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STATUS OF THE DEPARTMENT OF VETERANS AFFAIRS TO IDENTIFY GULF WAR SYNDROME

HEARING

BEFORE THE

SUBCOMMITTEE ON HUMAN RESOURCES

OF THE

COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT
HOUSE OF REPRESENTATIVES

ONE HUNDRED FIFTH CONGRESS

FIRST SESSION

APRIL 24, 1997

Serial No. 105–38

Printed for the use of the Committee on Government Reform and Oversight

U.S. GOVERNMENT PRINTING OFFICE

43–668 CC WASHINGTON : 1997

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STATUS OF THE DEPARTMENT OF VETERANS AFFAIRS TO IDENTIFY GULF WAR SYNDROME

THURSDAY, APRIL 24, 1997

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON HUMAN RESOURCES,
COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:10 a.m., in room 2154, Rayburn House Office Building, Hon. Christopher Shays (chairman of the subcommittee) presiding.

Present: Representatives Shays, Snowbarger, Gilman, Souder, Sanders, Kucinich, and Allen.

Staff present: Lawrence J. Halloran, staff director and counsel; Robert Newman, professional staff member; R. Jared Carpenter, clerk; Ronald Stroman, minority professional staff; and Ellen Rayner, minority chief clerk.

Mr. SHAYS. I'd like to welcome our witnesses to this very important hearing, and our guests, and thank everyone for their patience.

Accurate diagnosis and effective treatment of Gulf war veterans' illnesses requires a complete medical history of illnesses, allergies, exposures, inoculations, and a great deal more. For too many sick veterans, their medical history remains incomplete.

Why? Because Gulf war records that might document toxic exposures remain missing or classified. Because detection reports that could fix the time and place of probable chemical releases are lost or incomplete. Because sick call rosters and shot records that display adverse drug reactions were destroyed. And because virtually no effort was made to record who took the anti-nerve agent tablets, the pyridostigmine bromide [PB].

As a result, sick Gulf war veterans face an uncertain medical future because they lack critical evidence from their military past. In the absence of the records needed to correlate toxic causes with symptomatic effect, veterans are being misdiagnosed as stress cases and treated with ineffective therapies. That is simply unacceptable.

Our purpose today is to access the impact of missing records on Gulf war veterans' health. We ask what evidence is available to corroborate veterans' recollections of toxic exposures, and what additional information may yet be discovered or declassified in the course of on-going Defense Department, the DOD, and the Central Intelligence Agency, the CIA, investigations. We also ask that the benefit or any doubt caused by missing records goes to the veteran

who needs the benefit, as opposed to the military that lost the records and created the doubt.

While a necessary and constructive step, it is not enough to extend the presumptive period of service-connected benefits eligibility for undiagnosed Gulf war veterans, too often the presumptive diagnosis is stress, the disability compensation rating low, and the treatment biased in favor of psychiatric over neurobiologic. That is also unacceptable.

When it comes to matching cause to effect, diagnosis to treatment, presumptions are no substitute for the facts that are, or should be, in Gulf war medical, intelligence, and operations records.

To sick veterans, the missing unit logs, chemical detection reports, PB labeling information, and classified intelligence analysis are not just military records of the war 6 years ago. They are medical records vital to proper health care today. Every surviving Gulf war record even remotely connected to veterans' health claims must be found. The survival of many of our veterans depends on it.

As in our past hearings, we begin with testimony from Gulf war veterans. Theirs is the best intelligence available on the causes and effects of the mysterious cluster of maladies commonly called "Gulf War Syndrome." We are honored by their past service, their continued bravery, and their presence here today. And we welcome them.

DOD and CIA witnesses will testify on the status of their long-overdue efforts to investigate, analyze, declassify and disclose Gulf war records relevant to the health concerns of veterans.

Our final panel will discuss what is known about low-level chemical exposures and PB use that can fill the gaps created by missing Gulf war records.

We appreciate their being here, both the second and third panel, as well, and welcome their testimony, too. At this time I ask the gentleman, Mr. Sanders, if he has any comments he'd like to make.

[The prepared statement of Hon. Christopher Shays follows:]

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INDEPENDENT

SUBCOMMITTEE ON HUMAN RESOURCES
Christopher Shays, Connecticut
Chairman
Room B-372 Rayburn Building
Washington, D.C. 20515
Tel: 202 225-2548
Fax: 202 225-2382

Statement of Rep. Christopher Shays
April 24, 1997

Accurate diagnosis and effective treatment of Gulf War veterans' illnesses require a complete medical history of illnesses, allergies, exposures, inoculations, drug reactions, and a great deal more. For too many sick veterans, their medical history remains incomplete.

Why? Because Gulf War records that might document toxic exposures are missing, or remain classified. Because detection reports that could fix the time and place of probable chemical releases are lost or incomplete. Because sick call rosters and shot records that could document adverse drug reactions were destroyed. And, because virtually no effort was made to record who took the anti-nerve agent tablets, pyridostigmine bromide (PB).

As a result, sick Gulf War veterans face an uncertain medical future because they lack critical evidence from their military past. In the absence of the records needed to correlate toxic cause with symptomatic effect, veterans are being misdiagnosed as stress cases and treated with ineffective therapies. That's unacceptable.

Our purpose today is to assess the impact of missing records on Gulf War veterans' health. We ask what evidence is available to corroborate veterans' recollections of toxic exposures, and what additional information may yet be discovered or declassified in the course of ongoing Defense Department (DoD) and Central Intelligence Agency (CIA) investigations.

We also ask when the benefit of any doubt caused by missing records goes to the veteran who needs the benefit, as opposed to the military that lost the records and created the doubt.

While a necessary and constructive step, it is not enough to extend the presumptive period of service-connected benefits eligibility for undiagnosed Gulf War illnesses. Too often, the presumptive diagnosis is stress, the disability compensation rating low, and treatment biased in favor of psychiatry over neurobiology. That's unacceptable.

When it comes to matching cause to effect, diagnosis to treatment, presumptions are no substitute for the facts that are, or should be, in Gulf war medical, intelligence and operations records.

To sick veterans, the missing unit logs, chemical detection reports, PB labeling information and classified intelligence analysis are not just military records of a war six years ago. They are medical records vital to proper health care today. Every surviving Gulf War record even remotely connected to veterans' health claims must be found.

The survival of many of our veterans depends on it.

As in our past hearings, we begin with testimony from Gulf War veterans. Theirs is the best intelligence available on the causes and effects of the mysterious cluster of maladies commonly called "Gulf War Syndrome." We are honored by their past service, their continued bravery, and their presence here today and we welcome them.

DOD and CIA witnesses will testify on the status of their long-overdue efforts to investigate, analyze, declassify and disclose Gulf War records relevant to the health concerns of veterans.

Our final panel will discuss what is known about low-level chemical exposures and PB use that can fill the gaps created by missing Gulf War records.

We appreciate their being here today as well, and welcome their testimony.

Mr. SANDERS. Thank you very much, Mr. Chairman. I want to congratulate you for your long-standing efforts in trying to get to the root cause of this problem, your staff members—Bob Newman and the others—for the outstanding work that they have done, and the very fine work done by the minority staff. This has truly been a non-partisan issue. And I commend you for that.

I must tell you that the whole issue of Gulf war syndrome has preoccupied a great deal of my time and energy. We have hired new staff—Don Edwards, a former general, National Guard—to help us with this issue. We're holding a conference in Vermont focusing on this issue. Mr. Chairman, let me briefly go over some of the recent Gulf war syndrome history and tell you the conclusions that I've reached and the recommendations that I will be making.

As recent as 1 year ago, in April 1996, Assistant Secretary of Defense for Health Affairs, Steven Joseph, stated that there was "no indication of a unique illness or a Persian Gulf war syndrome or a single entity that would account for illness in any large or significant fraction of these people." He was wrong. For years the Defense Department and the CIA denied that our soldiers were ever exposed to chemical warfare agents. But there is now wide-spread acknowledgement that thousands of soldiers were exposed to these agents at Khamisiyah. And we will hear evidence today of far greater exposure. In other words, the DOD and the CIA were wrong in what they were saying for years, and may well be underestimating the problem today.

The President's Advisory Commission, relying heavily on the Department of Defense and other Government institutions for help, concluded, tragically in my view, that stress was the major cause of Gulf war syndrome. Dr. Jonathan Tucker, a chemical weapons researcher, was fired from his job with the Presidential Advisory Commission because he chose to talk to people outside the sphere of the Pentagon, who might have different opinions than the Pentagon, or the CIA about possible chemical exposures.

I think history will prove that he was moving in the right direction, and they were wrong. In general, the attitude of the DOD, the CIA, and the VA has been, in the very beginning—No. 1, there is no problem. It's all in the heads of the soldiers. No. 2, as time progressed: well, there may be a problem, but it is a stress-related problem, caused by stress. More time went on; they said, "Well, no. None of our soldiers were ever exposed to chemical agents." Well, we're sure of that. More time went on: "Well, yes. Maybe there were some exposures. But the problem is limited." More time went on: "Well, maybe the chemical exposure is not so limited, and we'll have to investigate how many tens of thousands of our soldiers were affected."

Now, all of this comes from the DOD, an agency with a budget of $250 billion. Meanwhile, some 70,000 men and women who served in the Gulf are suffering from one or another Gulf war symptom, some of them terribly, terribly serious.

Now, let's briefly look at some people with far more limited resources than the Pentagon who are seriously trying to address this horrendous problem. And I want to congratulate you, Mr. Chairman, because your committee has done an outstanding job in bringing some of these people to us and to the American people.

In late January, we heard from Dr. Robert W. Haley—the University of Texas Southwestern Medical Center. And this is what he says. He says, "Persian Gulf war syndrome is real. The syndromes are due to subtle brain, spinal cord, and nerve damage, but not stress. The damage was caused by exposure to combinations of low level chemical nerve agents and other chemicals, including pyridostigmine bromide in anti-nerve gas tablets, DEET, in a highly concentrated insect repellant, and pesticides and flea collars that some troops wore."

Another serious researcher, Dr. Muhammad Abou-Donia and Tom Kurt, from the Duke University Medical Center—they also have done some outstanding work. They study chickens. And the researchers specifically found that two pesticides—DEET and permethrin—and the anti-nerve gas agent PB, once again—were harmless when used alone, but when used in combination the chemicals caused neurological deficits in the test animals similar to those reported by some Gulf war veterans.

Doctors Garth and Nancy Nicolson, University of Texas, concluded that some Gulf war veterans have multiple chronic symptoms that may eventually have their diagnoses linked to chemical exposures in the Persian Gulf such as oil spills and fires, smoke from military operations, chemicals on clothing, pesticides, chemoprophylactic agents, chemical weapons and others. Dr. Claudia Miller, a good researcher from Texas, sees a direct relationship between the problems of our Gulf war veterans and multiple chemical sensitivity. Dr. William Ray, also from Texas, says the same thing.

Now, let me conclude, Mr. Chairman, by saying this: for whatever reason—and frankly I am not interested in speculating on that now—we could spend 10 hearings in speculation—I believe that the Department of Defense and the VA and the other Government agencies—CIA—have not been capable in either diagnosing or treating Persian Gulf war syndrome, or even fully analyzing the problem. In my opinion, there is no particular reason to believe that that is going to change.

We can bring the DOD, the VA and the CIA before us month after month. We can criticize them. We can berate them. But I have the sad feeling that it is not going to change, and what we have seen in the past is going to continue into the future. Mr. Chairman, you and this committee have done an extraordinary job in helping to expose many of the problems that currently exist. But I suggest to you that we must now assume an even greater responsibility.

I believe that this committee should, within the next several weeks, regroup, come together again, not for a hearing, but to formulate our conclusions. And then having done that, we should introduce a Manhattan Project type of organization which assigns responsibility and adequately funds individuals outside of the DOD and the VA to solve this problem. Whether those individuals should be within the civilian sectors of our Government, such as exists within the NIH, or whether they should be completely outside the

Government in a major university or research facility is something we can discuss. But I think we must reach the fundamental conclusion that the status quo approach is just not working. Thank you very much, Mr. Chairman.

[The prepared statement of Hon. Bernard Sanders follows:]

BERNARD SANDERS
MEMBER OF CONGRESS
VERMONT, AT LARGE

2202 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-4501
TELEPHONE: (202) 225-4115
FAX: (202) 225-6790

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FAX: (802) 860-6370

Statement of Congressman Bernie Sanders, April 24, 1997

Mr. Chairman,

I want to thank you and your staff, Bob Newman and the others for the outstanding work that you have done on this important issue.

I must tell you that this whole issue of Gulf War Syndrome has preoccupied a great deal of my time and energy. Among other things, I have brought on a new staff member, for Adujant General for the State of Vermont, Don Edwards, to help me with this, and I will be holding a conference in Vermont in late May to further address this issue.

Mr. Chairman, let me briefly go over some recent Gulf War Syndrome history and tell you that conclusions I reach and the recommendations that I make.

As recently as one year ago, in April 1996, assistant Secretary of Defense for Health Affairs, Steven Joseph stated that there was "no indication of a unique illness, or a Persian Gulf Syndrome or a single entity, that would account for illness in any large or significant fraction of these people." He was dead wrong.

For years the Department of Defense and CIA denied that our soldiers were ever exposed to chemical warfare agents, but there is now wide-spread acknowledgment that thousands of soldiers were exposed to these agents at Khamaseyah, and we will hear evidence today of far greater exposures. In other words, the DOD and CIA were wrong in what they were saying for years and may well be under estimating the problem today.

The President's Advisory Commission, relying heavily on the Department of Defense and other government institutions for help concluded, tragically, that stress was a major cause of Gulf War Syndrome. Dr. Jonathan Tucker, a chemical weapons researcher, was fired from his job with the Presidential Advisory Commission because he chose to talk to people outside the sphere of the Pentagon who might have different opinions than the Pentagon and the CIA about possible chemical exposures.

In general, the attitude of the DOD, the CIA, and the VA has been:
1, there is no problem, it's all in the "heads" of the soldiers;
2, well, maybe there is a problem, but is it "stress" related;
3, No, says the Pentagon, our soldiers were never exposed to chemical agents;
4, well yes, maybe there were some exposures, but the problem is limited;

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5, well, maybe the chemical exposure is not so limited and we'll investigate how many tens of thousands of soldiers may have been affected.

Now, all this from the DOD an agency with a $250 billion budget. Meanwhile some 70 thousand men and women who served in the Gulf are suffering with one or another Persian Gulf War Syndrome symptoms.

Now, lets briefly look at some people, with far more limited resources than the Pentagon who are seriously trying to address this horrendous problem -- people, some of whom through your good work, have testified before this committee. Dr. Robert W. Haley , University of Texas Southwestern Medical Center Persian Gulf War Syndrome is real " The syndromes are due to subtle brain, spinal cord and nerve damage -- but not stress. The damage was caused by exposure to combinations of low level chemical nerve agents and other chemicals, including pyridostigmine bromide in anti nerve gas tablets, DEET in a highly concentrated insect repellent, and pesticides in flea collars that some troops wore."

Doctors Mohammed Abou-Donia and Tom Kurt, Duke University Medical Center, in studies using chickens, the researchers specifically found that two pesticides, DEET and permethrin, and the anti-nerve gas agent pyridostigmine bromide were harmless when used alone...But, when used in combination, the chemicals caused neurological deficits in the test animals similar to those reported by some Gulf War Veterans.

Doctors Garth and Nancy Nicolson, University of Texas, Houston: Gulf War Veterans that have some of the multiple chronic symptoms may eventually have their diagnoses linked to chemical exposures in the Persian Gulf, such as oil spills and fires, smoke from military operations, chemicals on clothing, pesticides, chemoprophylactic agents, chemical weapons and others. In some cases, such exposure may have resulted in multiple-chemical sensitivity.

Dr. Claudia Miller , University of Texas Health Science Center at San Antonio, "MCS is very applicable here. I can think of nothing else that would begin to explain what's going on with our veterans. They have the same kind of intolerances to chemicals, drugs, and foods that MCS patients do. I think they may be the same thing."

Dr. William Rea, Environmental Health Center, Dallas, Texas and others

Mr. Chairman, let me conclude by saying this -- for whatever reason, and I'm not interested in speculating on that now, the Department of Defense and the VA have not been capable of either diagnosing or treating Persian Gulf War Syndrome, or even fully analyzing the problem. In my judgement, there is no reason to believe that this is going to change. We can bring the DOD, the VA, and the CIA before us month after month and berate them and crates them, but I have the sad feeling that nothing much is going to change. In terms of understanding the cause of Persian Gulf Syndrome and developing a treatment for it.

Mr. Chairman, you and this committee have done an extraordinary in helping to expose many of the problems that currently exist, but I suggest to you that we must now assume an even

greater responsibility. I believe that this committee should within the next several weeks regroup, come together again, not for a hearing but to formulate our conclusions, and that having done that, we should introduce a Manhattan Project type of legislation which assigns responsibility, and adequately funds individuals outside of the DOD and VA to solve this problem. Whether those individuals should be within the civilian section of the government, such as exists within the National Institutes of Health, or whether they should be completely outside the government in a major university or research facility is something we can discuss. But, I think we must reach the fundamental conclusion that the status quo just is not working.

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Hold for release:
8 a.m. EDT, Wednesday, April 17, 1996

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Contact: Rebecca Levine, Duke
(919) 684-4148
Levin005@mc.duke.edu
Kris Mullen, Southwestern
(214) 648-3404

DANGEROUS CHEMICAL COMBINATION PRESENTS POSSIBLE SCENARIO FOR GULF WAR ILLNESSES

WASHINGTON – Animal experiments at Duke University Medical Center show that harmless doses of three chemicals used to protect Gulf War soldiers from insect-borne diseases and nerve-gas poisoning are highly toxic when used in combination, researchers reported Wednesday. They said the findings may explain the wide array of symptoms reported by an estimated 30,000 Gulf War veterans.

In studies using chickens, the researchers specifically found that two pesticides, DEET and permethrin, and the anti-nerve gas agent pyridostigmine bromide (PB) were harmless when used alone, even at three times the doses soldiers likely received. But when used in combination, the chemicals caused neurological deficits in the test animals similar to those reported by some Gulf War veterans, according to Duke pharmacologist Mohamed Abou-Donia and Tom Kurt, a toxicologist at The University of Texas Southwestern Medical Center in Dallas.

Chickens were selected over rodents as test animals because their susceptibility to neurotoxic chemicals more closely resembles that of humans, the scientists said.

The findings were prepared for presentation Wednesday at the annual meeting of the Federation of American Societies for Experimental Biology and will be published in the May issue of the *Journal of Toxicology and Environmental Health.*

The researchers said their findings are similar to those reported in Scotland last month and by an Israeli team last year.

-MORE-

gulfwar-1stadd

Adding to those findings, the Duke and UT Southwestern scientists have developed a theory to explain why the chemical mix is dangerous. They said their results indicate the anti-nerve gas agent reduces the body's normal ability to inactivate the two pesticides, which can then travel to and damage the brain and nervous system. Such a mechanism could explain the wide array of symptoms reported by some Gulf War veterans, including memory loss, headache, fatigue, muscle and joint pain, weakness, shortness of breath and tremors, the researchers said.

"The decision to use these chemicals was made to protect soldiers from indigenous diseases in the gulf, such as malaria and leishmaniasis," said Abou-Donia, lead investigator of the study. "Without protection, there may have been thousands of deaths. But it appears that, for some veterans, the precautions prevented one set of problems and created another. Now, our task is to analyze the veterans' symptoms by investigating all the potential causes, not only for their sakes but for the welfare of future soldiers."

The Duke study is one of a three-part investigation on Gulf War illnesses organized by UT Southwestern. Co-authors of the Duke study include former Duke researcher Kenneth R. Wilmarth, now at ENVIRON Corp. in Arlington, Va.; Kurt; Karl F. Jensen of the Environmental Protection Agency at Research Triangle Park, N.C.; and Frederick W. Oehme of Kansas State University.

"Together, the three phases of our investigation may solve the mystery of some Gulf War veterans' illnesses," Kurt said. "The animal studies are an important component because they test the biological plausibility of our theory that combinations of certain chemicals can cause symptoms that are not caused by individual chemicals alone."

In the Duke study, researchers exposed healthy chickens to each of the three chemicals -- DEET, permethrin and PB -- individually and then in various combinations.

Doses of each chemical were selected prior to the study by determining the maximum amount a chicken could withstand without showing clinical signs -- a dose representing at least three times the amount soldiers likely received. DEET and permethrin were administered subcutaneously and PB was given orally.

"Even if a person was exposed to one chemical alone at three times the recommended dose, he or she would have remained healthy," Abou-Donia said. "Our first task was to demonstrate the safety of each chemical when used individually."

-MORE-

gulfwar-2ndadd

The chickens exposed to individual chemicals showed no outward signs of illness or debilitation, the researchers said. But chickens exposed to any two chemical combinations exhibited varying degrees of weight loss, diarrhea, shortness of breath, decreased activity, stumbling, leg weakness and a reluctance to walk, impaired flying or tremors. The combination of all three chemicals produced the most severe signs, resulting in total paralysis or death in some chickens.

A laboratory analysis of tissues in the central and peripheral nervous systems showed that multiple chemical exposure caused enlarged axons and axonal degeneration, a sign of widespread nervous system damage.

Tests also suggested that the severity of clinical signs depends on how active a particular blood enzyme is in removing the foreign chemicals from the body, the researchers said. This "scavenger" enzyme, called plasma butyrylcholinesterase (BuChE), inactivates foreign chemicals such as DEET and permethrin.

However, the scientists said there is a finite and limited amount of BuChE in the bloodstream, enough to neutralize DEET alone or permethrin alone. When multiple chemicals are present, the enzyme is unable to neutralize them all, resulting in a toxic accumulation of chemicals in the bloodstream and thus in the brain and nervous system.

Moreover, the anti-nerve gas agent PB further inhibits the action of this scavenger enzyme, BuChE. While PB's intended purpose is to temporarily shield and protect another similar enzyme, acetylcholine esterase (AChE), from nerve gas damage, it cannot distinguish between AChE and BuChE and therefore binds to both, the researchers said. So, even less BuChE is available to combat and neutralize DEET and permethrin.

"Pyridostigmine bromide actually pumps more of the other chemicals to the brain," said Abou-Donia. "While PB itself cannot cross the blood-brain barrier, it magnifies the effects of the other two chemicals by tying up the available BuChE."

Abou-Donia said an additional genetic risk factor arises in some individuals who have a faulty form of BuChE, resulting in low enzymatic activity and thus a diminished ability to inactivate drugs or pesticides. This risk factor, which affects only 3 to 4 percent of the population, may boost the toxicity of these chemicals.

"Individuals with genetic types of decreased plasma BuChe activity should be considered potentially at higher risk when exposed to PB and related compounds, and this may account for some of the more severe symptoms seen in up to 4 percent of the Gulf War veterans," said Abou-Donia. An estimated 700,000 military personnel served in the Gulf War.

-MORE-

gulfwar-3rdadd

In addition, soldiers who took higher-than-recommended doses of PB as an added precaution against nerve gas attacks may have caused nerve-cell overstimulation, contributing to tremors, muscle spasms and other symptoms of increased nerve-cell activity.

The research team is conducting a follow-up study analyzing blood samples from veterans with and without symptoms to determine if low enzymatic activity is associated with signs of illness.

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Bernie - FYI

THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT SAN ANTONIO

VOL. 21, NO. 1 SPRING 1994

Claudia S. Miller, MD, entered the Health Science Center's Medical School after 12 years as an industrial hygienist. Her work in many foundries and steel mills led her to pursue research in human sensitivities to chemicals. Today she is regarded as one of the nation's leading experts on Gulf War Syndrome.

THE WAR AND DR. MILLER

Faculty physician wins a battle for research in her quest to solve the mystery of Gulf War Syndrome

By Jim Barrett

A final victory in the Persian Gulf War may be won far from Iraq's desert and the burning oil wells whose smoke darkened Kuwait for weeks.

American troops fought in one of the most chemically active combat zones in the history of U.S. warfare. And now as many as 4,000 veterans have Gulf War Syndrome, an illness that so far has defied diagnosis.

Victims complain of many problems, including fatigue, memory disorders, mood swings, body pain and insomnia.

With the war's shift from the battlefield to the field of clinical research, Claudia S. Miller, MD, an allergist and immunologist at the Health Science Center, finds herself on the front line of a politically-charged medical mystery. In January, the Defense Department pledged $1.2 million for a research project similar to that first proposed by Dr. Miller to test the sick veterans for "multiple chemical sensitivity," or MCS.

"Her work has great potential importance as a possible etiology for the illnesses," said Maj. Gen. Ronald R. Blanck, DO, commander of Walter Reed Army Medical Center in Washington, D.C., and head of the Defense Department's clinical task force on the gulf veterans' illnesses.

"More significantly, it has a tremendous potential benefit to society, which is increasingly being exposed to low levels of a variety of chemicals in the environment," Dr. Blanck said.

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>
> Maj. Gen. ..onald R. Blanck, DO
> Commander, Walter Reed Army Medical Center

The Gulf War mystery fell in Dr. Miller's lap in 1992. She had become nationally known for her research into chemical exposure and its relationship to human illnesses. The Department of Veterans Affairs hired her as a consultant to examine its Gulf War patients and try to find a diagnosis.

"I noticed that the symptoms of some of the veterans were strikingly similar to multiple chemical sensitivity, a controversial condition that civilian patients had reported having before the war," she said.

In 1993, Dr. Miller was appointed to the VA's blue-ribbon scientific panel on the Gulf War illnesses. She acknowledged that MCS was unproven but pressed for clinical research on the subject.

MCS is a condition that has stirred controversy since it was first described 40 years ago. Victims say they are "sensitized" by intense or long-term chemical exposures and thereafter become sick when exposed to low levels of any number of chemicals.

Dr. Miller had studied related issues involving indoor air pollution and pesticide exposure, but said it was unknown whether exposure to low

'Why can't you be the way you were?'

"Momma, why can't you be the way you were?" Victoria's 7-year-old son said.

She didn't have an answer. Neither do her doctors.

Victoria, 39, is like many sick veterans from the Persian Gulf War. She has so many ailments that doctors are stumped for a diagnosis.

A former Army medic, Victoria spent eight years in the service and more than six months in the Persian Gulf. She is a single mother who manages to hold down a job in San Antonio. It isn't easy.

Victoria has fatigue, chest pains, breathing problems, sores that leave scars, recurring high fevers and two menstrual periods a month.

"I knew things were bad, but it just broke my heart when my son asked me why I was sick all the time," said Victoria, who asked that her real name not be used.

Since her discharge in September 1991, Victoria has been treated in nine separate military clinics without a diagnosis. "The doctors look at me like I'm crazy and say it's just stress. Well, I may be stressed, but that's only because they don't know what's wrong with me," she said.

Photograph by Mike Treuter

Victoria, a Gulf War veteran with serious medical problems, is a single mother who is raising a 7-year-old son.

The armed forces deployed 650,000 men and women in the Gulf War. About 5,000 came from South Texas. No one is sure how many service members are sick. Defense officials report 500 to 1,000 defined cases of Gulf War Syndrome, but the Disabled American Veterans, a veterans organization, has estimated as many as 4,000 veterans are affected.

In 1991, the VA established a national registry for Gulf War veterans. Registrants could receive free physical examinations, counseling, family support and other services. In South Texas, 844 veterans have registered and doctors have examined 200, most of whom were referred to specialists.

Officials at Audie L. Murphy Memorial Veterans Hospital in San Antonio have adapted procedures for the unique situation. They contracted with three private doctors to help speed examinations. In addition, they put each Gulf War patient under the care of a primary physician. "There were so many symptoms and the patients were seeing so many different doctors that we had to get more consistency in treatment. We needed one doctor who could monitor an individual's situation and get the big picture," hospital spokeswoman Amber Baldwin said.

Most veterans organizations say the VA is handling Gulf War veterans better than it did Agent Orange patients. Agent Orange was a chemical defoliant used in the Vietnam War. For years after the war, veterans claiming Agent Orange disabilities were denied benefits until Congress acted.

Few Gulf War veterans claiming chemical exposure have won disability benefits so far. The VA has granted about 80 claims out of 1,500.

levels of environmental chemicals could affect previously sensitized individuals. She proposed building an "environmental medical unit," a set of ultraclean rooms to test patients for chemical sensitivities. Her approach began to win support from the military, veterans' organizations, scientists and congressmen.

In November, Congress appropriated $300,000 in defense funds for the unit. Defense officials announced in January they would supply the additional $920,000 needed to build and operate it. There was no immediate announcement about where the unit would be located, but congressmen who campaigned for its funding want it to be San Antonio.

During a December visit to the Health Science Center, Rep. G.V. "Sonny" Montgomery, D-Miss., chairman of the House Veterans Affairs Committee, and committee member Rep. Frank Tejeda, D-Texas, endorsed Dr. Miller's proposal for the unit and said it should be built in San Antonio.

MCS causes no known changes in antibodies, a fundamental clue in diagnosing allergies. How it affects the body, if it affects the body, is unclear. The American Medical Association has deferred recognizing MCS as a clinical diagnosis, citing a lack of research. Skeptics in medicine and science argue that Gulf War Syndrome, and MCS for that matter, are ill-defined and probably psychological in nature.

Dr. Miller acknowledges a gap in scientific proof, but says MCS could be the most logical explanation for the Gulf War illnesses.

"If I have any advocacy, it's not for one side or the other in this dispute. It's advocacy for careful research. Knowledge about chemical sensitivities is lagging far behind the pressing health care needs of the veterans. Without studies, we cannot define the mechanism and without a mechanism, treatments are just guesses," she said.

Dr. Miller's name and work have been cited by the *New York Times*, *USA Today*, the prestigious journal *Science* and other publications. In 1993, she testified before the House Veterans Affairs Subcommittee on Oversight and Investigations and began to win allies in her call for MCS research.

"She took a very courageous stand," said Iris Bell, MD, PhD, a leading researcher in the effects of environmental exposures on the brain. Dr. Bell is a psychiatrist at the University of Arizona and the VA hospital in Tucson.

The environmental medical unit would have eight beds in four rooms where the indoor air is filtered for optimum purity. Porcelain walls and special furnishings would minimize "out-gassing," the release of low-level chemicals common in plastics and other synthetic materials.

After several days in the unit, away from their usual home and work environment, patients would be given very low concentrations of the chemicals they would breathe, ingest or somehow encounter in daily living. These "challenges" would be blinded. In other words, substances would be presented so that patients could not smell or taste them. Patient reactions would be measured and analyzed.

The environmental unit is critical to ending the debate about whether MCS is real or imagined, said

Sanford A. Miller, PhD, no relation to Dr. Miller, who is dean of the Health Science Center's Graduate School of Biomedical Sciences and a former high ranking executive in the U.S. Food and Drug Administration.

"Claudia Miller wants to apply scientific standards to define what this disorder is and she has been remarkably objective. If she were anything but neutral in this debate, the last thing she would want is that environmental unit because it could just as well prove that she is wrong as prove she is right," he said.

Findings from the environmental unit could have a profound effect on medicine, consumer products and the way Americans live if evidence emerges to link illness with low-level chemical exposures.

Dr. Claudia Miller contends that Americans encounter many of the same chemicals suspected of making the Gulf War veterans ill. She said more doctors are seeing patients with similar problems and the number of cases of reported chemical sensitivity appears to have risen sharply in the past decade.

Years ago, miners kept caged canaries nearby to warn them if they were breathing dangerous gas. They would flee if a bird died. "Some people feel these chemically sensitive people are our canaries," Dr. Miller said. "I don't know, but we need to find out."

Military personnel in the Gulf War encountered a potent brew of chemicals. "The use of environmental agents was far greater in this war than in Vietnam," Dr. Blanck said.

There were pesticides to kill desert insects. Ammunition and armor made with depleted uranium, a heavy metal that is toxic as well as radioactive. Pyridostigmine bromide pills to protect against a poison-gas attack. Smoky, fuel-burning tent heaters. Diesel oil doused on roadways, runways and even inside tents to stop sand from blowing. One veteran said the diesel wicked up his tent's canvas siding. Others reported diesel odor and smoke in their tents and other areas.

Iraqi forces torched Kuwait's oil fields. Smoke from the fires was visible from space. The air turned foul, the sky turned dark and it rained a black, oily residue. Water became contaminated. "We all took showers in oily water," a former Army medic from San Antonio said.

In 1993, reports surfaced that some military personnel may have been exposed to low levels of Iraqi chemical warfare agents. Investigators for Sen. Donald Riegle, D-Mich., said it was possible the chemicals escaped when U.S. warplanes bombed Iraq's nerve-gas plants.

Defense officials have examined the possibility of low-level gas exposure, but report finding no evidence to support it.

In 1992, the VA's Houston Regional Referral Center hired Dr. Miller to examine some of the sickest Gulf War veterans who had been sent there from across the nation. She has since completed more than 20 comprehensive evaluations.

In the '70s, she distinguished herself as an industrial hygienist. Determined to pursue an interest in health effects of low-level chemical exposure, Dr. Miller enrolled in the Health Science Center's School of Medicine in the '80s. Later, her work became widely read. In 1991, she wrote the acclaimed book *Chemical Exposures: Low Levels and High Stakes*, which won an award from the World Health Organization.

Her co-author, Nicholas A. Ashford, PhD, JD, professor of technology and policy at Massachusetts Institute of Technology, said the book brought MCS into the mainstream of medical inquiry. Issues involving chemical sensitivity had become clouded by the unconventional treatment techniques of its chief proponents, clinical ecologists. Some ecologists prescribed vitamins or sweating in a sauna.

The respected *Journal of the American Medical Association* gave the book a favorable review. Soon the National Academy of Sciences and the Association of Occupational and Environmental Clinics sponsored national workshops on the subject. Participants seemed to agree that research was needed. Even skeptics acknowledged a need for the type of studies proposed by Drs. Ashford and Miller.

Dr. Ashford, who has known her for 20 years, said, "Claudia Miller understands the problem of chemical sensitivity better than anyone else in the world. She does not overstate what the evidence shows. She is clear about where the facts end and the speculation begins."

Dr. Miller grew up in Milwaukee. Her mother was a reading teacher; her father, a patent attorney. In the early '60s, she was the first girl at her high school to win the annual Bausch & Lomb science award.

She went to college amid the anti-war protests of the '60s. Dr. Miller was Phi Beta Kappa at the

What is MCS?

What is multiple chemical sensitivity? MCS is a controversial illness. Patients complain of fatigue, memory problems, mood changes and many other health problems. To those who accept it, MCS is a new diagnosis in medicine that is in a transitional stage of acceptance. They cite lupus and multiple sclerosis as examples where doctors detected a disorder, but could not immediately understand it.

Tobacco Smoke

Traffic Exhaust

How do people become chemically sensitive? A two-step process seems to lead to chemical sensitivity:

• Sensitization. "In many MCS patients, the illness appears to develop following a major exposure to any of a wide range of environmental chemicals. The sensitizing event may be either an acute high-level exposure, such as a chemical spill, or it may be a repeated or continuous exposure occurring at much lower levels such as in a sick building," said Claudia S. Miller, MD, an authority on chemical sensitivity.

Fragrances

• Triggering. "Following sensitization, patients report that extremely low levels of common chemicals tolerated by the majority of the population — for example, tobacco smoke, perfume and traffic exhaust — trigger severe symptoms. Commonly, they report that their symptoms are triggered not only by the chemicals involved in the original exposure, but also everyday, low-level exposures to other chemicals that are structurally different from the original exposure," she said.

What things can make people sick? Patients say a wide range of products trigger symptoms. These include nail polish remover, new carpet, insecticides, a fresh newspaper, perfume, tobacco smoke, hair spray, fresh paint and even the detergent aisle at the supermarket.

Detergent

Why is MCS so controversial? Chemically sensitive patients do not react the same way as people with allergies. The body produces IgE, an antibody, when it encounters a known allergen such as ragweed or bee venom. With MCS, no such "biological marker" has been discovered; therefore, there is skepticism that the syndrome exists.

Newspaper

How do chemicals get into the human system? Dr. Miller and Iris Bell, MD, PhD, a leading researcher on the subject, theorize that airborne chemicals may sensitize the brain's limbic region, which controls mood and helps record new memories, making it more vulnerable to subsequent exposures. Nerves in the nose that allow us to smell connect directly to the olfactory bulb, which is within the brain and offers the most direct pathway between the brain and the outside chemical environment.

Paint

The limbic system is a primitive region of the brain associated with instinctual responses and behavior. For example, it records the pleasant value most people assign to the smell of new-mowed grass or fresh-baked bread. The limbic region's role, if any, in chemical sensitivity is unknown, but is becoming the subject of research.

Nail Polish Remover

How many people have MCS? No one knows. One theory is that many people suffer from chemical sensitivity but may not recognize it. Humans have an enormous capacity to adapt to many substances. Examples are nicotine and alcohol. "MCS patients refer to adaptation as 'masking.' Many report that their illness began with flu-like symptoms. If they avoided exposures, either intentionally or unintentionally, they noticed their symptoms improved. With re-exposure, they observed that their symptoms recurred," Dr. Miller said.

University of Wisconsin, where she received her bachelor's degree in molecular biology in 1968. She obtained her master's degree in public health a year later from the University of California at Berkeley.

After graduating from Berkeley, Dr. Miller became an industrial hygienist and worked in the field for 12 years—first for the University of California Medical Center in San Francisco, then the Occupational Safety and Health Administration (OSHA) and finally for the United Steelworkers union.

In the mid-'70s, she helped solve unexplained illnesses at an electronics assembly plant in Pennsylvania. Dozens of solderers, mostly women, complained of headaches, nausea and difficulty concentrating. Federal investigators blamed the illnesses on psychological causes, but Dr. Miller had doubts.

"The women were breathing a cloud of organic and inorganic chemicals from the solder fumes. Some of us wondered if the cause might not be from these low-level chemical exposures. Our thinking was that maybe levels that meet OSHA standards still aren't always safe for everybody," she said.

Dr. Miller recommended adding exhaust hoods to ventilate the soldering area. The company installed the units and the illnesses went away.

Dr. Ashford, then chairman of OSHA's advisory committee, was impressed. "Everyone was calling this case mass psychogenic illness, but Claudia Miller thought they were jumping to conclusions and suggested the idea of systemic poisoning. She was right on the money, and that was 20 years ago."

Her colleagues describe her as tenacious, incisive and adept at analyzing complex problems.

"Claudia Miller is a dedicated scientist who is devoted to unraveling the mysteries behind the symptoms displayed by Persian Gulf veterans and others," said James J. Young, PhD, dean of the Health Science Center's Medical School and himself a former career soldier. "If she is given the necessary resources to establish an environmental unit and to conduct the appropriate research, I am confident that she will play a pivotal role in finding the root causes of these troubling conditions and pointing the way to their treatment."

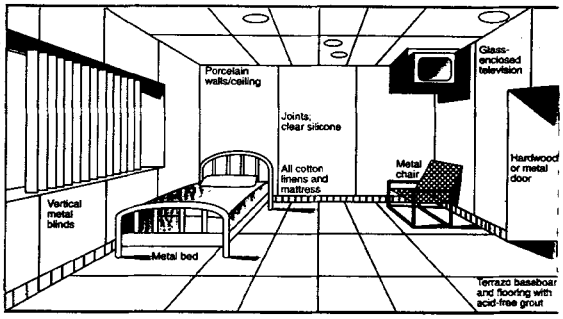
Dr. Miller's dedication seems to be nourished by her years examining occupational health issues, particularly those affecting blue-collar workers.

"I've been in mines, smelters, foundries, steel mills and manufacturing plants of all kinds. It was a very compelling and eye-opening experience. I realize what people must do to make a living and what they are exposed to in the process," she said.

"I wouldn't have gone to medical school if I hadn't been an industrial hygienist first and seen a problem that I felt was important enough for me to spend nine years in medical school and in training."

Dr. Miller teaches environmental and occupational health in the Health Science Center's department of family practice. On campus, she collaborates in research with Howard C. Mitzel, PhD, assistant professor of family practice, and Leonid Bunegin, assistant professor of anesthesiology. She also is an adjunct faculty member in the School of Public Health and teaches aerospace medicine residents from Brooks Air Force Base in San Antonio.

National debate about "sick building" syndrome, hazardous waste sites and the Gulf War illnesses has focused growing public attention on chemical sensitivity.



Patients would stay in an "environmental medical unit" that has a special air supply and furnishings and a style of construction that minimizes "out-gassing" of low-level chemicals. Once separated from everyday chemical exposures, patients would undergo tests to identify which substances trigger their illnesses.

Several state and federal agencies have been pulled into the debate, but none so directly as the Environmental Protection Agency (EPA), which was sensitized itself by an embarrassing incident in 1987.

About 200 EPA employees became sick when the agency remodeled its headquarters in Washington. Workers had repainted office space and installed 27,000 square yards of new carpet.

Several dozen employees have since claimed they have MCS. Some have sued. They have complained that they are unable to tolerate perfume, engine exhaust, tobacco smoke and low levels of other substances that never bothered them before the incident.

Business and industry have paid close attention to incidents that seem to be associated with chemicals in products.

"The struggle here is between psychosocial issues and science. In other words, when is a smell an irritant, and when is it just a smell most of us don't like?" said Mark Stuart of the National Association of Manufacturers in Washington, a trade organization.

"The truth is there is no way to tell in black and white that any smell is directly related to an illness," Stuart said.

Real or imagined, illness associated with low-level chemicals from the Gulf War or elsewhere appears to be a frontier for medical research in the '90s. Amid the controversy, Dr. Miller said she keeps in mind a lesson her parents taught her years ago.

"They patiently read stories to me as a child, encouraged my interest in science and taught me to keep the two separated. You have to remember that stories are about belief. Science is 'guess and test.' It's not about belief. It's about facts." ■

Scientific Findings on the Gulf War Syndrome And Action Plans Leading to Treatment for Veterans

Testimony before the House Subcommittee on Human Resources and Intergovernmental Relations

January 21, 1997

Robert W. Haley, M.D.

Epidemiology Division
Department of Internal Medicine
University of Texas Southwestern Medical Center
Dallas, Texas

The overall conclusions from the 3 studies from our UT Southwestern research group are as follows: Illness from the Persian Gulf War is real. Many Gulf War veterans are suffering from three primary syndromes. The syndromes are due to subtle brain, spinal cord and nerve damage--but not stress. The damage was caused by exposure to combinations of low-level chemical nerve agents and other chemicals, including pyridostigmine bromide in anti-nerve-gas tablets, DEET in a highly concentrated insect repellent, and pesticides in flea collars that some troops wore. Different combinations of the chemicals appear to have caused the 3 different syndromes.

To arrive at these findings, we completed three studies in a group of 249 members of a U.S. Navy reserve unit, the 24th Naval Mobile Construction Battalion. We chose them because Seabees go throughout the battle zone, and thus any geographical exposure would affect at least some of them. The 24th was the only reserve Seabees unit in the war, and a reserve unit can be reassembled because its members tend to live in a defined region of the country. We included ill and well veterans; about half had retired from the service.

Defining the Syndromes

In the first study, in December 1994 and January 1995, we actually assembled the 249 Seabees in groups and performed a very detailed survey of the veterans' symptoms. Then we used a mathematical computer technique to identify clusters of symptoms that comprise the syndromes. Early on, it occurred to me that each of the symptoms we were seeing was ambiguous. For example, "chronic fatigue" meant daytime sleepiness to some people and muscle exhaustion to others, and the medical meaning of these is very different. This turned out to be true for most of the symptoms.

So I wondered if, the fact that we had been lumping the different meanings of a symptom together might be why previous researchers had come out with ambiguous, or mysterious, diagnoses like chronic fatigue syndrome and post-traumatic stress disorder, which themselves have never been explained.

Sure enough, after splitting each symptom into unambiguous components, 3 primary syndromes and 3 secondary syndromes literally jumped out at us from the mathematical computer analysis. And these new syndromes looked like familiar nervous system injuries from different chemical exposures. This was our first breakthrough.

Uncovering Potential Causes

Also in the December '94 - January '95 survey, the veterans reported certain wartime exposures in our standardized survey booklets. Notice that we had obtained this information a full 18 months before the possibility of chemical weapons exposures became a serious consideration in the press. We designed a special analysis strategy to avoid a problem called "recall bias" that can occur when you ask people about their illnesses and their risk factors at the same time. From a very clever insight by my colleague, toxicologist Tom Kurt, who's here today, we hypothesized that the risk factors measuring veterans' exposures to chemicals, would be more strongly associated with the syndromes than the other risk factors, like oil well smoke and depleted uranium, that were being equally publicized but were probably not causal.

The strategy worked. The chemical-related risk factors were 4 to 8 times more common in the veterans with the new syndromes that in the well veterans. But the risk factors for oil well smoke, depleted uranium munitions, multiple immunizations, burning jet

fuel in tents, combat stress and the other highly publicized concerns were not associated, or were only weakly, associated.

Summary of the Syndromes and Risk Factors

The graphic table in your handout, entitled "The Gulf War Syndromes," shows the symptoms that make up each of these new syndromes and the risk factors associated with each.

Of the 249 veterans, many had health complaints that they attributed to the war, but one-quarter of them had one of the syndromes. Since the 3 secondary syndromes largely overlapped the first 3, I'll focus on the 3 primary syndromes.

First is syndrome 1, which we called the "impaired cognition" syndrome. Its symptoms are distractibility, difficulty remembering, depression, insomnia, fatigue in the sense of excessive daytime sleepiness, slurred speech, confusion and migraine-like headaches. These symptoms are typical of what we see in civilians who have repeated exposures to toxic pesticides. Syndrome 1 was epidemiologically associated with having worn pet flea collars to ward off insects, and having worked in security jobs during the war.

Many pet flea collars contain the common pesticide chlorpyrifos, or Dursban. It's been shown to cause brain and nerve damage in families whose homes were sprayed with Dursban on the inside. It's important to note that wearing flea collars in the war was not approved by the military command.

Also, security personnel often stood watch outdoors at night, exposed to potential chemical fallout as well as to pesticide fogging of the camps with Dursban.

Next is syndrome 2, which we called the "confusion-ataxia" syndrome. Its symptoms are confusion and disorientation, dizziness, disturbances of balance, a sensation of the room spinning, problems thinking and reasoning, and sexual impotence. Syndrome 2 is more severe, and it was epidemiologically associated with self-reports of having experienced excessive side effects after taking the pyridostigmine bromide anti-nerve-gas tablets and with having been involved in a chemical weapons attack or exposure. Remember that chemical weapons exposure was not being discussed widely in the press until 18 months after this survey was completed.

We also found an unusually high rate of syndrome 2 in individuals who had been in the Khafji area on January 20, the fourth day of the air war. Khafji is in far northeastern Saudi Arabia, near the Persian Gulf coast, and just below the Kuwaiti border. This was the same day that Czechoslovakian experts detected sarin and a mustard agent near here, and chemical alarms went off here.

I should note here that none of the veterans that we studied were anywhere near the Khamisiyah ammunition dump during the war. This means that the post-war Khamisiyah incident does not explain the illnesses in the veterans we studied. The problem appears to be much wider.

With syndrome 2, the evidence for chemical interactions was particularly strong. Veterans who were involved in what they thought was a chemical weapons attack, and who had particularly severe side effects from the PB tablets were five times more likely to have syndrome 2 than those with only one of these risk factors. This indicates a synergistic effect, and it's a strong sign of truly causal events in epidemiology.

Next is syndrome 3, which we called the "arthro-myo-neuropathy" syndrome. ("Arthro" for joint, "myo" for muscle, and "neuro" for peripheral nerves.) Its symptoms are

joint and muscle pains, muscle weakness, fatigue in the sense of excessive muscle exhaustion in daily activities, and tingling and numbness in the hands and feet. Syndrome 3 was epidemiologically associated with the amount of a highly concentrated insect repellent containing 75% DEET in ethyl alcolho typically used during the war, and with experiencing excessive side effects after taking the PB anti-nerve-gas tablets.

DEET is the active ingredient in most insect repellents. It's considered safe in concentrations of 30% or less, but higher concentrations have caused brain damage. Interestingly, action to ban these higher concentrations of DEET is pending appellate review in New York state.

Studies of the Nature and Severity of the Syndromes

All three syndromes appear to involve chronic diarrhea and skin rashes.

We found syndrome 1 mostly in younger veterans, while the rate of syndromes 2 and 3 increased with age.

To assess the relative severity of the syndromes, we analyzed the rates of unemployment. We found that approximately half of the veterans with syndrome 2 are disabled and unable to work, but unemployment was low in syndromes 1 and 3--similar to that in veterans with none of the syndromes. From this, we conclude that syndrome 2 is more severe than the other 2 syndromes.

In 1994 Dr. Jay Sanford developed a case definition of the Gulf War syndrome for the U.S. Defense Department from examinations of Gulf War veterans who were still on active duty in 1994. We found that the Sanford case definition closely mirrored our syndromes 1 and 3, but it did not reflect our syndrome 2. This suggests that the sickest, most impaired veterans (those with our syndrome 2) must have left the military before 1994. We think this explains why the Defense Department's large CCEP examination project, which began in 1994, did not find the most severely impaired veterans--they had already left the service.

Studies of Stress and Possible Psychological Causes

To measure levels of stress and other psychological problems, we performed standardized psychological testing on all 249 veterans in the study, supervised by our neuropsychologist Dr. Jim Hom. The results showed the same psychological profile in all three syndromes. This was the profile you expect to find in any general medical clinic--in patients with common physical illnesses. Let me emphasize--none of the 249 veterans had profiles compatible with post-traumatic stress disorder, combat stress, malingering or other psychological conditions.

Studies of Neurologic Damage

Now, we had all this information 18 months ago and shared it with scientists in the government to see if other studies being planned at that time could corroborate what we had found. However, we couldn't publish it then because--all these findings were statistical and did not prove that the syndromes represented real disease. To get a hook into bedrock, we designed a final case-control study to compare the brain and nerve function of veterans with the syndromes with that of well veterans, serving as controls. We brought 23 veterans with the syndromes and 20 well members of the same battalion to the UT Southwestern campus in Dallas for intensive neurological testing. This is reported in the second paper in the series.

The medical scientists in our 6 testing laboratories were blinded to which veterans were cases and controls. They performed sophisticated tests that electronically measure the speed of certain reflexes and how fast certain nerves conduct impulses. These tests are very sensitive to brain and nerve damage, and they're not under voluntary control, so the subject can't influence them. They also did brain MRI scans and brain blood-flow scans, a wide array of blood tests, and an entire day of detailed neuropsychological performance tests that can distinguish brain damage from psychological disorders.

The testing showed the veterans with the 3 syndromes to be significantly more neurologically impaired on the objective tests than the normal controls. This confirmed that damage to the brain, spinal cord and peripheral nerves underlies our three syndromes.

After all the testing was complete, I convened a meeting of the top UT Southwestern neurologists to go over all the clinical and laboratory findings on each veteran individually, to try to diagnose a known disease in each one. This was before they saw the results of the group comparisons. Ultimately, they were unable to make a diagnosis on any of the veterans. However, when I then showed them the results of the statistical group comparisons of the cases versus the controls, they agreed that the veterans with the syndromes were significantly more impaired than the controls in patterns typical of neurotoxic damage.

We believe this experience explains why medical examinations of tens of thousands of ill veterans in the various VA registries and the Defense Department's CCEP project have been unable to identify the syndromes. We couldn't do it either--when examining the veterans one at a time. We could only confirm the syndromes by comparing ill veterans with well veterans in a case-control study.

The Likely Mechanism of Neurologic Damage

The syndromes that we uncovered appear to be variants of a rare neurotoxic disorder called OPIDP (which stands for "organophosphate-induced delayed polyneuropathy"). OPIDP is caused by exposure to certain neurotoxic chemicals that inhibit cholinesterases and other enzymes in the nervous system. The spectrum of symptoms in OPIDP varies from severe nerve damage and paralysis following large chemical overdoses--all the way to vague, mild brain symptoms following repeated pesticide exposures, like what you see in injured pesticide applicators. Since these cases are usually treated by toxicologists, few regular physicians are familiar with OPIDP. This probably explains why no one explored this diagnosis earlier. Our medical toxicologist, Dr. Tom Kurt, proposed the OPIDP mechanism for the Gulf War syndrome back in early 1994 when we first started planning our studies.

At that time, as I began the epidemiologic studies in veterans, Dr. Kurt designed a series of laboratory studies to proceed in parallel with the epidemiology to test the biological plausibility of our chemical-combination theory in laboratory hens. He and his collaborators, at two other universities and the EPA, recently published two papers confirming that the same chemicals, already implicated in our epidemiologic studies in humans, act synergistically to cause permanent neurologic damage in hens. When they gave the chemicals one at a time to the hens, there was no adverse effect, but two-way combinations of the chemicals caused mild neurologic damage, and three-way combinations caused severe damage in the hens. Our findings in the veterans actually came first, but were published second because of the longer journal peer review process they required.

As for the mechanism by which these chemicals might have combined to cause neurologic damage, there is actually quite a lot of published material that has not come into

the public forum. We've summarized and referenced many of the key articles in our three *JAMA* papers. For example, extensive research has been published on the OPIDP syndrome and the mechanism by which certain chemicals cause it. To understand it, you have to distinguish between the "immediate" effects of the chemicals and their long-term effects. And you need to be aware of the concepts of pharmacologic "protection" and "promotion." Let me explain.

The immediate poisoning effects and the long-term neurologic damage occur by completely different mechanisms. Either can occur with or without the other.

The 1990 U.S. doctrine on defense against chemical nerve agents was based on the well-established fact that giving a protective drug like pyridostigmine before exposure to a neurotoxic chemical can protect a person and improve survival from a chemical attack with the nerve agent soman. However, research published since the war has shown that giving a protective drug after the exposure can paradoxically promote brain damage from even a low dose of a neurotoxic chemical that might not have caused a problem otherwise. Failure to understand these mechanisms has thoroughly confused the public debate up to now.

Summary of the Findings

To summarize the findings, after mathematically disentangling the different meanings of the ambiguous symptoms, we identified 3 primary syndromes. In a blinded, case-control study, we established that the syndromes are due to the nervous system damage. Epidemiologic analysis of self reported exposures found risk factors for different combinations of chemical exposures--including chemical nerve agents--to be strongly associated with each of the syndromes.

Plans Leading to Treatment for Veterans

Finally, where do we go from here? The ultimate goal of research on this subject is to develop a way of screening veterans to identify which have the bonafide neurologic syndromes and to find treatments for our injured service personnel to help return them to more productive and pleasant lives. Although brain and nerve damage cannot be cured, there are valid ways of identifying who has it, and there are medications and rehabilitation strategies that can reduce the symptoms and help the veterans function more successfully.

To reach this goal, three things must be accomplished.

First, we must bring our cases and controls back to Dallas for a final round of testing to define more sensitive ways of screening for the neurologic syndromes. Now that we have shown that groups of affected veterans can be distinguished from normal groups, we now need to validate tests that will allow us to identify definitively those single individuals who are affected rather than groups of individuals. We also need to gain a deeper understanding of some of the symptoms we deferred in the first study, such as the joint pains, diarrhea and skin rashes.

Second, in parallel we must organize a larger survey of Gulf War veterans using the methods we found successful to confirm our findings in a larger group of veterans. For this to work, we must establish a research task force of top Defense and VA department researchers with a mandate to reproduce our survey, a sufficient budget, access to Defense and VA department records, and a willingness to collaborate enthusiastically. This project should not supplant other creative approaches, but since we have uncovered the most

promising track, a new, larger project to test our theory must be undertaken soon and done well.

Third, from the findings of the clinical case-control studies we will develop practical clinical practice guidelines for screening veterans for the bonafide neurologic syndromes and for treating each of the major symptoms. We must test these screening and treatment recommendations in scientifically designed clinical trials to test their effectiveness. The validated screening methods and treatments will be incorporated into a final clinical practice guideline for nationwide implementation.

As you know, six years have passed since the end of the Gulf War and not enough has been done to alleviate the suffering and disability of the men and women who put their lives at risk for our country's interests. I am proposing a plan for moving aggressively and expeditiously toward providing practical ways to diagnose and help those veterans who have Gulf War illnesses. If this plan is adopted immediately, it can be completed and treatment started in less than a year. I hope that we can work with the Congress and the departments of Defense and Veterans Affairs to put this plan into action immediately.

The Gulf War Syndromes

UT Southwestern researchers studied 249 members of a U.S. Navy reserve unit and found that up to one-fourth of them suffered symptoms that occur together, indicating a possible syndrome.

Syndrome 1. "Impaired Cognition"

Symptoms
- Distractibility
- Difficulty remembering
- Depression
- Middle and terminal insomnia
- Daytime sleepiness
- Slurred speech
- Confusion
- Migraine-like headaches

Risks Wearing pet flea collars; working in security; younger veterans.

Syndrome 2.* "Confusion-Ataxia"

Symptoms
- Confusion and disorientation
- Dizziness, imbalance and vertigo
- Problems thinking and reasoning
- Sexual impotence

Risks Reporting a likely chemical weapons attack; experiencing side effects of pyridostigmine bromide (PB) tablets; being near Khafji on Jan. 20, 1991; older veterans.

Syndrome 3. "Arthro-Myo-Neuropathy"

Symptoms
- Joint and muscle pains
- Muscle weakness
- Muscle fatigue
- Tingling or numbness in hands and feet

Risks Using government-issued insect repellent containing 75% DEET; experiencing side effects of PB tablets; older veterans.

Chronic diarrhea is common in all three syndromes.
None of the 249 veterans was near Khamisiyah at any time in the war.
Psychological tesing showed that none is suffering from stress.

* Veterans with Syndrome 2 were more likely to be unemployed. A definition of the Gulf War Syndrome developed for the U.S. Department of Defense from examinations of Gulf War veterans who remained on active duty in 1994 closely mirrored Syndromes 1 and 3 but did not reflect Syndrome 2. The UT Southwestern researchers suggest this may have been because the sickest veterans (those with Syndrome 2) had left the military before 1994.

Mr. SHAYS. I thank the gentleman. I would thank him for his extraordinary dedication to this issue. You spend a great deal of time on this issue, and have been a major part of this committee's investigation and have been a tremendous help.

Mr. SANDERS. Thank you, Mr. Chairman.

Mr. SHAYS. At this time I would call on Mr. Snowbarger, the vice chairman of the subcommittee.

Mr. SNOWBARGER. Thank you, Mr. Chairman. I really don't have a formally prepared statement. I do want to thank you for continuing the hearings on this process, also thank the panel for helping us to try to find the answers to these questions that have long plagued us. I appreciate the frustration that you have gone through. We're frustrated, as well, in trying to get the answers, as Mr. Sanders has indicated. And I appreciate your being with us here today. I look forward to your testimony and questioning period.

Mr. SHAYS. I thank the gentleman. Mr. Gilman, the chairman of the Foreign Affairs Committee, as I call it.

Mr. GILMAN. Thank you, Mr. Chairman. And I want to thank you for convening this hearing this morning as part of your series of ongoing hearings related to the Gulf war syndrome. I believe that these hearings are important as they help keep the Department of Defense focused on an uncomfortable issue and remind both officials at the Pentagon and the members of the public as well as Congress' determination to address this unfortunate legacy of the Gulf war.

This morning's hearing is particularly important, because it goes to the heart of the matter regarding DOD's response to this issue. Along with, I'm sure, many of my colleagues, I've heard numerous allegations from our constituents about the poor initial response to our veterans' concerns from both DOD and the VA. And yet when we in the Congress raise these issues time and time again, our intelligence and the DOD assured Members of both the House and Senate that there was no evidence that any troops were exposed to any chemical weapons in the Gulf. Moreover, the VA was eager to accept these statements. So eager, in fact, that VA officials did not feel that any exposure to chemical agents even merited consideration when ascertaining the causes behind the symptoms experienced by the affected personnel.

And then, last year, when faced with overwhelming evidence to the contrary, officials at the Pentagon reversed themselves and stated that 400 of our troops at the Khamisiyah ammunitionsite were exposed to chemical agents. This figure later grew to approximately 20,000 of our troops. Since this initial revelation, additional distressing facts have come out as the CIA and the DOD have engaged in finger-pointing and blame-shifting over what was actually known at the time and what was communicated. To me, the most shocking fact is the revelation to this subcommittee last January, that 80 percent of the nuclear biological chemical logs from the theater of operations—165 pages of a total of 200—are now missing.

For one, I think I'm losing patience with the DOD in this issue. It's troubling enough that Pentagon officials were categorically denying troop exposure to chemical agents despite overwhelming evidence to the contrary. Now, however, we find out that most of the

record logs that were intended to track these incidents are classified or missing. The charges of cover-up no longer seem so far-fetched. These facts, as they've dribbled out over the last 6 years, point to the following conclusion: simply put, we were not prepared to handle the contingency of widespread chemical use by the Iraqi forces during the Gulf war, and that it was only by the grace of God that Saddam Hussein did not resort to the use of such weapons.

Mr. Chairman, the Congress needs and deserves straight, honest answers from the DOD. For too long, we've been dealing with commanders who apparently were more interested in protecting their own careers and reputations than in looking out for the welfare of the personnel under their command. It's bad enough to discount the thousands upon thousands of alarms and detections that occurred during the war. But what is far worse is a pattern of deceit and misrepresentation that's been waged with the Congress and the American people. If we had a problem in addressing widespread chemical exposures during the Gulf war, then let's admit it and move on. The hand-wringing, double-talk, and the finger-pointing that's occurred over the last few months is pointless and counter-productive. More importantly, it does nothing to help our veterans, who put their lives, both theirs and their families' health on the line for our Nation. Thank you, Mr. Chairman.

Mr. SHAYS. I thank the gentleman for his very fine statement. Mr. Allen, it's nice to have you here. You have the floor.

Mr. ALLEN. Thank you, Mr. Chairman. I will be very brief. First of all, I want to thank you for holding these most important hearings, and to thank all of the panelists who are here to testify. I would just say this: When we send the young men and women in our armed services into harm's way, we have an obligation to do well by them when they return, and to care for them and to make sure that we investigate whatever may have happened to them. The record in this, frankly, appears to be a sorry record. And I hope that one outcome of these hearings today is that we make sure that it doesn't happen again, that we are able to detect illnesses from chemical warfare or biological warfare and deal with them efficiently.

And it's not clear to me at all that that's been the practice over the last few years. And I am here, as I believe all of you are here, to try to understand what happened, and make sure it doesn't happen again. Thank you, Mr. Chairman.

[The prepared statement of Hon. Thomas H. Allen follows:]

STATEMENT OF REPRESENTATIVE TOM ALLEN
APRIL 24, 1997

Mr. Chairman, thank you for holding this hearing. Over 70,000 men and women of our armed forces who served in Desert Shield/Desert Storm have been experiencing serious health problems which for many have been disabling. While the Department of Defense and the Department of Veterans Affairs have not been able to provide them with a diagnosis and treatment for their ailments, currently referred to as the Gulf War Syndrome, there have been reports from a variety of sources that U.S. and allied troops have been exposed to chemical warfare agents.

According to a report by Dr. Jonathan Tucker, a chemical/biological weapons expert, "U.S. and allied troops were exposed to low levels of chemical warfare agents in downwind chemical fallout released by coalition bombing of Iraqi chemical weapons storage bunkers in southeastern Iraq and Kuwait, known as Khamisiyah. There are also strong indications that Iraq deployed chemical weapons into the Kuwati Theater of Operations. . . Although such chemical exposures had no significant effect on U.S. and allied military operations or the outcome of the war, they appear to have had long-term adverse health consequences for many of the exposed troops, with the severity of these effects depending on the level of exposure and individual genetic susceptibility."

There are numerous questions that remain unanswered which I hope will be addressed in this hearing. How many events, such as Khamisiyah, were our troops exposed to? Where are the military's Nuclear-Biological-Chemical (NBC) logs? What role did the pyridostigmine bromide tablets, the anti-nerve pill, play in protecting the health of our troops? I am quite concerned that there are numerous logs that are missing and that only an accurate log of events, such as Khamisiyah, will address the numerous questions soldiers and their families have in dealing with the ailments manifested since Desert Shield/Desert Storm.

Without the missing logs how can those with undiagnosed ailments be effectively treated? I am certain that everyone wants to do the right thing. But the agencies have not been able to provide our soldiers the treatment they need and deserve.

Several scientific studies have suggested that exposed troops may have developed serious health ailments as a result of multi-chemical exposures. The fact that they were exposed to chemical warfare agents and ingested anti-nerve pills (PB) may have made them more vulnerable to neurological damage when exposed to other agents, such as pesticides.

The Department of Defense and the Veterans Administration have a poor record in dealing with these health problems. We must do better for our veterans. I hope these hearings allow us to do that.

Mr. SHAYS. I thank the gentleman. Mr. Souder. What I would like to do first is before calling my witnesses, just get some housekeeping out of the way, and ask unanimous consent that all members of the subcommittee be permitted to place an opening statement in the record and that the record remain open for 3 days for that purpose. And without objection, so ordered. And I ask further unanimous consent that all witnesses be permitted to include their written statements in the record. And without objection, so ordered.

At this time, the committee will convene the first panel. The panel consists of three American heroes: Maj. Michael Donnelly, U.S. Air Force, retired, a Persian Gulf war veteran from South Windsor, CT. Our second panelist is Sgt. Susan Sumpter-Loebig, U.S. Army, retired, a Persian Gulf war veteran from Hagerstown, MD. And our third witness will be Sgt. Steven Wood, U.S. Army, retired, a Persian Gulf war veteran who presently resides in Germany.

Mr. Donnelly, I understand that you're in a wheel chair and will not be able to stand, but I would ask the other two witnesses to stand, and I'd ask all three of you to raise your right hand. We swear our witnesses in.

[Witnesses sworn.]

Mr. SHAYS. Thank you. Note for the record that all three witnesses have responded in the affirmative. And we will go from Maj. Donnelly, and then we'll go to you, Sergeant, and then to you, Sgt. Wood. But we'll start with you, Mr. Donnelly. It's nice to have you here.

STATEMENTS OF MICHAEL DONNELLY, MAJOR, U.S. AIR FORCE, RETIRED; SUSAN SUMPTER-LOEBIG, SERGEANT, U.S. ARMY, RETIRED; AND STEVEN WOOD, SERGEANT, U.S. ARMY, RETIRED

Maj. DONNELLY. Thank you, Congressman Shays and members of the committee. I want to thank you for the opportunity to be here today.

Mr. SHAYS. Maj. Donnelly, what I'm going to do—it may be a little difficult, but I'm going to ask you to put the mic a little closer to you.

Maj. DONNELLY. Sure.

Mr. SHAYS. It might mean that your papers have to overlap the—thank you.

Maj. DONNELLY. OK. How's that? Better?

Mr. SHAYS. I think it is better. And I'm going to ask you to lift the mic up just slightly. Thank you. That's perfect. That's great. Thank you very much.

Maj. DONNELLY. As you've already stated, my name is Maj. Michael Donnelly. And I am not the enemy. I come to you today to tell you that I am yet another Gulf war veteran with a chronic illness. I was medically retired in October 1996 after 15 years and 1 month of service in the Air Force as a fighter pilot. At the time Iraq invaded Kuwait, I was stationed at Hahn Air Base in Germany, flying F–16s.

Mr. SHAYS. I'm sorry to interrupt you again. I'd like all witnesses to just tap their microphones and make sure that they're—it's the one on the stem. I don't think yours is on, sir.

Maj. DONNELLY. Great.

Mr. SHAYS. Could you check that for us? It's not really picking up. We're going to trade microphones, then, if we can't get it working.

Maj. DONNELLY. Kind of the way things have been going for me lately.

Mr. SHAYS. Mr. Donnelly, this is a good day. I started out and lost $20. It is a good day. It's wonderful to have you here, sir. And it is a very important day to have you testifying. This is a good day.

Maj. DONNELLY. Great.

Mr. SHAYS. Thank you.

Maj. DONNELLY. And I'm happy to be here.

Mr. SHAYS. Thank you.

Maj. DONNELLY. As I stated, my name is Maj. Michael Donnelly. And I am not the enemy. I come before you today to tell you that I am another Gulf war veteran with a chronic illness. I was medically retired in October 1996 after 15 years and 1 month as a fighter pilot in the U.S. Air Force. At the time Iraq invaded Kuwait, I was stationed at Hahn Air Base in Germany flying F–16s. My unit deployed to Abu Dhabi, which is in the United Arab Emirates, on January 1, 1991, and redeployed back to Germany on May 15, 1991. During the war, I flew 44 combat missions. On those missions I bombed a variety of targets, such as strategic targets to include airfields, production and storage facilities, and missile sites.

I also bombed tactical targets, which included troops, battlefield equipment and pontoon bridges. I also flew combat air support, which is troops in combat, and combat air patrol missions. Never during any of those missions was I ever warned of the threat of any chemical exposure from chemical or biological weapons. Had I been warned, there were steps I could have and would have taken to protect myself. I can tell you that I flew throughout the entire region of Iraq, Kuwait, much of Saudi Arabia, to include in and around the oil smoke.

Evidence now shows that chemical munitions storage areas and production facilities that were bombed by us released clouds of fallout that drifted over our troops through the air. I know of other pilots who do remember a specific incident that later caused them to become ill. Upon returning from the Gulf, I was reassigned to McDill Air Force Base in Tampa, FL. That is when I first started to notice that something was wrong, that I didn't feel quite right.

By the summer of 1995, I was stationed at Shepperd Air Force Base in Wichita Falls, TX. It was here that my current illness started. I began to suspect that it was related to the service in the Gulf. During the summer, I was exposed several times to malathion, which is a fairly dilute organophosphate-based pesticide used for mosquito control. The base's policy there was to spray with a fogging truck throughout the base housing area, where I lived with my family. I was exposed to the malathion while jogging in the evenings. I would like to point out something here that I learned later:

organic phosphate is the chemical basis for all nerve agents. It is a poison that kills just like a pesticide does.

It was immediately after my exposure to malathion that I started to have serious health problems. After this, every time I ran I would get a schetoma—or blind spot—in front of my eyes and my heart would beat erratically. I started to have heart palpitations, night sweats, sleeplessness, trouble concentrating on my work, trouble remembering, trouble taking a deep breath, frequent urination, and I was extremely tired all the time. It wasn't until December 1995, that I started to have trouble walking. I had weakness in my right leg.

It was then that I decided to go and see the doctor. Right after the holiday season, on January 2, 1996, I went in to the flight surgeon at Shepperd Air Force Base. When I finished explaining my symptoms to him I mentioned that I had been in the Gulf war. He immediately started to talk to me about the effects of stress and delayed stress. He told me that the other problems—heart palpitations, breathing difficulty, sleeplessness—all that, was most definitely stress-related, but we needed to look into why I had weakness in my leg.

I was referred to the neurologist. During the first visit with the neurologist, it was one of the first times that I heard the line that I would hear throughout the entire Air Force medical system. And that line was: "There has never been any conclusive evidence that there's any link between service in the Gulf and any illnesses." Each time I heard this line, it was almost as if the person was reading from a script.

How can they say that they're looking for answers when they deny it's even possible? How can they say there's no connection when they don't study the individuals who present themselves with symptoms that might prove that connection. Instead, I got the line, which proved that no one was looking to see whether there was a problem with my connection, only to deny that it exists. At one point a doctor at Wilford Hall Medical Center gave me a 3-minute dissertation on how my illness absolutely could not be linked to service in the Gulf.

One thing else I noticed at Wilford Hall during my five or six visits was a room on the neurology labeled Gulf War Syndrome Room. In none of my visits was the door to this room ever open or the light on. I started to realize that because the military medical system would not acknowledge that my illness could be related to the Gulf war, I would not get help. Once I realized that I began to seek help from civilian doctors, many of whom had already made the connection between service in the Gulf and the high incidents of unusual illnesses among Gulf war veterans. Because the military has not acknowledged this connection, my family and I have been forced to spend over $40,000 of our own money on this effort.

Our search led us to people around the country with the same illnesses who were also Gulf war veterans. In the past 12 months I've travelled all over this country and even to Germany looking for help.

Incredible as it may seem, the Air Force medical system initially wanted to retire me with 50 percent disability and temporary retirement. Only after we hired a lawyer at our own expense and

went to the medical board did we get that changed to 100 percent and permanent retirement. I chose not to fight over whether my illness was combat-related, because I had already seen the stonewalling that was going on, and because I wanted to move my family back home. That was a personal decision made at a time when I knew I had far greater battles yet to fight.

Upon my retirement from the Air Force, I found myself worked into the VA medical system. What alternative did I have after 15 years of service? I guess I'm one of the lucky ones, since I was: one, still on active duty when I got sick; and, two, given a poor prognosis which required them to treat me and compensate me. What alternative did they have?

The VA bureaucracy is difficult and slow at best. I'm suffering from a fatal illness where every month matters. I could sit here today and tell you that despite my situation, which you would think would warrant expeditious treatment and action, I ran into a red tape and paperwork nightmare that continues to consume my life today. However, once I finally got to see them, the medical personnel who have treated me have been very kind and understanding, despite the fact there isn't much they can do. Maybe if we hadn't had 6 years of cover-up there would be something that they could do.

To this day, no one from the DOD or VA has contacted me personally to involve me in any tests or studies. I, myself, have found nine other Gulf war veterans, some who have already come before this committee, who are also suffering from ALS, an unusual illness that rarely strikes individuals under the age of 50. In fact, with the 10 of us who have ALS, we are certain there are more. We just can't find them. The incidence of ALS already far exceeds the normal incidence, given the number of soldiers who served in the Gulf. One thing I can tell you: this is not stress. With every other Gulf war veteran we have found who has ALS, the common thread has been subsequent exposure to some kind of strong chemical or pesticide, such as malathion, diazinon, and lindane.

Why aren't the DOD and the VA warning every one else who served in the Gulf that they may get sick in the future, just as I got sick 4 years after I returned from the Gulf?

How many other people out there are waiting for that one exposure that's going to put them over the top? Why is no one putting the word out? A warning could save the lives and health of many individuals. I'll tell you why: because that would take admitting that something happened in the Gulf that's making people sick.

I wonder how many flight mishaps or accidents that have happened since the war have involved Gulf war veterans. Those numbers shouldn't be hard to find. The military keeps records on all of that. In fact, I'll wager someone out there already knows the answer to that question and hasn't shared, whether because of a direct order not to, or because the right people haven't asked the question.

How many pilots are still out there flying who don't feel just quite right, just as I flew for 4 years after I returned from the Gulf? How many other pilots fear for their livelihood and the repercussions they know they would encounter were they to speak up

because they've been told, "There's no conclusive evidence that there's any link between service in the Gulf and any illness."

Imagine my dismay when the DOD announces $12 million to study the Gulf war illness, and four of those studies are centered around the effects of stress or post-traumatic stress disorder. You would think that the DOD and the VA would have an indepth knowledge of the effects of stress after all the wars that this country has fought, most of them a lot more stressful than the Gulf war. Why aren't they taking our illnesses seriously? I'll tell you why: because that would take admitting that something happened in the Gulf war that's making people sick.

Part of the ongoing cover-up has been to trivialize the illnesses the Gulf war veterans are suffering from. You hear about skin rashes and joint aches and insomnia and fatigue, and there's no doubt that these are real symptoms and are debilitating in and of themselves. But what you don't hear about is the high incidences of rare cancers and neurological diseases and immune system disorders that are totally debilitating. This is not stress. This is life and death.

Why is it impossible to get the right answers from the DOD and the VA about how many veterans are sick or have sought treatment? Why is it more important to protect high-placed Government officials than to care for veterans who are sick? The national defense issue now is that it's public knowledge that the DOD mistreats the people who serve. America will have no one else to fight its wars when people learn this.

The primary goal at this point is not to find out whose fault all this is, although some day someone will need to investigate that, and find out what happened and why. The people responsible for this tragedy should be held responsible and punished.

The top priority now is for all of us to help veterans and their families get their health and lives back. Or at least that should be the goal. That should be your goal. It's obvious now that there has been a cover-up going on all this time as more and more information gets released or discovered. It's time for people who know something—and they do exist—to come forward. Maybe we can save some lives.

During and after the war we proclaimed to ourselves and the rest of the world how we learned the lessons of Vietnam and fixed the military. We learned the lessons of Vietnam and we did it right this time. Last week, Gen. Powell stated that we suffered only 149 casualties in the Gulf war. I'm here to tell you: the casualty count is still rising. Just like in Vietnam with Agent Orange, it appears that we did not learn all the lessons. We still mistreat veterans. This country has again turned its back on people who fight its wars: the individuals to whom it owes the most.

I want to thank you for what you are doing for the veterans of this country, many of whom were squeezed out of the military right after the war and now find themselves out on the street fighting the very institution they fought for. Congressman Shays, in the military, we have a tradition called the salute, and it's used to show admiration and respect for an individual who has earned it.

I salute you for what you are doing. You go a long way to restoring this soldier's waning faith in a country that could so willingly desert its own. Remember: I am not the enemy. Thank you.

[The prepared statement of Maj. Donnelly follows:]

Testimony of Michael Donnelly

Congressman Shays and members of this committee, I want to thank you for giving me the opportunity to testify before you today. My name is Major Michael Donnelly. I am not the enemy.

I was medically retired in October of 1996 after 15 years and 1 month of service as a fighter pilot in the Air Force. At the time Iraq invaded Kuwait, I was stationed at Hahn Air Base in Germany flying F-16s. My unit, the 10 Tactical Fighter Squadron, was attached to the 363rd Tactical Fighter Wing and deployed to Abu Dhabi in the United Arab Emirates on 1 January 1991 in support of Operation Desert Shield and then Desert Storm. My unit redeployed to Germany on the 15th of May 1991.

During the war, I flew 44 combat missions. On those missions I bombed a variety of targets, including strategic targets (airfields, production and storage facilities, missile sites, etc.), tactical targets (troops, battlefield equipment, pontoon bridges, etc.). I also flew Close Air Support, and Combat Air Patrol missions. Never during any of these missions was I warned of the threat of exposure to any chemical or biological weapons. Although we expected and trained for that eventuality, we never employed any of the procedures because we were never told that there was any threat of exposure. Had we been warned, there were steps we could have and would have taken to protect ourselves.

Unlike other veterans who have testified before you, I don't have a specific incident that I can remember during the war that might have caused my illness. However, I can tell you that I flew throughout the entire region of Iraq, Kuwait and much of Saudi Arabia, to include in and around the oil smoke. Evidence now shows that chemical munitions storage areas and production facilities that were bombed by us released clouds of fallout that drifted over our troops through the air, and that's where I was. I know also of other pilots who do remember a specific incident that caused them to later become ill.

So while I cannot point to one event to explain my illness, I come before you today to tell you that I am yet another veteran from the Gulf War with a chronic illness. Upon return from the Gulf, I was reassigned to McDill Air Force Base in Tampa, Florida. It was here that I first started to experience strange health problems. It was nothing you could really pinpoint except to say that I didn't feel as strong as I once had or as coordinated. I felt like I was always fighting a cold or the flu.

By the summer of 1995, I was stationed at Shepperd Air Force Base in Texas. It was here that I believe my illness started and that I began to suspect that it was related to service in the Gulf. During the summer, I was exposed several times to malathion, which is a fairly dilute organophosphate-based pesticide used for mosquito control. The base's policy was to spray with a fogging truck throughout base housing where I lived with my family. I was exposed to the malathion fogging while I was running in the evenings. I would like to point out something I learned later: that organophosphate poison is the chemical basis for all nerve agents -- it is a poison that kills just like a pesticide does.

It was immediately after my exposure to malathion that I started to have serious health problems. After this time, every time I ran I would get a schetoma -- or blind spot -- in front of my eyes and my heart would beat erratically. I started to have heart palpitations, night sweats, sleeplessness, trouble concentrating, trouble remembering, trouble taking a deep breath and frequent urination. I noticed that one cup of coffee would make me extremely jittery. I noticed that one beer would have an unusually intense effect on me. I was extremely tired much of the time. I had to put my

head down on my desk to rest while I was working and I had to lie down at home before dinner after work.

It wasn't until December 1995 that I started to have trouble walking and experienced weakness in my right leg. It was then that I decided, right after the holiday season. I would go see the doctor. On the second of January 1996. I went to the flight surgeon at Shepperd Air Force Base. When I finished explaining my symptoms to him and mentioned that I had been in the Gulf War, he immediately started to tell me about the effects of stress. He told me that the other problems -- heart palpitations, breathing difficulties, sleeplessness -- were probably stress related, but that we needed to look into the weakness in the leg more, and I was referred to a neurologist.

During this first visit with the neurologist was when I first heard the line that I would hear throughout the whole Air Force medical system and that was: "There's no conclusive evidence that there's any link between service in the Gulf and any illness." Each time I heard this line, it was almost as if each person was reading from a script.

If an active duty field grade officer walks into a hospital and says he's sick and that he was in the Gulf War, why does the military not seize this opportunity to investigate whether there is any connection between service in the Gulf and this illness? How can they say they're looking for an answer when they deny it's even possible? How can they say there's no connection when they don't study the individuals who present symptoms that might prove that connection? Instead, he gets "the line," which proves that no one is looking to see whether there is a problem. Only to deny that one exists. Why should I have to call and register for the Gulf War Registry when I'm active duty? I should automatically be put on the list as another person with a chronic illness who served in the Gulf. Again, if they were really looking for a problem, all they have to do is look.

My treatment included several trips to Wilford Hall Medical Center in San Antonio for MRIs, CT scans, muscle tests and multiple blood tests. Each time I mentioned I was a Gulf War veteran, I got "the line." At one point, a doctor in Wilford Hall gave me a three minute dissertation on how my illness absolutely could not be related to my service in the Gulf. One thing I noticed during my four or five visits to Wilford Hall was a room on the neurology ward labeled "Gulf War Syndrome Room." In none of my four or five visits was the door to this room ever open or the light on. I started to realize that because the military medical system would not acknowledge my illness could be related to the Gulf War, I would not get help.

Once I realized that, I began to seek help from civilian doctors, many of whom had already made the connection between service in the Gulf and the high incidence of unusual illnesses among the war's veterans. They had all the proof they needed: the thousands of veterans coming to them desperate for medical treatment. Because the military has not acknowledged this connection, my family and I have been forced to spend over $40,000 of our own money in these efforts. Our search led us to people around the country with the same illnesses who were also Gulf War veterans. In the last twelve months, I have traveled all over this country and even to Germany looking for help.

Incredible as it may seem, the Air Force medical system initially wanted to retire me with 50% disability and temporary retirement with a diagnosis of ALS. Only after we hired a lawyer, at our own expense, and went before the medical board, were we able to change that determination to 100% and permanent retirement. All the while, I was contending with my declining health and the trauma to my family. I chose to not to fight over whether my illness was combat related, because I'd already seen the stonewalling that was going on and because I wanted to move my family back home. That was my own personal decision, made at a time when I knew I had other

and far greater personal battles yet to fight.

Upon my retirement form the Air Force, I found myself worked into the VA medical system. What alternative did I have after my 15 years of service? I guess I'm one of the lucky ones, since I was:
1. still on active duty when I got sick; and
2. given a poor prognosis, which required them to treat me and compensate me. What alternative did they have?

The VA bureaucracy is difficult and slow at best. I am suffering from a fatal illness, where every month matters. I can sit here today and tell you that despite my situation -- which you would think would warrant expeditious treatment and action -- I ran into a red tape and paperwork nightmare that continues to consume my life today. However, once I finally got to see them, the medical personnel who have treated me have been very kind and understanding, despite the fact that there isn't much they can do. Maybe if we hadn't had six years of cover-up, there would be something they could do.

To this day, no one from the DOD or VA has contacted me personally to involve me in any tests or studies. I myself have found more than nine other Gulf War veterans, some who have already come before you, who are also suffering from ALS, an unusual disease that rarely strikes individuals under the age of 50. In fact, with the ten of us who have ALS -- and we are certain there are more out there whom we just haven't found -- the incidence of ALS already far exceeds the normal incidence given the number of soldiers who served in the Gulf. Why is there no special emergency study of this outbreak? Why is no one worried about what is obviously a frightening incidence of a terrible neurological illness among such a young and healthy population? One thing I can tell you: this is not stress.

With every other Gulf War veteran we have found who has ALS, the common thread has been subsequent exposure to some kind of strong chemical or pesticide, such as malathion, diazinon, and lindane -- which is used to treat head lice in children.

Why aren't the DOD and the VA warning everyone else who served in the Gulf War that they may get sick in the future, just as I got sick four years after I returned to the US? How many other people are out there waiting for that one exposure that will put them over the top? Why is no one putting the word out? A warning could save the lives and health of many individuals, could save them from going through what I am now going through. I'll tell you why, because that would take admitting that something happened in the Gulf War that's making people sick.

I wonder how many flight mishaps or accidents that have happened since the war have involved Gulf War veterans. Those numbers shouldn't be hard to find: the military keeps records on all of that. In fact, I wager that someone out there already knows the answer to that question and hasn't shared it either because of a direct order not to or because the right person has yet to ask.

How many other pilots are still out there -- flying -- who are not quite feeling right? Just as I flew for four years after I returned from the Gulf, how many other pilots fear for their livelihood and the repercussions they know they would encounter were they to speak up because they know "There's no conclusive evidence that there's any link between service in the Gulf and any illness."

Imagine my dismay when the DOD announces $12 million (a drop in the bucket) to study the Gulf War illnesses and four of those studies are centered around the effects of stress or post-traumatic stress disorder. You would think that the DOD and the VA would have an in-depth

knowledge of the effects of stress after all the wars this country has fought. Most of them a lot more "stressful" than the Gulf War. Why aren't they taking our illnesses seriously? I'll tell you why, because that would take admitting that something happened in the Gulf War that's making people sick.

Part of the ongoing cover up has been to trivialize the illnesses that Gulf War veterans are suffering from. In the press and from the VA, you hear about skin rashes and joint aches, about insomnia and fatigue. There is no doubt that these are real symptoms and are debilitating in and of themselves. But what you don't hear about is the high incidence of rare cancers, neurological illnesses such as ALS, and immune-system disorders that are totally debilitating. This is not stress. This is life and death.

Why is it impossible to get the right numbers from the DOD and the VA about how many veterans are sick or have sought treatment? Why is it more important to protect certain high-placed government officials than to care for veterans who are sick? When it comes time to fund the military, budget concerns are usually set aside in the interest of defense and the public good. Well, the national defense issue now is that it's public knowledge that the DOD mistreats people who serve. America will have no one to fight its wars.

The primary goal at this point is not to find out whose fault all of this is. Someday, someone will need to investigate what happened and why. The people responsible for this tragedy should be found out and punished.

The top priority now for all of us is to help veterans and their families get their health and their lives back. Or at least that should be the goal. That should be your goal. All I want is what I brought to the Air Force: my health.

I'm not interested in hearing how surprised General Powell and General Schwartzkopf are about how we were all exposed to chemical weapons, or that the CIA really did know Hussein had these weapons, or that the CIA alerted the DOD to this fact. It's obvious now that there's been a cover up going on all this time as more and more information gets released or discovered. It's time for those people who know something -- and they do exist -- to come forward. And maybe we can save some lives.

During and after the war, we proclaimed to ourselves and to the world how we learned the lessons of Vietnam and fixed the military. We learned the lessons of Vietnam and we did it right this time. Last week, General Powell stated that we suffered only 149 casualties in the Gulf War. Well, I am here to tell you that the casualty count is still rising. Just like in Vietnam with Agent Orange, it appears that we didn't learn *all* the lessons. We still mistreat veterans. This country has again turned its back on the people who fight its wars, the individuals to whom it owes the most.

I want to thank you for what you are doing for the veterans who went to war for this country. Many of whom were squeezed out of the military right after the war and now find themselves out on the street, fighting the very institution they fought for. In the military, we have a tradition called the salute and it's used to show admiration and respect for an individual who has earned it. I salute you for what you are doing here. You go a long way in restoring this soldier's waning faith in a country that could so willingly desert it's own.

Remember: I am not the enemy.

Mr. SHAYS. Thank you, Maj. Donnelly. Major, your testimony is very helpful. We're going to be hearing from two other veterans and then we'll be asking you some questions. Thank you for honoring us with your presence. Sgt. Susan Sumpter-Loebig, if you would testify now.

Sgt. SUMPTER-LOEBIG. Good morning, ladies and gentlemen. Thank you for taking the time to listen to the ongoing struggle that I and other Gulf war veterans have been enduring since our return. I am 29 years old and was a sergeant E–5 in the Army Military Police Corps. My military occupational specialties are: Victor 5 investigations, senior military customs inspector, nuclear physical security, enemy prisoner of war camps, canine assistant, route reconnaissance specialist. And I've worked with CID numerous times.

I was released from active duty on March 18, 1997. January through April 1991, I was assigned to mortuary escort perimeter security at Dover Air Force Base. My job was to ensure the safe transportation of fallen soldiers from Southwest Asia back to the continental United States. Once processed and identified, I then escorted the remains back to their families and stayed to perform funeral detail. I was also to provide condolences and return any belongings to the families. It was also my responsibility to present the flag from the coffin to the family members. This done, I then helped the family finish anything they may have forgotten or left out.

I was then assigned in April to St. Louis as security for the new helicopter prototypes being displayed at the stadium. I was there for 3 weeks and was taken to the Air Force hospital with intestinal bronchitis the second week. I recovered and then returned home. Although I still felt bad, I took my annual PT test on April 12, 1991. My scores were 20 push-ups, 53 sit-ups, and I ran a 14:48 on my 2-mile run—a total of 232 points, which is passing for my age bracket.

In May, I was assigned to Fort Detrick, MD for the release of DOD police to take classes and do their training. I was there for 1 month. My duties included patrol, desk officer, gate duty and general police work. I had a cold most of the time I was there, but brushed it off as the cost of traveling that I had been doing back and forth through the country. I returned home 2 days later and was told that I would be returning to Southwest Asia. In June, I returned with the 164th Direct Support Maintenance Company. We were to perform numerous jobs in the few months we were there. We were stationed at KKMC.

My jobs were as follows: senior customs inspector, arms room, route reconnaissance, shotgun escort in and out of Dahran and Kuwait City, and general military police duties. Our first duty was to ship connex's of equipment, food, supplies, et cetera, back to the United States. They had to be emptied, inventoried, cleaned, inspected, packed, and sealed for shipment back to the United States. We were never issued any type of protective gear for this duty. In August, we received a severely damaged connex of unknown origin. Upon opening this, myself, Sgt. 1st Class Jattan, Staff Sgt. Henry Brown, Staff Sgt. Bogden and Sfc. Kevin Knight were drenched in a noxious, fuming gas that burned.

We found later that the contents was DS, CS and super-topical bleach. The substances mixed with the water that constantly drenched the tarmac and created this smoke. Everyone who had been in contact was rushed to the TMC and the rack was shut down; 2 to 3 days later it was reopened and we returned to duty. Two weeks after that it was shut down permanently and we were not permitted anywhere near it.

Upon returning home in December, my symptoms have been severe headaches, nausea, peeling skin, fatigue, rashes, unknown scarring, dry mouth, weight loss, weight gain, numbness of the hands and feet, constant colds, the inability to heal well, consistent bleeding of the rectum, severe acid indigestion, sleeplessness, night sweats, vivid recurrent memories, unusual movements in the abdominal region, hair loss, slight memory lapses, consistent soreness of the joints and heart palpitations. I am seriously concerned over the symptoms and I'm heartily fed up with being told they are a figment of my imagination, that I'm getting old, or that I'm making myself ill, because I had been, but my mind is making my body think that it is unwell.

I have never been anywhere near this ill in my entire life, had so many frequent colds, or felt so run-down. These symptoms also change from bad to worse. I get used to feeling bad and then get worse. And then I get used to that and it changes again. It's not getting any better, and I cannot accept that my mind wants to make these awful things happen to me. Walter Reed Army Medical Center claims it's somatiform disorder. The VA is saying PTSD. I can accept PTSD, purely because I was stationed in a combat zone. Walter Reed Army Medical Center's diagnosis is way off-base and has no merit.

These doctors care nothing about us. They didn't even want to hear about what my unit or I went through, or any of the other soldiers that were stationed there. Somebody has to put a stop to this. We cannot continue to be treated this way. I'm sorry. We served our country loyally and without hesitation. We all deserve better. A GAO study needs to be done on all the facilities, and records need to be researched. How many of us have been treated and diagnosed in the same manner? There is a pattern here, and I'm sure that my testimony will not only help myself but all other Gulf war veterans who are going through the same uncalled for treatment.

The thousands of us out here who are suffering along with our families cannot be mass-hypnotized into thinking that this is in our heads. Something is seriously wrong, and it needs to be investigated. I'd like to thank you for taking the time to listen to me. And God bless you.

Mr. SHAYS. Your full testimony will be put in the record. You left out a good chunk of it, didn't you?

Sgt. SUMPTER-LOEBIG. Yes, I did.

Mr. SHAYS. Well, God bless you. Sgt. Wood.

Sgt. WOOD. Yes, Mr. Chairman, distinguished committee members, my name is Staff Sgt. Steven Wood. I would like to thank you all for listening to me today. My road to sitting before you today began some 6 years ago in the desert sands of Iraq. Before I joined the on-line world 2 years ago, I was alone in my search for an-

swers. I luckily found others on the Internet who are experiencing the same problems as I am. I stayed in contact with Denise Nichols. Her interest in what my German neurologist found is why I'm here today to tell you my story and the stories of the other sick veterans. These are the veterans who have been forced to seek medical assistance outside this great country's borders.

These are my medical records from before I went to the desert. And these are my military medical records from afterwards. When I boarded the airplane in Germany that took me to Saudi Arabia in 1990, I was in perfect health, as these records indicate. Except for a massive infection in my left leg caused by a burn I received in combat I came through the Gulf war unscathed. Or so I thought. I even was awarded a bronze star medal from a unit I was not assigned to. In the Gulf war, my primary job was as a launcher's support team leader.

My men and I were attached to Alpha Battery 4th Battalion, 27th Field Artillery Regiment, Multiple Launch Rocket System. I stayed with this unit my entire time in Southwest Asia until returning to Germany a few weeks early in 1991 because of my health. As a school-trained area nuclear biological and chemical defense NCO, I was also the detachment NBC specialist.

My health problems started some time around the first week of March 1991. While part of a convoy leaving Kuwait and heading back into Iraq, my driver and I stumbled across something that I feel changed our lives. We noticed an artillery round that was roped off with yellow engineer tape.

Not only was this not normal, seeing as the other rounds in the same area were not treated this way—but the round itself appeared to be blue. Upon closer examination I saw it was a sort of a greenish-blue in color, with green and yellow painted bands. I remember thinking to myself how silly it was that someone would have brought practice rounds to a shooting war. Later that same day we arrived at our new position on what I believe was highway 8, replacing the 82nd Airborne.

I now had time to look in my manuals for the markings I had seen earlier on the shell. I was shocked to see it was a perfect match for a Soviet nerve agent. Later that evening I developed flu-like symptoms and massive diarrhea. I submitted an NBC 1 report, but never heard anything else about the incident.

While in this area bunkers were constantly being destroyed. One explosion in particular was extremely large. And we were told by our senior leadership, the engineers had just destroyed the largest Iraqi ammunition dump. The nearest town to our position was An Nasiriyha. When I returned to Germany, I continued to seek answers as to why I was not getting better.

For at least 6 months straight I tried to get help and had many, many tests performed. It was about this same time I discovered that my medical records from shortly before the war until then had disappeared. It was at this point I began to suspect something might be amiss. I continued to get worse, and was sent from doctor to doctor. I never found anyone in the Army who was serious about helping me—or anyone else, for that matter. I was told to suck it up and drive on.

And being a good soldier, I did. Unfortunately it got the point where I could no longer work to the standards of the U.S. Army. While still on active duty, I never received any real health care. I was told to quit faking, it's all in my head, and my all-time favorite: we do not know what's wrong with you, but you will be better in 2 weeks.

In October 1995, I was placed on the temporary disabled retired list at a rate of 30 percent disabled. In April 1996, I was seen by a German civilian doctor who did more testing in 2 hours than the Army did in 5 years. He found neurological damage during this visit. He told my wife and I, it looked to him as if I had been poisoned, and I might have multiple sclerosis. I took this information to an Army neurologist and was shocked at what I heard. I was told, "I do not like you Gulf vets that say you're sick. I was there, and I'm not sick."

This doctor then proceeded to tell me she felt I had no neurological problems before even examining me and she flatly refused to even read the German doctor's findings. I have stayed in Germany along with numerous other veterans for a very good reason: free unbiased health care. The doctors may not have been able to fix us yet, but they are at least trying to get to the bottom of this mystery. Another very important aspect is that we do not have to deal with actual VA doctors. Every VA examination is done by a German civilian contractor.

The Army states it is doing all it can for us. I was recently offered permanent retirement at 30 percent from the Army. This follows the Army telling Sen. Strom Thurmond in a letter that I was healthy and basically slipped through the cracks. Nearly every military doctor I have seen has stated they think nothing is wrong before they even examine me. The one military doctor that tried to help me was forbidden to do so at the last minute.

In light of the hard time I have had with the Army and their attempts to understate what is wrong to me, I must make one thing clear to all of you: I have been found totally disabled by the Veterans Administration. In 5 days I have a formal Army medical board to appeal my rating of 30 percent. I am interested in what happens, since the Army still refuses to acknowledge that my health problems are Gulf war-related. It will be especially interesting since the VA has decided, "The veteran was seen as exposed to an unspecified chemical."

Not only do I have to fight the Army for a fair disability rating, they have even refused to acknowledge my service and have withheld other awards from me. As I mentioned earlier, the VA has rated me at 100 percent disabled. This is retroactive to November 1, 1995. The VA currently owes me well over $20,000 in back benefits. Since speaking with the Washington regional office when I arrived here Monday, I have found out that Philadelphia did not take the appropriate actions to release this payment to me. Right now I have no idea when I will see the money that I was supposed to have weeks ago.

I truly believe that if something had been done sooner to help me I would not be as bad as I am today. I am a non-commissioned officer. I always took care of my soldiers. We need your help to take care of the others that can't get it. Thank you.

[The prepared statement of Sgt. Wood follows:]

TESTIMONY OF STEVEN WRAY WOOD
STAFF SERGEANT, UNITED STATES ARMY
RETIRED ON DISABILITY
FOR THE
SUBCOMMITTE ON HUMAN RESOURCES

I, Steven Wray Wood, would like to present the following testimony.

I was once a proud member of the United States Army until 20 October 1995 when I was retired for service connected disabilities. The evidence of record shows my disabilities began while I was serving my country in South West Asia.

During the warm parts of the year I am on occasion unable to take care of myself. During these times there are very few activities I can accomplish without some type of assistance. Most often I am not able to walk even 100 meters without suffering severe side effects but this was not always the case.

I was born and raised on the Florida coast and was an avid participant in all types of water sports. I played football and baseball and was selected for the Little League All Stars nearly every year. I was ranked among the top 10 in the state of Florida for BMX racing. I won the national championship in Teakwondo. I climbed mountains and rode mountain bikes here in Germany. I was the complete opposite of what I have now become.

I deployed to South West Asia on 22 December 1990 from my duty station in Wertheim, Germany. I was in perfect health before, during and shortly after the war except for a burn on my left leg received during combat. I was even awarded the Bronze Star Medal for my wartime service from a unit I was not even assigned to. During the first week of March 1991 my life was changed forever.

Up to that day I had been subjected to many unpleasant actions by the military. I was forced to take shots and was not told what they contained. The whole unit was lined up in a long row and ordered to drop our pants. A medic went down

the line, as the First Sergeant looked on, and injected all of us in the buttocks. This happened more than once yet no records were given, even when I demanded them.

I took PB tablets, and other pills such as Cipro, as I was ordered to on threat of court martial. Even when the PB tablets gave me diarrhea I continued taking them because of what I was taught in NBC school.

I slept in the middle of a ring of over 75 burning oil wells because that is where we had to set up our base camp. By this time my leg was so swollen with infection I could no longer lace my boot, yet I was not allowed to seek medical care beyond the unit level. I was simply fed more Cipro and told by the battalion physicians assistant, our only "doctor", that if the swelling stayed he would slice the wound open and squeeze the infection out. Needless to say I waited until I could find proper medical attention. Once I was given strong antibiotics the infection cleared up but that was not until the first of April 1991.

During the first week of March 1991, I can not remember the exact day, I was part of a convoy leaving Kuwait and heading back into Iraq to replace the 82nd Airborne units already there. We passed through numerous enemy fighting positions and ammunition storage sites that allied troops had destroyed. My position was at the end of the convoy to make sure all stray vehicles were policed up. My additional duty in South West Asia was as a school trained Area Nuclear Biological and Chemical Defense Noncommissioned Officer. While in a bombed out munitions depot I witnessed a few artillery rounds that were sitting by themselves and roped off with yellow engineer tape. I had my driver stop and got out of my vehicle for a closer look. Not knowing immediately what they were, and my convoy pulling even farther away, I got back in my truck and had my driver catch up. Later I was able to get my copy of FM 9-16, Explosive Ordnance Reconnaissance manual and identify the munitions as chemical weapons. This was based on the Soviet markings table since the Iraqis followed Soviet doctrine.

I submitted an NBC 1 report but never received any feed back. Later I was to find out that, according to classified reports, other sightings of chemical munitions had been made in the same general area. Later that day I started to get very sick with the symptoms I suffer still today. These facts have been attested to by my commander at the time. This may show what in fact caused my disabilities but a certainty is I am now totally disabled. The sad part is getting any type of medical help has proven to be almost impossible.

I sought medical assistance that same day in Iraq and never once received any comprehensive, much less compassionate treatment from the Army. I was told it was "all in my head" and I should just drive on and was given more Cipro. I was a good soldier and did what the doctors said since I had always thought I could trust them. I pushed and I pushed myself until my body could go no further. 1994 turned out to be the year that things started happening but only since I could no longer work.

The Army started processing me for medical retirement once they identified that I was in fact "officially" disabled according to Army rules. The problem was my health complaints were never adequately detailed during this process. Of the 50 plus symptoms I complained of maybe 10 were sent forward to the medical board. Efforts to get this corrected were met with statements such as "I am sorry I can not help you any more." This is very troubling coming from a military doctor who is, by Pentagon assertions, there only to help Gulf War veterans.

My medical board was delayed for a few months because I still had unexplained symptoms that were being called Gulf War Illness. I was informed the only way my medical board would be allowed to continue was if all references to these unexplained illnesses were omitted. I was exasperated and agreed. A deciding factor in this decision was my being threatened with punishment because I was physically unable to work. I attempted to get copies of the medical board

proceedings from the hospital after it was completed but was informed my file had been destroyed.

Now I am a civilian. I live in Germany and I think you will find the reason very interesting. I am married to a German national but we were undecided where we would live when I was retired. On the one hand our money in America would have gone at least twice as far as here in Germany. In Germany however, even though I am unable to work, I have health care coverage. Since I am disabled it is free. What does this have to do with where I live you ask? In the US I would have to spend money, money I did not have, in order to seek medical assistance since I am uninsurable. What about the military or VA? The Army has not done anything substantive in 6 years why would they now? More on that subject in a minute.

The VA, even though I was retired for service connected disabilities, took nearly 18 months to complete my claim for compensation. This means I could not get treatment from the VA during that entire time. First service connection must be established otherwise nothing happens. In fact after I went to a VA examination their doctor told me I might have Multiple Sclerosis but I needed an MRI to be sure. I called the VA, as he suggested, to speed things up because I wanted to know for sure. I was informed by a VA employee that paying for this test was not their responsibility since my claim was not finished. To make sure I understood what was said I ask if she meant even though I might have a disease that is fatal, found by their doctor, they refused to do any tests to verify the fact. I was told that is correct. We had the test done ourselves and thank goodness there are no lesions on my brain. This still does not rule out the possibility of MS but I now know I will not die anytime soon.

The VA immediately rated me at 10% for one condition but did so under the code for eczema. What I have must be rated under Lupus according to current law. The VA has still not acted on my Notice Of Disagreement on this point. Under

their Foreign Medical Program that means I can not get medical assistance until the clerical error is fixed. It was explained to me that reimbursement will only be made for treatment associated with the service connected disease. The treatments for Lupus are not the same as for itchy skin.

Shortly after seeing the VA contracted German doctor I went to an Army neurologist and gave them the results of my examination. It must be noted that this German doctor did more tests in two hours than the Army did in 5 years. When we left the Germans office he told my wife and I that I had been poisoned. These findings were immediately dismissed as being worthless since they did not come from a military doctor. I was told I would have to decide between seeing civilian or military doctors but not both. I was informed the only civilian doctor I could see would be a specific one chosen by this neurologist personally. I was not even given a cursory exam, nor was the VA examination even read, before I was told there was nothing wrong with me. Then it was stated to me by this military doctor that they did not like Gulf War veterans with health problems. I was told they went to the desert and did not have health problems so why did I.

I am willing to bet this doctor did not take part in combat operations, clear bunkers or be part of the troops stationed farthest north in Iraq by An Nasiriyha. This is the same place the Pentagon has finally admitted that chemicals were stored by the Iraqis and blown up by US troops. Bunkers were being destroyed in this area the whole time I was there. It should be noted that by this time we had been ordered to turn off our chemical alarms and leave them off. I can still remember a group of people from my higher headquarters visiting us at this location in Iraq. Some of the bunkers that were being blown up were very close to us and we actually received shock waves from the explosions. At one point we were told by our higher ups that the largest Iraqi ammunition storage site had just been destroyed.

I was one of the first participants in the vaunted Persian Gulf Illness Comprehensive Clinical Evaluation Program (PGICCEP) and was even seen at Walter Reed Army Hospital in Washington, DC. I have been poked, prodded, had "things" removed from my body and been generally subjected to some very painful procedures. One thing is for certain and that is the DOD does not want to admit there is a problem. If they did I would not be talking to you today nor would the doctors order only tests that will not verify damage already found. I have shown my civilian doctor the tests the Army has ordered and he says they will not show what is wrong with me. My first appointment with the PGICCEP doctor resulted in my being sent to a psychiatrist for "depression". I was sent back within a matter of minutes with findings stating in no uncertain terms I was not depressed. This led to my being sent back to another psychiatrist. He too wrote I was not depressed and went one step further stating my problems were physical in nature. Naturally I was sent back again to another doctor and this one wrote up that I had problems WITHOUT even examining me. I appealed and his findings were removed from my records. Since that day the attempts to blame my problems on psychiatric issues has stopped.

The PGICCEP doctor I had wanted to perform additional tests on me. When he went to his superior for permission the tests were refused. One of the diagnosis the Army boarded me for was Multiple Chemical Sensitivity. This is a service connected disability yet the Army still refuses to compensate me for it.

I have sought help from members of Congress and the President. Each elected official who has tried to help me has gotten different answers to the same questions from the Army. The latest strategy on the part of the Army is telling Senator Thurmond that my diagnosis has changed and I am now better.

I would also like to discuss how the Army treats its sick Gulf veterans. As is evident I am totally disabled and have been for a very long time now. For many years in the Army I was unable to perform my duties. This did not seem to matter

to my leadership. My doctor had given me written instructions to not do any physical activity or exercise except what I felt I could do. In spite of this my commander gave me a direct order to participate in unit physical training that caused me to become immediately ill and go to the hospital. I was being medically evacuated to Walter Reed hospital and was told by my leaders I could not go unless I took a physical fitness test before departing. Luckily the doctor corrected that problem. When my doctor issued me a physical profile forbidding exercise my leaders tried to find another doctor to override him. At one point my commander told me he could care less if I was sick or not his only concern was taking me to the field.

By the summer of 1994 my condition had gotten so bad I could not even remember my wife's name nor where I lived. This did not make a difference to my leadership. Worst of all my unit was given written instruction to keep me away from smoke but my commander still smoked all day long in my office which happened to be in the motor pool.

Best of all was the recognition, or better stated the lack of, I received when I was finally retired. I was not even given a hand shake and wished good luck. My unit even refused to give me a retirement award to recognize my years of service. The only reason I got out of the military was because of injuries received serving my country.

I went to the Inspector Generals office and asked for assistance in finding out why I was not given an award, especially after I had to write up my own recommendation. It is now close to two years since I first had a recommendation submitted for an award. During the 1 year time period before and after I was retired I was the only disability case in my command moreover the only person who was not given an award. Current law allows the Army to discriminate against disabled persons but that does not make it right.

As a result of the IG investigation I was put in for a retirement award. I was again asked to give what I had done during my career. I was eventually put in for a low level award, by the same person who gave me trouble before. To justify this action he omitted that I was awarded a Bronze Star, that I pulled a baby out of the ocean saving its life and provided first aid at an airplane crash where hundreds of people were injured.

To me it is a matter of principle. I sacrificed my health for my country and would just like to be recognized for it.

Now you know that the Army treats its sick soldiers with total disregard. Finding medical care is very difficult and forces people who love their country to seek refuge outside her borders to get assistance. You also know the Army tells members of congress that we are not as bad off as we really are when inquiries are made on our behalf.

The Army placed me on the Temporary Disabled Retired List at 30% in October 1995. This equates to going from $3500 net to $760 gross in monthly compensation. Now I am rated by the VA, using the same evidence and rules the Army used, at 100% disabled. I have a formal Army medical board on 29 April and I hope they do what is right. To date the Army still refuses to admit my health problems are related to my service in Desert Storm. I have been through enough and deserve better. Now that the VA has determined that I was "seen as exposed to an unspecified chemical" I hope the Army does what is right.

Just remember that for every one veteran that comes forward many more do not.

On that subject I would like to discuss some other people who are having problems. A friend of mine named Kenny went through the Army medical board system right after I did. I did everything I could to help him out during this process. The Army refuses to recognize all of his conditions either.

Kenny also became sick in the Gulf. He went to the same PGICCEP doctor that I did and was also sent straight to the psychiatrist. With Kenny they did find he suffered from PTSD and that is what he was medically retired for.

What the Army refused to rate was all the cancerous tumors they cut out of his body. They can not identify what type of cancer it is so they chose to ignore it all together. This is effecting Kenny's claim with the VA too. The VA has found that the cancer is now back. They will not grant service connection for this cancer however until Kenny can produce medical records from the Army showing he had this while on active duty. The Army refuses to give Kenny his medical records. The will only tell him they do not think he is dying right now. No treatment has been offered.

When Kenny first was retired from the Army he too stayed here in Germany for the medical care. Unfortunately his disease almost cost him his marriage. At one point he picked up his child and moved back to the States to try and start fresh. His wife joined him one month later and they worked things out between themselves.

In the US Kenny could not get medical insurance. When he went to job interviews every single interviewer noticed he was retired from the Army. Seeing how young he was they asked why. When he told them for medical reasons they inquired further. When Kenny stated it was related to his service in the desert his application was handed back to him and that was it. He was never able to find work in the United States. After 8 months he came back to Germany.

The reasons he returned here were simple. Free health care and free rent by living with his in laws. In spite of this his retirement check is gone every month by the 12th.

Kenny was also treated very bad by the military. His first sergeant actually told him he would do whatever he could to get him in trouble before he was retired. He tried to get Kenny in trouble because he could not physically work or take a physical fitness test. This same first sergeant told all his soldiers that there was nothing wrong with Gulf War vets and not to complain. He said nobody else would "get over" like Kenny did. Kenny was also refused any type of retirement award. This first sergeant is still in charge of troops.

I met another interesting person the other day named John. This man is a master sergeant in the Army with 15 years of service. He went to South West Asia and also came back sick. He has a disease similar to mine that when he becomes heated the symptoms really kick in. If he is given any type of anesthesia he will die.

The Army decided he was fit for duty with one major stipulation. He can not be assigned anywhere where there is no definitive medical care close by. By practical definition this means he should be within a half hour or so of a hospital that can treat his condition. This did not stop his unit from sending him to Bosnia for 7 months. He was told by his boss that they had medics there. He did not say anything because he was afraid of being booted out of the military with nothing.

John wanted me to make it clear that there are others out there too that are keeping their mouths shut and suffering in silence because they no longer trust the Army.

I want to give special recognition to the American Legion, in particular Mr. Puglisi and Mr. Underwood. These two gentlemen were instrumental in getting my claim with the VA processed as smoothly as it was.

The American Legion first saw that the Gulf War veterans were having serious problems in dealing with the VA. At this point they formed a Persian Gulf Task

Force who's only mission was dealing with Persian Gulf veterans and their claims. I am here to tell you they are doing their job in a superior fashion. I knew that I was entitled to 100% from the VA but I figured I would have to fight for years to get it. With the American Legion on my side it was done right the first time.

Mr. Puglisi and Mr. Underwood were always available to answer questions or just to listen to my problems when I was down. I am glad I did not have to go it all alone. Without them in the foxhole next to me I am sure this battle would have been long and drawn out.

Many others have helped me and countless other vets. One person in particular needs to be mentioned and that is Denise Nichols. Denise has put her own claim on hold to make sure everyone else is helped. She has sacrificed her time and money to come to the aid of others. Denise is the reason I am here today speaking to you. Let us not forget her when she needs our help.

I certify that the information I have given is true to the best of my knowledge and belief.

Sincerely,

Steven Wood
Staff Sergeant, United States Army
Retired

Sgt. SUMPTER-LOEBIG. Sir, if I may, could I finish my statement? I think it's very important.

Mr. SHAYS. I would be happy to have you finish your statement.

Sgt. SUMPTER-LOEBIG. Thank you very much. I'm very sorry for the interruption. This is important to me and important to the two gentlemen who are here with me and every other veteran in the United States and anywhere else who is going through this. This is my experience at Walter Reed Army Medical Center in the Gulf war program. I was seen there by Col. Raymond Chung on Ward 64—is what they call it. And I started the program in August 1994. I felt the program hadn't helped any of the current and past symptoms I have experienced.

Dr. Chung made the statement, "You have to realize that you're getting old, Sgt. Sumpter." This was made in the presence of my husband. I will be 30 in July. The only answer I've been given is an ultimatum: send in my results to a board now and be awarded 10 to 20 percent of base pay for 1 year as a settlement or go through a 4-week physical training program designed to help me learn to cope with my symptoms—which they are describing as sympathetic and mind-induced—be taught how to be socially active with the rest of the world, learn how to use PT to forget my mind-induced sympathetic symptoms, and be sent back to duty.

This is regardless if the symptoms are gone or not. We will do 1 to 2 hours of PT in the morning, then for the rest of the day be seen by numerous psychologists, psychiatrists, nutritionists, family counsellors, dieticians, and be placed on a certain schedule of times. The social activation will be trips to Washington to see the sights and learn how to interact with people. There will not be visitors or family allowed, no mail, and few if any phone calls. The reasoning for this, to Dr. Chung, is that we are being caused undue stress from our children, spouses, family, friends and strangers around us every day.

Spouses and children will be allowed a few hours on 1 day near the end of the program to visit the programs. There will be only six to eight people at one time allowed through this program. After this extensive program we are then to go back to our units and dishonestly tell them that we are cured. When I pointed this out I was told that I would not be lying, and that if I believed this, the program would not work for me because I had a poor attitude.

In January, I had been scheduled to take a psychological test for 6 hours for Dr. Fallensby. It was a battery of questions someone might be asked to take as a semester final in high school. There were lots of pictures, and I was asked to look at them and then later—5 to 10 minutes later—asked to draw what I remembered. I was given a letter of the alphabet and then asked to write down as many words as possible in that time that I could think of—and other such questions of the same nature. Based upon this test Dr. Fallensby determined that I was severely depressed, suicidal and angry at the world. This was all told to me by him during a session in his office during the space of maybe 30 minutes to an hour.

This is a man I had never met and I do not know personally or even as an acquaintance. I find Dr. Chung's and Dr. Fallensby's comments and diagnoses degrading, unfounded, unprofessional and totally out of line and character, as do my family and friends, espe-

cially the rest of the world. My religious preference all my life has been Church of God. And the only thing that makes me angry is the fact that individuals who don't know me are insinuating that I could possibility take my own life when it is against my moral beliefs and understandings.

If this was the case, why have I spent most of my life trying to help people, bring happiness, and, most of all, have been given a beautiful child to raise? I have dealt with my symptoms and numerous doctors for nearly 5 years now, and have always been patient and cooperative with everyone. Even through all the red tape and paperwork, no one could ever claim that I had no patience. Case in point, I recently found out that I have never been paid for my dependent.

I have not been paid since December 1994 for monthly incapacitation pay and received only 4 travel voucher checks out of 20 completed and sent in August 1994. The problems all started when Maj. Cusack from the surgeon's office at ARPERCEN retired in February and Capt. Crisp took over his position and was then sent on TDY for 3 months. This happened before. It's all been caught up now. But this had happened in May. And since his departure a woman named Denise had been working in his place. And she is a civilian employee.

I had not spoken to any military person within that office in that period of time. And shortly after he left for TDY, I spoke with Maj. Block, who was the individual who found my dependent paperwork on the bottom of my file. All military personnel have been very cordial and helpful since I was first enrolled in this program in January 1992. But this civilian, Denise, has answered all calls in-going to Maj. Block since and refuses to let me speak with them. When I have important questions she asks what they are and sometimes asks Maj. Block and calls back or gives her own advice.

Example: when I call to speak with Maj. Block about the physical program settlement program option Dr. Chung was proposing, she said she didn't understand what the problem was in going through with the program, that her mother had to go through a similar program and it was very helpful to her. When I inquired whether or not her mother was a Desert Storm veteran her reply was no, but it didn't make a difference, I should be grateful for the program, finish it and go back to my unit and duty, that complaining about good military doctors who knew what they were doing was just plain silly, and to her it sounded as if I did not want to return to work at all.

She refused to let me speak to Maj. Block about it. And when I stated that I was not satisfied with her answers, she replied she was only a civilian and could not or did not know what I needed. During this phone call I was home in my home town in my brother and sister-in-law's house with my fiance and my other brothers present. They heard the whole conversation. Is this what any veteran deserves? Do we mean nothing to anyone? Are we expected to be treated like this and not be upset with these programs? If two doctors—one civilian and one military—have declared that something is wrong and put it in writing, then why are their findings being dismissed by Walter Reed? Why are we being told to go through a program that wants us to lie to ourselves and to our

unit? Why does this sound so much like a cover-up, not wanting us to really have an answer to any of this.

What I want out of this is the disability that I think I deserve and so many veterans who have served in the Gulf. We went over and put our lives on the line. We were in areas we should have never been in. This isn't right. I would like to give you an account of what happened to me at the physical evaluation board at Walter Reed. And this was on January 7, 1997 of this year. On January 30, 1996, I was seen at Martinsburg VA, West Virginia for a regional evaluation similar to Walter Reed Army Medical Center's Gulf war clinical evaluation. Dr. Bradley Soule, M.D., regional psychiatrist, met me for around 2 hours. His findings stated that I did not have somatiform disorder, that in his opinion it was quite clear that I have post-traumatic stress disorder. His explanation for PTSD hit close to home for me in that it finally gave me some sort of clue as to why I'm having some of the feelings and problems I am experiencing mentally in addition to the findings of other physicians concerning and acknowledging my chemical exposure without my previous admission of being exposed.

This three-page letter of diagnosis was then submitted to Col. Carr, head of PEBLO, in January 1996 as a rebuttal of their somatiform diagnosis. Col. Carr's reply was that it was not admissible, and that Walter Reed Army Medical Center would stand by their diagnosis from Dr. John Fallensby. As you can imagine, I was shocked. Walter Reed Army Medical Center told me to seek other opinions and then told me that they were not acceptable.

Dr. Soule is not the only psychiatrist I have seen and been evaluated by, either. In December 1996, I went back to the VA in Martinsburg to seek further evidence and medical attention. I was seen by Dr. John Haram, L.C.S.W. and Dr. Ali Asghar, M.D., in mental hygiene. After almost 2 hours with them they came to the same diagnosis as Dr. Soule. Their opinion was that my PTSD was so regressed and hidden consciously that I am now being counseled at their vet center every week. On the morning of January 7, 1997 at the PEB at Walter Reed, I presented the new evidence and the diagnosis of two different psychiatrists. Counsel and I were vying for the change of diagnosis from somatiform to PTSD.

Capt. Jinny Chen met with the board and presented my offer to them. They declined it and told her that if I chose to be seen before them I would be found fit for duty due to my neat and healthy-looking appearance. One of the board members saw me and my husband in the waiting area and made this comment to counsel after my request had been submitted. I told counsel that I did not care about the rating or the money involved, I only wanted the diagnosis changed to PTSD from somatiform because of the opinions that I heard from other physicians and psychiatrists. Below are the two major reasons that I fought for this change.

The definition of undifferentiated somatiform disorder is characterized by unexplained physical complaints lasting at least 6 months that are below the threshold for a diagnosis of somatization disorder. Somatization disorder, historically referred to as hysteria or Briquet's Syndrome: a poly symptomatic disorder that begins before age 30, extends over a period of years, and is characterized by a combination of unknown pain, gastrointestinal, sexual, and pseu-

do-neurological symptoms. Post-traumatic stress disorder, on the other hand, is the development of characteristic symptoms following exposure to an extreme traumatic stressor involving direct personal experience of an event that involves actual or threatened death or serious injury or threat to one's physical integrity or witnessing an event that involves death, injury or a threat to the physical integrity of another person, or learning about unexpected or violent serious harm or threat of death or injury experienced by a family member or other close associate. The person's response must involve disorganized agitated behavior. The characteristic symptoms resulting from the exposure——

Mr. SHAYS. I just need to interrupt you. I'm trying to understand your point now. I'm losing your point.

Sgt. SUMPTER-LOEBIG. OK.

Mr. SHAYS. I'm losing your point.

Sgt. SUMPTER-LOEBIG. The point is that the somatiform disorder is basically they're telling us that—well, they're telling me that I'm a hypochondriac, that there's nothing wrong with me, that I'm making myself sick with this somatiform disorder. OK? And if there is anything mentally wrong with me that has been found that I can actually believe in, it would be PTSD, purely based on the fact that I was in a combat zone for a year. That is the only point I was trying to make.

Mr. SHAYS. OK.

Sgt. SUMPTER-LOEBIG. Is that OK? So I can skip the rest. As you can see from these definitions, I am thoroughly disgusted with Walter Reed and their poor excuse for a physical evaluation board. They know full well that they can throw us out and the VA will pick up where they leave off. This so-called board is a sham, disgrace, and basically a sold-out jury of three officers who have found an excellent loophole for the military to escape responsibility to their used soldiers. This physical evaluation board says that I am not fit for duty or my civilian job title. But they aren't going to admit that there is a problem caused by our Southwest Asia service, because we are no longer of any use to them.

From the moment an ill soldier walks into one of these military facilities and mentions they were in the Gulf, the decision and diagnosis are already decided upon. To cover themselves, they tell us to bring in other evidence to dispute their doctor. And when we do it is dismissed as irrelevant and non-admissible. These boards do not want to know how we are at home, how we feel, how our families and our friends are coping with what we're going through, what we were like before and what we are like now. They bring down their judgment swiftly and without any thought to our well-being.

They didn't want to hear about the incident at the wash rack, the injections, the unfriendly fire we received, the contaminated areas we were assigned to, or any chemical-related incident. They also did not want to hear how their own physicians never asked any questions pertaining to my service in the Gulf or even with the mortuary. Fallensby didn't even know I was a veteran. He assumed my husband was the veteran. Something must be done to stop this. We cannot allow this to be ignored any longer than it already has been. It isn't just the soldier who is ill now. It's also the family

members and spouses, children, friends. For once the Government needs to put an end to the cover-ups. After all, did we learn nothing from the Vietnam war?

Are we going to head down the same path? Every soldier who has fought in a war for this country has the right to be treated like a human being and not some machine to be discarded when it can no longer function. Again, a GAO study needs to be done on the military hospitals, the physical evaluation process, physical evaluation boards and members, the VA system and members who have already been through these, and the physicians. Again, I would like to thank you for your patience in listening to me today.

[The prepared statement of Sgt. Sumpter-Loebig follows:]

PREPARED STATEMENT OF
SGT. SUSAN SUMPTER-LOEBIG
UNITED STATES ARMY, RETIRED

22 April 1997

Ladies and Gentlemen of the Committee:

I am seriously concerned over the developments and the way the Gulf War Veterans have been getting treated in the past couple of years. It seems as if we are going around in circles over our health and problems we have been experiencing since our return home. I know I speak for many other Veterans who have been going through the same red tape I have, and it concerns me greatly. I do not think we deserve this kind of treatment.

I have been in the process over the last four years of trying to find out why I have been experiencing several severe symptoms upon my tour and return from King Khalids Military City, Southwest Asia, during the Gulf War.

What I have been expecting since January 1992 to present day is either a diagnosis and cure or disability compensation since two doctors, one civilian and one military, have submitted in writing that I am not in any condition to hold the position as a police officer, which I have trained and studied to be for eight years, nor any other job. They both recommended 60% or more disability compensation.

I am a SGT/E5 in the US Army Military Police and have been since August of 1987. I have no bad references or credentials pertaining to my work. I have numerous awards, letters, and certificates to support my integrity and job performance. (copies enclosed)

I was first deployed January 15 1991 to Supply and Service section for Port Mortuary duty. I returned on April 03 and was then sent to St. Louis MO for Security at the annual Aviation Convention for three weeks. After a two week bout of intestinal bronchitis I was sent to Ft. Detrick MD for one month of duty. I was then redeployed on June 15 to KKMC Southwest Asia with 22nd SUPCOM for route recon., EPW Camp, US Customs, and shotgun support for convoys going to Kuwait and Dhahran. I was tentatively assigned to HHD 210th and 438th MP Companies upon arrival and thereafter until my return to the States.

On 07 July 1991 SSG James Kiefer began a connex wash rack entailed to send connexes and their contents back to the US. We were to be supervised by US Customs inspectors Mr. Evans and Mr. Vernon. Being the only soldier there with customs experience and training, I was immediately detailed to be in charge of the supervision, cleaning, and approval of the containers. Three other MP's were sent to Dhahran for Customs training. I had asked several officers and NCO's why we were not given protective gear and other equipment and was subsequently told not to ask what I knew nothing about.

In August we received a badly damaged and dented connex that had been uncovered by a sandstorm near Kuwait. It was received during shift change at 6 a.m. We were working 12 hour shifts split between two platoons. My shift NCOIC and platoon leader was SSG Kevin Knight, and our other shift NCOIC and platoon leader was SFC Emmanuel Jattan. SFC Jattan was in the process of opening the connex with myself and SSG Knight as both shifts converged to change positions. When the door was opened, every container had been damaged and its contents spilled out into the standing water and open water hoses. A thick white/gray smoke immediately consumed us all. It was sulpherous in smell and left a thick slimy film on us. The rack was shut down and we were taken to the TMC for treatment. Our eyes were burning, hands and feet peeling, and we had small white circular burns on our exposed skin areas; arms, face, etc. We were immediately de-coned and sent to our bunks for observation. The following morning, we were all nauseous, experiencing severe headaches, and a burning itch on our skin. LTC St. John arrived shortly after noon to inquire why we were not at our assigned post. When informed, we were told by him that the washrack was priority number one and we did not have orders to shut it down. We were ordered to return to work ASAP to which we complied. One week later Gen. Pagonis shut the rack down completely. SFC Jattan found out later that the "natural spring" from which the water supply came had been found to be contaminated months BEFORE the rack opened and that it was only a standing pool not a spring. To make it short, the same water was being used over and over again to clean and was being further contaminated with numerous other chemicals washed off of the connexes, equipment, and chemical spills of DS, CS, Super-topical bleach, and others we were not told of. It was around this time that we started to realize we had no sense of smell, a feeling of our hands and feet being asleep, night sweats, trouble sleeping, and food having a different taste to it. Our hands and feet kept

peeling and the men lost the hair in their noses. Then the constant colds started. Flu-like symptoms that lasted weeks; almost as bad as the flu attack we had the first two weeks we were assigned to KKMC. The entire unit was ill and the medics had to stay in our area for lack of room at the TMC. November 17, we were finally issued protective masks. Ten days later we were at Ft. Jackson being out-processed and sent home. The entire time chemical detectors were going off non-stop. When we did a chem test they always came up positive but were told that the equipment was faulty and the kits defective. We were told not to drink the water or brush our teeth in it, but we showered in the very same water.

After the rack was permanently closed around the end of September, we were assigned various other tasks such as the Deconing of EPW's, riding shotgun for the Supply duces running equipment and supplies to Kuwait and Dharhan, and the transfer of prisoners to the KKMC Hospital. From June until September, we were given various medications to take for malaria and chemical exposures. We also encountered hostile fire on several occasions while running supplies into Kuwait. Mortar fire on the 8th of October was the worst of these encounters, because of the fact that this was the closest we came to being hit by any type of rounds. I have in my possession a piece of one of these rounds that lodged into my Kevlar helmet.

Upon my arrival home, I gave myself till after Christmas thinking it might be jet lag or the area I had been in. In February of 1992 Major Crawford of ARPERCEN's Surgeons Office section advised me to stop working and go to the nearest military facility or VA hospital. Upon doing so, I was admitted for two months and seen by Dr. Nahid Nikfar and an intern from Bethesda they flew up to assist. (those documents enclosed) Their findings stated that I was indeed chemically contaminated, but could not pinpoint any specific chemicals or diagnosis any one problem. She then found a fibrosistic tumor in the center of my chest near the right breast. A week later it was removed by another doctor who had not advised her, and was not biopsied but thrown out.

She then contacted LTC Timothy Cooper at Wright Patterson in Dayton Ohio who then took over as my physician. (copies enclosed) He also stated that he was positive that I

contracted my symptoms while in Southwest Asia due to exposure to chemicals and also removed another fibrosistic tumor in nearly the exact same place as before. It was benign. After a year and a half of tests and treatment, he decided to send my case up in front of a board for disability.(copy enclosed)

This board in Ft. Hood Texas said I was fit for duty and not eligible for disability even though they had never seen me personally. LTC Cooper and I did not concur with this decision and contacted Senator Robert C. Byrd who then arranged to have me sent to the Gulf War center at Walter Reed Army Medical Center, Washington.

I am now presently in the Gulf War Veterans Program at Walter Reed Army Medical Center Washington. My doctors name is Col. Chung. I have been in the program now since August 30, 1994. I feel that the program has not helped any of the current and past symptoms I've experienced. Dr. Chung has made the statement that quote "You have to realize that you are getting old Sgt. Sumpter" unquote, this was made in the presence of my husband.

My rash is being treated as folliculitis using Desquam-X wash (5% benzoyl peroxide), and Selsun 2.5% shampoo equivalent. So far only time has show any sign of helping, which takes three to four weeks at a time. Headaches are treated as a migraine with Pamelor taking three at bedtime. The headaches are still happening, and now last anywhere from three days to a week with no relief. Fluctuating bowel movements are being treated with Metamucil taken twice to three times daily, and Collate tablets. As of February, there has been from slight to a little more than slight bleeding in the rectum after each bowel movement. A colonoscopy in January turned up nothing. The numbness is still intense in my hands and from the waist down, and has never been treated or talked about by doctors since.

When I inquire about it, the subject is changed and avoided. The same applies to the symptoms of dry-mouth, night sweats, fatigue, nauseousness, unusual senses in smell, constant cold and flu-like symptoms, eye floaters, occasional flipping sensations in stomach and rib area; an EEG, X-rays, and bloodwork turned up negative.

The only answer I have been given is an ultimatum; Send in my results to a board now and be awarded 10 to 20% of base pay for one year as a settlement, or go through a four week physical training program designed to help me "learn to cope" with my symptoms which they are describing as "sympathetic" and "mind induced", be taught how to be "socially active with

the rest of the world", learn how to "use PT to forget my mind induced sympathetic symptoms", and be sent back to duty. This is regardless if the symptoms are gone or not. We will do one to two hours in the morning of PT, then for the rest of the day be seen by numerous Psychologists, Psychiatrists, Nutritionists, Family Counselors, Dietitians, and be placed on a certain schedule of times. The "social activation" will be trips around Washington to see the sights and learn how to interact with people. There will be no visitors or family allowed, no mail, and few, if any, phone calls. The reasoning for this, to Dr. Chung, is that we are being caused undue stress from our children, spouses, family, friends, and strangers around us everyday. Spouses and children will be allowed a few hours on one day near the end of the program to visit with the patients. There will only be 6 to 8 people at one time allowed through this program.

After this extensive program we are then to go back to our units and dishonestly tell them we are cured, and be put back on duty. When I pointed this out, I was told that it would not be lying, and that if I believed this, the program would not work for me, and I had a poor attitude.

On August 30 1994, I was given several sheets of paper with a survey typed on it to fill out in the waiting room before I could be seen. It consisted of questions about whether or not I felt I had received adequate treatment and answers to any questions I may have had. Of course, I had not seen anyone, so I did not rate very high.

In January, I had been scheduled to take a phsycological test for 6 hours for Dr. Fallensby. It was a battery of questions someone might be asked to take as a semester final in high-school. There were lots of pictures I was asked to look at then later asked to remember and draw. I was given a letter of the alphabet then asked to write down as many words as possible in a few minutes time that I could think of. And other questions of the same nature.

Based upon this test, Dr. Fallensby determined that I was severely depressed, suicidal, and angry at the world. This was all told to me by him during a session in his office during a space of maybe 30 minutes to an hour. This is a man I have never met and do not know personally or even as an acquaintance.

Now, to end this letter I am going to tell you about myself. I am a twenty-seven year old mother of 1 daughter, age 5. I have been enlisted in US Army since August 12 1987. My MOS is 95B20/V5/US Customs. My enclosed 214 shows my

awarded medals, and I have enclosed copies of all my other numerous awards and certificates. I have never been disciplined or been in any demoralizing situations. My integrity and reputation have been outstanding and impeccable throughout my military career. I have an associates degree in Law Enforcement/Military Justice, Psychology, US Customs, MPI, trained with CID, and worked with numerous different MOS's in my duties. I, as a civilian, worked in food chain restaurants for 7 years and was promoted often for outstanding service and social abilities. I was also a traveling entertainer singing 3 to 5 times a week with a popular DJ called Cowboy Will from WTNJ radio in Beckley WV. In school I was on the track team for 4 years, cheerleader for the AAA State Basketball Champions of 1983-84, tennis team, cross-country team, aerobics assistant instructor, member of the Future Business Leaders of America, Senior Beauty Candidate, Miss Teen WV Candidate 3rd place Miss Congeniality, and a well-known waitress/bartender/entertainer throughout my hometown. I have never been shy and have been known for my outgoing personality and willingness to help others. I have taught several military classes in my MOS, trained many new recruits in my specialties, volunteered for numerous classes and training specialties, correspondence courses, taken German at my first duty station in Germany through the University of Maryland, additional law enforcement courses through the University of Central Texas, and am CPR qualified. I also worked for Dr. Oscar P. Gosien as a candy-striper for one year as a civilian.

I find Dr. Chung and Dr. Fallensby's comments and diagnoses degrading, unfounded, unprofessional, and totally out of line and character, as do my family and friends. Especially the diagnosis of sever depression, suicidedness, and being angry at the world. My religious preference all of my life has been Church of God, and the only thing that makes me angry is the fact that individuals who don't know me are insinuating that I could possibly take my own life when it is against my beliefs and moral standings, and the way I was raised. If that was the case, why have I spent most of my life trying to help people, bring them happiness, and most of all was given a beautiful child to raise?

I have dealt with my symptoms and numerous doctors for nearly 5 years now, and have always been patient and cooperative with everyone. Even through all of the red tape and lost paperwork, no one could ever claim that I had no patience. Case in point, I just recently found out that I have never been paid for my dependant. I have not been paid since December 1994 for my monthly incapacitation pay, and have received only 4 travel voucher checks out of over twenty completed and sent

in since August of 1994. The problems all started when Major Cusack from the Surgeons Office at ARPERCEN retired in February. Captain Crisp took over his position and was then sent on TDY for three months. He should return in May. Since his departure a woman named Denise has been working in his place. She is a civilian employee. Since Capt. Crisps depar ture, I have not spoken to any military personnel in that office. Shortly after CAPT. Crisp left for TDY I spoke with Major Block who was the individual who found my dependant paperwork on the bottom of my file. All military personnel have been very cordial and helpful since I was first enrolled into this program in January 1992.

This civilian Denise has answered all of the calls going in to Major Block since, and refuses to let me speak with him. When I have important questions, she asks what they are and sometimes asks Major Block and calls back, or gives her own advice. Example; When I called to speak with Major Block about the "physical program"/settlement option Dr. Chung is proposing, she said she did not understand what the problem was in going through the program. That her mother had to go through a similar program and it was very helpful. When I inquired whether or not her mother was a Desert Storm Veteran, her reply was no, but that didn't make a difference, I should be grateful for the program, finish it, and go back to my unit and duty. That complaining about good military doctors who knew what they were doing was justs plain silly, and to her sounded as if I did not want to return to work. She refused to let me speak to Major Block about it, and when I stated that I was not satisfied with her answers replied that she was "only a civilian" and could not or did not know what I expected. During this phone call I was in my brother and sister-in-laws house with them, my fiance', older brother, and 1st cousin present. They heard the whole conversation and were appalled.

Is this what any Veteran deserves? Do we now mean nothing to anyone? Are we expected to be treated like this and not be upset with these programs? If two doctors, one civilian and one military officer, have declared that something is wrong and put it in writing, then why are their findings being dismissed? And why are we being told to go through a program that wants us to lie to our units and ourselves? Why does this sound so much like a cover-up, not wanting us to really have an answer to any of this?

As I stated in the beginning of this letter, I want to know what is wrong with all of the Desert Storm Veterans so we can truly deal with our physical symptoms and get the needed

medical treatment we need, and I want disability so that I may raise my child and be able to help other Veterans who are in a far worse state than I am. We all put our lives on the line for our country, and this is the thanks we have received. It is not right, and after the treatment the millions of other Veterans from previous wars received, you would think it could'nt happen in this day and age. But I and thousands of others have found out that it can and does.

My hope is to pull ourselves together and refuse to let the government do this to us, or to others in the future. I, and many others have to deal with our illnesses as best we can, and I know that many of my supervisors would testify that I with severe colds, broken bones, etc., so why, if I wasn't so ill, would I turn down State Police Academy in West Virginia, DOD Police at Ft. Detrick Maryland, City Police in Homewood Illinois, Recruiting school with a guaranteed slot in Beckley West Virginia, and Drill Academy? Why would I let my lifes goals and dream assignments pass by if something wasn't wrong? I did'nt turn these down because I don't want to work and just want to "sponge" off the Military for life. I know for a fact something is wrong, and in my case know exactly where and when it started. It saddens me, and many others, who have had government employees at the hospital or finance accuse and label us as "spongers" quote/unquote.

I have been told by Dr. Chung in the presence of my fiance that I will never be a Military Police Officer or be a civilian Police Officer again because of my symptoms. He stated that after the 4 week program I would be processed out of the military because of my claims, it would be on my record as such, so civilian employment would be nearly impossible to acquire. To quote Dr. Chung's own exact use of words "you're career is over". If that is the case, why does he refuse to acknowledge that I am disabled? After all, if you cut out all the fancy phrases and words, that is exactly what it implies. All that I have written about is the main reason why most Desert Storm Veterans, including my best friend, refuse to speak up or do anything about their illnesses. They are frightened and untrusting of the people who are supposed to be helping and taking care of us. I have never in my life been made to feel as though I am inconveniencing anyone, but that is the way I and many others have been treated.

I sincerely hope that you can see and understand from this letter why I am so concerned for myself and other Veterans affairs and well-being. I would like to see a stop put to this farce that the government is allowing to go on. We

have heard enough excuses and lies. It is time to do right by each and every one of us. If our illnesses are unfounded and psychological, why do we all have the same diagnoses?

I hope that any and all information that I provide you with is helpful to others in my predicament, as well as myself. If you have any questions or information for me, you may reach me anytime at the following address:

17812 Greentree Terrace, Hagerstown, MD, 21740, (301)791-1861.

Thank you very much for taking the time in your busy schedule to be of help and for reading my letter.

Sincerely,

Susan A. Sumpter-Loebig

THE FOLLOWING IS
ADDITIONAL TESTIMONY
OF
SGT. SUSAN SUMPTER-LOEBIG
UNITED STATES ARMY, RETIRED

BEFORE THE
SUBCOMMITTEE ON HUMAN RESOURCES,
COMMITTEE ON GOVERNMENT REFORM
AND OVERSIGHT,
U.S. HOUSE OF REPRESENTATIVES

THURSDAY, APRIL 24, 1997

This is an account of what happened to me at my Physical Evaluation Board on 07 January 1997 at Walter Reed Army Medical Center. Counsel was Capt. Jinny Chen provided by WRAMC, and Mr. Richard Schneider from NCOA.

On 30 January of 1996 , I was seen ant Martinsburg VA WV for a regional evaluation similar to WRAMC's Gulf War Clinical Evaluation. Dr. Bradley Soule, M.D. regional psychiatrist, met with me for around two hours. His findings stated that I did not have Somatoform Disorder and that in his opinion it was quite clear that I have Post Traumatic Stress Disorder. His explanation for PTSD hit close to home for me in that it finally gave me some sort of clue as to why I am having some of the feelings and problems I am experiencing mentally, in addition to the findings of the other physicians concerning and acknowledging my chemical exposure without my previous admission to being exposed. This three page letter of diagnosis was then submitted to Col. Carr, head of the PEBLO, in July of 1996 as a rebuttal of their Somatoform diagnosis. Col. Carr's reply was that it was not admissible and that WRAMC would stand by their initial diagnosis from Dr. John Follansby. As you can imagine, I was shocked. WRAMC told me to seek other opinions, and then told me that they would not accept them. Dr. Soule is not the only psyciatrist that I have been evaluated by either. In December of 1996, I went back to the VA in Martinsburg to seek further evidence and medical attention. I was seen by Dr. John R. Haram, LCSW, and Dr. Ali Asghar, M.D. in Mental Hygiene. After almost two hours with them, they came to the same diagnosis as Dr. Soule. Their opinion was that my PTSD is so regressed and hidden consciously that I am now being counseled at their Vet Center every week.

The morning of 07 January 1997 at the PEB at WRAMC, I presented the new evidence and the diagnosis of two different psychiatrists. Counsel and I were vying for the change of diagnosis from Somatoform to PTSD. Capt. Chin met with the board and presented my offer to them. They declined it and told her that if I chose to be seen before them I would be found fit for duty due to my neat and "healthy looking" appearance. One of the board members saw me in the waiting area with my husband and made this comment to my counsel. I was then informed that I could lose my 10% rating they were going to give me. I told counsel that I did not care about the rating nor the money involved, that I only wanted the diagnosis changed to PTSD from Somatoform because of the opinions of the VA psychiatrists and physicians. Below are the Two major reasons I fought for this change:

Undifferentiated Somatoform Disorder-characterized by unexplained physical complaints, lasting at least 6 months, that are below the threshold for a diagnosis of Somatization Disorder. (Somatization Disorder-historically referred to as hysteria or Briquet's syndrome) A polysymptomatic disorder that begins before age 30 years, extends over a period of years, and is characterized by a combination of pain, gastrointestinal, sexual, and pseudoneurological symptoms.

Post-traumatic Stress Disorder-the development of characteristic symptoms following exposure to an extreme traumatic stressor involving direct personal experience of an event that involves actual or threatened death or serious injury, or threat to one's physical integrity; or witnessing an event that involves death, injury, or a threat to the physical integrity of another person; or learning about unexpected or violent death, serious harm, or threat of death or injury experienced by a

family member or other close associate. The person's response must involve disorganized or agitated behavior. The characteristic symptoms resulting from the exposure to the extreme trauma include persistent re-experiencing of the traumatic event, persistent avoidance of stimuli associated with the trauma, and numbing of general responsiveness. The full symptom picture must be present for more than 1 month and the disturbance nust cause clinically significant distress or impairment in social, occupational, or other important areas of functioning. Traumatic events that are experienced directly include, but are not limited to, military combat, violent personal assault, being kidnapped, being taken hostage, terrorist attack, torture, incarceration as a prisoner of war or in a concentration camp, natural or manmade disasters, severe automobile accidents, or being diagnosed with a life-threatening illness. Witnessed events include, but are not limited to, violent personal assault, serious injury or unnatural death of another person due to violent assault, accident, war, or disaster, or unexpectedly witnessing a dead body or body parts. The disorder may be especially severe or long lasting when the stressor is of human design (e.g. war).

So, as you can see from these definitions, I am thoroughly disgusted with WRAMC and their poor excuse for a PEB. They know full well that they can throw us out and the VA will pick up where they leave off. This so-called board is a sham, disgrace, and basically a sold out jury of three officers who have found an excellent loophole for the military to escape responsibility to their used soldiers from. This PEB says I am not fit for duty or my civilian job title, but they aren't going to admit that there is a problem caused by our SWA service because we are no longer of any use to them. From the moment an ill soldier walks into one of these military facilities and mentions they were in the Gulf, the decision and diagnosis are already decided upon. To cover themselves, they tell us to bring in other evidence to dispute their doctor, then when we do it is dismissed as irrelevant and non-admissible. These boards do not want to know how we are at home, how we feel, how our families are coping with this, what we were like before, and what we are like now. They bring down their judgment swiftly and without any thought to our well-being. They didn't want to hear about the incident at the wash-rack, the injections, the unfriendly fire we received, the contaminated areas we were assigned to, or any chemical related incident. They also did not want to hear how their own physicians never asked me any questions pertaining to my service in the Gulf or the Mortuary. Follansby didn't even know I was the veteran, he had assumed my husband was.

In conclusion, the past six years of fighting for what was right have ended with an honorable discharge, a ludicrous diagnosis, no relief or treatment of symptoms, no career as a civilian, and a 10% settlement from the military of just over $12,000.00 (before taxes) for ten years of service and two combat tours. This settlement, of course, will be paid back to the government if I receive any disability from the Veterans Administration, and I am responsible to pay back the taxes also. How can the military be allowed to do this when they are the ones at fault for what has happened to us? They knew and know what they were sending us into. But they are being allowed to turn their backs on us and tell everyone that we all are mass hallucinating, have personality disorders, are hypochondriacs, or are just plain "faking illness".

Something must be done to stop this. We cannot allow this to be ignored any longer than it already has been. It isn't just the soldier who is ill, it is also family members-spouses, children,

friends, etc. For once, the government needs to put an end to the cover-ups. After all, did we learn nothing from the Vietnam War? Are we going to head down this same path? Every soldier who has fought in war for this country has the right to be treated like a human being, and not some machine to be discarded when it can no longer function.

Again, a GAO study needs to be done on the military hospitals, the Physical Evaluation process, Physical Evaluation Board and members, VA system, members who have already been through these, and the physicians.

Thank you.

Susan A. Sumpter-Loebig

Mr. SHAYS. Thank you very much. The military hospitals took a pretty big hit today. And we're going to be asking some questions of all of you just to understand a bit about your experience. We'll begin with Mr. Sanders.

Mr. SANDERS. Thank you very much, Mr. Chairman. I want to thank all three of our brave veterans who are here today. It's not an easy thing to do, and we thank you for coming forward. Let me start in reverse order with Sgt. Wood.

Sgt. WOOD. Yes, sir.

Mr. SANDERS. Sergeant, I would like to concentrate on pyridostigmine bromide.

Sgt. WOOD. Yes, sir.

Mr. SANDERS. You indicate that you were given PB tablets—I'm going to ask you a few questions, and then you respond however you're feeling comfortable. And I want to know if you were ever informed as to why you were taking the PB tablets? If you ever received any written material that describes the side effects of PB? Were you informed that PB had not been approved as a protection for chemical warfare? Did anyone attempt to monitor your medical condition after requiring you to take PB? Were you ever asked about your medical history before requiring you to take PB, and basically what you have learned about PB since your experience? Do you want to talk a little bit about that?

Sgt. WOOD. Yes, sir. As a school-trained NBC NCO I was taught that PB tablets were the treatment to take. They were there. And it's what we had to take if we wanted to survive. In the desert when we took the tablets, we were not told of any side effects. No record was given of taking PB tablets even whether we demanded that records be maintained.

Mr. SANDERS. What about the dosages? Were dosages controlled? Did people——

Sgt. WOOD. Yes, sir. A formation was held before the war started and we actually crossed into Iraq. A formation was held, and every soldier was monitored to take the pills. Once we crossed into Iraq during the war, every, I believe, 6 or 8 hours, a radio call was put out and everyone was ordered to take their pills.

Mr. SANDERS. What do you mean by monitored? What I'm trying to get at, were the pills given out on a pretty strict basis? Were some people swallowing more, perhaps, than they should have? Was there supervision?

Sgt. WOOD. There was no supervision, sir. The full dosage was given—enough for 2 weeks, I do believe. Each soldier had their own in their blister pack.

Mr. SANDERS. Each soldier had their own?

Sgt. WOOD. Each soldier was issued their own. Yes, sir.

Mr. SANDERS. Might it have been possible that some were gulping down others?

Sgt. WOOD. It's highly possible that someone that was scared could have taken more.

Mr. SANDERS. And nobody really checked up on that? Do you have that impression?

Sgt. WOOD. No, sir. They did not check on it. The only checks made were: take your pills.

Mr. SANDERS. What's your conclusion? Have you learned or been thinking about PB since?

Sgt. WOOD. I've read much on PB, sir, since then, and it scares me. It scares me. I've learned that PB is designed to protect against one nerve agent: soman. And from the intelligence I saw when I was in the desert, soman was not a threat to us.

Mr. SANDERS. Have you talked to any of your comrades who might have also had problems that might be associated with PB?

Sgt. WOOD. The only incident of PB from people I served with, sir, are the people who refused to take it, and pretended to take it, and threw it away instead of swallowing the pills. And not one of them is sick.

Mr. SANDERS. That's interesting. You know, Mr. Chairman, we also know that—if my memory is correct—the French soldiers did not take PB as well, as opposed to some of the other coalition forces. And the initial readings that I found is that they may be doing better. The chairman would like me to ask you, what do you mean by ordered to take? Talk about that.

Sgt. WOOD. Ordered to take. The pills were issued. The commander or the 1st Sgt. of the unit would come across the radio and say, "Take your pills now." Everything that we were given, from shots to PB tablets, were on threat of court-martial if you did not take them.

Mr. SANDERS. OK. And you are familiar now with some research which suggests that the combination of PB combined with exposure to other types of chemicals and pesticides might be a cause of some of the problems some of our soldiers are suffering?

Sgt. WOOD. Yes, sir. I have read the studies that show if you take PB tablets and are exposed to a common bug spray, that you can actually force it across your brain membrane and cause the damage that I have and the other veterans have.

Mr. SANDERS. OK. Thank you very much. If I could very briefly ask Sgt. Sumpter-Loebig, to the best of your knowledge, are women who served in the Gulf coming down with particular ailments? Have you been bumping into other women who are suffering problems as well?

Sgt. SUMPTER-LOEBIG. As in female problems that men can't discuss?

Mr. SANDERS. Yes. Sure.

Sgt. SUMPTER-LOEBIG. Symptoms that the men are not having?

Mr. SANDERS. Yes.

Sgt. SUMPTER-LOEBIG. Basically, it's the hair loss and a change in our cycles.

Mr. SANDERS. Menstrual problems?

Sgt. SUMPTER-LOEBIG. Right. The bleeding rectum part of it I have encountered with very few males that I keep in contact with from my unit. It's mostly the females that are having this problem. And it's not just certain bowel movements, it's every movement.

Mr. SANDERS. Sergeant, just out of curiosity, did you take PB as well?

Sgt. SUMPTER-LOEBIG. We were given the pills by a staff sergeant who just said, "Here, take these. You're supposed to take them. The medics gave us these to take."

Mr. SANDERS. And do you remember how people—did people take them on a strict regimen or were they just stuffing them in their mouths? How did that work?

Sgt. SUMPTER-LOEBIG. He came around every so often.

Mr. SANDERS. Every so often. Yes?

Sgt. SUMPTER-LOEBIG. And just handed us four and five pills. And said, "Here. Here's your medication."

Mr. SANDERS. In your various treatments in the hospital, has anyone talked to you about that or asked you if you've taken them?

Sgt. SUMPTER-LOEBIG. No. Never.

Mr. SANDERS. OK.

Sgt. SUMPTER-LOEBIG. The first day I went to Walter Reed was August 30, 1994. And they took me into this nice little waiting room. And there was all these little doctors running around.

Mr. SANDERS. I'm going to cut you off. You know why? Because that yellow light turns red. The chairman is going to be nice to me. But let me keep moving here.

Sgt. SUMPTER-LOEBIG. OK. They were giving us coffee and stuff, and they gave us this little nine-page questionnaire. How's the treatment here? Did you take any of these pills? And they told us not to sign it. And then we turned it in to them. That's the first things they gave us: to see how the treatment at Walter Reed was.

Mr. SANDERS. OK. Thank you. Let me ask the major a question. Major, did you take PB, by the way?

Maj. DONNELLY. I took PB for about 3 or 4 days at the beginning of the air war.

Mr. SANDERS. Why only 3 or 4 days?

Maj. DONNELLY. Well, there was some discussion about whether the stuff was good for you or going to work or whatever. Probably the highly skeptical pilot crew. The way they gave it to us was, the flight surgeon just put it out in the little bubble packs, and said, this is for our protection against nerve agents. We took it for about 3 or 4 days. It seemed like the thing to do at the time. It looked like the war was going to be over fairly quickly. It was going well. There was no evidence that he was using the chemicals. Stopped taking it.

Mr. SANDERS. OK. Let me ask you this: I am interested in your remarks that, as I understand it, your symptoms became worse when you were out jogging and you were exposed to malathion?

Maj. DONNELLY. Malathion, yes.

Mr. SANDERS. Malathion. I'm sorry. What conclusion do you draw from that, or do your doctors draw from that? What happened as a result of that chemical——

Maj. DONNELLY. I believe that the initial incursion that happened to me that made me sick was something in the Gulf war. Studies on the inoculation for botulism and the anthrax shots we got, the PB pills, evidence now that we may have undergone low-dose multiple chemical exposures over there, started some problem in my system that the last rip of the paper or drop in the bucket or whatever was this organophosphate-based pesticide.

Mr. SANDERS. So, you think that just could have triggered off?

Maj. DONNELLY. Sure.

Mr. SANDERS. Yes. Now, you say something that's very interesting, and I want to know more about this. You indicate—you have

a very serious and rare illness—and you said, "I myself have found more than nine other Gulf War veterans, some who have already come before you, who are also suffering from ALS." You have found nine soldiers—and you're understanding, this is a very rare disease—and you obviously do not have the resources of DOD.

Maj. DONNELLY. Right.

Mr. SANDERS. Now, that is a very startling—and this is an unusual disease for people under 50. So statistically——

Maj. DONNELLY. I've been to neurologists and doctors all over the country, and to see how many people actually fought in the war and the number of people that have this diagnosis, the incidence is way too high. A lot of them are very interested in trying to find out the names and medical histories of these people, but the only people who really know all the names aren't letting them out. I know of—you know, I've had a doctor from the VA system, I think, tell my parents—or whatever—that there's 12 names on the list. But they won't give them the names because of patient confidentiality. I don't know if I'm on the list either. And some of them are no longer with us.

Mr. SANDERS. You're guessing, though, that there's an unusual cluster?

Maj. DONNELLY. Absolutely.

Mr. SANDERS. OK.

Maj. DONNELLY. If we get the real data out of the DOD or the VA, I believe that there would be some startling evidence.

Mr. SANDERS. I gather—and it's the basis of your testimony—but I'm gathering that you have no doubt in your mind that for somebody your age, somebody who has previously been in good health, that your condition was caused by your experience?

Maj. DONNELLY. Because of the way that it started and because of the similarity with the other people that have this disease from the Gulf war, yes.

Mr. SANDERS. OK. Major, thank you very much. Thank you, Mr. Chairman.

Mr. SHAYS. I thank the gentleman. Mr. Souder.

Mr. SOUDER. I want to say up front that not everybody in Congress or even on this committee begins to have the knowledge level of having gone through all the hearings like the chairman and the ranking member. And part of the point of this is not only to educate Members of Congress but also America as the information gets out. And you're to be commended for coming forth and speaking openly. Because when people know your patriotism and your commitment to the armed forces it comes across differently. And they can see it in your testimony than somebody who might be trying to weaken our military or what we're trying to do. There's an honest concern.

And on the surface, as I've heard the issue in hearing today, it is hard to conceive, even if it isn't an established link, why the lack of interest in pursuing it isn't immoral as well as stupid even from a scientific standpoint. From the military standpoint as long-term. It's hard to fathom the types of stories you're saying, that you wouldn't immediately respond, "Oh, this is something really important."

Not only is it fair for you as an individual, but to us as a country, to understand what's on here as the times are changing. And it's nearly unfathomable for me. It's also very hard to ask you questions because it is so personally devastating to you, the career you've chosen, the way you feel about your country, the health problems you've had and so on. But there's a couple that I want to ask. And understand that I'm trying to learn some of what's going on. One is that I was interested on the PB question that Sgt. Wood, you said that you knew that those who hadn't taken the pills didn't show the symptoms. Is there a data collection process now going on that? Is that an informal thing that you've learned?

Sgt. WOOD. No, sir. It's just the people I've talked to over time and met with. But the people that aren't sick aren't coming forward.

Mr. SOUDER. Do you have any threshold or number of that? Is that something that—I mean, as we look at pursuing some of this, how many cases are—when you say that you know personally there are?

Sgt. WOOD. Highly informal, sir, at least seven or eight that I've bumped into, just from my old unit.

Mr. SOUDER. And several of those didn't take the pills and they aren't showing the symptoms?

Sgt. WOOD. The seven or eight that did not take the pills have zero symptoms.

Mr. SOUDER. And how many who took the pills are showing some of the symptoms?

Sgt. WOOD. I've met probably three times as many as that from my old unit.

Mr. SOUDER. I had a similar question for Sgt. Sumpter-Loebig. You said there were five of you—you gave, I think, five different names in the specific incident where there was the spillage?

Sgt. SUMPTER-LOEBIG. Right. The chemical spill.

Mr. SOUDER. Are the other four showing different symptoms? I know different people react different ways. Some people aren't necessarily going to be as forward, some are time delayed. But I'm just trying to sort through, because you have the advantage of a very specific incident. What has happened to the others in that incident?

Sgt. SUMPTER-LOEBIG. Sgt. Jattan is from North Carolina. He is having bladder problems, and they're not getting any better—the same symptoms that I'm having. Sgt. Dowell in South Carolina has been diagnosed with cancer. He's receiving 100 percent from the VA. He's not doing well at all. Sgt. Bogden in California cannot get any treatment from anybody, which I find unusual. He cannot even get treatment from the VA. So, he hasn't had any luck at all.

Mr. SOUDER. But he's showing symptoms, as well?

Sgt. SUMPTER-LOEBIG. He has the same symptoms that we have. Henry Brown is in Arizona. And his wife is now showing the exact same symptoms that he is. Although the only different diagnosis that she has that's different from his is, there's something different with her blood work. I believe it's diabetes that has suddenly shown up. But these are individuals—we went through a 2-week medical test in Fort Dix. We were fit, healthy, PT-tested, stamped grade-A, good to go. And we come home and this is what we came

home like. And it was not that we went over this way. We came home like this. Because we were perfectly healthy when we went.

But the chemical spill, I think, triggered something more than that. We were sick when we got there. The entire unit was down with a flu-like cold after being injected with the shots. And that's when it started for all of us. My entire unit—the entire 164th was sick. We had three medical people there: a spec 4, a PFC, and a sergeant. And that is it. They took care of us.

Mr. SOUDER. Maj. Donnelly, I have a similar question for you. You flew through the oil fires and were in several locations.

Maj. DONNELLY. Right.

Mr. SOUDER. And you said some of the people had some of the different pills. Have you seen other people in your particular unit, in your area, have similar type things, different? How could you describe some of the correlation of those who were similarly exposed like yourself?

Maj. DONNELLY. Part of the difficulty in doing that is that my unit got back to Germany and was immediately disbanded as part of the draw down. So, you know, 35 to 40 guys in a flying squadron all went different ways for the most part. In my efforts to try and track them down—one other guy in my unit that I've found has been having problems with dizzy spells and things like that. I have run into other Gulf war pilots who were in other aircraft that have had the same kind of heart palpitations, sweats, trouble concentrating, fatigue, things like that.

Mr. SOUDER. Well, you being here today, hopefully will make some others in your unit aware if they're having problems. It would be helpful, because just from a—let me ask you another question. Given the fact that at least two of you gave, now, specific instances with a reasonable sample size, has anybody in the military or in the VA or any doctor said that they've looked at the group as a whole to look at any commonality?

Because what you tend to see in the media are a lot of random-type things. But you've given us examples that there's names, there's a time, there's a date, there's a number of people, there's a pattern. You're saying you've seen, at least informally, you've got potentially a sample size of 25–30 there. Those things—why do you think—well, we can speculate as to why we think there hasn't been—do you have anything other than the fear that it might look bad or monetary? It just seems so strange that somebody wouldn't pursue this. Or, like you say, that they have the names and nobody else can follow it up. Anything else you want to suggest into the record as to why that's the case, why, if you were in command, you wouldn't do that?

Sgt. SUMPTER-LOEBIG. I know by personal experience that, when they sent my unit—the 164th—to the KKMC, that that city was evacuated because it was contaminated and they knew it. And they sent us there anyway. The water was contaminated. The area was contaminated. Everything was stripped and gone. And they sent us in there. Even the Saudis were not there. They were evacuated.

Mr. SOUDER. Let me ask you this question—and this is a really difficult question—but to some degree, when you go into the military, there's going to be a certain amount of risk, and you know that risk. And presumably, you knew there was some risk as you

were going through this because they were bringing up the tablets and some of that. But isn't one of the presumed things that when you take the risk, that you're going to be covered if the risk—in other words, there are two sides to the risk? And that's one of the scary things as a parent and as somebody who is concerned about how we maintain a volunteer army, is that you, in fact, knew there was some risk, because you've already eluded to the fact that there was a question of whether he was going to use chemical weapons, you knew they were giving you pills, you knew that conditions weren't always going to be sanitary. But you assumed the good faith that the military was trying to do what they could, and if it didn't work they'd take care of you. Is that a correct assumption?

Sgt. WOOD. Yes, sir. That's true. And I'm sure I speak for everyone. When you join the military you fully realize that you'll go to war. And when you go to war, you're fully prepared to give your life to do what your country asked you to do. But we were all wounded on the battlefield and then swept under the carpet. Not one promise was kept to take care of us. I was one of the first participants in the comprehensive clinical evaluation program. I was not asked one single time what I did in the Gulf war by any member of DOD. Not once.

Sgt. SUMPTER-LOEBIG. Then, too, they take us through basic training, and we train completely throughout our career in the military using mock gear, know how to use your weapons. Well, when you get over there and you get into a war like we got into, we didn't even get issued any protective gear. There was none to be issued. There was nothing.

Mr. SOUDER. Once again, thank you for your work for our country. And hopefully, by you coming forth you cannot only help yourselves but others.

Mr. SHAYS. The Chair now recognizes Mr. Allen.

Mr. ALLEN. Thank you, Mr. Chairman. Thank all of you. Your testimony has had an impact, I know, on me, and I'm sure on every member of this committee, the people in the audience and across the country. You've done a real service to your country today. I can't help but think back to almost 20 years ago when I was representing some people who had been sprayed, whose homes and gardens had been sprayed with an herbicide.

And many of the symptoms that they complained about were the same. And I have a question, but first a general comment. What strikes me about this entire situation is that our medical profession is able to say, if it's a virus or a bacteria or a physical cause, we go after it. But we are not doing a good job, certainly within the military, and perhaps, to some extent, outside the military. We are not doing a good job identifying the cause of some—whether it's pollution or chemical or biological agents that cannot be easily and quickly identified, we simply are not doing a good job about that.

And I said earlier, this is a sorry record of performance. And it needs to be improved. And I really believe that we have to focus on how to get to the bottom of illnesses that do not affect each individual in exactly the same way, because they are not caused by one virus or one bacterium. They affect different human beings in different ways. And it strikes me that we have failed at doing that. Maj. Donnelly, I do have a question for you. This is a hearing about

the Gulf war and what happened there. And your testimony, for all three of you, has been compelling on that ground.

But I was struck by the statement that you made that when you were at Shepperd Air Force Base in Texas, it was the base's policy to spray with a fogging truck throughout the base housing, where you lived with your family, the chemical malathion. I have some apple trees. I don't use malathion, because it's bad stuff. And Mr. Chairman, I don't know if this is appropriate, but I can't remember what the malathion label says, but I'd like leave to go down to the hardware and get a bottle and put the warnings on the label into this record.

Because I think that that in itself is something that should be looked at. And, Major, I'd be interested—you said in your testimony that in talking with other people who have ALS and other Gulf war veterans, that there seemed to be a common thread. And you described that common thread as some kind of subsequent exposure to a strong chemical or pesticide. Could you elaborate on that?

Maj. DONNELLY. Sure, Maj. Randy Ebert, U.S. Marine Corps, testified before this committee—I don't know if you remember, his dad read his testimony, his wife was there—he came back from the Gulf and he was doing OK until they sprayed his house for cockroaches. He happened to be in the house and in the garage when they sprayed it. Immediately after that he started having the same trouble I did.

Mr. Jeff Tack testified before this committee. He came back from the Gulf, didn't feel quite right, but wasn't having any serious problems until they treated his whole family and himself with lindane for head lice because the school had been having a problem. Right after that he started having the same symptoms, and was subsequently diagnosed with ALS.

Mr. ALLEN. Do you take this to be an indication that exposure to chemical agents can sensitize human beings to subsequent exposure, so that the kind of exposure to malathion or some other chemical agent that for most people would not have an effect, for some people who have been previously exposed would set off all the alarms or cause health problems or contribute to the accentuation of health problems that they already have to some degree?

Maj. DONNELLY. Do I feel that's true?

Mr. ALLEN. Yes.

Maj. DONNELLY. Absolutely. What you said—your opening statement—was right on the head. You nailed it.

Mr. ALLEN. OK.

Maj. DONNELLY. And you're going to find that some people, I think, are genetically predisposed. Some people have environmental or exposures prior to, which they are not able to detox and the body hangs on to. It's like ripping a piece of paper or filling a bucket with water: eventually you get the last drop, which, if you follow that line of reasoning, they should be warning the other people who are out there to say, "Hey, either you stay away from that kind of stuff or you're going to get sick, too." Some may not ever. Some people may be able to handle it just fine.

Mr. ALLEN. Right.

Maj. DONNELLY. But I don't want anybody else to have to go through this.

Mr. ALLEN. I don't want anyone to do that, either.

Maj. DONNELLY. Right.

Mr. ALLEN. Thank you very much.

Mr. SANDERS. Would the gentleman yield briefly for a second?

Mr. ALLEN. I'd be glad to yield.

Mr. SANDERS. Mr. Allen touches on almost the definition of what is now called multiple chemical sensitivity. And that is, the body has absorbed a significant amount of chemicals and then exposure to something new and strong occurs; it triggers off a reaction. And I think the point that the major is making is of extraordinary importance. And that is, we may have hundreds, thousands—we don't know—of walking time bombs of young men and women who served, who, if exposed to a strong chemical, could trigger off a serious problem. And I think your point is an excellent point, Major, in that to the degree that we understand that, that word should get out, that if you think you're sick now, stay away from these things. And did you want to elaborate on that?

Maj. DONNELLY. That would be preemptively treating people.

Mr. SANDERS. That's right.

Maj. DONNELLY. Yes.

Mr. SANDERS. That's a very important point.

Mr. ALLEN. I'd be glad to yield the balance of my time.

Mr. SANDERS. I'm fine.

Mr. ALLEN. Thank you very much.

Mr. SHAYS. We don't have a time problem in this committee. And, so, we can come back. Thank you. Thank you, Mr. Allen. Mr. Kucinich.

Mr. KUCINICH. Thank you very much, Mr. Chairman and members of the committee. I want to say first that Chairman Shays, I know you've held numerous hearings on this, and I'm proud to be on your committee, because you've done an excellent job of bringing this issue to light. When no one else really wanted to, you'd pursued the truth on this. And the facts that are being extracted are crucial to understand what happened in the Gulf, and also crucial to helping veterans who have been told too long that their symptoms are psychological.

And as has been pointed out by Representatives Sanders and Allen, perhaps, to provide some further caution to those who have not yet been affected by the symptoms but could be. There's a few things that are apparent here, Mr. Chairman. And that is that the Department of Defense failed to properly warn of the dangers, that the Department of Defense failed to properly diagnose or treat the veterans, that the Department of Defense is failing to adequately compensate the people who have been affected, and, based on what we just heard, that they are failing further to caution in the sense to provide preemptive treatment.

The question I have to all of these things that are becoming obvious with the testimony is why. Why not inform people if they're taking PB that there could be consequences and symptoms based on the dosage? Or why not inform people that malathion, whether it's sprayed in an area that's safe and in the States or in the field, could have serious effects? Why not inform people when they're being inoculated for these various potential disease encounters that can have side effects.

I'm wondering why—and if it is true that the CIA in fact didn't know in 1984 that the—we're told that the CIA has received numerous warnings starting in 1984 that chemical weapons were stored in Iraqi munitions bunkers, but failed to alert the United States military. You know, you, the witnesses here, you did not fail your country, your country is failing you. And what we need to do in order that we justify your presence in that war, is to get the answers: what did the CIA know; when did they know it; why didn't they communicate it to the Department of Defense or did they communicate it to the Department of Defense; and for some nebulous idea of national security, nothing was said?

Your presence here cries out for justice, for you personally, for your fellow servicemen and servicewomen. But it gets into some deeper issues of national security which have to do with, if we knew those dangers were out there in the first place and that our troops could be exposed to chemical weapons in the first place, what in the world were they doing there? And later on you pay the price. But, you know, Mr. Chairman and members of this committee, there are profound national security interests that were at stake there. But was the national security best served by sending people out into an area when the U.S. Government was in the position of information that there were munitions stored there?

And they were in position of information because the CIA received warnings. That's what we have a CIA for. And they're supposed to pass that information on so that our men and women out in the field are not going to be hurt, so that they're protected. Now, it's not enough for the Department of Defense to say that they really didn't know, and for the CIA to admit that they had received some warnings but didn't pass it on. So, this committee, while we have an obligation to assist you who are testifying here today in getting vindication, in getting treatment, but not just treatment. Because from what I hear you've all been treated and treated and treated.

But what we're not being treated to by the Department of Defense is the truth. It is reprehensible that people who have these multiple symptoms are just told that it's all in their minds. I'd like to know, Major, as a high ranking officer, were you given any indication of the numerous dangers that could lie ahead from your superiors?

Maj. DONNELLY. I knew full well what the dangers were. I knew they had chemical weapons. I knew they had surface-to-air missiles. I knew they had AAA. I knew what I was getting myself into when I signed up.

Mr. KUCINICH. Were you told that the chemical weapons were stored in Iraqi munitions bunkers?

Maj. DONNELLY. I knew that they had storage areas and production facilities. I was told that the way that we bombed them and the munitions that we used to bomb them would totally eradicate the material and not release into the atmosphere. Because we were worried about that, too. But the munitions we used against those known facilities and the way that we bombed them was supposed to wipe this stuff out.

Mr. KUCINICH. But that didn't happen? Or did it?

Maj. DONNELLY. Well, I think evidence shows now that it didn't happen.

Mr. KUCINICH. And what kind of bombs were you using?

Maj. DONNELLY. My unit specifically?

Mr. KUCINICH. Right.

Maj. DONNELLY. I did not use any—I used regular high explosive incendiary bombs, some cluster bombs, things like that.

Mr. KUCINICH. Now, Mr. Chairman and members of the committee, one of the most difficult things for our country to assess at any time is the possibility that we may have brought greater casualties upon ourselves than the enemy did. And the testimony here leaves so many open questions as to what you were told and what happened that it not only justifies this hearing but it justifies, I think, a deeper inquiry. I was listening to the testimony, making out my own little chart here of exposure symptoms and exposures—and people didn't have symptoms, and people who weren't exposed and showed symptoms, and people who neither had exposure nor showed symptoms.

And you wonder, if I can do that in a few minutes listening to your testimony, why hasn't some person in the Department of Defense who has lived with this for years been able to just do a study which I think would probably demonstrate that people who were exposed to PB, malathion, inoculations and chemical warfare have been demonstrating these symptoms, and that people who were exposed and perhaps didn't have symptoms, and then come up with an epidemiological study. Mr. Sanders.

Mr. SANDERS. Will the gentleman yield?

Mr. KUCINICH. I'll yield.

Mr. SANDERS. I think you raised the question that I raised in my opening remarks, in that what is very frustrating for many of us who have gone to these excellent hearings put together by the chairman and his staff, is that these same questions come up over and over again: why not, why not, why not? Now, the good news is that outside of the Pentagon and the VA some very serious research is being done showing the correlation, the problems of the synergistic effect of PB and various other chemical exposures. Some very important findings are taking place. They're not taking place within the defense establishment. The conclusion that I have reached, for whatever reason—I'm not even interested in speculating—is that it isn't going to happen.

You know, you can knock it and knock it and knock it. But for whatever reason, it's not going to happen. Therefore, I think we owe something to 70,000 veterans who are sick today to say, "Sorry, the defense industry is not going to do it. The Defense Department is not going—we're going to have to go where the action is." And there's some very fine researchers. And I think we should bring them together, probably either at a university or in a nonmilitary agency of the U.S. Government, bring the best minds together, develop a Manhattan type project, say we want immediate analysis, diagnosis, and treatment therapies. I don't think it's going to—I think if we keep going with the DOD and the VA, we're going to have this discussion 10 years from now. And I think we've got to recognize that.

Mr. KUCINICH. I thank the gentleman for his perceptive comments. I think we also need to pursue this to make sure that it doesn't happen again. Because PB is still being used. Is that—I would assume. Does anyone have information to the contrary? You know, there's still spraying with malathion going on. It's still—I don't think it's banned. They're still inoculating people if they're going into areas that are potential hazards. And we still have the threat of chemical warfare. That issue is before the Senate right now.

So, considering that all those factors are still evident, I guess part of the challenge here is not only to try to remedy the horrible pain and suffering that you've been through, along with the other service persons, but also, what can we do to make sure that this doesn't happen again? We're clearly being given plenty of testimony to suggest that there is a causal relationship here. And if there is, as your hearings have revealed, Mr. Chairman, then we certainly are in a position to make recommendations to be certain that more service men and women are not going to be affected the way that you have.

Because we're doubtless going to be ending up in situations in the future that are similar. How do we stop it from happening again? Thank you, Mr. Chairman. Thank you, members of the committee.

Mr. SHAYS. I thank the gentleman. And it's good to have you on the committee. I just need to clarify a few points before we go on to the next panel. All three of you were career servicemen and women?

Maj. DONNELLY. Yes, sir.

Sgt. WOOD. Yes, sir.

Sgt. SUMPTER-LOEBIG. Yes.

Mr. SHAYS. Note for the record all three have responded in the affirmative. There are many things, as committees learn. And we're getting to the point where we'll be issuing a report and making some recommendations as well as continuing our hearing. One thing that is very clear is that there is no one illness, no one symptom, no one cause. That seems fairly clear. Another thing that is eminently clear is that all of our soldiers who were ill were voices crying in the wilderness literally. And your treatment with, in many cases, with military hospitals, and with the VA, were found wanting in a significant way. That's very clear.

It's very clear that nobody wanted to know what you did in the service. They didn't want to know how you were exposed. And I can't think of anything more heart wrenching when you're in front of someone who you're seeking help from who seems very disinterested. It's also very clear to me that the military misuses chemicals, workplace chemicals, in ways that we would never allow in the public sector and in the private sector back home. That is very clear to me. And with that, I first want to ask you, Ms. Sumpter, Sergeant, you had experiences of using lindane? Were you involved with using lindane on the troops, or were you just in an area where that was happening?

Sgt. SUMPTER-LOEBIG. KKMC was the area where we were bringing any stray enemy prisoners of war in.

Mr. SHAYS. Right.

Sgt. SUMPTER-LOEBIG. And there was a containment area. And while we were guarding this perimeter—it was nothing more than concertina wire in three different perimeters.

Mr. SHAYS. Right.

Sgt. SUMPTER-LOEBIG. OK? There was the outside perimeter. And they had a couple of guards. And then your inside perimeter was a little more. And then further inside it was more. And then there was the prisoners. And that's the only way that we could contain them. And this was out in the open all day and all night. And, yes. They sprayed them off out there. And with the wind. And there's no trees. And the storms. Everything blew back right in our faces.

Mr. SHAYS. OK. So, you weren't administering the spray, but you were——

Sgt. SUMPTER-LOEBIG. We all were wet with it when we were out in that area.

Mr. SHAYS. OK. And this happened for an hour or so? Or did this happen for days?

Sgt. SUMPTER-LOEBIG. It depended on how rapidly we were moving the prisoners in through this containment area and then getting them to the hospital.

Mr. SHAYS. So, you were basically, in a sense, managing these—herding people into one room—escorting them, whatever—and so this happened on a continual basis?

Sgt. SUMPTER-LOEBIG. Yes, sir.

Mr. SHAYS. OK. Now, let me just—you had that experience. Lindane, in this country, would be regulated in its use.

Sgt. SUMPTER-LOEBIG. It's supposed to be regulated.

Mr. SHAYS. Yes.

Sgt. SUMPTER-LOEBIG. But it was being used. These people were really infested with a lot of little creatures.

Mr. SHAYS. Yes. OK. Now, when you came to both the military hospital and the VA and you maybe explained an experience like that, was there any interest?

Sgt. SUMPTER-LOEBIG. Through the VA?

Mr. SHAYS. Yes.

Sgt. SUMPTER-LOEBIG. There was some interest at the VA when I was speaking with one of the specialists who was examining the scars that I received over there.

Mr. SHAYS. How about the military hospital?

Sgt. SUMPTER-LOEBIG. No.

Mr. SHAYS. Did you attempt to explain to them?

Sgt. SUMPTER-LOEBIG. Yes, I did.

Mr. SHAYS. Now, you had another experience with the chemical that—the canister and so on. Would you just very briefly describe that again to me?

Sgt. SUMPTER-LOEBIG. The chemical wash rack experience?

Mr. SHAYS. Yes.

Sgt. SUMPTER-LOEBIG. We had received a damaged connex that was brought in. We had no clue where it was, who it belonged to. When we opened it, these chemicals all came out and hit the water. We had a standing pool of water like this all the time. We had fire hoses deconning the inside of these connexes for shipment back to the United States. Everything had to be cleaned and packed and

made sure there was no living animals, no plants, no illegal substances in the containers.

Mr. SHAYS. Right. And in the process of the chemical spilling, what happened? Was there a fog? Was there a mist? Was there a——

Sgt. SUMPTER-LOEBIG. It was a really, really thick—if you want to call it a mist, a fog. It just turned into this really thick cloud of smoke.

Mr. SHAYS. Now, when you attempted to explain—because that was of concern to you, correct?

Sgt. SUMPTER-LOEBIG. Pardon me?

Mr. SHAYS. That was of concern to you?

Sgt. SUMPTER-LOEBIG. Yes. That was a great concern to me. We were working on this wash rack. And I've been a Customs Inspector for 10 years. And they're telling me we don't need any chemical protective gear out there. We're using equipment to decon these containers, but we don't need any chemical protective gear.

Mr. SHAYS. Let me just have a sense, never having served in the military. If you said, "There is no way in hell that I am going to do this, because I think this is dangerous," what would happen?

Sgt. SUMPTER-LOEBIG. That was brought up several times by myself and the other NCOs that were on the wash rack. We were told to do our jobs, that the wash rack was priority No. 1, and that all other matters were expendable.

Mr. SHAYS. So, you had concern at the time and wanted to show more caution, but you were under orders to proceed?

Sgt. SUMPTER-LOEBIG. We were under orders to proceed. This was priority No. 1.

Mr. SHAYS. There's a gentleman in Connecticut who, from New Britain—Sgt. Dulka—whose job was to spray lindane day in and day out on the thousands of troops that were caught in his area. He died of pancreas cancer, I think. And he was in a confined area. I think he was actually in a tented area with no ventilation for days in and days out. That would never be allowed in a civilian population. The Government would go after whoever did that and prosecute them. In Mr. Dulka's case, he was under orders. He would have been court-martialed if he didn't carry out his orders.

Sgt. SUMPTER-LOEBIG. Correct.

Mr. SHAYS. So, one thing is very clear to me. The workplace of the military, and what soldiers have to do, has to be totally examined by the Defense Department. Anyhow, Mr. Wood, your concern is that you were—Sergeant. I'm sorry.

Sgt. WOOD. That's OK.

Mr. SHAYS. Your concern was that you were at Khamisiyah exposed to the plumes, et cetera, from the blowing up of the depo, is that correct?

Sgt. WOOD. No, sir. I actually was sick before that happened.

Mr. SHAYS. Pardon me?

Sgt. WOOD. I was sick before those explosions occurred, a day or two before. We went through and ammunition storage area that had been blown up by the allies. There were chemical rounds laying on the ground that I accidentally stumbled across. And that was the day I got sick. And that has been attested to by my commander at the time.

Mr. SHAYS. Now, again, you didn't find much sympathy when you expressed concerns. First off, were you ever required to carry out an order that you thought was dangerous to your health, like Sgt. Sumpter; she and her crew expressed concern about it. But you weren't in that same kind of circumstance. You weren't administering chemicals and so on.

Sgt. WOOD. No, sir.

Mr. SHAYS. But was there anything—did you have protective gear?

Sgt. WOOD. Yes, sir. We have protective gear.

Mr. SHAYS. Did you ever go to MOPP4?

Sgt. WOOD. Yes, sir.

Mr. SHAYS. OK. How many times?

Sgt. WOOD. I can't even begin to count, sir.

Mr. SHAYS. Seriously? More times than you can think of?

Sgt. WOOD. Well, I also have trouble remembering, sir.

Mr. SHAYS. OK.

Sgt. WOOD. But it was a minimum of 10 times we went to MOPP4 before we even went into Iraq.

Mr. SHAYS. OK. And in every instance, you're being told that that was a false alarm?

Sgt. WOOD. Practice.

Mr. SHAYS. OK.

Sgt. WOOD. Practice, sir.

Mr. SHAYS. It was practice. It was not based on an alarm?

Sgt. WOOD. No, sir.

Mr. SHAYS. OK. So, you never had an alarm go off that said, you better put on your gear?

Sgt. WOOD. Almost every day during the air war, sir. Almost every day during the air war our alarms went off. And at times, the alarms would go off, and they would say, "It's OK. Do not put your gear on. This is practice." I would get into my truck with my men to go pick up spare parts or deliver a port that had to be taken somewhere else. And every other unit on the way is in MOPP4.

Mr. SHAYS. OK. Now, but were you also in Khamisiyah, as well?

Sgt. WOOD. We were in the area. We were near An Nasiriyha, is what we were told. And one explosion, in particular, that I remember, was so huge it actually shook the tent sides. You put sand on the side of the tent to hold it down, to keep wind from blowing through. And it knocked the sand off the tents. It was that big of an explosion. And we were told that we were near An Nasiriyha.

Mr. SHAYS. Now, is it your testimony that your—your wife is German, is that correct?

Sgt. WOOD. Yes, sir.

Mr. SHAYS. And you live in Germany today?

Sgt. WOOD. Yes, sir.

Mr. SHAYS. Is your testimony that you are there as a convenience or because you believe that you will get better health attention there? If health was not an issue, would you be in the United States today?

Sgt. WOOD. When I was being processed out of the military for retirement, we had to decide what we wanted to do. We could either stay in the United States or come to Germany. And we

weighed all of the possibilities. In the United States our money would go much further, and we could have so much more in housing and so forth. But I could not get medical care. I could not get insurance. In Germany, I am covered. I am covered for free. And the doctors have zero limitations on what they can do. I am in Germany because of health care.

Mr. SHAYS. OK. You're in Germany because of health care, but not because it's free?

Sgt. WOOD. It is free for me, yes, sir.

Mr. SHAYS. No. But it would not be free for you in the United States as a retired medically-discharged soldier? I'm not clear about this.

Sgt. WOOD. Access to the hospital would be free. Yes, sir. Medical care? I have never seen it.

Mr. SHAYS. OK.

Sgt. WOOD. In a military facility.

Mr. SHAYS. It is also regarding—I want to be really clear on this.

Sgt. WOOD. Yes, sir.

Mr. SHAYS. And I don't want to put words in your mouth.

Sgt. WOOD. Yes, sir.

Mr. SHAYS. So, what I was hearing you imply was that you're there because you also think you get better health attention, not just because it's free?

Sgt. WOOD. Yes, sir. To make it more specific. If I walked into a military hospital today, after speaking with you, I would still more than likely be told, "There's nothing wrong with you," be offered no treatment. But if I go to a German physician, he will do tests. He will try to do his best to find out what's wrong and treat me. Yes, sir. That's what I'm saying.

Mr. SHAYS. And—does the gentleman need to yield?

Mr. SANDERS. No. I was just—another subject. As an advocate of a national health care system, which Germany has, I think that tells us something about the care. But that's another subject.

Mr. SHAYS. Well, but—and we can get into that—but what I want to get into is, I just want to know if your testimony today as an American citizen is that, as someone who I sent with my vote, to the Persian Gulf, because I have absolute total conviction that your mission was extraordinary important——

Sgt. WOOD. Yes, sir.

Mr. SHAYS [continuing]. And I believe what all three of you did was not just for the good of the United States and Europe, but for the entire free world. I believe that with all my heart and soul. I just want to know if you're saying to me that you are in Germany today because you think that doctors in Germany will pay more attention to you and provide better diagnosis and treatment for you, even though you aren't even a German citizen, than you would get in the United States? And that's what I'm trying to nail down.

Sgt. WOOD. Mr. Chairman, I am American. I love my country. And it pains me terribly. But, yes, that is what I am saying. I must live in Germany to get the care I need.

Mr. SHAYS. Would the issue of the nerve pills——

Sgt. WOOD. Yes, sir?

Mr. SHAYS. The military had to go to the FDA and have an informed consent waiver. The pyridostigmine bromide [PB] is used for treatment of a particular illness.

Sgt. WOOD. Yes, sir.

Mr. SHAYS. And this was being used in a different way. Now, the military was given permission—allowed to have you all take these pills. But they were not given permission not to inform you. In other words, the deal was, you were to be informed.

Sgt. WOOD. Yes, sir.

Mr. SHAYS. Now, all three of you took these pills. And I'm going to ask each of you. Were you informed that this was, in a sense, an experimental drug and it could have negative side effects? And I'm going to ask each of you. Sgt. Wood.

Sgt. WOOD. No, sir.

Sgt. SUMPTER-LOEBIG. No, sir.

Maj. DONNELLY. I don't recall. I was never given anything in writing. I don't recall exactly what the flight surgeon said when he put them down. I do remember a discussion of, what is this?

Mr. SHAYS. Right.

Maj. DONNELLY. Some kind of mistrust of it. But nothing any specific——

Mr. SHAYS. That's just because you're a pilot.

Maj. DONNELLY. Yes.

Mr. SHAYS. You're taught to think that way. You know, and Major, I was thinking, you flew for almost 15 years.

Maj. DONNELLY. Yes.

Mr. SHAYS. And you're in a wheel chair today. And you want to be healthy. And you also probably want to fly.

Maj. DONNELLY. Yes.

Mr. SHAYS. There's the one issue of the misuse of chemicals by the military. And all military personnel being under orders sometimes to use chemicals that is not appropriate. But you follow orders. That's what you're taught. And then there's the whole issue of offensive or defensive use of chemicals. In other words, defensive is when we blew up chemical munitions plants and depos of the Iraqis, some by plane, some by personnel on the ground. Maj. Donnelly, are you aware whether any of our targets were chemical plants?

Maj. DONNELLY. I don't think I bombed specifically a chemical plant. I bombed some weapons storage areas like Khamisiyah. When you look at it from the air, it's a huge complex. I have video tape from my airplane of Khamisiyah. We used to fly the combat air patrols over that area after the war was over in the no-fly zone. So, we would check on those areas daily. I bombed several of those. Airplanes coming and going inside of the theater. There was an iron highway of airplanes. There were things blown up all over the place.

Mr. SHAYS. Is your concern just—we're going to get to the next panel here, because I do know that we have to move on. But let me understand this: Is your concern that you were exposed to chemicals in flight or at your base, or both?

Maj. DONNELLY. My base was outside of the range of any known threat like the Scuds. I landed several times at a place called KKMC. We used to do what we called quick turns out of there.

We'd land, get more bombs and fuel, go back up there. I found out later that KKMC was one of the areas that they found to be contaminated. Sometimes right after an early morning Scud strike we'd land in there and everybody would be running around talking about, we just had a Scud come in. Nobody in MOPP gear. Or nobody other than just excited about the fact that a Scud came in. I don't have a specific example when I can remember of an event that happened to me during the war.

Mr. SHAYS. Yes. I'll just tell you, the last thing that I, as chairman, at least, am wrestling with, and the committee in general is wrestling with, and that is, we have testimony from the VA and others that medical science doesn't know how to truly diagnose and treat chemical exposure. That's the testimony. And it's clear to us that the VA in particular has very few people who have any expertise in chemical exposure. And the goal of this committee is to properly have you diagnosed, treated, and compensated for your service. And yet, there are only two countries in the world—Israel and the Netherlands—that have a specialty, a school that just focuses in on chemical exposure. And my understanding is, our medical institutions don't really provide much training, except there are some who are industrial hygienists and environmental toxicologists and so on.

But this is kind of a side issue for the military and the VA. And it's conceivable that one of our recommendations will be that we, like the Netherlands and Israel, have to do this. But all of you—I mean, I know Maj. Donnelly, you spent time in Texas, I believe, with someone who was trying to get the chemicals out of your body. Did you feel that was a constructive exercise?

Maj. DONNELLY. I learned a lot that I didn't know before about what we deal with in our environment every day. The organophosphates are not testable inside of your body after about 48 hours. So, it was an effort to see, given the options I had, if that would do any good.

Mr. SHAYS. But the bottom line is, medical science kind of looks, scans with discredit, at some of the things that you found yourself wanting to experiment. Is that correct?

Maj. DONNELLY. Right.

Mr. SHAYS. I mean, one was to kind of sweat out the chemicals from your body. And you did all those kinds of things. Correct?

Maj. DONNELLY. Right.

Mr. SHAYS. Do you have any comment about that?

Maj. DONNELLY. How much time you got?

Mr. SHAYS. We don't have a lot of time.

Maj. DONNELLY. My main point on that is that I've learned a lot about our medical system with all the doctors that I've seen. They are not open to leading edge investigation of anything. If it's not written and published in an AMA journal or JAMA or something, it does not exist. That's the problem with treating Gulf war illness, is that people buy the—they buy the misdirection. They buy the misinformation coming out of our Government that there is not Gulf war illness. So, they don't even look, some of them. There are some who believe there is something there. You don't have to look hard to see. You know, here we are. I'm not a rocket scientist, but even a pilot can figure that one out.

Mr. SANDERS. Let me interrupt you, if I might, Major, because I think you put your finger—all of you are doing a terrific job, and I appreciate it. You put your finger right on the issue. I don't think that there's malice. We all believe that the DOD and the VA want to do the right thing. But what you're suggesting—you used the word cutting edge. The VA and the DOD are not cutting edge. Unfortunately, if you guys were shot, they probably are the best doctors in the world. We can do something fantastic things for battlefield injuries. The orb is that what you are suffering from is not conventional type of wounds and injuries.

You are probably—you know, I'm not a doctor—but evidence that we have heard before this committee is that you may be suffering from a synergistic impact of different type of chemicals combined with the drugs that you took. And you know what? The Major is absolutely right. There's virtually no knowledge of that within the DOD and the VA right now. The point that I'm trying to make is that we're going to have to go outside of the system to those cutting edge people, who may be doing experimental things. Maybe they're not right 100 percent of the time. But to do the same old thing when they're not making the diagnosis or coming up with the treatment is knocking our heads against the wall. Is that what you're saying, Major?

Maj. DONNELLY. Absolutely.

Mr. SANDERS. But what's troubling is, after World War I, the general—Dr. Joseph, when he was testifying before us, basically made the analogy that if they weren't—and I have to be fair to him, because I don't have the record in front of me—but I'll tell you my interpretation. My interpretation was that if they weren't dying on the battlefield because of chemical exposure, there was no chemical exposure.

Maj. DONNELLY. Right.

Mr. SANDERS. And yet we know in this environment in the United States, that low-level chemical exposure leads to bad health and ultimately death. We know that. What's hard for me to reconcile—and I'm saying this, Dr. Rostker, there's a possibility that you could respond to it, who will appear in the next panel—what is troubling me is if in World War I, we knew that some soldiers died on the battlefield because of nerve agents and so on, others came back home and died years later, but prematurely because of low-level exposure. We know that happened in World War II, the Korean war.

We do know that with radiation—nuclear radiation—men and women who were—particularly men who were cleaning the planes, and others who were exposed to nuclear radiation with Agent Orange—it would seem to me that the Pentagon would have the top experts with chemical exposures. And it seemed to me the VA would have it. And we wouldn't just be great at dealing with a bullet wound or some shrapnel wound. So, that's what this committee is wrestling with. You know, we want to have these hearings. We want to also lead it to some conclusion.

One thing we do know—or at least we're convinced—you wouldn't know about Khamisiyah today if it wasn't for these hearings. So, we know that there's some good in that. And the other thing we do know is that your testimony is very powerful, is absolutely the core of it. You are the most important people that will

appear before us today, without any question. And as someone who played a part in sending you there, I want to play a part in making sure you get better. So, I thank you—all three of you—for being here.

Sgt. WOOD. Thank you.

Sgt. SUMPTER-LOEBIG. Thank you.

Maj. DONNELLY. Thank you.

Mr. SANDERS. Thank you.

Mr. SHAYS. We will go to our next panel. And we'll just maybe take a 2-minute break to exchange the witnesses.

[Recess.]

Mr. SHAYS. I'd like to begin with or second panel: Dr. Bernard Rostker, the Special Assistant for Gulf War Illnesses at the Department of Defense, Mr. Robert Walpole, Special Assistant for Gulf War Illnesses for the Central Intelligence Agency. Mr. Walpole, is that a new position?

Dr. WALPOLE. Yes, it is.

Mr. SHAYS. And Mr. Donald Mancuso, Deputy Inspector General, Department of Defense. I think, as you all know, we have a tradition, we swear in all our witnesses, including Members of Congress.

[Witnesses sworn.]

Mr. SHAYS. For the record, our witnesses have responded in the affirmative. I think we're going to be able to—do any of you have time restraints other than Mr. Rostker. I mean, I think we won't have any—Dr. Rostker. I'm sorry. Does anyone else have any time restraint?

Mr. ROSTKER. No, sir.

Mr. SHAYS. I appreciate the fact that you all three were here for the testimony of our veterans. And that means a lot to this committee that you were here for their testimony. And also thank you for not doing what some like to do and say, "We're here in official capacity and would like to be first." So, I also thank you for that. While I pointed out that the first panel was the first important, it's all in degrees. And you are a very important panel, and it's nice to have you here. And Dr. Rostker, I think we'll start with you.

Mr. ROSTKER. Thank you, Mr. Chairman.

Mr. SANDERS. Thank you for your testimony. It was very helpful.

Mr. SHAYS. Will you lower your mic just a bit?

STATEMENTS OF BERNARD ROSTKER, SPECIAL ASSISTANT FOR GULF WAR ILLNESSES, DEPARTMENT OF DEFENSE; ROBERT WALPOLE, SPECIAL ASSISTANT FOR GULF WAR ILLNESSES, CENTRAL INTELLIGENCE AGENCY; AND DONALD MANCUSO, DEPUTY INSPECTOR GENERAL, DEPARTMENT OF DEFENSE

Mr. ROSTKER. Mr. Chairman, I appreciate the opportunity to appear before the subcommittee this morning. In previous testimony presented in January, I outlined the mission of my office and described the full extent of the commitment of the Department of Defense. It is imperative that we find out everything we can to determine the possible causes of illness while providing the best possible care for those who are ill. We also have an eye toward the future as we learn from our Gulf experience and make the necessary

changes in policy, doctrine, technologies to protect our forces in the future.

With that as sort of my mission, I would like to comment on this morning's testimony which I applaud the committee for, and I personally found very useful. Three points that I think might help you put the testimony this morning in perspective. First of all, you know of our significant efforts to understand low-level chemical exposure and Khamisiyah. But that's not all we're doing. And we've stood up an environmental team which is explicitly charged to look at issues such as pesticides.

They are of great concern to us. And we are trying to understand how they were used in the Gulf and the possible health consequences from their use. We've also commissioned a medical review paper that would provide us with state-of-the-art knowledge about what you've talked about as multiple chemical exposures, or I like to think of the hyper-sensitivity to chemicals, and that those issues are also part of our focus for new research. So, we share your concerns for the issues that we raised this morning about pesticides. An issue was raised, also, about incident reporting. And one of the Members made reference to the fact that there were people here and there might be a cluster.

We might have seen a unit that had an exposure. And wasn't anybody in the Department of Defense looking at that. In fact, we are. We have a 800 number that is doing exactly that. And it's highlighted in this little handout that we give out to veterans, and has been on armed forces radio and television. The item on the back says DOD incident reporting line. It focuses on examining incidents which occurred during the Gulf, the hazardous exposures that may have resulted from these incidents, and the broader implications of such incidents.

So, we are very eager to track down the kind of clusters that we discussed here this morning, and to try to make sense of them within the broad pattern. So, the question of was anybody interested in the Defense Department, the answer is, yes. We are very interested in talking to people that have had these kinds of experiences. As you well know, the only way we're going to get at what happened in the Gulf is to talk with and involve the people who served in the Gulf in our inquiries. And that's a major focus of what we have been doing.

Finally, the issue of ALS was raised, and questions were asked about, well, couldn't we figure out what the incidents of ALS is. In fact, we've done that. After your hearings in December where somebody with ALS was also a witness, I went back and asked exactly that question. Currently, the two combined registries—the defense registry and the VA registry—are carrying nine veterans who have a diagnosis of ALS. The normal rate of occurrence for ALS within the general population under 40 per 100,000 of population is between 1.0–1.5. In other words, for the population that served in the Gulf, we would expect to see roughly between 7 and 11 cases of ALS. And we're looking at nine cases of ALS.

I can provide for the record the more specific numbers and the site for the general population if you'd like, sir. But that doesn't take away from the tragic nature of the disease. And our hearts go out to the Major. And we wish he and his family the best. But

those are the basic statistics as we understand them. Having said that, let me now return and review for you some of the significant progress we have made since I last appeared before the subcommittee.

We have embarked on a comprehensive research program which has resulted in many proposals being received to examine the consequences of a number of potential causes for illnesses, but particularly low-level chemical agents. The proposals are undergoing internal and external non-DOD peer review. Awards will be made. We have eliminated the backlog of calls from veterans who contacted the 800 number that I just referred to. Approximately 90 percent of those who have called have been fully debriefed by a trained investigator. That's around 1,600 phone calls.

Our technique is to take the initial call, and then within 72 hours a trained investigator calls back and does a complete debrief, ensuring that the information is passed to the right analysis team, assuring that we maintain contact with the veteran. These debriefs often last for well over an hour, and some over 2 hours. In reality, it's not just debriefing on what happened in the Gulf, but talking to the veteran and often referrals to the VA, and other issues are raised and we try to deal with them.

But we've accomplished over 1,600. In truth, sir, we have more people working the telephones—the 800 number—than the department had investigating Gulf illnesses before my group was stood up. We have launched an outreach effort, in January mailing surveys to approximately 20,000 Gulf war veterans who may have been within 50 kilometers of Khamisiyah. To date, more than 6,000 veterans have responded. Of that number, approximately 300 commented on their illness or health, and approximately 300 provided information on what they saw in Khamisiyah. And all of these are in the process of receiving phone calls and being debriefed.

The latter group receives followup calls from the investigation to try to understand specifically what they may or may not have seen at Khamisiyah. Our GulfLINK home page is now interactive. Veterans now can e-mail their concerns. And we've opened up a two-way dialog with the veterans rather than a static home page. We've also gone to news articles on the home page so that we can communicate to the veterans what we're doing and what's going on rather than just posting transcripts of hearings, although I'm sure, sir, you appreciate that the transcripts of your hearings are outstanding.

And the veterans need to see that. But there's more that we're doing than just testifying. We have strengthened our relations with the veterans service organizations and the military service organizations with monthly roundtables on such topics as the chemical gear used in the Gulf, depleted uranium and the like. And as you know, I kicked off a nine city town hall tour. Last night I was at the American Legion post in Atlanta. And tonight I'll be in Boston. These meetings are productive, and they provide the front-line contact that is necessary for us to fully appreciate the concerns of our veterans.

I know the committee has been concerned about the missing portions of the chemical and biological logs. The investigation of the CENTCOM chem logs has been turned over to the DODIG. My of-

fice has taken this investigation to a point where the assignment to the DODIG is quite appropriate to provide the additional resources that her office can provide. Our inquiry, which will be expanded by the DODIG, indicates that the chemical log pages that survived were extracted from a full set of logs that survived at least until 1994.

We believe they survived because the specific pages that—the 30-some odd pages that we still have—we believe they survived because they were used to prepare testimony for the defense science board. In other words, these were the pages that were actually taken out of the larger number of pages in the log because they carried significant chemical events. With the exception of Khamisiyah, almost every major chemical event we are investigating, such as the Czech-French detections, the Marine breaching operation which was testimony here to your committee, are carried in the chemical logs.

Moreover, we would not expect to see Khamisiyah on these pages because it was not viewed or reported by the troops on the scent at the time as a chemical event. It is my best assessment that these missing pages did not contain information about chemical exposures. In addition, we do have the core situation reports for the 18th Airborne Corps for the specific days around Khamisiyah. And they do not mention chemical events at Khamisiyah. We also have the logs for the 82nd Airborne Division, of which the 37th Engineers was a part. And they also do not mention chemicals at Khamisiyah. They do talk about the explosions that went on at Khamisiyah, but there was no reporting of chemicals.

There are a number of other collateral efforts underway to obtain more detailed information which is supportive of the work in my office. The Army IG is also conducting an investigation of the events at Khamisiyah. And we are providing them with additional leads as we gain those leads. So this is an independent effort. But we are coordinating to make sure that their effort is fully comprehensive to our best knowledge of any supporting events. The assistant to the Secretary of Defense for intelligence oversight is undertaking an independent and further investigation of what the intelligence community, and particularly the defense intelligence community, knew concerning Khamisiyah before and after the events at Khamisiyah.

These investigators are well-coordinated and we welcome their support in this action. Some of the efforts of the investigators involved continued—we continue to search and interview veterans who were in the Khamisiyah area at the time of the demolitions. Working with the CIA, we are trying to estimate what is known as the source term, or how much agent may have been released at Khamisiyah, and then what the wind patterns were that might have carried the agent over American troops.

Because our position time data base is frankly so poor, it's a bottom up data base. We are assembling this month the division commanders and brigade commanders from the 18th Airborne Corps who were in the Gulf. And we're using their expertise of their military operations to try to identify any additional troops that might not have been captured in the official data base of time and location. And we're also conducting an analysis of participation rates

in the combined CCEP and VA registry to see if there is any pattern of participation in those registries that might be correlated with time and location of Khamisiyah.

All of these efforts are directed toward a single purpose of determining what is causing our veterans to be ill. While doing this, we are ensuring that Gulf war veterans are receiving the best possible care. Finally, we then must make certain to apply the lessons learned for the Gulf to our future deployments. You have my commitment that no effort will be spared to determine that causes of these illnesses and respond to the health needs of our veterans. Thank you, Mr. Chairman.

[The prepared statement of Mr. Rostker follows:]

Statement
of
The Honorable Bernard Rostker
Special Assistant for Gulf War Illnesses
to the
House Committee on Government Reform and Oversight
Subcommittee on Human Resources
April 24, 1997

Mr. Chairman, I appreciate the opportunity to appear before the Subcommittee on Human Resources to report on the progress of the Department of Defense investigation of Gulf War illnesses. In previous testimony presented before the Subcommittee on January 21, 1997, I outlined the mission of my office and described the full extent of the commitment of the Department of Defense. It is imperative that we find out everything we can to determine the possible causes of these illnesses while providing the best possible care for those who are ill. We also have an eye toward the future as we learn from our Gulf experience and make the necessary changes in policies, doctrine, and technologies.

With an increased level of resources and redirected efforts, we have focused on the goal of conducting as thorough an investigation as possible into why many of our veterans who served in the Gulf War are ill and have entered into a broader dialogue with them as we proceed in our investigation. We remain committed to our veterans who served our nation so willingly and committed to the mutual trust upon which the military contract with our service members depends. We know full well that if that commitment doesn't express itself in action - it doesn't exist.

That commitment was demonstrated in the recent Presidential decision to extend the presumptive period for compensation for Gulf War veterans with undiagnosed illnesses. As you know, the government compensates for disability, not exposure. In the

case of symptoms that may be attributed to Persian Gulf veterans' illnesses, the benefit of the doubt regarding service connection is in favor of the veteran. We welcome this because it completely eliminates any argument that our actions are driven by concerns over government liability. Our inquiry never has been, and never will be, directed by such concerns. Our only interest is to support our veterans by vigorously searching for the causes of Gulf War illnesses.

During the course of our investigation, we have worked to communicate with our veterans to explain our efforts and to gain an understanding of their personal concerns. Since December, our activities in the area of risk communication have intensified. We have eliminated the backlog of calls from veterans who call our 1-800 Incident Reporting Line. This one-on-one contact with veterans has helped our investigators obtain valuable information that is incorporated into our investigation. Approximately 90 percent of the people who have called have been fully debriefed by a trained investigator. Their insights have increased our understanding of various events and incidents before, during, and after the war.

We launched an outreach effort in January mailing surveys to approximately 20,000 Gulf War veterans who may have been within 50 kilometers of the Khamisiyah site when bunker demolition took place. Veterans were asked if they witnessed chemical detection from indicators such as M8 alarms, M256 kits, or Fox vehicle detections; if symptoms were experienced or observed; and, if they saw or heard anything that may be helpful to the investigation. To date, more than 6,000 veterans have responded; of that number, approximately 300 commented that they experienced some symptoms associated with Persian Gulf Veterans' illnesses; approximately 300 provided information on

recollections they had regarding the site. This latter group is receiving follow-up calls from our investigators for a full debriefing of their experiences. This response has provided our investigation and analysis team with many new leads which are being followed up with telephone interviews.

Communication with veterans, Congress, and the American people is a high priority for our investigation. To this end, we have improved our GulfLINK Internet website to include a news article format to explain what we are doing on a week-to-week basis. A hyper-text capability on the site will provide supporting information to the more technical case narratives as they are released. Our GulfLINK website is now interactive. Veterans who have questions about our investigation can now e-mail the Defense Department with their concerns and get answers. We hope this will allow us to hear from the public and be even more responsive to Gulf War veterans.

To strengthen our relationship with veterans services organizations (VSOs), I have held two monthly roundtable meetings with VSOs -- one in February and one in March. I consider feedback and participation from veterans' organizations in this investigation to be a critical element in answering questions pertaining to the relevant Persian Gulf War issues that concern them. Nationwide public forums have been scheduled. At the invitation of the Veterans of Foreign Wars and the American Legion, I am participating in nine town hall meetings throughout the country. Last night I was the guest of the American Legion in Atlanta and tonight I will be in Boston. These meetings have been productive opportunities to have one-on-one conversations with our Gulf War veterans. I have been to Cleveland and will be traveling to Denver, San Diego, Seattle and Chicago in May.

The DoD investigation is organized around a formal case management system.

Cases include examination of incidents like Khamisiyah or other environmental hazards and issues such as the use of pyridostigmine bromide (PB) tablets and pesticides. Case managers direct the efforts of many teams that review events and issues that occurred before, during or after the war to assess how events relate to potential causes of illnesses or to the need for future changes in policy.

The Investigation and Analysis Directorate (IAD) comprises the largest element of the Office of the Special Assistant and directly supports the analytical effort. The Chemical and Biological Warfare Agents Team is presently the largest team within the directorate investigating 25 cases of suspected or reported chemical detection.

The Environmental and Occupation Exposures team is investigating all cases relating to environmental and occupational exposures including depleted uranium, pesticides, and similar potential causes of illnesses.

The Medical Planning Issue Team is investigating the medical planning, policy and relevant exposure issues relating to immunizations, pyridostigmine bromide, stress, infectious diseases, and any other similar potential causes of Gulf War illnesses.

Also central to our investigation is the Veterans Data Management team who work practically around the clock calling veterans for their input and observations. We are asking these veterans to share with us any logs, journals or photographs they might have in addition to eyewitness accounts to further the investigative efforts.

The results of each investigation will be released to the Congress and the American public. The Khamisiyah narrative published in February was the first in a series of reports intended to open up a dialogue with Gulf War veterans. We intend to publish narratives related to incidents or issues involving Camp Monterey, Fox Vehicle capabilities, Marine

Breaching Operation, Czech/French detection, Mustard Exposure, and Al Jubayl in the next 60 days.

During the demolition operations at Khamisiyah on March 10, there were no reports of chemical munitions nor were there reports of anyone experiencing symptoms consistent with exposure to chemical agent. Subsequent inspection by the U.N. in late 1991, early 1992, and then again in May 1996 suggested that there were chemical munitions stored at Khamisiyah during the time in which U.S. forces destroyed the depot. It was not until late 1995 that the evidence led CIA, and later DOD, to suspect that U.S. forces could have destroyed these munitions and possibly been exposed to chemical agents. This was confirmed in a U.N. visit in May 1996 and announced by the Department in June 1996.

The recently released Khamisiyah narrative is an interim report which portrays our best understanding of what occurred as we know it at this point in time. The narrative does not represent a final product. It was released with an appeal to individuals who were in the Khamisiyah vicinity to contact us with any information that would help us better understand the activities at this facility after the war. As we receive additional personal descriptions from veterans as well as survey results, the Directorate will continue to refine the case narrative.

I know the Committee is concerned about the missing portions of the U.S. Central Command (CENTCOM) nuclear-biological-chemical (NBC) log. The investigation of this log has been turned over to the DoD IG. My office had taken the investigation to a point where the assignment of additional resources was appropriate.

Our inquiry, which will be expanded by the ongoing DOD IG investigation, indicates that the chemical log pages that survived were extracted from the full set of log entries. We believe they survived because they were used to prepare testimony for the Defense Science Board. In other words, these were the pages that carried significant chemical events.

With the exception of Khamisiyah, almost every chemical event we are investigating, such as the Czech/French detections and the Marine Breaching Operation, is entered into the log. Moreover, we would not expect to see Khamisiyah on these pages because it was not viewed or reported by the troops as a chemical event. At this time, my best assessment is that the missing pages did not contain any information about chemical exposure. In addition, we have the Corps situation reports (SITREPS) for these days; specifically, the 4th of March and the 5th of March, the day of and the day after the detonation of Bunker 73, and they do not mention destruction of chemical weapons at Khamisiyah. We also have obtained the SITREPS for March 10 and 11, the day of and the day after the detonation in the pit. Those documents are classified and we are asking that they be declassified.

There are a number of other collateral investigative efforts underway to obtain more detailed information which is supportive of the work of my office. The Army Inspector General (IG) is also conducting an investigation into the events surrounding the demolition of the ammunition storage facility at Khamisiyah. The Assistant to the Secretary of Defense for Intelligence Oversight is undertaking a further investigational effort that deals with the intelligence aspects of Khamisiyah. All of these investigations are well-coordinated and we welcome them.

Efforts to determine potential exposure at Khamisiyah are ongoing. Because of the difficulties inherent in modeling the Khamisiyah pit area, Deputy Secretary of Defense White requested that the Institute for Defense Analyses (IDA) convene a panel of experts in meteorology, physics, chemistry, and related disciplines to review all of the modeling efforts. IDA also reported continued concern about the inability to describe the many variables of the agent-munition release mechanism. IDA agreed with the CIA that huge uncertainties remained in attempting to estimate key variables such as the number of rockets present for destruction and the number of those destroyed, total quantity of agent released, mechanism of release, and purity of agent. Both the CIA and IDA presented testimony on this issue before the March 18, 1997 public meeting of the Presidential Advisory Committee on Gulf War Veterans.

Our efforts to estimate exposure are directly linked to two key factors: estimates of the extent of any chemical agent dispersion and determination of actual troop locations. We are working with the CIA to reduce some of the uncertainties associated with the demolition. We will be conducting a series of small scale tests at Dugway Proving Ground in Utah using inert chemicals to provide insight into numbers of rockets destroyed, mechanism and quantities of agent release, and initial agent behavior. As we have discussed with the Presidential Advisory Committee in Salt Lake City, preliminary estimates regarding potential exposures are premature until we review the test results.

Our second ongoing effort involves improving our knowledge of unit locations throughout the war, including the time frame of the Khamisiyah demolitions. Later this month, the Army will assemble Desert Storm brigade and division operations officers from XVIII Airborne Corps, the major command in the Khamisiyah area, to help us identify unit

location already in our database. We are asking these senior officers to locate their units down to at least battalion level for days not previously identified from existing records. In subsequent months we intend to extend this methodology to other corps to improve our knowledge of troop locations throughout the theater of operations.

The Department of Defense believes that our search for answers to the question of who may have been exposed to chemical agents requires aggressive inquiry. Therefore, having discussed these concerns with the Presidential Advisory Committee at their last meeting, I am going forward with an analysis of participation rates for personnel registered in the CCEP and VA medical registry programs that were examined prior to July 1996 with regard to time and unit locations relative to Khamisiyah events. We believe that our measures of the relationship between relative unit location and registry participation, while having extremely serious scientific limitations, may help further our understanding and generate hypotheses. In time, when modeling yields its best estimate of where chemical agents may have affected troops, we can observe whether different kinds of participation and symptoms are in some meaningful way associated with the dispersal of chemical agent.

To ensure that we fully understand the existing state of science on a variety of issues related to the health of Gulf War veterans and to help focus our future efforts, we have asked the RAND Corporation to prepare extensive medical literature reviews in nine areas including: pesticides, immunizations, chemical warfare agents, pyrdostigmine bromide, stress, biological warfare agents, depleted uranium, infectious diseases, and environmental exposure to oil fires. The literature reviews will examine published articles,

books and government reports. This will give a clear picture of the existing knowledge base, identify gaps, and allow analyses of future research needs.

Research will help us understand the long-term effects of exposures to a number of factors present in the Gulf War. As I reported to the Committee in February, the DoD has strengthened its research program to study a wide range of medical issues related to Gulf War illnesses. For fiscal year 1997, we will spend up to $27 million in Gulf War-related research. The Department's research program is conducted with extensive collaboration with the Departments of Veteran Affairs and Health and Human Services through the Research Working Group of the Persian Gulf Veterans Coordinating Board.

We are actively pursuing solid research proposals examining the consequences of possible exposure to low levels of chemical agent. In late 1996 and in early 1997, requests for proposals were published in the Commerce Business Daily to solicit proposals investigating the causal relationships between illnesses and symptoms among Gulf War veterans and possible exposures to hazardous material; chemical warfare agents; stress; and combinations of inoculations and investigational new drugs during military service in the Gulf War. Proposals have been received and they are undergoing external scientific review.

We continue to seek the advice of oversight organizations for recommendations throughout this investigative process. The Department of Defense has taken guidance in many matters from the Presidential Advisory Committee on Gulf War Veterans' Illnesses. In March, the Departments of Defense, Veterans Affairs and Health and Human Services submitted to President Clinton an action plan in response to the recommendations contained in the Committee's *Final Report.*

Our investigation is one that deals concurrently with the past, the present and the future. We are attending to the health needs of our veterans, seeking them out and responding to their concerns. We are examining the past through a very thorough, painstaking investigation to find out what occurred that could be affecting the health of many veterans. We are also looking to the future and applying what we learn to ensure that the Department implements necessary changes to military doctrine, procedures, and equipment to ensure that we protect our troops in the future. Having complete records, such as the CENTCOM NBC log, would certainly have made make our job easier. We must improve our systems of collecting and retaining information from the battlefield - operational, intelligence, personnel location, and health records. As we discover new leads, we will use every resource at our disposal to move our investigation forward. We will "widen the net" with outreach, communication, town-hall meetings and any other vehicle that maximizes the dissemination of vital information and provides further insights into our investigation.

We are conducting an open investigation. We are actively declassifying documents and making them available to the public. The Army as the executive agent for declassification has pursued every lead and recently visited numerous installations facilities, and commands to ensure the most complete compilation of documents pertaining to the Gulf. This very pro-active approach has recently produced another 66,000 additional new pages of information. We will fully disclose everything we learn, when we learn it.

You have my commitment that we will aggressively pursue all of these issues. No effort will be spared to determine the causes of these illnesses and to provide the medical care our Gulf War veterans need and deserve.

Case Summaries And Status
(as of 3/27/97)

TEAM	#	CASE NAME	SUMMARY	STATUS
Chem/Bio	1	Tallil	Military personnel report possible exposure to chemical, while engineers and EOD personnel blew up bunkers.	In analysis
Chem/Bio	2	Czech/French Detections	Possible presence of chemical warfare agent (CWA) in area of Czech/French detections	Interim findings published; Updated report in progress
LTC Morris	3	Kuwaiti Girls School	Suspected container of Mustard agent at Sabbaniyah Girls School Kuwait, August 1991	Report in progress
LTC Morris	4	Mustard Exposure	Injury of PFC Fisher in March 1991	Report in progress
LTC Morris	5	Camp Monterey	Suspected detection of Sarin in September 1991	Report in Progress
Chem/Bio	6	Rafha	M8 alarms sounded for approximately 2 week period preceding the Ground War	In analysis
Chem/Bio	7	USMC Breaching Operation	Possible exposure of USMC personnel to chemical warfare agents and mines during breaching operations in Kuwait. Chemical exposure to Task Force Ripper personnel during offensive operations in Kuwait	Interim report in progress, analysis continuing
Chem/Bio	8	ASP/Orchard - QT753/391	GySgt Grass' account of a detection in a bunker	In analysis
Chem/Bio	9	Al Jaber Airfield	Marine activities and possible chemical detections	Collecting data
Chem/Bio	10	FOX/M256 Detections	Detections not otherwise associated with a case	Collecting data
Chem/Bio	11	Khamisiyah Ammo Depot	Possible exposure to nerve agent during munition bunker destruction	Interim report issued, analysis continuing
Chem/Bio	12	Al Jubayl	Possible exposure to CWA from SCUD missile interception. Exposure to industrial chemicals in Al Jubayl harbor	Interim report in progress, analysis continuing
Chem/Bio	13	Post-War Chemical Use On Iraqi Civilians	Iraqi use of chemicals against their own people	Monitoring
PAG	14	Ad Dammam	Events at that location	Collecting data
PAG	15	Safwan	Events at that location	Collecting data
Chem/Bio	16	Tawkalna Division Howitzers	Alleged chemical weapons discovered with the firing batteries	Monitoring
PAG	17	King Khalid Military City	Events at that location	Collecting data
PAG	18	Bahrain	Events at that location	Collecting data
PAG	19	Dhahran	Events at that location	Collecting data
PAG	20	Basrah	Events at that location	Collecting data
PAG	21	Kuwait City	Events at that location	Collecting data
PAG	22	King Fahd Int'l Airport	Events at that location	Collecting data
PAG	23	Riyadh	Events at that location	Collecting data
PAG	24	Doha	Events at that location	Collecting data
PAG	25	King Abdul Aziz Airport	Events at that location	Collecting data
PAG	26	Jalibah	Events at that location	Collecting data
PAG	27	As Salman	Events at that location	Collecting data
PAG	28	An Nasiriyah	Events at that location	Collecting data
PAG	29	Al Busayah	Events at that location	Collecting data
Med	30	Graves Registration Detail	Alleged sole survivor of 16 military personnel Graves Registration Detail based on anecdotal information from US Army JAG officer	Data Collection/ Analysis
Chem/Bio	31	Thiosarin Nerve Agent	Possibility that a sulfur sarin analog (Thiono-sarin) that causes different symptoms than nerve agents was used	Validation

Case Summaries And Status
(as of 3/27/97)

TEAM	#	CASE NAME	SUMMARY	STATUS
Chem/Bio	32	Munitions Additives	Allegation that smoke producing chemicals in Iraqi Soviet-made munitions cause low level nerve agent exposure	Validation
Environ	33	CARC Paint	Possible effects of exposure	Collecting data
Med	34	Pyridostigmine Bromide	PB adverse effect or enhancement delayed neuropathy	Validation
Environ	35	Insecticides/Pesticides	Exposure to insecticides (DEET, pyrmethrin, and others) cause illnesses	Validation
Environ	36	Lindane	Possible exposure during delousing of EPWs	Data Collection/ Analysis
Environ	37	Thallium	Possible exposure to Thallium (rat poison) residue causing illnesses	Validation
Environ	38	Sand Exposure	Exposure to sand causing adverse health effects	Collecting data
Environ	39	Water Contamination	Contaminated potable water supplies caused illness	Collecting data
Environ	40	Oil Well Fire Exposure	Exposure to oil well fire smoke causing adverse health effects	Data Collection/ Analysis
Environ	41	Depleted Uranium	Heavy metal and radiation contamination from DU penetrating munitions	Validation
Chem/Bio	42	Fort Leavenworth	Possible exposure to insecticides or chemical agents while handling Gulf War documents	Validation
Med	43	Immunizations	Multiple vaccinations/anthrax and botulinum toxoid vaccines. Relationship between silicate-based adjuvants and human autoimmune diseases. Contamination of universally administered gamma globulin vaccinations.	Validation
Chem/Bio	44	Delayed Neurotoxicity/ Low Level Exposure	Medical study of the effects of low level exposure	Validation
	45	Miscellaneous Medical Theories	Illnesses are manifestations of: Fibromylagia, Multiple Chemical Sensitivities, Chronic Fatigue Syndrome, Immune Dysregulation Syndrome, Immune Dysregulation Syndrome	Collecting data
Med	46	193rd Air National Guard	Clustering of symptoms in a single unit	Data Collection/ Analysis
Chem/Bio	47	11th Marines	Activities of this unit	In analysis
Chem/Bio	48	Dead animals	Possible indications of CBW exposure	Validation
Med	49	Mortality/Morbidity	Determine possible underlying causes of PGVI based on morbidity. Identify deaths for which the cause is unaccounted. Possible higher mortality rate for PGW deployed vice non-deployed	Data Collection/ Analysis
PAG	50	Special Weapons Reports	Reports of novel weapons.	Collecting data
Med	51	Infectious Diseases	Infectious disease process/possible genetic engineered BW agent/possible vaccine contaminant (Formerly called "Mycoplasma")	Monitoring
Med	52	Stress	Compilation of stress studies	Monitoring

Case Summaries And Status
(as of 3/27/97)

TEAM	ID	CASE NAME	SUMMARY	STATUS
Chem/Bio	53	BW Exposure	Possibility of BW exposure	Collecting data
Environ	54	Food Contamination	Effects of Food Contamination (Formerly called "Foodbourne Contamination" now part of Infectious Diseases)	Collecting data
PAG	55	Cover-Up Allegations	Eddington, et al	Collecting data
Chem/Bio	56	Possible Release of Chemical/ Biological Agents by Scud	Analysis of possibilities	Collecting data
Chem/Bio	57	Chemical Detection/Time Distance Analysis	Follow/up study to determine if there is a pattern of detections/possible releases	Collecting data
LTC Morris	58	CENTCOM NBC Desk Logs	Chain of custody and content of the logs	Report transferred to DoD IG
Environ	59	Retrograde Equipment	Reports of civilian and military personnel affected by equipment being returned	Monitoring
Chem/Bio	60	M8A1 Alarms	Reports of alarms	Monitoring
Environ	61	Tent Heaters	Possible effects of use of tent heaters including use of inappropriate fuels	Monitoring
PAG	62	Escon Village	Events at that location	Collecting data
LTC Morris	63	Schwarzkopf Journals	Chain of custody and content of the journals and attachments	Collecting data
PAG	64	Coalition Bombing	Determine extent of any possible release of chemical/biological agents as a result of coalition bombing	Collecting data

Persian Gulf Veterans Coordinating Board **FACT SHEET**

Contacts:
Department of Defense (703) 695-0192
Department of Veterans Affairs (202) 273-5700
Department of Health and Human Services (202) 690-6343

April 1997

Persian Gulf Veterans Coordinating Board

The Persian Gulf Veterans Coordinating Board was established by President Clinton in January 1994 to work to resolve the health concerns of Persian Gulf veterans, including active duty personnel and reservists with Gulf service. The board, headed by the Secretaries of the Departments of Defense (DoD), Veterans Affairs (VA), and Health and Human Services (HHS), is coordinating government efforts related to research, clinical issues and disability compensation.

Background: Persian Gulf Veterans' Health Problems

Some 697,000 active duty service members and activated National Guard and Reserve unit members served in the Persian Gulf theater of operations during Operations Desert Storm and Desert Shield. The majority of troops were deployed to the Gulf theater of operations before the air war began on Jan. 16, 1991, and more than half of the deployed troops were withdrawn from the area by the first week of May 1991. However, an additional 300,000 individuals have been deployed over the ensuing years, with several thousand U.S. military members currently serving ashore and afloat in the Gulf region.

Responding to concerns about the health problems of Persian Gulf War veterans, in 1992 VA created the Persian Gulf Registry Program for all veterans who served in the Persian Gulf, inviting them to come to VA for a free medical examination. In addition, DoD has established the comprehensive clinical evaluation program (CCEP), to provide care and systematically evaluate Persian Gulf veterans and their family members. Veterans have commonly reported that they suffer from a diverse group of symptoms, including fatigue, skin rash, headache, muscle and joint pain, memory problems, shortness of breath, sleep disturbances, gastrointestinal symptoms, and chest pain. DoD, VA and HHS are investigating possible causes of Persian Gulf veterans' health problems, including various chemical exposure combinations, leishmaniasis, health effects of oil well fires, petrochemical exposure, chemical/biological warfare agents, effects of vaccines and medications, and exposure to depleted uranium. The three departments are engaged in more than 90 federally supported Persian Gulf-related research and evaluation projects, including studies of general health and environmental effects. This includes grants to more than a dozen non-federal researchers, federal agencies and academic institutions examining a variety of health issues in Gulf veterans or studies of specific risk factors or illnesses. In May 1995, President Clinton formed an independent advisory committee to review the research agenda as well as other government activities related to the health of Persian Gulf veterans.

The Presidential Advisory Committee on Gulf War Veterans' Illnesses, whose term recently was extended another nine months, issued reports assessing the government's approach to the health problems of Gulf War veterans in February 1996 and December 1996. The most recent report said that while there was a delay in acting at the end of the Gulf War, the government is now providing appropriate medical care to Gulf War veterans and has initiated research in the areas most likely to illuminate the cause of their illnesses. The advisory committee found that some veterans clearly have service-connected illness, but it said current scientific evidence does not support a causal link between the symptoms and illnesses reported today by Gulf War veterans and exposures while in the Gulf region to a variety of environmental risk factors assessed by the committee: pesticides, chemical warfare agents, biological warfare agents, vaccines, pyridostigmine bromide, infectious diseases, depleted uranium, oil-well fires and smoke, and petroleum products. Stress, which may affect the brain, immune system, cardiovascular system, and various hormonal responses, is likely to be an important contributing factor to the broad range of physiological and psychological illnesses currently being reported by the veterans, the Presidential Advisory Committee concluded.

VA Health Care - Persian Gulf Registry

VA's Persian Gulf Registry Program offers a free, complete physical examination with basic laboratory studies to every Persian Gulf veteran. A centralized registry of participants who have had these examinations is maintained to enable VA to keep them informed through periodic newsletters. This clinical database of more than 65,000 Persian Gulf veterans who have taken advantage of the physical examination program also provides a mechanism to catalog prominent symptoms, reported exposures and diagnoses. VA has named a physician at every VA medical center to coordinate the special examination program. In June 1994, VA expanded the basic examination protocol, which elicits information about symptoms and exposures, and directs baseline laboratory studies, including blood count, urinalysis, and a set of blood chemistries. In addition to this core laboratory work, for every veteran taking the Persian Gulf program examination, physicians may order additional tests and specialty consults as symptoms dictate. If a veteran's symptoms remain unexplained, VA provides an expanded assessment protocol, standardized in collaboration with DoD, for use in evaluation of unexplained illnesses.

In addition to the Registry program, VA provides medical care to Persian Gulf veterans for illnesses possibly related to exposure to toxic substances or environmental hazards. Any Persian Gulf veteran who VA determines might possibly have an illness resulting from exposure to a toxic substance or environmental hazard in the Persian Gulf theater of operations has special eligibility for hospital and outpatient care. They have a higher eligibility for treatment than other nonservice-connected veterans. For Gulf veterans with unexplained symptoms, the local VA physicians also may refer veterans to a local tertiary care facility, or to one of VA's four Persian Gulf Referral Centers for additional specialty consultations. They are located at VA medical centers in Washington, D.C.; Birmingham, Ala.; Houston; and Los Angeles.

Also, VA is inviting spouses and children of Persian Gulf War veterans to take advantage of special health examinations being scheduled through VA's national Persian Gulf Helpline. The free exams, administered by contractors of 33 VA medical centers, are available only to spouses and children of veterans who served in the Persian Gulf War and who have received a Persian Gulf Registry examination. VA estimates that the $2 million authorized by Congress for this program will provide physical examinations for approximately 4,500 individuals. The program does not provide follow-up, treatment or compensation for the veteran's spouses or children.

VA offers a toll-free information line at 800-PGW-VETS (800-749-8387) where operators are trained to help veterans with questions about care and benefits and schedule the spouse and child examinations described above. Information also is being disseminated 24 hours a day through a Persian Gulf Veterans' Illnesses page on VA's World Wide Web site at http://www.va.gov/gulf.htm.

Realizing that research will take time to find answers to Persian Gulf veterans' health questions, the Clinton Administration supported legislation, enacted in 1994, to give VA authority to award compensation benefits to chronically disabled Persian Gulf War veterans with undiagnosed illnesses. Under a final regulation published Feb. 3, 1995, VA has begun paying compensation to Persian Gulf veterans suffering from chronic disabilities resulting from undiagnosed illnesses that became manifest during service in the Southwest Asia theater or within two years thereafter. On March 7, 1997, President Clinton approved VA's request to extend the eligibility period for compensation for undiagnosed illnesses to allow a window for manifestation of such symptoms through Dec. 31, 2001. After the regulatory process is complete, this will replace the current requirement for manifestation of symptoms within two years of leaving the Gulf. Some 27,383 veterans with Persian Gulf service currently are receiving VA compensation for chronic disabilities of all kinds including more than 660 for undiagnosed illnesses. Another 37,800 veterans have conditions that have been adjudicated as service-connected, but which are not serious enough to warrant compensation.

DoD's Comprehensive Clinical Evaluation Program

DoD, in collaboration with VA, developed the "Comprehensive Clinical Evaluation Program" in June 1994 to provide an in-depth medical evaluation to all eligible beneficiaries who have health concerns following service in the Gulf. All service members eligible for health care at DoD medical facilities, active, ready reserves or retired, who participated in Operation Desert Shield and Desert Storm, and their family members, are eligible for the program. To register, individuals should call the DoD hotline (800-796-9699) for Gulf War veterans. In April 1996, DoD issued its fourth report on 18,598 participants. DoD physicians find the majority of CCEP participants have clear diagnoses which include a variety of common conditions for which they are receiving treatment. The report concluded that based upon the CCEP experience to date, there is no clinical evidence for a single or unique syndrome among Gulf War veterans. However, a mild illness or a syndrome affecting a proportion of veterans at risk might not be detectable in such a case series. The results of the CCEP are consistent with the conclusions of a National Institutes of Health Technology Assessment Workshop Panel that no single disease or syndrome is apparent, but rather multiple illnesses with overlapping symptoms and causes.

A specialized care center established at Walter Reed Army Medical Center in Washington, D.C., provides therapeutic care for some CCEP participants. The center uses multidisciplinary teams to provide intensive programs to improve the health of patients experiencing disabling symptoms. An additional specialized care center is located at Wilford Hall Medical Center in San Antonio, Texas. This center provides treatment for Gulf War returnees with chronic pain and other health concerns.

In late 1996, DoD requested the National Academy of Sciences Institute of Medicine to reevaluate the relevancy of the CCEP examination process in light of the March 1991 demolitions at Khamisiyah, Iraq. A report is expected this year.

As of February 1997, 39,706 have requested participation in the CCEP. This number includes 10,379 individuals who have requested registration without examination.

Expanded Department of Defense Investigative Efforts

Since November 1996, DoD has expanded its Gulf Illnesses Investigative Team from 12 to 110 people. This expanded organization is designed to add additional resources to help better understand what could be causing Gulf War illnesses. This greatly expanded team is building upon the very valuable work accomplished thus far by many organizations throughout DoD. The team is composed of representative elements of critical DoD components to ensure that research and analytical efforts and outreach programs are effective, coordinated and meaningful.

In March 1995, DoD established a declassification effort encompassing research, medical, operational and intelligence records that could increase understanding of the causes of Gulf War illnesses. By March 1997, the DoD declassification project had reviewed over 5.5 million pages of operational information. Approximately 794,000 pages were provided to the Analysis and Investigation Team for further review. About 64,256 pages of information were posted on the GulfLINK World Wide Web home page.

In June 1996, DoD announced that U.S. troops destroyed large quantities of ammunition at Khamisiyah, a sprawling ammunition storage site in southern Iraq shortly after the Gulf War ended. Evidence that chemical weapons may have been among the munitions destroyed on March 4 and 10, 1991, has triggered an intensified effort on the part of DoD to reconstruct the events at that time. DoD released an interim narrative of events at Khamisiyah on Feb. 25, 1997. Additionally, the Army Inspector General is conducting an in-depth inquiry into all the events and activities surrounding Khamisiyah. The Assistant Secretary of Defense for Intelligence Oversight is looking into the handling of intelligence information about Khamisiyah.

In October 1996, the DoD announced a series of actions to seek the help of 20,000 Gulf War veterans who may have been near Khamisiyah, Iraq during the period March 4 - 15, 1991. The expanded outreach actually began in August 1996 when DoD began contacting 1,168 U.S. service members assigned to units involved in the March 4, 1991, demolition at the Khamisiyah bunker.

Veterans are being asked to call the DoD Gulf Veterans hotline numbers to report any medical problems they may be experiencing and provide any information they believe is pertinent to this event. The incident reporting hotline number is 1-800-472-6719.

The National Academy of Sciences has agreed to advise DoD on its overall approach to Gulf War Illnesses and to recommend any needed changes to that approach.

No Unusual Contagions Identified

The Persian Gulf Veterans Coordinating Board has carefully reviewed the clinical and scientific information available at this time and concludes that there is no scientific basis for claims that the illnesses of Persian Gulf veterans are caused by an infectious disease. In tens of thousands of protocol medical examinations of Persian Gulf veterans to date, neither VA nor DoD medical authorities have found evidence of infectious diseases beyond the range of illnesses common in the population at large. Research studies now in progress will provide more scientific answers to this question, but no published research to date has established a scientifically reproducible link between Gulf War veterans' illnesses and an infectious agent.

CDC has advised the American Association of Blood Banks it has found no evidence at this time to suggest unexplained symptoms of Persian Gulf veterans are due to infection. No characteristic infectious agent has been identified in ill veterans, no epidemiologic evidence suggests unusual rates of any infectious agent and there is no scientific study demonstrating secondary transmission to family contacts.

More than 30 U.S. servicemembers were diagnosed with leishmaniasis, a sandfly-borne infectious disease endemic to the Persian Gulf region; however, it is unlikely to be a major contributing cause to undiagnosed illnesses. Leishmaniasis itself is not transmitted from person to person.

All plausible hypotheses related to potential causes of Gulf War illnesses will be examined by federally sponsored research projects. Private scientifically valid research is encouraged as well.

Research Activities

The federal government has steadily expanded research into the illnesses reported by Gulf War veterans, including the latest portfolio of 17 studies that include both non-federal researchers, federal agencies and academic institutions. The compendium of new projects brings to more than 90 the total of federally supported research projects. The research agenda is detailed in the November 1996 update to *A Working Plan for Research on Persian Gulf Veterans' Illnesses*. The new initiative results from a nationwide request for protocols that brought a broad response of 111 scientific proposals. The proposed investigations were reviewed by independent panels of experts and graded for scientific merit and for program relevance to key questions surrounding health issues of Gulf veterans. The Persian Gulf Veterans Coordinating Board, through its Research Working Group, has intensified efforts related to possible effects of low-level exposures to chemical warfare agents. Based on the Coordinating Board's recommendation, three new peer-reviewed, basic science research projects in this area have been funded, and an additional $2 million has been identified for future studies.

During fiscal year 1996, DoD committed $12 million of DoD funds for research involving Persian Gulf health issues as designated by the *Working Plan for Research on Persian Gulf Veterans' Illnesses*. Five million dollars of DoD/VA sharing funds were specifically designated to study the possible health effects related to subclinical exposure to chemical warfare agents. In fiscal year 1997, DoD is committed to obligating at least $27 million for Persian Gulf health-related research. Of the $27 million, about $20 million is for research on the health effects of possible exposure to chemical warfare agents and other possible exposures, and DoD is currently awaiting the independent proposal selection process. The remaining $7 million supports other Persian Gulf health-related research.

The *Working Plan for Research on Persian Gulf Veterans' Illnesses* identifies major research questions and gaps in current knowledge, and required research that will close the gaps between what is known and what is needed. Among the 21 key research questions listed in the plan, the one identified as most important is the determination of whether Persian Gulf veterans are experiencing a greater prevalence of illnesses in comparison with an appropriate control population. Thirteen controlled scientific studies are being funded to address that question. Additional research goals include identifying possible risk factors for any excess illness or death, as well as finding appropriate diagnostic tools, treatment methods, and prevention strategies for any conditions found. The research plan helps coordinate federally sponsored research to ensure all the relevant research issues are targeted and unnecessary duplication is avoided.

Some Persian Gulf veterans have expressed concern about birth defects in their children. While there are no current data supporting an increased rate of birth defects in the children of Persian Gulf War veterans, this is an important research question and deserves extremely careful review. A study conducted by the Mississippi State Department of Health in conjunction with the Centers for Disease Control and Prevention (CDC) and the Jackson, Miss., VA Medical Center showed no increase in birth defects or illnesses among children born to Persian Gulf veterans in two National Guard units. In addition, preliminary results of DoD epidemiologic research demonstrate no increase in the overall rate of birth defects among children born after active duty servicemembers returned from the Gulf compared to children of a control group of active duty service members who did not serve in the Gulf. Ongoing DoD, VA and CDC studies are examining the issue of birth defects, reproductive health, and family health status. Because of the broader importance of reproductive health to veterans, VA, in collaboration with the University of Louisville, established a fourth environmental hazards research center at the Louisville, Ky., VA Medical Center focusing on reproductive and developmental outcomes in both Vietnam and Persian Gulf veterans.

Research Studies and Evaluations

- A panel of nongovernment experts brought together at a ***National Institutes of Health***-sponsored workshop in April 1994 examined data and heard from both veterans and scientists. The panel concluded that no single cause or biological explanation for the reported symptoms could be identified and indicated that it was impossible at that time to establish a single case definition for the health problems of Gulf veterans.

- VA and DoD contracted with the ***National Academy of Sciences*** to review existing scientific and other information on the health consequences of Gulf operations. An interim report was issued Jan. 4, 1995, and the final report was published in October 1996.

• The ***Naval Medical Research Center*** in San Diego, in collaboration with VA investigators, is conducting epidemiological studies comparing Gulf veterans and control-group veterans (who served elsewhere) to detect differences in illnesses, hospitalizations, and birth outcomes in large cohorts of active duty service members.

• In its ***National Health Survey of Persian Gulf Veterans,*** the VA is conducting a mail survey of a random sample of 15,000 Persian Gulf veterans and active duty members with Gulf service to compare their health status with an equal-sized group not deployed to the Gulf. Results of initial responses now are being analyzed. Information on the health status of family members also is included, including birth outcomes and illnesses in the children born to veterans in the survey. A health examination will be offered to a representative sample to help evaluate participants' symptoms.

• CDC, in collaboration with the University of Iowa and the Iowa Department of Public Health, conducted a telephone survey of 3,695 active and retired ***military personnel from Iowa*** and found that Persian Gulf veterans reported significantly higher rates of certain medical and psychiatric conditions than their counterparts in the military who were not deployed to the Persian Gulf. The results of this CDC-funded study appear in the Jan. 15, 1997, issue of the *Journal of the American Medical Association.*

• CDC also is studying a group of ***Air National Guard Persian Gulf War veterans*** in the state of Pennsylvania for any pattern of unusual illnesses. In the June 16, 1995, *Morbidity and Mortality Weekly Report,* the CDC said preliminary findings indicate that some chronic symptoms were reported more commonly by Persian Gulf War veterans than by nondeployed Persian Gulf War-era service personnel. However, standardized physical examinations and reviews of laboratory test results did not reveal consistent abnormalities. Final results of the study will be published within a few months.

• VA has analyzed cause-of-death data gathered from death certificates for its ***Mortality Followup Study of Persian Gulf Veterans,*** comparing Gulf-deployed veteran non-combat deaths with a control group of troops never deployed to the Gulf. As has been observed after other wars, veterans of the Persian Gulf War have experienced a higher incidence of death due to accidents. When this contributing factor is excluded, Persian Gulf veterans have not experienced a higher mortality rate due to disease-related causes. Both the Persian Gulf and non-deployed control group veterans had a lower death rate than Americans their age in general. A report was published Nov. 14, 1996, in the New England Journal of Medicine.

• VA established four ***environmental hazards research centers*** with an initial focus on the possible health effects of environmental exposures of Persian Gulf veterans. The centers are located at VA hospitals in Boston; East Orange, N.J.; and Portland, Ore. The centers are being funded for five years with a total annual budget of approximately $1.5 million and an additional $300,000 for equipment costs in the first year of operation. A total of 14 individual protocols are scheduled on a variety of interdisciplinary projects. A fourth environmental hazards research center focused on reproductive outcomes was announced in November 1996 to be located in Louisville, Ky.

- The Baltimore VA Medical Center is following the health status of individuals who retained embedded fragments of ***depleted uranium*** from injuries sustained during the Persian Gulf War.

- The Birmingham VA Medical Center is conducting a clinical evaluation program that includes an extensive battery of neurological tests aimed at detecting the kind of dysfunction that would be expected after ***exposure to nerve agents***.

- DoD will study the effects of chemical/environmental exposures.

- DoD and VA are continuing work in developing a less invasive test for ***viscerotropic leishmaniasis*** that may provide for broader diagnostic screening in the future.

- DoD has developed a ***geographic information system*** (GIS), or troop location registry, that contains location information on more than 4,000 units from all Services. The GIS allows military unit locations during Operation Desert Storm to be compared with air quality measurements, reported SCUD attacks, chemical/biological weapon detection reports, weather reports and other factors. This data was used to identify units in the Khamisiyah area.

- Both VA and DoD are continuing to examine the role of stress from deployment and ***post-traumatic stress disorder***, with a goal of developing intervention strategies.

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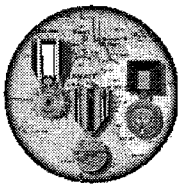

About GulfLINK

GulfLINK is the official World-Wide Web Information Service from the **Office of the Special Assistant for Gulf War Illnesses** in cooperation with the Defense Technical Information Center (DTIC). The information provided in GulfLINK is publicly released information. The purpose of GulfLINK is to provide the public with recently-declassified documents that may have potential relevance to the illnesses affecting Gulf War Veterans.

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- About the GulfLINK Document Collection

About the Office of the Special Assistant for Gulf War Illnesses

The Persian Gulf War Veterans' Illnesses Senior Level Oversight Panel Investigative Team was created in March 1995 to oversee Department of Defense (DoD) initiatives on Persian Gulf War Veterans' Illnesses. Please see the Deputy Secretary of Defense memorandum which created this Panel.

The first initiative is the review and declassification of intelligence, operational and medical records related to possible sources of Persian Gulf War Veterans' Illnesses. The following DoD officials were given overall responsibility for the declassification efforts: The Secretary of the Army for all operational records, the Assistant Secretary of Defense for Health Affairs for all medical records, and the Director of the Defense Intelligence Agency for all intelligence records.

The second initiative establishes a "1-800" telephone line for veterans who want to report incidents they believe may have led to a medical problem they or others have experienced since returning from the Persian Gulf. The line became operational on May 30, 1995 and is operated by the Defense Manpower Data Center in Seaside, CA. The number is 1-800-472-6719.

The third initiative is the creation of an interdisciplinary Investigative Team to analyze medical, operational and intelligence records related to

possible causes of Persian Gulf War Veterans' Illnesses. The Team is under the authority, direction, and control of the Assistant Secretary of Defense for Health Affairs.

The fourth initiative establishes a DoD Senior Level Oversight Panel chaired by the Deputy Secretary of Defense and supporting staff to oversee these efforts.

About the GulfLINK Document Collection

Readers will eventually find the complete spectrum of operational traffic such as directives, plans, status reports, daily mission reports, logistics, intelligence, personnel, and on-going operations summaries in GulfLINK. GulfLINK currently contains a subset of these documents and will be updated frequently as more information is available. Please see the Database Description for further information.

The documents released have been reviewed for operational security, intelligence, Freedom of Information Act (FOIA), and Privacy Act concerns and annotated accordingly. Please see the Explanation of Exemption Codes for more information regarding these annotations.

The Investigative Team will analyze Persian Gulf illnesses-related classified and declassified records, and help respond to reports of Persian Gulf War incidents that might have resulted in illnesses. The team is soliciting first-hand information via the "800" telephone line from individuals reporting on incidents and exposures as a result of service in the Persian Gulf War. The team will investigate and analyze:

- DoD records in the medical, operational, and intelligence communities that could relate to possible causes of Persian Gulf War Veterans' Illnesses, in order to help insure timely and reasonable investigation of links between service in the Persian Gulf War and possible illnesses related to that service. Records to be examined include unit logs, records, reports, files, and any other relevant Department information.

- Anecdotes related to Persian Gulf exposure and illness forwarded by persons who served in the Persian Gulf and any additional anecdotal information developed as a result of Team inquiries and responses.

- Theories advanced regarding possible Persian Gulf illnesses and causes.

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Mr. SHAYS. Thank you, Dr. Rostker. Mr. Walpole.

Mr. WALPOLE. Thank you, Chairman Shays, Congressman Sanders. I appreciate the opportunity, as well, to appear before you today to discuss CIA's and the intelligence community's efforts on the issue of Gulf war veterans' illnesses and possible exposure of some of those veterans to chemical weapons agent. We know how important this issue is to veterans, and that our intelligence is essential to understanding what occurred during and immediately after the war.

In fact, I would like to submit for the record a copy of the Khamisiyah historical perspective paper and the 41 documents that we released with that, because it helps understand what was known about Khamisiyah since 1976 on that issue. In response to President Clinton's tasking to his advisory committee on Gulf war veterans illnesses, and after determining that the issue required additional resources, George Tenet, Acting Director of Central Intelligence, appointed me his Special Assistant. And that was on February 27.

So, from that point it was a new position. And he asked me to have a task force running by March 3. Since that time, we have made efforts to keep the staff of this subcommittee as well as several other committees apprised of our efforts. The purpose of our efforts is to help find answers as to why the veterans are sick. And I particularly appreciate the couple of hours spent this morning with some of those veterans. It helps keep our focus on that purpose. We're supporting numerous Government efforts on this issue and are searching for any intelligence we have in our files that can help answer those questions.

Let me turn first to our mission. Our mission is to provide aggressive, intensive intelligence support to the numerous efforts underway within the Government. We have 50 officers serving on the task force from across the intelligence community. That's from the Central Intelligence Agency, the Defense Intelligence Agency, National Security Agency, and the National Imagery and Mapping Agency. We also have individuals from Department of Defense's Office of the Special Assistant for Gulf War Illnesses as well as the Assistant to the Secretary for Intelligence Oversight. The task force is managing and reviewing all intelligence aspects related to this issue, with the goal of getting to the bottom of it.

Specifically, the task force provides intelligence support across several fronts. On the document side, that's search, declassification and sharing of those documents. And the 41, I mentioned earlier, are part of that declassification effort. On modeling support, on committees with the Department of Defense, the President's Advisory Committee, you here on the Hill, veterans groups, and others in the Government.

And, finally, on supportive analysis. This is the first time that we have fully integrated an analytical component into a task force on this issue. This gives us an opportunity to run to ground any threat of information that we find that might be of interest on this issue, as well as to provide papers that provide analytical context to the documents that we release. And the historical perspective is one example of that. Another was released on March 18, in Salt Lake City in the hearing with the PAC, when we prepared a one-

page paper telling a little bit about Khamisiyah and the demolition there.

And we included photographs on this to support that—was to see if we could get any veterans to come forward that recalled this site and could provide any further information to us. At that time, we only had two soldiers that we were able to interview and sort out what was going on in the pit. And there was a lot of confusion. I'll get to that later. In fact, this morning, when we heard Major Donnelly mention that he had a video tape of Khamisiyah from the air. That could be helpful in our modeling efforts. That could be helpful in determining what happened. If the tape was either before demolition occurred or after, it could provide significant information for us on that.

The day after we released that particular document DOD received numerous calls on the 1–800 number. Some recalled having been at Khamisiyah. Those kinds of efforts have been helpful in helping this effort move along. I'm aware that this subcommittee is interested in our modeling efforts. And let me discuss that briefly. Several developments have occurred in this area that I'd like to elaborate on. To begin with, in the past we were able to model the demolition events or the bombings at Al Muthanna, Muhammadiyat and Bunker 73, largely because we had ground tests back in the 60's that let us know what happened to an agent when it was destroying inside of a building.

When we turned our efforts to modeling, to the pit, we quickly realized that the uncertainties were significant, particularly how the rocket warheads would react in a demolition in an open pit. We're also uncertain about the number of events that occurred. We believed in March, when I testified in Salt Lake City, on the basis of limited and often contradictory data, that two events were more likely than one. These data included a military log entry indicating the March 12 demolition occurred, and then contradictory stories from two soldiers and an UNSCOM video tape.

CIA and DOD have devised a joint plan to reduce some of those uncertainties. This plan includes additional soldier interviews and simulation testing. We've conducted several other interviews. In fact, we've more than doubled the number of soldiers that recall being in the area, and have met with them. And one of the things that they've indicated to us was that the log in question was completed after the fact and that we should not rely on the March 12 date. When we learned that—and questioning that March 12 entry—the only prudent course was to model one event. And so we're now back to modeling one event on March 10.

Now, if we receive further information and if the video tape sheds light on this—that could be some of that further information—of course we'll modify the approach. We're also jointly developing tests with the Department of Defense to destroy rockets containing CW agent simulants in an open pit environment. We expect this to provide us invaluable data on how the agent would react in that environment, similar to the data we had on earlier testing and buildings. And then we would plan to publish these modeling results by the end of July.

During our initial efforts on Khamisiyah, we determined that certain intelligence documents were critical to answering the ques-

tions: what did the intelligence community know when, and what did we do with that information? We began briefing these documents to the Presidential Advisory Committee and appropriate congressional committees. We also began simultaneous efforts to declassify key papers and to search for other material relevant to these questions. As the work progressed, we determined that an unclassified paper documenting the historical perspective on this would be valuable to anyone looking at those documents.

The paper, which was released on April 9, provides details about the intelligence community's knowledge before, during and after the war relative to Khamisiyah. The documents released and the Khamisiyah paper do not change our judgment that Iraq did not use chemical weapons during Desert Storm. Nor does it change the fact of our warnings that Iraq would likely deploy chemical munitions to the theater and would be prepared to use them. Nor that they did not mark their chemical munitions.

In detailing the historical perspective, the paper and documents illustrate warnings the intelligence community provided to CENTCOM elements including J–2, targeting elements, ARCENT, the U.S. Marine Corps and Air Force representatives prior to the demolition activities in March 1991. At the same time, however, the paper illustrates that intelligence support, particularly in the areas of information sharing and analysis, should have been better. The task force is preparing recommendations to address these problems, and will continue to assess how we ensure that they do not occur in the future.

On other document efforts, we're continuing document searches on Iraqi CW sites as well as any intelligence related to potential biological warfare, radiological exposure and environmental issues. We're using the original search criteria that previous task forces have used, but we have not augmented those criteria by extending the timeframes and topical search terms. Intelligence that we find that sheds light on the veterans' illnesses and will help the Presidential Advisory Committee, Persian Veterans Coordinating Board and others understand these issues will be identified and declassified.

Any documents that cannot be released for reasons of national security will be delivered to relevant U.S. Government agencies, the President's Advisory Committee and congressional committees that are following the issue. We also plan to write analytical papers similar to the one I mentioned here, to help readers put all of the information into context.

In conclusion, I want to reiterate George Tenet's commitment, the commitment in the intelligence community and my personal commitment to the men and women who served this country in the Persian Gulf. We owe them a full and accurate accounting of what happened. To that end, the intelligence material we released on Khamisiyah gives the veterans and the American citizens a clearer understanding of what we knew and how we used that material. Helping relevant agencies determine what is making some of our Gulf veterans ill is critical and will remain our central focus. We

stand behind our contributions to national security, and are working to enhance our support for the future. Thank you.

[Note.—The report entitled, "Khamisiyah: A Historical Perspective on Related Intelligence," can be found in subcommittee files.]

[The prepared statement of Mr. Walpole follows:]

Introduction

Chairman Shays and members of the subcommittee, I am pleased to appear before you today to discuss CIA's and the Intelligence Community's efforts on the issue of Gulf war veterans' illnesses and the possible exposure of some of those veterans to chemical weapons agent. We know how important this issue is to the veterans, and that our intelligence is essential to understanding what occurred during and immediately after the war.

In response to President Clinton's tasking to his Advisory Committee (PAC) on Gulf War Veterans' Illnesses, and after determining that the issue required additional resources, George Tenet, Acting Director of Central Intelligence, appointed me his Special Assistant on this issue on 27 February, and asked me to have a Task Force running by 3 March. Since that time, we have kept the staff of this subcommittee, as well as several other committees, apprised of our findings and actions. The purpose of our efforts is to help find answers to why the veterans are sick. We are supporting numerous government efforts on this issue, and are searching files for any intelligence that can help.

First I will discuss the mission and scope of the task force, and our progress to date, including our modeling and search efforts, and the recent release of documents and publication of our paper on Khamisiyah.

Mission and Scope

The mission of this Task Force is to provide intensive, aggressive intelligence support to the numerous US Government efforts currently investigating Persian Gulf war illnesses issues. Fifty officers are serving on the task force, drawn from across the Intelligence Community--CIA, NSA, DIA, and NIMA--and from DoD's Offices of the Special Assistant for Gulf War Illnesses and Assistant to the Secretary for Intelligence Oversight. We have made considerable progress in addressing this mission during our first several weeks.

The task force is managing and reviewing all intelligence aspects related to this issue with the goal of "getting to the bottom" of it. Specifically the task force provides intelligence support across several fronts:

- Documents--search, declassification, and sharing;
- Modeling support;
- Communications with DoD, the PAC, the Hill, veterans' groups, and others; and
- Supportive analysis.

This is the first time we have fully integrated an analytical component into a task force on this issue to run to ground every thread we uncover on the issue, and to prepare papers providing the analytical context surrounding relevant material.

An example of this group's efforts was disseminated a few weeks ago in Salt Lake City at the Presidential Advisory Committee meeting. It is a one-page paper concerning the release of chemical warfare agent at Khamisiyah during March 1991. The day after the meeting, DoD received numerous calls on the 1-800 number, some from veterans who recall being at Khamisiyah. This is an important step forward in trying to determine exactly what happened at Khamisiyah and to address veterans' concerns about their possible exposure to chemical agent.

Modeling Support

I am aware that this subcommittee in particular has been very interested in CIA's modeling efforts. Several developments have occurred in this area that I would like to elaborate on. To begin with, in the past, we were able to model the events at Al Muthanna, Muhammadiyat, and Bunker 73 at Khamisiyah largely because we had US test data indicating how the agent would react and release when structures in which it was stored were bombed or detonated. However, when we turned to modeling demolitions at the pit, we quickly realized we had significant uncertainties regarding how rockets with chemical warheads would have been affected by open-pit demolitions. We were also uncertain about the number of demolition events and the weather conditions at the time of the demolitions. We believed, on the basis of the limited and often contradictory data we had, that two demolition events were more likely than one. These data included a military log entry for destruction on March 12, the contradictory stories from two soldiers, and an UNSCOM video tape.

CIA and DoD have devised a joint plan which will reduce some of these uncertainties in order to more accurately identify the extent of the release. This plan includes additional soldier interviews and simulation testing. We have conducted several interviews with soldiers who recall important information about the demolition event, particularly how and when it occurred. These interviews called into serious question the log's credibility; we learned it was prepared after the fact and that we should not rely on the 12 March date. With the log's credibility in question, the prudent approach would be to model one event that occurred on March 10; from a modeling perspective, this would be true whether the demolition occurred as two events at the same time. If we receive further information on what actually happened in the pit, we will modify this approach. We are also jointly developing tests with the Department of Defense to destroy rockets containing CW agent simulants. We expect this to

provide us invaluable data on how the agent would react in an open-pit demolition, similar to the data earlier testing had provided for detonations in buildings. We plan to publish the modeling results by the end of July.

Khamisiyah Paper

During our initial efforts on Khamisiyah, we determined that certain intelligence documents were critical to answering the questions--what did the Intelligence Community know when, and what did we do with that information. We began briefing these documents to the PAC and appropriate Congressional Committees. We also began simultaneous efforts to declassify key papers and to search for other material relevant to the questions. As this work progressed, we determined that a paper detailing the historical perspective would be useful to accompany the release of the documents we were declassifying. The paper, released on 9 April, provides details about the Intelligence Community's knowledge of Khamisiyah before, during, and after the war.

The documents released and the Khamisiyah paper written to accompany them do not change our judgment that Iraq did not use chemical weapons during Desert Storm; nor our warnings that Iraq would likely deploy chemical weapons to the theater and be prepared to use them, and did not mark its chemical munitions. In detailing the historical perspective, the paper and documents illustrate warnings the Intelligence Community provided to CENTCOM elements--including J-2, targeting, ARCENT, and US Marine Corps and Air Force representatives prior to demolition activities in March 1991. At the same time, the paper illustrates that intelligence support—particularly in the areas of information sharing and analysis—should have been better. The Task Force is preparing recommendations to address these problems and will continue to assess how we ensure they will not occur in the future.

Document Efforts

We are conducting document searches on other Iraqi CW sites as well as any intelligence related to potential biological warfare and radiological exposure, and environmental issues. We are using search criteria developed by previous task forces and expanding them by adding related topical search terms and increasing the range of dates to be searched. Intelligence we find that sheds light on or can help the Presidential Advisory Committee, Persian Gulf Veterans Coordinating Board, veterans and public understand Gulf war illnesses issues will be identified and declassified. Any documents that cannot be released for reasons of national security will be delivered to relevant US Government agencies, the Presidential Advisory Committee, and Congressional Committees that are following this issue. We also plan to write analytic papers to try to help the readers put all of the information into context. The first of these papers was released two weeks ago.

Conclusion

In conclusion, I want to reiterate George Tenet's and the Intelligence Community's commitment to the men and women who served this country in the Persian Gulf. We owe them a full and accurate accounting of what happened during the final days of Desert Storm and in the following days and weeks before their return to the United States. To that end, the intelligence material we released on Khamisiyah, including the paper outlining the related historical perspective, gives the veterans and American citizens a clearer understanding of what we knew, and how we used this material to prepare and to warn our forces. Helping relevant agencies determine what is making some of our Gulf war veterans ill is critical and will remain our central focus. We stand behind our contributions to national security and are working to enhance our support for the future.

Subject: SUBJ: FIRST IDENTIFICATION OF TALL AT LAHM, 1976
Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

NEW WORKSHEET

DATA ENTRY

0445-30

SUGGESTED SERIES NUMBER VALIDATED

NO	BE	NAME OF TARGET (38 SPACES)	COUN
$$$0445-30	$DA0006	TALL AL LAHM AMMO DEPOT	12

DATE
7609

$GSDES: 2.4 nm EAST OF TALL AL LAHM AND 6.5 NM SOUTH OF SUG ASH SNUYK THE AMMO DEPOT CONSISTS OF AMMO STORAGE BUNKERS UNDER CONSTRUCTION, CONSTRUCTION SUPPORT BUILDINGS, VEHICLE SHEDS, AND NUMEROUS PIECES OF SUPPORT EQUIPMENT AROUND THE AREA.

1.5(c)
95627:95627

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28 APR 82

AMMUNITION DISPERSEMENTS TO IRAQI EASTERN DEPOTS AND DUMPS

AL KHAMISHIYAH ((UNLOCATED)): AMMUNITION DEPOT

AN NASIRIYAH ((3102N 04616E)): AMMUNITION DEPOT

2,000 SHELLS FROM AL SA'D AMMUNITION DEPOT TO AL KHAMISIYAH AMMUNITION DEPOT

1,000 130MM FULL CHARGE SHELLS FROM KHAMISIYAH AMMUNITION DUMP

95512:95512
1.5(c)

16 AUG 82

IRAQI AMMUNITION DISBURSEMENTS TO EASTERN AREAS

((AN NASIRIYAH 3102N 04616E))

AL KHAMISIYAH ((3046N 04629E)): AMMUNITION DEPOT

AN NASIRIYAH ((3102N 04616E)): AMMUNITION DEPOT

1000 SHELLS TO AN NASIRIYAH AMMUNITION DEPOT

130 MM FULL CHARGE AMMUNITION FROM AMMUNITION DEPOT TO THE GROUPS BELOW AS FOLLOWS:
200 SHELLS TO AL KHAMISIYAH AMMUNITION DEPOT.
100 SHELLS TO AN NASIRIYAH AMMUNITION DEPOT.

94777:94777
1.3 (c) ——

136

Subject: SUBJ: REPORT MENTIONING CHEMICAL WEAPONS AT KHAMISYAH, MAY 1986
Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

SUBJECT:

THE FOLLOWING EXCERPT IS FROM THE LAST PAGES OF A LENGTHY OFFICIAL IRAQI DOCUMENT REGARDING ITS CHEMICAL WEAPONS' PRODUCTION PLANTS. IT WAS WRITTEN IN LATE 1985 AND OBTAINED BY THE CIA IN MAY 1986

ARTILLERY GRENADES

A. 3,975 155MM MUSTARD LOADED ARTILLERY GRENADES HAVE BEEN ISSUED (FROM JUNE 1984 TO MARCH 1985) TO AL-KHAMISIYAH WAREHOUSES. WE DO NOT HAVE OFFICIAL DATA ABOUT USING THIS QUANTITY BY THE THIRD ARMY CORPS. THE

WAREHOUSES CURRENTLY HAVE 6,293 150MM MUSTARD BOMBS, ENOUGH TO MEET FRONT DEMANDS FOR FOUR DAYS ON A 15-MINUTE MISSION. THIS IS BASED ON 155MM AUSTRIAN ARTILLERY BATTALIONS (FIVE BATTALIONS) ASSIGNED TO CHEMICAL WEAPONS. SUPPOSING THAT ALL THESE BATTALIONS ARE ASSIGNED TO A CORPS SECTOR, THEY CAN FIRE 1,620 BOMBS IN 15 MINUTES, THE TIME REQUIRED TO FIRE CHEMICAL WEAPONS.

IF THE NEED TO USE 155MM SARIN BOMBS SHOULD ARISE, 857 BOMBS CAN BE LOADED WITH END PRODUCT FROM AVAILABLE SUPPLIES (3,000 LITERS) IN THREE DAYS IN THREE SHIFTS A DAY (EIGHT HOURS A SHIFT). IN ADDITION, 12,571 155MM SARIN BOMBS CAN BE LOADED IN THE NEXT FIVE MONTHS (USING 44,000 LITERS OF SARIN TO BE PRODUCED DURING THESE MONTHS) OR AN AVERAGE OF 2,514 BOMBS A MONTH. THIS QUANTITY IS WITHIN THE CAPABILITY OF THE FIVE ARTILLERY BATTALIONS AND WITHIN THE LOADING TIME.

1.5(c)
95629:95629

Subject: SUBJ: IRAN-IRAQ: CHEMICAL WARFARE CONTINUES, NOVEMBER 1986
Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

IRAN-IRAQ: CHEMICAL
WARFARE CONTINUES

AN INTELLIGENCE ASSESSMENT

NOVEMBER 1986

Iran-Iraq: Chemical Warfare CONTINUES

Key Judgments
Information available
as of October 1986
was used in this report.

Reliable reporting indicates that Iraq has used lethal chemical weapons (CW) against Iran numerous times since its first use of the blister agent mustard in August 1983. More recently, Iraq used CW, including nerve agents, throughout the February-March 1986 Iranian offensives, causing Iran to suffer about 8,000 CW-related casualties. Although CW use in these offensives has been heavier than in previous years, it has had a less definitive effect on the course of battle. This decrease in effectiveness has resulted from:

- Poor tactical employment.
- Lessened element of surprise.
- Increased Iranian preparedness.
- Possible problems with munitions, agents, and delivery techniques.

Iraq has not yet mastered the tactical use of chemical weapons, and we believe its proficiency in using these weapons will improve only marginally with increased experience. Despite the heavy usage, these chemical weapons have neither stopped the Iranian advance nor ensured a successful Iraqi counterattack. We doubt that their use will be a major factor in deciding the outcome of the war.

Iraq now possesses one of the largest chemical weapons inventories in the Middle East and has the production capacity in place to increase its stockpile significantly over the next few years. These capabilities provide Iraq a substantial potential to supply others with chemical warfare agents and technology. We believe, however, that the current regime in Iraq is unlikely to become a supplier, but the potential to do so remains.

Because the political costs of continued CW use have been so small, we doubt that Iraq will abandon its use of chemical weapons in the foreseeable future. Furthermore, Iraq probably has now made sufficient progress in its chemical weapons program to render it relatively immune to the foreign trade restrictions. US and Western nations' efforts to embargo Western precursor chemicals have not, and probably will not, curtail Iraq's CW

progress.

Iran-Iraq: Chemical
Warfare Continues

The Forecast: Continuation of the Same

We believe Iraq will continue to wage chemical warfare as it has in the past because Baghdad recognizes that chemical weapons (CW) can create significant numbers of casualties. The Iraqi use of these weapons is unlikely to be a MAJOR FACTOR IN THE outcome of the war, however.

NONETHELESS, WE EXPECT
Iraq to use INCREASINGLY Greater amounts of agent per attack in an effort to keep Iranian losses high. Iraq's continually growing agent production capacity, particularly of nerve agents, will support such a strategy. Furthermore, Baghdad's increasing experience with chemical weapons use should marginally improve its tactical employment of chemical weapons.

Iraq intends to continue and,
in fact, to expand its CW agent production capability
The Iraqis are becoming more sophisti-
CATED AND SELF-RELIANT in their CW agent research and production efforts. Iraq probably has now made sufficient progress in its chemical weapons program to render it relatively immune to foreign trade restrictions. US and Western nations' efforts to embargo Western precursor chemicals probably slowed the Iraqi chemical warfare program somewhat and imposed greater costs, but these efforts have not, and probably will not, curtail its progress. Most production equipment is in place, Iraq Is using numerous front companies and friendly states to circumvent tHe Western embargoes on precursor chemicals. Moreover, even if the Western embargoes were effective and IraQ's ability to procure supplies in Western EUROPE WERE ENDED, we believe Iracl would turn to
FOR SUPPLIES of
all required chemicals

Of significant concern to us are Iraq's long-range intentions regarding its agent production capacity. The production units on line or undergoing installation provide Iraq a substantial potential to supply chemical warfare agents and technology; however, we judge it unlikely under the current regime in Iraq. The increasing number of nations in the Middle East and elsewhere that possess CW capabilities suggests that chemical weapons may once again be integrated into conventional weapons arsenals and that their use may become viewed as politically acceptable.

Conventional Use of Chemical Warfare

Iraq's Learning Curve

Iraq has used lethal chemical weapons--primarily in response to Iranian offensive actions--since August 1983. (Iraq had also used tear gas several times during 1982.) In August 1983 Baghdad used a limited amount of mustard against Iranians in northern Iraq extensive use of mustard in November of that year caused several hundred Iranian casualties and was instrumental in stopping an Iranian attack. Iraq subsequently employed mustard and the nerve agent tabun during the early 1984 Iranian offensive and again during the March 1985 offensive. The 17 March 1984 use of tabun was the first use anywhere of nerve agents in a conventional battle. Both mustard and tabun were used by Iraq in the Val Fair 8 and 9 offensives, which began in February 1986 (see inset)

Iraq's use of chemical warfare has reflected its overall defensive strategy. It has employed chemical agents during Iranian offensives and in support of Iraqi counterattacks. Chemical weapons have been used against Iran's frontline troops to disrupt attacks during the initial stages of battle. Subsequent use against frontline and rear-area troop concentrations caused casualties that stressed Iranian evacuation capabilities and generally hindered Iranian support operations.

We have not been able to derive any indicators of impending CW use.

The Iraqis have not always used their chemical weapons with great effectiveness. They have used them when the wind was blowing toward their own units and during daylight hours when the Iranians were more likely to be alert. Moreover, because Iran's major offensive successes usually have occurred during the rainy season, Iraq invariably has had to use its chemical weapons during unfavorable weather conditions.

Relying on aerial bombs as its primary means of delivery has also caused Iraq problems (see inset.) For reasons of personal security, Iraqi pilots often have not dropped enough chemical agent at any one time and place to be militarily effective. In addition, in the past Iraqi President Saddam Husayn personally dictated tactics, thereby inspiring Iraqi pilots to avoid loss of their aircraft by dropping their bombs from high altitudes, particularly over well-defended troop concentrations. In mid-1986, however, Iraqi pilots began to fly lower and take more risks in their normal bombing missions, and this approach may carry over to chemical attacks.

Reliable information indicates that Iraq's tactics mAy call for use of more than one agent at a time. Iranian victims have claimed simultaneous delivery of different sizes aND colors of chemical bombs, presumably with different agent fills. Some Western medical personnel believe tHe symptoms of the victims support simultaneous exposure to two or more different agents. The UN investigating team confirmed that mustard agent (shown by chemical analysis to be 95 percent pure) and tabun were used in the Val Fajr 8 and 9 offensives.

Utility Assessment: A Mixed Result

Despite the success of Iraq's initial use of chemical warfare during battles in 1983 and its gradually increasing familiarity with using chemical weapons, the effectiveness of its chemical attacks has been decreasing. This decrease has resultad from:
- Poor tactical employment.
- The lessened element of surprise.
- Increased Iranian preparedness.
- Possible technical problems with munitions, agents, and delivery techniques that the Iraqis are only now beginning to correct.

For example, despite heavy usage during the Val Fair offensives--we estimate 100 or more metric tons--chemical weapons neither stopped the Iranian advance nor ensured a successful Iraqi counterattack. Nonetheless, the use of chemical weapons has had a major impact on the character of the war.

decontamination, by ambulance, helicopter, aircraft, or other available meanS. A Iranian reports that, while evacuating CW casualties from an attack in March, the Pilots wore protective masks but not protective suits. In this instance none of the evacuation team were alleged to have been affected by the chemical agent, nor was any effort made to Decontaminate the helicopters. This fact indicates a low level of contamination or possibly the use of a nonPersistent agent.

CW Production Capabilities: Developing Apace

Iraq: Independent and Sophisticated

Iraq probably now possesses the largest chemical weapons capability in the Middle East and has the capacity to increase its stockpile significantly over the next few years. This has been accomplishED despite Western diplomatic pressure and economic sanctions against acquisition of requisite materials.

Analysis and modeling of Iraq's production facility lead us to estimate that Iraq is currently producing at least 6 tons per day of the blister agent mustard, between 1 and 2 tons per day of the nerve agent tabun, and limited amounts of the nerve agent saRin. In addition, it is researching production of the nerve agents soman, VG, and VX, AND the psyChochemicals BZ and EA3443.

Iraq's CW production facility is near the town of Samarra, northwest of Baghdad. Over the past year, four new CW agent production facilities were coMpleted at the SamaRrA complex. These facilities probably are for the production of mustard, tabun, and possibly saRin. However, they could also be used for small-scale production of soman, VX, EA3443, or BZ.

We assess that Iraq is developing the capability to produce indigenously key precursor chemicals and equipment from raw materials that are not uniquely associated with CW. This capability would effectively

circumvent any actions--except a total embargo--designed to constrain the Iraqi CW production program.

CW Depots: Growing in Capacity

Iraq has increased its CW munition storage capability substantially over the last six years.
eight new CW storage bunkers were completed adjacent to the Samarra' production facility during 1983. The eight bunkers have a total floorspace of about 4,000 square meters and serve as Iraq's main CW depot. Each bunker could store at least 200

500-kilogram bombs. In addition, a new generation of 16 bunkers will expand Iraq's capability to store CW munitions At six airfields and at three ammunition storage depots that are strategically located throughout the country.

The only bunker completed to date is at Tallil airfield in southern Iraq. Finished in early 1986,

The bunker at Tallil has over 500 square METERS OF FLOOR SPACE and could store about 200 500-kilogram bombs.

We expect that the next Iraqi chemical bunkers to be completed--probably within the next six months--will be two bunkers at AL Kut airfield and one bunker

each at the Ash Shu'aybah and Nasiriyah ammunition depOts. Completion estimates for the remaining seven bunkers are difficult because of the sometimes lengthy periods of inactivity at the sites.

Only within the last year have the bunkers at H-3 appeared to be externally complete and separately secured; the road network to the bunkers is also coMPLETE.

As early as 1982 analysis indicated that storage of chemical munitions probably was limited to one bunker at the Karbala' ammunition depot. Subsequent reporting suggests the presence of an additional one or two bunkers at the Kirkuk and Sulaymaniyah ammunition depots. While we have no confirmation that CW munitions are stored at the southern forward ammunition depot located at Tall al Lahm, we conclude that CW munitions must be stored there because of the heavy use of CW by Iraqi ground troops in the south.

Chemical Agents and Field Employment

In general the amount of agent delivered determines the extent of contamination and the number of casualties. The persistenCy of the specific agent varies depending on the type of munition used and the weather conditions. In all cases, given sublethal doses of an agent, incapacitation will occur to varying deGrees.

Blister Agents

Blister agents are primarily used to cause medical casualties. They may also be used to restrict use of terrain, to slow movements, and to hamper use of material and installations. These agents affect the eyes and tungs and blister the skin. Sulfur mustard and lewisite are TWo examples of blister agents. Most blister agents are inSidious in action; there is little or no pain at the time of exposure except with lewisite, which causes immediate pain on contact.

Mustard is preferred over lewisite because lewisite hydrolyzes very rapidly exposure to atmospheric moisture to FOrm a nonvolatile solid. This conversion lowers the vapor hazard from contaminated terrain and decreases the effectiveness of the agent through clothing. Lewisite is less persistent than mustard; however, persistency of both agents becomes very short under humid conditions.

Blood Agents

Blood agents are absorbed into the body primarily by breathing. They prevent the normal utilization of oxygen by the cells and cause rapid damagE to body tissues. Blood agents such as hydrogen cyanide (AC) and cyanogen chloride are highly volatile and in the gaseous state dissipate rapidly in air. Because of their high volatility, these agents are most effective when surprise can be achieved against troops who do not have masks or are poorly trained in mask discipline. In addition, blood agents are ideally suited for employment on terrain that the user hopes to occupy within a short time. Blood agents rapidly degrade the mask filter's effectiveness. Therefore, these agents could be used in combination with other agents in an attempt to defeat the mask's protective capabilities.

Nerve Agents

Nerve agents such as sarin (GB) and tabun (GA) are members of a class of compounds that are more Lethal and quicker acting than mustard. They are organophosphorus compounds that inhibit action of the enzyme cholinesterase. In suFFIcient concentration, the ultimate effect of these agents is paralysis of the respiratory musculature and subsequeNt death.

Nerve agents are extremely rapid acting aNd may be absorbed through the skin or through the respiratory tract: Exposure to a lethal dose may cause death within as LIttle as 15 minutes. These gases are used when immediate casualties are desired and to create a short-term respiratory hazard on the battlefield.

Bombs: The Preferred Delivery System

According to an Iraqi MIG-23 pilot, bombs are dropped in a random pattern from an altitude of 3,000 to 4,000 meters. Examination of bomb craters showed them to be 4 meters in diameter and 2 to 3 meters deep, with debris spread over a 20- to 30-meter radius. Mustard droplets were detected at distances of I00 to 200 meters from the craters.

In addition to bombs, Baghdad has chemical artillery shells for its 82-mm and 120-mm mortars and its 130-mm, 152-mm, and I55-mm guns. Furthermore, Iraq probably has the capability to deliver chemicals with 122-Mm rockets. Mustard agent has been delivered by all of these systems, while tabun has been delivered by aerial bombs only.

1.5(c)
95224:95224

Subject: SUBJ: REPORT IRAQI CW STORAGE LOCATIONS, AUGUST 1988
Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

Subject: The Following Excerpt is from a Reliable Intelligence Report on the iraqi CW Production and Stockpile Levels. The Information was Obtained and Disseminated by CIA in August 1988.

As of early 1988, Iraqi artillery shells, bombs, and rockets loaded with chemical warfare (CW) materials were stored either at Samarra, or in a large ammunition dump near the town of Muhammadiyat. This facility was located about 12 kilometers outside of Baghdad. Additionally, 122mm rockets temporarily were stored at the air base in Kirkuk for further transport to Sulaymaniyah.

1.5(c)
95626:95626

IRAQ: POTENTIAL FOR CHEMICAL WEAPON USE.

Filename:71726882
PATHFINDER RECORD NUMBER: 26882
GENDATE: 950605
NNNN
TEXT:
ENVELOPE CDSN = LGX140 MCN = 91032/13061 TOR = 910321012
OTTSZYUW RUEKJCS2674 0321010- --RUEALGX.
ZNY
HEADER O 011010Z FEB 91
FM JOINT STAFF WASHINGTON DC
INFO RUEALGX/SAFE
O 010600Z FEB 91
FM DIA WASHINGTON DC//IRAQ REGIONAL ITF//
TO DIACURINTEL
RUDPMAX/FAISA FT BRAGG NC
RUKGNLA/DLA CAMERON STA VA
RUDPTOC/XVIII ABN CORPS INTEL CEN.FT BRAGG NC
RUWJHRA/CDRUSAEPG FT HUACHUCA AZ
AIG 7011
AIG 7046
AIG 7033
RHMPOSP/SEVENTHFLT OSF
RHWZOSP/OSP EASTPAC
RHTMMCC/MMCC BCST
RHFTAAA/39SOW RHEIN MAIN AB GE
RHSEACR/CDR 2D ACR MAIN FWD
XMT CTF SIX ZERO
BT
CONTROLS
SECTION 01 OF 04
PASS: [(b)(2)]

SERIAL: DIM 37-91

BODY SUBJ: IRAQ: POTENTIAL FOR CHEMICAL WEAPON USE.
DOI: 25 JAN 91

KEY JUDGMENTS

1. COALITION ATTACKS ARE STEADILY ELIMINATING IRAQ'S CHEMICAL

WEAPON PRODUCTION AND FILLING CAPABILITIES. BASED ON BOMB DAMAGE
ASSESSMENTS, A 40- TO 50-PERCENT DEGRADATION IN IRAQ'S CHEMICAL PRODUCTION AND FILLING CAPABILITIES HAS BEEN REALIZED TO DATE.
2. IRAQ IS LIKELY TO RETAIN A SIGNIFICANT CHEMICAL WEAPON STOCKPILE FOR SOME TIME, ALTHOUGH ITS NERVE AGENT STOCKS ARE BEING
REDUCED BY SPOILAGE AND PROBABLY WILL BE MILITARILY INEFFECTIVE AFTER 31 MARCH. IRAQ'S BINARY STOCKS AND BLISTER AGENTS WILL REMAIN
TOXIC FOR A LONGER TIME.
3. THE PRINCIPAL THREAT OF CHEMICAL ATTACK IS FROM ARTILLERY AND MULTIPLE ROCKET LAUNCHER FIRE AGAINST COALITION GROUND FORCES.
THE LIKELIHOOD THAT CHEMICAL MUNITIONS WOULD BE AIR DELIVERED HAS BEEN REDUCED BY ALLIED AIR SUPERIORITY. IRAQ HAS TOO FEW SCUD CHEMICAL WARHEADS TO SUSTAIN THEIR USE.
4. ATTACKS ON IRAQ'S CHEMICAL AGENT PRODUCTION AND WEAPONS FILLING CAPABILITIES SHOULD BE CONTINUED. ELIMINATING FIRE SUPPORT ASSETS AND CHEMICAL STORAGE AREAS AT GROUND FORCE DEPOTS IS THE MOST EFFICIENT MEANS TO PREVENT TACTICAL USE OF CHEMICAL WEAPONS.

BACKGROUND

5. IRAQ HAS A SIGNIFICANT PRODUCTION CAPABILITY FOR BOTH NERVE AND BLISTER AGENT WEAPONS. THE IRAQI CHEMICAL WEAPON PRODUCTION
FACILITY AT SAMARRA HAS BEEN DAMAGED SERIOUSLY BY COALITION AIRSTRIKES; THE LOSS OF TWO OF THE THREE FILL BUILDINGS AND THE PARTS WAREHOUSES WILL GREATLY REDUCE IRAQ'S POTENTIAL TO REPLENISH
ITS CHEMICAL MUNITION STORES. FURTHER STRIKES AGAINST SAMARRA WILL BE REQUIRED TO ELIMINATE THIS CAPABILITY.
6. IRAQ IS NOT ABLE TO MAKE GOOD-QUALITY CHEMICAL AGENTS. TECHNICAL FAILURES HAVE REDUCED THEIR PURITY AND CAUSED PROBLEMS IN
STORAGE AND HANDLING. THIS IS A PARTICULAR PROBLEM FOR THE SARIN-TYPE NERVE AGENTS (GB AND GF). THESE BOTH CONTAIN HYDROFLUORIC ACID
(HF), AN IMPURITY THAT ATTACKS METAL SURFACES AND CATALYZES NERVE AGENT DECOMPOSITION. THIS LEADS TO METAL FAILURE AND LEAKS IN THE

AMMUNITION. INCREASING HANDLING HAZARDS. MUSTARD IS ALSO JUDGED TO
BE OF POOR QUALITY, BUT IT HAS LESS CORROSIVE IMPURITIES. LOWER PURITY SIGNIFICANTLY LIMITS SHELF LIFE AND REDUCES TOXIC EFFECTS WHEN THE MUNITION IS EMPLOYED.

7. IN WEAPONS WITH RELATIVELY SMALL FILL WEIGHTS, THE REDUCED PURITY AND LOSS OF TOXICITY THROUGH DILUTION PROBABLY WOULD NOT HAVE MUCH EFFECT ON THE WEAPON'S AREA OF COVERAGE. IN MUNITIONS
WITH LARGER FILL WEIGHTS (AERIAL BOMBS AND MISSILE WARHEADS), THE WEAPON'S LOSS OF POTENCY COULD REDUCE CONTAMINATED AREAS CONSIDERABLY. ENVIRONMENTAL FACTORS INCLUDING WEATHER AND TERRAIN
ALSO INFLUENCE THE EXTENT AND EFFECTIVENESS OF CONTAMINATION.

8. RECENT PRODUCTION. A CHEMICAL AGENT-WEAPONS PRODUCTION RUN
PROBABLY WAS CONDUCTED AT SAMARRA FROM MID-DECEMBER 1990 THROUGH
MID-JANUARY 1991. PERIODIC PRODUCTION RUNS ARE NEEDED TO REPLENISH
DETERIORATED NERVE AGENT STOCKS. THE IRAQI STOCKPILE'S TOTAL SIZE IS NOT KNOWN, BUT IT HAS BEEN ESTIMATED AT 300 TO 2,000 TONNES. THE
LARGER STOCKPILE SIZE IS BASED ON A LARGE PROPORTION OF MUSTARD IN
THE INVENTORY.

9. THE NERVE AGENT RECENTLY PRODUCED SHOULD HAVE ALREADY BEGUN
TO DETERIORATE. AND DECOMPOSITION SHOULD MAKE MOST OF THE NERVE
AGENT WEAPONS UNSERVICEABLE BY THE END OF MARCH 1991. IRAQ'S BINARY
STOCKS AND BLISTER AGENTS WILL REMAIN TOXIC FOR A LONGER TIME. THE RECENT PRODUCTION RUN AT SAMARRA COULD HAVE RESULTED IN NEW STOCKS
OF BINARY CHEMICAL MUNITIONS.

10. PRODUCTION FACILITIES. THE SAMARRA PRODUCTION COMPLEX, CONTAINED IN AN AREA OF ABOUT 25 SQUARE KILOMETERS, IS THE WORLD'S
LARGEST CHEMICAL AGENT PRODUCTION FACILITY. IT HAS FIVE RESEARCH/PRODUCTION BUILDINGS, SIX PRODUCTION BUILDINGS, FOUR

PRODUCTION BUNKERS, THREE FILLING BUILDINGS, AND NUMEROUS SUPPORT
BUILDINGS. A STORAGE AREA HAS EIGHT CRUCIFORM BUNKERS WHERE CHEMICAL WEAPONS ARE HELD FOR SHIPMENT TO BUNKERS THROUGHOUT IRAQ
OR TO DEPLOYED FORCES. ALLIED BOMBING HAS DESTROYED SEVERAL OF THE
PRODUCTION AND MUNITION-FILLING FACILITIES.
11. SAMARRA IS CAPABLE OF PRODUCING NERVE AND BLISTER AGENTS, BINARY COMPONENT CHEMICALS, AND RIOT CONTROL AGENTS.
12. THREE PLANTS FOR PROBABLE CHEMICAL AGENT PRECURSOR PRODUCTION HAVE BEEN BUILT NEAR THE HABBANIYAH-AL FALLUJAH AREA. SOME OF THE HABBANIYAH PLANTS ALSO MAY BE ABLE TO PRODUCE CHEMICAL
AGENT OR BINARY COMPONENTS.
13. OTHER FACILITIES. OTHER CHEMICAL AGENT PRODUCTION FACILITIES HAVE BEEN REPORTED, BUT THE REPORTS ARE NOT CONSIDERED CREDIBLE. IT IS POSSIBLE IRAQ HAS ESTABLISHED CLANDESTINE PRODUCTION SITES INSIDE LARGE PRODUCTION COMPLEXES, SUCH AS THE AL
QAIM FERTILIZER PLANT, OR AT REMOTE OR EVEN UNDERGROUND LOCATIONS.
THESE POSSIBILITIES ARE CONSIDERED UNLIKELY. HIDING A CHEMICAL AGENT PLANT IN A LARGE COMPLEX RISKS ITS DISCOVERY BY VISITORS. THERE IS ALSO A RISK OF ACCIDENTALLY EXPOSING FACTORY WORKERS TO CHEMICAL AGENTS. CLANDESTINE LOCATIONS WOULD BE DIFFICULT TO ESTABLISH AND OPERATE WITHOUT DISCOVERY BECAUSE OF THE ACTIVITY EVEN MINIMAL MAINTENANCE WOULD REQUIRE. ADDITIONALLY' THE IRAQIS DEPEND ON FOREIGN ASSISTANCE FOR THEIR TECHNICAL OPERATIONS, AND
IT IS LIKELY THAT SUCH ASSISTANCE WOULD ADD TO THE RISK OF DISCLOSORE.
14. CHEMICAL STOCKPILE. DIA ESTIMATES THAT MOST OF THE IRAQI CHEMICAL STOCKPILE IS IN MUNITIONS, WITH A MODEST AMOUNT OF CHEMICAL AGENTS STORED IN BULK. DIA ASSESSES THAT MOST OF IRAQ'S CHEMICAL WEAPONS ARE UNITARY; THEY HAVE BEEN FILLED WITH A FINISHED CHEMICAL AGENT. BINARY WEAPONS ARE BEING INTRODUCED, BUT
THEY ARE BELIEVED TO BE A SMALL PART OF THE CURRENT STOCKPILE. THE STOCKPILE INCLUDES NERVE AND BLISTER AGENT WEAPONS. BLOOD AGENTS
CANNOT BE RULED OUT.

15. MISSILE WARHEADS. IRAQ IS ASSESSED TO HAVE A LIMITED NUMBER OF CHEMICAL WARHEADS FOR ITS SCUD-B MISSILES AND POSSIBLY FOR THE AL HUSAYN AND THE AL ABBAS MISSILES. A CHEMICAL WARHEAD WOULD IMPROVE THE VALUE OF THESE INACCURATE MISSILES BY GIVING THEM THE POTENTIAL TO CONTAMINATE LARGE AREAS. THE CHEMICAL FILL WEIGHT FOR THE MISSILES HAS BEEN ESTIMATED AT ABOUT 550 KG FOR THE SCUD-B, 80 TO 1U0 KG FOR THE AL HUSAYN, AND 200 TO 3U0 KG FOR THE AL ABBAS.

THE EXTENDED-RANGE SCUD MISSILES GAINED RANGE IN PART BY REDUCING

THE MISSILE PAYLOAD. SIGNIFICANT TECHNICAL PROBLEMS IN GUIDANCE, FUSING, AND AGENT STABILITY WILL CONTINUE TO LIMIT THEIR EFFECTIVENESS, BUT THEY COULD BE USED AS TERROR WEAPONS AGAINST CIVILIANS.

16. THE MOST EFFECTIVE CHEMICAL AGENT FILL FOR A MISSILE WARHEAD IS A PERSISTENT AGENT. THE VX NERVE AGENT OR A THICKENED AGENT OF ANY TYPE COULD BE USED TO ATTACK HIGH-VALUE DEEP TARGETS.

IRAQ'S BEST AGENTS FOR MISSILE WARHEADS ARE THE PERSISTENT BLISTER AGENT MUSTARD AND THE SEMIPERSISTENT NERVE AGENT GF. VX IS A POSSIBLE AGENT IN THE IRAQI INVENTORY.

17. AERIAL WEAPONS. AIRCRAFT ARE IRAQ'S ONLY MEANS TO DELIVER CHEMICAL AGENTS ACCURATELY AT DISTANCES IN EXCESS OF ARTILLERY RANGE. DURING THE IRAN-IRAQ WAR, ALL TYPES OF AIRCRAFT, INCLUDING HELICOPTERS, WERE USED TO DELIVER CHEMICALS.

18. IRAQ HAS DEVELOPED 90MM ROCKETS FOR ITS HELICOPTERS. THESE PROBABLY ARE FILLED WITH MUSTARD, BUT THEY COULD CONTAIN ANY

AGENT.

19. AERIAL BOMBS ARE ESTIMATED TO BE THE MAJOR PART OF THE IRAQI STOCKPILE. ABOUT 65 TO 75 PERCENT OF IRAQ'S CHEMICAL AGENT STOCK IS ASSESSED TO BE IN BOMBS BECAUSE BOMBS CONTAIN LARGER AMOUNTS OF AGENT THAN DO ARTILLERY SHELLS. IRAQI AERIAL BOMBS ARE ESTIMATED TO HAVE 100 KG OF NERVE AGENT OR 120 KG OF MUSTARD IN THE

500-KG BOMBS AND 50 KG OF NERVE AGENT OR 60 KG OF MUSTARD IN THE 250-KG BOMBS. ARTILLERY SHELLS CONTAIN AN ESTIMATED 1.5 TO 3.4 KG OF AGENT.

20. GROUND DELIVERY SYSTEMS. IRAQ HAS DELIVERED CHEMICALS USING ITS 130MM, 152MM, AND 155MM TUBE ARTILLERY AND 122MM MULTIPLE

ROCKET LAUNCHERS. OTHER FIRE SUPPORT SYSTEMS COULD BE USED TO

DELIVER CHEMICALS. THERE ARE UNCONFIRMED REPORTS OF CHEMICAL EMPLOYMENT BY ROCKET-PROPELLED GRENADES AND MINES.

21. OTHER AGENTS AND WEAPONS. IRAQ PROBABLY HAS FILLED MUNITIONS WITH PARTICULATE CARRIERS IMPREGNATED WITH MUSTARD, ALSO CALLED "DUSTY MUSTARD," WITH THE PARTICULATE CARRIER GROUND TO A PREDETERMINED SIZE, THE "DUSTY" AGENT CAN PENETRATE THE NATO-TYPE PROTECTIVE ENSEMBLE. OTHER POSSIBLE ITEMS IN THE IRAQI ARSENAL ARE AEROSOL GENERATORS FOR AGENT DISSEMINATION AND SPRAY TANKS THAT COULD SPREAD CHEMICAL CONTAMINATION FROM HELICOPTERS OR FIXED-WING AIRCRAFT.

22. CONSEQUENCES OF BINARY INTRODUCTION. IRAQ IS CAPABLE OF PRODUCING THE COMPONENTS AND CHEMICALS FOR BINARY CHEMICAL MUNITIONS, BUT THE NUMBER OF BINARY WEAPONS IN INVENTORY IS BELIEVED TO BE LIMITED. UNITARY MUNITIONS REMAIN THE PRIMARY CHEMICAL WEAPON TYPE IN THE IRAQI INVENTORY. ONE OF IRAQ'S MOTIVATIONS FOR DEVELOPING BINARY WEAPONS WAS TO MAKE CHEMICAL AGENTS THAT ARE MORE STABLE IN STORAGE. BINARIES COMBINE TWO OR MORE CHEMICALS IN A MUNITION TO PRODUCE A CHEMICAL AGENT. THE CHEMICALS USED IN THE BINARY WEAPON ARE NOT CHEMICAL AGENTS AND HAVE LOWER TOXICITY, SO THEY ARE EASIER TO PRODUCE WITH GOOD QUALITY THAN UNITARY CHEMICAL AGENTS AND ARE SAFER TO HANDLE.

23. THE MOST LIKELY IRAQI CHEMICAL AGENTS TO BE USED IN BINARY WEAPONS ARE THE NERVE AGENTS GB AND GF. BOTH ARE MADE BY THE REACTION OF AN ALCOHOL WITH THE CHEMICAL DIFLUOROMETHYLPHOSPHONATE (DF). GB IS PRODUCED BY THE REACTION OF ISOPROPYL ALCOHOL (ISOPROPANOL) WITH DF; GF IS PRODUCED BY THE REACTION OF CYCLOHEXYL ALCOHOL (CYCLOHEXANOL) WITH DF. GF PRODUCTION IS MORE DIFFICULT IN THE BINARY CONFIGURATION SINCE CYCLOHEXANOL IS LESS REACTIVE THAN ISOPROPANOL. THE REACTION WILL TAKE LONGER AND MAY NEED TO BE HEATED.

24. THE MOST LIKELY TYPES OF IRAQI BINARY WEAPONS ARE ARTILLERY, MULTIPLE ROCKET LAUNCHERS (MRLS), AND MISSILE WARHEADS.

ALTHOUGH ANY WEAPON CARRYING A CHEMICAL FILL CAN BE CONVERTED TO A
BINARY. GB IS THE MOST LIKELY FILL FOR THE ARTILLERY AND MRL AMMUNITION. GF IS MORE LIKELY TO BE USED IN LARGER MUNITIONS, SUCH AS MISSILES OR AERIAL BOMBS.
25. BINARY WEAPONS HAVE DISADVANTAGES THAT WOULD REDUCE THEIR
VALUE TO THE IRAQIS. A LARGE PART OF THE BINARY'S INTERIOR IS FILLED WITH NONLETHAL COMPONENTS THAT HELP MIX THE CHEMICALS WHEN
THE WEAPON IS DELIVERED. THESE COMPONENTS ALSO HELP KEEP THE CHEMICALS SEPARATED PRIOR TO USE. BECAUSE THE REACTION MUST TAKE PLACE WHILE THE WEAPON IS EN ROUTE TO THE TARGET, THE REACTION DOES
NOT CONVERT ALL THE DF TO A CHEMICAL AGENT WHEN THE ROUND HITS ITS
TARGET. THE ROUND CONTAINS A MIXTURE OF AGENT, UNREACTED DF, UNREACTED ALCOHOL, HF, AND OTHER IMPURITIES WHEN IT REACHES THE TARGET.
26. AN ADDITIONAL PROBLEM FOR THE IRAQIS MAY BE THE POOR QUALITY OF THE DF THEY PRODUCE. THE SAME CHEMICAL ENGINEERING PROBLEMS THAT HAVE LIMITED THE PURITY OF CURRENTLY PRODUCED AGENTS
ALSO COULD LIMIT THEIR DF QUALITY. DF IS MADE FROM AN ORGANOPHOSPHORUS CHEMICAL AND HF. REMOVING THE HF IS DIFFICULT: IT
IS LIKELY THAT IRAQI DF CONTAINS HF, WHICH COULD CATALYZE DECOMPOSITION.
27. DISTRIBUTION OF THE STOCKPILE. THE CHEMICAL STOCKPILE'S LOCATION IS NOT KNOWN WITH CONFIDENCE. LIKELY STORAGE SITES ARE THE
22 S-SHAPED BUNKERS DISTRIBUTED THROUGHOUT IRAQ AND THE 8 CRUCIFORM
BUNKERS AT SAMARRA. [(b)(1) sec 1.3(a)(4)] CHEMICAL WEAPONS ALSO COULD BE STORED IN THE REFRIGERATED BUNKERS LOCATED
THROUGHOUT IRAQ. [(b)(1) sec 1.3(a)(4)] VIRTUALLY ANY IRAQI BUNKER LARGE ENOUGH TO ALLOW MUNITIONS THROUGH THE DOOR COULD BE USED, AND, IF NECESSARY, CHEMICAL MUNITIONS SIMPLY COULD
BE STORED IN THE OPEN.
28. DIA ASSESSES THAT IN THE KUWAITI THEATER OF OPERATIONS,

THE STOCKPILE PROBABLY HAS BEEN DISTRIBUTED TO THE GENERAL SUPPORT AMMUNITION DEPOTS WITH CHEMICAL STORAGE BUNKERS AND FIELD SUPPLY
AREAS FOR THE DEPLOYED UNITS. THE NORTHERN S-SHAPED BUNKERS ASSOCIATED WITH AIRFIELDS STILL MAY CONTAIN SIGNIFICANT QUANTITIES OF CHEMICAL WEAPONS.

29. DOCTRINE FOR CHEMICAL USE. DURING THE WAR WITH IRAN, THE IRAQIS LEARNED TO USE CHEMICAL WEAPONS IN WAYS THAT MAXIMIZED EFFECTIVENESS. FOR EXAMPLE, THEY DISSEMINATED CHEMICAL AGENTS IN THE MORNING RATHER THAN LATER IN THE DAY, WHEN HIGH TEMPERATURES WOULD ACCELERATE EVAPORATION. TYPICALLY, THE IRAQIS WOULD DEPOSIT
PERSISTENT MUSTARD AGENT IN AN IRANIAN FORCE'S REAR AREA AND THEN BOMBARD THE FRONT WITH A NONPERSISTENT NERVE AGENT (SARIN). TROOPS
FLEEING THE SARIN-CONTAMINATED AREA THEN WOULD BE EXPOSED TO MUSTARD AS WELL.

30. IRAQ MIGHT ATTEMPT TO USE AIR ASSETS TO ATTACK TARGETS BEHIND THE LINES, SUCH AS LOGISTIC STOCKPILES, PORTS, AND AIRFIELDS. AIRFIELDS, IN PARTICULAR, WOULD BE CRITICAL TARGETS BECAUSE OF COALITION AIR POWER. PERSISTENT CHEMICALS WOULD BE EMPLOYED TO SUPPRESS AIRFIELD OPERATIONS. ATTACKS AGAINST NAVAL SHIPS MIGHT BE ATTEMPTED BUT WOULD NOT BE EXPECTED TO HAVE A SIGNIFICANT MILITARY EFFECT.

31. IRAQ USED CHEMICALS EFFECTIVELY IN THE 1988 OFFENSIVES AGAINST IRAN. DURING THIS TIME, IRAQ EMPHASIZED SELECTIVE SATURATION OF TARGETS WITH CHEMICAL WEAPONS. BECAUSE IRAQ HAD THE
OPERATIONAL INITIATIVE, ITS FORCES COULD CHOOSE THE BEST WEATHER AND TERRAIN CONDITIONS TO SELECT CHEMICAL TARGETS.

32. LATE IN THE WAR WITH IRAN, SADDAM HUSAYN DELEGATED THE AUTHORITY TO USE CHEMICALS TO CORPS COMMANDERS, WHICH IMPROVED
RESULTS. THE DISCRETION OF THE GROUND FORCE COMMANDER MADE IT POSSIBLE TO RESPOND QUICKLY WHEN THE TACTICAL SITUATION FAVORED CHEMICAL WEAPON USE, AND COMMANDERS TOOK ADVANTAGE OF THIS AUTHORITY.

33. [(b)(1) sec 1.3(a)(4)]

34. [(b)(1) sec 1.3(a)(4)]

35. [(b)(1) sec 1.3(a)(4)]

36. IN RECENT DAYS, [(b)(1) sec 1.3(a)(4)] HOWEVER, IRAQ'S DIPLOMATIC REPORTING REPEATEDLY WARNS OF THE INTENTION TO USE CHEMICALS AGAINST THE COALITION, AND IRAQI RADIO RECENTLY ANNOUNCED ALLIED CHEMICAL ATTACKS IN THE BASRA VICINITY. IT APPEARS THAT IRAQ MAY BE LAYING THE PSYCHOLOGICAL GROUNDWORK FOR ITS USE OF CHEMICAL WEAPONS.

37.[(b)(1) sec 1.3(a)(4)]

38. [(b)(1) sec 1.3(a)(4)]

39.[(b)(1) sec 1.3(a)(4)]

40.[(b)(1) sec 1.3(a)(4)]

41.[(b)(1) sec 1.3(a)(4)]

42. PROSPECTS FOR CHEMICAL USE. IRAQ'S CHEMICAL CAPABILITY REMAINS SIGNIFICANT. THIS CAPABILITY WILL DETERIORATE OVER TIME, BUT IT WILL NOT BE ELIMINATED COMPLETELY. IRAQ RETAINS THE ABILITY TO LAUNCH CHEMICAL STRIKES AT ANY TIME WITH ARTILLERY AND AIR POWER, AND IT COULD USE CHEMICALS ON SOME OF ITS REMAINING SCUD-B MISSILES.

43. IRAQ MAY BE SAVING ITS CHEMICAL WEAPONS TO LAUNCH A STRIKE WITH ALL AVAILABLE ASSETS TO KILL AND INJURE COALITION FORCES. SUCH AN ATTACK MIGHT ATTEMPT TO DISRUPT AN ALLIED ATTACK OR MIGHT BE PROMPTED BY IRAQ'S CALCULATION THAT IT IS FACING IMMINENT DEFEAT AND HAS LITTLE TO LOSE. THESE OPTIONS COULD BE COUNTERED BY DIMINISHING IRAQ'S CAPABILITY TO DELIVER CHEMICAL WEAPONS: ELIMINATING ITS AIRFIELDS, MISSILE LAUNCHERS, AND FIRE SUPPORT ASSETS.

44. SADDAM EVIDENTLY BELIEVES THE US HAS BOTH A CHEMICAL AND A NUCLEAR CAPABILITY IN THE THEATER, BUT DIA ASSESSES THAT THIS WOULD NOT DETER HIM FROM EMPLOYING CHEMICAL WEAPONS AGAINST COALITION FORCES. DIA JUDGES THAT SADDAM VALUES THE FORCE-MULTIPLICATION

CAPABILITY OF CHEMICAL WEAPONS TOO HIGHLY TO FORGO THEIR USE IN ANY
IMPORTANT COMBAT SITUATION WHERE THEY WOULD PROVIDE SUBSTANTIAL
TACTICAL BENEFITS. CHEMICAL WEAPONS ARE INTEGRAL TO IRAQ'S MILITARY
DOCTRINE. CONSEQUENTLY, DIA ESTIMATES THAT:
–IRAQI FORCES WOULD BE VIRTUALLY CERTAIN TO USE CHEMICAL WEAPONS
IN ANY DEFENSIVE SITUATION IN IRAQ OR KUWAIT WHERE THEY ARE BEING
PUSHED BACK BY AN ALLIED OFFENSIVE AND THEIR DEFEAT IS IMMINENT.
–IRAQI FORCES WOULD BE VERY LIKELY TO USE CHEMICAL WEAPONS AS AN
INTEGRAL PART OF ANY OFFENSIVE INTO TERRITORY DEFENDED BY US OR
OTHER ALLIED FORCES.
–IRAQ MAY USE CHEMICAL WEAPONS TO DISRUPT AN IMMINENT ALLIED
ATTACK.
–ONCE IRAQI FORCES BEGIN USING CHEMICAL WEAPONS AGAINST ALLIED
FORCES, DIA ANTICIPATES THEY WOULD BE WILLING TO USE THEIR ENTIRE
CHEMICAL ARSENAL, INCLUDING MISSILES WITH CHEMICAL WARHEADS.
–SPECIAL FORCES OR OTHER GROUPS ALSO COULD DELIVER CHEMICAL
WEAPONS TO SELECTED TARGETS.
45. (U) THIS MEMORANDUM CONTAINS INFORMATION AS OF 25 JANUARY 1991.
ADMIN PREP: [(b)(2)]

OTG: 28***** Feb 90

SUBJECT: Suspected Chemical/biological weapons storage sites in the KTO prior to the ground war.

1. (U) Priority: IU

2. (U) Need no later than: 041200C Mar 91

3. (U) Requestor: CENTCOM / *******/ JIO DOJ2

4. Justification: The threat of special munitions may still pose a hazard to coalition forces and access to suspected chemical/biological (CW/BW) sites may offer an opportunity to clarify the extent of the Iraqi CW/BW capability.

5. Information requested: Request that ARCENT survey the following locations to determine if they do or do not contain possible chemical/biological weapons. These sites were suspected to have possibly contained special munitions prior to the ground war. A brief description follows

3056**N 04605**E	Tallil Airfield
300700N 0471000E	'Ammo Dump-** trucks ********** at storage site
3006**N 04713**E	3 Ammo bunkers, 30 supply bunkers, 400 revetted trucks, 800 vehicle revetments unoccupied, and-400 hardened bunkers.
301800N 0473000E (0445VRV228)	Ammo site: 50 ammo storage revetments 23 occupied.
294500N 0465000E	Ammo storage site
294600N 0464900	Ammo storage site
294600N 0465200E	127 trucks, 16 occupied, fence secured revetments.
302600N 0471400E	Rumaylah ammo storage area southwest - Jan had suffered damage to 145 revetments. 10 occupied intact and 10 revetted trucks.
302600N 0472500E	Rumaylah ammo storage area 1 130 trucks
302900N 0473830E	Ash Shuaybah ammo storage depot northwest damaged by explosion, still active 17 underground storage bunkers, 12 bermed storage buildings in use.
303200N 0465200E	Al Jazair ammo storage area. Approximately 86 KM west of Al Basrah. 23 AAA positions, each with 37-MM AAA guns in each site.
301600N 0474100E	** Underground storage bunkers.
302500N 0474200E	Ash Shuaybah ammo storage east permanent ammo storage area consisting of 11 revetted storage buildings and 2 ammo storage bunkers.
302600N 0473700E	Ammo site - 12 earthen storage (86 revetments and 10 ammo storage buildings, 1 revetment has bomb damage.

3046**N 04525**E	Tall Al Lahm ammunition storage depot south: 100 occupied revetments. This *** logistic site covers the following area 041****N/04627*****E to 3045*****N/04627****E to 3045*****N/04824****E to 3045*****N/04823****E to close.
3057**N 04610**E	An Nasiriyah ammunition storage depot - 6 storage bunkers destroyed within the main storage facility.
304700N 0462800E	Tall Al Lahm ammunition storage 42 of 88 ammunition storage buildings destroyed and another 10 damaged. Across the major highway in the vicinity of 304200N 0462500E are 950 to 1000 revetments. Over 500 revetments are occupied with material and trucks.

"Final formatting and approval for release to GULFLINK is being accomplished by DIA"

Subject: SUBJ: CIA CABLE ON SUSPECTED CHEMICAL STORAGE AREA, 23 FEBRUARY 1991
Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

2312512 FEB 91

TO: IMMEDIATE JILE/SAUDI, DIRECTOR

SUBJECT: WNINTEL -- SUSPECTED CHEMICAL STORAGE FACILITY

ACTION REQUIRED: PLS ADVISE IF INFORMATION SHOULD BE SUBMITTED AS INTEL.

1. RECEIVED A VERY UNUSUAL MESSAGE FROM OUR AMBASSADOR TODAY. COM RETURNED FROM A MEETING THIS MORNING WITH A HANDDRAWN MAP AND SOME COORDINATES OF A LOCATION IN IRAQ THAT IS DESCRIBED AS A CHEMICAL WEAPONS STORAGE FACILITY.

INDICATED THAT THEY HAD OBTAINED IT FROM SOMEONE IN THE IRANIAN AIR FORCE OR AIR FORCE-RELATED INDUSTRY (IT WAS UNCLEAR TO COM). ALTHOUGH THE CHAIN OF ACQUISITION SEEMS TENUOUS, ON THE OFF CHANCE THAT IT IS USEFUL, WE ARE FORWARDING IT.

2. WE PLOTTED THE COORDINATES AND MATCHED THE DRAWING ON JOG (AIR) SERIES 1501, SHEET NH 38-7, EDITION 5. THE COORDINATES ARE (3047N-4622E). ON THIS MAP, THOSE COORDINATES MATCH UP TO A STORAGE AREA EAST OF JUWARIN, IRAQ. ACCORDING TO INFORMATION THIS IS A CHEMICAL WEAPONS STORAGE AREA. PLS ADVISE.

END OF MESSAGE

1.5(c)
95618:95618

Subject: SUBJ: CENTCOM INFORMED OF 23 FEBRUARY 1991 CIA CABLE, 24 FEBRUARY 1991
Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

2400002 FEB 91

CITE JILE/SAUDI

TO: IMMEDIATE DIRECTOR

SUBJECT: FYI

*REF: 231252ZYES91

1. FYI, CENTCOM/COLLECTIONS HAS TASKED COLLECTION ASSETS TO INVESTICATE THE POSSIBLE CHEMICAL WEAPONS STORAGE FACILITY AS DESCRIBED IN REF. CENTCOM APPRECIATES PASSING THIS INFORMATION, FOR CHEMICAL FACILITIES, AS YOU CAN IMAGINE, CARRY HIGH TARGETTING PRIORITIES. RGDS.

END OF MESSAGE

94748:94748
1.5c

SUBJECT: SUBJ: CIA DESERT STORM CBW ACTIVITY LOG, 25 FEBRUARY 1991
NOT FINALLY EVALUATED INTELLIGENCE

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DESERT STORM

ACTIVITY LOG

25 FEB 91

25 FEB 91

0815 HRS:
DO SOURCE HAS IDENTIFIED A PLACE NEAR JUWARIN (3047N/04622E) AS A CW STORAGE LOCATION. APPARENTLY IT'S IDENTIFIED AS SOME TYPE OF STORAGE PLACE ON THE JOG I50I NH 38-7 MAP AFTER LOOKING THROUGH DRAWERS I CAN'T FIND IT. OH, WELL. THE COORDINATES ARE SORT OF NEAR EITHER AN NASIRIYAH OR TALLIL.

0835 HRS:
MY PUNY BRAIN SEEMS TO REMEMBER THAT THERE WERE DECON VEHICLES SEEN AT AN NASIRIYAH SHORTLY AFTER IT WAS BOMBED. CALL NPIC TO CHECK
SAYS THAT ON 17 JAN TWO
DECON VEHICLES WERE PRESENT AT AN NASIRIYAH. YESTERDAY, THERE'S INFO THAT HELICOPTERS WERE PRESENT AT THE AN NASIRIYAH STORAGE AREA. ANALYSIS: MAYBE WE'VE FINALLY FOUND A CW STORAGE LOCATION!

94757:94757
1.5C

Subject: SUBJ: CIA RESPONSE TO 23 FEBRUARY 1991 CABLE, 26 FEBRUARY 1991
Not Finally Evaluated Intelligence

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2602382 FEB 91 DIRECTOR 533647

TO: IMMEDIATE JILE/SAUDI
SUBJECT: SUSPECTED CHEMICAL STORAGE FACILITY

1. WE ARE UNABLE TO IDENTIFY SPECIFIC CHEMICAL STORAGE FACILITY LOCATION. WE PASSED INFORMATION INFORMALLY TO ANALYSTS.

2. MINIMIZE CONSIDERED.

END OF MESSAGE

1.5(c)
94749:94749

(b.2.)

/********** THIS IS A COMBINED MESSAGE **********/
BODY
SUBJ: ARCENT COLLECTION EMPHASIS FOR FEB 91
1. COLLECTION OBJECTIVES: PROVIDE SUPPORT TO ARCENT UNITS FOR OPERATION DESERT STORM PLANNING AND EXECUTION; LOCATE AND DETERMINE DISPOSITION OF REPUBLICAN GUARDS; LOCATE AND DETERMINE DISPOSITION OF IRAQI UNITS WITHIN THE ARCENT'S AND JOINT FORCES COMMAND NORTH'S AREAS OF OPERATIONS; LOCATE AND DETERMINE DISPOSITION OF RESERVE IRAQI UNITS; VALIDATE TARGETS FOR TARGET INTERDICTION; BATTLE DAMAGE ASSESSMENT; AND PROVIDE INDICATIONS AND WARNING.
2. ARCENT'S EMPHASIS FOR FEB 91:
IN PRIORITY ORDER:

(b.1. sec. 1.5.c.)

(B) GOLD ORANGE (18 ABC)
49 ID & 18 ABC OBJ'S (b.1. sec. 1.5.c.)
DETERMINE DISPOSTION &
ACTIVITY.

DROP IF CAPTURED BY 252400Z FEB.

(b.1. sec. 1.5.c.)

3. ARCENT'S EMPHASIS FEB:
REQUIREMENTS ARE LISTED IN ORDER OF PRIORITY.
A. SITUATIONAL DEVELOPEMENT: CONFIRM/DENY PRESENCE OF ENEMY FORCES.
(b.1. sec. 1.5.c.)

OBJ GOLD 304700N0462200E (18 ABC)
OBJ ORANGE

(b.1. sec. 1.5.c.)

A. DETECT CHANGE IN DISPOSITION IN FOLLOWING DIV'S & AREAS:
UNIT/LOCATION SEARCH BOX

49 ID/OBJ ORANGE 95
OBJ GOLD 96

(b.1. sec. 1.5.c.)

B. TARGET VALIDATION OF STRIKE TARGETS. IN PRIORITY. (b.1. sec. 1.5.c.)

(b.1. sec. 1.5.c.)

A. MONITOR KEY UNITS & LOCATIONS IN FOLLOWING DIV'S AND POINTS:

(b.1. sec. 1.5.c.)

OBJ GOLD
OBJ ORANGE

ARCENT'S EMPHASIS FOR FEB 91:
A. SITUATIONAL DEVELOPEMENT OF FOLLOWING DIV'S AND AREAS:
VII CORPS 0400-1000C HOURS ?????????????
MONITOR MOVEMENT & REACION OF FOLLOWING DIV'S

(b.1. sec. 1.5.c.)

OBJ GOLD (b.1. sec. 1.5.c.)
OBJ ORANGE

1996121116132928

Khamisiyah

DAILY STAFF JOURNAL OR DUTY OFFICER'S LOG

For use of this form, see AR 220-181; the proponent agency is Office of The Deputy Chief of Staff for Operations & Plans

PAGE NO. 4 OF PAGES 6

ORGANIZATION OR INSTALLATION

LOCATION

PERIOD COVERED FROM HOUR DATE 26 Feb 91 TO HOUR DATE 26 Feb 91

ITEM NO.	TIME IN	TIME OUT	INCIDENTS, MESSAGES, ORDERS, ETC.	ACTION TAKEN	INI
70	0735		82d - Unit UPDATE As of 0200c	RF/ UUR	BW
71	0745		XVIII ABN Corps Unit UPDATES.	RF/ UUR	BW
72	0754		3ACR - Unit UPDATE. As of 0800	RF/ UUR	BW
73	0756		ATO for 26 Feb	RF/Info	BW
74	0815		VII Corps UPDATE As of 0730	RF/Info	BW
75	0816		Move FSCL To River - per BG A	RF/Info	BW
76	0818		STATUS. of 12th AVN BDE	RF/Info	BW
77	0821		When CAN 24ID move?	RF/Info	BW
78	0825		101st ABN DIV (AASLT) OPERATIONS	RF/Info	BW
79	0950		MARINE OBJECTIVES 26 Feb 91	RF/Info	BW
80	0952		Possible Chemicals on OBJ GOLD	RF/Info	BW
81	0955		FRENCH moving into AS SALMAN	RF/Info	BW
82	0958		BG Stewart Arrives TAC CP (Tentative)	RF/Info	BW
83	0959		82d Holding Vic AA Fayetteville	RF/Info	BW
84	1011		XVIII Corps Arty UPDATE	RF/ UUR	BW
85	1022		Unit UPDATES - 24ID, 82d, 101, 12, 18th	RF/ UUR	BW
86	1025		Combat OPS Summary	RF/ CNS	BW
87	1027		EVACUATION OF EPWs	RF/ Dim	BW
88	1029		BG Arnold Delayed - 1100hrs	RF/ Info	BW
89	1030		Weather Hold due to wind - 18th AVN	RF/ Info	BW
90	1031		VII Corps UPDATE As of 1012c	RF/ Info	BW
91	1033		Guidence on EPWs for 24th	RF/ Info	BW
92	1034		82d - Moving Past 40.60 GRID	RF/ Info	BW

TYPED NAME AND GRADE OF OFFICER OR OFFICIAL ON DUTY: BRENFLECK, BRIEN OPSNCO

SIGNATURE: Brien Brenfleck

DA FORM 1594, NOV 68 — PREVIOUS EDITION OF THIS FORM IS OBSOLETE.

GPO : 1988 O - 210

1996 1211 6133552

MESSAGE FORM/ CTOC JOURNAL SHEET	PRIORITY	CLASSIFICATION SSS	
TO: 2AID 101st Abn	FROM: COL AHERS	Means of Delivery msg rdo	DTG Received 260845C Feb 91

MESSAGE: SUBJ: Possible Chemicals on OBJ GOLD

Enemy is departing vic OBJ GOLD in 2 directions, NW and SE. It is possible that we have hit chemical munitions, and enemy is fleeing area as quickly as possible. LEAD with FOX vehicles when entering area.

ACTION:
- Notified 2AID main, CPT Gudge, 260850C Feb
- Notified 101st Abn Div (Main) - RECEIVED 260855C Feb 91 (VERIFIED RECEIPT/INST PLGH - 0900)

DTG Completed	Journal No	Actioned By:
	80	CPT CHURA

CLASSIFICATION: SSS Downgrading NOOR

FS FORM 3365 1 MAR 79 (APZA-OPT-O) PREVIOUS EDITION OBSOLETE

DISTRIBUTION SEC/UNIT
G2
Dep G2
G2 Admin
G2 CHOPS
G2 Ops MAP
G2 Production
G2 SSO
G2 CI/OPSEC
G2 ASPEC
G2 CM&D
G2 Plans
G2 R&S
G2 TGTS
G2 SWO
G3
DEP G3/CHOPS
G3 Admin
G3 Ops
G3 Ops MAP
G3 Ops Rpts/Journal
G3 Plans
G3 NBCE
G3 EW
G3 ADE
G3 Air/ALO
FAS
Corps Avn
Engr
C-E
AG
G1
G4
G5
Hq Cmdt

* U.S. GPO 1990-7304

DTG: Feb 91

SUBJ: Response to Iraqi Storage bunkers (Addendum)

1. The following is intended to amplify and expand on Feb 91, subject, response to poss BW Bnkr. There are currently 12 frame storage bunkers in Iraq. Of these both the refrigerated and the non-refrigerated types may have a BW association. At one of these bunker after it was struck and severely damaged indicated that the Iraqis were attempting to remove material that may have been salvageable inside, and decontaminate it for future use. Also, some agents are relatively heat resistant

2. The number of twelve frame bunkers in Iraq, is so large as to suggest roles in addition to BW storage. They could include storage for chemical, FAE, and sensitive electrocics for weapons, as well as other functions including possibly weapons fill or handling.

3. Some of the destroyed/damaged 12 frame refrigerated bunkers (An Nasiriyah Stor Fac SW), and undamaged non-refrigerated 12 frame bunkers (3 at AZ SUBAYR ammo DPO SE) may be within range of coalition forces operating in southern Iraq. A determination of what is present in these bunkers, or may have been present at destroyed bunkers based on a sample of the immediate area, could be of major military and intelligence importance. If an attempt is made to access these bunkers protective measures should be employed. Further, caution should be used since the vicinity of the bunkers may be mined.

*Tail Al Lahm	1	3047	N	04625.	*	E	These Nr Bnks are approx
Ammo stor area	2	3047	N	04625		E	17 NM S/SE of Tallil AF,
							3 NM S of SUQ ASH

SHUYAKH RD INTERSEC.

Final formatting and approval for release to GULFLINK is being accomplished by DIA

DTG: 01***** Apr 91

Passing instructions: From CMO VII Corps to CMO 513th MI BDE

SUBJECT: Response to ********** suspected chem/bio weapons storage sites in KTO prior to ground war (U)

1. The following locations do not contain chemical/biological weapons. All locations were confirmed through VII Corps G2 OPS BY VII Corps Division on 30 Mar 91.

305604N0460536E	Tallil AFLD. No chem found
300700N0471000E	Ammo dump. No chem found
300613N0471331E	3 ammo bunkers etc. No chem found
301800N0473000E	Ammo site. No chem found
294500N0465000E	Ammo storage site. No chem found
294500N0464900E	Ammo storage site. No chem found
294600N0465200E	127 trucks. Fenced revetments-No chem
302600N0471400E	Rumaylah ammo storage. No chem found
302600N0472500E	Rumaylah ammo storage. No chem found
302900N0473839E	Ash shuaybah ammo storage depot
303200N0465200E	Al Jazair ammo storage area-No chem
304649N0462522E	Tall Al Lahm ammo. No chem found
305750N0461030E	An Nasiriyah ammo. No chem found
304700N0462600E	Tall Lahm ammo. No chem found

2. The following locations can not be confirmed whether or not they contain chemical munitions, because they are past the demarcation line and are in Iraqi territory.

302900N0473830E	Ash Shubayah ammo storage depot northwest. In Iraqi territory.
301600N04741005	**Underground storage bunkers. In Iraqi territory.
302500N040474200	Ammo storage In Iraqi territory.
302502N0473700E	Ammo site - 12 earthen storage revetments and 10 ammo blogs. In Iraqi territory.

"Final formatting and approval for release to GULFLINK is being accomplished by DIA"

Subject: CW REQUIREMENTS RESPONSE

Not Finally Evaluated Intelligence

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MAR 91

SUBJECT: CW REQUIREMENTS RESPONSE

HAS NOT REPEAT NOT FOUND ANY
CHEMICAL OR BIOLOGICAL MUNITIONS STORED IN THE KTO, NOR WERE ANY CHEMICAL OR BIOLOGICAL MUNITIONS WITH REPUBLICAN GUARD OR IRAQI ARMY UNITS OVERRUN/CAPTURED BY COALITION FORCES.
REPORTING EARLY IN THE WAR OF CHEMICAL MINES AND BUNKERS PROVED FALSE ACCORDING TO CENTCOM AUTHORITIES. A MORE RECENT REPORT OF A POSSIBLE
CHEMICAL STORAGE BUNKER IN KUWAIT CITY
PROPER, NOT FAR FROM THE US EMBASSY, HAS PROVEN NEGATIVE AND

THIS FACILITY IS SCHEDULED FOR DEMOLITION TODAY. MILITARY CHEMICAL EXPERTS REPORT THAT THE BUNKER MIGHT HAVE BEEN BUILT AS A CHEMICAL STORAGE FACILITY, BUT TESTS REVEALED NO TRACES OF CHEMICAL AGENTS.

THERE HAS BEEN ONLY ONE INSTANCE IN WHICH A SOLDIER MAY HAVE BEEN, AND BY INDICATIONS WAS, EXPOSED TO CHEMICAL AGENTS. THIS OCCURRED THREE DAYS AGO IN THE AREA PREVIOUSLY OCCUPIED BY IRAQI 52D INF DIV, VIC GEO COORD 2956N 04706E. CONFUSION AS TO THE EXACT CAUSE OF INJURY STEMS FROM THE SOLDIER USING THERMITE GRENADES TO DESTROY DAMAGED IRAQI EQUIPMENT. THE SOLDIER WAS NOT IN CHEMICAL PROTECTIVE GEAR, BUT DRESSED IN NOMEX. WHEN HE DISCOVERED THE BLISTER, A NEARBY FOX CHEMICAL DETECTION VEHICLE MADE AN IMMEDIATE ASSESSMENT. THE FOX SNIFFER EQUIPMENT IDENTIFIED HD AND HQ (A MIXTURE OF HD AND Q AGENTS) PRESENT. A BUNKER IN THE VICINITY WAS INSPECTED AND HD VAPORS WERE DETECTED. SOAP POWDER ALSO WAS FOUND ON THE FLOOR, WHICH MAY HAVE BEEN USED AS EITHER A DECONTAMINATION AGENT OR, EQUALLY POSSIBLE, AS THE BASE FOR MIXING WITH GASOLINE TO FORM FUGASSE/NAPALM FOR MOLOTOV COCKTAILS. NO CHEMICAL MUNITIONS WERE FOUND, AND, AT THIS TIME, THE INJURY IS BELIEVED TO HAVE BEEN CAUSED BY CHEMICAL RESIDUALS IN THE AREA. INDIVIDUAL'S CLOTHING HAS BEEN SENT THROUGH MILITARY CHANNELS TO CRDEC (CHEMICAL RESEARCH, DEVELOPMENT AND EVALUATION CENTER) FOR ANALYSIS.

ASH SHUAYBAH IS NOT UNDER COALITION FORCES CONTROL. MILITARY CHEMICAL SPECIALISTS TRAVELED YESTERDAY TO AN NASARIYAH. ONE CAPTAIN REMARKED THAT HE HAD NEVER REALLY APPRECIATED THE EFFECTS OF PRECISION BOMBING UNTIL HE SAW THE BUNKERS. THEY WERE COMPLETELY DESTROYED AND, FOR THIS REASON, IT WAS IMPOSSIBLE TO DETERMINE THE REFRIGERATION SYSTEM, INSULATION OR ANY SPECIFICS RELATING TO

MARKINGS

THE BUNKERS WERE "SO MUCH RUBBLE". SINCE NONE WERE OPERATIONAL, IT WAS IMPOSSIBLE TO DETERMINE OPERATING TEMPERATURES. TESTS FOR CHEMICAL AGENTS WERE CONDUCTED (ON SITE TESTS WERE NEGATIVE, BUT SAMPLES HAVE BEEN SENT TO CONUS FOR FURTHER TESTING), SOIL SAMPLES INSIDE AND OUTSIDE THE BUNKERS WERE TAKEN, AND THE SITE WAS PHOTOGRAPHED. WE EXPECT ESTIMATED DIMENSIONS OF THE BUNKERS TO BE REPORTED TO CENTCOM SOON.

TALLIL. CENTCOM FORCES ARE SCHEDULED TO WITHDRAW FROM TALLIL AREA IN THE VERY NEAR FUTURE. WE HAVE EMPHASIZED THE IMPORTANCE OF SENDING A CHEMICAL DETECTION TEAM IN TO INVESTIGATE BUNKERS THERE. HOPEFULLY, THE BUNKERS WILL BE INSPECTED NOT LATER THAN TOMORROW BEFORE THE FACILITIES AT TALLIL ARE DESTROYED BEFORE WITHDRAWAL. WE WILL ADVISE YOU OF REPORTS ON TALLIL IN A FOLLOW-UP MSG.

CHEMICAL MUNITIONS MARKINGS

INFORMATION WAS PROVIDED BY AN EXTENSIVE REPORT

INDICATED IRAQI CHEMICAL MUNITIONS ARE COLOR-CODED TO IDENTIFY THE TYPE OF CHEMICAL AGENTS CONTAINED IN THE MUNITIONS. COLORED RINGS AROUND THE MUNITIONS DENOTE THE CHEMICAL TYPE. RED RINGS INDICATE NERVE AGENTS, YELLOW RINGS DENOTE BLISTER AGENTS, AND GREEN RINGS INDICATE CHOKING AGENTS. KNEW THAT NERVE AND BLISTER AGENT MUNITIONS WERE IN THE IRAQI INVENTORY BECAUSE THEY HAD BEEN EMPLOYED IN THE IRAN/IRAQ WAR.

END OF MESSAGE

Subject: SUBJ: CIA RELAYS CONCERNS ABOUT UNMARKED CHEMICAL MUNITIONS, 6 MARCH 1991
Not Finally Evaluated Intelligence

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0619232 MAR 91 DIRECTOR 551818

TO: IMMEDIATE JILE/SAUDI

FROM: DI

SUBJECT: PROPOSED TDY

REF: A.
B. DIRECTOR 545985

ACTION REQUESTED: PLEASE SEE PARAGRAPHS 2, 6, AND 7.

1. WE HAVE JUST RECEIVED INFORMATION THAT ARMY TEAM ANALYSTS WERE TO ACCOMPANY HAS BEEN CANCELLED. ANALYSTS STILL HAVE URGENT NEED FOR THE SAKE OF FUTURE ANALYTICAL REQUIREMENTS TO VISIT ANY OF THE FOLLOWING FACILITIES WHILE THEY REMAIN UNDER COALITION CONTROL:

A. AD DIWANIYAH AMMO STORAGE EAST
3200N 4500E

B. AD DIWANIYAH AMMO STORAGE SW
3157N 4454E

C. AN NASIRIYAH AMMO STORAGE SW
3058N 4611E

D. ASH SHUAYBAH AMMO STORAGE NE
3029N 4739E

E. TALLIL AIRFIELD
3056N 4605E

2. URGENTLY REQUEST THAT JILE/SAUDI DETERMINE IF ANY OF THE ABOVE IRAQI FACILITIES WILL STILL BE IN COALITION HANDS IN THE NEXT 60 HOURS.

3. HIGH LEVEL POLICYMAKERS WANT IMMEDIATE ANSWERS TO QUESTIONS ON PRESENCE OF CHEMICAL MUNITIONS IN THE KTO. THE NEXT TWO WEEKS, WHILE FACILITIES ARE STILL IN COALITION CONTROL, ARE A PERIOD OF GOLDEN OPPORTUNITY TO COLLECT INTELLIGENCE INFORMATION THAT COULD ANSWER THESE INQUIRIES. PRESENCE OF ANALYSTS WILL ENSURE THAT

POLICYMAKERS' QUESTIONS ARE ADDRESSED.

4. ALTHOUGH THERE HAVE BEEN EPW REPORTS THAT IRAQ'S CHEMICAL MUNITIONS HAVE COLORED BANDS OTHER MEANS OF IDENTIFICATION, OUR EXPERIENCE WITH THE MUNITIONS IRAQ USED IN ITS WAR WITH IRAN INDICATES THAT THE IRAQIS DID NOT/NOT MARK THEIR CHEMICALLY FILLED MUNITIONS. WE BELIEVE THE EPW REPORTS ON MARKINGS MAY REFLECT TRAINING CLASSES ON CHEMICAL MUNITIONS USING SOVIET EXAMPLES. OUR EXPERTS ARE FAMILIAR WITH THE SPECIFIC TYPES OF MUNITIONS THAT IRAQ FILLED WITH CHEMICAL WARFARE AGENTS DURING THE IRAN-IRAQ WAR. IF PERSONNEL IN THE KTO ARE NOT AWARE OF THIS POSSIBILITY, OPPORTUNITIES TO SUCCESSFULLY IDENTIFY CHEMICALLY FILLED MUNITIONS MAY BE MISSED.

WHEN CACHES OF UNMARKED MUNITIONS ARE DESTROYED, THERE IS ALSO THE POSSIBILITY THAT INDIVIDUALS COULD BE EXPOSED TO CHEMICAL WARFARE AGENTS. IF ANY CW AGENTS ARE DETECTED, EXPERTS WILL PROVIDE REAL-TIME GUIDANCE ON TYPES OF AGENTS KNOWN OR SUSPECTED OF BEING IN THE IRAQ ARSENAL.

5. PRESENCE OF EXPERTS WILL ALSO ENSURE THAT ANY DOCUMENTS, MATERIALS, OR INFORMATION OBTAINED FROM EPWS OR CAPTURED AREAS CAN BE REVIEWED IN REAL-TIME FOR CW RELEVANCE. OUR EXPERTS CAN ALSO HELP FOCUS DEBRIEFING QUESTIONS AND COLLECTION EFFORTS.

6. REQUEST JILE/SAUDI IMMEDIATELY PROVIDE ANY INFORMATION AVAILABLE ON RECENT REPORTING INDICATING THAT A US SOLDIER HAD BEEN EXPOSED TO BLISTER AGENTS. WHEN REPORTING OF THIS TYPE SHOWS UP, HIGH LEVEL CONSUMERS--THE PRESIDENT, THE DIRECTOR OF CENTRAL INTELLIGENCE, AND MEMBERS OF THE NATIONAL SECURITY COUNCIL--DEMAND AN IMMEDIATE ASSESSMENT. WITHOUT ADDITIONAL DETAILS, OUR EXPERTS ARE UNABLE TO DETERMINE THE VALIDITY OF SUCH REPORTS. INITIAL ASSESSMENTS THAT WE ARE UNSURE OF THE IMPLICATIONS OF THESE REPORTS CAN ONLY KEEP THESE CONSUMERS AT BAY, FOR A SHORT TIME.

7. REQUEST THAT JILE/SAUDI DIRECTLY APPROACH CENTCOM CCJ2 AND ASK FOR IMMEDIATE COUNTRY CLEARANCE FOR ANALYSTS. ANALYSTS ARE READY FOR IMMEDIATE DEPARTURE WHEN COUNTRY CLEARANCE RECEIVED.

1.5(c)
74543:65158

03 APR 91

SOURCES FROM IRAQ'S INFANTRY DIVISION LOCATED IN AN NASIRIYAH (3102N 04616E) LEARNED ON 3 APRIL 1991 THAT AN AMERICAN FORCE , HAD BLOWN UP THE IRAQI AL IMAM 'ALI BASE AND THE AL KHAMISIYAH (3044N 04625E) AMMUNITIONS STORAGE DEPOT ON 1 AND 2 APRIL.

---

21 APR 91

IRAQI VI CORPS
UNITS CONDUCT SEARCH OPERATIONS, APRIL 1991;
DAMAGES TO AL KAMISIYAH AMMUNITION DEPOTS
DUE TO DESERT STORM OPERATIONS

TEXT:

MILITARY UNITS SUBORDINATE TO THE IRAQI VI CORPS
CONDUCTED SEARCH OPERATIONS
APRIL 1991.

AL KAMISIYAH AMMUNITION DEPOTS
MOSTLY DESTROYED PROBABLY BY DESERT STORM FORCES

Page:

VI CORPS . . ON APRIL,

SEARCH OF THE AREA OF
TALL AL LAHM (3047N 04623E), THE AL **KAMISIYAH** (3046N 04629E)
AMMUNITION DEPOTS (NFI),

MOST OF THE AL **KAMISIYAH**
AMMUNITION DEPOTS WERE DESTROYED BY "AMERICAN" AIRCRAFT BOMBING
OR DETONATION,

95624:95624
1.5(c)

Subject: SUBJ: IRAQI DECLARATION
Not Finally Evaluated Intelligence

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ANNEX IV

LOCATION, CONDITION, AND TECHNICAL SPECIFICATIONS OF MUNITIONS

NO: 1

LOCATION.: MUTHANNA ESTABLISHMENT (SAMARRA)

AGENT: SARIN

MUNITION: 122-MM ROCKET WARHEAD

QTY: 6,120

DESCRIPTION: METAL WARHEAD COMPRISING TWO PLASTIC CONTAINERS (TOTAL CAPACITY 7 LITRES), EQUIPPED WITH IMPACT FUSE AND INTERNAL BURSTER FILLED WITH RDX; MOUNTED ON MISSILE VEHICLE WITH BINARY-SYSTEM SOLID FUEL STORED OUTDOORS IN WOODEN BOXES

CONDITION: NORMAL

NO: 2

LOCATION: MUTHANNA ESTABLISHMENT

AGENT: SARIN

MUNITION: 122-MM ROCKET

QTY: 2,500

DESCRIPTION: METAL WARHEAD COMPRISING THREE METAL CONTAINERS LINED WITH TEFLON (TOTAL CAPACITY 6 LITRES); FOLLOWING DISPERSAL, THE CONTAINERS ARE OPERATED BY IGNITING AN ALL-WAYS FUSE; MOUNTED ON MISSILE VEHICLE COVERED BY BINARY-SYSTEM SOLID FUEL

CONDITION: UNDER DEBRIS IN DAMAGED STORE

NO: 3

LOCATION: MUHAMMADIYAT

AGENT: SARIN

MUNITION: DS-2 SERIAL BOMB

QTY: 200

DESCRIPTION: MADE OF LOCALLY-PRODUCED ALUMINIUM; CAPACITY 220 LITRES; EQUIPPED WITH INTERNAL BURSTER FILLED WITH RDX AND IMPACT FUSE

CONDITION: UNDER DEBRIS; DESTROYED

NO: 4

LOCATION: MUHAMMADIYAT

AGENT: MUSTARD GAS

MUNITION: LD-250 SERIAL BOMB

QTY: 200

DESCRIPTION: LOCALLY PRODUCED; EQUIPPED WITH INTERNAL BURSTER FILLED WITH RDX AND IMPACT OR PROXIMITY FUSE

CONDITION: DAMAGED

NO: 5

LOCATION: MUHAMMADIYAT

AGENT: CS

MUNITION: MORTOR SHELL

QTY: 20,000

DESCRIPTION: ORDINARY BOMB; CAPACITY 440 GM (?); EQUIPPED WITH IMPACT FUSE

CONDITION: DESTROYED

NO: 6

LOCATION: KHAMISIYAH STORES

AGENT: SARIN

MUNITION: 122-MM ROCKET

QTY: 2,160

DESCRIPTION: AS IN (1) ABOVE

CONDITION: DESTROYED

NO: 7

LOCATION: CHEMICAL CORPS TRAINING CENTRE (NEAR FALLUJAH) (80 KM WEST OF BAGHDAD)

AGENT: MUSTARD GAS

MUNITION: ARTILLERY SHELL

QTY: 6,394

DESCRIPTION: 3.5-LITRE-CAPACITY SHELL EQUIPPED WITH INTERNAL BURSTER (TYPE RDX) AND IMPACT OR PROXIMITY FUSE

CONDITION: NORMAL

NO: 8

LOCATION: AL-WALID AIRBASE

AGENT: SARIN

MUNITION: BINARY-SYSTEM R-400 SERIAL BOMB

QTY: 336

DESCRIPTION: LOCALLY PRODUCED; 90 LITRES; AGENTS MIXED SHORTLY BEFORE UTILIZATION; EQUIPPED WITH RDX-TYPE INTERNAL BURSTER; IMPACT FUSE AND DELAY FUSE (?)

CONDITION: NORMAL

NO: 9

LOCATION: SADDAM AND QADISIYAH AIRBASE

AGENT: MUSTARD GAS

MUNITION: AALD-500 500-GAUGE SERIAL BOMB

QTY: 140

DESCRIPTION: CAPACITY 12 LITRES; EQUIPPED WITH RDX-TYPE INTERNAL BURSTER AN IMPACT OR PROXIMITY FUSE

CONDITION: NORMAL

NO: 10

LOCATION: SADDAM, QADISIYAH, AL-PAKR AND TAMMUZ AIRBASES AND AL-TUZ AIRFIELD

AGENT: MUSTARD GAS

MUNITION: LD-250 250-GAUGE SERIAL BOMB

QTY: 900

DESCRIPTION: CAPACITY 60 LITRES; LOCALLY PRODUCED; EQUIPPED WITH RDX-TYPE INTERNAL BURSTER AND IMPACT OR PROXIMITY FUSE

CONDITION: NORMAL

NO: 11

LOCATION: DUJAYL (AVARAH)

AGENT: SARIN

MUNITION: AL-EUSSEIN MISSILE WARHEAD

QTY: 16

DESCRIPTION: LOCALLY-PRODUCED WARHEAD; CAPACITY 140 LITRES; EQUIPPED WITH INTERNAL BURSTER AND IMPACT FUSE

CONDITION: NORMAL

NO: 12

LOCATION: DUJAYL (AVARAH)

AGENT: BINARY SARIN

MUNITION: AL-EUSSEIN MISSILE WARHEAD

QTY: 14

DESCRIPTION: LOCALLY-PRODUCED WARHEAD; CAPACITY 140 LITRES; AGENTS ARE MIXED ABORTLY BEFORE UTILIZATION; EQUIPPED WITH INTERNAL BURSTER AND IMPACT FUSE

CONDITION: NORMAL

NO: 13

LOCATION: KHAMISIYAH STORES (NASIRIYAH)

AGENT: MUSTARD GAS

MUNITION: 155-MM SHELL

QTY: 4.240

DESCRIPTION: 3.5-LITRE-CAPACITY BOMB EQUIPPED WITH RDX-TYPE INTERNAL BURSTER AND IMPACT OR PROXIMITY FUSE

CONDITION: NORMAL

1.5(c)
76864:76864

Subject: SUBJ: IRAQ'S NONCOMPLIANCE WITH UN SECURITY COUNCIL RESOLUTION 687, AUGUST 1991
Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

Directorate of
Intelligence

Iraq's Noncompliance With UN
Security Council Resolution 687

An Intelligence Assessment

August 1991

We know through reporting that chemical weapons have been stored at three declared siteS---Samarra', Muhammadiyat, and Khamisiyah---for several years. The latter TWO SITES were not in Iraq's initial declaration to the UN but were declared shortly thereafter. By 1989, SAMARRA' and Muhammadiyat reportedly were two of Iraq's principal CW storage sites. Chemical weapons were stored at the KhamiSiyah site as early as 1985. three other storage sites declared by Iraq contained S-shaped special storage bunkers, all but one of which was damaged or destroyed by Coalition AIRSTRIKES.

Khamisiyah Storage Facility

Iraq declared that chemical munitionS are stored at the Khamisiyah storage facility, near the city of An Nasiriyah. REPORTING indicated in 1986 THAT SEVERAL THOUSAND MUSTARD munitions were stored at the Khamisiyah site. The Iraqi coordinates are close to those of a storage facility near An Nasiriyah that contains ONE S-shaped bunker. The bunker was extensively damaged by Coalition attacks.

1.5(C)
95631:95631

The United Nations Special Commission on Iraq (UNSCOM) has made available the following information derived from the UNSCOM 9/CW-2 (15 to 22 August 1991) Mission Inspection Report:

Annex R

ANSWERS TO QUESTIONS POSED BY UNSCOM 9 ON CHEMICAL AGENTS AND SYNTHETIC PROCESSES

120

Why was the original declaration of 155-mm mustard shells so incomplete?

A: The declaration for Khamisiyah was not made until after 18 April because on 18 April Khamisiyah was still in the hands of the Coalition forces. We did not know until after their withdrawal how many mustard gas shells had been left there, if any.

(Comment: Even if correct, this doesn't, of course, answer the question in relation to the mustard shells at Fallujah)

Subject: SUBJ: SITE DESCRIPTIONS FROM UNSCOM 20 INSPECTION REPORT, 13 NOVEMBER 1991
Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

THE UNITED NATIONS SPECIAL COMMISSION ON IRAQ (UNSCOM) HAS MADE AVAILABLE THE FOLLOWING INFORMATION DERIVED FROM THE UNSCOM 20/CW-6 MISSION (22 OCTOBER TO 11 NOVEMBER 1991) INSPECTION REPORT (DATED 13 NOVEMBER 1991):

SECTION 3

SITE DESCRIPTIONS

INTRODUCTION

68. THE UNSCOM 20 INSPECTION TEAM VISITED 6 DECLARED CHEMICAL WEAPONS STORAGE SITES: SADDAM AIR BASE, AL-TUZ AIRFIELD, KHAMISIYAH CW STORAGE SITE, QADISIYAH AIR BASE, AL-WALID AIR BASE AND MUHAMMADIYAT CW STORAGE SITE.

KHAMISIYAH CW STORAGE SITE

78. KHAMISIYAH CW STORAGE SITE IS SITUATED APPROXIMATELY 25KM SOUTHEAST OF NASIRIYAH. THERE WERE TWO TYPES OF CHEMICAL WEAPONS STORED THERE: 155MM MUSTARD-FILLED ARTILLERY SHELLS AND 122MM 'BINARY SARIN' ROCKETS (FILLED WITH A MIXTURE OF GB AND GF).

79. THE 122MM CHEMICAL ROCKETS WERE STORED WITHIN THE CONFINES OF KHAMISIYAH AMMUNITION DEPOT. ARTILLERY SHELLS WERE LOCATED IN AN UNFENCED OPEN AREA ABOUT 5KM EAST OF THE DEPOT.

80. A SMALL QUANTITY OF SALVAGED 122MM ROCKETS WAS LOCATED IN A HOLLOWED-OUT PIT. THE ROCKETS WERE PLACED IN THREE PILES. THE MAIN STOCK OF 122MM ROCKETS WERE STORED. IN THE REMAINS OF A DEMOLISHED STORAGE BUNKER. THE IRAQIS REFER TO THE BUILDING AS "WAREHOUSE 73". THE ROCKETS IN AND AROUND THIS STRUCTURE WERE DAMAGED BEYOND REPAIR. THE BUNKER ITSELF HAD BEEN REDUCED TO A PILE OF RUMBLE. COUNTING OF THE CONTENTS WAS NOT POSSIBLE. EXPLOSIVE HAZARDS AND CONTAMINATED AREAS EXIST WITHIN THE DEPOT. MOVEMENT THROUGH THE DEPOT WAS RESTRICTED BECAUSE OF MUNITIONS AND EXPLOSIVE MATERIALS SCATTERED THROUGHOUT THE AREA. MUNITIONS CANNOT BE TRANSPORTED AND MUST BE DESTROYED WHERE THEY ARE. DESTRUCTION OF THE ROCKETS WOULD BE DIFFICULT AND DANGEROUS OWING TO THEIR DETERIORATION AND PRESSURE BUILD-UP WITHIN THE CASING. CAREFUL ADDITIONAL STUDY IS NECESSARY BEFORE A DETAILED DESTRUCTION RECOMMENDATION CAN BE MADE.

81. THE IRAQI EXPLANATION THAT THE ROCKETS HAD BEEN DESTROYED DURING THE WAR WAS INADEQUATE. THE INSPECTION TEAM OBSERVED THAT THE STRUCTURES DID NOT LOOK AS THOUGH THEY HAD BEEN BOMBED, BUT RATHER DESTROYED BY LOCALLY PLACE DEMOLITION CHARGES. SINCE THAT THE IRAQI ARMY EVACUATED THIS AREA DURING THE WAR, THE POSSIBILITY THAT THE CHEMICAL WEAPONS WERE DESTROYED BEFORE ITS DEPARTURE CANNOT NOT BE EXCLUDED.

82. IN CONTRAST TO THE CONDITION OF THE ROCKETS, THE ARTILLERY PROJECTILES APPEARED TO HAVE RETAINED SOME UTILITY. THIS IS AN ADDITIONAL INDICATION THAT THE 155MM PROJECTILES WERE MOVED TO THE PRESENT LOCATION AFTER THE WAR. THE 155MM SHELLS COULD BE TRANSPORTED TO AL-MUTHANNA FOR DESTRUCTION WITHOUT DIFFICULTY.

83. A MAP OF KHAMISIYAH AREA AND DIAGRAMS OF THE RELEVANT CW STORAGE SITES ARE ATTACHED.

SECTION 5

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

136. A SIMILAR SITUATION EXISTS AT KHAMISIYAH WITH REGARD TO THE 122MM ROCKETS. THEY ARE TO DANGEROUS TO MOVE. IT SHOULD BE NOTED THAT WRITTEN PERMISSION HAS ALREADY BEEN GIVEN TO THE IRAQI AUTHORITIES TO MOVE THE AMMUNITION WHICH HAS BEEN DEEMED FIT TO BE TRANSPORTED. THE IRAQIS HAVE ALSO BEEN TOLD TO TAKE NOT ACTION CONCERNING ALL OTHER AMMUNITION UNTIL THEY RECEIVE ADVICE FROM UNSCOM.

138. DURING UNSCOM 20 FURTHER DISCUSSION WERE HELD WITH THE SENIOR IRAQI CW OFFICIALS. AS ON PREVIOUS OCCASIONS THE QUESTIONS OF THE TEAM WERE MET WITH OBFUSCATION, PREVARICATION AND DOWNRIGHT LYING.

139. ANOMALIES WERE DISCOVERED AT SEVERAL SITES CONCERNING THE CONDITION OF AMMUNITION. IT WAS EVIDENT THAT AMMUNITION HAD BEEN MOVED TO ITS CURRENT LOCATION WELL AFTER THE END OF THE GULF WAR. THE REASON FOR THIS IS NOT CLEAR. THE IRAQIS DENY THAT THEY HAVE REMOVED ANY AMMUNITION AND WILL PROVIDE NO INFORMATION ON THIS. THE SIGNIFICANCE OF THIS IS HARD TO ASSESS.

140. THE INCIDENT WHICH WHILST OPENING A 122MM ROCKET AT KHAMISIYAH PROVED THAT BOTH THE EQUIPMENT USED AND THE PROCEDURES ADOPTED WERE CORRECT.

ANNEX F - DETECTION INFORMATION

7. KHAMISIYAH STORAGE:

- NO POSITIVE DETECTION AND NO HAZARD WITH 155MM SHELLS, IF NOT UNSCREWING HANDLING RINGS.
- ON AND AROUND THE 122MM ROCKETS:

·NO VAPOUR DETECTION

- MANY LEAKS ON THE GROUND (LIQUID DETECTION: 5 BARS PHOSPHORUS WITH AP2C)

OPERATIONS

18. AN NASIRIYAH DEPOT. TWO 122MM BINARY GB/GF ROCKETS WERE SELECTED FOR CHEMICAL SAMPLING, AND ONE OF THESE TWO ITEMS WAS EXAMBLED WITH ARS ALONE. THE INAICATION WAS LIQUID. THIS WAS THE ITEM WHICH SPRAYED LIQUID G-AGENT ON THE EOD PERSONNEL DRILLING THE MUNITION.

19. A TARGET OF OPPORTUNITY WAS MISSED BY NOT INTERROGATING ANY OF THE 5.000- MUSTARD- FILLED 155MM PROJECTILES. ARS WOULD HAVE BEEN IDEAL IN THIS SITUATION.

1.5(c)
72668:72668

Subject: SUBJ: MEMORANDUM OF PHONE CALL, 15 NOVEMBER 1991
Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

MEMORANDUM OF PHONE CALL 15 NOV 91

1. TALKED TO 0815L

7. CAME BACK ON THE LINE TO POINT OUT THAT PARA OF LAST NIGHT'S SUPPORT CABLE CONTAINED A MISUNDERSTANDING ON OUR PART. HE STATED (VERY EMPHATICALLY-YOU KNOW) THAT TALL AL LAHM AMMUNITION STORAGE DEPOT THAT WAS VISITED BY UNSCOM 20 IS NOT THE SAME AS THE AN NASIRIYAH STORAGE FACILITY SW. THESE TWO INSTALLATIONS ARE ABOUT 25 KILOMETERS APART, AND THE IRAQIS TOOK THE TEAM TO THE FORMER LOCATION, BUT NOT THE LATTER.

1.5(c)
94742:94742

Subject: SUBJ: ACIS ON FACILITY IDENTIFICATION AND TASKING, 15 NOVEMBER 1991
Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

15 NOV 91

5 - ACIS APOLOGIZES FOR MISUNDERSTANDING ON TALL AL LAHM STORAGE FACILITY TERMINALS WERE DOWN MOST OF DAY ON 14 NOV AND HAD TROUBLE VERIFYING DIFFERENCE BETWEEN TWO FACILITIES. TASKING WILL BE FORWARDED TO STUDY THIS FACILITY FOR ACTIVITY THAT MIGHT INDICATE THAT THE IRAQIS BROUGHT CW MATERIAL INTO FACILITY JUST FOR THE INSPECTION, RESULTS WILL BE FORWARDED NEXT WEEK. ALSO ACIS WILL GET IN TOUCH WITH 24TH MI DIVISION ON THIS MATTER. ACIS HAS NO ON CW6 VISIT TO TALL AL LAHM FACILITY. PLEASE QUERY STATUS OF REPORT FAX ACIS IF POSSIBLE.

1.5(c)
94736:94736

ENVELOPE CDSN = LGX071 MCN = 91316/10784 TOR = 913161212
PTTSZYUW RUEKJCS5419 3161212-SSSS--RUEALGX.
ZNY SSSSS
HEADER P 121212Z NOV 91
FM JOINT STAFF WASHINGTON DC
INFO RUEADWD/OCSA WASHINGTON DC
RUEAHQA/CSAF WASHINGTON DC
RUEACMC/CMC WASHINGTON DC
RUSNNOA/USCINCEUR VAIHINGEN GE
RUFGAID/USEUCOM AIDES VAIHINGEN GE
RUCUAAA/HQ SAC OFFUTT AFB NE//XP//
RUETIAQ/MPCFTGEORGEGMEADEMD
RHFPAAA/UTAIS RAMSTEIN AB GE//IN-CMO//
RHFUMHE/BRFINK MHE BOERFINK GE
RHEPAAB/TAC IDHS LANGLEY AFB VA//IDHS//
RHCGSRB/COMUSARCENT FT MCPHERSON GA//AFRD-DSO//
RUFTAKA/USAINTELCTRE HEIDELBERG GE
RUFTAKC/UDITDUSAREUR HEIDELBERG GE
RUDOGHA/USNMR SHAPE BE//SURVEY//
RHDLCNE/CINCUSNAVEUR LONDON UK//N2/N24//
RHCGSRB/CINCFOR FT MCPHERSON GA//FCJ2-IC/FCJ3-OD//
RUCBSAA/USCINCLANT NORFOLK VA//J2//
RUWSMXI/MAC INTEL CEN SCOTT AFB IL//IN//
RUCJACC/USCINCCENT MACDILL AFB FL//CARA//
RUCQVAB/USCINCSOC INTEL OPS CEN MACDILL AFB FL
RUQYSDG/FOSIF ROTA SP
RUEOFAA/COMJSOC FT BRAGG NC//J2//
RULKQAN/MARCORINTCEN QUANTICO VA
RUSNNOA/USCINCEUR VAIHINGEN GE
RUFTAKA/CDR USAINTELCTRE HEIDELBERG GE
RUEALGX/SAFE
P 121157Z NOV 91
FM
TO RUEKJCS/DIA WASHDC PRIORITY

RHEHAAA/THE WHITE HOUSE WASHDC//SITUATION ROOM// PRIORITY
RUEHC/SECSTATE WASHDC PRIORITY

RUHGRPG/COMUSNAVCENT
RUEBFDA/USCENTAF FWD DHAHRAN//IN//
RUEBFDA/4404CW DHAHRAN//IN//

RUHGPSA/CTF ONE FIVE FOUR
RUHGMFG/CTF ONE FIVE SIX
RUHGMFG/CTF ONE FIVE EIGHT
RUWMHJA/NAVSTKWARCEN FALLON NV//N-2//
RUDHAAA/CDRINSCOM FT BELVOIR VA//IAOPS-H-F//
RUCDGDA/DIRMSIC REDSTONE ARS AL//AIAMS-T//
BT

SERIAL: (U) IIR 6 021 0020 92.

/********** THIS IS A COMBINED MESSAGE **********/
BODY COUNTRY: (U) IRAQ (IZ).
SUBJECT: IIR 6 021 0020 92/UNSCOM 20 (CW6) INSPECTION RESULTS OF KAMISIYAH AMMUNITION STORAGE FACILITY (U).

WARNING:

THIS IS AN INFORMATION REPORT, NOT FINALLY EVALUATED INTELLIGENCE.

DEPARTMENT OF DEFENSE

DOI: (U) 911027.

SOURCE:

SUMMARY: ON 26 AND 27 OCT 91, THE UNITED NATIONS SPECIAL COMMISSION CHEMICAL WARFARE TEAM 6, UNSCOM 20, INSPECTED CHEMICAL MUNITIONS AT AN AMMUNITION STORAGE DEPOT NEAR AN NASIRIYAH. A POTENTIAL NERVE AGENT CASUALTY WAS COMPLETELY PROTECTED BY A GERMAN-MADE PROTECTIVE SUIT.

TEXT 1. BACKGROUND--BETWEEN 22 OCT 91 AND 1 NOV 91, THE UNITED NATIONS SPECIAL COMMISSION (UNSCOM) CHEMICAL WARFARE (CW) INSPECTION TEAM 6, UNSCOM 20, CONDUCTED DETAILED INSPECTIONS OF DECLARED CW STORAGE SITES THROUGHOUT IRAQ. ON 27 OCT 91, THE TEAM COUNTED AND CATALOGUED CHEMICAL MUNITIONS STORED AT AN AMMUNITION STORAGE FACILITY NEAR AN NASIRIYAH. IN ADDITION, THE TEAM INSPECTED TWO OTHER SITES CONTAINING 155MM ARTILLERY ROUNDS AND SALVAGED 122MM ROCKETS.
2. AMMUNITION DEPOT--THIS DEPOT //GEOCOORD:3074N04429E//, IS LOCATED APPROXIMATELY 25 KILOMETERS SOUTHEAST OF AN NASIRIYAH. THIS FACILITY IS OF EQUAL SIZE TO THE AN NASIRIYAH DEPOT SOUTHWEST

//GEOCOORD:3057N04306E//. THE DEPOT CONSISTS OF A MIXTURE OF BUILDINGS OF VARIOUS CONSTRUCTIONS, AND NUMEROUS TANKS, CONTENTS UNKNOWN, ALL SURROUNDED BY EARTHEN BERMS. THESE TANKS COULD BE WATER SUPPLIES.

3. 155MM ARTILLERY SHELLS--155MM ARTILLERY SHELLS WERE LOCATED IN AN UNFENCED OPEN AREA APPROXIMATELY FIVE KILOMETERS EAST OF THE DEPOT AT //GEOCOORD:3043N04625E//. THE SHELLS WERE PAINTED GREY WITH THE WORD GAZ, WRITTEN IN ARABIC SCRIPT, FOLLOWED BY THE LETTER "H", WRITTEN IN ROMAN SCRIPT. THE LOT NUMBER WAS WRITTEN UNDERNEATH THIS. THE SHELLS HAD LIFTING/HANDLING RINGS ON TOP. SOME OF THE RINGS HAD WASHERS, WHILE OTHERS DID NOT. THE ONLY MUSTARD DETECTED WAS FROM ONE ROUND WHERE THE LIFTING RING HAD LOOSENED. THERE WAS NO EVIDENCE OF ANY EXPLOSIVES, BURSTER CHARGES, OR FUSES. THE SHELLS WERE NOT NEATLY STACKED. ALTHOUGH THE SHELLS HAD BEEN ON PALLETS, SOMEONE APPARENTLY HAD PUSHED THEM OVER. WHEN THE TEAM ARRIVED, THE SHELLS WERE COVERED WITH CANVAS. THE IRAQIS REMOVED THE CANVAS SO THE TEAM COULD COUNT THE SHELLS. ALTHOUGH THE IRAQIS DECLARED 6,240 SHELLS, THE TEAM COUNTED A TOTAL OF 6,323. OTHER THAN THE LEAKING SHELL, ALL THE SHELLS APPEARED TO BE IN GOOD CONDITION, AND WILL BE MOVED TO THE "UTHANNA STATE ESTABLISHMENT //GEOCOORD:334956N0434813E// FOR DESTRUCTION.

4. 122MM ROCKETS--THE IRAQIS DECLARED 2,160 ROCKETS, WHICH ARE STORED IN TWO SEPARATE LOCATIONS. DUE TO THE HAZARDOUS CONDITIONS AT THE TWO SITES, THE TEAM WAS ABLE TO ONLY COUNT 297 ROCKETS.

A. OPEN PIT--ON 26 OCT 91, THE TEAM INSPECTED A PIT NEXT TO THE CANAL WHERE THE IRAQIS HAD DUMPED THE SALVAGED 122MM BINARY SARIN ROCKETS, WHICH WERE FILLED WITH A MIXTURE OF GB AND GF. THESE ROCKETS WERE APPARENTLY SALVAGED FROM WHAT THE IRAQIS REFERRED TO AS WAREHOUSE '73' AT THE DEPOT. THE APPROXIMATE LOCATION FOR THIS PIT IS //GEOCOORD:304480N0462580E//. INSIDE THE PIT, MEASURING 300 METERS BY 150 METERS, THE ROCKETS WERE HEAPED INTO FOUR PILES, THREE LARGE PILES AND ONE SMALL PILE, ALONG WITH THEIR ASSOCIATED WOODEN CRATES. IT APPEARED TO THE TEAM THAT THE WOODEN BOXES HAD BEEN PILED UP WITH EXPLOSIVES UNDERNEATH AND BLOWN TO PIECES. THERE WERE VARIOUS OTHER REMAINS OF CONVENTIONAL ROCKETS, ALONG WITH OTHER "ILITARY-TYPE LITTER IN THE PIT.

B. 122MM ROCKET SAMPLING--ON 27 OCT 91, THE TEA" TOOK SAMPLES FROM THE 122MM ROCKETS. THE SAMPLING WAS PRECEDED BY AN EXPLOSIVE ORDNANCE DESTRUCTION (EOD) TECHNICIAN DRILLING A HOLE IN THE ROCKET. AS THE TECHNICIAN PREPARED, A DECONTAMINATION LINE WAS ESTABLISHED WITH DOCTORS STANDING BY. PRIOR TO DRILLING THE HOLE, EOD PERSONNEL DONNED FULLY-IMPERMEABLE CHEMICAL PROTECTIVE SUITS WITH OXYGEN BOTTLES. THE EOD TECHNICIAN ATTEMPTED TO DRILL INTO THE ROCKET, BUT WAS UNSUCCESSFUL AT THIS SPOT. HE CHOSE A SECOND SPOT, AND BEGAN TO DRILL AGAIN. ALTHOUGH THE DRILLING WAS VERY DIFFICULT, THE DRILL SUDDENLY ENTERED THE ROCKET AND WAS IMMEDIATELY FORCED BACK OUT. A FOUR-"ETER STREAM OF SARIN, UNDER CONSIDERABLE PRESSURE, SPRAYED FROM THE ROCKET, AND HIT THE EOD TECHNICIAN UNDER THE JAW WITH CONSIDERABLE FORCE. APPROXIMATELY ONE-THIRD OF THE ROCKET'S CONTENTS ESCAPED. THE TECHNICIAN IM"EDIATELY UNDERWENT FULL DECONTA"INATION PROCEDURES. THIS PROCESS WAS CONDUCTED TWICE BEFORE THE TECHNICIAN WAS CO"PLETELY DECONTA"INATED BECAUSE THE SARIN WAS IN ALL THE FOLDS OF THE GARMENT AROUND THE NECK AND AR"S. IN ADDITION, THE CHEMICAL AGENT "IXTURE CONTAINED GF, WHICH IS "ORE DIFFICULT TO REMOVE THAN GB. THE INDIVIDUAL SPENT APPROXIMATELY 40 MINUTES IN THE SUIT AND SUFFERED NO EFFECTS FROM THE ORDEAL. THERE WAS PLENTY OF WATER ON THE SITE FOR THE DECONTAMINATION PROCEDURE AND TO KEEP THE INDIVIDUAL COOL DURING THE PROCESS. FOLLOWING THIS INCIDENT, THE REQUIRED SAMPLES OF THE AGENT WERE TAKEN. BASED ON THIS INCIDENT, THE TEAM BELIEVED THE IRAQIS COULD NOT HAVE SAFELY OPENED THE ROCKETS. THE CONTENTS OF THE ROCKETS MUST BE UNDER CONSIDERABLE PRESSURE. AFTER THE SARIN EJECTED FROM THE ROCKET, THE PLASTIC CONTAINER INSIDE RECOVERED ELASTICALLY AND ACTUALLY MOVED ABOUT FOUR MILLIMETERS, OBSCURING THE HOLE. THERE WAS NO OBVIOUS EXTERNAL SIGN OF THE PRESSURE. THERE WAS NO OBVIOUS DISTORTION OR BULGING OF THE ROCKET CASING, AND NO APPARENT LEAKAGE. THE IRAQIS WERE GENUINELY CONCERNED AND VERY SURPRISED BY THE INCIDENT. IN THE TEAM'S ESTIMATION, THE IRAQIS DO NOT HAVE THE EQUIPMENT TO SAFELY DRAIN THE ROCKETS, AND UNDER THE SAME CIRCUMSTANCES WOULD HAVE SUFFERED A SEVERE CASUALTY, PROBABLY A FATALITY.

C. BUNKER 73--ON 27 OCT 91, THE TEAM INSPECTED BUNKER 73, AS IT IS KNOWN BY THE IRAQIS, WHICH IS LOCATED ABOUT THREE KILOMETERS FROM THE HEADQUARTERS BUILDING OF THE AMMUNITION DEPOT, AND WAS COMPLETELY DESTROYED. ALL THAT REMAINED WAS A PILE OF EARTH WITH A FEW STANCHIONS STICKING UP, AND SOME TWISTED REINFORCING STEEL WITH CHUNKS OF CONCRETE ATTACHED. THIS BUNKER WAS JUST A STANDARD AMMUNITION STORAGE BUNKER, SURFACE CONSTRUCTION, WITH EARTHEN BLAST PROTECTION ON THE SIDES. THIS BUNKER APPEARED TO BE STANDARD WHEN COMPARED TO OTHER BUNKERS IN THE AREA. IT APPEARED TO HAVE NO SPECIAL PROVISIONS FOR VENTILATION AND WAS

CHEAPLY CONSTRUCTED. 122MM ROCKETS, WITH THEIR CANISTERS SPLIT OPEN, WERE SCATTERED THROUGHOUT THE BUNKER AREA. HOWEVER, NO CONTAMINATION WAS DETECTED. ALTHOUGH THE IRAQIS HAVE "OVED A LARGE "AJORITY OF "UNITIONS TO THE PIT, THERE ARE STILL ROCKETS, EITHER WITH SPLIT CASINGS OR OTHER DAMAGE, SCATTERED AROUND THE AREA. NONE OF THE 122M" MUNITIONS OBSERVED COULD BE CONSIDERED SERVICEABLE. THE IRAQIS WERE TOLD NOT TO "OVE THE "UNITIONS. THE IRAQIS CLAIMED THE BUILDINGS AND "UNITIONS WERE DESTROYED BY OCCUPYING COALITION FORCES. IN THE TEA"'S ESTIMATION, THE DESTRUCTION OCCURRED AS A RESULT OF LOCALLY-PLACED EXPLOSIVES AS OPPOSED TO BOMBING.

COMMENTS: (U) NONE.
//IPSP: (U)
//COMSOBJ: (U)
ADMIN PROJ: (U)
INSTR:

PREP: (U)
ENCLS: (U) NONE.
ACQ: (U)
DISSE": (U) FIELD: NONE.

95730:95730
1.5(c)

970212_cia_68329_68329_01.txt

Subject: SUBJ: SIT REP ON TALL AL LAHM

Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

NOV 91 STAFF

SUBJECT: STATUS REPORT, 12 NOV 91

TEXT:

1. SITUATION REPORT ON TALL AL LAHM AMMUNITION STORAGE DEPOT: UNSCOM 20 INSPECTED TALL AL LAH14 STORAGE DEPOT (GEOCOORD: 3044SON 462580E) ON 26-27 OCTOBER 1991. THE SITE IS LOCATED APPROXIMATELY 25KM SOUTHEAST OF AN NASIRIYAH. THE INSPECTORS FOUND TALL AL LAHM LITTERED WITH DAMAGED AND DESTROYED SARIN-FILLED 122MM ROCKETS. THE INSPECTORS ALSO NOTED THAT THE BUILDINGS WERE DESTROYED BY DEMOLITIONS AS OPPOSED TO AERIAL BOMBBARDMENT. THEY ALSO FOUND AN EMPTY U.S. CRATE LABELED AS M48, WHICH ARE SHAPE CHARGES USED BY THE U.S. MILITARY.

NOTIFIED ARMY CENTRAL COMMAND (ARCENT) OF THE LOCATION AND EVIDENCE FOUND AT TALL AL LAHM. WE RECEIVED INFORMATION FROM ARCENT TO THE FACT THAT 24TH MECHANIZED INFANTRY DIVISION WAS LOCATED IN THE VICINITY OF TALL AL LAHM, BUT WE ARE UNABLE TO CONFIRM IF U.S. TROOPS DID IN FACT DESTROY BUILDINGS AT THIS PARTICULAR SITE. WE ARE SENDING THIS INFORMATION TO YOU IN ORDER TO TAKE APPROPRIATE ACTION AS YOU SEE FIT AS THE RISK OF CHEMICAL

CONTAMINATION BY 24TH ID PERSONNEL IS A POSSIBILITY.

END OF MESSAGE

68329:68329

1.5c

First Page |Prev Page |Next Page |Src Image

Subject: SUBJ: RECORD OF PHONE CALL, 20 NOVEMBER 1991
Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

SPOKE WITH CAPT AT G2 OFFICE, FT STEWART, GA, HOME OF 24TH MECH INF DIV. WANTED ME TO PASS ON INFORMATION REGARDING CW MUNITION AT TALL AL LAHM AMMO DEPOT IN SOUTHERN IRAQ. I REQUESTED THAT ANY INFORMATION REGARDING U.S./COALITION FORCES AT THIS FACILITY DURING OP. D-S. BE FORWARDED TO ACIS.

1.5(c)
94768:94768

970212_cia_94737_94737_01.txt

Subject: SUBJ: INFO ON TALL AL LAHM AMMO

Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

SLUGS: WNINTEL

SUBJECT:

20 NOVEMBER 1991

TEXT:

CHEMICAL:

INFO ON TALL AL LAHM AMMO DEPOT WAS PASSED TO AT G-2 OFFICE, FT STEWART GA (24TH MI DIVISION). INFO ON PRESENCE OF TROOPS THERE AND THEIR ACTIVITIES DURING DESERT STORM WERE REQUESTED WILL PASS ON ANY SIGNIFICANT INFORMATION TO WHEN AVAILABLE.

94737:94737

1.5(c)

First Page |Prev Page |Next Page |Src Image

SERIAL: (U) IIR 6 021 0099 92.
BODY:
COUNTRY: (U) IRAQ (IZ).
COMBINE: COMPLETE

SUBJECT: IIR 6 021 0099 92/CHEMICAL ROCKET DESTRUCTION IN KHAMISIYAH (U).

WARNING:

THIS IS AN INFORMATION REPORT, NOT FINALLY EVALUATED INTELLIGENCE.

DEPARTMENT OF DEFENSE

DOI: (U) 920324.

SOURCE:

SUMMARY: A UNITED NATIONS SPECIAL COMMISSION CHEMICAL DESTRUCTION TEAM, UNSCOM 29 (CD 1), DESTROYED A TOTAL OF 463 BINARY CHEMICAL (GB, GF) 122-MM ROCKETS NEAR KHAMISIYAH CW STORAGE SITE, IRAQ.

TEXT: 1. NOTE--THIS IIR IS BEING RETRANSMITTED AT WASHINGTON CUSTOMER REQUEST TO BE INSERTED INTO THE DIA DATA BASE. THE ORIGINAL TRANSMISSION OF THIS IIR WAS DTG APR 92.///
DURING THE PERIOD 23 FEB - 22 MAR 92, A UNITED NATIONS SPECIAL COMMISSION CHEMICAL DESTRUCTION TEAM, UNSCOM 29 (CD 1), DESTROYED A TOTAL OF 463 BINARY CHEMICAL (GB, GF) 122-MM ROCKETS FROM KHAMISIYAH CW STORAGE SITE //GEOCOORD:304420N0462640E// NEAR AN-NASIRIYAH, IRAQ. NINETY PERCENT OF THE ROCKETS ACTUALLY CONTAINED AGENT, WITH AN ESTIMATED TOTAL AGENT WEIGHT OF 3 TONS.
2. LOCATION. DESTRUCTION TOOK PLACE IN THE VICINITY OF //GEOCOORD:304325N0464045E//. THE TEAM SELECTED THIS LOCATION AFTER CAREFUL CONSIDERATION OF SUCH FACTORS AS TOPOGRAPHY, WEATHER, AND POPULATION CENTERS. SAFETY WAS THE PRIMARY DETERMINANT, GIVEN THE MAIN WIND DIRECTION (ENCLOSURE 1). UNDER THE WIND CONDITIONS MOST PREVALENT IN THE AREA, THE SAFETY ANGLE OF THIS LOCATION IN RELATION TO THE POPULATION CENTERS NEARBY WAS 150 DEGREES.
3. IN ADDITION TO THE ROCKETS DESTROYED, THE TEAM DISCOVERED 74 ROCKETS, 8 WARHEADS, AND 4 ROCKET MOTORS AT KHAMISIYAH CW STORAGE SITE. THEY WERE RECOVERED FROM THE SAND BANK BETWEEN THE CHEMICAL WEAPONS STORAGE AREA AND THE CANAL TO THE SOUTH

. THE TEAM LEADER INSTRUCTED THE IRAQIS TO CONTINUE TO SEARCH IN THE SAND BANK FOR ANY MORE ROCKETS, THEN TO MAKE AN OFFICIAL DECLARATION OF THE NUMBER OF ROCKETS FOUND.

4. THE TEAM STATED THAT OTHER AREAS NEAR AN-NASIRIYAH WILL NEED TO BE INSPECTED IN DETAIL FOR POSSIBLE STORED CW MUNITIONS. BELIEVED THAT ADDITIONAL BACKGROUND WORK IS REQUIRED TO IDENTIFY THE ORIGINAL STORAGE LOCATION OF THE CHEMICAL ROUNDS THAT THEY DESTROYED. THE IRAQIS CLAIMED THAT ALL DAMAGE IN THE AREA WAS CAUSED BY COALITION FORCES THAT HAD OCCUPIED THE AREA. THE TEAM THOUGHT THAT THERE WAS SUFFICIENT UNCERTAINTY TO MERIT FURTHER EXAMINATION OF THIS ISSUE.

5.

COMMENTS: 1. IRAQ DECLARED KHAMISIYAH AS A STORAGE SITE FOR CHEMICAL MUNITIONS, BUT INITIALLY GAVE NO SPECIFIC LOCATION FOR THE FACILITY OTHER THAN THAT IT WAS NEAR AN-NASIRIYAH. THE U.S. INTELLIGENCE COMMUNITY INITIALLY BELIEVED THAT AN-NASIRIYAH DEPOT SOUTHWEST //GEOCOORD:3057N04611E// WAS THE MOST LIKELY STORAGE FACILITY FOR CW MUNITIONS IN THE AREA. THE UNSCOM TEAM TASKED TO VERIFY THE STORED CHEMICAL MUNITIONS, UNSCOM 20, DID NOT VISIT THIS DEPOT, HOWEVER, AS THE IRAQIS TOOK THEM TO KHAMISIYAH CW STORAGE SITE.

2. (U) THIS IIR IS A RETRANSMISSION; ORIGINAL DTG OF IIR IS 110723ZAPR92.

95623:95623
1.5(c)

Subject: SUBJ: UNSCOM MEMBER QUESTIONS ABOUT COALITION ACTIVITY, 1 APRIL 1992
Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

010801Z APR 92

2.

A. A TOTAL OF 463 BINARY (GB, GF) 122MM ROCKETS WERE EXPLOSIVELY DESTROYED DURING UNSCOM 29'S 32 DAYS IN IRAQ. NINETY PERCENT OF THE ROCKETS ACTUALLY CONTAINED AGENT, AN ESTIMATED TOTAL OF 3 TONS OF AGENT.

3.

A. REQUESTED THAT ADDITIONAL BACKGROUND INFORMATION BE PROVIDED UNSCOM BEFORE FURTHER DESTRUCTION TAKES PLACE AT KHAMISIYAH. THE IRAQIS TOLD UNSCOM 29, AS THEY HAD TOLD UNSCOM 20, THAT THE DESTRUCTION AT THE STORAGE SITE HAD BEEN CAUSED BY COALITION FORCES WHO HAD OCCUPIED THE AREA UNTIL 10 MAR 91. UNSCOM 20 CONCLUDED THAT IT WAS PROBABLE THAT THE IRAQIS HAD GATHERED THE ROCKETS HERE AND ATTEMPTED TO DESTROY THEM THEMSELVES. REQUESTED DETAILS PERTAINING TO COALITION FORCES' ACTIVITIES AT THIS SITE: WHO WAS THERE, WHEN WERE THEY THERE; HOW LONG DID THEY STAY' WHAT ACTIONS WERE TAKEN; ETC. AGREED TO SUBMIT A REQUEST FOR THE INFORMATION.

1.5(c)
94741:94741

Subject: SUBJ: WORKING PAPER MENTIONING POSSIBLE CW EXPOSURE, 1992
Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

1. REQUEST DETAILS PERTAINING TO COALITION GROUND FORCE ACTIVTIES AT THE FOLLOWING SITES:

AN NASIRIYAH DEPOT SOUTHWEST (3057N04611E)
TALL AL LAHM STORAGE AREA (3047N04627E) (AKA KHAMISIYAH STORAGE AREA)
KHAMISIYAH CW STORAGE SITE (3044N04625E)

PLEASE PROVIDE INFORMATION ON WHO WAS THERE (WHAT UNIT(S); WHEN WERE THEY THERE; HOW LONG DID THEY STAY; WHAT ACTIONS WERE TAKEN (I.E., DID THEY COLLECT AND EXPLOSIVELY DESTROY ANY MUNITIONS? IF SO, WHERE, WHEN, DETAILS? DID THEY PLACE CHARGES IN/AROUND STORAGE BUNKERS AND DETONATE THEM?); ETC

2. JUSTIFICATION. THE IRAQIS TOLD UNSCOM 29, AS THEY HAD TOLD UNSCOM 20, THAT THE DESTRUCTION AT KHAMISIYAH STORAGE AREA AND AT THE KHAMISIYAH CW STORAGE SITE HAD BEEN CAUSED BY COALITION FORCES WHO HAD OCCUPIED THE AREA UNSCOM 20 CONCLUDED THAT IT WAS PROBABLE THAT THE IRAQIS HAD GATHERED THE ROCKETS HERE AND ATTEMPTED TO DESTROY THEM THEMSELVES ADDITIONAL INFORMATION TO CONFIRM OR REFUTE THE IRAQI CLAIM WILL SIGNIFICANTLY ASSIST THE INTELLIGENCE COMMUNITY'S EFFORTS TO IDENTIFY IRAQ'S CW STORES.

3. BACKGROUND:

A. IN ITS DECLARATION TO THE U.N. ON CHEMICAL WEAPONS HOLDINGS, IRAQ DECLARED THAT CHEMICAL MUNITIONS WERE STORED AT KHAMISIYAH, NEAR AN-NASIRIYAH. THE SPECIFIC LOCATION WAS NOT GIVEN. THE U.S. INTELLIGENCE COMMUNITY IDENTIFIED AN-NASIRIYAH DEPOT SOUTHWEST AS THE PROBABLE FACILITY TO WHICH IRAQ REFERRED.

B. UNSCOM 17 VISITED KHAMISIYAH ON 24 OCT 91 AT THE REQUEST OF UNSCOM NEW YORK TO CHECK ON REPORTED MOVEMENT OF MUNITIONS THAT WERE TAKING PLACE. UNSCOM 17 REPORTED THAT THE IRAQIS ADMITTED MOVING UP TO 20 TRUCKS PER DAY OF RECOVERABLE CONVENTIONAL MUNITIONS FROM THE DAMAGED STORAGE BUNKERS AT KHAMISIYAH. ACCORDING TO ONE OF THE UNSCOM 17 PERSONNEL WHO VISITED KHAMISIYAH, THE REPORT DID NOT STATE, HOWEVER, THAT THE SENIOR IRAQI MINISTRY OF DEFENSE REPRESENTATIVE TOLD UNSCOM 17 THAT CW MUNITIONS WERE STORED OUTSIDE THE KHAMISIYAH STORAGE AREA PROPER. UNSCOM 17 DID NOT INSPECT THE AREA BUT DID REPORT THAT LEAKING CHEMICAL AGENT WAS NOTICEABLE.

C. UNSCOM 20 VISITED THE KHAMISIYAH STORAGE SITE ON 26 AND 27 OCT 91. THEY STATED THAT BINARY SARIN-FILLED 122MM ROCKETS ALONG WITH THEIR ASSOCIATED WOODEN CRATES, APPARENTLY SALVAGED FROM WHAT THE IRAQIS REFERRED TO AS WAREHOUSE 73 AT THE KHAMISIYAH STORAGE AREA,

HAD BEEN PLACED IN FOUR PILES IN A LARGE PIT OUTSIDE THE KHAMISIYAH STORAGE AREA PROPER; I.E., AT KHAMISIYAH CW STORAGE SITE. (WAREHOUSE, OR BUNKER, 73 IS LOCATED ABOUT 3 KM FROM THE HEADQUARTERS BUILDING AT KHAMISIYAH STORAGE AREA. IT IS A STANDARD AMMUNITION BUNKER OF SURFACE CONSTRUCTION WITH EARTHEN BLAST PROTECTION ON THE SIDES. IT IS COMPLETELY DESTROYED.) NO MARKINGS TO IDENTIFY THE ROCKETS AS CHEMICAL MUNITIONS WERE NOTED. THE WOODEN BOXES APPEARED TO HAVE BEEN PILED UP WITH EXPLOSIVES UNDERNEATH AND BLOWN TO PIECES. THERE WERE REMAINS OF VARIOUS OTHER CONVENTIONAL ROCKETS AND OTHER MILITARY-TYPE LITTER IN THE PIT EQUIPMENT ASSOCIATED WITH U.S. MILITARTY DEMOLITIONS WAS DISCOVERED.

D. UNSCOM 29 SPENT THE PERIOD 23 FEB - 22 MAR 92 AT KHAMISIYAH CW STORAGE SITE, DESTROYING THE 122MM BINARY SARIN-FILLED ROCKETS. THEY FOUND ADDITIONAL ROCKETS STREWN AROUND THE SITE AND BURIED IN THE SAND BANKS BETWEEN THE SITE AND THE CANAL TO ITS SOUTH.

4. COMMENTS. THERE IS A DISTINCT POSSIBILITY THAT COALITION. (U.S.) GROUND FORCES DESTROYED BUNKERS OR PILES OF MUNITIONS CONTAINING BINARY SARIN-FILLED ROCKETS, WITHOUT KNOWING THAT THE CHEMICAL ROUNDS WERE PRESENT. RESEARCH TO RESPOND TO UNSCOM'S QUERY SHOULD ALSO REVEAL IF ANY SUCH EXPOSURE ACTUALLY OCCURRED. (S)

1.5(C)
95968:95968

SUBJECT: SUBJ: INTERNAL MEMORANDUM ON PERSIAN GULF WAR VETERANS' ILLNESSES, 30 MAY 1995
NOT FINALLY EVALUATED INTELLIGENCE

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

NOTE FOR:
FROM:
DATE: 30-05-95 10:23:18
SUBJECT: PERSIAN GULF WAR VETERANS' ILLNESSES

REF: EMPLOYEE BULLETIN 0003-95, DTD 19 MAY 1995

1. THE FOLLOWING MAY OR MAY NOT BE PERTINENT TO THE SUBJECT, BUT IS FORWARDED IN RESPONSE TO REQUEST FOR AN AGENCY PERSON WITH INFORMATION THAT MIGHT BEAR ON POSSIBLE CAUSES OF GULF WAR SYNDROME.

2. AN INSPECTION TEAM UNDER THE AUSPICES OF THE UNITED NATIONS SPECIAL COMMISSION (UNSCOM)--UNSCOM 29/CHEMICAL DESTRUCTION 1--VISITED IRAQ 23 FEB-22 MAR 92 TO SUPERVISE THE DESTRUCTION OF SARIN-FILLED 122 MM ROCKETS. THE SITE AT WHICH THE ROCKETS HAD BEEN STORED IS CALLED KHAMISIYAH BY THE IRAQIS, AND IS KNOWN TO THE US INTELLIGENCE COMMUNITY AS TALL AL LAHM AMMUNITION STORAGE FACILITY. DURING THEIR PERIOD IN IRAQ, THE IRAQIS TOLD THE INSPECTION TEAM THAT MUCH OF THE DESTRUCTION AT THE KHAMISIYAH SITE HAD BEEN CAUSED BY COALITION FORCES WHO HAD OCCUPIED THE SITE , BUT THE INSPECTORS THOUGHT IRAQ MIGHT SIMPLY HAVE GATHERED THE ROCKETS HERE AND ATTEMPTED TO DESTROY THEM THEMSELVES. UNSCOM REQUESTED ADDITIONAL INFORMATION FROM THE US ON THE ACTIVITIES OF ANY COALFILCH FORCES WHO HAD BEEN IN THAT AREA.

THE CABLE ON THIS TEAM'S ACTIVITIES NOTED THAT THE TEAM "...REQUESTED DETAILS PERTAINING TO COALITION FORCES' ACTIVITIES AT THIS SITE: WHO WAS THERE; WHEN WERE THEY THERE; HOW LONG DID THEY STAY; WHAT ACTIONS WERE TAKEN; ETC."

3. A DOD INTELLIGENCE INFORMATION REPORT-IIR 6 021 0099 92/CHEMICAL ROCKET DESTRUCTION IN KHAMISIYAH--PROVIDED DETAILS OF THE TEAM'S DESTRUCTION ACTIVITY AND PROVIDED COORDINATES FOR THE KHAMISIYAH FACILITY AND THE NEARBY DESTRUCTION SITES. THE IIR ALSO FORWARDED A SKETCH MAP AND AN ANNOTATED MAP EXTRACT DEPICTING THE EXACT LOCATION OF THE DESTRUCTION SITES.

4. IN MID-MAY, I PREPARED A REQUEST TO DOD FOR THE INFORMATION DESIRED BY UNSCOM. DOD NEVER RESPONDED TO THE REQUEST. I HAVE SEARCHED WITHOUT SUCCESS THROUGH MY OWN AND THE OFFICE'S FILES FOR A COPY OF THIS REQUEST TO DOD.

5. PRIOR TO MAY 1991, I HAD SERVED AS SENIOR ANALYST WITH THE CURRENT ANALYSIS BRANCH OF THE JOINT INTELLIGENCE CENTER (JIC) IN THE PENTAGON. AS ALL ARE AWARE, THE THREAT OF IRAQI USE OF CW OR BW WEAPONS WAS A HIGH PRIORITY DURING THE PREPARATIONS FOR AND THE CONDUCT OF DESERT STORM. IN MY CAPACITY IN THE JIC, I NEVER CAME ACROSS A SINGLE INSTANCE OF PROVEN CW OR BW USE OR DISCOVERY

ANYWHERE IN THE ACTIVE THEATER OF OPERATIONS.

6. I HAVE BEEN CONNECTED CONTINUOUSLY WITH THIS ACTIVITY SINCE MAY 91

COPIES OF THE TWO REPORTS CITED ABOVE ARE AVAILABLE FROM ME IF THEY MIGHT BE OF USE TO YOU.

1.5(C)
94784:94784

S. Hrg. 103-900

UNITED STATES DUAL-USE EXPORTS TO IRAQ AND THEIR IMPACT ON THE HEALTH OF THE PERSIAN GULF WAR VETERANS

HEARING

BEFORE THE

COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS UNITED STATES SENATE

ONE HUNDRED THIRD CONGRESS

SECOND SESSION

ON

UNITED STATES CHEMICAL AND BIOLOGICAL WARFARE-RELATED DUAL-USE EXPORTS TO IRAQ AND THEIR POSSIBLE IMPACT ON THE HEALTH CONSEQUENCES OF THE PERSIAN GULF WAR

MAY 25, 1994

Printed for the use of the Committee on Banking, Housing, and Urban Affairs

U.S. GOVERNMENT PRINTING OFFICE

86-558 CC WASHINGTON : 1994

For sale by the U.S. Government Printing Office
Superintendent of Documents, Congressional Sales Office, Washington, DC 20402
ISBN 0-16-047069-2

Dr. OEHLER. What we're saying is that we have no evidence that they were, and it cannot be any stronger than that.

The CHAIRMAN. Do you have a theory as to what was going on then?

Dr. OEHLER. I don't know if my theory counts much. As a scientist, I know that trying to design sensors to detect specific chemicals and not others is a rather difficult job and false alarms are a way of business.

I'll also note that the battlefield is a pretty messy place with incoming rockets, which when they impact have unexpended rocket fuel that vaporizes, you have explosives that go off, you have solid fuel missiles going with pollutants in the air. There's an awful lot of what would be hard-to-identify chemicals in the atmosphere at any time.

The CHAIRMAN. So much of the Department of Defense reports now rest on the fact that the chemical alarms that they put out there that kept going off did not work right. Maybe they are right that they did not work, and they bought a lot of equipment that did not work right. But I do not find your answer satisfactory, quite frankly, and let me just be blunt about it. If you have got some information, classified or other, that will bear out what you are saying, I would like to see it. I would like to see it all.

Dr. OEHLER. I have no information to suggest, that leads us to the conclusion that any BW or CW agents were used against coalition forces.

The CHAIRMAN. Well, you see, again, that is a very—that is what we call in the business the use of a very carefully structured phrase. Let me give you an example. Suppose a bombing run hits a munitions facility and blows up into the air some of these agents, either gas agents or biological agents, and they are carried by the windstream down over our troops, and they are impacted by it. Is that a use?

Dr. OEHLER. Let me address those two specifically.

The CHAIRMAN. First of all, I would like a yes or a no—in terms of the way you are using the word "use." Is that a use or not a use?

Dr. OEHLER. I would call that exposure, certainly.

The CHAIRMAN. But is that a use within the way you are using it here?

Dr. OEHLER. No, but I would not sit here and try to use some legal definition to get around a problem like that. I do not have any intelligence information to suggest that coalition forces were exposed, whether it be by intentional use or by accidental discharge to BW/CW agents.

Let me address these two separately, because I think this is significant. The coalition forces did not find any CW agents stored in the Kuwaiti theater of operations, with the exception of some the U.N. found near An Nasiriyah.

The CHAIRMAN. Right. We talked about that earlier.

Dr. OEHLER. And, if in fact a munition blows up a chemical warhead storage site and chemical agents are released into the atmosphere, the modeling that has been done on this suggests that nothing is going to go further than maybe 10 miles. So if your American troops, if the coalition troops are much farther than that, they are not going to be exposed to chemical warfare.

Questions from Chairman Riegle

Filename:0riegleq.894
Aug. 94

Subject: Questions from Chairman Riegle

Q1. Was the Department of Defense intelligence apparatus aware of the items exported to Iraq by the United States which were converted to use in the Iraqi chemical, biological, and nuclear programs prior to the Persian Gulf War? Provide specific details.

A1. During the earlier years associated with Iraq's build-up of its scientific, industrial and military capabilities, Iraq was neither a proscribed nation to be denied military critical technology, nor an enemy. The US intelligence community is forbidden from monitoring the activities of US citizens and its companies. Consequently, very little was known by the Intelligence Community about US exports of technology with military potential, particularly to a non-proscribed non-enemy nation, unless it was informed of such exports by the Department of Congress. During 1980-1994 Commerce requested review of only 16 dual-use export cases by the DoD. Of these, only two were forwarded to the DIA for technical review. They involved computers and signal processing equipment. DIA recommended denial in both cases. DIA was aware of the illegal export of thiodiglycol to Iraq by the Baltimore company Alcolac. DIA assisted customs and the FBI in their investigation and successful prosecution of that company. DIA biological warfare (BW) analysts were aware of some of the dual-use items purchased by Iraq for its BW program, but generally did not know what U.S. company was supplying the items.

Q2. Were Iraqi chemical and biological facilities among the priority targets hit by Coalition bombers during the first days of the air war?

A2. Yes. Some Iraqi chemical and biological (CBW) facilities were priority targets and were among the first attacked on and around the first days of the air war. Not every CBW target was attacked during the first days however. CBW targets were themselves prioritized, generally by the intelligence community, then specifically, by the operators out of CENTCOM

and were attacked accordingly. Generally speaking, CBW targets were attacked at the very beginning and throughout the air campaign.

Q3. Were U.S. national laboratories contacted prior to the war and requested to assess the danger from the fallout of bombing Iraqi chemical, biological, and nuclear facilities? What was their advice?

A3. The Defense Nuclear Agency was tasked to assess the danger of fallout from bombed Iraqi facilities. Their advice was passed to CENTCOM though other than intelligence channels.

Q10. Are all biological agents lethal? Isn't it true that one biological warfare strategy is to debilitate your adversary's capabilities and another is to overload his medical facilities?

A10. No, not all biological warfare agents are lethal; some are only lethal if untreated, while others are almost always lethal, even with medical treatment. Incapacitating BW agents could be used to debilitate an adversary's capabilities and to overload his medical facilities.

Q15. Were any biological agents or materials capable of being used to cause disease or other illnesses discovered by the U.S. or any other Coalition forces in Iraq, Kuwait, or Saudi Arabia? What were those materials?

A15. No such materials were found by U.S. or Coalition forces.

Q16. Were any Iraqi vaccines discovered or did interviews of enemy prisoners of war, or others, reveal what biological warfare-related materials the Iraqis had defended against?

A16. No.

Q17. Did Iraq have a biological warfare program that appeared to be offensive in nature?

A17. Yes. See question 29.

Q19. Were chemical munitions or binary precursor materials

capable of being used in chemical warfare discovered in any area of Iraq, Kuwait, or Saudi Arabia before, during, or after the war by US Forces, US civilian personnel or other Coalition participants?

AI9. The wording of this question requires a three part answer to include responses addressing the Kuwaiti Theater of Operations (KTO), Operation Provide Comfort, and the UN inspections.

The Kuwaiti Theater of Operations (KTO) included southern Iraq south of 31'00 N, Kuwait, and Saudi Arabia. This was the area eventually occupied by Coalition ground forces before, during and after Operation Desert Storm. Neither chemical munitions, bulk agent, nor binary precursors were discovered in the KTO before, during or after the war by US Forces, civilian personnel, or Coalition participants.

On 28 May 1991, several months after the war, during Operation Provide Comfort in Kurdish occupied northern Iraq, four Iraqi expended, unexploded, 122mm chemical rockets were discovered by US forces near the town of Kani Masi 37'13 N 043'26 E. This area is in extreme north central Iraq, about five miles from the Turkish boarder. The rounds appeared to be duds and appeared to have been in the field for years. The rounds were returned to the US, exploited, and found to contain no intact chemical agent, only degradation

products of the nerve agent sarin. This information, along with the location and condition of the rounds indicate they were most likely fired during the reported Iraqi use of chemical weapons against Kurds in 1988. These rounds in no way should be associated with events of Desert Storm nor be used as evidence in the investigation of so-called Gulf War Syndrome. Their only significance is that, at the time, they confirmed our assessment that such weapons existed in the Iraqi arsenal.

Finally, it has been widely circulated that UN inspection teams found thousands of destroyed and intact chemical rounds in an ammunition depot at Nasiriyah, and that this discovery contradicts our statement in paragraph one of this answer. Nasiriyah technically is outside the KTO, being north of 31'00

N and the Euphrates River. More importantly, it was not in the territory occupied by Coalition forces after the war.
Moreover, the following points are relevant because UN inspectors did not really "find" the subject munitions. In reality, the Iraqis declared the munitions to the UN and the Inspectors eventually went to that location to check what the Iraqis had reported:
l) the UN inspection occurred at least eight months after the war;
2) the location of the "found" chemical rounds was 15 miles from the widely discussed CBW bunkers bombed at Nasiriyah (the site which was originally expected to be inspected). The bombed bunkers were not inspected until one year later in Oct 1992 and found to contain no chemical or biological weapons;

Q20. What evidence, if any, is there concerning the forward deployment of chemical and biological warfare agents or weapons prior to or during the Persian Gulf conflict? What evidence, if any, is there of Iraqi attempts to avoid the destruction of chemical or biological warfare agents or weapons by Coalition bombings? For example, transshipment activity just prior to the initiation of the air war from chemical production facilities such as Samarra Habbaniyah, or others.

A20. There is no evidence, that Iraq forward deployed chemical and/or biological agents or weapons prior to or during Desert Storm. Even though at the time, many analysts expected and warned against potential Iraqi use of CBW, it is our position now, and has been since the end of the war, that Iraq did not intend to use CBW because of the fear of massive retaliation, and the conclusion that Coalition troops Were too well prepared to fight in a CBW environment, if not, far better prepared than Iraqi troops, thus eliminating their advantage. This conclusion is based primarily, but not totally, on:

- their were no indications and warnings of imminent Iraqi use of CW i.e. heavy transshipment activity of CW transport trucks from

Samarra to the forward areas. - not one CBW munition was found

in the captured/occupied Iraqi territory.

Even if Iraq intended to use CW against the Coalition, the pace and ferocity of the air ahd ground campaign was such that Iraq's ability to produce, weaponize, forward deploy, and deliver CW on a target was virtually eliminated. The only CW which could have been used had to be pre-positioned in substantial amounts. The pace and ferocity of the air and ground campaign, in our opinion, rendered it impossible to move any CW munitions into or out of the KTO. Because the ground campaign quickly overwhelmed the Iraqi forces, we would expect to find abandoned CW munitions, as was the case for conventional munitions and equipment. It is difficult to believe that under the mass1ve bombardment levied against the Iraqi troops that they somehow managed to move substantial amounts of CBW munitions out of the KTO, undetected, leav1ng not a trace of it behind. Since no CBW was found in the KTO we believe it never was there.

There is evidence that Iraqi attempted to avoid destruction of its CBW production equipment prior to the air war. Besides camouflaging many of its production buildings, cargo trucks did move an unknown amount of CW production equipment from Samarra. Equipment-moving trucks and refrigerated trucks were also observed at the Salman Pak BW facility prior to the onset of bombing, suggesting that Iraq was moving equipment or material into or out of the facility. Information obtained after the conflict revealed that Iraq had moved BW agent production equipment from Salman Pak to the Al Hakam suspect BW facility.

QZI. What evidence, if any, exists of Iraqi chemical and biological warfare defensive measures during or prior to the Persian Gulf War?

A21. Iraq claims it did not have a dedicated BW defensive program. Iraq distributed drugs for the treatment of nerve and mustard exposure to at least some of its Republican Guard Divisions. There was an effort to outfit their troops with chemical protective gear; this usually consisted of a gas mask, gloves, boots, simple poncho, and individual chemical agent antidote kits. Additionally, decontamination stations were established throughout Iraq.

Q22. What evidence, if any, exists of Iraqi command

instructions to use chemical weapons prior to or during the war?

A22. There is no/evidence to indicate instructions or orders to use chemical weapons were given by Iraqi command authorities prior to or during the war.

Q23. Were any Iraqi chemical units in Iraq or Kuwait located or reported on by US or Coalition sources during Operation Desert Shield or Desert Storm? Explain.

A23. No. Specific locations of Iraqi chemical units were never reported by US or Coalition sources during Operation Desert Shield or Desert Storm. See question 35.

Q24. In the Department of Defense's final report to Congress on the Conduct of the Persian Gulf War, it was reported that 88 Scud launches were detected. Saddam Hussein has claimed to have launched at least 93 Scuds. Can you explain the discrepancy? Were any Scud missiles launched by Iraq against Turkey or any other location other than Israel or Saudi Arabia? Were U.S. forces and dependent personnel in Turkey ever ordered into MOPP gear?

A24. DIA holds a total of 88 SCUD launches against Israeli and Saudi Arabian targets only. We cannot explain the discrepancy between Saddam's claim to have launched at least 93 SCUDs.

Q26. Did Iraq conduct test firings of Scuds or other short or medium range ballistic missiles during Operation Desert Shield? What was the assessed purpose for these tests since Iraq already had extensive knowledge of the capabilities of Scud missiles?

A26. No. Iraq did not conduct test firings of SCUDs or other short or medium range ballistic missiles during Operation Desert Shield.

Q27. Did Iraq have the capability to deliver biological weapons via ground based aerosol generators, aircraft, helicopters, or FAW missiles? Did they have any other means of delivering biological weapons?

A27. Iraq had a capability to deliver BW agents

from missile warheads and aerial bombs. Iraq also had the capability to disseminate biological agents from ground-based aerosol generators; however we found no evidence that they had attempted to do so. Other delivery systems (helicopters) and munitions (i.e., CW munitions) could be used to disseminate BW agents; however, we found no evidence that Iraq had loaded BW agents into any such munitions.

Q29. What was the Defense Intelligence Agency evaluation of Iraq's chemical and biological weapons programs and delivery means, prior to, during, and after the Persian Gulf War? What delivery means were within range of Coalition forces at the beginning of the air war and by the end of the ground war?

A29. Prior to the Persian Gulf War Iraq was assessed to possess roughly 1000 MT of chemical agent equally split between the blister agent mustard and the nerve agents sarin (GB) and GF. Small amounts (possibly tens of tons) of the persistent nerve agent VX were assessed as possibly available from ongoing R&D programs The nerve agent soman (GD) and the psychochemical BZ were also assessed to be in the R&D stage. Much of the above 1000 MT of agent was assessed

to be weaponized in the following munitions with the remainder stored as bulk agent:

Artillery

155mm *
152mm
130mm
122mm rocket *

Mortars

82mm
120mm

Aerial

250kg bomb
500kg bomb
Cluster bombs

90 mm rocket

Note: (I) * Preferred weapon for artillery
(2) Landmines were assessed as possible.

Missiles

SCUD
Al Husayn
Al Abbas

(3) Frog missiles are capable of CW delivery but no evidence existed for such a warhead in Iraq.

Prior to the Persian Gulf War, DIA assessed that Iraq had BW agents weaponized in aerial bombs and Scud missile warheads, and that Iraq was capable of disseminating BW agents with ground-based aerosol generators. Scud missiles and aircraft capable of carrying aerial bombs probably were within range of Coalition forces during the war, but we know of no BW munitions for these systems which were ever forward-deployed. Further, we know of no occasion when such dissemination systems or munitions were used to disperse BW agents during the war.

After the war, DIA assessed the CW program to be severely degraded but not eliminated. The BW program was assessed to have retained the infrastructure needed to reestablish itself. UN inspections and ongoing intelligence efforts have resulted in DIA's reassessment that although nearly all known buildings and bunkers associated with CBW programs were destroyed, CW and BW production equipment, precursors and munitions have been hidden or salvaged and that both programs could be reestablished shortly after UN inspections ceased.

Iraqi CBW delivery assets in range of Coalition troops both before and after the war were SCUDs, aerial bombs, and potentially any ISSmm artillery or 122mm mobile rocket launcher within approximately 25 kilometers of Coalition forces. One must keep in mind that during the war, Coalition air superiority largely eliminated aircraft delivery of CBW agents to forward areas, and that by the end of the ground war, Iraqi air and ground forces, as well as its command and control structure were in complete disarray.

Q30. Describe the evolution of Iraq's battlefield employment of chemical weapons during the Iran-Iraq war, did Iraq's ability to use these weapons improve over the course of the war?

A30. Generally speaking Iraq's use of CW against Iran during their war improved dramatically as the war progressed. Essentially, Iraq learned how to use CW through on the job training, very inefficiently at first then becoming quite effective towards the end. Iraqi use of CW against Iran can be divided into three distinct phases. The first phase, which continued until 1986, involved the use of CW agents in a strictly defensive role, to disrupt Iranian offensives. In a transitory phase lasting from late 1986 to early 1988, Iraq used CW preemptively against staging areas prior to Iranian offensives. Finally, and most significantly, Iraq used massed nerve agent strikes as an integral part of its well-orchestrated offensive in the spring and summer of 1988. The success of these offensives prompted Iran to accept a cease-fire in August 1988.

Q31. What chemical and biological agents were assessed to be in the Iraqi operational inventory and test i .ventories prior to the Persian Gulf War?

Chemical agents assessed to be in the Iraqi operational inventory prior to the Persian Gulf War were mustard, sarin, and GF. Tabun and dusty mustard were known to have been used against Iran but were thought to possible have been dropped from the 1990 inventory. Agents assessed to be in the R&D stage were VX, BZ and Soman.

Biological agents assessed to be in the pre-war inventory were anthrax and botulinum toxin in a limited number of missile warheads and aerial bombs.

Q34. What evidence exists, if any, to indicate that Iraq deployed chemical mines in the Kuwaiti theater of operations?

A34. There is no evidence that Iraq deployed chemical mines in the KTO. In fact, over 350,000 Iraqi mines have been found and removed from Kuwait, none of which were chemical mines.

Q35. Did Iraq deploy any chemical units or establish any chemical decontamination sites in the Kuwaiti or Iraqi theater

of operations - or in the disputed territories?

A35. Iraqi defensive chemical units are a standard complement of a typical Iraqi Corp and Division. Our best information suggests that most but not all of Iraqi divisions deployed with their standard chemical units. Dedicated offensive chemical units were assessed to be part of Republican Guard Divisions only, however, theoretically, virtually any 155mm artillery piece or 122mm mobile rocket launcher could fire CW rounds.

Yes. Iraq establish chemical decontamination sites in the KTO as well as throughout Iraq. Similar decontamination sites are located at known chemical training schools and therefore, their appearance is assessed more as standard operating procedure rather than a hard indicator of intent to use CW.

Q36. Which country provided the chemical Scud warheads to Iraq that were later located by the UN inspections? If by another country, how many of these warheads were initially provided? Did Iraq also manufacture its own?

A36. Iraq manufactured all of its chemical SCUD warheads indigenously.

Q37. Was the [(b)(1) sec 1.3(a)(4)] suspected of providing chemical or biological warfare training to Iraqi officers either in Iraq,
or any other country? Explain.

A37. there is absolutely no evidence to suggest, that they provided offensive chemical or biological weapons training to Iraq at any time. [(b)(1) sec 1.3(a)(4)]involved in providing defensive CBW equipment and training to the Iraqis in the early 1980's.

038. Is the Department of Defense aware of any to the Iraqis in setting up any chemical training center or production facility in Iraq? Explain.

A38
[(b)(1) sec 1.3(a)(4)]in setting up a chemical training facility in Iraq-
constructed a CW training center
near Habbaniyah, and may have helped train Republican Gaurd

troops in field
operations in a chemical environment.

Q40. Is there any classified or unclassified information that would indicate any exposures to or detections of chemical or biological agents?

A40. Other than the Czech detections on 19 and 24 January 91, which have been discussed at length during testimony and other questions for the record, there is no information, classified or unclassified, which would indicate any exposures to or valid detections of chemical agents. There were many, probably thousands, of false chemical alarms experienced by the Coalition, however, no alarm ever was verified using follow-up confirmation procedures. This issue has also been discussed at length in testimony and other questions for the record.

As with the alleged CW detections, there are some unsubstantiated reports that allege exposure to BW agents. However, despite concerted efforts, Coalition assets were not able to confirm any of these reports.

Q41. Is there any classified or unclassified information that would indicate the discovery of any chemical, biological, radiological or nuclear warfare related materials by U S. or Coalition forces before, during, or after the Persian Gulf War?

A41. There is no information, classified or unclassified, that would indicate the discovery of any chemical, biological, radiological or nuclear warfare related materials by the US or Coalition forces before, during or after the Persian Gulf War. See question 19.

Q46. What is the role of the Defense Intelligence Agency in the investigation into the exposure of U.S. forces to chemical, biological or radiological materials during Operation Desert Shield and Desert Storm?

A46. DIA's role, as always, has been to provide intelligence to the OSD. DIA has been deeply involved with the investigation into alleged exposure of US forces to chemical, biological or radiological materials during Desert Shield and

Desert Storm since the investigation began in early summer 1993. DIA has reviewed every aspect of its assessment of Iraqi chemical, biological and nuclear weapons programs, the possibility of their use against Coalition troops, and the possibility of accidental release from bombed Iraqi targets. DIA has spearheaded the investigation into the alleged Czech detections, making the honest assessment that the Czech detections were likely valid. Leaving no stone unturned, DIA traveled to Saudi Arabia, Kuwait, Israel, Czech Republic, France and England to further investigate the issue. Likewise, through the Defense Attache system, DIA requested information and assessments regarding the issue from other Coalition members and allies. To date, all of DIAs efforts and contacts point to the unanimous conclusion that coalition troops were not exposed to chemical or biological agents, either accidently (as a result of downwind exposure from bombed Iraqi facilities) or purposely (from direct Iraqi use).

[b.2.]

Subject: SUBJ: INTERNAL MEMORANDUM DESCRIBING UNCERTAINTIES ABOUT
TALL AL LAHM, 6 SEPTEMBER 1995
Not Finally Evaluated Intelligence

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN
REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN
TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF
THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON
REQUEST.

NOTE FOR:

FROM:

DATE: 09-06-95 10 29.50 AM

SUBJECT: GULF WAR SYNDROME

TO ACHIEVE ANY MEANINGFUL RESULTS ON THE FALLOUT HAZARD ISSUE, WE
NEED TO SETTLE THE NASLRIYAH/TALL AL LAHM ISSUE THE UN-FOUND PARTIALLY
DESTROYED GB MUNITIONS THERE; THESE POSED THE ONLY POTENTIAL (REALISTIC)
FALLOUT THREAT TO COALITION FORCES THE KEY, THEREFORE, IS IN DETERMINING
WHEN AND HOW THESE MUNITIONS WERE DESTROYED AND WHERE COALITION
TROOPS WERE AT THE TIME THERE ARE A COUPLE OF COMPLICATING ISSUES, THOUGH:

ANALYSIS COULD IDENTIFY (AT LEAST APPROXIMATELY) WHEN STORAGE
BUILDINGS WERE DESTROYED HOWEVER, WE DON'T KNOW THE EXACT LOCATIONS
OF THE DAMAGED MUNITIONS. THE UN INSPECTION TEAM THAT WENT THERE EXPECTED
TO BE TAKEN TO A DIFFERENT SITE AND DIDN'T HAVE LINE DRAWINGS AVAILABLE
WAS ON THAT TEAM BUT WAS IN THE GROUP THAT WENT TO INSPECT THE UNDAMAGED
MUSTARD MUNITIONS. RECORD OF ANY BOMBINGS AT THE PLANT WOULD BE A USEFUL
START IF ALL ATTACKS THERE TOOK PLACE ON THE SAME DAY, FOR EXAMPLE, WE COULD
NARROW DOWN THE TIMEFRAME FOR POTENTIAL AGENT RELEASE

COULD HELP BY PROVIDING RECORDS OF WHEN AIR ATTACKS ON THIS FACILITY
OCCURRED AND LETTING US KNOW WHAT HAPPENED WHILE COALITION FORCES OCCUPIED
THAT AREA AT THE END OF THE WAR. THE UNSCOM TEAM THOUGHT THAT DAMAGE AT
THE CW STORAGE AREA LOOKED LIKE DEMOLITION WORK. IF TRUE, THE BIG QUESTION IS,
WHO DID IT--THE COALITION OR THE IRAQIS? I'D LIKE TO KNOW WHAT OUR TROOPS SAW
AND/OR DID IN THE SHORT TIME THEY WERE IN THE AREA.

I DON'T THINK IT WOULD BE TOO DIFFICULT TO REQUEST
COULD GIVE US A REASONABLE ANSWER I'M NOT AS SURE ABOUT TASKING
FOR INFO BUT I'II LET YOU WORRY ABOUT THAT.

CC:

1.5(C)
95621:95621

SUBJECT: SUBJ: INTERNAL MEMORANDUM REQUESTING INFORMATION TO SUPPORT STUDY OF POTENTIAL EXPOSURE ISSUES, 13 SEPTEMBER 1995
NOT FINALLY EVALUATED INTELLIGENCE

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

13 SEP 95

MEMORANDUM FOR:

FROM:

SUBJECT: REQUEST FOR INFORMATION TO SUPPORT DESERT STORM "FALLOUT STUDY"

MY STUDY INTO THE POTENTIAL FALLOUT FROM DAMAGED OR DESTROYED IRAQI CHEMICAL MUNITIONS IS FOCUSING ON THE TALL AL LAHM STORAGE DEPOT (304700N0462615E), WHICH IS THE ONLY SITE IN SOUTHERN IRAQ AT WHICH UNSCOM FOUND CHEMICAL WEAPONS. UNFORTUNATELY, AS YOU ARE WELL AWARE, SIGNIFICANT GAPS EXIST IN OUR UNDERSTANDING OF WHEN THESE WEAPONS ARRIVED AND WHEN THEY COULD HAVE BEEN DAMAGED. BECAUSE THIS FACILITY WAS NOT IDENTIFIED AS A CW STORAGE FACILITY UNTIL LATE 1991, LITTLE IS KNOWN ABOUT THE BACKGROUND OF THIS FACILITY AND WHAT TRANSPIRED THERE DURING OPERATION DESERT STORM.

I HAVE IDENTIFIED SOME KEY QUESTIONS (PRESENTED BELOW) THAT I BELIEVE DOD IS BEST ABLE TO ADDRESS. I REQUEST THAT YOU IDENTIFY AN APPROPRIATE POINT-OF-CONTACT AT DOD AND FORWARD THESE QUESTIONS TO THAT PERSON:

DURING OPERATION DESERT STORM, WERE COALITION AIR ATTACKS CONDUCTED AGAINST THE TALL AL LAHM STORAGE DEPOT? IF SO, WHAT ORDNANCE WAS DROPPED ON WHICH DAYS? WHAT DAMAGE RESULTED FROM THESE ATTACKS?

DURING THE GROUND PHASE OF DESERT STORM, DID COALITION GROUND FORCES FIRE ARTILLERY OR OTHER WEAPONS AT THE TALL AL LAHM DEPOT? IF SO, WHAT ORDNANCE WAS USED? WHEN DID THIS OCCUR, AND HOW CLOSE WERE COALITION UNITS AT THE TIME(S) OF ATTACK? WHAT WAS THE RESULTING DAMAGE?

DID COALITION FORCES OCCUPY THE TALL AL LAHM DEPOT AT THE CONCLUSION OF DESERT STORM? IF SO, WHEN DID TROOPS FIRST OCCUPY THE DEPOT, AND WHEN DID THEY WITHDRAW? WHICH UNITS OCCUPIED OR WERE IN CLOSE PROXIMITY TO THIS DEPOT? WAS ANY DEMOLITION OF BUILDINGS, MUNITIONS, OR OTHER MATERIEL CONDUCTED BY COALITION TROOPS WHILE THE FACILITY WAS UNDER THEIR CONTROL? IF SO, WHAT WAS THE EXTENT OF THIS ACTIVITY? IN WHAT CONDITION WAS THE DEPOT (SPECIFICALLY ANY BUILDINGS, BUNKERS, AND REVETMENTS THERE) WHEN FIRST OCCUPIED BY THE COALITION? WERE THERE ANY CREDIBLE

DETECTIONS OF CW AGENTS AT THIS FACILITY AT THE TIME IT WAS UNDER THE CONTROL OF COALITION FORCES?

1.5(C)
94781:94781

Unit Location Listing

	Br	Command	Box	UIC	Unit Description	J-Date	Location Name	MGRS Grid	Latitude	Longitude
1	A	XVIII ABN CORPS	8		0082 ABN DIV O3 BDE	91060		PV34800650	30 46 07	046 24 33
2	A	XVIII ABN CORPS	27	WAASAA	0017 ARSQ 01 AIR CAV SQDN	91060		PV35800730	30 47 26	046 25 13
3	A	XVIII ABN CORPS	8		0082 ABN DIV O3 BDE	91061		PV34800850	30 48 07	046 24 33
4	A	CENTER OF MIL HIST	33		0082 ABN DIV O3 BDE	91061		PV34800850	30 48 07	046 24 33
5	A	XVIII ABN CORPS	30	WABGAA	0307 EN BN ABN TAC CP	91061	TALL AL LAHM ASP	PV35000800	30 47 51	046 24 40
6	A	22ND SUPCOM	220		0082 ABN DIV O3 BDE	91062	VIC OBJ GRAY		30 48 00	046 24 00
7	A	HQ, USARSUR AND 7TH AR	10		3RD BDE, 82 ABN DIV	91062	VIC OBJ GRAY		30 48 00	046 24 00
8	A	34TH INF DIV	30		0082 ABN DIV O3 BDE	91062	VIC OBJ GRAY		30 48 00	046 24 00
9	A	CENTER OF MIL HIST	33		0082 ABN DIV O3 BDE	91062	VIC OBJ GRAY		30 48 00	046 24 00
10	A	XVIII ABN CORPS	8		0082 ABN DIV O3 BDE	91062		PV34800650	30 46 21	046 24 33
11	A	XVIII ABN CORPS	31	WGGOAA	0037 EN BN	91062		PV36200710	30 47 21	046 25 25
12	A	XVIII ABN CORPS	41	WGGOAA	0037 EN BN CORPS CBT AVN CP	91062		PV36200710	30 47 21	046 25 26
13	A	XVIII ABN CORPS	41	WGGOAA	0037 EN BN CORPS CBT AVN	91062		PV36200710	30 47 21	046 25 25
14	A	22ND SUPCOM	220		0082 ABN DIV O3 BDE	91063	VIC OBJ GRAY		30 46 00	046 25 00
15	A	XVIII ABN CORPS	27	WGGOAA	0037 EN BN CENTER MASS	91063		PV37000620	30 46 45	046 25 54
16	A	XVIII ABN CORPS	27	WGGOAA	0037 EN BN CENTER MASS	91063		PV37000620	30 46 61	046 25 54
17	A	XVIII ABN CORPS	27	WABVAA	0506 IN BN 02 ABN	91064		PV35000600	30 46 23	046 24 40
18	A	XVIII ABN CORPS	27	WABVAA	0506 IN BN 02 ABN	91064		PV37500550	30 46 38	046 24 13
19	A	VII CORPS	21		0001 IN DIV	91101		PV39000500	30 48 12	046 27 09

As of 10/11/95 11 48.45

*** Unclassified***

Page 1 of 1

95028-95028
1.5c

Document Footnote:

It must be pointed out that this list of unit locations is old information and has since been updated with more complete and accurate data. This information was the first attempt made to determine if Friendly Forces operated near Khamisiyah (aka: Tall Al Lahm), and came from DoD Environmental Support Group (ESG) database in October 1995. It was informally provided to CIA analysts in response to a query of whether troops were at Khamisiyah. After further research the DoD Investigation and Analysis Directorate (IAD) compiled a more complete list. The most current and complete list of units located at Khamisiyah is included in the Khamisiyah Case Narrative which was published in February 1997 by the DoD, Special Assistant for Gulf War Illnesses, Investigation and Analysis Directorate.

SUBJECT: SUBJ: CIA BRIEFING TO NSC ON STUDY OF POTENTIAL EXPOSURES, 26 JANUARY 1991
NOT FINALLY EVALUATED INTELLIGENCE

TO FACILITATE ELECTRONIC ACCESS, THIS DOCUMENT HAS BEEN REFORMATTED TO ELIMINATE INFORMATION THAT DOES NOT PERTAIN TO GULF WAR ILLNESS ISSUES OR THAT IS CLASSIFIED. A COPY OF THIS REDACTED DOCUMENT, IN ORIGINAL FORMAT, IS AVAILABLE ON REQUEST.

26 JAN 96

ONGOING CIA STUDY OF
POTENTIAL FOR EXPOSURE TO CBR
AGENTS DURING THE
PERSIAN GULF WAR

CENTRAL INTELLIGENCE AGENCY

WHY STUDY CBR EXPOSURE?

RESPONSE TO ALTERNATIVE VIEWS OF 2 CIA EMPLOYEES

CONTINUING EFFORT TO PROVIDE INDEPENDENT, COMPREHENSIVE, DEFENSIBLE REVIEW OF INTELLIGENCE TO SUPPORT USG EFFORTS BY:
- REVIEWING NEW INTELLIGENCE AND SUPPORTIVE INFORMATION
- REVISITING CIA ASSESSMENTS

STUDY INCLUDES

INFORMATION SURFACED BY CIA'S SPECIAL SEARCH AND DECLASSIFICATION EFFORT.

LATEST UNSCOM INFO

REEVALUATION OF FALLOUT MODELS.

STUDY INCLUDES (CONT):

NON-CLASSICAL AGENTS OR USE

INTEL ON GULF WAR HAZARDS

INTELLIGENCE ON NON-US ILLNESSES

IRAQI CW INTENT

STUDY USES FOR POINTING
PURPOSES:

VETERAN MEDICAL DATA

DOD OPERATIONAL LOGS

VETERAN TESTIMONIALS

BUT, NO COMPREHENSIVE REVIEW OR INVESTIGATION.

INTERIM REPORT OUTLINE

PAPER WILL COVER MAIN ASSESSMENTS ON USE, LOCATION, INTENT, FALLOUT, NOVEL AGENTS.

EXTENSIVE COVERAGE IN APPENDICES OF CBR PROGRAMS, MUNITIONS LOCATION, INTEL REPORT CREDIBILITY, AND SCUD PROPELLANTS.

IF SIGNIFICANTLY DECLASSIFIED WILL AID IN RESOLVING SOME PUBLIC CONCERNS.

PREVIOUS ASSESSMENTS

NO CONCLUSIVE
EVIDENCE OF EXPOSURE
CHEMICAL WEAPONS IN
KTO PRIOR TO AIR WAR
BUT REMOVED
FALLOUT INCAPABLE OF
REACHING TROOPS
CZECH DETECTIONS
ENIGMATIC

JAN 96 ASSESSMENTS

NO CONCLUSIVE
EVIDENCE OF EXPOSURE

NEW INTEL SOURCES: ADD'L HUMINT,
UNSCOM INFO

CHEMICAL WEAPONS IN
KTO BUT PULLED TO
ABOUT 31N BY AIR WAR

NEW INTEL SOURCES: ADD'L HUMINT,
UNSCOM INFO

FALLOUT INCAPABLE OF
REACHING TROOPS

NEW INTEL SOURCES: ADD'L MODELING USING
WEATHER FRONTS

CZECH DETECTIONS
ENIGMATIC

NEW INTEL SOURCES: ADD'L MODELING USING
WEATHER FRONTS

SOME ISSUES

POSSIBILITY OF EXPOSURE DUE TO EOD

KUWAIT GIRL' S SCHOOL TANK

RESIDUAL RFNA IN SCUDS

NOVEL AGENTS

CHEMICAL MUNITIONS
IDENTIFICATION

UNSCOM EXPERIENCE AND HUMINT INDICATE
LACK OF CHEMICAL WEAPON MARKINGS.

IRAQ TOLD UNSCOM INSPECTORS THAT US
EOD PERSONNEL DESTROYED GB ROCKETS AT
TALL AL LAHM IN KTO.

POSSIBILITY OF LOCALIZED EXPOSURE HAZARD
FROM SUCH DESTRUCTION.

KUWAIT GIRL'S SCHOOL TANK

FOCAL POINT OF CBW EXPOSURE ADVOCATES

WE BELIEVE THAT TANK CONTAINED RFNA

SAMPLING COULD FURTHER CLARIFY ISSUE

EXPOSURE TO SCUD PROPELLANT

STRONG CORRELATION FOUND BETWEEN
TESTIMONIES OF SOME VETERANS ON SCUDS AND
KNOWN AL HUSAYN EVENTS.

IMMEDIATE VETERAN SYMPTOMS MATCH
TEXTBOOK CHARACTERISTICS OF RFNA EXPOSURE.

DOD IS INVESTIGATING FURTHER.

NOVEL CBR AGENTS

EXCEPT PCP, CW INFO COVERS CLASSIC AGENTS
BW RESEARCH INCLUDED SEVERAL NOVEL AGENTS
RADIOLOGICAL WORK RESEARCH ONLY

NO INFO ON EFFORT TO PRODUCE ILLNESSES
CONSISTENT WITH THOSE OF GW VETERANS

CONTINUING INFORMATION FLOW AND IRAQ'S
STORY INCOMPLETE

STUDY PLANS

INTERIM REPORT DUE OUT EARLY SPRING.

FINAL CONCLUSIONS DEFERRED PENDING
COMPLETION OF SEARCHES, COLLECTION, AND
ANALYSIS.

95630:95630
1.5C

P 22 MAY 96

(b.2.)

SERIAL: (U) IIR 6 021 0196 96.

/********** THIS IS A COMBINED MESSAGE **********/
BODY
COUNTRY: IRAQ (IZ).

SUBJECT: IIR 6 021 0196 96/IRAQI FALLUJAH, KHAMISIYAH, AND AN-NASIRIYAH CHEMICAL WARFARE RELATED SITES

(b.1. sec. 1.5.c., b.2.)

DEPARTMENT OF DEFENSE

DOI: (U) 960520

(b.2.)

(b.1. sec. 1.5.c.)

SUMMARY: FROM 960511 TO 960520, UNSCOM ONGOING MONITORING AND VERIFICATION SUPPORT TEAM INSPECTED THE IRAQI CHEMICAL WARFARE RELATED FACILITIES, FALLUJAH THREE, AND THE KHAMISIYAH (TALL AL-LAHM) AND AN-NASIRIYAH MUNITIONS STORAGE AREAS.

TEXT: 1. FROM 960511 TO 960520, UNITED NATIONS SPECIAL COMMISSION (UNSCOM) ONGOING MONITORING AND VERIFICATION SUPPORT TEAM-NINE B (OST-9B) INSPECTED THE FOLLOWING IRAQI CHEMICAL WARFARE (CW) RELATED FACILITIES--FALLUJAH THREE CASTOR OIL EXTRACTION FACILITY//GEOCOORD: 333288N0433694E//, THE KHAMISIYAH (TALL AL-LAHM) AMMUNITION STORAGE AREA//GEOCOORD: 3047N04626E//, AND THE AN-NASIRIYAH STORAGE DEPOT//GEOCOORD: 3057N04306E//.

(b.1. sec. 1.5.c.)

3. KHAMISIYAH (TALL AL-LAHM)
AMMUNITION STORAGE AREA. OST-9B INSPECTED THE AREA INSIDE AND AROUND BUNKER 73. THIS STRUCTURE WAS TOTALLY DESTROYED, BUT THERE WAS EVIDENCE OF A LARGE NUMBER OF SAKR-18, 122MM CHEMICAL ROCKETS BOTH IN THE PREVIOUS FOOTPRINT OF THE STRUCTURE, AS WELL AS THE SURROUNDING AREA. THE INSPECTION TEAM TOOK A NUMBER OF STILL AND VIDEO PHOTOGRAPHS OF THE AREA AND THE ROCKETS, CONCENTRATING ON FEATURES WHICH ARE SPECIFIC TO CW FILLED ROCKETS (I.E. CENTRAL BURSTER, PLASTIC CANISTERS, ETC.). (b.1. sec. 1.5. c.)
DISCUSSIONBETWEEN THE INSPECTION TEAM AND THE IRAQI REPRESENTATIVES REVEALED THE FOLLOWING--
3A. IRAQ MOVED 2,160 SAKR-18 GB/GF FILLED ROCKETS (TWO CANISTERS-GA/GF) BETWEEN 910110 TO 910115 FROM AL-MUTHANNA STATE ESTABLISHMENT//GEOCOORD: 335031N0435051E// TO BUNKER 73. (FIELD COMMENT--GA IS TABUN, GB IS SARIN, AND GF IS CYCLOHEXYL SARIN.)
3B. ALMOST IMMEDIATELY, THE ROCKETS BEGAN TO LEAK AND THE IRAQIS BEGAN TO MANUALLY MOVE THE ROCKETS (FOUR MEN PER ROCKET) TO A SITE, IN THE OPEN, NEAR THE CANAL, LOCATED APPROXIMATELY FOUR KILOMETERS FROM BUNKER 73. BY THE TIME OF THE IRAQI RETREAT IN LATE 910200 AND EARLY 910300, APPROXIMATELY 1,100 ROCKETS HAD BEEN REMOVED FROM THE SITE. BOTH BUNKER 73 AND THE ROCKETS THAT WERE STORED IN THE OPEN WERE INTACT AT THE TIME OF THE IRAQI RETREAT.
3C. UPON RETURNING TO THE SITE, AFTER OCCUPATION FORCES HAD WITHDRAWN, THE IRAQIS DISCOVERED THAT BUNKER 73 HAD BEEN DESTROYED. THE IRAQI REPRESENTATIVE STATED THAT THERE WAS A LOT OF WIRE AND OTHER EVIDENCE OF GROUND DESTRUCTION PRESENT. ADDITIONALLY, THERE WAS THE SAME TYPE OF EVIDENCE TO SUPPORT THE FACT THAT SOME OF THE ROCKETS LOCATED IN THE OPEN AREA HAD BEEN DESTROYED BY THE OCCUPYING FORCES.
3D. FURTHER DEVELOPMENTS INCLUDED UNSCOM 29'S DESTRUCTION OF APPROXIMATELY 700 OF THE REMAINING ROCKETS LOCATED IN THE OPEN AREA, AS WELL AS THE IRAQI BACKFILL OF THE BUNKER 73 AREA WITH SOIL.(FIELD COMMENT--UNSCOM 29/CD1 CONDUCTED ITS CW DESTRUCTION MISSION FROM 920228 TO 920324.)
3E. IN ADDITION TO THE BUNKER 73 AREA, THE INSPECTION TEAM ALSO EXAMINED THE 'CANAL BANK' AREA, USED BY THE IRAQIS FOR OPEN STORAGE, AND FOUND EVIDENCE OF SAKR-18'S//GEOCOORD: 304454.1N0462587.1E//.

THE INSPECTION TEAM EXAMINED THE REMAINS OF THE TWO MOST SOUTHERN BUNKERS OF EACH OF THE SOUTHERNMOST ROWS (NEAREST THE NEW CANAL, INCLUDING BUNKER 73) FOR THE PRESENCE OF CW OR SUSPECT CW MUNITIONS. THIS WAS DONE TO VERIFY THE IRAQI CLAIM THAT NO OTHER CW MUNITIONS WERE PRESENT AT KHAMISIYAH. THERE WAS NO EVIDENCE OF FURTHER CW MUNITIONS. THERE WAS, HOWEVER, SOME EVIDENCE OF SOME INTERESTING 'BASE EJECT', 155MM PROJECTILES WHICH WERE EMPTY.

3F. IN SUMMARY, BASED ON PHYSICAL EXAMINATION, AS WELL AS DISCUSSION WITH IRAQI REPRESENTATIVES, IT APPEARED THAT THERE WERE APPROXIMATELY 2,160 GB/GF FILLED 122MM SAKR-18 CW ROCKETS AT KHAMISIYAH AT THE TIME OF THE GULF WAR. FURTHER, THERE IS NO REASON TO DISBELIEVE THE IRAQIS WITH RESPECT TO CIRCUMSTANCES SURROUNDING THE DESTRUCTION OF THESE ROCKETS.

(b.1. sec. 1.5.c.)

4. AN-NASIRIYAH STORAGE DEPOT. THE PURPOSE OF THE INSPECTION OF AN-NASIRIYAH WAS TO DOCUMENT EVENTS SURROUNDING THE RECEIPT, STORAGE, AND REMOVAL OF APPROXIMATELY 6,000 155MM IRAQI HD MUNITIONS MOVED TO AN-NASIRIYAH IN THE MID 910100 TIME-FRAME. (b.1. sec. 1.5.c.)

THE INSPECTION TEAM OBSERVED THAT 12 TO 14 BUNKERS WERE IN USE AT THIS SITE, 22 HAD BEEN DESTROYED BY COALITION BOMBING, AND OVER 20 HAD BEEN DESTROYED BY OCCUPATION FORCES.
(b.1. sec. 1.5.c.)

4B. THE INSPECTION TEAM'S DISCUSSION WITH THE IRAQI REPRESENTATIVES CENTERED AROUND THE DELIVERY, STORAGE, AND MOVEMENT OF HD MUNITIONS FROM AL-MUTHANNA TO THIS SITE IN 910100, SPECIFICALLY THE FOLLOWING--
-QAPPROXIMATELY 6,000 MUNITIONS WERE MOVED FROM AL-MUTHANNA TO AN-NASIRIYAH BETWEEN 910110 AND 910115.
-QTHE MUNITIONS WERE PLACED IN IRAQI BUNKER NUMBER EIGHT//GEOCOORD: 305815.9N0461015.3E//.
-QALSO IN BUNKER EIGHT THERE WERE A RELATIVELY SMALL NUMBER OF 120MM HE MORTAR ROUNDS AND 7.9MM BALL SMALL ARMS

AMMUNITION.
-QTHE MUNITIONS WERE REMOVED FROM BUNKER EIGHT AND AN-NASIRIYAH OVER A ONE-WEEK PERIOD AROUND 910215 AND PLACED IN THE OPEN AREA NEAR KHAMISIYAH (TAL AL-LAHM)//GEOCOORD: 304605.3N0462276.1E//. THE INSPECTION TEAM EXAMINED THIS SITE AND DISCOVERED NO EVIDENCE OF REMAINING MUNITIONS OF ANY TYPE. THERE IS, HOWEVER, A RECENTLY CONSTRUCTED CANAL ADJACENT TO THE DUMP SITE.
4C. THE INSPECTION TEAM EXAMINED ADDITIONAL BUNKERS IN ORDER TO CLARIFY QUESTIONS ASSOCIATED WITH THE AN-NASIRIYAH SITE, SPECIFICALLY THE FOLLOWING--
-QIRAQI BUNKER NUMBERS 15//GEOCOORD: 305773.0N0461015.5E// AND 19 (UNSCOM NUMBERS 99 AND 98 RESPECTIVELY). THE INSPECTION TEAM DID NOT OBTAIN GEOGRAPHIC COORDINATES FOR BUNKER 19, DUE TO SAFETY CONSIDERATIONS. THESE TWO BUNKERS WERE TYPICAL IN THEIR CONSTRUCTION AND CONTENT, SUCH AS MIXED PROJECTILES, MORTAR ROUNDS, SMALL ARMS AMMUNITION, AND PROPELLANT. HOWEVER, THESE TWO STRUCTURES WERE DESTROYED AT 0100 HOURS, 910117, BY COALITION BOMBING. IN ALL APPROXIMATELY 22 STRUCTURES WERE DESTROYED BY AERIAL BOMBING. BUNKER EIGHT WAS DESTROYED BY OCCUPATION FORCES, AS EVIDENCED BY U.S. DETONATORS, ETC., LEFT IN PLACE. THERE WAS NO EVIDENCE OF OTHER THAN CONVENTIONAL MUNITIONS AT THESE SITES.
4D. IRAQI BUNKERS 59//GEOCOORD: 305787.7N0460917.0E//, 60//GEOCOORD: 305780.2N0460923.0E//, AND 61//GEOCOORD: 305771.0N0460922.0E// (UNSCOM NUMBERS 101 TO 103). THESE BUNKERS WERE ALL DESTROYED BY COALITION AERIAL BOMBING. THEY WERE BUILT AND USED FOR STORAGE OF SENSITIVE EXPLOSIVES, I.E. DETONATION CHARGES, DETONATORS, TNT, ETC. AS SUCH, THEY WERE EQUIPPED WITH 'CHILLERS', WHICH PROVIDED COOLED AIR TO THE INTERIOR OF THE BUNKERS' FOUR SEPARATE STORAGE ROOMS. THE INSPECTION TEAM EXAMINED ALL OF THESE BUNKERS AND DISCOVERED NO EVIDENCE OF ANYTHING OTHER THAN THOSE TYPES OF EXPLOSIVES PREVIOUSLY INDICATED AS BEING STORED THERE.
4E. IRAQI BUNKER 20//GEOCOORD: 305747.7N0461047.8E// (UNSCOM NUMBER 71). THIS BUNKER WAS TYPICAL OF THE TYPE REMAINING IN USE. THE DOORS TO THE STRUCTURE WERE LOCKED, HOWEVER, THE IRAQIS READILY AGREED TO ALLOW ACCESS. THE CONTENTS OF THE BUNKER WERE AS FOLLOWS--
-Q120MM MORTAR ROUNDS
-Q130MM PROJECTILES
-Q155MM HE (U.S. 820000)

-QFUSES
-QPROPELLANT
-QSMALL ARMS AMMUNITION
THE PHYSICAL CONSTRUCTION OF THE BUNKER WAS ESSENTIALLY A MAIN ROOM SURROUNDED BY AN ANNULUS WITH TWIN ANTEROOMS OFF THE ENTRANCE. 155MM AND 12MM SHELLS WERE STACKED IN THE ANTEROOMS. (FIELD COMMENT--THE CHIEF INSPECTOR STATED THAT THERE APPEARED TO BE NO 'RHYME OR REASON' TO IRAQI STORAGE PROCEDURES.)
4F. IRAQI BUILDING THREE//GEOCOORD: 305745.5N0460940.0E//. THIS STRUCTURE WAS ONE OF THREE SUCH STRUCTURES LOCATED AT THE AN-NASIRIYAH SITE. ESSENTIALLY THESE FACILITIES WERE CONSTRUCTED OF BRICK AND CORRUGATED TIN, AND BUILT AT-GRADE. THE DAMAGE ASSOCIATED WITH THESE FACILITIES WAS EXPLAINED AS OCCURRING FROM THE BLAST WAVE FROM THE DESTRUCTION OF ADJACENT STRUCTURES. AN EXAMINATION OF BUILDING THREE REVEALED THE FOLLOWING CONTENTS--
-
-Q240MM CHINESE MORTAR ROUNDS
-
-Q122MM HE ROCKETS (JORDANIAN)
-
-Q155MM HIGH EXPLOSIVE ANTI-TANK, TNT,
- AND CYCLOTRIMETHYLENE NITRAMINE (RDX)
-QOF U.S. MANUFACTURE
-
-QROCKET-PROPELLED GRENADE LAUNCHERS (RPG)
-
-QLIGHT ANTI-TANK WEAPONS OF RUSSIAN MANUFACTURE
-
-QSMALL ARMS AMMUNITION
-
-QTOW OF U.S. MANUFACTURE
-
-QAT-3 SAGGER ANTI-TANK GUIDED MISSILE OF RUSSIAN
-QMANUFACTURE
-
-Q120MM TANK AMMUNITION OF U.S. MANUFACTURE

9b.1. sec. 1.5.c.)

4G. IN SUMMARY, THERE WAS NO INDICATION THAT THERE ARE CURRENTLY CW MUNITIONS STORED AT THIS SITE. FURTHERMORE, THERE IS NO EVIDENCE, EITHER PHYSICAL OR AS A RESULT OF DISCUSSIONS WITH IRAQI REPRESENTATIVES, THAT THERE WERE CW MUNITIONS STORED HERE IN ADDITION TO THOSE 6,000 HD MUNITIONS INDICATED ABOVE.

5. THE FOLLOWING IS A LISTING OF THE LOCATION OF SPECIFIC TYPES OF CW MUNITIONS AND IS A DIRECT EXCERPT FROM IRAQ'S MOST RECENT CHEMICAL FULL, FINAL, AND COMPLETE DISCLOSURE (FFCD), PRESENTED TO UNSCOM ON 960513-

-QSTATUS OF MUNITIONS FILLED WITH MUSTARD AND LOCATION-

STORAGE SITE	QUAN-TITY	TYPE OF MUNITIONS
AL-MUHAMMADIYAT	200	AERIAL BOMB 250
SADDAM BASE	315	AERIAL BOMB 250
SADDAM BASE	90	AERIAL BOMB 500
AL-BAKR BASE	25	AERIAL BOMB 250
AL-BAKR BASE	135	AERIAL BOMB 500
AL-KADISIYA BASE	135	AERIAL BOMB 250
AL-KADISIYA BASE	315	AERIAL BOMB 500
AL-TUZ	225	AERIAL BOMB 250
AL-TUZ	135	AERIAL BOMB 500
TAMOZ BASE	200	AERIAL BOMB 250
AL-NASIRIYA MUNITIONS STORES (AL-KAIMISIYA)	6,240	ARTILLERY SHELL 155MM
AL-AUKHADER MUNITIONS STORES (THEN TRANSFERRED TO CHEMICAL PROVING GROUND)	6,394	ARTILLERY SHELL 155MM

-QSTATUS OF R-400 FILLED WITH IRAQI BINARY AND LOCATION--

STORAGE SITE	QUANTITY
AL-WALEED AIR BASE	176
SADDAM AIR BASE	80
AL-KADISIYA AIR BASE	240
SAAD AIR BASE	28
TAMOZ AIR BASE	120
TALHA AIRSTRIP	60
MURSANA AIRSTRIP	160
AL-TABAAT AIRSTRIP	160

-QSTATUS OF DISTRIBUTION OF OTHER MUNITIONS--

STORAGE SITE	QUAN-TITY	TYPE OF MUNITIONS
AIRSTRIP-37 (TAMOOZ AIR BASE)	125	AERIAL BOMB/250 FILLED CS
AL-MUHAMMADIYAT	12	AERIAL BOMB/DB-2 FILLED WITH

		SARIN
AL-MAYMONA MUNI-TIONS (STORE)	4,100	ROCKET 122MM FILLED WITH SARIN
AL-AUKHADER MUNI-TIONS (STORE)	2,160	ROCKET 122MM FILLED WITH SARIN
AL-KAMISIYA	2,160	ROCKET 122MM FILLED WITH SARIN
DUJALA AWARA	30	AL-HUSSEIN WARHEADS, 16 FILLED WITH SARIN, 14 FILLED WITH ALCOHOL
AL-NEBAIE	20	AL-HUSSEIN WARHEADS, FILLED WITH ALCOHOL

9b.1. sec. 1.5.c.)

//IPSP: (U) b.2.
//COMSOBJ: (U) b.2.

(b.1. sec. 1.5.c.)

(b.2.)

Mr. SHAYS. Thank you very much, Mr. Walpole. We'll now hear from the Deputy Inspector General, Mr. Mancuso.

Mr. MANCUSO. Thank you. Mr. Chairman and members of the subcommittee, I am pleased to be here today to discuss the effort now underway by the Office of the Inspector General to find the logs maintained by the nuclear, biological and chemical desk officers at the United States Central Command in Saudi Arabia during the Gulf war.

As you are aware, the Office of the Special Assistant for Gulf War Illnesses, in its efforts to identify the cases of a number of illnesses being suffered by Gulf war veterans learned that logs that might contain information of value in this work had been kept in Central Command J–3 Operations Center in Riyadh. An effort was begun in January 1997 by that office to find those logs.

On March 3, 1997, the Deputy Secretary of Defense directed that the Inspector General take over the inquiry and carry it to conclusion. Specifically, the Deputy Secretary asked that we follow all leads that can be identified on the location of the original log or copies in electronic or hard copy versions, gather all originals and copies that can be located, and, if a full copy of the log cannot be located, to explain why.

To accomplish this task, we formed a team of five senior criminal investigators supported by a staff of four auditors and investigative support personnel. The team's activities are being closely directed by senior investigative managers, and is supplemented by additional staff as needed. Initially, our investigative approach focused on collecting and analyzing the considerable investigative record created by the Special Assistant for Gulf War Illnesses.

That effort included reviewing numerous detailed transcribed interviews of officers assigned to the NBC desk during the war, interviews of other persons who may had access to the logs after the war, as well as many telephonic and written requests for information from sources throughout the Department of Defense. Based on our review and analysis, we have identified areas where the coverage provided by the Special Assistant was thorough, and other areas where we felt that additional professional investigative effort would be useful.

For example, we are interviewing every available witness who was directly involved in the creation of the CENTCOM NBC desk logs in Riyadh, or whom we know was in possession of the logs or any portion of those logs at Central Command in Tampa, after the conclusion of the Gulf war. The investigation is now in progress, and we are receiving the full cooperation and support of all affected elements of the Department.

As you know, we do not comment on the details of active investigators, both to avoid jeopardizing investigative effort, and to protect the privacy and reputation of parties involved. I can assure you, however, that we fully recognize the importance of this investigation. We prioritized our efforts in order to complete the work as thoroughly and as quickly as possible. Upon completion, the results of the investigation will be provided to the Secretary of Defense, the Presidential Advisory Committee on Gulf War Veterans Illnesses, and the Congress. Thank you.

[The prepared statement of Mr. Mancuso follows:]

Mr. Chairman and Members of the Subcommittee:

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jeopardizing investigative effort and to protect the privacy and reputations of parties involved. I can assure you, however, that we fully recognize the importance of this investigation. We have prioritized our efforts in this area, in order to complete our work as thoroughly and as quickly as possible. At the appropriate time, the results of the investigation will be provided to the Secretary of Defense, the Presidential Advisory Committee on Gulf War Veterans' Illnesses and the Congress.

Mr. SHAYS. Thank you very much. Mr. Sanders.

Mr. SANDERS. Thank you very much, Mr. Chairman. You know, one of the problems with this whole issue is there are so many aspects of it that my office is rapidly becoming overflowing with papers in a dozen different areas. So, what I want to begin with is by focusing on health issues. And I want to chat with Dr. Rostker for a minute. Doctor, first of all, let me begin by saying that since you've been on board—when did you come on board?

Mr. ROSTKER. November 12 as Special Assistant.

Mr. SANDERS. I appreciate your efforts in trying to open up the process and get quick responses back to people who are asking questions. I would suggest to the audience that there has been a significant improvement since you've come on board. And I appreciate that.

Mr. ROSTKER. Thank you, sir.

Mr. SANDERS. I'm sure the veterans community does, as well. What I would like to do, though, is to ask you some questions. And maybe you can help me out. Because I'm starting from the premise that throughout this country and in the veterans community, there is a lot of cynicism, to say the least, toward the DOD and the VA in terms of their response from day 1—well before you were on board—to this problem. And I would just like to ask you a few questions.

You heard today—today, after so many years, so many articles, so much discussion—you heard some of our veterans saying that even today when they go to speak to medical people within the veterans system, that they're still told that the problem was in their head. Would it be fair of me to say that at least at the very beginning this problem was minimized by the DOD? Is that a fair statement?

Mr. ROSTKER. Yes.

Mr. SANDERS. OK. Is it a fair statement to say that the DOD minimized the problems of chemical exposure, that the DOD position until not so long ago was, "Hey, our soldiers were not exposed to chemicals?" Is that a fair statement?

Mr. ROSTKER. Yes.

Mr. SANDERS. OK. Is it a fair statement—well, let me ask you this question, as you know, a few months ago, the President's Advisory Commission did a whole lot of work, and they relied on the DOD and the CIA and other Government agencies for a lot of their information, and they came to the conclusion that while there were a number of other areas that yet remained to be explored, that they thought that stress was perhaps the major cause of Persian Gulf syndrome. Am I characterizing them fairly?

Mr. ROSTKER. I believe they drew that conclusion on their own. I would not characterize—they drew that on their own.

Mr. SANDERS. I didn't mean to be so hard on you. We haven't even begun this yet.

Mr. ROSTKER. And they relied on their own witnesses. We have—we treat stress and all of the other potential causes in an open way. My office has drawn no conclusion on any of the potential causes.

Mr. SANDERS. Right. And I'm not for a moment suggesting that stress is probably not a factor. But my point was—you're suggest-

ing that they were independent. But on the other hand, we knew that they fired Dr. Jonathan Tucker—and I know that's not your thing—but he went outside of the usual channels to try to get some information. Now let me ask you this, if I might: Dr. Robert Haley——

Mr. ROSTKER. Yes.

Mr. SANDERS [continuing]. Is a researcher at the Southwestern Medical Center at the University of Texas. And he suggests, based on his studies, that "the syndromes are due to subtle brain, spinal cord and nerve damage, but not stress. The damage was caused by exposure to combinations of low-level chemical nerve agents and other chemicals including pyridostigmine bromide in anti-nerve gas tablets, DEET in a highly concentrated insect repellent and pesticides in flea collars that some troops wore." What do you think?

Mr. ROSTKER. Dr. Haley's work was published with an unusual editorial that accompanied it by the, I believe, the New England Journal of Medicine, and it was the subject of a number of further editorials and comments. I believe his research is suggestive. But the tenor of those comments are that the conclusions are a bit strong based upon the research. Now, I believe Dr. Haley intends to extend that research. And I'm sure we support the extension of that research.

But that actual reports and the actual research are a bit toned down from the stark conclusions that Dr. Haley has brought forward. And that was the judgment in the editorials that, in the New England Journal, that accompanied the research at the same time. I would also point out that Dr. Haley's research, as best I understand it—and I am not a physician—did not carry with it suggestions for treatment. And that's one of the major concerns that we have.

Mr. SANDERS. OK. But quoting Maj. Donnelly before—he made a very important point—you see, and here's the problem, and I want to stay on it for a while. Multiple chemical sensitivity today, to the best of my knowledge, is not an allowable diagnosis according the American Medical Association.

Mr. ROSTKER. You're in an area that I'm not——

Mr. SANDERS. OK. And you may not know. I may be wrong. But I believe that that is a case. In other words, it's a controversial diagnosis. OK? That's true. Controversial. Some doctors believe it, some doctors don't. And the chairman tells me it's true. All right.

Mr. SHAYS. That is one thing we can agree on.

Mr. SANDERS. OK. Controversial. But here is the problem. And this is exactly what the problem is and concerns me very much. If we have 70,000 people who are hurting—is that a fair number? Is that a good number? It's the number I've heard.

Mr. ROSTKER. We can split the registries into different ways. But there are about 70,000 or more who have actually been examined. The vast majority of those people have real diagnoses. And I think the residual with unknown diagnoses are substantially smaller than that.

Mr. SANDERS. OK.

Mr. ROSTKER. And we can provide that for the record.

Mr. SANDERS. But hold on. Here's the problem, you see: the AMA does not have a diagnosis, the VA does not have a diagnosis, the

DOD does not have a diagnosis. But then when people come forward—and I'm a layman, I'm not a medical specialist—with work that makes some of us believe that they're moving in the right direction, then people say, "Hey, you know, where is the peer review? Give us more." And this is the dilemma that the major, I think, correctly put his finger on. You are not succeeding. In other words, if we were—we're politicians. If we kept running for office every time we kept losing and getting 2 percent of the vote, we'd have to re-evaluate. The general consensus is, you're failing. You are not solving the problem. And that we should be looking to more, to quote the Major, cutting edge type research.

Mr. ROSTKER. And I absolutely agree with you. That's why, in the construct of my office, we are not just focusing on the possibility of chemical exposures. That's why we have gone out and commissioned an outside review of the issues of pesticides and multiple chemical exposures.

Mr. SANDERS. Who have you gone to? Who have you gone to that knows these subjects?

Mr. ROSTKER. To pull it together, we've gone the RAND Corporation, and they, through their health program, are bringing in people who have expertise.

Mr. SANDERS. What kind of expertise? Do they have expertise on multiple chemical synergy?

Mr. ROSTKER. Yes.

Mr. SANDERS. Really?

Mr. ROSTKER. Yes.

Mr. SANDERS. OK. You will furnish us those names?

Mr. ROSTKER. I will, sir.

Mr. SANDERS. OK. Because this is the problem. And it's not a personal criticism of you. You have within the medical community strong philosophical differences about the validity of multiple chemical sensitivity. And we can bring the best experts in this country on multiple chemical sensitivity to most doctors, and you know what they'll say: charlatans, quacks, we don't want to hear this stuff. And this is my concern. I don't know that the people that you're going to can peer review the work that others are doing.

Mr. ROSTKER. I can only say I share all of your concerns. That's why within the construct of what my charter is, we have not drawn a conclusion. We have thrown it open. We are explicitly looking at that. We are prepared to, within the dollars allocated for medical research this year, to carry on research in this whole area. I happen to agree with your concerns.

Mr. SANDERS. All right. Let me go on.

Mr. ROSTKER. But we have to go forward in a structured, reasonable way. And that's what we're trying to do.

Mr. SANDERS. I've heard that for years. OK. All right. Let me just ask you another question. Doctors Muhammad Abou-Donia—I'm probably mispronouncing the name—and Dr. Tom Kurt, Duke University Medical Center. They used chickens because, I gather, that the chickens respond similarly to how humans respond. And they found that two pesticides—DEET and hermathrine—and the anti-nerve gas agent, PB, were harmless when used alone, but when in used with combination the chemicals caused neurological

problems similar to those reported by some Gulf war veterans. How does the DOD feel about that research?

Mr. ROSTKER. It goes all into the review we're making of PB and the medical aspects of PB.

Mr. SANDERS. Who is making? You see, I'm going to be hard on you here. Because that's not a good enough answer.

Mr. ROSTKER. OK.

Mr. SANDERS. I don't know that you—so, in other words—not a personal criticism, but I think if, for example, as the chairman was mentioning before, if your soldiers, God forbid, get injured in the field of battle, in many, many ways you guys are probably the best in the world in putting people back together. And I suspect you perform miracles. I think in this area you're not doing well.

Mr. ROSTKER. Well, I can only say that we have an ongoing program to extend our frontiers of medical knowledge. I'm sure you would agree that's the appropriate thing to do. We're eager to learn more about the issues of pesticides, the issues of PB in combination. We have not drawn a conclusion.

Mr. SANDERS. All right. But here's the point: we're going to hear testimony in a few minutes after you're through, about people who are going to tell us about PB. And what they're going to say—at least one of the gentleman—it's going to be pretty frightening stuff. You are interested in learning. Well, we're all interested in learning. But we have tens of thousands of people who are hurting. Why are we—tell me what the DOD is doing with regard to PB?

Mr. ROSTKER. Well, as I've indicated, we have the existing research. We're trying to extend the research to better inform ourselves about it. Your hearings here and the information available to us is important. But we have not yet drawn a conclusion about PB.

Mr. SANDERS. All right. Here's my question: you have a budget, not you personally, I'm sure, of $250 billion. Why does it take two researchers at Duke University to work with chickens and come up with their conclusion about the synergistic effect?

Mr. ROSTKER. I have no answer, sir.

Mr. SANDERS. But this is—why should we have confidence in the DOD when we're seeing people at Duke with limited budgets making what some of us think are significant breakthroughs?

Mr. ROSTKER. I have no comment.

Mr. SANDERS. Do you have comments on the work done by Dr. Nicolson at the University of Texas? They have, among other things, suggested that some of the multiple chronic symptoms may eventually have their diagnoses linked to chemical exposures in the Persian Gulf, et cetera. In some cases, such exposure may have resulted in multiple chemical sensitivity. Are we working with those people?

Mr. ROSTKER. Yes. I believe we are.

Mr. SANDERS. All right. Claudia Miller had applied, as I understand it, for a grant from the DOD, and somewhere along the line it was killed. You want to tell me about that?

Mr. ROSTKER. I will be happy to look into it. I don't know the specifics of the case.

Mr. SANDERS. Claudia Miller is one of the experts in multiple chemical sensitivity in the country. She is, in fact, in a book that

is soon to come out, has an entire page, Mr. Chairman—I'll probably get sued for copyright violation, the book is not out yet—but it's comparing the symptoms of veterans with symptoms experienced by multiple chemical sensitive people. See? She has a direct correlation.

This is my point. And Mr. Chairman, this is the point where I think we finally have got to say, "Thank you. Continue your research. We don't have a lot of confidence in you. We're going elsewhere, as well." We owe that to the tens of thousands of veterans.

There is, getting back to the Major, who made a very profound statement, we need cutting edge research. I have the sad feeling, Mr. Chairman, that in 5 years from now, if I'm still here, Dr. Rostker—we'll be still having it. They're interested in the issue. They're going to explore the issue. They're going to go to the same conservative doctors that are going to tell the same things. We need new ideas. And my experience is that the DOD is not bringing forth those ideas. And I'll yield back to you. Thank you.

Mr. SHAYS. I thank the gentleman. Let me just start off with you, Mr. Walpole. We had testimony previous, from the CIA—Ms. Sylvia Copeland, who was trying to respond as best she could to our concerns. And I asked you to look over her testimony and what she submitted, and response to our questions. Is there anything that you would qualify in her testimony that would be helpful to us? Is there anything that you add to her testimony that might be helpful to us?

Mr. WALPOLE. Congressman, I read the question session of that testimony while I was preparing my own opening remarks, to look for any questions that you might have had that we were not able to answer at the time. And one that stood out to me was the working relationship with the Department of Defense. And I wanted to make sure I underscored that throughout my opening remarks. In fact, we have a very close working relationship there.

As you know, I started on February 27. And I have tried to look forward from that point as what we could do. I was completely fresh to this issue. But in looking back over the remarks that you had asked me to look at this morning, what really comes to mind is that since that time, we have declassified a lot more material, particularly in the area of Khamisiyah. And we prepared this paper. More information has been discovered. More information was released than at the point of that testimony.

I have not evaluated that testimony for some of the questions you've asked. If you'd like us to take that for the record I can. But I do know that a lot more information is in the Khamisiyah historical paper than at the time of that testimony.

Mr. SHAYS. That's it? That's your response? Anything else you would add to that? Was there any information that was possibly incorrect or that you would qualify that was submitted, some written document?

Mr. WALPOLE. I honestly did not evaluate it for that purpose. Now, part of the submission for the record was the paper on the modeling of the pit, Al Muthanna, Muhammadiyat, and the reiteration that we did not see any evidence that the Iraqis used chemical weapons against us in the war.

Mr. SHAYS. Right.

Mr. WALPOLE. Those judgments still stand.

Mr. SHAYS. In her testimony she said that U.S. troops were not interviewed by the CIA, that the CIA depended on the Pentagon. Your testimony today suggests that you are now talking with U.S. troops. Is that correct?

Mr. WALPOLE. Absolutely.

Mr. SHAYS. The basis for that is what?

Mr. WALPOLE. The basis for talking with the troops? In trying to do the modeling, for example, we have talked to the soldiers who were there to try to sort out how to put together a model of what might have been released when those rockets were destroyed.

Mr. SHAYS. Would we not also be turning to our soldiers to see if they've identified any other sources? Wouldn't the CIA speaking to our soldiers to gain information—let me just interrupt myself by saying it blew my mind that the CIA seemed to depend on foreign sources and the DOD's position instead of speaking to the people who were there: our own soldiers. I lost a lot of respect, frankly, for the CIA. I thought who better to speak to than the people who were there: our own soldiers. My gosh, we'd speak to someone who wasn't our own soldiers, but, you know. So, is this a change in policy?

Mr. WALPOLE. We have two approaches that I'm aware of at this point for talking with the soldiers. When we put together the announcement that I mentioned earlier we released in Salt Lake City, with the photographs of Khamisiyah, we did that in conjunction with the Department of Defense and included their 1–800 number at the bottom, so that the information could get into that system, they would relay the information to us, and we would work that.

When I released the historical perspective paper, before we released in the press briefing, we took it to the veterans organizations. And I think 21 organizations were represented there. Veterans Affairs set that up for us. So they got a pre-briefing. And during that briefing we gave them our public affairs number, that if any of them or anybody in their organizations, any veterans they became aware of, had any information or questions for us on this or other issues from an intelligence perspective, call that number and we would get back to them. I have a public affairs person on my task force for that purpose.

Mr. SHAYS. I think that's a healthy change in practice. Let me ask you, if I'm to ask you a question that you can't answer because it's still classified, is your response to me going to be that this information is going to be—what is your response on any information?

Mr. WALPOLE. I would answer that the information is still classified. I was asked that last week and said that same thing.

Mr. SHAYS. OK. That's the response I would like rather than to suggest that we don't have a problem or something. So, the answer will be—from my understanding—I'll either get a straight answer or I'll get an answer that says it's classified?

Mr. WALPOLE. That is correct.

Mr. SHAYS. OK.

Mr. WALPOLE. And if I don't know an answer, I'll certainly tell you that.

Mr. SHAYS. When we did studies—excuse me. When the CIA—I believe it was the CIA—contracted an outside company that had formerly the CIA Director, Mr. Deutch, and former Defense Secretary, Mr. Perry, on its board—what was the name of the company? SAIC. Their job was to make an analysis through modeling of what would happen when we blew up certain chemical plants and other sites, where the plumes would go, and would our troops be affected or not. Obviously, a very important question. Mr. Rostker, this is something you're familiar with as well. My first question is, we know where the plumes went, correct? Before it was a model of what would happen. Now we know. Is that not correct?

Mr. WALPOLE. We know—on which site are we talking about, the pit?

Mr. SHAYS. Any site. We have the pictures. We have the weather. It's in effect—it's an occurrence that's happened. We know where the winds went, et cetera.

Mr. WALPOLE. In all cases, we did not know where the winds went. When we were doing Muhammadiyat and Al Muthanna——

Mr. SHAYS. Now, let me be clear on this.

Mr. WALPOLE. OK.

Mr. SHAYS. What I'm asking is, we did modeling to anticipate where the winds would take the chemical fallout.

Mr. WALPOLE. OK. I'm with you. You're talking about before the war?

Mr. SHAYS. Right. That's a model. Now we have reality. Reality is what actually happened. Isn't it true that we can determine what happen, and have determined where those prevailing winds went?

Mr. WALPOLE. In the case of the pit, which is the one we're modeling right now, just with the weather, the winds, depending on how long you run the plume extension—and that depends, of course, on how much agent is released—that's why we're doing the ground testing—the wind changed direction.

Mr. SHAYS. But we monitored the weather 24 hours a day, correct? Mr. Rostker, you want to jump in here a second.

Mr. ROSTKER. Umm.

Mr. SHAYS. Doctor. Believe me, I'm sorry.

Mr. ROSTKER. That's OK.

Mr. SHAYS. If you went to the trouble to get your doctorate, then you'll be called a doctor.

Mr. ROSTKER. I appreciate that, sir. The wind information is very imprecise. At one point, the CIA was making calculations where the nearest wind observation was 200 miles away.

Mr. SHAYS. Are you talking modeling or the fact?

Mr. ROSTKER. Fact.

Mr. SHAYS. OK.

Mr. ROSTKER. The fact. When Deputy Secretary White asked the Institute for Defense Analysis to stand up an expert panel, it was largely on the meteorological aspects and the weather. And subsequent to the initial CIA attempt to model the pit, additional weather observations have become available from classified satellite reports, from the Saudis who had withheld weather information because it might have been used by the Iraqis, and from classified Navy reports, so that the pure data that we have today on the pits

has grown exponentially since last November when CIA was initially working on this.

IDA used two different models to look at how one could bring the weather information to bear. And the CIA has a third model. Where we are today is not so much worrying about the weather, but worrying about what was actually released. There's great uncertainty. In fact, the CIA came to us and asked us to do tests. We're blowing up captured 122 millimeter rockets, because there is tremendous uncertainty of what actually happened.

Mr. SHAYS. Let me just interrupt you, Doctor, just so I'm clear and you don't use me. Is your testimony before this committee that while we know the weather we don't know how much chemical was released in these sites? Is that the real issue?

Mr. ROSTKER. Right now that's what we are focusing on, the uncertainty.

Mr. SHAYS. Isn't it true we know pretty much where the plumes went based on the actual fact of what the conditions were?

Mr. ROSTKER. No, sir. Not until you know how much was released into the atmosphere.

Mr. SHAYS. I'm not asking that. That's not what I'm asking. I'm asking if we know the direction of where the plumes went. I'm not asking what level of concentration of chemicals were in the plumes.

Mr. ROSTKER. But we have meteorological weather, today. Isn't that right, Bob?

Mr. WALPOLE. Yes.

Mr. SHAYS. I'd like a short version answer, not a——

Mr. WALPOLE. Yes. Let me give you a short one. Modeling, theoretically, is in some senses easier than modeling what you're referring to as the fact. Because theoretically you choose your inputs.

Mr. SHAYS. Right.

Mr. WALPOLE. We're trying to determine what the facts are. The winds changed direction. I don't remember exactly how many hours after the event it changed direction. But it changed direction. That's why Dr. Rostker is saying the amount of agent in the air at the time the wind changed direction makes a difference as to where that plume went. And we don't that.

Mr. SHAYS. OK. Your testimony is that while you have data, you don't have all the data, you're getting the data, and that you still may never have enough data?

Mr. WALPOLE. We will never have all of the data. We will never know exactly how many rockets were in each of that stacks.

Mr. SHAYS. I'm not asking about concentration. I'm just talking weather. The reason I'm getting a little impatient is we're going to be here a long time if——

Mr. ROSTKER. We believe we have a set that will accurately allow us to do the plume analysis.

Mr. SHAYS. OK. And so you're just basically waiting to determine the concentration of chemicals?

Mr. ROSTKER. That is correct, sir.

Mr. SHAYS. OK.

Mr. SANDERS. Can I just—on this thing?

Mr. SHAYS. Yes.

Mr. SANDERS. Let me just pick up where the chairman was—and help me out here. In terms of Khamisiyah, my memory is that

originally the authorities, the DOD, claimed that several hundred people were perhaps exposed. And that number went up to as many as 20,000?

Mr. ROSTKER. The first accountings were how many were near the Bunker 73. We then started to focus on the pit. And we extended the potential area to 50 kilometers. We were always working with the same data base. But the original CIA analysis that was made public last summer had a smaller event. And that's what the numbers were that we published then.

Mr. SANDERS. What is your best guess today in terms of the number of American soldiers that were exposed?

Mr. ROSTKER. Given the data that we have on position and location at the 50 kilometer range, it is 20,000.

Mr. SANDERS. Might that be revised?

Mr. ROSTKER. Absolutely, as we gain more insight.

Mr. SANDERS. What you're saying is, now—I don't want to put words in your mouth—that the 20,000 may be a conservative number. And, in fact, based on more evidence, it is possible that the number could multiply significantly?

Mr. ROSTKER. That's correct. The 20,000 also was 360 degrees around Khamisiyah. So, depending upon where the wind took it, it might even not have blown over troops. We just have to wait and see.

Mr. SANDERS. OK.

Mr. SHAYS. We're going to try to get you out, Doctor, by 15 of. And Mr. Mancuso, I'm going to just kind of wait. I just have a few questions for you. But I want to make sure that I am able to deal with the CIA and the DOD. Do we have any indication that Iraqi citizens are feeling the effects of chemical exposure, Mr. Walpole?

Mr. WALPOLE. I'm not aware of any information on that. I don't know the answer.

Mr. SHAYS. That seems kind of surprising to me. Because it would strike me that if we want to know how our troops were impacted, that we would want to know how Iraqi citizens were impacted. And if they were in certain areas, large concentrations, it would be helpful to us. So, I'm a little more than disappointed with your response. It just doesn't even seem logical to me.

Mr. WALPOLE. The wind direction from the pit was away from Iraq.

Mr. SHAYS. My view—and help me out—it either went toward the soldiers or went toward civilians. And you're saying there's another option? It didn't go toward civilians either? It didn't go toward the troops. It didn't go toward civilians. So, it went——

Mr. WALPOLE. No. It went, I think it's south. I don't know if it was directly south. But it did go away from Iraq.

Mr. ROSTKER. Moreover, without knowing how much agent was released, we would have no basis for knowing who may have been exposed.

Mr. SHAYS. No. But we're not even talking about Khamisiyah now. We're talking about—I'm sorry, Doctor, but mine was a general question. Do we have any record of Iraqi citizens feeling the effects of chemical exposure? And it boggles my mind if we don't. One, I would make assumptions that they were affected, and, two, that we would know it. We have no intelligence information that

says that some Iraqi soldiers may be affected by chemical exposure?

Mr. WALPOLE. I'm not going to pretend to know all the answers. I'm not even going to pretend to know all the questions. If we have information on that. And I will check if we do, then that would obviously be knowable, and I can get that for you.

Mr. SHAYS. The reason why I started out my questioning about whether you would tell me if it was classified information—is your response because it's classified or is your response——

Mr. WALPOLE. No. My response is because I do not know.

Mr. SHAYS. OK. I would like to know the answer to that question. If you would get back.

Mr. WALPOLE. Sure.

Mr. SHAYS. And that's something that we need to followup with. Isn't it logical, though, that we would want to know if Iraqi citizens were affected?

Mr. WALPOLE. Absolutely. If the direction of wind was such that anybody in the path could have supplied information on that, absolutely.

Mr. SHAYS. Let me ask you this, isn't it true that some of these munitions plants were in urban areas that we blew up by air?

Mr. WALPOLE. The only facility that we have identified where we have a potential chemical release on the information to date is Khamisiyah.

Mr. SHAYS. No——

Mr. WALPOLE. Now, some of the sites—yes. The answer to your question is, yes. Many of the sites are.

Mr. SHAYS. I've made an assumption. Dr. Rostker, help me out here. I made an assumption that we blew up some munitions/chemical munitions plants. I make that assumption based on also what was news accounts. And my recollection was that that was the case. Is that your testimony? We didn't blow up any chemical plants? I'm asking both of you.

Mr. WALPOLE. No. That's not——

Mr. SHAYS. I want both of you to respond to this question. Dr. Rostker, did we blow up——

Mr. ROSTKER. We obviously did. Of course we did.

Mr. SHAYS. OK.

Mr. WALPOLE. Yes.

Mr. SHAYS. Now, my question is, do we have any intelligence information—and I'll first make sure that we're clear—Dr. Rostker, do we have any intelligence information that Iraqi citizens were impacted by any chemical exposure?

Mr. ROSTKER. There are numerous accounts in the closing days of the war—I shouldn't say the war—during the rebellion of the Shi'ites—that Saddam Hussein had used chemicals on the Shi'ites.

Mr. SHAYS. Well, we know he used them against Iran.

Mr. ROSTKER. Yes.

Mr. SHAYS. I'm not talking about Iran.

Mr. ROSTKER. I'm not either, sir.

Mr. SHAYS. I'm talking about what—so we have no information? I want to be clear that I'm asking the right question so I know how to evaluate your answer.

Mr. ROSTKER. The only accounts that I have seen of Iraqi citizens complaining of being exposed to chemical agents come in a number of reports where they presented themselves to United States personnel during the short-lived occupation of Iraq. And they claim direct exposure to mustard gas from Iraqi forces. And that is well documented in the military logs of the 18th Airborne Corps.

Mr. SHAYS. Let me just explain why I want to be a little more precise. When Mr. Deutch appeared before CBS, he was very clear to say that there was no offensive use of chemical weapons. And then, shortly after, which was defensive exposure took place. He clearly had to know that he was using a very precise work so he would be safe. So, I just need to know if we're in this kind of level. When you say, Dr. Rostker—have you heard?

Mr. ROSTKER. No, sir.

Mr. SHAYS. So, your testimony before this committee is that you are not aware of civilian troops being exposed to chemicals by potentially the blowing up, the destruction of any of the chemical munitions plants in Iraq?

Mr. ROSTKER. That is correct. I've seen no reports to that effect.

Mr. SHAYS. Or heard any?

Mr. ROSTKER. Or heard.

Mr. SHAYS. Or aware of any?

Mr. ROSTKER. Or aware of any.

Mr. SHAYS. Doctor——

Mr. WALPOLE. OK. I thought initially you were talking about Khamisiyah. I do not know the answer to your question. I will go back and make sure that we check every site that chemicals were possibly at, and when they were destroyed either by bombing or by demolition, and see if there's any intelligence that relates to Iraqis indicating effects.

Mr. SHAYS. OK. Sure.

Mr. SANDERS. Mr. Chairman, let me just pursue your line of questioning. Mr. Walpole, one of the things that we're knocking our brains out here is to try to figure out to what degree American troops were exposed to chemical agents. And what the chairman asked you is—and it seems to be a pretty logical question—is, if American troops may or may not have been exposed, then what about the people in the immediate area? What about the Kuwaitis? What about the Iraqis, themselves? If we bombed, as Dr. Rostker has told us, and we all knew, chemical plants, chemical weapon plants in Baghdad or wherever they were, were people in Iraq affected, or people in Kuwait or wherever? It would seem to me that the CIA would be in the midst of that investigation.

Mr. WALPOLE. Yes.

Mr. SANDERS. Are you suggesting that they are not?

Mr. WALPOLE. I'm saying that I personally do not know. I might well go back and have the people on my task force that are experts on this field say, "Well, Bob, yes. We looked at that quite a while ago. And here's the answer." And then, of course, I'll feel that I should have known the answer. But it's a very logical question.

Mr. SANDERS. Will you tell us the answer then?

Mr. WALPOLE. And when I find out the answer to the question, we'll make sure you get it.

Mr. SANDERS. My question is, has the CIA investigated chemical exposure among Iraqis and Kuwaitis and other peoples in that region?

Mr. WALPOLE. Yes. And it's a legitimate question. If that was part of the overall question of exposures, then the answer would be yes. But I don't know that for certain, and I don't want to mislead you.

[The information referred to follows:]

QUESTION: Please provide all available data on civilians and soldiers (Iraqi, Kuwaiti, and Saudi) reporting incidence of, or effects from, exposure to chemical and biological agents during or after the war:

ANSWER: We are unaware of intelligence related to specific cases in which Iraqis, Saudis, or Kuwaitis were exposed to chemical or biological agents during or after the war, with the exception of an Iraqi soldier injured by nerve agent during postwar cleanup for UNSCOM. While it is possible that UNSCOM may have information we are unaware of on acute illnesses at Iraqi production facilities, UNSCOM has said they have nothing on long-term illnesses from low-level chemical exposure. However, we have seen several vague and/or implausible indications of possible exposure to BW agents in Iraq and Kuwait:

- Soviet press reports in February 1991 claimed that BW agents released from destroyed Iraqi facilities were causing disease outbreaks in Baghdad and other cities. In addition, Iraqi press reports cited a number of incidences of disease outbreak among Iraqi civilians during and after the war. The nature of these disease outbreaks, however, indicates that they are attributable to sanitation and hygiene problems rather than release of BW agents.

- In July 1995, Iraqi press claimed that the United States and its allies had used toxins (including T-2, a tricothecene mycotoxin) against Iraq during the war and that "hundreds of people are dying every day as a result of this continuing violation of humanitarian law and crime against humanity."

- In December 1995, the Kuwaiti Minister of Health told US officials that an "apparent change in local disease patterns in Kuwait," though unsubstantiated, had caused speculation on possible Iraqi use of a BW agent in Kuwait. We have seen no subsequent confirmation and believe this speculation may have been triggered by Husayn Kamil al-Majid's late-1995 revelations about Iraq's BW program.

- In August 1997, the Iraqi press indicated that Iraqi authorities were establishing a committee to investigate strange diseases affecting people and plants. The article speculated that the diseases were caused when biological and chemical weapons were blown up during the Gulf war.

We are conducting a search for any intelligence documents that might relate to this question. Any found will be reviewed for release. In addition, we are preparing a paper to link any intelligence documents with some of the unclassified information already available on the Internet and elsewhere. You will receive that information as soon as that effort is completed.

Mr. SHAYS. Doctor, thank you. And we will followup on that. Dr. Rostker, tell me how you react and if you want to correct my understanding that the Pentagon went to the FDA to have an informed consent in regards to PB so that it could be administered to our troops. One, did that happen? Two, do you agree with the testimony that has been fairly consistent in our committee with all of the veterans who appeared that they were not warned for the most part—I say for the most, there may have been one or two. We know with the Major that there may be something to this. But is it a fair conclusion on our part that our troops were not warned about the use of PB?

Mr. ROSTKER. That is correct, sir.

Mr. SHAYS. OK. So, what is the Pentagon's position knowing that?

Mr. ROSTKER. The new supply of PB—and let me say there is not definitive statement that we would use it or not use it. It would have to depend upon the circumstances. But a new supply of PB, obviously, has been procured. And it comes with a warning and a statement of side effects.

Mr. SHAYS. Is there any new protocol that's been issued by the Secretary instructing a different practice in the future?

Mr. ROSTKER. I don't know of any. But I would say, as part of my inquiry on procedures and policy and doctrine, we certainly will cover this. The testimony that you heard today we hear all the time on our 800 numbers. There was not adequate warning despite of the assurances of the FDA. There was poor quality control in terms of the regimen of PB. In some units it was careful. In other units it was not careful. We don't have records that would definitively establish who had PB. It was not done that way any of us would have liked to have seen it done. There's no question about that.

Mr. SANDERS. In your judgment, was the use of PB a mistake?

Mr. ROSTKER. I'm not prepared to say that. There was a concern that there was a potential for the Iraqis to have soman, which is a particular type of nerve gas. The normal procedures that we had for providing our troops protection would not have worked against soman. It would have been deadly. And the judgment was made at the time that this was consistent with the testing that had been done at the time, an appropriate prophylactic. It was the only procedure we had, the only medicine we had that would have provided any protection to a soman attack.

Mr. SANDERS. Can you tell us again, briefly, exactly the research that is now being done by the DOD or VA about the synergistic impact of——

Mr. ROSTKER. I'd have to provide that for the record. And I will.

[The information referred to follows:]

Representative Bernard Sanders (I-VT) submitted a request for the following information:

A list of the members of the Department's peer review organization.

Independent, external scientific peer review panel services are provided to the U.S. Army Medical Research and Materiel Command (MRMC) through a contract agreement with the American Institute of Biological Sciences (AIBS). Panel participants are nationally recognized scientists who have entered into a contractual agreement with AIBS, and whose credentials have been reviewed by MRMC to assure appropriateness, high level of credibility and absence of conflict of interest.

Immediately after a peer review is completed, MRMC destroys the list of participant names and only maintains the results of the review. As the MRMC record of names of panel members pertaining to your request was destroyed, we have requested that MRMC obtain a list of panel participants from AIBS. We will provide them to you when released and expect this to be in approximately two weeks.

Since the anonymity of the panel participants is intended to ensure objective, unbiased, critical reviews and to protect the privacy of the reviewers, we respectfully request that this information not be released outside your committee.

Mr. SANDERS. Do you consider that to be a major issue?

Mr. ROSTKER. Absolutely. Let me just say, I hate to be vague on this, but when my office was set up we maintained the primacy of the assistant secretary of health affairs on the medical aspects of this. And while I have maintained an ongoing interest in oversight, and we coordinate, I or my office are not the prime people responsible for the health program. And so, if I'm a little vague on an answer, it's because I'll have to get that for you for the record.

Mr. SANDERS. You may be vague on this one, as well. But answer me this: Maj. Donnelly made a very interesting point. He suggested that he was made ill by exposure to malathion. Is that how it's pronounced?

Mr. ROSTKER. Malathion.

Mr. SANDERS. And he suggested that other people may have had similar problems. He raised a very interesting point.

Mr. ROSTKER. And I absolutely agree. And there are examples in civilian literature of people getting very sick on malathion.

Mr. SANDERS. Exactly.

Mr. ROSTKER. Congressman Allen said, "Nasty stuff. I wouldn't use it."

Mr. SANDERS. That's right.

Mr. ROSTKER. "My wife won't let me use it." But, sir, it is still an approved chemical from——

Mr. SANDERS. I know that. But here's my point. It may be possible—and, again, I may be over my head, I'm not a scientist—but it is possible that we have thousands of men and women who are working around as walking time bombs. Might we at least get the word out to them to be at least careful, get out some information to them?

Mr. ROSTKER. I don't know the cause and effect. The Major was talking about maybe some exposure in the Gulf has a triggering event.

Mr. SANDERS. Or PB?

Mr. ROSTKER. Or PB. But maybe his trip to the golf course 2 weeks earlier was a triggering event. I just don't know. This is nasty stuff. And that's why I've made a special effort in my inquiry to make sure we highlight pesticides and insecticides, that we do a full inquiry. Because I'm as concerned as you are.

Mr. SANDERS. I understand that. But the issue here is that you may have folks who already have a whole lot of crap in their systems, who might be particularly sensitive. Isn't it worth while at least exploring some of the——

Mr. ROSTKER. I would have to leave that to the doctors. It's a hypothesis. I just can't draw a conclusion whether, at this point, it warrants that. And, again, just taking the Major's testimony. He had a whole life of exposures to chemicals. I have no idea why he believes he had a triggering event. And we have no linking between ALS and even chemical exposures. Those are things we have to research.

Mr. SANDERS. My last question on this round. You've been very patient for allowing me to interrupt you.

Mr. SHAYS. No. That's fine. I'm just going to followup——

Mr. SANDERS. We're going to hear in a few minutes from Jonathan Tucker. And he's going to tell us, quoting from a statement

he has presented us, "DOD has called the Khamisiyah incident a 'watershed' in it's investigation of chemical exposures. At the same time, however, the Pentagon has discounted dozens of other chemical exposure incidents reported by Gulf war veterans or mentioned in declassified operational logs. These low-level exposures to chemical weapons appears to have resulted from three sources—" He goes through them. "Chemical fallout from aerial bombardment, explosive demolitions of munitions bunkers, sporadic and uncoordinated Iraqi use of chemical weapons." My question is, what do you think about what he is saying, and are you telling us today that Khamisiyah is all that we should expect to hear about in terms of chemical exposure, or do you think that tomorrow or next week or next year we're going to hear about other facilities or other situations that have resulted?

Mr. ROSTKER. You'll hear others from us. We've provided the committee with a matrix of our first-round primary inquiries. And there is a whole range of potential chemical exposures, plus some cross-cutting papers that we're producing on FOX vehicles and other things that cut across. You're aware that there are concerns about positive 256 test kit readings and FOX vehicle readings. Many of those appear in journals. We don't have the specifics of people who are associated with that. We've developed a post card campaign. We'll go to everyone in the unit and ask people if they can provide information about a specific incident that occurred on a specific day.

Mr. SANDERS. Bottom line is that it may end up that there were more chemical exposures?

Mr. ROSTKER. It may well. Because we are looking intensely at all of the named exposures. And every time we see an exposure or we get to the point where there's enough credible evidence to create a case like we heard today, we will create a case and run that to ground.

Mr. SANDERS. Thank you.

Mr. SHAYS. I thank the gentleman. He may not be a scientist, but he looks like one. My sense to what a scientist looks like. No offense to the scientists out there. Doctor, I'm not letting you go quite this second here, but you're getting close.

Mr. ROSTKER. That's OK.

Mr. SHAYS. You're going up to Boston? Is that correct?

Mr. ROSTKER. We're going to Boston for a town hall meeting with veterans. And I really appreciate the committee's indulgence. But reaching out to the veterans and talking to them, I think, is an important activity.

Mr. SHAYS. It's absolutely essential. And I was going to complement you on that.

Mr. ROSTKER. Thank you, sir.

Mr. SHAYS. Just as you are fairly clear on the whole issue informed consent and with the troops and PB, is it possible that you would recommend a protocol that would make clear that it is a tremendous violation of a soldier's duty to not warn another soldier of a case like this. In other words, that that would be part of a protocol that you would suggest. But I'd also like to know, would the protocol allow a soldier, if this was a harmful chemical, that they would say, "Sir, I respectfully decline to take that chemical"?

Mr. ROSTKER. I think we have to come to grips with that. We have had incidents recently in terms of vaccinations that we need to establish what our policy is.

Mr. SHAYS. What the policy is informing and what the policy is for a soldier under orders to say, "I have the right to exercise my own judgment on my own body" and decline.

Mr. ROSTKER. Yes, sir.

Mr. SHAYS. And that's going to be looked into?

Mr. ROSTKER. Yes, sir.

Mr. SHAYS. It also relates to, you said, referring to the chemical that Mr. Allen was referring to, you paraphrased him perfectly. The bottom line there is are you going to be looking at protocol and the use of industrial chemicals in the military? Because we may find that this is a very big problem.

Mr. ROSTKER. Absolutely. And it goes hand-in-hand. And everything we are trying to do in my organization—there are two parts—I need to understand what the science is. As imperfect as it is, I still need to understand that. And then I have to understand the practices. And it's putting those two pieces of information together which will help us understand what policies and procedures we have to change for the future. And, as I said, I'm very concerned about these issues. I take Congressman Sanders' concerns very much to heart.

Mr. SHAYS. Thank you. Some of our military leaders during the war responded by saying, in essence we didn't see evidence of chemical exposure because no one was falling on the battlefield, which related to testimony that Dr. Joseph made as it regards to Khamisiyah. And I'm going to be quoting in a second. I just want to get your reaction. I'm not asking that you repeal the statement. But I want a reaction to it. He said, "To date there has been no evidence found that soldiers located in this area (talking about Khamisiyah) complained of or presented any symptoms characteristic to acute exposure to chemical agents. However, we are still searching for additional information." And then he further said, "Now, the most important thing that I really have to say about this is that the current accepted medical knowledge is that chronic symptoms or physical manifestations do not later develop among persons exposed to low levels of chemical nerve agents into—did not first exhibit acute symptoms of toxicity." And then he said, "However, this avenue is also being furthered explored by the department, both looking back at the situation story and research." Now, my sense is, from the work that you're doing, is that this is not a show-stopper. In other words, that you are, regardless of what so-called established medicine has determined, you're taking a big look at this issue?

Mr. ROSTKER. Absolutely. And as you will remember, sir, in concert with your staff, we removed from our GulfLINK site a definitive paper on low-level chem, because it was inconsistent with us then turning around and fostering research, sponsoring research, to address that very issue. So, I think it has to be up. I would also say, in terms of the first part of what Dr. Joseph said, that we have been engaged in a contemporary analysis of participation rates in the two registries. And we find no correlation with Khamisiyah. We're working on the final draft of that. And as soon as it's ready

I'll make it available to the committee. But certainly the preliminary indications are that those units that are around Khamisiyah have not experienced a higher participation rate in the two registries than other units in the Gulf.

Mr. SHAYS. Yes. I just want to make the point, while he said further research, this to me was a show-stopper in terms of the VA, that there was an attitude that basically said, just like our generals felt. And it was a mindset that I think carried through both the DOD and the VA, with all due respect to both organizations. That hearing, when he testified—this was June 25, 1996. So, a lot has happened since then.

Mr. ROSTKER. Yes, sir.

Mr. SHAYS. You had a comment. And then I'm going to let you get on your way.

Mr. SANDERS. I know that you have to leave. And let me just say this. As I indicated earlier, I think that since you have come on, things are happening better. And I think many people are appreciative of that. I think the basic concern that I have is that what many of our troops may be exposed to is a new type of problem. And I think doing things the same old way and going to the same old guys, who have not come up with the solutions, is the problem. And I believe we're going to have to go outside of the DOD and the VA. Even RAND. I mean, RAND has been working with the DOD for a million years, right? They're your right-hand private sector guys.

Mr. ROSTKER. But I made sure their charter is to make sure they are tapping the full range of medical opinion.

Mr. SANDERS. Well——

Mr. ROSTKER. And RAND tends to be a very independent type organization, as many of its research products have shown.

Mr. SHAYS. One last question of you, Dr. Rostker. The whole process of declassification—are you aware of any information that you will be declassified that will be considered significant?

Mr. ROSTKER. I have a rule that if I see a piece of information that I feel is significant, before the sun is down I ask for it to be declassified. And I tell the PAC, the only two pieces that we are now working on for declassification which I think you will find useful or the complete set of logs for the 18th Airborne Corps and the complete set of logs that we have for the 82nd Division so that you can judge the full context. And it helps explain—I think it helps explain what was going on on the days that there are no logs for the CENTCOM chem logs. So I've asked that those full sets of logs be declassified for you.

Mr. SHAYS. And I would just make this request to you and then you're on your way, that when you are aware of the declassification that goes on the Internet, that you notify our committee that this information will be on-line so we don't discover it 3 days later or 4 days later?

Mr. ROSTKER. We'd be happy to do that. We're also on——

Mr. SHAYS. I'd like that to be a general practice.

Mr. ROSTKER. Yes, sir. Absolutely.

Mr. SHAYS. Thank you.

Mr. ROSTKER. And we're also changing our search engines on GulfLINK so that they are more user-friendly so that you and your

staff and veterans, in general, will have an easier time plowing through the 38,000 pages that we have on GulfLINK.

Mr. SHAYS. I thank you for being here for so long. Travel safe.

Mr. ROSTKER. Thank you.

Mr. SHAYS. Mr. Walpole, thank you. And also, Mr. Mancuso, do you have any comments? And thank you for your patience sitting here so long and not being—you're happy not to talk? OK. Do you have any comment about the issue of declassification?

Mr. MANCUSO. No. It has not been a problem in our area at all. The Deputy Secretary made it perfectly clear that we had wide berth in the department and that anything that could be viewed as constructive to us or in any area that someone could be helpful to us, we would get through that. And, in fact, where we've needed access we've been able to gain access virtually immediately.

Mr. SHAYS. Let me ask you, if you were to discover something that you had access to that was classified that you thought was important for the veterans to know for their health, what would be your response in the course of doing your work? How would you respond to that information?

Mr. MANCUSO. We would seek to immediately make it known to the—certainly to Dr. Rostker's office. And if we did not feel that we had a satisfactory response there, we would seek to go higher than that.

Mr. SHAYS. So, the bottom line is, you would, if you saw classified information that you thought would be helpful to the health of the veterans, you would recommend to Dr. Rostker that he seek to have this declassified?

Mr. MANCUSO. Most definitely. Again, though, Mr. Chairman, our focus for our investigation as defined by the Deputy Secretary is quite narrow. It is to find the missing logs.

Mr. SHAYS. I know that.

Mr. MANCUSO. Had we found anything else or had we found any aspect of a document that would be helpful in the search for what's wrong with the veterans we certainly would have done whatever was needed to be done to make that known.

Mr. SHAYS. Yes. I think we're seeing it the same way. I realize you have a very limited issue here.

Mr. MANCUSO. Mm-hmm.

Mr. SHAYS. A very important one, but limited. But in the course of doing your work—we're trying to develop a culture and encourage a culture within the CIA and the VA and the DOD that says, this is information. And even if it isn't someone's primary responsibility. But if it's information that's helpful, we want them to be a proactive person. Not to release something that's classified, go through the channel, but work hard to have that done.

Mr. MANCUSO. Mm-hmm.

Mr. SHAYS. Would you like to—do you have a question?

Mr. SANDERS. Yes. I do. I just wanted to explore—revisit an issue we talked about a few minutes ago. Is it your judgment, Mr. Walpole, that when the United States bombed the chemical factories in Iraq that there was no release of chemical agents that might have impacted civilians or our own troops?

Mr. WALPOLE. In fact, I was just looking at that in the paper that was released—in the testimony we discussed earlier in Decem-

ber. In the section under Muhammadiyat and Al Muthanna, there is the statement, "Finally we have found no information to suggest that casualties occurred inside Iraq as a result of this bombing, probably because they are in remote locations." I have to, from that, assume that the question we discussed earlier was indeed looked at for those two sites. So, the answer for those two sites, at least, is no. There were no casualties. And since I'm assuming they looked at everything else, no indication because of the remoteness of those two facilities.

Mr. SANDERS. We're familiar with what happened at Khamisiyah. Do you have any evidence that—from the CIA's perspective—any similar type occurrences occurred in other munitions depos?

Mr. WALPOLE. No. In fact, we're doing a search of any potential site. We have found no other site. But we're—just like Dr. Rostker—we're leaving an open mind for other sites that we may find intelligence on that would help.

Mr. SANDERS. So your position is the same as Dr. Rostker's?

Mr. WALPOLE. Yes.

Mr. SANDERS. Is that at this point you cannot tell us of any other sites or occurrences of situations that may have exposed our soldiers to chemical agents?

Mr. WALPOLE. Yes. We have found no others. But we're going to address it with an open mind.

Mr. SANDERS. OK. Thank you.

Mr. SHAYS. Mr. Walpole, the working group that was 24-hour continuous operation seemed to be a new discovery for those of us outside the CIA. That wasn't something that was volunteered to us when your organization came before us the first time. Explain to me a little bit about the role of that organization again.

Mr. WALPOLE. Yes. In fact I have seen it mentioned in former testimonies. And I could pull out exactly which ones there are. We have——

Mr. SHAYS. Former testimonies where?

Mr. WALPOLE. Before committees. I don't know if it exactly was your committee. But it was—it was in——

Mr. SHAYS. You have the testimony of our—you've seen it?

Mr. WALPOLE. Yes. The September one. And as I recall it might have been mentioned in November testimony. I don't remember where that was. It's also mentioned on the first page of our Khamisiyah historical perspective paper. Now what it was was a group of seven analysts that were chemical and biological warfare analysts at CIA—had decided that they wanted to run a 24-hour operation. Basically, alternate their schedules so that they weren't working 15 and 18-hour days.

They, in order to communicate with each other, would enter a computer file—each of them on their own machine—and then type in what kinds of things occurred at certain times of the day that they would pass on to someone else. They titled that a log. And, in fact, the two entries that related to Khamisiyah were released as part of this package. It didn't mention the name Khamisiyah. In fact, there was a confusion with An Nasiriyha. But we recognized that, and thought that should be released. We have all of

those. And we are going through those for any information that is pertinent to this issue that can be released.

As you can imagine, in notes from one analyst talking to the next, there's a lot of completely extraneous information talking about, no, really we're not asleep and we got a chance to eat and things like that. But as we go through that, if there's information that is relevant to the veterans' illnesses that indeed will be released.

Mr. SHAYS. So all seven of those individuals have been interviewed by you?

Mr. WALPOLE. Yes.

Mr. SHAYS. By you?

Mr. WALPOLE. By me.

Mr. SHAYS. Yes.

Mr. WALPOLE. Three of them are currently on the task force. Five of them are involved in activities along the way over the years related to this issue. But I have talked to all seven of them.

Mr. SHAYS. I would have made an assumption that there were chemical sites throughout Iraq based on the briefings that were provided to me as a Member of Congress. So it's somewhat surprising to me that the CIA wouldn't have really been very clear about where these chemicals were and that they would have been on a wall during the war. I have to tell you—I don't have to tell, I want to tell you that I've lost some respect for the CIA in the sense that, if I were there, knowing what I had even been briefed before the war started, I would have on the wall and in my computer a clear sense of where all those chemicals were located. And it surprises me that we wouldn't have known up front that Khamisiyah had chemicals. Doesn't it surprise you?

Mr. WALPOLE. Well, I have the value of 20/20 hindsight. Do you want me to walk through what we knew and didn't know about Khamisiyah? It will take a couple of—30 seconds.

Mr. SHAYS. Yes, I do.

Mr. WALPOLE. OK. And it's in this paper. That's why I thought you might want to include that in the record. In 1977, Khamisiyah was identified under construction as a conventional ammunition storage depo. In 1986, we had information—and it was very good information—it was an official Iraqi document translated—that at the end of the document—it was on their chemical weapon production plant—indicated that a certain number of Mustard rounds were stored—a large number, over 3,000—stored at Khamisiyah. Now, when you have an official Iraqi document you know you've got firm evidence for a chemical connection. Later, in 1986, analysts began to look at that, and they determined that S-shaped bunkers appeared to be the future for forward deployed storage.

Mr. SHAYS. Of chemicals.

Mr. WALPOLE. Of chemicals. Because that's how Khamisiyah was viewed from that 1986 report. It indicated that chemical weapons were stored there during the Iran-Iraq war, specifically in 1984 and 1985. Analysts began to focus on S-shaped bunkers as the future forward deployed storage locations. Khamisiyah did not have one of those bunkers. In 1988, we received a report with the same reliability, same confidence in the report, that indicated that chemical weapons were stored either at Samarra or Muhammadiyat. And

then it mentioned also that there was a temporary storage at Kirkuk Airfield, which also had an S-shaped bunker. The bottom line was, in 1988, the same reliability intelligence suggested that Khamisiyah wasn't used any more for a storage site.

The focus was on S-shaped bunkers. So, just prior to the war, Khamisiyah was not on, in the analytical thinking, it wasn't on our list of sites, the sites that were included. And they were all suspect. We didn't know a lot of things about the storage sites. We knew where things were produced. We didn't know the storage sites. So, it wasn't on that list. The warnings I talked about in my opening statement occurred just before the ground war, not before the air war. So, that's how it was missed.

Mr. SHAYS. OK. It's still surprising to me. I just felt that we would have informants that would be able to track—chemicals are something that we consider quite a significant weapon. And it's just surprising to me that we did not have inside sources that would have been able to provide that. I'm just going to express that.

Mr. WALPOLE. Yes. Well, the 1988 information seemed to shift us away from that. Now, the 20/20 hindsight I referred to—my thinking on this would have been, if they stored chemical munitions there during the Iran-Iraq war, we should have included it on the list as a possible site even with the caveat that we don't know that anything is there.

Mr. SHAYS. And we didn't know that they had taken them away from there. So, it seemed to me that the last time we knew, they were there.

Mr. WALPOLE. Well, the 1988 report seemed to imply that they did.

Mr. SHAYS. OK. Let me, Mr. Mancuso. This is an issue that was very narrow. And your statement was so much on target you didn't leave a lot of questions in our minds. But what I don't quite understand is how you go about determining where these logs are with any kind of certainty. Because—do you have access—do you first know everyone who potentially would have handled these logs?

Mr. MANCUSO. We believe we do, yes.

Mr. SHAYS. And some are active and some are not active?

Mr. MANCUSO. That is correct.

Mr. SHAYS. And you are seeking out both active and non-active and questioning them?

Mr. MANCUSO. That is correct.

Mr. SHAYS. You question them under oath, or is there no reason to?

Mr. MANCUSO. They've been questioned under different circumstances depending on the interview. I can tell you that we've conducted in the 7 weeks since we took over this investigation approximately 70 interviews. About half of which were re-interviews, more detailed interviews of people who had been approached during the review conducted by Dr. Rostker.

Mr. SHAYS. Is it against military protocol to have destroyed these documents? Was someone authorized to? Was there certain protocol how you would handle documents like this?

Mr. MANCUSO. The documents we're speaking about were not technically required to even have been used.

Mr. SHAYS. OK.

Mr. MANCUSO. In practice they were useful and they were something you would expect from good staff work.

Mr. SHAYS. It's not like the log on a ship?

Mr. MANCUSO. No.

Mr. SHAYS. No.

Mr. MANCUSO. We're talking about documents that good staff people would normally maintain. What we're trying to do is track those documents through the system, again, in all media they may have been in, and to move through the process very deliberately and determine who actually handled those documents—again, different copies, different medias at different times—in a best effort following every available lead to locate them.

Mr. SHAYS. So, one hope is to obviously find out what was in them even if we can't locate them. In other words, you're asking them what they recall seeing in the documents, correct? And the other is to actually locate the documents.

Mr. MANCUSO. That's——

Mr. SHAYS. Is there hope that the documents still exist somewhere?

Mr. MANCUSO. That's why we're continuing. We will continue until we believe that we've either located everything we need to locate or exhausted all conceivable leads in that regard.

Mr. SHAYS. But maybe I'm making an assumption I shouldn't. Are you trying to reconstruct the documents even if you don't have them? In other words, are you asking people what they saw, what they put on them, what others who read it saw?

Mr. MANCUSO. I'd prefer not to go into the interviews, but it is accurate. As Dr. Rostker said, there are other larger separate records.

Mr. SHAYS. I just don't understand why you would prefer not to. I don't see why. Was there something significant about—are you saying that in the process of doing this, you don't want to disclose to someone else what you might have asked someone else?

Mr. MANCUSO. That is correct.

Mr. SHAYS. OK. I understand that. Is there anything you want to add, any point, question that you wished we would have asked you?

Mr. MANCUSO. I would just add, to follow on on a point you made about the Inspector General's office taking on the investigation, and would we in fact, for instance, act on, for instance, classified information. I just point out that as an Inspector General's office we are, although we are technically a part of the Department, we're set up independently by the Inspector General Act, and, have dual reporting to the Congress and the Secretary. And as in many, many other matters that we've investigated, we've shown ourselves to be independent and not—occasionally not in line with the Department's preferred thinking.

Mr. SHAYS. I have a sense you're independent. I just want to know if you think that's part of your mandate. And part of your mandate, it seems to me, if you came across something—and I think you agree.

Mr. MANCUSO. Absolutely.

Mr. SHAYS. I had hoped that the case. I'm happy it is the case. And I'm happy it's on the public record.

Mr. MANCUSO. Thank you.

Mr. SHAYS. Mr. Walpole, is there anything you wish we had asked you that we didn't?

Mr. WALPOLE. I can't think of anything.

Mr. SHAYS. OK. Is there anything I wish I had asked you that you are happy I didn't?

Mr. WALPOLE. I would imagine if you had thought of it you would have asked it.

Mr. SHAYS. Now, I want to be clear. Now, the question you wished I had asked you is the question you're happy I didn't ask that I wish that I had asked you that I want you to tell me.

Mr. WALPOLE. No. I think we've covered everything.

Mr. SHAYS. OK.

Mr. WALPOLE. If you do get a chance to read the historical perspective, it gives you a good feel for the pluses and the minuses on this. It was a very honest effort to lay this all out. And one of the reasons we did it was so the veterans would have something in hand when they want to try to remind themselves of what might have occurred, or talk to DOD people on the phone about this. It's now unclassified, and there are no bars to talking about it.

Mr. SHAYS. OK. Great. One last question, I guess, that my staff wants me to ask is, is there some classified information left in the drawer that will be coming out in the near future or that won't be coming out that should?

Mr. WALPOLE. Everything classified that we discover, which, of course, is what we have, we're ensuring that all the Government agencies that are cleared, including the Hill, have that. We're also working to declassify any and all information that's pertinent to this issue. At this point I know of no major surprises.

Mr. SHAYS. Dr. Rostker would have access, and you would be making sure he sees classified information. And based on his pledge to this committee, and frankly what I think his conduct has been, he would certainly be a voice in asking that it be declassified. So, if you had some doubts, you're still going to be sharing it with Dr. Rostker?

Mr. WALPOLE. Absolutely. And with Walt Jacko, as well. In fact, I think when—you'll find some interesting DOD documents in our package here that came to light just as we were getting ready to go to print. And Dr. Rostker said, "Let's include these in that package," and so on. So, there's a very close working relationship there.

Mr. SHAYS. I'm just thinking of one last question. The process of declassifying means, who do you go to? Who has the ability to declassify, in the Dr. Rostker's case and your case?

Mr. WALPOLE. Well, it depends on the information. Obviously, George Tenet has the ultimate authority on many of these. But if it's foreign source information, then we have to go back to the owner of that information, the foreign country, and say, "Can we use this information." If it's national technical means derived information then there are certain legal requirements we have to go through.

Mr. SHAYS. OK. Thank you both very much. And we'll get our third panel up here.

Mr. SANDERS. Thank you.

Mr. SHAYS. Let me invite our third panel, which is Dr. Jonathan Tucker, director, Chemical and Biological Weapons Nonproliferation, Center for Nonproliferation Studies, Monterey Institute of International Studies. A rough place to live, Doctor, I've been there. And Dr. Tiedt, a research and neuroscientist, Longboat Key, FL. So far, we've got two lovely places to live. And Dr. Satu Somani, Professor of Pharmacology and Toxicology, Southern Illinois University School of Medicine.

It's nice to have all three of you here. I'm getting a little giddy, so we better get on with it here. We'll start in the order that I called. We'll just go down the row here. And Dr. Tucker, you'll start. I need you to rise and I need to swear you in.

[Witnesses sworn.]

Mr. SHAYS. And we'll note for the record that all three of our witnesses have responded in the affirmative. Again, Dr. Tucker, we'll start with you.

STATEMENTS OF JONATHAN B. TUCKER, DIRECTOR, CHEMICAL AND BIOLOGICAL WEAPONS NONPROLIFERATION PROJECT, CENTER FOR NONPROLIFERATION STUDIES, MONTEREY INSTITUTE OF INTERNATIONAL STUDIES; THOMAS TIEDT, RESEARCHER AND NEUROSCIENTIST, LONGBOAT KEY, FL; AND SATU SOMANI, PROFESSOR OF PHARMOCOLGY AND TOXICOLOGY, SOUTHERN ILLINOIS UNIVERSITY SCHOOL OF MEDICINE

Mr. TUCKER. Mr. Chairman, Congressman Sanders, I appreciate the opportunity to appear before you today. I direct the Chemical and Biological Weapons Nonproliferation Project at the Monterey Institute of International Studies. Formerly I was senior policy analyst of the staff of the Presidential Advisory Committee on Gulf War Veterans Illnesses. Before that I was a chemical weapons specialist at the United States Arms Control and Disarmament Agency, and served as a biological weapons inspector in Iraq with the U.N. Special Commission.

Mr. Chairman, the evidence shows that there were multiple chemical weapons detection and exposure incidents during the Gulf war that the U.S. Government has not officially acknowledged. Much attention has been given to the March 1991, incident at Khamisiyah in which United States combat engineers blew up a munitions bunker containing 8.5 metric tons of nerve agent. The Department of Defense has called Khamisiyah a watershed in its investigation of chemical weapons exposures.

At the same time, however, the Pentagon has discounted dozens of other exposure incidents reported by Gulf war veterans or mentioned in declassified operations logs. These exposures appear to have resulted from three sources. First, chemical fallout from the bombing of Iraqi munitions depots in the war zone. Second, fallout from the explosive demolition of Iraqi munitions bunkers by United States troops during and after the ground war. And third, the sporadic and uncoordinated Iraqi use of chemical weapons. In short, the evidence demonstrates that Khamisiyah was just the tip of the iceberg.

The Department of Defense has stated that Iraq never deployed large numbers of chemical weapons into the war zone and that the storage sites in central Iraq were too far away for toxic fallout from their destruction to have reached United States troops. Yet this position ignores dozens of declassified military intelligence reports that refer to Iraqi chemical weapons in Kuwait. The Pentagon has disavowed these intelligence reports, claiming they were never substantiated. But the sheer number and detail of the reports suggests that Iraqi chemical weapons were indeed present in Kuwait before the Gulf war.

The CIA, for its part, claims that Iraq deployed chemical weapons into Kuwait during the summer and fall of 1990, but then withdrew them before the start of the air war in January 1991. Yet it is not logical that Iraq would renounce a potent weapon in the face of a major ground invasion, and then tie up its logistics moving thousands of chemical munitions out of Kuwait. No evidence in the public domain indicates that such a withdrawal took place. On the contrary, according the Charles Duelfer, deputy chairman of the U.N. Special Commission, Iraq transported more than 2,000 rockets filled with nerve gas from the production plant at Al Muthanna in central Iraq to the bunker complex at Khamisiyah during the second week of January 1991. In other words, Iraq was moving chemical weapons into the war zone right up to the beginning of hostilities.

Based on the thus-far declassified record, former CIA analyst Pat Eddington has identified 12 likely Iraqi chemical weapon storage sites in southeastern Iraq and Kuwait. Many Gulf war veterans say they encountered Iraqi chemical munitions on the battlefield during and after the ground war. An official Marine Corps survey of more than 1,600 chemical defense specialists found that 13 percent reported some contact with or detection of Iraqi chemical weapons. The investigator, Capt. T.F. Manley, concluded, "There are too many stated encounters to categorically dismiss the presence of agents and chemical agent munitions in the Marine Corps sector."

With respect to Iraqi use of chemical weapons, the declassified operations logs corroborate numerous veteran reports of detecting low levels of chemical warfare agents during the ground war, including sarin, lewisite, and mustard gas. Many of these detections were made with analytical methods that are highly reliable and have a low false alarm rate. Thus, while adverse weather conditions and the speed of the coalition advance precluded the large scale use of Iraqi chemical weapons, there is strong evidence for sporadic, uncoordinated use.

In conclusion, evidence in the public domain indicates a larger number of credible chemical weapons detection and exposure incidents during the Gulf war than either the Pentagon or the CIA have acknowledged. The implication is that many more American troops were exposed to low levels of chemical weapons than the estimated 20,000 at Khamisiyah. While medical experts will need to make the ultimate judgment about the relationship between low-level chemical exposures and Gulf war illnesses, such a link cannot

be dismissed on the basis of the available evidence. I would be happy to answer your questions on these and other matters, including my dismissal from the staff of the Presidential Advisory Committee and my recommendations to the subcommittee for further action. Thank you.

[The prepared statement of Mr. Tucker follows:]

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Attachment B: Presidential Advisory Committee on Gulf War Veterans' Illnesses, Memorandum for Dr. Jonathan B. Tucker.

Attachment C: Philip Shenon, "Gulf War Panel Reviews Researcher's Ouster," *The New York Times*, December 24, 1996, p. A9.

Attachment D: Kevin Howe, "Former Investigator Leery of Gulf War Illness Study," *The Monterey County Herald,* January 4, 1997, p. C1.

Attachment E: Tracy Seipel, "Gulf War Syndrome: Researchers Cry Foul," *San Jose Mercury News*, January 12, 1997, pp. 1A, 6A.

Attachment F: Charles Leroux, "'Clean" Gulf War Turns Messy," *The Chicago Tribune,* Perspective section, January 26, 1997, pp. 1, 6.

Mr. Chairman, [redacted], distinguished members of the Subcommittee, I appreciate the opportunity to appear before you today. I am director of the Chemical and Biological Weapons Nonproliferation Project at the Monterey Institute of International Studies. Formerly I was a senior policy analyst on the staff of the Presidential Advisory Committee on Gulf War Veterans' Illnesses. Before that, I was a specialist on chemical and biological weapons at the U.S. Arms Control and Disarmament Agency, and served as a biological-weapons inspector in Iraq with the United Nations Special Commission.

My testimony addresses incidents of chemical detection and exposure during the Gulf War that the Department of Defense (DoD) has not officially acknowledged. Much attention has been given to the March 1991 incident at Khamisiyah in southern Iraq, when U.S. combat engineers blew up a munitions bunker that contained 8.5 metric tons of chemical nerve agents. Information on this event only became public in May 1996, five years after the end of the war.[1] Atmospheric modeling studies have since indicated that demolition of the bunker at Khamisiyah released a plume of nerve agent that travelled 25 kilometers downwind, contaminating at least 20,000 U.S. troops.[2]

DoD has called the Khamisiyah incident a "watershed" in its investigation of chemical exposures. At the same time, however, the Pentagon has discounted dozens of other chemical-exposure incidents reported by Gulf War veterans or mentioned in declassified operational logs. These low-level exposures to chemical weapons appear to have resulted from three sources:

1. chemical fallout from the aerial bombardment of Iraqi field munitions depots containing chemical weapons in the Kuwait Theater of Operations, or KTO (the area covering Kuwait and Iraq south of the 31st Parallel, where the ground war was fought);
2. explosive demolition of munitions bunkers in the KTO by U.S. combat engineers and special-operations troops during and after the war; and
3. sporadic and uncoordinated Iraqi use of chemical weapons during the ground campaign, and the possible deliberate contamination of the oil-well fires.

In short, whereas the Pentagon would have us believe that the Khamisiyah incident is the whole story, [redacted] that it is just the tip of the iceberg.

The Link Between Low-Level Exposures and Veterans' Illnesses

The link between low-level exposures to chemical weapons and the persistent health problems of Gulf War veterans is still hypothetical.[3] Although the Presidential Advisory Committee on Gulf War Veterans' Illnesses concluded that the "available

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[1] Sylvia Copeland, Central Intelligence Agency, "Briefing Before the Presidential Advisory Committee Panel on Chemical and Biological Warfare Issues," Washington, D.C., 1 May 1996; CIA Persian Gulf War Illnesses Task Force, "Khamisiyah: A Historical Perspective on Related Intelligence," 9 April 1997.

[2] Presidential Advisory Committee on Gulf War Veterans' Illnesses, *Final Report* (Washington, D.C.: U.S. Government Printing Office, December 1996), p. 42.

[3] Paul Richter, "Small Doses Probed in Gulf Illness Research Effort," *The Los Angeles Times*, 19 February 1997, p. 8.

scientific evidence" does not indicate that low-level exposures to chemical-warfare agents can give rise to chronic illnesses, the panel also noted that "the amount of data from either human or animal research on low-level exposures is minimal" and that additional research is needed to clarify the issue.[4] Recently, a few preliminary studies have indicated that a link between exposures and illness may exist. In January 1997, the Department of Veterans Affairs (VA) reported that soldiers who had possibly been exposed to low levels of chemical-warfare agents during the demolition of Khamisiyah were experiencing higher rates of arthritis-like joint and muscle symptoms than other troops who fought in the Gulf War.[5]

Ongoing [redacted] studies suggest that low-level exposures to nerve agents (such as sarin) may cause chronic health problems when combined with multiple exposures to other chemicals that act on the same physiological targets in the human body. For example, several chemicals act synergistically with nerve agents to inhibit an enzyme known as *cholinesterase,* which is vital to the functioning of the nervous system and other organs. Cholinesterase-inhibiting chemicals include pesticides of the organophosphorus and carbamate types, which were widely used during the Gulf War,[6] and pyridostigmine bromide (PB), an experimental drug that U.S. troops were ordered to take to protect them against nerve agents. Ironically, some research indicates that PB may have had the unintended effect of exacerbating the effects of low-level nerve agent exposures.[7]

Of particular interest is the observation that while British, Canadian, and Czech troops who served in the Gulf War have reported chronic health problems, French troops have not. It is known that French soldiers did not take PB tablets as an antidote to nerve-agent exposure, nor were they vaccinated against anthrax or botulinum toxin, two biological-warfare agents in Iraq's arsenal. Recent research also indicates that some individuals carry a mutant gene that makes them more susceptible to the toxic effects of PB and low-level nerve agent exposures.[8] In addition, animal experiments suggest that under conditions of extreme stress such as those encountered in combat, the "blood-brain barrier" that [redacted] shields the brain from foreign substances in the bloodstream breaks down, allowing PB and [redacted] normally harmless chemicals to enter the central nervous system and cause tissue damage.[9]

These preliminary research findings are suggestive of a link between low-level exposures to chemical-warfare agents and chronic health problems, particularly in genetically susceptible individuals or under conditions of extreme stress. Given the fact that some major epidemiological and laboratory studies of this issue are just getting under

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[4] Presidential Advisory Committee on Gulf War Veterans' Illnesses, *Final Report*, p. 39.

[5] "Exposure to Chemicals, Joint Pain Linked in Gulf War Vets," *Chemical & Engineering News*, January 27, 1997, p. 21.

[6] David Fairhall, "Flea Treatments 'Linked to Gulf War Syndrome'," *The Guardian*, 31 October 1996.

[7] Philip J. Hilts, "Chemical Mix May Be Cause of Illnesses in Gulf War," *The New York Times*, 17 April 1996, p. A17; Robert W. Haley and Thomas L. Kurt, "Self-reported Exposure to Neurotoxic Chemical Combinations in the Gulf War," *Journal of the American Medical Association* 277(3), 15 January 1997, pp. 231-237.

[8] Yael Loewenstein-Lichtenstein et al., "Genetic predisposition to adverse consequences of anti-cholinesterases in 'atypical' BCHE carriers," *Nature Medicine* 1(10), October 1995, pp. 1063-1065.

[9] "Gulf War: Illness Tied to a Potent 'Cocktail'," *U.S. News & World Report,* 14 April 1997, p. 44.

way, however, it would be premature for me to speculate further. I will therefore focus the remainder of my testimony on the exposure side of the equation.

A Pattern of Official Denial

For more than five years after the end of Operation Desert Storm, the U.S. government steadfastly denied that American and allied troops had been exposed to chemical weapons during the Gulf War. Senior DoD officials stated categorically that no direct or indirect exposures to Iraqi chemical or biological agents had occurred. In a memorandum to Gulf War veterans issued on May 25, 1994, Defense Secretary William J. Perry and Chairman of the Joint Chiefs John M. Shalikashvili declared:

> There have been reports in the press of the possibility that some of you were exposed to chemical or biological weapons agents. There is no information, classified or unclassified, that indicates that chemical or biological weapons were used in the Persian Gulf.[10]

This position was repeated, with supporting analysis, in a report released in June 1994 by the Defense Science Board (DSB), a scientific advisory body to the Department of Defense. The DSB report concluded there was "no evidence that either chemical or biological warfare was deployed at any level against us, or that there were any exposures of U.S. service members to chemical or biological warfare agents in Kuwait or Saudi Arabia."[11] Because of DoD's insistence that no exposures had occurred, the Persian Gulf Veterans Coordinating Board--an interagency task force established to set the research agenda for Gulf War illnesses--declined to fund biomedical research on the possible health effects of low-level exposures to chemical-warfare agents until after the Khamisiyah incident became known in the summer of 1996.[12]

In late 1994, however, the staff of the Senate Banking Committee, under the leadership of Chairman Donald W. Riegle, Jr. (D-MI) and Ranking Minority Member Alphonse M. D'Amato (R-NY), compiled official documents and eyewitness testimony suggesting that U.S. troops had been exposed to chemical-warfare agents during the Gulf War.[13] Another event that cast doubt on DoD's categorical denial of exposures was an interview with then-Deputy Secretary of Defense John Deutch by the CBS news magazine *60 Minutes* on March 12, 1995. Deutch stated repeatedly that there had been "no widespread use" of chemical or biological weapons during the Gulf War. This ambiguous formulation seemed to imply that *some* Iraqi use of such weapons had

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[10] William J. Perry and Gen. John Shalikashvili, "Memorandum for Persian Gulf Veterans, Subject: Persian Gulf War Health Issues," 25 May 1995.

[11] Defense Science Board, *Report of the Defense Science Board Task Force on Persian Gulf War Health Effects* (Washington, D.C.: Office of the Under Secretary of Defense for Acquisition and Technology, June 1994).

[12] Persian Gulf Veterans Coordinating Board, *A Working Plan for Research on Persian Gulf Veterans' Illneses*, August 1995, p. 17.

[13] U.S. Senate, Committee on Banking, Housing, and Urban Affairs, Hearing, *United States Dual-Use Exports to Iraq and Their Impact on the Health of Persian Gulf War Veterans*, 103rd Congress, 2nd session, 25 May 1994 [S.Hrg. 103-900], pp. 225-551.

occurred. Deutch later backed away from his statement, claiming that he had been misunderstood, but suspicions remained.

Evidence for the Presence of Iraqi Chemical Weapons in Kuwait

To demonstrate that the bombardment or demolition of chemical-weapons depots in the KTO could have led to multiple low-level exposures of U.S. troops, it is first necessary to prove that Iraqi chemical weapons were present in the war zone. To date, the Pentagon has stated that Iraq never deployed chemical weapons into the KTO (with the sole exception of Khamisiyah) and that known production and storage sites in central Iraq were too far away for their destruction to have generated chemical fallout that could have reached U.S. forces. According to 1994 congressional testimony by Edwin Dorn, Assistant Secretary of Defense for Personnel and Readiness, "We have looked across the battlefield for evidence of chemical munitions, and of the tens of thousands of tons of munitions found on the battlefield, none contained chemical or biological agents."[14]

It is hard to reconcile this position, however, with the many declassified Defense Intelligence Agency (DIA) reports posted on the Pentagon's GulfLINK website that refer specifically to the presence of Iraqi chemical weapons in the war zone. (See *Exhibit A*.) DIA has disavowed the accuracy of these reports, claiming they were based on "raw intelligence" from the field that was never substantiated. But the number and detail of the reports suggest that Iraqi chemical weapons were indeed present in the theater before and during the ground war. In addition, DoD's position that Iraqi chemical weapons were absent from the KTO cannot explain the detections by Czech units in northern Saudi Arabia of low levels of nerve and mustard-agent vapors in the air on January 19-20, 1991, the third and fourth days of the Coalition air campaign. According to Dorn's testimony, "I must... concede a mystery, which is that we are accepting as valid some reports of small levels of chemical agents. We are at this point satisfied that they are not the result of the use of chemical warfare agents, but how they came to be in that area we cannot say at this point.... [W]e are talking here about the Czech detections around January 19 [1991] and a few days later."[15]

CIA officials have taken a somewhat different position on the presence of Iraqi chemical weapons in the theater, based in part on information obtained from the interrogation of an Iraqi general who defected.[16] In May 1994, Dr. Gordon Oehler, director of the intelligence community's Non-Proliferation Center, testified that Iraq probably deployed chemical weapons into the KTO during the summer and fall of 1990 but then withdrew them in December and January 1991, before the start of the air campaign on January 16, 1991.[17] It strains credulity, however, that the Iraqi forces would unilaterally renounce a potent weapon and then tie up their [redacted] logistics capabilities

[14] Dorn testimony, in U.S. House, Commitee on Armed Services, Subcommittee on Military Forces and Personnel, Hearing, *Desert Storm Mystery Illness/Adequacy of Care*, 103rd Congress, 2nd session, 15 March 1994 [HASC No. 103-58], p. 80.

[15] *Ibid*, p. 81.

[16] Central Intelligence Agency, "The Gulf War: An Iraqi General Officer's Perspective," 12 March 1991 GulfLINK file no. 60720052.

[17] Oehler testimony, in U.S. Senate, Committee on Banking, Housing, and Urban Affairs, Hearing, *United States Dual-Use Exports to Iraq and Their Impact on the Health of Persian Gulf War Veterans*, p. 72.

moving tens of thousands of chemical munitions out of the theater. No evidence in the public domain indicates that such a retrograde operation ever took place. On the contrary, Charles Duelfer, deputy chairman of the United Nations Special Commission on Iraq (UNSCOM), testified before the Presidential Advisory Committee that during the period between January 10 and 15, 1991, the Iraqis transported 2,160 rockets filled with the nerve agents sarin and cyclosarin from the production plant at Muthanna, in central Iraq, to Khamisiyah, inside the KTO. In other words, Iraq was deploying chemical weapons *into* the theater right up to the beginning of hostilities.[18]

DoD officials have also argued that during the air campaign, the destruction of bridges over the Euphrates River prevented Iraq from moving fresh chemical munitions into the theater. In fact, the Iraqi Army was quite resourceful in keeping its logistical supply lines open through the use of pontoon bridges and other temporary crossings erected at night. According to DoD's own report to Congress on the conduct of the Gulf War, "Interdiction of LOCs [lines of communication] leading into the KTO continued as Coalition aircraft attacked pontoon bridges, which replaced previously destroyed fixed bridges. The Iraqis' heavy vehicle losses led to the use of civilian vehicles, even garbage trucks, to transport supplies to the KTO."[19]

Press accounts during the Gulf War also support the conclusion that Iraqi chemical weapons were present in the KTO. The *Sunday Times* of London, citing an unnamed Pentagon source, reported in February 1991 that the Iraqis had stockpiled about 100,000 chemical-filled artillery shells and several tons of bulk agent near the front lines.[20] Similarly, *Time* magazine reported in its March 4, 1991 issue that according to information provided by Iraqi POWs, large numbers of chemical munitions had been distributed to front-line units for use in the event of an allied invasion of Kuwait.[21] Iraqi troops were clearly prepared to fight in a chemical environment: they were equipped with gas masks, chemical protective suits, antidotes, and decontamination kits, and built numerous trenches throughout Kuwait for the decontamination of military vehicles.[22]

Many Gulf War veterans have reported that they encountered Iraqi chemical munitions on the battlefield during and after the ground war, contradicting the official Pentagon position that no such munitions were present. (See *Exhibit B.*) Shortly after the Gulf War, the U.S. Marine Corps Research Center in Quantico, Virginia, conducted a survey of more than 1,600 chemical-defense specialists and related personnel from operational Marine units who had served in Operation Desert Storm. Of this total, 221 respondents (about 13 percent) reported some contact with or detection of Iraqi chemical weapons during the ground war. According to the declassified Marine Corps report summarizing the survey results:

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[18] Hearing transcript, Presidential Advisory Committee on Gulf War Veterans' Illnesses, 8 July 1996.

[19] U.S. Department of Defense, *Conduct of the Persian Gulf War: Final Report to Congress* (Washington, D.C., April 1992), p. 190.

[20] James Adams and Andrew Alderson, "Strategic View from the Saddam Bunker," *Sunday Times* [London], 2 February 1991.

[21] Jesse Birnbaum, "The Prisoners," *Time Magazine*, 4 March 1991, p. 37.

[22] Brad Roberts, "Chemical Disarmament and International Security," *Adelphi Papers* 267 (London: Brassey's for the International Institute for Strategic Studies, Spring 1992), p. 20.

> Survey data indicates that a significant number of Marines believed they encountered threat chemical munitions or agents during the ground offensive.... Many Marines described encountering chemical munitions at airport bunkers outside Kuwait City. Another group of Marines said they found a box of chemical grenades at one of the breach positions. A Marine Corporal and Sergeant stated that during a sweep through an orchard outside Kuwait City they came across chemical markings on ammunition pits and ran into chemical mines. One Marine indicated that a chemical bunker containing mustard agent was destroyed. There are no indications that the Iraqis tactically employed agents against Marines. However, there are too many stated encounters to categorically dismiss the presence of agents and chemical agent munitions in the Marine Corps sector.[23]

In a forthcoming book, former CIA analyst Pat Eddington draws on declassified intelligence reports, operations logs, and veteran testimony to identify 12 likely chemical-weapons storage sites in the KTO. In addition to Khamisiyah, these suspect sites include Ar Rumaylah Republican Guard Ammunition Storage Facilities 1 and 2 in southeastern Iraq, and Matla Umm al Aish Army Camp, Iraqi III Corps Ammunition Supply Point, Al Jahra, Abraq al Habari, and Sabbahiya High School for Girls in Kuwait.[24] This list is probably an underestimate, since it is based only on materials declassified to date. Reports by Iraqi prisoners of war that their artillery units had chemical weapons, and unit logs indicating that Saddam Hussein delegated chemical weapons release authority down to at least brigade level, suggest that the actual number of chemical weapons storage sites in the KTO was significantly higher.[25]

In sum, evidence from various sources indicates that large quantities of Iraqi chemical weapons were stockpiled in field munitions depots on the Gulf War battlefield. Thus, the bombardment of such bunkers during the air campaign, or their demolition by U.S. troops during and after the ground war, may have caused the release of toxic fallout, contaminating U.S. troops downwind with low levels of chemical-warfare agents.

Evidence for Iraqi Chemical Weapons Use

With respect to the possible Iraqi employment of chemical weapons during the Gulf War, the Executive Branch continues to insist that no such use occurred. A CIA representative testified in May 1996, "To date, we have no intelligence information that leads us to conclude that Iraq *used* chemical, biological, or radiological (CBR) weapons."[26] Similarly, the Presidential Advisory Committee stated in its *Final Report*,

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[23] Captain T.F. Manley, *Marine Corps NBC Defense in Southwest Asia* (Quantico, VA: Marine Corps Research Center, Research Paper No. 92-0009, July 1991), p. 11.

[24] Patrick G. Eddington, *Gassed in the Gulf: The Inside Story of the Pentagon-CIA Cover-up of Gulf War Syndrome* (Washington, D.C.: Insignia Publishing Company, 1997), pp. 300-301.

[25] *Ibid.*, p. 300.

[26] Sylvia Copeland, Central Intelligence Agency, "Briefing Before the Presidential Advisory Committee," p. 3.

"Based on information compiled to date, there is no persuasive evidence of intentional Iraqi use of CW [chemical-warfare] agents during the war."[27]

The lack of severe chemical injuries or fatalities among Coalition forces makes it clear that no *large-scale* Iraqi employment of chemical weapons occurred. Even if Iraq intended to make extensive use of chemical weapons, a number of factors precluded this option. The remarkable speed of the Coalition advance, combined with the effectiveness of the strategic bombing campaign in disrupting Iraq's military command-and-control system, made it difficult for Iraqi commanders to select battlefield targets for chemical attack. Furthermore, the prevailing winds, which for six months had blown from the northwest out of Iraq, shifted at the beginning of the ground war to the southeast, towards the Iraqi lines.

Nevertheless, considerable evidence suggests that the Iraqi forces engaged in sporadic, uncoordinated chemical warfare during the Gulf War. The London *Sunday Times* and *Newsweek*, citing unnamed Pentagon and intelligence sources, reported during the war that intercepts of Iraqi military communications indicated that Saddam had authorized front-line commanders to use chemical weapons at their discretion as soon as Coalition forces began their ground offensive.[28] Reuters also interviewed a British signals officer who had been monitoring the Iraqi command net and "heard them give the release order to the front-line troops to use chemical weapons against Rhino [Coalition] force if it crossed the border."[29]

In addition, military records--operations logs, command chronologies, and an official Marine Corps history--corroborate eyewitness accounts by Gulf War veterans of multiple chemical-warfare agent detections during the air and ground campaigns, including the nerve agents sarin and cyclosarin and the blister agents sulfur-mustard and lewisite. Many of these detections were made with analytical methods that are considered highly reliable, such as the gas chromatograph-mass spectrometer onboard the German Fox chemical-reconnaissance vehicle, the M21 Remote Sensing Chemical Agent Alarm (RASCAL), and the M256 chemical agent identification kit used by U.S. troops to confirm chemical alarms. *Exhibit C* contains a partial list of such detections during the Gulf War. This table was compiled from multiple sources in the public domain, including congressional testimony and declassified government documents posted on GulfLINK or released under the Freedom of Information Act. *Exhibit D* contains eyewitness accounts by Gulf War veterans indicative of Iraqi chemical-weapons use.

Finally, circumstantial evidence suggests that the Iraqi saboteurs who ignited the 600 Kuwaiti oil well fires may have deliberately contaminated some of them with chemical-warfare agents. For example, a captured top-secret Iraqi military record provides detailed instructions to the Iraqi 29th Infantry Battalion for sabotaging 31 Kuwaiti oil wells with explosives. Attached to these instructions is a letter from the

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[27] Presidential Advisory Committee on Gulf War Veterans' Illnesses, *Final Report*, p. 39.

[28] James Adams and Andrew Alderson, "Strategic View from the Saddam Bunker," London *Sunday Times*, 2 February 1991; Tom Masland and Douglas Walker, "Are We Ready for Chemical War?" *Newsweek*, 4 March 1991.

[29] Reuters, "British Paper Says Saddam Hussein Approved the Use of Chemical Weapons," 2 February 1991, AM cycle.

commander of the 29th Infantry Battalion to "Chemical Command FL4" that states as follows (emphasis added):

> Please send an assigned person from your personnel to the Chemical Rank Command of Battalion 14 to receive the *chemical preparations* distributed to your units according to the directions of the command above. The assigned should have the original documents signed by the administrative officer and the unit commander, and sealed with the unit stamp and should come in six copies. Please report to us.[30]

An annex to this document makes reference to the use of individual chemical protective gear and decontamination stations for equipment and vehicles, suggesting a link between the Iraqi oil-well sabotage and chemical warfare. While not conclusive, this document raises the possibility that Iraqi troops deliberately contaminated the oil-well fires with chemical-warfare agents, generating clouds of poison-laced smoke with the intent of debilitating Coalition forces downwind. This hypothesis might help explain why U.S. troops exposed to the oil-well smoke at certain times during the Gulf War became sick, whereas none of the 400 firefighters who extinguished the 600 oil-well fires in Kuwait after the war have developed chronic health problems.[31]

What Iraqi Chemical Agents Were Involved?

Considerable mystery surrounds the question of what toxic agent or combination of agents could have given rise to the multiple, chronic manifestations of Gulf War illnesses. It is conceivable that a mixture of chemical agents was responsible, since Iraq has admitted to experimenting with exotic agent "cocktails," such as sarin combined with sulfur-mustard. Standard chemical warfare agents may have novel clinical manifestations when combined, complicating attempts at diagnosis.

It is also possible that the Coalition bombardment of Iraqi munitions storage bunkers in the KTO, or Iraqi contamination of the oil fires, generated fallout containing a witches' brew of chemical-warfare agents and toxic byproducts, such as dioxin from the partial incineration of mustard gas. Little is known about the medical effects of exposure to complex mixtures of toxic chemicals. When the immune system is unable to clear a toxic material from the body, it releases powerful biochemical mediators called lymphokines, which in turn trigger inflammatory reactions in a variety of body tissues. This type of delayed immune response might account for the emergence of chronic symptoms weeks or months after an initial toxic exposure.

Biological toxins--non-living poisons derived from living organisms such as bacteria, fungi, plants, reptiles, and amphibians--are also extremely difficult to detect without sophisticated analytical techniques. Iraq has admitted that before the Gulf War, it mass-produced at least 2,200 liters of a fungal poison called aflatoxin, of which 1,580

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[30] "Captured Iraqi military record," dated 2 December 1990, GulfLINK file no. 20tr2_6.j17.

[31] Dick Foster, "Oil-Field Firefighters in Iraq Didn't Get Ill," *Rocky Mountain News* [Denver], 2 April 1995, p. 14A.

liters were filled into 16 aerial bombs and two missile warheads.[32] Aflatoxin is a potent liver carcinogen and may have acute toxic effects when inhaled as a concentrated aerosol. According to a CIA report, "Effects of aerosolized aflatoxin are unknown. UNSCOM assesses that Iraq looked at aflatoxin for its long-term carcinogenic effects and that testing showed that large concentrations of it caused death within days." CIA claims, however, to have "no information that would make us conclude that Iraq used aflatoxin or that it was released in the atmosphere when bombing occurred."[33] Still, although Iraq insists that its aflatoxin weapons were never used and were destroyed after the Gulf War, Baghdad has failed to provide physical or documentary evidence to back up this claim.

Some circumstantial evidence suggests that Iraq may have produced significant quantities of another class of fungal toxins called trichothecenes, popularly known as "yellow rain." A captured pre-war Iraqi military record dated April 10, 1990, addressed from the 55th Republican Guards to the chemical company of the Tawakalna Ala Allah Forces Command, requests a copy of "the yellow rain manual (fungal toxins) number 894."[34] The fact that the Iraqi chemical corps had prepared an entire manual devoted to trichothecene mycotoxins suggests a secret Iraqi military effort in this area. Since U.S. forces in the Gulf lacked detection systems capable of identifying fungal toxins, American troops could have been exposed unknowingly to a covert attack.

U.S. Sampling and Analysis Operations in the War Zone

A potentially valuable source of information about possible toxic exposures to U.S. troops during the Gulf War is the large volume of environmental and biomedical samples that were collected during and after Operation Desert Storm. The use of sampling and analysis techniques to identify chemical and biological warfare agents on the battlefield is a standard element of U.S. chemical/biological defense doctrine. According to *U.S. Army Field Manual 3-3*:

> Sampling is not done indiscriminately, but only when an attack has occurred. Sampling operations will be initiated only upon the knowledge and consent of the NBCC [Division Nuclear, Biological, and Chemical Center]. Sample priorities are bulk agent and delivery systems, first; environmental (contaminated vegetation, soil, water, and clothing), second; and biomedical (patient or autopsy tissue, urine, and sputum) samples, third.[35]

U.S. forces in the Gulf carried out extensive environmental and biomedical sampling to determine the presence of Iraqi chemical and biological warfare agents in the theater. In January 1991, the U.S. Army's Foreign Material Intelligence Battalion (FMIB) established the Joint Captured Material Exploitation Center (JCMEC) in

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[32] United Nations Special Commission on Iraq, Status Report, October 11, 1995, p. 29.

[33] "CIA Report on Intelligence Releated to Gulf War Illnesses," 2 August 1996, posted on GulfLINK, p. 7.

[34] Captured Iraqi military record, "Manual Receipt: Army Form/Sample/Number 102," GulfLINK file no. 3tr41_44.m24.

[35] U.S. Army, *Field Manual 3-3: Chemical and Biological Contamination Avoidance* (Washington, DC: Headquarters Department of the Army, 16 November 1992), p. 5-10.

Dhahran, Saudi Arabia, to coordinate the sampling mission. Technical Intelligence (TI) teams with expertise in chemical/biological sampling techniques were deployed to support the two U.S. Army Corps and the two Marine Divisions in the theater. The TI teams were assisted in the sampling mission by the 9th Chemical Company from Fort Lewis, which was attached to the FMIB. According to an unclassified JCMEC memorandum dated April 4, 1991, "JCMEC elements have collected 234 Chemical and Bio-medical samples and have evacuated them to CONUS [continental United States] for further evaluation."[36] (See *Attachment A*.) Despite requests under the Freedom of Information Act, the results of these analyses have not been made public.

The following cryptic entries from the 101st Airborne operations logs also suggest that a major sampling effort in the KTO took place during the war:

DATE	TIME	LOG ENTRY
09 Feb 91	0832	MSG [message] /XVIII/ 081530 Feb 91/ Collection and transportation of suspected chemical agents.
10 Feb 91	1537	Received a secret msg in distribution concerning collection and transportation of suspected chemical and biological agents.
02 Mar 91	1850	Sent message out ref chemical munitions markings.

Finally, the declassified Marine Corps post-war survey of chemical-defense specialists contains the following paragraph on sampling activities:

> After cessation of offensive operations, the Fox [German-made chemical reconnaissance] vehicles were used frequently to recon[noiter] suspected chemical munitions storage bunkers and chemical filling sites. While on recon[naissance] missions the Fox teams detected low levels of agent contamination around bunkers and suspected agent storage sites. On one Fox mission, the 2nd MARDIV [Marine Division] Fox teams actually collected agent ground samples from a contaminated ground area at a possible chemical munitions filling site in their Tactical Area of Responsibility (TAOR). These samples were passed through proper chain of custody, to Joint Electronic Warfare/Joint Captured Material Exploitation Center (JCMEC), for confirmation analysis at the U.S. Army Chemical Research, Development and Engineering Center, but apparently the laboratory results were never received by 2nd MARDIV.[37]

My Tenure With and Dismissal From the Presidential Advisory Committee Staff

Finally, I would like briefly to discuss my tenure with and dismissal from the staff of the Presidential Advisory Committee on Gulf War Veterans' Illnesses. From August to December 1995, I served on the Committee staff as the senior policy analyst

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[36] Joint Captured Material Exploitation Center, S-3 Operations, "Chemical and Biological Sampling in Theater" [unclassified memorandum], 4 April 1991.

[37] Capt. T.F. Manley, *Marine Corps NBC Defense in Southwest Asia*, op. cit., p. 18.

responsible for investigating incidents of chemical and biological agent exposures. During my tenure, I was briefed by DIA, CIA, the Army Chemical School, and the Army Chemical and Biological Defense Command, all of whom categorically denied the presence of Iraqi chemical weapons in the KTO, low-level exposures to U.S. troops from chemical fallout, or Iraqi use of chemical weapons. I was puzzled, however, by the fact that the U.S. government's position on these issues was at odds with the eyewitness testimony of dozens of Gulf War veterans, as well the Czech detections of low levels of nerve and mustard agents in northern Saudi Arabia during the air war, which even DIA acknowledged were valid.

To address these discrepancies, I decided to investigate dissenting views inside and outside of government. In particular, I requested copies of declassified documents containing evidence of chemical exposures from Paul Sullivan of Gulf War Veterans of Georgia and Charles Sheehan-Miles of Gulf War Veterans of Massachusetts, both outspoken critics of the Pentagon; and from Pat and Robin Eddington, husband-and-wife intelligence analysts at CIA who differed strongly with the conclusion of their agency that Iraq had not employed chemical weapons during the Gulf War. I believed that only by drawing on information from the full range of informed sources could the Presidential Advisory Committee come to a reasoned judgment about the incidence of exposures.

Shortly after I began this effort, however, the Committee senior staff ordered me verbally and by e-mail not to seek documents or off-line briefings from unauthorized sources, including Sullivan and the Eddingtons. I believe the reason for this unwritten policy was the fact that the Presidential Advisory Committee lacked subpoena power and thus relied for information on the voluntary cooperation of DoD, CIA, and the VA, whose activities it was supposed to oversee. This situation apparently led the senior Committee staff to avoid antagonizing agency officials by being tacitly complicit in the suppression of dissenting views. I refused to accept these constraints on my investigation, believing that they would prevent me from fulfilling the President's mandate to the Committee to "leave no stone unturned" in exploring possible causes of Gulf War illnesses.

On December 1, 1995, I was summarily dismissed from the Committee staff and given one hour to clean out my desk and leave the building. Before being fired, I had never received a negative performance review, and despite repeated requests, I was never given grounds for my dismissal. A spokesman for the Presidential Advisory Committee has stated repeatedly in response to press inquiries that I resigned voluntarily, despite the fact that I received and retain a copy of the termination memo. (See *Attachment B.*) Newspaper articles related to my dismissal from the Committee staff are appended to my testimony as *Attachments C* through *F.*

Conclusions and Recommendations

Evidence in the public domain from a variety of sources indicates a far larger number of credible chemical-weapons detection and exposure incidents than DoD or CIA have thus acknowledged. Eyewitness accounts, declassified intelligence records, and operational logs all suggest that Iraq deployed chemical weapons into the Kuwait Theater of Operations prior to the Gulf War and may have employed them in a sporadic and uncoordinated manner against Coalition forces during the ground war. U.S. troops also appear to have been exposed to low levels of chemical-warfare agents from the

bombardment of Iraqi field munitions depots in the KTO during the air campaign, and the explosive demolition of remaining bunkers containing chemical weapons after the cease-fire. While the jury is still out on the linkage between low-level chemical-weapons exposures and chronic illness, these exposures may have had adverse health consequences for the affected troops--particularly when combined with exposures to other widely used chemicals such as pesticides and the drug PB.

Given the political and bureaucratic interests at stake, the possibility of chemical-weapons exposures during the Gulf War has been, and remains, a highly sensitive issue. U.S. government officials, hoping to avoid blame for serious mistakes, appear to have adopted the classic bureaucratic tactic of denying that the problem exists and hoping that it will go away. Unfortunately, this denial of the facts has meant the abandonment of tens of thousands of sick veterans who served their country loyally and well, and who need to know the cause of their illnesses if they are to seek optimal medical treatment and regain peace of mind and public respect. Equally troubling has been the corrosive effect of this controversy on public confidence in government. Only a full disclosure of the facts, and the acceptance of official responsibility where it is due, can restore the relationship of trust between the government and the people that is the essence of our democracy.

I would like to offer the Subcommittee two recommendations. First, the results of the extensive sampling and analysis operations during the Gulf War represent a valuable but as yet untapped source of information about possible toxic exposures. Despite requests under the Freedom of Information Act, the data derived from the extensive sampling operations in the KTO coordinated by the JCMEC have not been made public. I would therefore urge the Subcommittee to request these records from the DoD, and if the request is denied, to issue a subpoena for their release.

Second, since the Pentagon has suffered a significant loss of credibility with Gulf War veterans and the general public, the further investigation of chemical weapons exposure incidents should be entrusted to an objective and disinterested body that can regain the confidence of the American people. To this end, Congress should establish a bipartisan Select Committee of both Houses to conduct an independent investigation of the exposures issue. This committee should have subpoena power and access to the full range of classified intelligence and operational records from the Gulf War. Among other issues, the Select Committee should examine data on the presence of Iraqi chemical weapons in the KTO, sporadic Iraqi use of chemical and/or toxin-warfare agents, and possible Iraqi contamination of the Kuwaiti oil-well fires with chemical-warfare agents.

Thank you very much for your attention. I am now prepared to answer questions.

Exhibit A: Declassified Intelligence Reports of Iraqi Chemical Weapons in the KTO

Date	Location	Description	Source
Sept 90	Southern Iraq near Kuwait border	DIA intelligence report describes two Iraqi chemical decontamination sites close to the Kuwait border, one about 10 kilometers east of Safwan Airfield.	Defense Intelligence Agency, "Second Chemical Decontamination Site Identified," Sept. 1990, GulfLINK file no. 73562277.
Sept 90	Kuwait	Intelligence report states that during August 1990, the Iraqis "reportedly moved chemical munitions into Kuwait. At that time, the munitions were said to be ready for use.... Possible CW activity was noted at the suspect S-shaped storage bunker at Tallil Airfield and is similar to the type of activity noted at this airfield during the Iran/Iraq War prior to chemical use."	"Chemical Warfare Activity in Kuwait," 2 September 1990, GulfLINK file no. 0168pgv.00d.
13 Dec 90	Ar Rumaylah Republican Guard Ammunition Storage Facilities 1 and 2, located about 28 km west of Basra and 45 km north of the Kuwait border	An intelligence report provides information on possible storage of chemical munitions in two rectangular storage bunkers surrounded by dual defensive berms. Since November 26, Iraqi troops have dug distinctive V-shaped decontamination trenches outside both bunkers and installed concertina wire along the berms. In addition, a multiple rocket launcher battalion has been deployed adjacent to each bunker. Conclusion: "The presence of decontamination trenches and heavy security suggest that the Ar Rumaylah bunkers contain chemical munitions under the control of the Iraqi Republican Guard."	"Possible CW Munitions Storage Facilities at Ar Rumaylah," 13 December 1990, GulfLINK file no. 4023317.
27 Dec 90	Mutlaah Ridge, northwest of Kuwait City	Human source reports that the Iraqi Republican Guard has deployed 60 Scud missiles with chemical and biological warheads along the Mutlaah Ridge. The missile sites are reportedly well camouflaged and defended with tanks and anti-aircraft weapons.	Joint Staff, "Alleged Iraqi Chemical/Biological Scud Missiles Located on the Mutlaah Ridge in Kuwait," 27 December 1990, GulfLINK file no. 60290408.91r.
Dec 90	Kuwait	Intelligence report states that Iraqi troops in Kuwait and along the Iraqi-Saudi and Kuwait-Saudi borders are equipped with chemical weapons (nerve and mustard agents) and protective gear.	"Iraqi Gas and Chemical Weapons," December 1990, GulfLINK file no. 60040.91s.
Jan 91	Kuwait	Intelligence report states that six Iraqi missiles with binary chemical warheads have been deployed in the area of Abraq Al Habari, Kuwait.	"Iraqi Chemical Munitions," January 1991, GulfLINK file no. 60041.91s.
01 Feb 91	KTO	DIA intelligence assessment on the potential for Iraqi CW use states: "DIA assesses that in the Kuwaiti Theater of Operations, the [CW] stockpile probably has been distributed to the general support ammunition depots with chemical storage bunkers and field supply areas for the deployed units. The northern S-shaped bunkers associated with airfields still may contain significant quantities of chemical weapons."	Defense Intelligence Agency, "Iraq: Potential for Chemical Weapon Use," 1 February 1991, GulfLINK file no. 71726882.
11 Feb 91	KTO	Situation update contains information provided by three defectors from Iraqi VII Corps, which has mission of defending against a Coalition ground assault into southern Iraq. Two of the defectors report knowledge of chemical munitions deliverable by RPG-7 shoulder-fired rockets. One claims the munitions are present in the KTO with his former unit for launching attacks against company-sized units. One defector also describes special CW munition storage boxes with a skull and warning message.	Joint Staff, "Iraq-Kuwait: Situation Update," 11 February 1991, GulfLINK file no. 74526000.

12 Feb 91	Kuwait	Human source provides first-hand information on the types and amounts of chemical rounds held by Iraqi artillery batteries in Kuwait. "Each brigade in the 20th Infantry Division has organic artillery units... [and] eight mustard and binary chemical rounds... The maximum range for these rounds is 43 km when the artillery gun is cold, but after it warms up the range drops to 17 km, with the range decreasing as the gun gets hotter. Source believes that the [Iraqi] commanders will order the use of such weapons if they are attacked by an invading ground force."	Joint Staff, "Chemical Munitions in the 20th Infantry Division," 12 February 1991, GulfLINK file no. 60290705.91r.
17 Feb 91	KTO	A DIA assessment states that several Iraqi defectors have reported that chemical munitions have been delivered to divisional artillery units in the KTO. Iraqi units "will probably be given two different contingencies under which they can fire chemical munitions. In a prepared fire, units will fire only those types of rounds which the core fire plan requires. However, if the division is under threat of being overrun, the division commander has probably been given authority to use any means, including chemical munitions, to defend his unit. Despite coalition emphasis on degrading Iraqi artillery, there are still more than enough artillery tubes and [multiple rocket launchers] available to all divisions and corps to fire a high-priority chemical delivery mission."	Defense Intelligence Agency, "Iraqi Chemical Threat Reassessment," 17 February 1991, GulfLINK file no. 0407pgf.91.
mid-Feb 91	Riyadh, Saudi Arabia	Intelligence report describes growing fear in Riyadh over possible Iraqi use of chemical weapons. "Coalition forces had detected systems placed near the border with Saudi Arabia to create toxic clouds. At least one element believed that some of the Scuds intercepted over Riyadh might have been armed with binary weapons."	"Fear in Saudi Arabia of Chemical Weapons Attack," February 1991, GulfLINK file no. 60078.91s.
22 Feb 91	Kuwait City	Intelligence report describes an incident in which the Iraqis may have conducted a chemical weapons experiment in Kuwait City in which six Iraqi soldiers were killed. "Field Comment: It is possible the fatalities were the result of a handling accident rather than an experiment."	Joint Staff, "Iraqi Activities in Kuwait," 22 February 1991, GulfLINK file no. 60290730.91d.
24 Feb 91	KTO	Intercept of Iraqi military communications notes that "an element of Iraqi III Corps was concerned about the possible existence of chemical traces in the area and that the element's chemical detection gear was not working."	"Possible Chemical Presence," 24 February 1991, GulfLINK file no. 60046.91s.
late Feb 91	KTO	Interrogation of an Iraqi POW from the 36th Infantry Division, a regular Army unit deployed near the Kuwait-Saudi border, reveals that his brigade possessed "a type of tear gas, another type of concentrated gas, mustard gas, and a binary chemical weapon, which is able to deliver two types of gas. There is also a gun that can launch these gas weapons."	"Interrogation Translation: Chemical Weapons and the Armament of the 36th ID," GulfLINK file no. 0415pgf.91.
03 Mar 91	Kuwait	A DIA intelligence report states that during the Gulf War, Iraq deployed 250 "Ababil" missiles in Kuwait with chemical warheads. These missiles were deployed in Jaleeb and in Alshuyukh, south of the Kuwait Airport, and targeted on Saudi Arabia. When the ground war began, the Iraqi commander responsible for the missiles, a Shi'ite, was ordered to launch them but refused and was said to have deserted. Iraqi troops then withdrew from the area, leaving the missiles and chemical warheads behind.	Defense Intelligence Agency, "CW Agent Warheads in Kuwait During the Gulf War," 3 March 1993, GulfLINK file no. 23230089.93a.
09 Mar 91	Kuwait	A human source provides information that "one chemical munition storage bunker is located to the north of the Kuwaiti 6th Brigade Headquarters in Kuwait" and that the bunker could be mined. The same source claims that the Iraqi 19th, 8th, 11th, 27th, and 2nd Infantry Divisions had chemical companies to store and distribute their cnemical munitions, and that Iraqi chemical rounds for the 106mm howitzer and 60mm mortar are stored in cylindrical canisters marked with a red skull and crossed bones.	Joint Staff, "Chemical Markings, Transport, Types and Location in Kuwait," 9 March 1991, GulfLINK file no. 23402901.91r.

Exhibit B: Eyewitness Accounts of Iraqi Chemical Weapons in the KTO

- Barry Kaplan was a logistics officer in the U.S. Army's 3rd Armored Division during Operation Desert Storm. After the end of the ground war, his unit took control of Tactical Assembly Area (TAA) Victory in northern Kuwait, the site of the final battles, and spent late February and early March 1991 inspecting Iraqi bunkers. Kaplan heard several alarms over the operations and intelligence net that chemical munitions had been discovered. He also learned that the Army's 1st Infantry Division had discovered Iraqi chemical weapons near Safwan Airfield. At the end of April 1991, the 3rd Armored Division moved to TAA Camelot, a Kuwaiti military base located midway between Kuwait City and Basra. Prior to the Americans' arrival, the British 1st Armored Division had occupied the area. Kaplan heard from British troops that they had discovered "unconventional munitions" at an Iraqi logistics base located three kilometers southeast of TAA Camelot.[37]

- Dale Glover served in the Gulf with the 1165th Military Police Company, Army VII Corps. His MP company was approximately 75 miles inside Iraq, south of the Euphrates River, when they came upon a destroyed artillery site and an ammunition bunker that had been partially uncovered by the bombing. Inside the bunker was a strong ammonia-like smell, and Glover discovered leaking plastic inserts for chemical munitions packed inside aluminum casings. An M256 test confirmed the presence of blister agent. The MPs returned to their unit and reported what they had found to higher headquarters. They did not receive a response for several hours, at which point they were told that the detection was "a false-positive, nothing to be concerned about." Within hours, however, the MP company was ordered to move away from the site where it was encamped, about three miles from the Iraqi bunker.[38]

- Bobby Lawson, a cannon crew member with a field artillery unit in the 3rd Armored Division, served in the Gulf from January 1 to June 16, 1991. After the ground war, he was inspecting Iraqi bunkers in northern Kuwait and the border area when he came across a bunker that had been damaged by a bomb. Several artillery shells lying in the sand inside and outside the bunker had been been painted with a white skull and crossbones on a black background. Later, Lawson watched from a distance as Army demolition experts blew up the bunkers in place.[39]

- Ronald Matthews, a Blackhawk scout helicopter pilot, says that he flew Army special-forces teams wearing chemical-protective suits into contaminated areas of Kuwait and southern Iraq, where they inspected and blew up Iraqi ammunition bunkers suspected of containing chemical munitions. Matthews has since developed numerous symptoms of Gulf War illness.[40]

- Army Major Gus Grant, Jr., of the 111th Ordnance, 22nd Support Command, claims that he was involved in processing captured Iraqi chemical munitions after the Gulf War. In a signed and notarized affidavit obtained by Gulf War Veterans of Georgia, Grant says that a storage site in Kuwait was established for captured Iraqi ammunition, including 152mm and 155mm artillery shells filled with mustard agent. He also claims that although the captured Iraqi conventional munitions were transported to Tactical Support Area 4 outside King Khalid Military City, Saudi Arabia, the chemical shells were left behind in Kuwait. According to Grant, the CIA would not allow him to keep records on the chemical weapons.[41] (Although Maj. Grant's statement refers to the "CIA," senior Agency officials have denied that CIA agents were on the ground in Kuwait or Saudi Arabia during Operation Desert Storm. In congressional testimony, Dr. Gordon Oehler of the CIA Nonproliferation Center stated, "We were not in a position on the ground, nor tasked, to provide monitoring for BW/CW [biological weapons/chemical weapons], because that was the responsibility of the Department of Defense."[42])

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[37] Author's telephone interview with Barry Kaplan, December 1995.
[38] Senate Banking Committee staff interview, in U.S. Senate, Committee on Banking, Housing, and Urban Affairs, *Hearing*, op. cit., p. 246.
[39] Author's telephone interview with Bobby Lawson, December 1995.
[40] Author's telephone interview with Ronald Matthews, December 1995.
[41] Maj. Gus Grant, Jr., Notarized affidavit.
[42] U.S. Senate, Committee on Banking, Housing, and Urban Affairs, *Hearing*, op. cit., p. 72.

Exhibit C: Chemical Weapons Detection/Exposure Incidents During the Gulf War

Date	Time	Location	Description	Source
During period of 13-19 Jan		King Khalid Military City (KKMC), Saudi Arabia	Sgt. George C. Vaughn, serving with military intelligence battalion near KKMC, comes under Scud attack. During alert, he has trouble sealing his gas mask and experiences a bitter-almond taste and begins choking. Within a few days, he and others in his unit begin to experience nausea, diarrhea, and severe fatigue. GI symptoms persist after return from Gulf, along with development of fatty skin tumors called angiolipomas.	U.S. House, Committee on Armed Services, Subcommittee on Military Forces and Personnel, Hearing, *Desert Storm Mystery Illness/Adequacy of Care*, 103rd Congress, 2nd sess., 15 March 1994 [HASC No. 103-58), pp. 5-11.
19 Jan	0300	Al Jubayl, Saudi Arabia	Seabees of Naval Mobile Construction Battalion 24, stationed west and south of the port of Al Jubayl, report a bright flash in the night sky followed by a powerful detonation-concussion. Chemical alarms sound, but before many troops have time to mask they experience acrid smell, choking, profuse nasal secretions, facial numbness, burning sensation on exposed skin, and metallic taste in the mouth. Two M-256 detection kits are positive for chemical blister agent. Exposed troops report that their exposed skin became inflamed, and that they later developed chronic symptoms.	Philip Shenon, "Many Veterans of the Gulf War Detail Illnesses from Chemicals," *The New York Times*, 20 September 1996, pp. A1, A12.
19 Jan	1045	KKMC, Saudi Arabia	Czech chemical detachment reports an unspecified chemical agent in the air at a concentration of 0.003 mg/m3. All-clear given 3 hours later.	Defense Intelligence Agency, "Military Intelligence Digest: Saudi Arabia: Detection of CW Agents in Desert Shield/Desert Storm," 4 Nov 1993, GulfLink file no. 042300nv.93.
19 Jan	PM	37 km northwest and 45 km northeast of Hafar-al-Batin, Saudi Arabia	Two Czech chemical detachments attached to Saudi units on patrol detect low levels of nerve agent in the air at concentration of between 0.05 and 0.003 mg/m3. Agent is detected for about an hour before it dissipates completely.	*Ibid.*
20 Jan	1710	vicinity KKMC	Czechs report detecting nerve agent and suggest that "hazard is flowing down from factory/storage bombed in Iraq."	Central Command NBC Desk Log; Philip Shenon, "Czechs Say They Warned U.S. Of Chemical Weapons in Gulf," *The New York Times*, 19 October 1996, pp. 1, 7.
21 Jan	0825	vicinity KKMC	French 6th Division forces report detecting tabun, sarin, and mustard vapors in "sublethal quantities" in atmosphere	101st Airborne Div., Intelligence Spot Report, "Reference reports of chemical agents in French sector, 22 Jan 1991.
21 Jan	1540	near ammunition storage facility at KKMC	French chemical alarms sound, Czech units detect nerve agent and mustard vapors in air	DIA, "Military Intelligence Digest: Saudi Arabia: Detection of CW Agents in Desert Shield/Desert Storm," 4 Nov 1993, GulfLink file no. 042300nv.93.

24 Jan		vicinity KKMC	A Czech chemical detachment reports very low levels of mustard-agent vapor in air, confirmed by mobile laboratory	*Ibid.*
24 Jan		French base south of KKMC	French chemical agent alarms sound after storm blows wind out of Iraq. Chemical agent detection badges on French troops' protective suits change color, indicating presence of nerve-agent vapors in air.	Associate Press, "France Says Gulf Troops Detected Chemicals," *The Washington Post*, 5 December 1993, p. A24.
24 Jan		6 miles north of KKMC	Saudi officials summon Czech chemical detachment to investigate a "suspicious" wet patch of sand measuring 60 x 200 centimeters. Using two techniques, the Czechs detect low levels of mustard agent in sand. The source of contamination is unknown, as no munition fragments, craters, or other indications of military activity are observed near the site.	Defense Intelligence Agency, "Military Intelligence Digest: Saudi Arabia: Detection of CW Agents in Desert Shield/Desert Storm," 4 November 1993, GulfLink file no. 042300nv.93.
25 Jan		Saudi-Iraq border	Sergeant First Class David W. Stone reports "From [18th Airborne] Corps G-3, ACR [Armored Cavalry Regiment] reports a 1 [round] airburst w/yellow cloud at 500 [meters] from their TOC [tactical operations center]." Report is passed to G-2 intelligence and logged.	Declassified operations logs, 101st Airborne Division
28 Jan	0250	Saudi-Iraq border	"Vulcan position" reports nerve-agent alarm at 0045 hours, confirmed with an M256 kit. At approximately 0130 hours, D3/327 Infantry reports a nerve-agent alarm, confirmed with two M256 kits.	Declassified operations logs, 101st Airborne Division
28 Jan	1615	Saudi-Iraq border	The G-2 [intelligence staff] of the 101st Airborne division reports that Saddam Hussein has given authorization to use chemical weapons to brigade level	Declassified operations logs, 101st Airborne Division
04 Feb	2200	Saudi-Kuwait border	24th Infantry Division reports that Iraqi forces have been observed placing 55-gallon drums along specific locations on the border. Iraqi forces may have had face and hands covered while emplacing drums. [No follow-up report available.]	Declassified operations logs, 101st Airborne Division
24 Feb	0600	Saudi-Kuwait border	2nd Battalion, 7th Marine Regiment, 1st Marine Division receives the order to go to MOPP-2. Intelligence reports indicate that the enemy might use chemical weapons at Al Jaber Airfield. NBC condition "yellow" (attack probable) is put into effect.	Commanding Officer, 2nd Battalion, 7th Marine Regiment, 1st Marine Division, "Command Chronology for the Period 1 January to 28 February 1991," 9 March 1991.
24 Feb	0635	Saudi-Kuwait border, breaching operations	During crossing of an Iraqi minefield, a FOX chemical-reconnaissance vehicle with B Company, 1st Battalion, 6th Marine Regiment, 1st Marine Division (Task Force Ripper), operated by Chief Warrant Officer Joseph P. Cottrell, detects trace quantities of a blister agent (mustard or lewisite) in Lane Red I at levels below an immediate threat to personnel. The alarm is rapidly spread throughout the division, and troops go to maximum level of individual chemical protection (MOPP-4).	U.S. House, Committee on Armed Services, Oversight and Investigations Subcommittee, Hearing, *Use of Chemical Weapons in Desert Storm*, 103rd Congress, 1st sess., 18 November 1993, p. 9; 6th Marine Regiment, "Operation Desert Storm: Battle Assessment Documentation," 24 February 1991 [logs]

24 Feb	0712	Saudi-Kuwait border	Task Force Ripper sends a second FOX vehicle to the area, which confirms the presence of blister agent, which had "probably been there a long time." According to an official history of the 2nd Marine Division, "Unknown in origin, [the blister agent] was still sufficiently strong to cause blistering on the exposed arms of two AAV [amphibious assault vehicle] crewmen."	Lt. Dennis P. Mroczkowski, *U.S. Marines in the Persian Gulf, 1991: With the 2nd Marine Division in Desert Shield and Desert Storm* (Washington, D.C.: History and Museums Division, Headquarters U.S. Marine Corps, 1993), p. 45.
24 Feb	0730	Saudi-Kuwait border	6th Marine Regiment's intelligence officer (S-2) reports to 2nd Marine Division headquarters that Lane Red I is contaminated for the first 300 meters only. Commanding officer determines that rapid movement through the breach sites will not pose a threat to continued combat operations or require decontamination, but exposure time for individuals is not tracked or limited. Work continues on mine clearance, and the MOPP level is reduced to 2 after about a half-hour.	6th Marine Regiment, "Operation Desert Storm," op. cit.; Mroczkowski, *U.S. Marines in the Persian Gulf*, op. cit.; "Prepared Statement of CWO Joseph P. Cottrell," op. cit.
24 Feb	1024	Inside Kuwait	Battalion intelligence officer (S-2) with the 1st Battalion, 7th Marine Regiment reports radio intercept indicating that an Iraqi self-propelled artillery unit had been ordered to get into MOPP gear and fire chemicals at 0945. The information is 30 minutes old, but no chemical agents have been detected. At 1143, however, S-2 reports that Marine Air Group 26 is reporting nerve agent.	Command chronology for 1st Battalion, 7th Marine Regiment
24 Feb	1143	Kuwait-Saudi border	Marine Air Group 26 (MAG-26) reported a nerve agent detection at 28 degrees North, 47 degrees East on the Saudi-Kuwait border.	Command chronology for 1st Battalion, 7th Marine Regiment
24 Feb	1507	Inside Kuwait	5th Battalion, 11th Marine Regiment, 1st Marine Division (Task Force Ripper) detects nerve agent with a RASCAL M21 Remote Sensing Chemical Agent Alarm, a passive-infrared detector that monitors for clouds of nerve or blister agent out to a range of 5 kilometers and has a low false-alarm rate. 11th Marines go to MOPP-4. All-clear is sounded at 1541.	Combat chronology, Task Force Ripper, 1st Marine Division
24 Feb	1908	Vicinity of Ahmed Al Jaber Airbase, Kuwait	As Task Force Ripper holds positions around Al Jaber Airbase, the FOX vehicle's mass spectrometer, operated by CWO Cottrell, detects vapors of lewisite blister agent. Cottrell reports the findings to division headquarters and is told to forward the tape up the chain of command. The response is that the FOX had alerted on the oil smoke. But Cottrell separates the petroleum peaks from the chemical agent, confirming the detection. According to 1st Marine Division logs, "Ripper 6 believes that chemical weapons were used, but not sure if Ripper was the target. These chemical munitions could have been exploded by our own artillery, thus causing secondary explosions."	U.S. Senate, Committee on Banking, Housing and Urban Affairs, Hearing, *United States Dual-Use Exports to Iraq and Their Impact on the Health of Persian Gulf War Veterans*, 103rd Congress, 2nd sess., 25 May 1994 [S.Hrg. 103-900], p. 303-304; 1st Marine Division, operational logs, 25 February 1991.

25 Feb	0319	Inside Kuwait	Task Force Ripper detects gas at grid coordinate 756862.	Command chronology, 1st Battalion, 7th Marine Regiment
25 Feb	1735	Inside Kuwait	3rd Tank Battalion, 11th Marine Regiment, a Task Force Ripper unit, reports a chemical detection. According to testimony by FOX vehicle operator, Gunnery Sergeant George J. Grass, "As the mass spectrometer was monitoring for chemical agent vapor contamination with the usual readings from the oil fires, the alarm went off and the monitor showed a lethal vapor concentration of the chemical agent S-Mustard." Grass noted that when he reported the detection to the Division NBC Officer, he was told that the reading was false and had been produced by oil fire vapors.	1st Marine Division After-Action Review; Command chronology, 1st Battalion, 7th Marine Regiment; Testimony by Gunnery Sergeant George J. Grass, USMC, before the Presidential Advisory Committee Panel on Chemical and Biological Warfare Issues, 1 May 1996.
25 Feb	1900	Inside Kuwait	An Iraqi POW reports a chemical minefield at Jalib Ash Shuyukh Police Post west of Kuwait International Airport.	Command chronology, Tiger Brigade
25 Feb	1908	Inside Kuwait	3rd Battalion, 11th Marine Regiment (Task Force Ripper) detects blister agent. A FOX vehicle is called in to confirm. Sgt. Robert A. Maison, member of the FOX reconnaissance team, observes an artillery attack to the northwest at a distance of about 4 kilometers. About 5 minutes later, the mass spec on the FOX vehicle sounds an alarm. The agent detected is lewisite "in a concentration considered to produce casualties but not death." Because of strong, steady winds (40-50 knots), detection lasts only 3 minutes.	1st Marine Division After-Action Review; U.S. Senate, Committee on Banking, Housing and Urban Affairs, *Hearing*, op. cit., p. 304.
25 Feb	1922	Inside Kuwait	A FOX vehicle attached to Tiger Brigade detects lewisite at a location miles from Task Force Ripper.	Command chronology, Tiger Brigade
26 Feb	0213	Inside Kuwait	A Company, 1st Battalion, 11th Marine Regiment reports a positive reading for blister agent, which is confirmed with two separate M256 detection kits. A majority of 11th Marines assume MOPP-4. Subsequent readings at 0327 and 0410 also positive. Units get all-clear at 0421.	1st Marine Division After-Action Review; Command chronology, Task Force King, 1st Marine Division
26 Feb	0327	Inside Kuwait	A Company, 1st Battalion, 11th Marine Regiment [Task Force Ripper] reports positive reading for blister agent confirmed with M256 detection kits. Majority of 11th Marines assume MOPP-4. Test at 0410 is also positive. Test at 0421 is negative, and after selective unmasking, the all-clear is sounded.	Command chronology, Task Force King, 1st Marine Division
26 Feb	1045	Inside Kuwait	Task Force Shepherd finds an ammunition bunker that may contain mustard agent.	Command chronology, Tiger Brigade; Command chronology, 1st Battalion, 7th Marine Regiment
26 Feb	1046	Inside Kuwait	Task Force Ripper reports "dusty mustard found stored in bunker in vicinity QT 9015."	Operations log, Task Force Ripper
26 Feb	1055	Inside Kuwait	1st Battalion, 5th Marine Regiment finds low berms with signs in Arabic that Kuwaiti interpreters read as "Collection point for NBC casualties." Two lanes are marked for vehicle decontamination.	Command chronology, 1st Battalion, 7th Marine Regiment

26 Feb	1105	Inside Kuwait	Task Force Ripper reports "NBC decon point found at grid QT 714281."	Operations log, Task Force Ripper
26 Feb	1149	Inside Kuwait	As Marine units approach Kuwait City, 1st Battalion, 11th Marine Regiment with Task Force Ripper detects gas.	Command chronology, 1st Battalion, 7th Marine Regiment; 1st Marine Division After-Action Review
26 Feb	early PM	Inside Kuwait	A FOX vehicle with the 8th Marines detects gas.	Command chronology, 8th Marines
26 Feb	1500	Inside Kuwait	1st Battalion, 11th Marine Regiment detects gas in vicinity of Kuwait International Airport.	1st Marine Division After-Action Review
26 Feb	1527	Inside Kuwait	3rd Battalion, 23rd Marine Regiment reports gas: "3/23rd under NBC attack, in MOPP-4; remainder of 8th Marines in MOPP-2."	Battle Assessment Documentation, 6th Marine Regiment
26 Feb	1735	Inside Kuwait	3rd Battalion, 11th Marine regiment reports a chemical detection.	1st Marine Division, Maneuver Chronology
26 Feb	2300	Inside Kuwait	Task Force Ripper moves out of an area contaminated with chemical weapons.	1st Marine Division, After-Action Review
27 Feb	1545	U.S. Central Command (CENTCOM) Headquarters	Message from the Commander-in-Chief, Central Command, makes reference to "Cdr's guide for disposition of captured chemical and biological munitions."	Central Command NBC Desk Log
27 Feb	1800	CENTCOM Headquarters	Responding to a query about explosive ordnance disposal of found chemical and biological agents and munitions, CENTCOM states that JCS-J5 (the policy division of the Joint Chiefs of Staff) "feels destruction of small quantities using field method is OK. 'Bulk' (not defined) destruction is not approved because it may have great international implications. More guidance to follow. For the time being, bulk must be secured and await further instructions."	Central Command NBC Desk Log
27 Feb	2300	Inside Kuwait	5th Battalion, 11th Marine Regiment is ordered to move south out of Task Force Ripper's zone to enable TF Ripper to reposition units away from "ammunition/chemical hazard areas."	Operations log, Task Force Ripper
28 Feb	1641	Inside Kuwait	3rd Battalion, 7th Marine Regiment reports "Mustard agent at QT 753393910. Localized vapor hazard. Detected by FOX vehicle."	3/7 Marines Staff Journal
28 Feb	1845	Occupied Iraq	Lt. Col. Rick Jenkins reports interest in exploitation of suspected chemical and biological munitions bunkers in the occupied portion of Iraq. CENTCOM log states: "Advised him to identify his requirements to 513th [Military Intelligence Brigade], as they have the mission and already have some assigned tasks (i.e., chem rounds for exploitation.)"	Central Command NBC Desk Log
28 Feb	1930	Just outside Kuwait City	A FOX vehicle with Task Force Ripper, 1st Marine Division, surveys an Iraqi 3rd Armored Corps ammunition bunker complex just outside Kuwait City that enemy POWs have reported contains suspected chemical munitions. During the survey, the FOX computer alarm goes off with a full distinct spectrum and lethal vapor concentration of S-Mustard. FOX operator GySgt George Grass also	Testimony by Gunnery Sergeant George J. Grass, before the Pres. Advisory Committee Panel on Chemical and Biological Warfare Issues, 1 May 1996; Central Command NBC Desk Log

			observes artillery shells on boxes stencilled with a skull and crossbones. Grass makes additional detections of distilled mustard and benzene bromide within a 100 yards of each other. CENTCOM log states: "The FOX [mass spectrometer] has come up with indications of small conc of sulfur mustard after numerous tests. All possible interferences with petroleum products ruled out.... Area is cordoned off, all their people in the area have been warned."	
28 Feb	2155	Kuwait City	Maj. Chapman, intelligence officer with XVIII Airborne Corps, says Special Operations Central Command (SOCCENT) and Marines Central Command (MARCENT) have both reported finding Iraqi chemical-filled mines in Kuwait City. The mines are gray with a yellow stripe.	Central Command NBC Desk Log
1 Mar	1700	Enemy bunker complex in southern Iraq, 3 kilometers north of Kuwait border	PFC David Allen Fisher, a scout with 4/8 Cavalry, 2nd Brigade, 3rd Armored Division, is inspecting an Iraqi bunker complex in southern Iraq for intelligence material when he brushes up against some wooden crates. At 0100 the next morning, he feels a stinging pain on his left upper arm and notes that it has a sunburned appearance. He sleeps from 0300 to 0400 and observes on waking that blisters have formed on his upper arm. Fisher is examined by a chemical casualty specialist, who supports a diagnosis of mustard agent exposure. Fisher later receives a Purple Heart for his chemical injury.	Col. Michael A. Dunn, "Information Paper: Chemical Agent Exposure, Operation Desert Storm," SRGD-UV-ZA, 5 March 1991; Thomas D. Williams, "Veteran's Story Counters Official One on Gas War," *The Hartford Courant*, 21 September 1994, p. A2.
01 Mar	2045	Inside Kuwait	A soldier from the 3rd Armored Division, VII Corps throws a thermite grenade into an Iraqi armored personnel carrier. There is a secondary explosion, he smells garlic and is overcome by gas. He is hospitalized in critical condition. Army Central Command (ARCENT) believes the cause was an exploding battery. [No follow-up report available.]	Central Command NBC Desk Log
03 Mar	1420	Kuwait, northwest of Ar Rumuylah oil field	Elements of 4/64 Armor, 24th Infantry Division, are conducting reconnaissance mission northwest of Ar Rumaylah oil field when they discover a "military jeep with chem amo [chemical ammunition] and documents."	Operational log, 24th Infantry Division
04 Mar	1400	Khamisiyah, Iraq	Three companies of the 37th Engineer Battalion, assisted by two teams of the 60th Explosive Ordnance Disposal Detachment, destroy a total of 37 Iraqi munitions bunkers, including Bunker 73, which the Iraqis later report contained chemical munitions. At 1445, a chemical alarm goes off but only some troops don gas masks or go to MOPP-4. M-256 kits give "weak" positive results.	U.S. Department of Defense, "U.S. Demolition Operations at the Khamisiyah Ammunition Storage Point," GulfLINK website, 21 February 1997.
05 Mar			Col. Michael A. Dunn, a former commander of the U.S. Army Medical Research Institute for Chemical Defense, writes a report on the Fisher incident	Col. Michael A. Dunn, "Information Paper: Chemical Agent Exposure, Operation

			(see 1 March above) that ends with the following statement: "I conclude that PFC Fisher's skin injury was caused by exposure to liquid mustard chemical warfare agent. The complete sequence of events is consistent with this conclusion. In particular, the latent period of 8 hours between exposure and first symptoms is characteristic of mustard exposure. No other corrosive or skin-toxic chemical that could reasonably be expected to have been present on the battlefield shows this latent period. The confirmatory FOX spectra findings are also consistent...."	Desert Storm," SRGD-UV-ZA, 5 March 1991.
10 Mar	1540	Khamisiyah, Iraq	U.S. troops detonate crates of 122mm rockets in the "pit" area, along with 60 remaining Iraqi bunkers. UNSCOM later determines that the rockets contained a mixture of sarin and cyclosarin.	U.S. Department of Defense, "U.S. Demolition Operations at the Khamisiyah Ammunition Storage Point," GulfLINK website, 21 February 1997.
12 Mar	1620	KTO	Central Command log reports that Marines have located a suspected chemical land-mine filling site. A FOX vehicle obtained positive readings for tabun and lewisite, and they also found containers resembling air tanks and mine crates. The log reports: "The area has been roped off and secured. I advised them to call 513th [Military Intelligence Battalion] and get a sampling team into the area."	Central Command NBC Desk Log
12 Mar	1940	KTO	Central Command log reports that Captain Napier of Army Central Command has called in the finding of possible chemical rounds in the 1st Armored Division area. The troops have come across 15 bunkers, some containing 82mm rounds with 3 red bands and Jordanian markings.	Central Command NBC Desk Log
17 Mar	1855	An Nasiriyah, Iraq	Iraqi resistance fighters say that the Iraqi Republican Guard Forces Command is in control of An Nasiriyah and has been using gas "causing tearing and coughing." They also report that the Iraqi army has used mustard gas in Basra to quell the Shi'ite uprising in southern Iraq, killing 1,400 people.	Intelligence Spot Report, 101st Airborne Division
26 Mar		Karbala, southern Iraq	A Kuwaiti doctor accuses the Iraqi Army of dropping nerve gas from helicopters on civilians and rebels in southern Iraq. "They used nerve gas in Karbala," he says. "We received lots of cases at the general hospital, and I treated them. The people had muscular spasms, dilated [sic] pupils, they were semiconscious. Some were defecating uncontrollably. A few died from asphyxiation." Shi'ite rebels also report that an Iraqi Air Force helicopter loaded with chemical weapons has landed in Iran and its crew asked to defect after refusing to attack rebel positions in Basra and Amara.	Reuters, "Kuwaiti Doctor: Iraq Dropped Nerve Gas," *The Washington Times*, 27 March 1991, p. A9.

Exhibit D: Eyewitness Accounts Suggestive of Iraqi Chemical Weapons Use

- Roy Morrow, a reservist stationed with Naval Mobile Construction Battalion (NMCB) 24 near the Port of Al Jubayl, Saudi Arabia, was sleeping in his tent in the early morning of January 19, 1991, shortly after the start of the air war. At about 3:00 AM, a brilliant flash of red light in the cloud-covered sky was followed by a powerful double-explosion and a shockwave strong enough to knock over tents and awaken the sleeping troops. Almost immediately, the general-quarters alarm began to sound, and the camp radio net broadcast a message reporting "confirmed chemical agent" and ordering troops to don their protective gear and proceed to bunkers. As the troops emerged from their tents and ran to the bunkers, they smelled a sharp, acrid odor and saw a yellowish mist floating over the camp. Morrow experienced a burning sensation on his exposed skin, a numbness around his mouth and lips, and a strange metallic taste "like sucking on a penny." A half-hour later, the all-clear sounded. Morrow ran to the water buffaloes to wash his burning skin, which had become red and inflamed. Although he and the others were convinced they had been exposed to a chemical attack by an Iraqi Scud or an aircraft shot down over the Port, the commanding officers said the explosion had been a "sonic boom" and ordered them to stop discussing the incident. Within a few days, those soldiers who had experienced acute symptoms began to suffer from a flu-like illness, including fever, sweating, diarrhea, and muscle cramps and spasms. Areas of exposed skin broke out in rashes, welts, and small blisters, which eventually burst and scabbed over but eventually recurred.[43] For many, the symptoms have persisted, including chronic diarrhea, joint pain, muscle spasms, mysterious skin rashes and tumors, chronic fatigue, recurrent headaches, and memory loss. According to a telephone survey by the *New York Times* in September 1996, of 152 members of NMCB-24 who were contacted, 114 said they were sick with chronic illnesses they attributed to the war.[44]

- Tommy Hare served as a forward observer with the 101st Airborne Division along the Kuwait-Saudi border and advanced into southern Iraq as far as the Euphrates River. One day during the ground war, ten chemical-agent alarms went off simultaneously along the perimeter of the camp. The troops went into full chemical-protective (MOPP) gear but got the all-clear after two hours and were told it had been a false alarm. When Hare unmasked, however, his nose and throat started burning. Six months after his return to the United States, he developed pains in his hips and legs, skin rashes, moodswings, and chronic diarrhea. Gradually his musculoskeletal pain worsened to the point that he was restricted to a wheelchair with chronic pain in his legs and spells of paralysis. He would awaken in the middle of the night screaming in pain with what felt like "a charleyhorse from the waist down." The VA Hospital put him on several medications but nothing worked; finally, he responded to high-dose doxycillin (an antibiotic). Hare contacted the 10 members of his fire-support team, all but one of whom were having similar problems. Perhaps significantly, the one individual who was not sick had refused to take his pyridostigmine bromide nerve-agent prophylaxis pills.[45]

- Venus Hammack, a paralegal with the 46th International Law Detachment, served in the Gulf from August 1990 to March 1991. She was visiting a fortified area on the Saudi-Kuwait border one night when she suddenly started sneezing, coughing, wheezing, and gasping for breath. After she reached the nearest evacuation hospital at 4:00 AM, about 20 soldiers from other units also arrived complaining of respiratory problems. Although the doctors attributed their symptoms to the oil fires, the smoke conditions at the time were not particularly thick. However, there were three Scud missile impacts in the area that night, and Hammack has wondered ever since if they released toxic chemicals that caused her medical problems. Five years later, at the age of 40, she suffers from tremors, sleeping problems, poor short-term memory, inability to concentrate, dry hair and skin, shortness of breath, nausea, chronic diarrhea, and allergies to numerous chemicals. She has also developed Factor 8 deficiency, which impairs the clotting of the blood. The problem was discovered when she suffered a minor nick during a routine Pap test and began to bleed uncontrollably, losing two pints of blood and going into shock on the examining table. She only recovered after being transfused with four bags of platelets [the cells that promote blood clotting]. Hammack had herself tested for heavy metals and

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[43] Author's telephone interview with Roy Morrow, December 1995.

[44] Philip Shenon, "Many Veterans of the Gulf War Detail Illnesses from Chemicals," *The New York Times*, 20 September 1996, pp. A1, A12.

[45] Author's personal interview with Tommy Hare, October 1995.

agent lewisite contains arsenic, she believes that she may have been exposed to low levels of this agent and that her medical problems are attributable to arsenic poisoning.[46]

- Navy Reserve Captain Julie Dyckman served as a nursing supervisor with Fleet Hospital 15, a 500-bed field hospital near Al Jubayl, from January to March 1991. During this three-month period, the hospital treated some 10,000 soldiers. Many of the patients were suffering from cardiac and respiratory problems, asthma, and urinary tract bleeding. Some patients, including Dyckman herself, developed large blisters on the top of their feet underneath their boot laces that eventually burst and turned into open sores, suggesting possible exposure to chemical blister agents that had penetrated through the eyelets of the boot laces. Although a dermatologist at the hospital photographed some of the more unusual lesions, Dyckman said that he was active-duty Navy and had no desire to stir up controversy. The most dramatic incident Dyckman witnessed at the field hospital was a soldier who was brought in comatose, with yellow mucus oozing from his mouth and nose. A tube was inserted in this throat to keep his breathing passages open and he was medevaced out. Although the medical staff suspected a drug overdose, Dyckman believes the soldier may have been a chemical casualty. Beginning in February 1991, Dyckman developed uncontrolled high blood pressure and a rapid heartrate that have continued ever since. Her doctor initially suspected post-traumatic stress syndrome, but neurological testing indicated damage to her autonomic nervous system and an MRI scan revealed brain lesions.[47]

---

[46] Author's telephone interview with Venus Hammack, January 1996.
[47] Author's telephone interview with Julie Dyckman, January 1996.

ATTACHMENT A

UNCLASSIFIED

1. (U) JULLS NUMBER: 14548-72100(00004), submitted by JCMEC S-3 Opns, MAJ Jones, IAM-T-O , ( )894--785.

2. (U) conducted on 04/04/91

3. (U) KEYWORDS: None.

4. (U) TITLE: Chemical and Biological Sampling in Theater

5. (U) OBSERVATION: CENTCOM had not established the policy and precedures for chemical and biological sampling and evacuation.

6. (U) DISCUSSION: Before the Foreign Material Intelligence Battalion (FMIB) established the Joint Captured Material Exploitation Center (JCMEC) in Dhahran, CENTCOM had no policy procedure for conducting chemical and biological sampling and evacuation of the samply to CONUs to verify first use of these agents by Iraqi forces. The ARCENT G-3 NBC section had no policy or procedure for conducting the sampling mission. There had been neither prior coordination between CENTCOM agencies such as the Armed Forces Medical Intelligence Center (AFMIC) or the Chemical Research Development and Engineering Center (CRDEC). FMIB developed the sampling and evacuation policy for the Desert Storm OPLAN 001 (see Tab D to Appendix 10 to Annex B to COMUSARCENT DESERT STORM OPLAN 001). This tab explained the policy and procedured for US forces to assist the TI teams in conducting the sampling mission. FMIB deployed to Saudi Arabia on 6 January 1991. Technical Intelligence (TI) teams were deployed to the two Corps and MARCENT on 11 January 1991. Each team was capable of conducting the sampling mission as well as the TI mission. After establishment of the JCMEC, CENTCOM attached the 9th Chemical Company from Ft Lewis to FMIB to ~sist in the sampling mission. Attachment was effective upon ..rival of the company in the theater.

7. (U) LESSON LEARNED: Close coordination and training between Fmib and CRDEC prior to deployment enabled the TI teams to conduct the sampling mission. The attachment of two LNOs from CRDEC with the 9th Chemical Company allowed the JCMEC to place and control sampling assets in the critical areas that were possible targets for chemical and biological agents. Close coordination with the 513th MI Bde NBC officer ensured a proper use of assets as well as a proper liaison between the JCMEC and the ARCENT/CENTCOM NBC staffs. JCMEC elements have collected 234 Chemical and Bio-medical samples and have evacuated them to CONUS for further evaluation.

8. (U) RECOMMENDED ACTION: CENTCOM should establish the policy and procedures for sampling and evacuation upon evaluating the threat. In this operation, the existence and general

UNCLASSIFIED

ATTACHMENT A (cont.)

UNCLASSIFIED

1. (U) JULLS NUMBER: 14548-72100(00004), submitted by JCMEC S-3 Opns, MAJ Jones, IAM-T-O , ( )894--785.

2. (U) conducted on 04/04/91

3. (U) KEYWORDS: None.

4. (U) TITLE: Chemical and Biological Sampling in Theater

capabilities of Iraqi chemical and biological weapons was known before the JCMEC advance elements deployed. The potential volume of the Iraqi inventory could have affected coalition operations significantly. First use verification is crucial to assist national level planning. If future operations require the attachment of assets such as the 9th Chemical Company to FMIB, this should be done before the battalion deploys so that thorough coordination can be done in CONUS. Further, the U.S. Army Chemical Center and School should take the lead in developing the doctrine for chemical and biological sampling, so the soldiers are properly trained to collect and handle chemical field samples.

9. (?) COMMENT:

UNCLASSIFIED

ATTACHMENT B

Presidential Advisory Committee on Gulf War Veterans' Illnesses

Chair
Joyce C. Lashof, M.D.

John Baldeschwieler, Ph.D.
Arthur Caplan, Ph.D.
Admiral Donald Custis, M.D., (Ret.)
David A. Hamburg, M.D.
James A. Johnson
Captain Marguerite Knox, M.N.
Philip Landrigran, M.D.
Elaine L. Larson, Ph.D.
Rolando Rios, Esq.
Andrea Kidd Taylor, Dr.P.H.

Executive Director
Robyn Y. Nishimi

Deputy Director/Counsel
Holly L. Gwin

01 DEC 1995

MEMORANDUM FOR DR. JONATHAN B. TUCKER

SUBJECT: Termination of Employment

This is to give you advance notice that your services as a Staff Analyst, GS-301-15 with the Gulf War Veterans' Illnesses Committee will be terminated effective December 31, 1995. Notification of Personnel Action (SF 50) effecting this termination will be forwarded to you subsequent to the effective date.

You are also advised that starting the week of December 4, 1995, you will be employed on a part time basis with tour of duty and hours of work to be determined.

You are requested to sign and date the receipt acknowledgement copy of this memorandum. Failure to sign and date does not void its contents.

Robyn Y. Nishimi, Ph.D.
Executive Director

1411 K Street, N.W. // Suite 1000 // Washington, D.C. 20005-3404 • Phone 202.761.0066 • Fax 202.761.0310

ATTACHMENT C

Gulf War Panel Reviews Researcher's Ouster

By PHILIP SHENON

WASHINGTON, Dec. 23 — A Congressional panel said today that it was investigating why a White House committee studying the illnesses of veterans of the Persian Gulf war abruptly dismissed its respected chemical-weapons investigator last year.

The investigator, Jonathan B. Tucker, a weapons researcher who had worked for the Arms Control and Disarmament Agency and the State Department, has said that he believes he was dismissed because he refused to limit his investigation to evidence gathered only from Government agencies.

Dr. Tucker said he had been ordered not to talk to gulf war veterans or to Government whistle-blowers, even though he believed that they had valuable information about the possible release of chemical or biological weapons in the war.

Dr. Tucker, a chemical-weapons researcher at the Monterey Institute of International Studies, said he had decided to speak out as a way to protest the committee's final report, which is scheduled to be sent to the White House by the end of the year.

The panel, the Presidential Advisory Committee on Gulf War Veterans' Illnesses, is expected to criticize the Pentagon in the report. The committee unearthed extensive evidence of chemical exposures in the war.

But the report is also expected to conclude that the Pentagon should retain control over the inquiry and that wartime stress is far more likely than chemical weapons to have been the cause of the ailments of most gulf war veterans.

Dr. Tucker said he thought the conclusions of the panel were "vastly premature" in light of how little research had been done on the health effects of exposure to low levels of chemical and biological weapons. "Having spoken with many sick vets," Dr. Tucker said, "it seems that we need to do a lot more research."

Representative Christopher Shays, the Connecticut Republican who is the chairman of the House panel, the Government Reform subcommittee on Human Resources, said in an interview that the White House advisory committee was "not so independent as it pretends."

"I want to know why the committee thought that talking to independent sources — sources outside the Pentagon — would be bad," Mr. Shays said. He added that Dr. Tucker had proved to be "of immense help" to the subcommittee and would be called to testify next year.

Why did a White House committee dismiss a respected investigator?

Several members of the White House panel said in recent interviews that they had never been told about the decision to dismiss Dr. Tucker — his departure was officially described as a resignation, although Dr. Tucker retains a copy of his termination letter — and were surprised to learn of it only now.

The panel's executive director, Robyn Y. Nishimi, refused to discuss her reasons for dismissing Dr. Tucker, but she added, "I can assure you without equivocation that there was no outside influence relative to Jonathan's departure."

The panel's chairwoman, Joyce C. Lashof, the former dean of the School of Public Health at the University of California at Berkeley, said she had been aware of the circumstances of Dr. Tucker's departure.

"I'm not going to get into a discussion about the caliber of anybody's work," Ms. Lashof said, noting that the panel had been praised for its investigation of chemical exposures in the gulf war. "I think the committee's work speaks for itself."

Dr. Tucker's departure alarmed veterans advocates. "He's a very smart guy," said Matt Puglisi, a spokesman for the American Legion. "He certainly had the expertise to handle this issue, and not knowing why he was dismissed is unsettling."

Other specialists on chemical and biological warfare were surprised that Dr. Tucker would be dismissed from such an investigation. "Jonathan is a very thoughtful, methodical, careful man," said Matthew Meselson, a professor of biology at Harvard University. "The Government needs more people like him."

Dr. Tucker said he was called into Dr. Nishimi's office last December and given an hour to clean out his desk. "I asked, 'What are the grounds?' " he recalled, "and she said, 'I'm not going to tell you that.' "

Dr. Tucker said that when he returned to his office, the hard drive from his computer had been removed, and he was watched closely by another supervisor as he cleaned out his desk "to make sure that I didn't take any of the files."

"I thought things like this only happened in the movies," he said.

REMEMBER THE NEEDIEST!

The New York Times, 24 December 1996, p. A9.

The Monterey County Herald, Saturday, January 4, 1997

Former investigator leery of Gulf War illness study

BY KEVIN HOWE

Herald Staff Writer

An upcoming White House report on the possible relationship between troops' exposure to chemical weapons and the Gulf War syndrome should be viewed with suspicion, a former investigator who worked on the report said in Monterey.

The conclusions of the report, expected to be released Tuesday or Wednesday, may be premature and the scope of its inquiry too limited to give valid results, said Jonathan Tucker, a former investigator for the Presidential Advisory Committee on Gulf War Veterans' Illnesses.

Gulf War syndrome has been blamed for a myriad of illnesses, including depression and intestinal and digestive disorders.

Tucker, now director for chemical and biological weapons proliferation issues at the Center for Nonproliferation Studies at the Monterey Institute of International Studies, was an investigator for the committee for five months before he was fired Dec. 1, 1995.

He has worked for the congressional Office of Technology Assessment and the U.S. Arms Control and Disarmament Agency as a chemical weapons specialist. He was part of a United Nations inspection team to Iraq in February 1995.

He said Thursday that he was repeatedly told by the presidential committee's executive director, Robyn Nishimi, to stop seeking out "unofficial" sources — veterans, veterans groups and government whistle-blowers — for information on possible chemical exposure to troops in the field and to limit his investigations to Pentagon, Central Intelligence Agency, Defense Intelligence Agency and other official government sources.

Please see TUCKER PAGE C2

TUCKER

FROM PAGE C1

Tucker said he was allowed to resign after receiving a memorandum of termination from Nishimi.

The memo didn't specify reasons for his termination, Tucker said, adding that he didn't leave voluntarily.

Tucker officially resigned from the committee, its director of public affairs, Gary Caruso, said yesterday.

"His official folder reflects his resignation," Caruso said, adding that the committee would not address "personnel matters" related to Tucker's leaving.

He pursued his own sources, Tucker said, because he believed that was the committee's mandate.

Otherwise, he said, the committee was depending on the same agencies it was investigating for information.

The CIA, DIA and Defense Department "cooperated superficially," Tucker said, but the information in their briefings "was not very helpful."

The Pentagon denied that troops had been exposed to Iraqi chemical weapons during the 1991 Gulf War, until the revelation last June that thousands of troops were exposed to low levels of poison gas when they blew up an Iraqi munitions dump in Khamisiyah, Iraq.

"The idea of exposure," Tucker said, "was rejected out of hand" by the Pentagon while he was on the committee staff.

'I think the evidence of exposure is overwhelming.'

— Jonathan Tucker, former investigator

He said his own inquiries, through field reports, interviews and unreleased military documents, showed consistent indications of exposure.

He cited one instance in which Navy Construction Battalion (Seabee) sailors reported skin blisters and respiratory ailments when a toxic cloud passed over their installation at Al Jibayl on the Saudi Arabian coast.

Marines who entered and searched abandoned Iraqi bunkers in Kuwait, he said, reported finding munitions with unusual markings, which they suspected were chemical weapons.

In one case, he said, a container began hissing when troops disturbed it.

Other field reports cited detection of poison gases by German "Fox" vehicles equipped with sophisticated chemical analysis devices and by troops carrying U.S. M-256 chemical detection kits.

Many of these reports, he said, were "completely discounted" by the Pentagon.

Interviews with military medical personnel who worked in field hospitals showed there was no large-scale use of chemical weapons, Tucker said.

"They (troops) were not falling like flies," he said, "which is what I was told they would have expected if the weapons were used. But that doesn't rule out that low-level exposure did occur."

"I think the evidence of exposure is overwhelming," Tucker said. "The link to Gulf War syndrome is less compelling but sufficient to warrant more research."

The presidential committee investigators talked to "hundreds of individuals and groups of veterans," Caruso said.

"The whole objective of the committee was to go out and talk to as many sources as possible."

A draft copy of the report leaked to the New York Times last fall, Tucker said, "concluded positively that there was no link to chemical weapons and Gulf War illnesses."

The report due to be released next week, Tucker said, "was possibly rewritten or hedged" since the draft report.

Caruso said it would be "impossible" for the newspaper to have obtained a copy of the report.

"One copy went to the President Tuesday evening," he said. "The rest of the copies are in a locked office here. No one has seen it except for the president."

The Times may have developed its story, Caruso said, from testimony in open committee hearings. He added that he could not comment on the contents of the report until it is officially released.

Political and economic implications are involved in linking Gulf War illnesses and troops' exposure to chemical weapons, Tucker said, in terms of the cost of veterans' compensation, the revealing of a major military vulnerability and the thought that the Gulf War was a more costly victory than originally thought.

Tucker said he is scheduled to testify Jan. 21 on Gulf War illnesses before the House Subcommittee on Human Resources and Intergovernmental Relations, chaired by Rep. Christopher Shays, R-Conn.

Tucker has a bachelor of science degree in biology from Yale University, a master's degree in international relations from the University of Pennsylvania and a doctorate in political science from the Massachusetts Institute of Technology, with a concentration in defense and arms control studies.

WEST

Kids Gone Bad

Deadly drama from the juvenile justice system / Page 10

PERSPECTIVE

Why I Fought Newt

Rep. Tom Campbell explains bold move against Gingrich/ 1C

Green Software

Programs for gardeners and landscapers/ 1F

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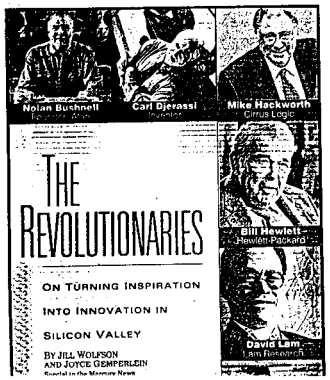

THE REVOLUTIONARIES

ON TURNING INSPIRATION INTO INNOVATION IN SILICON VALLEY

BY JILL WOLFSON AND JOYCE GEMPERLEIN
Special to the Mercury News

GULF WAR SYNDROME

Researchers cry foul

■ Report under fire: Scientists say government reined them in.

BY TRACY SEIPEL
Mercury News Staff Writer

MONTEREY — Jonathan B. Tucker says the government isn't telling the whole truth about gulf war syndrome.

Like others who have researched its mysterious symptoms, the weapons analyst is troubled by last week's findings that there is no scientific evidence linking exposure to nerve agents, pesticides or medication to the poor health of tens of thousands of gulf war veterans.

Tucker said he was dismissed from the president's official investigation for disobeying orders not to interview certain veterans advocates and government whistle-blowers. That puts him in the company of several researchers working with gulf war veterans, who charge that their work has been ignored and that they have been targeted for termination by the government agencies that employ them.

They contend that last week's official committee report — the result of 18 months of official research — isn't reliable because it has dismissed important studies that support a link between the illnesses and low-level chemi-

See GULF WAR, Page 6A

A TIDE OF CHANGE

Floods aren't expected to slow flow of residents into Central Valley

ATTACHMENT E (cont.)

Scientists say U.S. impeded study of vets

■ GULF WAR

from Page 1A

cal exposures.

After all, they note, one day later, researchers in Texas came to exactly the opposite conclusion.

The 126-page report issued by the Presidential Advisory Committee on Gulf War Veterans' Illnesses concluded that wartime stress — not chemical exposure — was the primary factor in the veterans' complaints. But, the report criticized the Pentagon for its investigation of the issue and called for further study into long-term health effects of low-level exposures to chemical warfare agents.

"I was trying to pursue the truth as best I could, and my efforts were being unduly constrained," said Tucker, 42, who is now director for Chemical/Biological Weapons Proliferation Issues at the Monterey Institute of International Studies.

"I took our mandate from the president very seriously: to leave no stone unturned in getting to the bottom of the issue to find out what was making the vets sick. I felt I had to analyze evidence from all possible sources," Tucker said of his four-month-long staff experience.

> "I was trying to pursue the truth as best I could, and my efforts were being unduly constrained."
>
> *— Jonathan B. Tucker, gulf war syndrome researcher*

Similar story in L.A.

Dr. William Baumzweiger, a Los Angeles-based psychiatrist, tells a similar story: he says his studies of 60 Persian Gulf War veterans at a Los Angeles Veterans Affairs clinic during his fellowship there have been suppressed by officials.

"They threatened to fire me when I started looking at these guys," said Baumzweiger. "They were very upset with me. They said the policy was that there was no such thing as gulf war syndrome — that they were all psychiatric cases. I said, 'This is not psychiatric.'"

Baumzweiger said he was able to keep his job only after intervention by Rep. Christopher Shays, R-Conn., who has been conducting hearings on the illnesses, and Sen. Barbara Boxer, D-Calif.

A similar scenario unfolded two months ago at the VA Medical Center in Lebanon, Pa., where Dr. Katherine Murray Leisure, a nationally known infectious disease specialist who is treating gulf war vets, managed to keep her job only through political pressure.

VA officials have said that necessary budget cutbacks prompted Leisure's proposed termination, not her work. Baumzweiger's bosses say he was engaged in research he was not specifically hired to do, and Tucker's former employers say he misrepresented his experience.

But Tucker is not persuaded by these explanations.

'Premature' report

Tucker said the panel's report was "premature" in concluding that illnesses reported by gulf war vets — ranging from chronic fatigue and joint pains to blurred vision and rashes — were related to stress.

"I don't think they have the full picture of the range of information available on chemical-biological exposures," he said. "Having spoken to many vets, I find it hard to believe all these symptoms of this syndrome are attributable to stress."

President Clinton extended the committee's work for nine more months to insure independent oversight of the on-going Department of Defense investigation into the chemical and biological issues. But Tucker does not believe the oversight will be adequate.

"It won't be the same as a staff of fully trained, independent investigators looking into this issue, who are not beholden to the powers that be in the Department of Defense," he said.

Tucker's government assignment began in August of 1995. To prepare for the job, he read histories of the war before arranging briefings with officials from various government agencies, including the Central Intelligence Agency, the Defense Intelligence Agency, the U.S. Army Chemical School and the U.S. Chemical and Biological Defense Command.

At each agency, he said, he asked the same questions. And at each, he received similar answers.

'The company line'

"I repeatedly heard the company line: There was no deployment of Iraqi biological or chemical weapons into the theater of war; there were no indirect exposures from bombing of Iraqi chemical weapons production or storage facilities, and there was no Iraqi use of chemical or biological weapons," he said.

Along the way, he said he was referred to a Senate committee report that included extensive testimony by veterans of low-level exposures during the war. He sought out the Pentagon's own Web site on the Internet that included dozens of declassified intelligence documents that referred to the presence of chemical weapons in the gulf war zone.

Tucker said that when he asked Pentagon officials about the documents posted on its GulfLINK Web site, they told him the information in the documents had never been substantiated.

"They were repudiating their own reports," said Tucker. "If nothing else, I told them it was confusing to the vets to put those documents on the Internet and then say none of them were valid. I felt compelled to investigate further," he said. Some of the reports were later removed by intelligence officials.

Even the presidential advisory committee's members admitted in their report that the Pentagon's early efforts to investigate the presence of chemical and biological weapons were "superficial" and "unlikely to provide credible answers."

The story changes

For years, the Defense Department denied that American troops had been exposed to chemical agents during the gulf war. But in June 1996, the Pentagon announced that U.S. soldiers destroyed an Iraqi munitions depot in Kamisiyah in March 1991. Officials now believe more than 20,000 troops may have been exposed to chemicals in the incident.

"Until Kamisiyah, the incidents were rejected out of hand," Tucker said. "I personally think Kamisiyah was the tip of the iceberg."

Tucker said he also interviewed veterans and their advocates who offered him eye-witness accounts of chemical exposure, and former Central Intelligence Agency analysts offered similar evidence. But as he consulted with these sources more frequently, he said, he was warned to stop contacting them.

Tucker said the committee's executive director, Robyn Y. Nishimi, told him through e-mail and in conversation to work through "official channels."

"I felt it was unconscionable that I was relying on information given to us by the agencies that the Presidential Advisory Committee was supposed to oversee, particularly after it became clear that they were not being completely forthcoming," Tucker said.

Jonathan B. Tucker says he was dismissed from the president's probe of gulf war syndrome for asking questions that the government didn't want answered.

JUDY CALLON — MERCURY NEWS

On Dec. 1, 1995, he said Nishimi called him into her office and fired him. A few weeks later, Tucker said, he submitted a letter of resignation. "I did not leave voluntarily," he said.

Repeated calls to Nishimi were not returned, but a spokesman for the panel took issue with Tucker's story.

"Our whole investigation was based on talking to as many sources as possible," committee spokesman Gary Caruso said. Tucker's allegation that he was not allowed to interview certain people is "nonsense," he added.

"I don't know what his motivations are," Caruso said. "The official personnel action was that he resigned from the committee."

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Chicago Tribune

Sunday, January 26, 1997

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SUNDAY'S TRIBUNE

SPORTS

Ditka back in the saddle

The man whose Bears won a Super Bowl will return to the NFL as coach of the New Orleans Saints.

- If nothing else, this ought to be fun, Bob Verdi writes.
- Former Bears wonder whether he'll be able to hack it this time around.
- Super Bowl: Green Bay vs. New England, 5:18 p.m. kickoff.

TRAVEL

-hing or Maui

-ter trips that are hot and, well,

Trials, tribulations wre... court

By Ken ...

'Clean' gulf war turns messy

Some reported incidents of U.S. troops' exposure to toxic chemicals in the gulf

Jan. 19, 1991. Al Jubayl, Saudi Arabia.

That afternoon Outside King Khalid Military City, Saudi Arabia.

March 1991. Near Khamisiyah, Iraq.

By Charles Leroux

From the vantage point of the living room couch, the battles of the 1991 Persian Gulf war seemed to have a video game aura. Image after image illustrated the "surgical" quality of allied airstrikes upon an enemy lacking the way or the will to hit back.

America's Joes and Janes came marching home after a relatively swift and, for them, painless victory. Of a force of 697,000 U.S. troops, 148, about ⅕ of a percent, had died in action.

"But today," said Jonathan B. Tucker, a former senior staff member of the Presidential Advisory Committee on Gulf War Veterans' Illnesses, "we're seeing that the war wasn't painless after all."

As of October, 96,000 gulf war vets had asked to be put on record with the Veterans Affairs Department and the Department of Defense as having health concerns they suspect may be tied to service in that war. About 90 percent of these vets have been found to be, in fact, ill, some with diagnosed disorders, others with ailments or clusters of ailments that don't fit neatly as symptoms of specific diseases.

These ailments include fatigue, muscle and joint pain, psychiatric problems, breathing difficulty, incontinence, headache, sexual dysfunction, rash, loss of balance, loss of strength, hair loss and memory loss. The

SEE GULF, PAGE 6

Staff photo illustration

...been a judge for 27 years, then I introduce myself, I ...dge Heiple, whether it's to ...ger or a police officer. It ...occurred to me that I ...et in trouble by introduc... ...self as Judge Heiple."

...s, a balding, bespectacled ...who could challenge the ...omatic Dennis Rodman ...of controversy, said the ...have no connection to

SEE HEIPLE, PAGE 8

...'s ...ar

...Gregory ...was served coffee from an ornate urn in the White House Map Room last year, he sweetened a different kind of pot.

The Oyster Bay, N.Y., software executive donated $10,000 to a political fund of the Democratic National Committee.

Three of his companions sipping coffee with the president in the White House that June morning also opened their checkbooks just days before the meeting, donating a total of $87,500 to Democratic accounts.

...tetan guerrillas come forward to discuss an episode that both the United States and the Dalai Lama's government-in-exile would prefer to forget.

PHILIPPINES

Ocean

By Paul Salopek
TRIBUNE STAFF WRITER

KATMANDU, Nepal—The first Americans Nawang Gaylsen ever saw had small, silver eagles pinned on their caps.

Nawang will never forget those eagles. They seemed auspicious, like totems of victory or success. Today, his face wrinkles into a sad smile remembering this.

The Americans came, he said, in a big turboprop plane, a gleaming machine that he and other awed Tibet-

ATTACHMENT F (cont.)

Gulf

CONTINUED FROM PAGE 1

vets report the ills as ranging from nagging irritation to total debilitation.

But not all the pain that lingers from the confrontation with Saddam Hussein relates to disease. Some of the hurt comes from vets' sense that their government is unsympathetic and will go to great lengths not to have to pay for their pain. And not all the concern over the messy legacy of this supposedly tidy conflict comes from veterans.

The public, too, has become mired in this divisive controversy. One might think the government would have figured, by now, how to avoid such public relations nightmares. Sadly, it hasn't.

Tucker blames that on a mid-level bureaucratic inability to admit mistakes. Though top-level officials are promising fuller disclosure, the debate over gulf war syndrome has become exactly what the White House especially hoped it would not—a stew of medical murkiness and political maneuvering with the aroma of *deja vu*.

For 20 years, some Vietnam veterans struggled to win government recognition of the damage done them by the military's use of the defoliant, Agent Orange. Also, in claims dating back a quarter century and more, some Americans in and out of the military have tied persistent ailments to exposure to radioactivity from Pentagon nuclear weapons tests or accidents. Eventual government acceptance of many of these claims came only after stubborn denials of any liability-implying connection between exposure and illness.

Shortly after the gulf war ended six years ago, what would become a flood of health complaints began to be reported, first from the 123rd Army Reserve Unit from Lafayette, Ind., then the Reserve Naval Mobile Construction Battalion 24 from five states in the Southeast, then a unit of the Pennsylvania Air National Guard.

The unexplained ailments came to the attention of the media; soon, questions were being asked about a mystery illness consisting of a group of symptoms with no clear link to a common cause, a gulf war syndrome.

The White House, Congress, veterans groups, government agencies and health organizations sponsored investigations and issued reports. Each headline seemed to contradict the one previous.

The Defense Department adopted a stance reminiscent of the Agent Orange and radiation controversies—denial. It cited a study showing that gulf war vets suffered no greater rate of mortality or illness than would be seen in any other group of 700,000 Americans of similar ages. Conversely, a later study would show significantly higher rates of illness.

"Is there a mystery illness? No, there is not," said Stephen Joseph, assistant secretary of defense for health affairs, at a conference in 1995.

The Defense Department emphasized stress as a cause of symptoms. Certainly stresses abounded in the gulf, not least among them the rumors that biological and chemical weapons would be used against allied forces. But as one vet expressed it to investigator Tucker, "It wasn't the war that stressed me out as much as not being taken seriously by the doctors at the VA hospital."

The gulf war theater was awash in chemicals. There were fuels and solvents and exhausts aplenty; the acrid smoke of oil well fires at the end of the war; flea collars; super strong military-issue insecticides; vaccines against biological warfare agents; the alcohol substitutes honoring the Islamic host's ban on alcohol.

Of course, the main chemicals of concern were those in enemy weapons. As to those, the Defense Department affirmed the findings of the war's end report to Congress by the Pentagon that there had been no evidence that troops had been exposed to Iraqi biological or chemical warfare agents.

That wasn't what some vets were saying.

Members of Reserve Naval Mobile Construction Battalion 24, who had been stationed near the Saudi Arabian port city of Al Jubayl recalled the early morning hours of Jan. 19, 1991. They saw a flash of red light in the cloudy sky, followed by a double explosion and a shock wave strong enough to topple tents and knock soldiers to their knees. The loudspeaker announced, "Confirmed chemical agent. Don gas masks!"

The reservists said they smelled a sharp odor and saw a yellow mist. They felt their faces go numb and a burning sensation on the skin, noted a metallic taste in the mouth, "like sucking on a penny."

That afternoon, the sensitive instruments of a Czech chemical defense battalion hired by the Saudis sampled the air north of King Khalid Military City. They sensed sarin (the nerve gas Japanese terrorists more recently released in the Tokyo subway). Similar detections in the same area occurred the next afternoon and the morning after that.

After the war, troops cited a March 1991 incident in which Army combat engineers blew up a munitions dump near Khamisiyah, Iraq. Again, the Defense Department denied exposure. But the Pentagon later admitted that one bunker had contained 8.5 metric tons of sarin and a related chemical.

The more the government denied, the more grass-roots gulf vets advocacy groups seemed to sprout. Within the government, whistle-blowers appeared or were created. The sort of thing that happened to Jonathan Tucker added to the sense of something at least high-handed if not under-handed going on.

As an experienced and respected chemical and biological arms control expert, Tucker had been hired by the presidential committee which, in 1995, had been asked to prepare a report on the unexplained ailments of gulf war veterans. President Clinton said the committee was to "leave no stone unturned" in its investigations.

However, after only four months of service, on the eve of a trip to a conference to deliver a preliminary report Tucker says his direct supervisor had praised, he was abruptly fired.

Tucker says the staff director's only expression of displeasure with his work was that he had been asked to cut off contact with government whistle-blowers and those especially vehement representatives of veterans' groups, people he thinks the committee saw as being "off the reservation." During a government furlough, his phone mail was found to contain calls from just those sorts of people.

Now, he is director of the Chemical and Biological Weapons Nonproliferation Project at the Monterey Institute of International Studies in California. In a telephone interview, he said he's a whistle-blower himself, "a role I'm growing into."

On June 21, 1995, the Pentagon admitted that at least 20,000 troops could have been exposed to low levels of nerve gas, the first crack in a wall of denials. Tucker says that "what we've heard about exposure may be just the tip of the iceberg." He speculates that the cause of the gulf vets' ailments will turn out to be the synergistic effect of more than one sort of exposure. He laments the fact that Defense Department denials have delayed appropriate research funding for years.

The presidential committee report, released Jan. 7, called the Defense Department's early efforts, "superficial" and lacking in credibility. It called the lack of research, "a disservice to the veterans and the public."

Last Wednesday, Pentagon special assistant for gulf war illness Bernard Rostker seemed to concur. He told a House subcommittee: "The effort we had was understaffed, poorly focused and inadequate to the job."

Tucker thinks the presidential committee report could have had a more independent, investigatory stance. "The committee came down hard on the DOD but should have done more aggressive oversight of the CIA's investigation of possible exposures."

The Pentagon's Rostker told a veterans' group Wednesday that next month he will release "a status report to the American people of what we know, when we knew it, and what actions we plan to take."

Americans should hope that report will help all of us begin to recover from the ills of gulf war syndrome.

Charles Leroux is a Tribune senior writer.

Mr. SHAYS. Thank you, Doctor. I just want you to note: Dan Miller is a good friend of mine. And I believe your Congressman just alerted me that you would be coming, and was very happy that you would be testifying. And I work closely with him on this and some other issues. So, it's very nice to have you here.

Mr. TIEDT. Thank you very much. Mr. Chairman and members of the subcommittee, there is a 30-year record of scientific evidence addressing Gulf war syndrome. In view of the two panels previously, I must emphasize it is not as bleak as we were led to believe.

Mr. SHAYS. Doctor, I'm going to have you pull the mic a little toward you now.

Mr. SANDERS. Closer.

Mr. SHAYS. And move it up just a little bit. That's great. Thank you.

Mr. TIEDT. Everyone had hoped that the White House Presidential Advisory Committee would have examined the scientific evidence. But most of the critical evidence was absent from the report that was issued in January of this year. This scientific evidence shows that Gulf war syndrome was easily predictable. The symptoms of Gulf war syndrome match the toxic effects of PB, sarin and pesticides, all toxic enzyme inhibitors. The symptoms are diverse because the affected enzymes have distribution all over the body in our central nervous system and around our periphery. Chemical inhibition of the most studied of these enzymes causes stunning nerve and muscle degeneration moments after a single dose, as well as an array of hormonal, cardiac and development abnormalities.

Extensive research from various points of view shows that this toxicity is worsened by activity and stress. One look at the electron microscope pictures would shock anyone. Not all the damage is reversible. My team's research at the University of Maryland during the mid-1970's was comprehensive. We concluded that enzyme inhibitors are toxic, even in patients with myasthenia gravis. These patients are less susceptible than healthy and active individuals to the toxic effects of these agents.

Our work was followed by an explosion of research by DOD during the 1980's, the most relevant of which was produced by my coauthors and colleagues still at the University of Maryland and at the Aberdeen Chemical Warfare R&D Center. We have a very active R&D apparatus throughout the United States. I know of at least 12 very active DOD laboratories. DOD established by the early 1980's that PB causes persisting "counterproductive consequences" and that PB is worthless by itself as a chemical warfare protectant. Moreover, PB reduces the protection provided by effective protective agents.

DOD research also found that at sublethal dosage PB is more dangerous and more toxic than sarin nerve gas. Hundreds of thousands of soldiers were ordered to take PB. Most of them had acute side effects. There was no benefit to balance the certain and substantial risk. If the goal was to protect our soldiers, DOD used the wrong drug.

Last year, research added important new findings to the already large data base: One, stress makes the blood brain barrier leaky to

PB and enhances PB's central nervous system toxicity. Two, behavioral changes begin weeks after PB treatment ends. And three, Gulf war veterans display objective signs of nerve damage.

PB's use in the Gulf war was a senseless violation of the Nuremburg code. So was FDA's waiver of informed consent for our soldiers. Not supplying our soldiers with the required brochures describing PB's side effects was a violation of FDA's waiver. The PB experiment adds to the already long record by the military to conduct involuntary, meritless and hazardous experiments on our soldiers.

Extensive scientific evidence also exists about organophosphate-induced neurotoxicity, explaining why EPA and most States have strict standards for our homes and workplaces. Mr. Chairman, I hear you touch that point all the time. It's a very significant point. In the real world we know these chemicals are very hazardous. Sarin and pesticides are organophosphates.

Exposure to the nerve gas sarin is sufficiently confirmed. I believe there are tens of thousands of chemical alarms. I believe we should also replay the press conference by Dr. Rostker last December 5, wherein he testifies at the press conference that at Khamisiyah there was extensive recognition of chemical warfare sarin-containing warheads, including the drilling of holes within those warheads, taking a sample, measuring it, determining and confirming that it was sarin gas prior to destruction. Of course, we must ask where are those records.

We know that long-term and delayed onset neurotoxicity can result from exposures not producing acute symptoms. There is extensive DOD research on that. We know our soldiers were exposed to repeated doses of pesticides and unique high-dose insect repellents. Some pesticides—malathion comes to mind—are converted to even more dangerous chemicals by heat in air, just the conditions in the Gulf war. We know that repeated clothes launderings fails to prevent poisoning from contaminated clothes.

We also know that co-exposure to PB, sarin, pesticides and insect repellents make each other more dangerous, more toxic. Since many soldiers reported acute symptoms from these exposures, the probabilities of long-lasting neurotoxicity and its higher prevalence are greater.

Several epidemiologic studies of Gulf war veterans confirm what was easily predicted. A wide range of symptoms are significantly more prevalent in Gulf war veterans. The three studies in the Journal of the American Medical Association 3 months ago by Dr. Robert Haley and his team are very, very important.

They're also great work. The factor analysis is something to behold. These studies found neuropathy in Gulf war veterans and its association with exposure to nerve enzyme inhibitors. Psychological illnesses were ruled out for the observed brain and nerve dysfunction. The authors also noted a 1983 warning that PB would increase the likelihood of occurrence of chemical-induced neuropathy. This information presented the Presidential Advisory Committee in

September 1995 was also absent from the Presidential Advisory Committee's report.

There is no doubt that enzyme inhibitors caused toxicity to our troops. No other explanation has as much relevant and mainstream evidence or explains as many cases. Thank you.

[The prepared statement of Mr. Tiedt follows:]

GULF WAR SYNDROME
House Government Reform and Oversight Committee
Human Resources Subcommittee

4/24/97 TESTIMONY BY

Thomas N. Tiedt, Ph.D.
Bradenton, FL
PO Box 422, Longboat Key, FL 34228

Mr. Chairman and members of the subcommittee:

Thank you for today's opportunity to review the extensive and very relevant 30-year record of scientific evidence addressing Gulf War Syndrome.

As a neuroscientist for 23 years, I am deeply concerned by official statements in contradiction to this large record.

Everyone had hoped that the Presidential Advisory Committee (PAC) would have examined this evidence. But, virtually none of it was included in its report to the President (1-115). The incriminating DOD research was entirely absent (26-32, 44, 53, 58-62, 64, 71-73, 81, 101).

> I provided this information in response to April 1995 and January 1996 White House phone calls, and presented it again at PAC's hearing last November. March 1997, PAC sent me a list of 25 important studies, all of which were also absent from the PAC report.

This evidence shows that Gulf War Syndrome was easily predicted.

The symptoms of Gulf War Syndrome largely match those of cholinergic syndrome, which results from inhibition of the life- and development-critical enzyme acetylcholinesterase (AChE).

> Matching symptoms include: red eye, blurred vision, tearing eyes, headache, gastrointestinal complaints, bronchial tightness and secretions, asthma, muscle cramps and pain, cardiac changes, fatigue and weakness, imbalance, confusion, myopathy and neuropathy, sleep disturbances, development abnormalities, rash, irritability, nervousness, memory loss.

PB (pyridostigmine), sarin, and organophosphate pesticides are examples of AChE inhibitors (110).

All AChE inhibitors cause stunning nerve and muscle degeneration moments after a single dose (10, 11, 23, 24, 26-34, 36, 38, 42-45, 47, 48, 51, 53, 56, 58-62, 64, 68, 70, 72, 74-80, 82, 97, 101-105), which worsens with multiple doses. These agents also cause an array of hormonal, cardiac, and developmental changes (20, 22, 37, 39, 40, 41, 46, 48, 49, 52,

55, 63, 66, 85, 86, 87, 90). Much is known of this form of excitotoxicity, which is enhanced by activity and stress (17, 18, 25, 26, 58, 65, 72, 78, 80, 88-90).

The point of contact a nerve makes with other cells is called the synapse. When a nerve is stimulated, an electrical signal travels down the nerve and causes release of a chemical messenger (neurotransmitter) from the nerve ending which in turn stimulates the nerve, muscle, or gland cells on the message-receiving side of the synapse.

Perhaps the most common nerve type in the body is cholinergic, ie they release acetylcholine (ACh) as the chemical messenger.

ACh is inactivated by the enzyme acetylcholinesterase (AChE).

Inhibition of AChE leads to excessive build up of ACh and excessive stimulation of the receiving cells (eg nerves, muscles, glands). Hyperactive cholinergic synapses produce an array of observable symptoms collectively known as cholinergic syndrome. Depletion of oxygen and toxic elevations of calcium produce cellular degeneration. Sufficient cholinergic damage might lead to Alzheimer's- or ALS-type symptoms, memory loss, or confusion. Enough chronic cell damage may predispose to auto-immune problems. Excitotoxicty has been associated with DNA brakes. We need to be careful about playing with neurotransmitters.

Measures which quiet nerve activity will reduce the side effects/toxicity. Events which enhance nerve activity, eg exercise and stress, will more rapidly and more fully induce excessive/toxic levels of ACh.

The numerous studies documenting PB toxicity used doses of 0.0036-5 mg/kg/day. The PB dose used in the Gulf War was 0.5-1 mg/kg/day. The PB dose used in Myasthenia Gravis patients is 1-25 mg/kg/day.

One look at the electron microscope pictures would shock anyone. That not all damage could be reversible is obvious. AChE inhibitors are classified as either reversible or irreversible. This refers to the different rates of recovery of AChE, a few minutes vs a few hours. PB is considered a reversible inhibitor whereas sarin and organophosphates are considered irreversible.

Repair mechanisms, while beautifully efficient, are not 100% effective at the microscopic level. The equivalent of intracellular scars may persist indefinitely. This is analogous to a car which is in an accident. Even when fixed, it may not run as

good as it did before.

Therefore, even though PB inhibits AChE relatively briefly, the well-known cellular damage from PB may persist indefinitely. Of course, PB may also have effects beyond AChE inhibition (61, 70, 103).

Due to the principle of biological variation, different cells and different individuals will experience different degrees of acute and chronic effects. The electron microscope pictures of PB-induced muscle degeneration reveal this variation clearly. Within the same photo destroyed cells can be seen adjacent to normal-looking cells.

My team's research at the University of Maryland during the mid 1970s about physiological and microscopic AChE toxicity was comprehensive (10, 11).

AChE inhibitor neuromuscular toxicity was first reported in 1969 (80, 112), including that it was prevented by procedures which decreased neuromuscular transmission but induced by stimulating neuromuscular transmission.

This raised the question whether the drugs used to treat MG contributed to the neuromuscular pathology characterizing this rare disease. Also, since it was known too little nerve activity was detrimental (eg, atrophy after nerve injury), that it appeared excessive nerve was actively toxic (much like running an engine at excessive RPM) posed a range of new questions about neurotrophic/regulatory mechanisms (8, 9).

Our research remains the longest-term most-comprehensive study in the field. Dramatic physiological and morphological disruption was observed within 30 minutes of a single dose of reversible AChE inhibitor. In some cells, the muscle in the area of nerve contact dissolved! The disruption persisted for months.

We concluded MG treatment with AChE inhibitors contributed to this disease's pathology. It was also clear too little AND too much nerve activity can be detrimental.

Our work was followed by an explosion of research by DOD during the 1980s, the most relevant of which was produced by my coauthors and colleagues at the University of Maryland and chemical-warfare R&D center in Aberdeen (26-31, 44, 61, 70, 81, 101, 103, 104, 105).

DOD established by the early 1980s that 1) PB would be

harmful in healthy individuals, 2) PB was worthless, even counterproductive, as a protectant against chemical warfare (30, 32, 42, 73, 92, 96-102, 113, 114), 3) PB was more toxic than sub-lethal doses of chemical warfare agents (31), and 4) higher levels of baseline nerve activity produced more toxicity than lower levels of baseline nerve activity (78, 80). There was no demonstrated benefit to balance the certain and substantial risk.

I understand PB was taken by about 500,000 soldiers (personal communication with Senate Veterans' Affairs committee staff June 1994). It has been reported 50-60% of soldiers taking PB have acute side effects (34, 96).

If DOD really wanted to protect our soldiers, DOD used the wrong drug.

Findings establishing that PB is useless or counterproductive may be explained by 1) PB reduces the rate of recovery of AChE after inhibition from irreversible agents (eg, sarin and pesticides), and 2) PB shifts sarin binding from peripheral AChE sites to CNS sites (3, 32).

Gordon et al (98) warned in 1983 that PB use increased the likelihood that organophosphates-induced delayed polyneuropathy would occur if individuals were exposed to organophosphates (eg, sarin and pesticides).

Atropine protects against nerve agent exposure, not PB. However, atropine is no panacea; it is only an aid. Of course, we would not have needed a protectant if we did not supply Iraq with sarin in the first place (111).

Even in patients with the rare disease Myasthenia Gravis (MG) who are far less sensitive to PB toxicity, DOD research concluded PB had "counterproductive consequences" (31).

MG is an auto-immune disease attacking the neuromuscular junction - resulting in progressive loss of efficiency of neuromuscular transmission and weakness due to altered synaptic geometry, synaptic debris, and loss of ACh receptors.

AChE inhibitors help these patients by elevating ACh concentrations in attempt to overcome the barriers to normal neuromuscular transmission. For these patients, the benefit is worth the risk.

Without this neuromuscular pathology, AChE-inhibitor toxicity will occur at a much smaller dose. For example, while few MG patients report acute side effects from AChE-inhibitor therapy, 50-60% of soldiers report side effects (34, 96). Since soldiers would likely under-report side effects to not affect their

> medical record, the actual percentage of healthy individuals who would experience side effects is probably higher.

Substantial evidence exists about long-term toxicity from even small doses of sarin, organophosphates, and pesticides (3, 15, 16, 23, 96, 109).

Much is known about organophosphate-induced neurotoxicity and organophosphate-induced delayed polyneuropathy (23, 81, 83, 91, 109) - explaining why EPA has such strict standards for our homes and workplaces. DOD research has shown that long-term neurotoxicity can result from exposures not producing acute symptoms (81, 96, 109).

> "Organophosphate toxicity can be fatal. It accounts for almost 40% of all insecticide- and pesticide-related illnesses reported by the American Association of Poison Control Centers. Skin contamination is the most important route of occupational exposure...Organophosphates and carbamates, either alone or in combination with other pesticides, accounted for 20,850 (43.2%) of 48,282 insecticide- and pesticide-related poisoning cases...in 1989." (23) In the real world if not the DOD world, these chemicals are dangerous. Please also consider the debacle occurring now in Mississippi due to pesticide exposure.

Sarin exposure to many appears sufficiently confirmed. We know in fact our soldiers were exposed to large and repeated doses of pesticides and insect repellants, and in forms more toxic than that available to civilian populations (3). Since many soldiers reported acute symptoms from these exposures, the probabilities of lasting neurotoxicity and its higher prevalence are greater.

Several epidemiological studies of Gulf War veterans have confirmed what was easily predicted (1-4, 93, 94).

The 3 studies in JAMA last January by Dr. Robert Haley and his team are very important (1-3). These studies found neuropathy in Gulf War veterans and its association with AChE inhibitors. This information, presented to PAC September 1995, was also absent from the PAC analysis.

Reported last year were that 1) stress makes the blood-brain barrier leaky to PB - allowing enhanced CNS toxicity (17, 18), 2) behavioral changes begin weeks after PB treatment ends (22), 3) PB, sarin, and DEET toxicities are synergistic (24, 33, 96), and 4) Gulf War veterans display objective signs of nerve damage, which the authors associated with PB therapy (35).

There can be no doubt that nerve enzyme inhibitors caused toxicity to our troops.

> Anyone with a deficiency of one of critical enzymes (eg, AChE, neuropathy target esterase, paraoxonase, butyrylcholinesterase) would likely be more sensitive to AChE-inhibitor toxicity (3, 95).

Unfortunately, Gulf War Syndrome is not an easy disease. It probably has other causes as well and they should be evaluated. However, I know of no other explanation with as much relevant and mainstream evidence or that can explain as many cases.

I urge the subcommittee not to forget this evidence as so many have forgotten Bernard Rostker's announcement last December that sarin presence was confirmed prior to Khamasiya's bunker destruction by drilling holes into the chemical-warfare warheads and taking samples (115).

> To the Senate Veterans' Affairs Committee 1/29/97, General Norman Schwarzkopf said we intended to destroy chemical weapons bunkers in the strategic air campaign. I view of 1991 press accounts and the 1993 'Riegle Hearings', the current CIA/DOD concessions appear empty.

If no one uses expensive medical research, why do it?

> Where are the brochures DOD prepared and FDA required for our troops about PB toxicity? Where are the Fox vehicle GC/MS records? Where are the air/soil/clothing/warhead samples? Why do we keep buying testing and warning equipment DOD claims produces 100% false data?

All of this information appears relevant to the Chemical Warfare Convention discussion. GAO just estimated (106) it will take over $25 billion to clean up our chemical-warfare arsenal, which is only lightly guarded and already enough to kill 90% of the American population. We hear the claim that the US chemical industry will lose if it is not passed. We must end the chemical-warfare business, not encourage it.

Last month in JAMA I stated that use of PB was a violation of the Nuremberg Code, and concluded, "more attention is needed on the long record by the military to conduct involuntary, meritless, and hazardous experiments on soldiers." (6, 7)

> The Nuremberg Code states, "No experiments should be conducted where there is an a priori reason to believe that death or disabling injury will occur." (14)
>
> The use of PB was an experiment. It was the first time we used PB for such a purpose. There were no data supporting its use or the way its was used. Sadly, no records remain or were kept.

Thank you.

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prepared by T. N. Tiedt

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JAMA, March 5, 1997—Vol 277, No. 9

The Nuremberg Code, Informed Consent, and Involuntary Treatment

To the Editor.—As Dr Grodin and Mr Annas[1] mention, another area wherein the Nuremberg Code is not merely World War II history is the especially difficult situation in which the informed consent mandate is waived by government agencies for active-duty soldiers because of presumed battlefield exigencies—as was the case when Gulf War troops were ordered to take pyridostigmine for an experimental purpose. This waiver and the process by which it was accomplished compel serious examination.

The Food and Drug Administration (FDA) informed consent waiver was based on production of safety and efficacy data for pyridostigmine as a protective agent against nerve gas attack. Several animal studies have documented the dangers of pyridostigmine and its futility to protect against nerve gas exposure.[2] In addition, FDA's Investigational New Drug (IND) approval required coadministration of atropine, the actual protectant against nerve gas lethality. In fact, however, atropine was not administered. The US Department of Defense (DOD) also announced recently that it failed to supply FDA-required brochures about pyridostigmine hazards to the soldiers so as not to tip off Saddam Hussein of its experiment.[3] Moreover, no records were kept about or re-in from one of the world's largest clinical experiments, yet another unmet IND requirement.[4]

Several studies have revealed higher incidence of chronic symptoms and neurotoxicity among Gulf War veterans,[5] serving as a scientific foundation for the syndrome reported by more than 80 000 veterans so far. Another report[6] suggests that stress enhances the transfer of pyridostigmine across the blood-brain barrier and may subsequently disrupt central cholinergic synapses, analogous to the well-known damage caused by pyridostigmine at peripheral cholinergic synapses.

It would appear that a serious Nuremburg Code violation produced a likely contributor to the Gulf War syndrome, as well as a serious breach of human rights. Clearly, more attention is needed on the long record by the military to conduct involuntary, meritless, and hazardous experiments on soldiers.

Thomas N. Tiedt, PhD
Longboat Key, Fla

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In Reply.—

We agree with Tiedt that "more attention is needed on the long record by the military to conduct involuntary, meritless, and hazardous experiments on soldiers," but nonetheless would note that the absence of detailed exposure data and follow-up studies continue to make definitive statements concerning neurologic injury related to the Gulf War difficult.[1]

The rule for waiver is a violation of the Nuremberg Code and should not have been adopted in the first place. It is past time for the FDA and the DOD to rescind it.[2]

Michael A. Grodin, MD
George J. Annas, JD, MPH
Health Law Department
Boston University Schools of Medicine and Public Health
Boston, Mass

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Mr. SHAYS. Thank you, Dr. Tiedt. Dr. Somani.

Mr. SOMANI. Mr. Chairman Shays.

Mr. SHAYS. Dr. Somani, I'm going to ask you—I'm sorry, I keep interrupting. We really want to hear you out. I keep interrupting everyone here. But if you would lower your mic I think it would help. Lower this mic. Bring it down. Thank you. That's great. Can you still see your page?

Mr. SOMANI. Oh, yes.

Mr. SHAYS. OK. Thank you. Good to have you here.

Mr. SOMANI. Thank you.

Mr. SHAYS. And, again, I should thank all three of you because you've been here since before 10 a.m. And it's very appreciated you would sit through this entire hearing. And your testimony is very valued. Thank you.

Mr. SOMANI. Mr. Chairman Shays and Congressman Sanders, I thank you for giving me an opportunity to testify before you. I request you to include the entire written testimony for the record.

Mr. SHAYS. That will happen.

Mr. SOMANI. My testimony is based on the premise that the Gulf war veterans were taking pyridostigmine as a precautionary measure against potential exposure to nerve agents—for example, sarin—and they were exposed to insecticides and other harmful chemicals, and that they were also under physical stress which can modify the effects of such exposure.

The literature suggests that sarin can be responsible for delayed neurotoxic effects which may not appear until years after a low level of exposure. Although pyridostigmine is not normally taken up by the brain, it crosses blood brain barrier under conditions of physical stress and causes central nervous system effects. Insecticides, insect repellents and other chemicals can also contribute to neurotoxic effects of nerve agents as sarin, soman, tabun and Vx and they are important weapons of chemical warfare. Sarin has been used as a chemical warfare agent since World War II. More recently, it was used during the Iran-iraq conflict. Sarin was also used by terrorists as a weapon in Japan.

Reports from the Defense Science Board and Committee on Banking, Housing and Urban Affairs indicate that the Desert Storm veterans might have been exposed to a low level of sarin. If that's the case, then the veterans may suffer from the delayed neurotoxic effects of the low level of sarin. Although we have a treatment for a single dose toxicity, there is no treatment, however, for the delayed neurotoxicity. Delayed neurotoxicity was first reported in the 1950's.

German personnel exposed to nerve agents during World War II suffered from neurological problems even 5 to 10 years after their last exposure. Long-term abnormal neurological and psychiatric symptoms have also been seen in personnel exposed to sarin in sarin manufacturing factories. The symptoms of the delayed neurotoxicity include impaired concentration and memory, depression, fatigue, irritability in those working in factories where nerve agents were manufactured.

The chronic delayed neurotoxic effects are seen in animal experiments after administration of organophosphates such as sarin. These effects are difficulty in walking and paralysis. These are due

to organophosphate-induced delayed neurotoxicity, what we call OPIDN. And this OPIDN was attributed to the inhibition of the enzyme, neurotoxic esterase in the nervous system, and also the degeneration of the axon. That means, the message pathway from nerve cell to nerve cell is impaired. Recently, Haley could explain the mild impairment of the nervous system functions in the Gulf war veterans based on their epidemiological studies.

Mr. SHAYS. He's done what? I'm sorry. Speak a little more slowly. I'm just missing some of your words. What was the last point you made?

Mr. SOMANI. Based on their epidemiological studies, they attribute the number of veterans. Similarly, a British study also reported neurological dysfunction in veterans. I wish to take a moment to speak about the pre-treatment drug, pyridostigmine. I did my Ph.D. on pyridostigmine and sister drug neostigmine. Recently, I also worked on another drug, physostigmine. These are all the same sort of drugs, which work in the central nervous system and the peripheral nervous system.

Pyridostigmine is a charged compound. This is a positively charged drug which does not enter into the brain. This has been used for more than 50 years in the treatment of myasthenia gravis disease. Pyridostigmine is used as a pre-treatment drug against nerve agents such as sarin. The protective effect is attributed to the capacity to form a reversible complex with a portion of the enzyme acetylcholinesterase, thereby preventing the inhibition of this enzyme by the nerve agent. Pyridostigmine is metabolized to another charged compound. And both of these are excreted in the urine.

However, both the drug and its metabolites seems to accumulate in the muscle and in the cartilage—cartilage tissues, which are present in the ears and nose and the soft tissues. Since exercise—as we take exercise, our cardiac output increases, the blood flow to the muscle mass increases 10 times, and the blood flow to the liver increases. And these drugs are metabolized, are degraded in the liver. For example, the sister drug, like physostigmine on which we worked, the half-life of that increased—half-life is the amount of the time the drug stays in the body—and the clearance—the drug has to be cleared from the body—the clearance has decreased, indicating that the drug and its metabolites stay in the body for a longer time, thereby causing more effect.

Recently, Friedman gave doses of pyridostigmine to mice, and they were subjected to forced swim. That means that the mice were under stress. This positively charged drug entered the brain and inhibited acetylcholinesterase, causing more toxicity. This drug, which is a peripheral drug, has become a central drug, acting under the central nervous system. In another study, rats were administered with pyridostigmine for 14 days. The rats were also given physical exercise. The combination of physical exercise and pyridostigmine caused muscular damage.

In conclusion, based on the recent experimental evidence and the similarities of the symptoms of the delayed neurotoxicity reported by workers in the organophosphate industry and also by Desert Storm veterans, I'm inclined to suggest that the Gulf war syndrome may be due to low-level exposure to sarin.

Mr. SHAYS. Low-level exposure to what? Sarin. OK.

Mr. SOMANI. Yes. By sarin. The symptoms are due to low-level exposure to sarin. Pyridostigmine in combination with physical exercise can contribute to neurotoxic effects. Finally, the simultaneous exposure to insecticides and other chemicals under physical stress may have initiated the neurotoxicity.

Mr. SHAYS. Your testimony—are you done?

Mr. SOMANI. Thank you.

[The prepared statement of Mr. Somani follows:]

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Satu M. Somani *1*

ABSTRACT

Gulf War Syndrome: Potential Effects of Low-Level Exposure to Sarin and/or Pyridostigmine under Conditions of Physical Stress

Years after Desert Storm, many veterans continue to suffer from medical and psychological problems such as fatigue, headache, joint pain, gastrointestinal disorders, and other ailments collectively labeled the 'Gulf War Syndrome' (GWS). This testimony is based on the premise that the Gulf War veterans were taking pyridostigmine (PYR) as a precautionary measure against potential exposure to nerve agents (e.g. sarin) and they were exposed to insecticides and other harmful chemicals. They were also under physical stress that modified the effects of such exposure.

Nerve agents (sarin, soman, tabun and Vx) are potent weapons of chemical warfare. The lethal effects of nerve agents are caused by the irreversible inhibition of acetylcholinesterase and the resulting increase in acetylcholine levels in the nervous system. Examples of the lethal effects of nerve agents include salivation, lacrimation, tremors, convulsions, and respiratory failure. The toxic, harmful or poisonous nature of nerve agents is exacerbated by the fact that even if an individual were provided pre- or post-treatment, there is still a strong potential for such effects to continue because of **delayed neurotoxicity**. Further, while *acute* toxicity can be treated with atropine, oxime and diazepam, no treatment is available for delayed neurotoxicity.

Delayed neurotoxicity, first reported in the 50's, can occur 5 to 10 years after exposure to nerve agents. Its symptoms include impaired concentration and memory, depression, fatigue, and irritability in those working in plants where nerve agents were manufactured. Recently, studies have shown that organophosphate-induced delayed neurotoxicity (OPIDN) is due to inhibition of neurotoxic esterase enzyme in the nervous system, and histopathological-axonal degeneration This also produces muscular weakness and ataxia (difficulty in movement).

One drug that is used for pretreatment of nerve agents toxicity is **Pyridostigmine** -- a quaternary ammonium compound. Pyridostigmine is metabolized to **3-hydroxy-N-methyl pyridinium** and both are excreted in urine. It also seems to bind to mucopolysaccharides (chondroitin sulfate) and both the drug and its metabolites seem to accumulate in muscle and cartilaginous tissue. Since **exercise** increases cardiac output and causes a ten-fold increase in blood flow to muscle mass, physical exertion can alter the disposition of drugs in the body.

For example, the half life of physostigmine, a drug similar to PYR, increases with exercise and its clearance decreases, indicating an enhanced effect of the drug. Physical exercise also decreases acetylcholinesterase (AChE) activity in brain and muscle.

Recent studies have shown that PYR combined with free wheel exercise causes muscular damage and an increase in creatine phosphokinase in plasma as well as an increase in creatine excretion rate in urine. PYR and swim exercise opened the blood/brain barrier, which caused an increase in AChE inhibition in the brain. This AChE inhibition in the brain was comparable to the inhibition caused by physostigmine administration which penetrated the brain easily. Thus PYR, a peripheral nervous system drug, can act as a central nervous system drug under stress conditions.

In conclusion, based on recent experimental evidence and the similarities of symptoms of delayed neurotoxicity reported by workers in the organophosphate industry and also by Desert Storm veterans, the author concludes that GWS may be due to low-level exposure to sarin, intake of pyridostigmine, and exposure to pesticides and other chemicals. It is also concluded that the adverse effects of such exposure were amplified by physical stress.

I. GULF WAR SYNDROME

Many military personnel who were deployed in the Persian Gulf between August, 1990 and March, 1991 are seeking medical care due to unexplained illnesses, often referred to as the "Gulf War Syndrome" (Inst. of Med, 1995). Numerous symptoms of this unique syndrome have been reported; however, recent studies have shown that the illnesses affecting Desert Storm veterans represent a particular type of neurological injury involving the central, peripheral, and autonomic nervous system (Haley and Kurt, 1997; Jamal et al., 1996).

Epidemiological studies have indicated that some Desert Storm veterans may experience delayed chronic neurotoxic syndromes due to war-time exposure to a combination of chemicals that inhibits butyrylcholinesterase and neuropathy target esterase (Haley and Kurt, 1997). For example, most US and British troops used pyridostigmine bromide (30 mg every 8 hrs) during two weeks of air and ground war to protect them from potential exposure to nerve gases (Dunn and Sidell, 1989; Persian Gulf Veterans Coordinating Board, 1995).

The acute toxicity of nerve agents (Sarin, Soman, Tabun and Vx) has been extensively studied and summarized (see Somani et al., 1992). However, there are scant reports on long term health effects of low-level nerve agents. This is particularly true for **sarin**, a nerve agent that is suspected to have been present during the Gulf War (Defense Science Board, 1994; Committee on Banking, Housing and Urban Affairs, 1994). The delayed neurotoxic effects of sarin in mice with ten repeated inhalation exposures were reported by Husain et al. (1993, 1994). This study demonstrated the following effects of exposure to sarin:

1) behavioral: muscular weakness of the limbs and ataxia (difficulty in movement);
2) biochemical: inhibition of cholinesterase and neurotoxic esterase in brain, spinal cord, and platelets; and
3) histopathological: focal axonal degeneration in the spinal cord of mice.

Thus, it can be concluded that low-level exposure to sarin can induce delayed neurotoxicity.

II. NERVE AGENTS

Several aspects of nerve agents (sarin, soman, tabun and Vx) have been summarized by the author (see "Chemical Warfare Agents" by Somani, 1992). There, it was described that sarin (methylisopropyl phosphonofluoridate) is an organophosphate chemical warfare agent with a potent anticholinesterase property in humans. Sarin has been used as a chemical warfare agent since World War II. More recently, it was used during the Iran-Iraq conflict and, later, in the Gulf War (Ivarsson et al., 1992; Defense Science Board, 1994; Committee on Banking, Housing and Urban Affairs, 1994).

Official reports indicate that Desert Storm veterans might have been exposed to low dose sarin. However, given the similarities between sarin's delayed neurotoxic effects and the morbidity that was reported by Desert Storm veterans, the conclusion that the latter were exposed to sarin seems highly likely. It is this author's premise that these veterans continue to suffer from delayed neurotoxicity following exposure to sarin, a condition which could have been neither prevented, nor subsequently treated, through doses of pyridostigmine.

A. Acute Effects of Sarin

Exposure to organophosphorus nerve agents may produce acute cholinergic symptoms

(tremors, convulsions, salivation, lacrimation, and respiratory failure) that are transient, if not fatal. These acute neurotoxic effects are due to the inhibition of cholinesterase at neuromuscular junctions and neuronal membranes of the nervous system.

The effects of single low doses (1/49-1/9 of LD50) of sarin on behavior and motor performance were studied in male Wistar rats. The results of this study suggested that acute nontoxic doses of sarin affect the behavior of rats. Sarin seems likely to impair motor coordination/balance (Sirkka et al., 1990). Similarly, the effects of single low dose of sarin (12.5 and 50 micrograms/kg, intraperitoneally) on behavior were studied in male Wistar rats. The results of this study suggested that small doses of sarin have inactivating effects on the behavior of rats. Although these findings cannot be extrapolated directly to behavioral changes in humans, they indicate that subtle behavioral dysfunctions can also occur in humans at exposures which do not cause acute toxicity (Neiminen et al., 1990).

B. Chronic Effects of Low Doses of Sarin and Delayed Neurotoxicity

1. **Historical Aspects:** It has been reported that German personnel exposed to nerve agents during World War II suffered from neurological problems even 5 to 10 years after their last exposures (Spiegelberg, 1961; Stockholm In. Peace Res. Inst., 1975). Long term abnormal neurological and psychiatric symptoms have also been seen in personnel exposed to sarin in sarin manufacturing plants (Sidell, 1974; Duffy et al., 1979). It was not until 1951 that A. Wiess drew public attention to this topic by raising medical questions about the delayed toxicity of these agents (Sipri, 1975).

Spiegelberg from Germany was the first scientist to report on delayed neurological lesions caused by organophosphorus (OP) compounds, which are, in essence, pesticides. Since organophosphorus pesticides are closely related to nerve agents, generalized conclusions were drawn about delayed neurotoxicity from chemical warfare agents.

A reassessment was called for to look into the problems of delayed lesions caused by chemical warfare agents. The production of chemical warfare agents such as sarin, soman and tabun started soon after World War II. The increased production of these compounds also intensified research activity. But this research remained mostly secretive during the 50's. Former chemical warfare production and storage workers in Germany had advanced legal claims concerning their state of health. Furthermore, many of the pesticides manufactured on a large scale were structurally similar to the nerve agents.

Discussions on the delayed effects of organophosphate agents have been scant in literature. Durham et al. (1956) and Davies et al. (1960) showed that the neurotoxic phenomenon produced by organophosphate nerve agents in some poultry varieties were comparable to the manifestations produced in man (Sipri, 1975). In this regard, it is known that organophosphate compounds which are neurotoxic to chickens will also produce neurotoxicity in humans under appropriate conditions. Aldridge, Barne and Johnson in 1969 summarized various aspects of delayed neurotoxicity (Sipri, 1975). A synaptic evaluation of 536 civilian cases of alkylphosphate poisoning made by Pasi and Leuzinger (1970) led them to the conclusion that acute alkylphosphate poisoning in civilians did not result in delayed lesions (Sipri, 1975).

2. **Organophosphate Induced Delayed Neurotoxicity (OPIDN):** The chronic delayed neurotoxic effects (ataxia and paralysis) induced by nerve agents were referred to as organophosphate-induced delayed neurotoxicity (OPIDN), and was attributed to the inhibition of neurotoxic esterase in the neuronal membranes of the nervous system (Johnson, 1970). OPIDN is a syndrome characterized by a delay period of 4-21 days following exposure to nerve gas that occurs

before clinical symptoms (ataxia and paralysis) are manifested (Husain et al., 1993; 1994; 1995). The primary molecular target for OPIDN initiation is the inhibition of membrane-bound enzyme called neurotoxic esterase (NTE) in the nervous system (Johnson, 1970; Husain 1994). A minimum of 70% neurotoxic esterase inhibition after a single exposure, and 45% after multiple exposures to organophosphorus nerve agents, and subsequent aging of neurotoxic esterase is the biochemical prerequisite for the development of OPIDN (Johnson, 1982; Husain et al., 1994; 1995). Histopathological changes consist of degeneration of axon followed by demyelination of the nervous system (Abou-Donia and Lapadulla, 1990; Husain et al., 1993; 1994; 1995). Epidemiologic studies by Haley and Kurt (1997), as well as by Jamal et al. (1996), explain the mild impairment of the brainstem, spinal cord, and peripheral nerve functions in Gulf War Veterans. Such studies are consistent with the spectrum of OPIDN syndrome.

The main nerve agents (sarin, soman, tabun, and Vx) have been shown to inhibit neurotoxic esterase *in vitro* as well as *in vivo* (Gordon et al., 1983). Sarin has been shown to produce delayed neurotoxicity when administered at higher doses in protected hens (Gordon et al., 1983); however, these investigators did not use lower doses of sarin to study the OPIDN.

Husain et al 1993 have studied the delayed neurotoxic effects of low dose sarin in mice after repeated inhalation exposure. Inhalation is one of the major entry routes of neurotoxic organophosphorus compounds into the body. Female mice exposed to atmospheric sarin (5 mg m^{-3} for 20 min) daily for 10 days developed muscular weakness of the limbs and slight ataxia on the 14th day after the start of the exposure. These changes were accompanied by a significant inhibition of neurotoxic esterase activity in the brain, spinal cord and platelets. Histopathology of the spinal cord of exposed animals showed focal axonal degeneration (Fig 1, 2; Table 1). These changes were comparatively less in animals treated with the neurotoxic organophosphate, mipafox, which is a compound known to produce OPIDN. The results of this study indicate that sarin may induce delayed neurotoxic effects in mice following repeated inhalation exposure which may be related to neurotoxic esterase inhibition, spinal cord damage, and subsequent appearance of clinical symptoms. The role of acetylcholinesterase inhibition was also considered but it was rejected for the reason that the same exposure inhibited acetylcholinesterase activity in blood by 27.3% and in the brain by 19.2%. Such an inhibition is not able to cause antiacetylcholinesterase symptoms.

It is quite possible that Gulf War veterans are likely to have delayed neurotoxic effects due to very low exposure of sarin which may have been amplified by the presence of PYR and other chemicals as well as accompanying stress conditions.

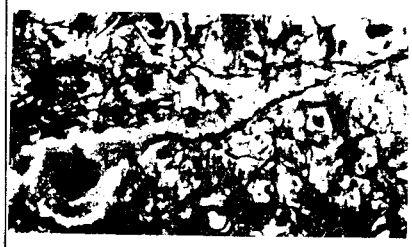

Figure 1. Spinal cord (left inside) of control mouse showing normal neurons with axon (x 500).

Figure 2. Spinal cord (left side) of sarin-exposed mouse showing degeneration axons (x 500).

Table 2. The incidence of axonal degeneration in the spinal cord of mice exposed to sarin and Mipafox

Animal no.	Control	Sarin	Mipafox (positive control)
1	-	+	+++
2	-	++	+++
3	-	+	++
4	-	++	++
5	-	+	+++
6	-	+	+++

*Degeneration densities in the lateral columns of spinal cord: -, none; +, light; ++, moderate; +++, heavy.

III. PYRIDOSTIGMINE

Pyridostigmine (PYR), a carbamate and a quaternary ammonium compound, is a reversible inhibitor of acetylcholinesterase. This drug has been used for many years in the treatment of myasthenia gravis (Somani, 1969; Somani et al., 1972). PYR has also been recommended as a pretreatment drug against warfare nerve agent intoxication. The protective effect is attributed to its capacity to form a reversible complex with a portion of acetylcholinesterase which prevents inhibition by the nerve agent. When administered as a pretreatment, PYR is given in a dose sufficient to achieve a constant 20-30% inhibition of red blood cell acetylcholinesterase. The efficacy and safety of this regimen have been investigated in a number of experimental and human studies. In particular, special attention has been paid to the possible adverse effects on the neuromuscular junction. The efficacy of a symptom-free dose of two carbamates pyridostigmine (0.1 mg/kg, i.m.) and physostigmine (0.075 mg/kg, i.m.) at various pretreatment intervals against sarin inhalation in rats has been studied (Vijayaraghavan et al., 1992). This study demonstrated that a 20-minute pretreatment prior to exposure was optimal for protection against the lethality of inhaled sarin. The physostigmine provided better protection than pyridostigmine which may be due to its protection of the central cholinergic receptors or due to their differential pharmacokinetics. Physostigmine has been extensively studied as a pretreatment drug against nerve agents by Somani et al. (1984; 1985, 1986, 1988). The symptoms associated with pyridostigmine bromide intoxication are tremors, diarrhea, hypersalivation, nausea, abdominal cramps, muscle cramps and muscle weakness, fatigue, blurred vision, toxic alopecia (hair loss), emesis, fasciculations, urinary incontinence, reddened feces, intestinal intussusception, sweating, miosis, and rhinorrhea. Some of these symptoms are associated with the Gulf War veterans, and are likely to be enhanced under physical stress.

A. Metabolism and Excretion

1. Human Study

The author has used pyridostigmine (3 tablets at 3 hr intervals equivalent to a total daily dose of 1080 mg) for the treatment of myasthenic patients over several weeks (Somani, 1969, Somani et al., 1972). These patients were also examined by electromyography (EMG). It was noticed that they did not show any muscular abnormalities (Somani, 1969).

The author has also studied the metabolism of PYR in myasthenic patients and confirmed that PYR and its metabolite -- 3-hydroxy-N-methyl pyridinium -- is excreted through urine (Somani, 1969; Somani et al., 1972). These studies suggest the possible accumulation of PYR and its metabolites in patients who are treated with high doses of pyridostigmine for prolonged periods. These studies also reported the presence of three other metabolites of PYR in the urine of myasthenic patients; however, they were not identified.

2. Animal Study

The author has studied the metabolism, excretion and binding of radioactivity to tissues and macromolecules after chronic administration of ^{14}C-pyridostigmine (Somani, 1977; Somani, 1983). ^{14}C-Pyridostigmine was administered (1.78 μmol/kg s.c.) to rats twice a day for 16 days. Urine and feces were collected each day and counted for radioactivity. The average daily excretion of ^{14}C-PYR and its metabolites was 76% in urine and 7% in feces. An average of 17% of the dose was unaccounted for, indicating the accumulation of pyridostigmine and its metabolites in body tissues. These studies also suggest the biliary excretion of the drug and its metabolites (Somani, 1983). This study clearly identified two other radioactive spots in addition to PYR and 3-hydroxy-N-methyl pyridinium. Structures of the other two metabolites are not yet known. The daily excretion of PYR in urine ranged from 39-70% and that of 3-hydroxy-N-methyl pyridinium from 15-20% of the daily dose. There was no consistent increase or decrease in PYR and its metabolites excretion during the entire study, which suggests no stimulation or inhibition of the metabolism. The elimination of radioactivity in feces ranged from 3-10% of the daily dose. These studies suggest that PYR accumulated in the body after multiple dosing.

These results also indicate a progressive increase in radioactivity per gram of tissue from day 1 to day 16. Cartilaginous tissues, in particular, accumulated increasing concentrations with subsequent doses of pyridostigmine. This increase in radioactivity in the body tissues after chronic dosage may be indicative of its binding to macromolecules, specifically mucopolysaccharides (chondroitin sulfate), a negatively charged molecule. PYR is a positively charged molecule. The radioactivity accumulated steadily from day 1 to day 16 in the ear, from 15×10^{-2} to 42×10^{-2} nmol, and in the tail fiber, from 5×10^{-2} to 50×10^{-2} nmol. These tissues contain a high concentration of mucopolysaccharide, termed as a "non-specific receptor." The binding of quaternary amines to chondritin sulfate (2 to 100 mg % was carried out *in vitro* by ultra filtration technique using varying concentrations of ^{14}C-PYR from 7.66×10^{-9} to 3.8×10^{-7} mol. Increasing concentrations of ^{14}C-PYR bind with an increasing amount of chondritin sulfate, a constituent of mucopolysaccharide. The distribution of radioactivity in subcellular fractions of liver was studied after s.c. administration of ^{14}C-PYR. The liver was isolated and subcellular fractions were prepared. ^{14}C-PYR and its metabolite 3-hydroxy-N-methyl pyridinium being a quaternary ammonium compounds were concentrated up to 2-3 fold in microsomes (Somani, 1977). The *in vitro* experiments indicated microsomes to supernatant concentration ratio for ^{14}C-PYR was 1.8. The binding of these quaternary amines (PYR and neostigmine) to cellular constituent might be related to their sequestration in the intact liver (Somani, 1977).

Somani (1983) has shown that PYR and its metabolites accumulate in the body upon chronic administration. They also showed the presence of two other radioactive spots in addition to PYR and 3-hydroxy-N-methyl pyridinium. One of these could be a dihydroxy metabolite, which could be converted to quinone form. Hudson and Foster (1984) have shown that there is neuromuscular damage to skeletal muscle (diaphragm, soleus and extensor longus) of rat following exposure to PYR bromide. We consider that the accumulation of ^{14}C-PYR radioactivity, and metabolite 3-hydroxy-N-methyl pyridinium, may be due to its existence in zwitter ionic form at the basic pH of the muscle, and this accumulation may be the cause of muscle damage.

IV. EXERCISE

It has been known from ancient times that exercise contributes to good health. However, in certain instances exercise can also be detrimental to good health. Susruta, a leading practitioner and advocate of Ayurveda, the branch of medicine practiced in ancient India (600 B.C.), described the

effects of exercise on health: *"Exercise is essential for good health, and it is the only way to reduce fat, and gain strength: it should be followed by massage. A man should exercise up to the onset of rapid breathing every day in all seasons; more than this may make him ill. Strong winds and hot sun must be avoided."* (Translated by G.D. Singhal and T.J.S. Patterson, 1993, from *Susruta Samhita* IV.24.38.51, 75-85.)

A. Exercise and Blood Flow

The recent monogram on pharmacology in exercise and sports has extensively discussed the interaction of drugs and exercise on various organs system of the body (Somani 1996). During exercise, cardiac output increases with the intensity of the activity, and causes concomitant changes in regional blood flow distribution. Thus, during exercise the blood flow to skeletal muscles and skin is greatly increased while hepatic blood flow decreases (Somani 1996). The decrease in hepatic blood flow could theoretically result in a diminished clearance of the drug, thereby resulting in its accumulation during chronic drug administration, increased drug effects with increasing plasma concentrations, and potentially detrimental effects of the drug and its metabolites' toxicities.

B. Physical Exercise and Pyridostigmine

The effect of exercise on absorption, distribution, metabolism and excretion of drugs was reviewed by Somani and Kamimori (1995) and indicated that the disposition of drugs is altered due to exercise. The pharmacokinetics and metabolism of PYR are likely to be altered by exercise due to altered blood flow rates to the liver and the pH of muscles. PYR and its metabolites are likely to accumulate more in muscle due to increasing blood flow thus causing imbalances in cholinergic enzymes. Based on these studies, the author projects that exercise will increase the inhibition of cholinesterase activity by PYR after its administration.

Since soldiers in the field undergo physical exercise and are also exposed to drugs, chemicals, vaccines and other chemical stresses, it is important to understand the disposition and toxicodynamics of PYR under conditions which closely simulate heavy military duty.

Effects of acute and chronic exercise on behavioral responses to pyridostigmine have been studied. Pyridostigmine, a peripheral acting drug, produces no behavioral changes in rats (McMaster and Finger, 1989). Pyridostigmine (90 mg/day for 8 days; 20-30% acetylcholinesterase inhibition) does not cause any neuromuscular effects in humans (Glikson et al., 1991). Human pretreatment with pyridostigmine under war-time conditions (chemical threat) resulted in changes such as increased flatus, abdominal cramps, soft stools and urinary urgency; however, the soldiers' performance was not impaired (Keeler et al., 1991). Acute and oral administration of low doses of pyridostigmine (12 mg/kg) to rats results in debilitating effects on operant behavior, which are due to the stimulation of peripheral muscarinic receptors via anticholinesterase activity (Liu, 1991).

Francesconi et al. (1984) reported the effects of PYR (cholinesterase inhibition of 64%) on the ability of rats to exercise while exposed to heat. PYR-treated rats had a mean endurance of 23 min whereas saline-treated animals ran for nearly 35 min. Pyridostigmine (6.6 mg/day) administered orally to rats for 14 days while exercising in the heat, resulted in increased weight loss with increased minor clinical indices of heat/exercise injury (Francesconi et al., 1986). Chronic pyridostigmine treatment does not impact most soldiers' ability to perform physical work in a desert environment (Wenger et al., 1992). Therefore, pyridostigmine has little effect on physiological responses to moderate exercise-heat stress (Wenger et al., 1992).

A couple of recent studies have shown the enhanced toxicity of PYR under stress conditions. Rats were administered with pyridostigmine subcutaneously through an implanted osmotic mini

pump. The dose produced 20-30% whole blood acetylcholine esterase inhibition for 14 days. Rats were also given physical exercise. The combination of physical exercise and pyridostigmine significantly potentiated the serum creatine phosphokinase activity and creatine urinary excretion rate. This study suggests muscular damage due to the combination of pyridostigmine and exercise (Hubert and Lison 1995).

Recently, Friedman et al. (1996) demonstrated that pyridostigmine (peripheral acting drug) and physostigmine (centrally acting drug) showed similar efficacy in inhibiting the brain acetylcholinesterase activity *in vitro* as well as inhibiting serum butyrylcholinesterase activity after administration in mice. When mice were subjected to a forced-swim protocol (stress), an increase in blood-brain barrier permeability reduced the PYR dose required to inhibit mouse brain acetylcholinesterase activity by 50%. PYR, under physical stress, increased brain levels of C-fos oncogene and acetylcholinesterase mRNAs. These findings indicate that under physical stress, peripheral nervous system acting drugs can penetrate into the brain and influence the central nervous system functions.

C. Physical Exercise and Cholinergic Enzymes

Cholinesterase inhibitors (carbamates) are being used extensively as pesticides, insecticides, and as pretreatment drugs against organophosphate intoxication. The interactive effects of drugs and exercise affect the cholinergic system which, in turn, is likely to influence an individual's performance and health condition. The combined effects of physical exercise and physostigmine on acetylcholinesterase activity in different tissues of rat have been studied extensively during the last five years (Somani and Dube, 1992, Dube et al, 1993, and Babu et al, 1993). Physostigmine is a centrally acting anticholinesterase drug used as a potential pretreatment drug for organophosphorus intoxication (Somani & Dube, 1989). Acute physostigmine administration in exercising rats resulted in a 50% inhibition of blood cholinesterase and a reduction in endurance (performance), whereas, chronic administration attenuated the decrease in cholinesterase activity and the endurance of exercising rats. Similarly, acute administration of peripheral acting carbamate (pyridostigmine) resulted in decreased endurance and inhibition of cholinesterase (40-60%), whereas, chronic administration of this drug elicited a cholinesterase inhibition of 40% without decreasing the performance of exercising rats. These studies suggest that decreases in performance, caused by acute drug administration, may be attenuated through accommodation with chronic administration. These studies also indicate the interactive effect of exercise, drugs, and cholinergic systems in controlling the performance of exercising rats. Dube et al. (1990) reported the interactive effects of physostigmine and exercise on cholinesterase activity in red blood cells and tissues of rat. The cholinesterase activity in red blood cells of exercised rats that were not exposed to physostigmine increased. Babu et al. (1993) reported the interactive response of exercise and physostigmine on muscular acetylcholinesterase activity. Acetylcholinesterase activity was decreased in both fast twitch muscle and soleus muscles of exercise trained rats. Acetylcholinesterase activity also decreased in fast twitch muscle and soleus muscle. and remained depressed even after 24 hr. Our results showed a constant decrease in acetylcholinesterase activity in both muscle groups and did not recover even after 24 hr. This study and others show that physostigmine plus exercise modified the functional activity on cholinergic systems in fast twitch muscle and soleus muscles.

Somani et al. (1991) studied the interaction of a centrally acting anticholinesterase drug physostigmine (Phy), exercise, and the choline acetyltransferase activity in brain regions of rat. The results suggest that brain regions involved with control of motor, autonomic and cognitive functions are affected by subacute physostigmine and exercise.

V. INTERACTION OF SARIN AND PYRIDOSTIGMINE UNDER PHYSICAL STRESS

In conclusion, based on recent experimental proof, and historical evidences of symptoms such as impaired concentration and memory, headache, fatigue and depression of the workers who worked in organophosphate industry, I consider that the illness associated with Desert Storm veterans may be due to low dose sarin exposure, intake of pyridostigmine, and exposure to insecticides and chemicals. The adverse effects of these chemicals were amplified by physical stress conditions.

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Mr. SHAYS. Thank you. I didn't want to interrupt you. Your testimony is extraordinary. The bottom line to you both, Dr. Tiedt and Dr. Somani, is that we basically poisoned our troops. In essence, that's what you're saying. We poisoned our troops. We basically gave them a chemical agent, did not warn them of the potential harm of this agent; we ordered them to take it. And many did, obviously. And some were poisoned because of it. That's your testimony. And your point about stress was that that just magnified the problem. I noticed Dr. Somani and Dr. Tiedt, you were both nodding as the other spoke; as best I can understand, they seem to be very compatible. Dr. Tiedt, do you disagree with any point that was made by Dr. Somani? Do you want to qualify it any way?

Mr. TIEDT. I guess I think the major thing to emphasize is that the data base is very, very, very extensive. My testimony has simply 115 of hundreds of references that are directly relevant to Gulf war syndrome.

You know, if Gulf war syndrome was a positive event, we would be giving the Nobel Prize to the Department of Defense for the work that they published during the early 1980's. It was very clear.

If it was a positive outcome, you know, like for example, I was very active in the role of aspirin in stroke and heart attack, that was a positive outcome, and those folks that did that work down at the University of Texas, et cetera, are hailed as, you know, very strong scientists now.

The connection with Gulf war syndrome, with inhibitors of enzymes, nerve enzymes, acetylcholinesterase simply being the best studied, is much tighter. The evidence story is extremely tight. And the troubling thing is it all really came out of about a dozen of the DOD and DVA laboratories during the early 1980's.

Mr. SHAYS. What is troubling to me is that your testimony basically, from your standpoint, it doesn't take a rocket scientist to know what the problem is.

Yet, Dr. Joseph's standpoint—and that there's no current accepted medical knowledge—is that chronic symptoms or physical manifestations are not later developed among persons exposed to low levels of chemical nerve agents.

Mr. TIEDT. It's simply false. The Pentagon published, in 1993, one of my co-authors from my 1970's work—actually, a chairman of the department where I did my post-doctoral fellowship at the University of Maryland—did an amazing study and spends a great deal of time in the introduction and discussion relating a chronic organophosphate-induced neurotoxicity, single or just a few exposures, that cause no acute symptoms but, years later—we all know that—I'm a pilot myself. I've been around cropdusters for 20 years.

We all know that cropduster pilots develop some problems, and there's literature on that that goes back to the 1960's. It's really tight, the story between nerve enzyme inhibitors.

Really, if you want to know it in a nutshell, what we have in our bodies, we have protective mechanisms called enzymes, and we have circulating pools of two enzymes, in particular.

When you take a PB or get exposed to low levels under a repeated basis, or even a single basis, to sarin or malathion or DEET, et cetera, you start soaking up that capacity of protection, and then that makes the nerve endings—we're talking about a 100 million

points of toxicity that our bodies, the cholinergic nerve endings. It is so tight.

That is why the idea of chemical sensitivity comes into play. That is why some of these things can take a long time. It is well-known that an enzyme called NTE—neuropathy target esterase—takes a long time to age, and it can take years to display a neurotoxicity from an exposure to any chemical that inhibits that. Pesticides and organophosphates are well-known inhibitors.

Mr. SHAYS. Would you disagree with testimony before this committee that we do not know how to properly diagnose or treat chemical exposure?

Mr. TIEDT. I sure do, and I just ask everybody to look at the package insert for PB. Actually, look at any textbook of pharmacology and therapeutics, and just simply—if you're interested, I've already done it for you—just write down the list of side effects from PB, sarin, DFP—I'll give you a long list—and write down the symptoms of Gulf war syndrome. It is a fingerprint match.

It does not take a rocket scientist. It only takes a biomedical scientist.

Mr. SHAYS. You have a right to be frustrated.

Dr. Somani, is that your response to the same question? Would you take issue with testimony before this committee, first, about the issue, if it wasn't acute, that you're not going to see it happen? If you don't see acute symptoms, then you don't have a problem?

Mr. SOMANI. Yes.

Mr. SHAYS. Second, that we don't know how to diagnose chemical exposure and, therefore, we don't know how to treat it, either?

Mr. SOMANI. Yes. You don't see the acute symptoms with this low level. The continuous exposure, you have to wait 10 years, you can say, because the sarin or organophosphates, they alkylate or phosphorylate like the enzyme and they also bind to the NTE—neurotoxic esterase—enzyme.

What happens within this delayed period, we still don't know.

Mr. SHAYS. Do we know how to diagnose? I mean, can you diagnose a patient that has this low-level exposure?

Mr. SOMANI. They cannot be, because there is a delay period they don't have the symptoms during that period, and all of a sudden, they get the symptoms, after some time.

Mr. SHAYS. I need to be clear. I thought maybe you were disagreeing with earlier testimony. So, Dr. Tiedt, you would say it's also difficult to diagnose?

Mr. TIEDT. Certain kinds of this toxicity go through an acute incident that may or may not be symptomatic, and then followed by a period of months or years of totally asymptomatic period, that is without symptoms, by definition, you can't see a symptom, and only to be exposed by itself, by a delayed neurotoxicity, or an exposure to another incident, like going back to your barracks and they're spraying the place with malathion.

Mr. SHAYS. You were talking with your hands, and your voice was coming out. Dr. Somani was also talking with his hands, but he wasn't saying anything. You were his voice.

Mr. TIEDT. Ventriloquism.

Mr. SHAYS. I'm going to get you into this, but I want to call on Mr. Sanders. But do you have anything to comment on what we've

asked so far? I'm going to get into some points you raised, but I did want to make sure. Is there any comment you want to make in regards to these questions?

Mr. TUCKER. I would not, not being a medical expert, I would not comment. It sounds plausible to me. The emphasis of my testimony is that there were multiple low-level chemical exposures which, in combination with other types of chemicals, could have led to a synergistic effect.

Mr. SHAYS. You have total conviction that there was lots of different troops who were exposed to lots of different chemicals, something I also agree with, and then we have the evidence of what happened. Dr.—Mr. Sanders.

Mr. SANDERS. No, I'm not a doctor.

Mr. SHAYS. I should have said, he looks like a scientist. He looks like a mad scientist. [Laughter.]

Mr. SANDERS. I take that as a compliment.

This is a fascinating panel, and each of you are making a very important contribution. And, Dr. Tucker, be patient. We will get to you, because I think you have a whole lot to say. But let me get to the physical scientists, if I might, first.

The chairman asked you, I think, an appropriate question, and let me go over it again and maybe ask you, Dr. Somani, Dr. Tiedt makes a statement, and I quote, from the paper that you gave us:

"DOD established by the early 1980's that, one, PB would be harmful in healthy individuals; two, PB was worthless, even counterproductive, as a protectant against chemical warfare; three, PB was more toxic than sublethal doses of chemical warfare agents; and, four, higher levels of baseline nerve activity produced more toxicity than lower levels of baseline nerve activities. There was no demonstrated benefit to balance the certain and substantial risk."

Dr. Somani, do you agree with that?

Mr. SOMANI. That time, they didn't think that the risk was there, because this drug has been in use for myasthenia gravis for 50 years.

Mr. SANDERS. Right.

Mr. SOMANI. I do not see any literature that this drug could act as a central acting drug, that it can get into the brain. Pyridostigmine is a positively charged drug, and it doesn't get into the brain.

What they were thinking of when the pyridostigmine is given, it inhibits up to 20 to 30 percent blood enzyme as to cholinesterase enzyme, and that would protect against the sarin. But they didn't realize that the pyridostigmine, under stress conditions, can get into the brain. That information was not available.

I also want to make a point here. I don't know. I wonder as to how come they didn't try to use another drug, physostigmine, which was a centrally acting drug, which I considered was a very good drug, and that will give us central protection, because that's what our goal is, to protect the brain.

Mr. SANDERS. All right. There is a lot to discuss. But basically, then, you are in agreement with what Dr. Tiedt said? You are basically in agreement with Dr. Tiedt's statement?

Mr. SOMANI. Yes.

Mr. SANDERS. OK. If this was 1990, or just before the war, a month before the war, and the Pentagon came to you and said, "We're concerned about our soldiers being exposed to chemical agents, and we're thinking of using PB," now, Dr. Tiedt is saying, "Hey, you would be crazy. That would be the worst thing in the world. You would be poisoning our soldiers."

What would you have said? Would you have said the same thing?

Mr. SOMANI. No. I tell you, what are our choices? We need a drug. Right? And we have to use something there to protect our soldiers. So what are our alternatives? The pyridostigmine is a peripherally acting, and they felt this was the best under those conditions. They could have considered physostigmine, but they did not.

Now, what they did not know at that time, that the pyridostigmine, under stress conditions, will cross the blood-brain barrier and get into the brain.

Mr. SANDERS. If you're going to war, it doesn't take a genius to figure out, if I'm sending you to war and I'm giving you a drug which is going to have a negative impact under stress, war is stress. Right? Am I missing something here? War is stress.

Mr. SOMANI. Yes.

Mr. SANDERS. So anybody who is going into war is going to be living under stress. Right?

Mr. SOMANI. Yes. But they should have studied that before, but that work was not done in 1990.

Mr. SANDERS. This is what I'm confused about.

Mr. SOMANI. Yes.

Mr. SANDERS. What I'm confused about is, Dr. Tiedt—and I'll give it to you now—you're telling us that the literature was pretty clear on this, are you not?

Mr. TIEDT. Yes. There is extensive literature, and it really begins, unfortunately, with my research, published in the Journal of Pharmacology and Experimental Therapeutics, in 1978. Again, keep in mind where it came from. It came from the primary laboratory of acetylcholinesterase inhibitor toxicity in the world.

We concluded, in our 1978 paper, that treatment of myasthenia gravis, the actual drugs used to treat these patients, contributes somewhat to the pathophysiology of the disease. If you compare the electronic microscope pictures between myasthenia and PB, you'll see such similarities.

That was then extended in much more depth by the Pentagon, and many studies, several studies published in the early 1980's, that PB, all by itself, is extremely toxic in healthy——

Mr. SANDERS. OK, but here's my question. My question is a simple question. Why didn't they read their own research? What you're suggesting is, they themselves demonstrated the potential danger of this drug. They, themselves, did that, and you're suggesting to us that they ignored their own research. Is that what you're saying?

Mr. TIEDT. I think that's a generous way of putting it, yes.

Mr. SANDERS. Let me ask you this question.

Mr. TIEDT. See, if you read their—you have to realize, the publication—this is a very critical point about scientific research. A publication is not published in some sort of abstract thing—we had nothing to do this weekend, so we wrote a paper.

We first have to apply for a grant. These grants were applied for, to the DOD, for funding. In any grant application, you outline, review the relevance, the meaning, the impact, the ramifications of your research. I assure you that the effect of PB as a nerve chemical warfare agent was completely spelled out in these research grants prior to the work even being initiated.

Then the work is done. Then the work is eventually published. I just ask anyone to read any of the papers in my references, and look at the introduction and the discussion, and you will see conclusions by the DOD scientists that PB was very toxic.

Mr. SANDERS. Let me ask you this. You are a trained pharmacologist; is that your area?

Mr. TIEDT. I received my Ph.D., in pharmacology and therapeutics.

Mr. SANDERS. If we had a dozen pharmacologists up here, well-trained, would they agree with you?

Mr. TIEDT. If they're aware of the same literature. If we all started on the same page, simply lay out the same literature, yes, we would come with agreement.

Mr. SANDERS. You're not giving us some—not to say that we don't respect all points of view. But you're giving us a mainstream opinion, do you think?

Mr. TIEDT. I'm describing what the literature says, and anyone that looks at the literature, be it yourselves as nonscientists or scientists would come to the same conclusion. Anybody that reads the book chapters written by the DOD laboratories that did this work, it's obvious. There's really no debate here.

One has to be aware of the literature. I am very sensitive to the idea that PB is used in myasthenia gravis. I want to say right up front that PB should be used in myasthenia gravis, as well as other similar drugs. But that's not to say that, in healthy individuals, it does not have toxicity.

Mr. SANDERS. Dr. Somani, did you want to jump in, in this discussion?

Mr. SOMANI. Yes. We have used for myasthenia gravis this drug. We gave about 1,080 milligrams of this drug per day to a patient, and we didn't see any adverse effect of this drug in the patient. So the question is, in normal people, maybe it will affect more than the myasthenic patients.

Now, the question which you are raising really is the use of the pyridostigmine as a pretreatment drug. If I understand, the British, they claim they want to use pyridostigmine, and then we followed them the same way, because the British are using, so we also use this. That's my understanding. Because the question was, to use between pyridostigmine and physostigmine.

But the British were using because this drug is a tested drug for the last 50 years, not knowing the effect of the exercise, physical stress, and what happens to the crossing of the blood-brain barrier. That information, I don't think, was available in 1990. It came out later on, last two——

Mr. SHAYS. Is physostigmine an approved drug? Would they have been able to get the same waiver from the FDA?

Mr. SOMANI. Physostigmine is an approved drug not for as a pretreatment drug against organophosphate.

Mr. SHAYS. What is it for?

Mr. SOMANI. It is for the eye treatment for some eye diseases. See, every drug has to be used for particular symptoms.

Mr. SHAYS. Would it have been the same process? Would the FDA, they would have gone through the same——

Mr. TIEDT. I know why they used PB. The reason they used PB is, in 1984, they submitted an IND. In the United States, you can only market a drug or use a drug for an indication approved by FDA. If you want to use a drug for an indication beyond an FDA approved labeling, you must get an IND.

The DOD had an IND filed in 1984 for PB. They never filed one, to my knowledge, on any other drug.

Now, scientifically—let's take the regulatory thing out of it—scientifically, they could have used physostigmine and, in fact, the evidence for physostigmine being a protective agent is far superior. Physostigmine is a superior protective agent.

First of all, we must realize, PB is not protective, it's actually harmful. Physostigmine is protective, for two primary reasons. One, it has better access to the brain. Two, it has a self-limiting toxicity, because it desensitizes the acetylcholine receptors, and so it kind of self limits its own toxicity. Those are two big hits why physostigmine would have been a much better use.

Both of these, any of these drugs, actually, the only literature that shows any of these drugs really work are in combination with atropine and 2-PAM. So we really needed a cocktail like that, not the way it was used.

Mr. SHAYS. What we're going to do, if you don't mind—do you have any time restraint, or would you be willing to let us vote and come back?

Mr. SANDERS. Let me ask Dr. Tiedt this question. What you're saying is fairly mindblowing, frankly.

Mr. TIEDT. Yes, it is. That's why, when I first heard this whole issue—I was watching the Rockefeller hearings on May 6—I could not believe, watching the folks raise their right hand and say—and it really astonished me, and I walked about 20 miles for 2 days, when they said PB has no known toxicity. Read the package insert, if you don't want to read the scientific literature.

It's really disturbing, when a scientific study is published, it's no good anymore. You know, what's going on today is, we're spending over $100 million more for scientific studies to answer all the questions that were answered 15 years ago.

Mr. SANDERS. Mr. Chairman, correct me if I'm wrong, but you know as much about this as anybody. We have not heard a whole lot about this, have we?

Mr. SHAYS. Not a lot.

Mr. SANDERS. No, we have not heard a whole lot about this. And this can be a very important factor and, I think, this whole discussion. I'm hearing that you are in agreement with the studies that Haley and others have done which talk about the synergistic effect and the increased impact of stress and exercise and all of this.

We'll be back. We're going to vote and we're going to come back, because this is important.

Do you have confidence, Dr. Tiedt, given what you have said today—two questions—that the DOD will do the right thing in

terms of coming up with some of the conclusions to what you have indicated?

Mr. TIEDT. As a scientist, I have to go by the evidence, and the evidence, the answer is absolutely not.

Mr. SANDERS. Tell us a little about your surprise that information like this did not make it to the Presidential Advisory Commission.

Mr. TIEDT. I'm very surprised. I was called by the White House in April 1995, asking if I would be interested in being a member—not a member of the staff, but actually a member—of the Advisory Panel. Presumably because I'm a mere adjunct professor at a local community college these days, you know, it's not right up there in the fast lane.

So I didn't hear again, in any serious way, until January 1996. But I can tell you, in April 1995, I submitted extensive documentation, along with my CV and my interest in participating.

On January 16, I got an emergency phone call from the White House, asking me what else I knew about PB toxicity. I asked that person who called me, I said, "Did you ever do a literature search?"

Simply go to any library—we happen to be in a city that has the best libraries. Go to those libraries and just type in the word "pyridostigmine" and watch the couple hundred references that come out, and then go read those references, and find out who did all those studies, or most of those studies.

It is shocking. It is shocking. I submitted that four-page bibliography on January 17, 1996. I was asked to send it to Philip Landrigan, the same day. I did. On October 4, the Presidential Advisory Panel called me, told me they didn't even know who Philip Landrigan was. They told me they never received my four-page bibliography. So I sent it again.

I went to the Advisory Panel meeting in Tampa, asking to testify. I was refused testimony. They said they still did not know of any of my research.

By some strange coincidence, I was permitted to testify on November 13. Once again, I submitted all of that—all of that——

Mr. SANDERS. Your testimony was similar to what you have stated today?

Mr. TIEDT. Yes. I submitted, you know, my bibliographies again. None of my articles in the bibliographies—not my articles, the DOD studies—there's no DOD study in the Presidential Advisory Panel from the published peer review literature.

I got an interesting letter 1 month ago from the Presidential Advisory Panel. I asked about input from another scientist to this panel. They sent me back a two-page bibliography of the DOD studies that this person was a coauthor of—coauthor of my studies, by the way, and my name is in those papers—23 published studies and two private contract studies with the U.S. Army, all done in the 1980's. None of those studies appear in the Presidential Panel Report.

They have actually eliminated any studies that document Gulf war syndrome. If you read Dr. Haley's fine print in his JAMA article, he says he presented this information to the Presidential Advisory Panel.

If you go to the Presidential Advisory Panel, No. 1, not only do you not see any references of Dr. Haley; No. 2, he doesn't even appear on the page-and-a-half of names of people who supplied input. I think it's serious. It's very, very serious.

Mr. SHAYS. It is serious. And we're going to go vote in 1 second. But, Dr. Tucker—this is a good segue, in one sense—knowing of the commission, describe why that event may have happened, these events. Maybe you can't see a relationship.

I mean, as he was talking, he was saying, "I'm not surprised." Were you?

Mr. TUCKER. Well, I can only discuss my personal experience on the committee staff, which I would be happy to do, and perhaps you could extrapolate from my experience some more general conclusions. But I was only on the committee staff for 4 months.

Mr. SHAYS. OK. What we'll do is, we'll come back and we'll do that.

Mr. TUCKER. OK.

Mr. SHAYS. You both don't mind waiting?

Mr. TUCKER. No.

Mr. SHAYS. We have one vote. I don't think we have another. It will probably be about 15 to 20 minutes. The committee stands at recess.

[Recess.]

Mr. SHAYS. I call this hearing to order. I don't think we're going to be going too much longer, but I did want to tie up some loose ends.

Dr. Tucker, I would be interested to know—you were working on the Presidential Advisory Committee—why you think you left, so we can put that on the record.

Mr. TUCKER. I would be happy to. From August to December 1995, I served on the staff of the Presidential Advisory Committee as the senior policy analyst responsible for investigating chemical and biological weapons exposures.

During my tenure, I received briefings from CIA, the Defense Intelligence Agency, the Army Chemical School, and the Army Chemical and Biological Defense Command. In each case, I heard categorical denials that Iraqi chemical weapons were present in the war zone, that United States troops were exposed to fallout from bombed chemical weapons bunkers, or that Iraq used chemical weapons.

I was puzzled by the fact that the United States Government's position on all these issues was at odds with the eyewitness testimony of Gulf war veterans, as well as detections by Czech chemical defense units in northern Saudi Arabia of low levels of chemical weapons, which the Pentagon acknowledged were valid. So there seemed to be a disconnect.

To address these discrepancies, I decided to investigate a wide range of views, both within and outside Government, including the leaders of Gulf war veteran advocacy groups and Pat and Robin Eddington, the CIA analysts, who differed strongly with the position of their agency that chemical weapons had not been used in the Gulf war.

I believed that only by obtaining information from the full range of informed sources could the committee come to a reasoned judg-

ment about the incidence of exposures. I also believed that we had the moral and professional responsibility to obtain all such relevant information and that it was unethical, as well as unscientific, to ignore it.

Shortly after I began this effort, however, certain committee senior staff ordered me verbally and by e-mail not to seek documents or unofficial briefings from so-called "unofficial" sources.

I became concerned that the Presidential Advisory Committee's dependence on the people and institutions it was investigating was creating problems for my investigation. The committee lacked subpoena power and relied for information on the voluntary cooperation of the Pentagon, the CIA, and the VA, whose activities it was supposed to oversee.

Mr. SHAYS. Excuse me. Just to clarify, the Presidential Advisory Committee does not have the ability to subpoena?

Mr. TUCKER. That's correct. I feared that certain committee senior staff wished to avoid alienating agency officials by being complicit in the suppression of dissenting views. I personally refused to accept these constraints on my investigation, believing they would prevent me from fulfilling the President's mandate to leave no stone unturned in exploring possible causes of Gulf war illness, and would violate our ethical, scientific, and legal responsibilities.

On December 1, 1995, without prior warning, I was dismissed from the committee staff and given 1 hour to clean out my desk and leave the building. Before that time, I had never received a negative performance review. Despite repeated requests, I was never given grounds for my termination.

In response to press inquiries, the Advisory Committee spokesman has stated repeatedly and falsely that I resigned voluntarily. I received, in fact, a formal termination memo, a copy of which is appended to my written testimony.

The credibility of a committee like the Presidential Advisory Committee on large matters, such as whether Gulf war illness was caused or linked to chemical exposures, suffers when its spokesman lies about small matters, such as my termination.

Thank you.

Mr. SHAYS. Thank you. My understanding is that the gentleman who replaced you—what is his name?

Mr. TUCKER. James Turner. I do not know him personally.

Mr. SHAYS. But my understanding is that he is—the implication was that you were reaching out beyond—you suspect you were terminated because?

Mr. TUCKER. I am speculating about the possible reason for my termination. Despite repeated requests, I was not given grounds for my termination.

Mr. SHAYS. You're allowed to speculate, if you haven't been given grounds. So what is your speculation?

Mr. TUCKER. As I said, I believe that the reason was that I was pursuing my investigation too aggressively, and that senior Committee staff—and perhaps members of the panel itself, I just don't know—were concerned that this would jeopardize the Committee's access to information voluntarily provided by the agencies we were investigating.

Mr. SHAYS. Your point is that the Committee itself, it needs the cooperation of the very people it's investigating?

Mr. TUCKER. That is correct.

Mr. SHAYS. Without that cooperation, the willingness to provide information, they don't get the information?

Mr. TUCKER. That's correct, they don't have subpoena power.

Mr. SHAYS. Dr. Tiedt, I would like to be clear as to what hearing you were watching when you found yourself ethically upset with the fact that people were testifying in a way that you wondered how they could—that's a long question.

The bottom line is, you felt people at what hearing were testifying and testifying falsely?

Mr. TIEDT. I believe it was—I know it was May 6, and I believe it was a Senate Veterans' Affairs Committee hearing by——

Mr. SHAYS. What year?

Mr. TIEDT. 1994.

Mr. SHAYS. 1994. OK. We're going back a ways. 1994, you recall a hearing where people testified about PB?

Mr. TIEDT. That's right.

Mr. SHAYS. And said it was not toxic?

Mr. TIEDT. There was no known toxic effects from PB.

Mr. SHAYS. OK. What I would like to do—and then, Bernie, we'll come back to your line, as well, of questioning—I need to clarify the fine points of difference. I thought, when you were testifying, Dr. Tiedt, that you were agreeing with Dr. Somani. And then later, I'm seeing some differences, and they may be subtle differences, although they may be significant. I need to know that.

The testimony I think I'm hearing from you, Dr. Tiedt, is that basically our troops were given what, in essence, is a drug, an experimental drug that caused more harm than good. In fact, not more harm than good—it caused harm, period. That's your testimony. And the imagery I have is that we were basically poisoning our troops.

Mr. TIEDT. That's correct.

Mr. SHAYS. And you feel pretty comfortable with that statement. I got the sense, Dr. Somani, that you were nodding your head, but you wanted to qualify that. Do you disagree with that, or agree with it with qualifications?

Mr. SOMANI. I need to give a little explanation.

Mr. SHAYS. OK.

Mr. SOMANI. If you are giving pyridostigmine, it will cause the acute effects right away. We know those effects are diarrhea, hypersalivation, nausea, abdominal pain, muscle weakness, fatigue, blurred vision, all of those, urinary problems—we know those.

But my question comes, then, they are taking the drug now; 2 years, 3 years, 4 or 5 years, will those—those effects are still causing some problems?

Mr. SHAYS. Yes.

Mr. SOMANI. I don't think so. That's all my point is. The effects of the Gulf war syndrome, everything, it's because of the organophosphates. Because we know that caused the delayed neurotoxicity, but I don't know whether pyridostigmine causes the delayed neurotoxicity.

And another thing. There are some troops, like Czechoslovakian troops, they didn't take pyridostigmine, still they have the same symptoms. How and why?

Mr. SHAYS. What is your response to that, Dr. Tiedt?

Mr. TIEDT. What, about the Czech Republic troops?

Mr. SHAYS. Just his response. How do you react to what Dr. Somani said?

Mr. TIEDT. I can only report what the studies have found. The studies have found that a few exposures to cholinesterase inhibitors—like PB, like physostigmine, like neostigmine, et cetera—cause ultrastructural and electrophysical effects that last months. I don't have any evidence that anything lasts years, in terms of a controlled scientific study. However, if you look at the effects that are lasting months, and the exquisite physiology that's at play here, it's not hard to predict.

I do agree with one thing that Dr. Somani is saying, and that is that organophosphate co-exposures can be very, very important.

The thing to emphasize here is that PB can shift. Let's say you've given a dose of PB, and then subsequently given a dose of sarin. You will be blocking the binding sites for sarin, and shift those to the central nervous system in a preferential fashion.

That is all very well explained and described by Dr. Haley's reports.

Mr. SANDERS. If you were listening to my line of questioning to Dr. Rostker, what I was concerned about is that conventional medicine is not looking at the synergistic approach that might, in fact, be affecting many of our troops. Let me ask you this question, and that's for either Dr. Somani or Dr. Tiedt.

That is, is there a standard diagnostic code for delayed neurotoxicity, or delayed neuropathy? Is the diagnosis accepted and recognized widely in clinical practice?

Mr. TIEDT. I believe the OPIDP essentially is. Now, when you say "in clinical practice," we are a large country with a couple hundred thousand physicians. Many physicians probably are not tuned in to the scientific literature, and I have no doubt that those physicians have no idea about all of this.

Mr. SANDERS. But, for example, are you familiar with the diagnosis of multiple chemical sensitivity?

Mr. TIEDT. Somewhat.

Mr. SANDERS. I mean, that is a diagnosis among which, to the best of my knowledge, the AMA does not agree. Some physicians believe it very strongly, some do not. The concern that I had with the DOD is, we're going to keep going around in circles, because many of their doctors just may not believe this. Is that a reasonable ground for concern?

Mr. TIEDT. Yes, it is.

Mr. SANDERS. Do you believe it?

Mr. SHAYS. Do you believe in multiple chemical sensitivity as a concept, and would you describe, how it fits into mainstream science?

Mr. TIEDT. You know, I think Representative Sanders outlined basically the pathophysiology of MCS so eloquently, and how can anyone not buy into that? That's exactly what is at play here. You are sensitizing to future events.

We know that, in the real world, we know that, from an EPA point of view.

Mr. SHAYS. The workplace.

Mr. TIEDT. Workplace, and home place. Look what is happening in Mississippi.

Right now, as we speak, a couple of folks in a pesticide company used excessive pesticide levels in motels, in homes, and they have all been condemned and closed down, and they're about ready, if it hasn't been done already, to be bulldozed over, simply like another Love Canal. Dioxin. Isn't that Love Canal? Isn't that an inhibitor of these same enzymes?

We know that. We know there's chemical sensitivity in life. But just because I say that sentence, it's also true that our standards of medical practice and scientific research, in every single borough and country and city in this country is not the same.

That is a problem, getting the word out. Unfortunately, you know, it must be said. I know it makes it a long sentence. But it must be said that we live in a world that we're barraged with information.

We have a real technology problem of what information is the highest priority stuff to know. It's a problem.

Mr. SANDERS. Dr. Somani, did you want to comment?

Mr. SOMANI. Yes. I do believe in multiple chemical sensitivity, because it does cause the effect, and the effect prolongs for a longer time.

Mr. SANDERS. Do you believe that Persian Gulf syndrome is connected to multiple chemical sensitivity?

Mr. SOMANI. Yes, definitely. It has exaggerated more. A single component caused it, but, in the presence of others, it has amplified or potentiated the effects.

Mr. SANDERS. What we heard from Maj. Donnelly earlier today would be a classic situation?

Mr. SOMANI. Yes. But primarily, that is due to organophosphates, insecticides, and those.

Mr. SANDERS. Was I wrong in suggesting that, if we have hundreds of thousands of young men and women walking around perhaps with a lot of stuff, nasty stuff, in their bodies, that they might be more sensitive when somebody sprays their home for cockroaches, and that could trigger off a problem with them? Is that a legitimate concern?

Dr. Somani, why don't you start?

Mr. SOMANI. That is a concern. But we also have a good enzymatic system in the body to get rid of that. Otherwise, we will be really——

Mr. SHAYS. Doctor, I'm sorry. I couldn't understand your words. Just say it a little more slowly, because I value what you're saying here.

Mr. SOMANI. OK. See, our body is capable of getting rid of those compounds. Even though we are exposed every day—you and me are eating about 1.5 milligrams of insecticides, OK, which are sprayed; through a lifespan of time, they can accumulate in the body—but we have a good enzymatic system in the body, which can detoxify these compounds.

Mr. SANDERS. But you would agree that, for some people, it may be better than for other people?

Mr. SOMANI. Yes. Yes. That is the genetic effects, OK? That is where the environmental factor plays the role. But they can be more sensitized. Some people are more sensitive, some people are less sensitive.

Mr. SANDERS. Right.

Mr. SOMANI. In a situation like Gulf war syndrome, that is not the one factor; it is a combination of the factors.

Mr. SANDERS. Is it fair to say that, understanding people are different in genetic composition——

Mr. SOMANI. Yes.

Mr. SANDERS [continuing]. But that we would have reason to believe that, for the men and women who were over there, they have come back and are in a condition that we might say somebody who worked in a pesticide company or somebody who was spraying, that they have been exposed; is that a fair statement?

Mr. SOMANI. If they are exposed, they will be more sensitive.

Mr. SANDERS. Yes, that's my only point.

Mr. SOMANI. Yes.

Mr. TIEDT. And that's what you mean by MCS, isn't it?

Mr. SANDERS. Yes, that is what I mean.

I'm interested, Dr. Tiedt, again, I was disappointed, to be frank with you, in the Presidential Advisory Commission. Some of hoped for a little bit more. The emphasis on stress, I thought, was unfortunate.

Do you want to elaborate a little bit on why you think that more evidence concerning the chemical factors was not included in that report? That's what you've said. Anything more that you want to add to that?

Mr. TIEDT. Certainly, let me just restate it, so at least I can start with something solid there. That's how you left your question.

The fact exists that hundreds of relevant studies—directly relevant, not by some stretch of an imagination—done prior to the Gulf war, were not included in the Presidential Panel Final Report, "final," because some of us prevailed a little bit, and they were asked to go back to work for a little bit, so we'll get a Final No. 2.

That's a fact; and they knew it. It's not like, well, they didn't go to the literature and do it. They certainly had it from me and many others, it turns out, submitted to them on many, many occasions, and it's simply not there.

The issue is the motivation. Why would they not include it?

Mr. SANDERS. Let me take that one. I'll ask that to you and to Dr. Tucker. Do you think that there was a built-in bias of wanting to conclude that it was more stress-related than chemical-related?

Mr. TIEDT. Yes, I do. Yes I do. The reason is that I think that has been a catch-all, and don't we all know that it's been a catch-all, for years. Quite frankly, Dr. Joseph, he blamed Gulf war syndrome—he has had three different explanations.

His first explanation was on psychosomatic freeloaders. His second explanation was on stress. That changed last December when Dr. Friedman's study came out. Of course, anybody would have

known that stress was a major factor, if you just read the literature from the 1960's and 1970's.

Then, finally, about 3 weeks ago, when he announced his resignation, and traveling around the world in a boat called the Moonraker, he said, no, now he blames Gulf war syndrome on society. It's something with the fabric of our consciousness, that we are just susceptible to hearing, you know, that the Government is to blame for things.

That's basically his three answers to Gulf war syndrome. So I basically have to disagree, because the evidence prior to the Gulf war shows that it was at least predictable.

Mr. SANDERS. And, Dr. Tucker, you were interested from another point of view in pursuing the possible chemical exposures. You got fired? I mean, do you think that there was a built-in bias there, that they didn't want to look at this stuff?

Mr. TUCKER. All I can say is that information within the Presidential Advisory Committee staff was extremely tightly held. The senior staff controlled the flow of information not only to the outside world and to the panel, but to the members of the staff itself who were working on this issue. So we were working under very tight constraints.

The reasons for those constraints, as I speculated earlier, may have been related to concern about access to information from the agencies that were supposed to supply it to the committee.

Mr. SANDERS. That you might have, by going outside it, upset some of the people in the DOD or the VA?

Mr. TUCKER. Right, particularly dealing directly with whistleblowers or dissenters within those agencies.

Mr. SANDERS. OK. Your bottom line is that you believe that there has been more chemical exposure than we have been led to believe?

Mr. TUCKER. That's correct.

Mr. SANDERS. A lot of what you say makes sense in terms of Iraq having a history of using these weapons, the unlikeliness of them in the midst of a terrible defeat, after they had brought these weapons to the theater, then taking them away, right?

Mr. TUCKER. Right. Well, the CIA has testified, in particular, Dr. Gordon Oehler from the Non-Proliferation Center testified before Congress that CIA had assessed that Iraq had deployed chemical munitions into the Kuwait Theater of Operations in the summer and fall 1990, before the beginning of the air war, and then had withdrawn them shortly before the war began on January 16, 1991.

But the CIA did not provide any information to substantiate the theory that the weapons had been withdrawn. There is considerable evidence on GulfLINK and in documents released under the Freedom of Information Act, many produced by the Defense Intelligence Agency, as well as CIA, that refer to the presence of chemical munitions in the Kuwait Theater of Operations, right up to the beginning of hostilities.

Mr. SANDERS. You believe, as I understand it, that one of the possible areas of exposure was when these bunkers were blown up, that it was not just Khamisiyah, but other bunkers, as well?

Mr. TUCKER. Right. I believe that Khamisiyah was one of many incidents in which bunkers were explosively demolished, releasing low levels of chemical agent.

Mr. SANDERS. And your judgment about whether or not the Iraqis, from an offensive point of view, used chemical or biological weapons?

Mr. TUCKER. Those are based on reports of detections, for example, during the breaching operations by the Marine Corps, during the invasion of Kuwait. There were detections with FOX reconnaissance vehicles, which have a very reliable detection system called a gas chromatograph mass spectrometer.

There were multiple detections with the so-called M256 kit, which is a highly reliable way of confirming initial chemical alarms. There was also a device called a RASCAL, which can detect clouds of chemical agent at a distance.

All of these systems detected a number of different chemical agents during the ground war, including lewisite and mustard, which are blister agents, and sarin, which is a nerve agent.

Mr. SANDERS. So your conclusion, as I recall from your testimony, is that there was not a massive attack?

Mr. TUCKER. Clearly, people were not falling like flies, which one would expect from a massive use of chemical agent. But, for example, there may have been chemical mines. There may have been occasional use of artillery shells.

I believe what happened is that there was some delegation of authority from Iraqi senior command levels to front-line units to actually use these weapons, and that there was some uncoordinated use. But because of the speed of the war and the fact that the weather conditions were adverse, there was no coordinated use, no effective use of chemical weapons.

Mr. SANDERS. Am I hearing you correctly? Obviously, one has to know what is true and what is not true, and we can speculate all we want. But, in terms of speculation, they have a history of using it. They used it right after the war. You're suggesting that the stuff was there?

Mr. TUCKER. Yes.

Mr. SANDERS. And you're suggesting that maybe permission was given to some of their front-line people to use it, and you're arguing, given all of that, it shouldn't shock you that some of that was used?

Mr. TUCKER. Because, for example, there are communications intercepts, where we intercepted Iraqi military communications, and there were indicators that they had issued an order, that senior command levels had issued an order to front-line troops to use the weapons if needed against Coalition forces.

Mr. SANDERS. Do you also suggest that, in terms of the burning oil wells, that that might have been an area where some——

Mr. TUCKER. Well, there's one document that is suggestive of the possibility. When a number of Iraqi units were ordered to sabotage the Kuwaiti oil wells, they were also ordered to—I forget the exact term, but there was a reference to "chemical preparations." The troops themselves were ordered to wear chemical protective gear and to set up decontaminationsites. So that is suggestive.

I'm not saying this is conclusive evidence by any means, but it is suggestive of the possibility that some of the oil well fires were deliberately contaminated with chemical weapons.

Mr. SANDERS. I mean, the bottom line of what you're saying is, given all of these factors, you would be surprised if our troops were not exposed to more than Khamisiyah?

Mr. TUCKER. Right. I think the CIA and the Pentagon have made an effort to fence in the problem by focusing on Khamisiyah, while ignoring a number of other incidents of this type.

Mr. SANDERS. Are you confident, when Dr. Rostker tells that they are now exploring a whole lot of other areas? Do you think we may see something?

Mr. TUCKER. I was encouraged to hear that they have an open mind that there may have been other incidents of this type. When I was on the committee staff, they were completely categorical that there had been no exposures. So there has been a kind of paradigm shift since Khamisiyah and now they are more open to the possibility.

Mr. SANDERS. Mr. Chairman, thank you very much.

Mr. SHAYS. We're ready to close up here. I just need to have a sense of direct dose versus low level.

First, I'm just going to say to you that one of the things that has troubled me throughout our hearings, and this is the eighth hearing we've had, as a State legislator, I got involved in environmental issues and safety in the workplace and, for me, it was like lesson No. 1, certain chemicals in the workplace cause harm, illness, and potential death.

It seems to me like the Army hasn't learned that lesson yet. It does surprise me that people that have your views somehow aren't at the VA and aren't at the DOD. I would like to understand, just appreciate that a little bit more. Is the kind of science that you're in, and your expertise, not the kind of science that doctors get into in terms of financial remuneration?

What got you into this field, and why aren't there more people in your field? Why am I not seeing more people of your expertise in the VA? When we had one member from the VA testify, they really couldn't think of people that had your expertise, except for one or two, really a handful.

Mr. TIEDT. I'd rather not even speculate on that. Let me give you the realities. Simply consult my reference list, look at all the authors, and look at their affiliations. The DOD and the DVA have lots of scientists that know lots about low-level nerve gas, organophosphate exposures, and the toxicities of PB and like chemicals.

Matter of fact, that's where most of the funding and the research comes from—the DOD-funded laboratories.

Mr. SHAYS. I thought you were a little unfair to Dr. Joseph, because I'm not sure that he would have publicly stated—it may have been your sense of his three levels of what he—the growth of his sense of what Gulf war syndrome was.

Therefore, because I thought you were a little unfair, I was trying to find the exact quote that I recalled. The sense I had from it was that there have been very few low-level studies of exposure to chemicals, that basically, his view, high-level exposure, acute illness, we know we have a problem; low-level, we don't really have any proof that this is a health care problem.

Yet you seem to be implying that there are a number of studies that may, in fact, even be low-level studies. There certainly are, in the private sector, in the workplace.

Are you aware that there are DOD studies that can verify and could have alerted the DOD to the seriousness of low-level exposure to chemicals?

Mr. TIEDT. Yes, I am. I mean, for example, one of the best DOD studies out, I think it was published in 1985, the lead author is Meshul—M-e-s-h-u-l.

He finds that he was able to give a dose of sarin, that it caused no acute toxicity, none. But then he goes in and pulls the muscles out, and he finds all kinds of, you know, neuromuscular junction problems, and it's going to be long-lasting neuromuscular junction problems.

That's not even tapping into the NTE, the other enzyme, which is more of a long-term, you know, delayed neuropathy sort of thing.

Certainly, there is evidence out there, and before and after the Gulf war. It's not bleak. It is simply not bleak. I just ask folks to really look at the reference list. It's not my interpretation. It's really the DOD determinations.

Keep in mind some of the procedures about things. I'm not sure if anybody has published a study. When you publish a study and it's paid for by somebody, quite often you have to get endorsement. For example, that just recently came out on generic Synthroid. They had to get an endorsement.

Being a pharmaceutical executive in clinical research, I am aware of the confidentiality agreements that I've asked a variety of investigators to sign.

I believe it's a certainty that any study that is going to be postured in the scientific literature as a DOD-funded study, done by DOD employees, particularly at the Aberdeen Chemical Warfare R&D facility, is going to be approved up the chain of command and finally get an endorsement to get out into the published literature.

Now, these studies are not done by low-level scientists running amok up in Aberdeen.

Mr. SHAYS. Well, your testimony raises whole levels of new inquiry for us. I had accepted as reality that, as foolish as it seemed to me to be, the DOD wasn't into doing much work in low-level exposure and, as a result, I was critical of them, because I couldn't justify it in my own mind.

You're saying—and we're going to go back and examine the record—you're saying that's not so. You've also basically testified that people under oath in 1994, in your judgment, were really contradicting a scientific fact.

Mr. TIEDT. DOD and the FDA said, May 6—I didn't bring the testimony with me.

Mr. SHAYS. It's right here.

Mr. TIEDT. 1994.

Mr. SHAYS. Right.

Mr. TIEDT. That was the context. And, you know, actually, said, you know, "We agreed to keep medical records; we agreed to give folks PB brochures outlining the side effects and the things to be cautious of. We agreed to do that." Well, they didn't do it.

Mr. SHAYS. We are going to be having a hearing on May 8, 1997, whose topic is going to be bioethics and informed consent, so we're going to be getting into that whole issue.

Your testimony has been really quite excellent. It has been a very interesting day.

Dr. Tucker, we didn't get as much into your area, but we have in the past. Is there anything that you would want to close with?

Mr. TUCKER. OK. I would like to make a remark relevant to the topic we were just discussing.

Historically, U.S. chemical defense doctrine has——

Mr. SHAYS. Let me interrupt you and say that I also understand you have some recommendations to make?

Mr. TUCKER. Yes, that's right.

Mr. SHAYS. OK. Why don't you do that, as well?

Mr. TUCKER. OK. Thank you.

Historically, U.S. chemical defense doctrine has discounted the possibility of harm from doses of chemical warfare agents that are too low to produce immediate acute effects.

Much of the research on low-dose exposures has dealt with occupational exposures—for example, people who work at Army depots where chemical agents are stored and who work day in and day out with very low level, whole-body exposures. I think there has been a disconnect between the chemical defense doctrine for the battlefield and the development of occupational safety and health measures for depot workers. That might be part of the explanation.

In general, the goal of chemical-defense doctrine has been to minimize the impact of an enemy's use of chemical weapons on the tempo and effectiveness of U.S. military operations. They have done this by setting up the so-called MOPP scale—mission-oriented protective posture—which refers to the ensemble of protective gear that U.S. troops wear—gas mask, poncho, and protective garments.

The idea is to calibrate the level of protection to the assessed chemical threat, because when people are in MOPP–4, the full ensemble, they are almost incapacitated. They cannot fight efficiently, particularly under hot weather conditions. They have poor vision. They can't communicate well. They are under a higher level of stress.

To deal with this problem, the Army has sought to minimize the level of protection that troops wear in combat, and calibrate it to the assessed level of threat.

As a result, there has been a kind of all-or-nothing mindset that has viewed chemical weapons exposures as either severe if they produce acute effects or, if they're sub-acute, they're just discounted, they're viewed as harmless.

Commanders during the Gulf war generally disregarded reports of low-level chemical detections and exposures because of this all-or-nothing mindset. I believe that, later on, after the war, when large numbers of troops began getting sick, the same commanders wished to avoid accountability for serious errors of judgment, such as blowing up bunkers that may have contained chemical weapons. They refused to acknowledge the problem, hoping it would simply go away.

In my view, regardless of who was at fault—that's really no longer important—the critical issue is to get to the truth, so that

we can make sure that future soldiers are better protected against these low-level threats and better treated by their Government if they are exposed.

In terms of my recommendations, I strongly believe that the executive branch's failure to deal forthrightly with this issue from the beginning has seriously eroded public confidence, not only in the Department of Defense but in Government in general. I think only a full disclosure of the facts and acceptance of official responsibility where it is due can restore the relationship of trust between Government and the people that is the essence of our democracy.

To this end, I would offer two recommendations.

First, a crucial untapped source of information about possible toxic exposures during the Gulf war is the large volume of environmental and biomedical samples that U.S. technical intelligence teams collected throughout the war zone during and after Desert Storm. A memo describing this sampling operation in detail is attached to my written testimony. It was coordinated by a rather shadowy unit called the JCMEC, based on Dhahran.

Despite requests under the Freedom of Information Act, the results of these analyses have never been made public. I would, therefore, urge the subcommittee to request these records from the Department of Defense and, if the request is denied, to issue a subpoena for their release.

Second, I would agree with Mr. Sanders that the Pentagon has suffered a significant loss of credibility and that the future investigation of chemical exposure incident should be entrusted to an objective and disinterested body that can regain the confidence of the American people.

My suggestion would be for Congress to establish a bipartisan select committee of both houses to conduct an independent investigation of the exposures issue. This committee should have full subpoena power and access to the full range of classified information on the Gulf war.

Mr. SHAYS. Thank you. Dr. Tiedt or Dr. Somani, do you have any closing comments?

Mr. TIEDT. I would add, regarding the recommendation to get additional information, I'm aware, because I've received a couple copies, of unpublished DOD studies that are internally completed and have signoffs, but they simply did not, you know, fit the need to get published.

It seems to me that, undoubtedly, there are many, many others—unpublished studies, finished, but just not ready for prime time publication—and I would recommend that those get requested, as well.

Mr. SHAYS. OK. Dr. Somani.

Mr. SOMANI. Yes. My recommendation would be that, as Dr. Rostker already pointed out, that they have announced about the grants for the low-level studies, and hopefully, they will continue that, because the future problem is with the low-level studies.

Mr. SHAYS. One problem with studies for me right now is that I'm not prepared to recommend that we have a lot more studies. I'm not prepared to recommend we have a lot more studies. I feel like we're all studied out, and I want to see some action.

Obviously, we need to continue studies, but I don't want to wait for action.

Mr. SOMANI. Effective of a low level of the organophosphate, the nerve agents. OK.

No. 2 will be, we know that there should be other pretreatment drugs besides pyridostigmine, like physostigmine, and I'm sure they should be looking into it. In fact, in the last symposium, they did say that they will be looking into physostigmine as a pretreatment drug.

Mr. SHAYS. I would like to thank you gentlemen. The third panel has the most difficult job, because we've been here a while. You were very stimulating and informative, all three of you.

This was a day well spent. I'm very grateful to all of you. I thank those of you who have stayed to listen to the testimony of our witnesses, and I thank the Department of Veterans' Affairs, because I do know we have officials from there who have been here—most of the day, or all of the day? All of the day. For the record, that is very appreciated. Thank you very much.

[Whereupon, the subcommittee was adjourned.]

[Additional information submitted for the hearing record follows:]

DEBBIE STABENOW
8TH DISTRICT, MICHIGAN

1516 LONGWORTH HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-2208
TELEPHONE: (202) 225-4872
FAX: (202) 225-5820

Congress of the United States
House of Representatives
Washington, DC 20515–2208

COMMITTEE ON AGRICULTURE
SUBCOMMITTEE ON GENERAL FARM COMMODITIES
SUBCOMMITTEE ON FORESTRY, RESOURCE CONSERVATION AND RESEARCH

COMMITTEE ON SCIENCE
SUBCOMMITTEE ON TECHNOLOGY

April 22, 1997

Mr. Robert Newman
Subcommittee on Human Resources
B-372 Rayburn HOB
Washington, DC 20515

Dear Mr. Newman:

I respectfully request that the testimony of Scott A. Burnett, a Gulf War Veteran, be included as written testimony for the hearing on Gulf War Illness on Thursday, April 24. Mr. Burnett served in the Gulf from early September of 1990 through March of 1991. A letter from Professor Garth L. Nicolson is also part of the testimony.

Thank you for your consideration. I look forward to hearing the committee's decision.

Sincerely,

Debbie Stabenow
Member of Congress

DS:er

DISTRICT OFFICES:

3401 EAST SAGINAW #214
LANSING, MI 48912
PHONE: (517) 336-7777
FAX: (517) 336-7236

2900 EAST GRAND RIVER
HOWELL, MI 48843
PHONE: (517) 545-2195
FAX: (517) 545-2430

2503 SOUTH LINDEN
FLINT, MI 48532
PHONE: (810) 230-8275
FAX: (810) 230-8521

PRINTED ON RECYCLED PAPER

Scott A. Burnett
2014 N. McKinley Rd.
Flushing, MI. 48433

April 20, 1997

To Those Who Are Concerned:

I am writing today to testify to my experiences pertaining to my services in the Gulf War and my health condition since that service.

I am a Gulf War Veteran, I served in the Gulf from early September of 1990 through mid March of 1991. I served in the U.S. Army, 101st. Airborne Division, for four years, from May, 1988 until May, 1992.

While serving in the Gulf, Desert Shield-Desert Storm, I firmly believe that I was exposed to biological/chemical weapons while doing a night patrol in November of 1990, we were locatated about 60 miles South of Kuwait at the time. I began smelling a musty smell or odor. I still, to this day have this smell in my nostrils. For years, I have been asking other people if they can smell it, but they cannot.

The exposure mentioned above, the pyridogistigmine bromide tablets, the vaccines, the other chemical exposures, ie, pesticides, petroleum products, stress, both physical and psycholical, the harsh desert environment, blowing sand, or other unknown causes, have resulted in serious damage to my heart.

After serving three years in the 101st Airborne Division, I suddenly found that I could not keep up with physical training, running, etc. I became winded very fast, I was threatend that I would be chaptered out of the Army if I could not meet their standards. This occurred after returning from the Gulf, April, 1991-May, 1992. During this period of time, I also began to have trouble with my knees also, the medical staff dismissed this problem, calling me a "crybaby."

I began experiencing headaches that seemed to throb my eyes out, I was fatigued all of the time, had muscle twitching, had sharp mood swings plagued with anger over nothing and suffered from chronic diarrhea.

When I was discharged from the Army in May of 1992, I was determined to get on with my life, I went back to school, and completed my Associates degree in Criminal Justice and also an Associates degree in General Studies. I then started working on my BA degree. In December of 1994, my grades went from an A-B average to a D+. I was too tired to work and go to school, so I dropped out of school to channel my efforts towards my job.

I had headaches, and vomiting and was in an almost constant "sick to my stomach" state. My condition was worsened, as at night I would lie awake, although I was dog tired, I usually got only 1 or 2 hours of sleep per night for the next year and a half.

Then, in mid 1995, the real trouble started. Going to work made me so tired that I could not even mow my small yard or wash my truck. I was always hot, and would break into sweats with no activity. My co-workers would say, "it must be very hot outside," I did not know what to say.

In October of 1995, I came down with pneumonia and was at home sick for a month. I went to the doctor twice a week, took all the medications he prescribed, etc. I could not keep food down, walk up and down stairs, sleep, lay down, I could not breath while lying down. I was coughing up blood from my lungs, but was too sick to be concerned.

In November of 1995, I was finally admitted to the hospital, and after two days of tests, I was told that I have cardiomyopathy and congestive heart failure, which is the leading cause of death of those who are over 65 yrs of age. I was to celebrate my 29th birthday in a few days.

My heart was one and one half times normal size, and my ejection fraction (heart function) was 10-17%. I was told that I may not make it and would need a heart transplant if I was to live.

I was sent to the University of Michigan Hospital in Ann Arbor where I was treated and placed on a list for heart transplant/ heart failure clinic. I spent three weeks there, when I was sent home, I had a visiting nurse four times a week for several months. I was unable to work my state job for nearly a year. I had no disability insurance and no income. I almost lost my home. To this day the VA has not done anything that I know of to even try to compensate me. I applied for compensation in December of 1995 and there has been no determination on to this date. If it were not for my family, the government I worked so hard for would have just let me die.

A year after my medical emergency, my private physician told me that he did not know if I would make it and he was worried that he may lose me. I have been treated by private physicians during the course of my illness and have only been seen at the VA for compensation evaluation. The VA physician did tell me that I have beaten the odds, whatever that means.

I am very thankful to the many physicians who have treated me and I am especially thankful to Drs. Garth and Nancy Nicolson who were there to help me even though the DOD encouraged them not to. I feel, as do my private physicians, that the Nicolson's recommended courses of anti-biotics have done much to help me regain a good portion of my health.

I now have an ejection fraction (heart function) of about 38% and have been able to return to my job. I must take many heart medications and am also continuing with my anti-biotic therapy.

My physicians here in Flint and in Ann Arbor and the Nicolsons have been able to treat me and to keep me alive, and I am very grateful for that.

Thank You,

Scott A. Burnett

Scott A. Burnett
Phone 810-659-7929

Professor Garth L. Nicolson
David Bruton Jr. Chair in Cancer Research
Department of Tumor Biology (108)
The University of Texas M. D. Anderson Cancer Center
Houston, Texas 77030 Phone (713)792-7481 Fax (713)794-0209

July 28, 1996

Mr. Scott Burnett
2014 McKinley Road
Flushington MI 48433

Dear Mr. Burnett:

This letter will confirm from your signs and symptoms and our preliminary research laboratory tests that you have a mycoplasmal infection that is usually not detected in routine lab analyses. The particular mycoplasma that we found can penetrate and proliferate inside cells, unlike most bacteria which proliferate outside cells and can be more easily detected. It also differs from other common mycoplasmas in that it has unusual gene sequences integrated into its DNA genome. This microorganism is contagious and close contact can cause airborne transmission. You probably contracted this infection during Operation Desert Storm or by contact with individuals that served in the Gulf War.

Mycoplasma infections can cause chronic fatigue, reoccurring fever, night sweats, joint pain, stomach upsets and cramps, headaches, skin rashes, heart pain, kidney pain, heart abnormalities, respiratory ailments, gastric discomforts, thyroid problems and in extreme cases autoimmune-like disorders, such as those that lead to neurological symptoms and paralysis (this microorganism is released from infected cells carrying parts of host cell plasma membrane, and individuals may respond to the mycoplasma as well as normal host antigens resulting in autoimmune-like symptoms). The type of mycoplasma that we have found in your white blood cells is communicable between humans and should be considered moderately infectious. If your family members show symptoms, they should also receive similar treatment. Since these mycoplasmal infections are moderate contagious, immediate family members are usually infected, particularly if they have some of the same signs and symptoms.

Mycoplasma infections will respond to antibiotics, and we suggest several courses of the antibiotic doxycycline (2-3 X 100 mg/day for a total of six weeks per course). If you can't tolerate 300 mg then use 200 mg/day. We recently published a brief article in *J. Am. Med. Assoc.* (Nicolson, G.L. and Nicolson, N.L. Doxycycline treatment and Desert Storm *JAMA* 273: 618-619, 1995). This brief note discusses our results with 73 soldiers with Desert Storm-Associated Chronic Fatigue Illness: of these, 55 had good responses with doxycycline and after several antibiotic courses eventually recovered. In another publication 14/30 veterans had the mycoplasmal infection, 13/14 recovered after several cycles of doxycycline and 1/14 is still undergoing therapy (Nicolson and Nicolson, *Int. J. Occup. Med. Immunol. Tox.* 5: 69-78, 1996). The recovered veterans no longer tested positive for mycoplasma in their blood.

If the disease is present, one will feel significantly better within a few weeks of taking doxycycline. It may take some time to see a complete return to normal health, and you may require several cycles of antibiotic therapy. The treatment is not harmful, very few have adverse reactions. If you have Multiple Chemical Sensitivity Syndrome, you may have some problems tolerating doxycycline, but ciprofloxacin (1000-1500 mg/day) or azithromycin (500 mg/day) can be substituted. We also recommend that patients who also have bacterial infections should take a two week course of a broad spectrum antibiotic mixture (such as Augmentin, 3 X 500 mg per day) between their courses of doxycycline. This will suppress the bacterial infections that often accompany GWI/CFIDS. We also suggest sublingual vitamin B complex and mineral supplements (especially magnesium and selenium).

Sincerely,

Garth L. Nicolson, Ph.D.
David Bruton Jr. Chair in Cancer Research
Professor
Department of Tumor Biology
The University of Texas M. D. Anderson Cancer Center
and
Professor of Pathology and Laboratory Medicine
Professor of Internal Medicine
The University of Texas Medical School at Houston

Congress of the United States

Washington, DC 20515

January 28, 1997

The Honorable Christopher Shays
Chairman
House Subcommittee on Human Resources and Intergovernmental Relations
B372 Rayburn House Office Building
Washington, DC 20515-6148

Dear Mr. Chairman:

I write on behalf of a constituent, Ms. Elner Jean Kumler, who attributes her son's 1992 death to the Gulf War Syndrome. To aid your ongoing investigation of the Gulf War Syndrome, Ms. Kumler has asked that I forward to you a copy of her son's death certificate and a synopsis of the events leading up to the time of her son's unfortunate death. Should you continue with hearings on this tremendously important issue, Ms. Kumler respectfully asks that you consider including this information as part of your subcommittee's written record.

Like Ms. Kumler, I hope that you find this information helpful. If you have questions regarding this matter, please do not hesitate to contact me or Tony Condia of my staff at 5-2216. Thank you.

Sincerely,

Steve Chabot

Encl.

cc. The Honorable Bob Stump
Ms. Elner Jean Kumler

PRINTED ON RECYCLED PAPER

JAN 21 1997

July 23, 1996

Gregory Lee Kumler, YN2, USN
SS# 299-62-8356
September 28, 1959 - April 24, 1992

Gregory Lee Kumler, 33, Yeoman Second Class, USN died April 24, 1992 at National Institutes of Health, Bethesda, Maryland. Petty Officer Kumler was suffering from Lymphoma.

A Cincinnati native and 1978 graduate of Forest Park High School, Petty Officer Kumler attended the University of Cincinnati prior to his July 1, 1981 enlistment in the United States Navy. He served with Fleet Training Group, Guantanamo Bay, Cuba; Commander Mideast Force; Naval Air Station, Key West, Florida; Fleet Anti-Submarine Warfare Training Center, Coronado, California; Assault Craft Unit Five, Camp Pendleton, California; and Bureau of Naval Personnel, Washington DC. As a member of Assault Craft Unit Five, he served with the Fifth Marine Battalion in the Persian Gulf during Operation Desert Shield and Desert Storm. He was awarded with the Sea Service Deployment Ribbon, Meritorious Unit Commendation, Navy Achievement Medal (third award), and the Navy Commendation Medal.

Survivors include mother Elner Jean Kumler; two brothers, George Burton and Gary Allen Kumler; and a sister, Gayla Lynn Geis.

I just read the article in Playboy magazine regarding the Gulf War illness. I did not know so many young people were still suffering and hope that my son's death may somehow help them.

Let me begin at the beginning. Both my husband and I were in the Navy, stationed at Great Lakes. Greg was born strong and healthy at the Naval Hospital there. So he had no other choice but to join the Navy.

While stationed in San Diego he found out that he was HIV positive. He worked hard to keep up his health and "T" cell count to maintain the Navy standards. He was then chosen for Special Forces Training (SEAL), and completed the desert survival, the underwater training, the jumping from aircraft, etc. But he was told that the Officer-in-charge of the jungle survival part refused him because of the HIV and the trips to the doctor that it required. I mention this to give you some idea of his excellent physical condition.

Then Desert Storm. At that time he was stationed at Camp Pendleton, with the 5th Marines, in the office handling the LCAC's (Landing Craft Air Cushioned) assault craft paper work as their yeoman. When the 5th Marines LCAC's were deployed in mid-August, 1990, so was Greg, as a bow gunner on one of the landing craft.

He called home several times while sitting in Saudi Arabia, waiting for the war to start. He talked of the missiles and watching them shot down, of putting on and taking off the gas masks, and I believe he said he had some kind of shot to inject himself with against chemical exposure. Also he talked of a foot fungus that everyone had from showering with their boots on, and being treated for it.

When the war started they made amphibious landings on three islands, taking some prisoners, before landing at Kuwait City. The Marines were clearing the beach of land mines when Greg saw a public phone in a damaged hotel and called me. He told me that he could see the burning oil wells and that the smoke was very thick, making it hard to breathe.

After the war, my son returned to duty at Camp Pendleton. He came home on leave in July of 1991. At that time he broke out in a red rash and became quite ill. He went to a local Cincinnati doctor who had no idea what was wrong with him. The doctor ran test. He had the rash for over a week and spent most of his leave in bed. To me, it looked like measles only bigger spots and a brighter red color.

He returned to Camp Pendleton until his tour was over there, a few months. He was then stationed in Washington DC. On his way to Washington he stopped at home for a few days looking and acting healthy.

Christmas night 1991 he called from his hospital room in the Naval Hospital in Bethesda, Maryland. He had fluid around his heart and was in pain and having problems breathing. They drew the fluid from around his heart, tested the fluid and everything else, but had no answers to his problem. He got better and went back to his apartment and work. A few weeks later, back in the hospital, more fluid and high temperature. More doctors and more tests. . .still no answers. He felt better and was discharged. A few weeks later, back in the hospital again. This time I drove to Washington to be with him. He had a high temperature and fluid in and around his lungs. While I was there, fluid had to be taken again from around his heart. Many more tests, more doctors (3 or 4 doctors for each and every part of his body, plus HIV doctors). Still no answers. He feels better and they sent him home (to his DC apartment).

I stayed with him for a few days and it was amazing to watch him prepare his food and his health routine. Since he was HIV positive, he prepared all his own meals, washing all fruit and vegetables and meat; and then cooking all the meat fully at high temperatures to kill any germs, etc. He worked out each day with some weights (not very heavy, but weights). He looked better than I could ever imagine. His "T" cell count was much better than the Navy required, so he was not worried with that. I returned home.

Next came the call from Greg at Bethesda Hospital saying he was moving in a few minutes to the National Institute of Health across the street for some special treatments he had volunteered for. He gave me the phone number of his room at NIH. That night I called his room to see if he was settled in. The nurse's desk answered his phone saying he was in intensive care and gave me that phone number. The intensive care nurse told me that the whole family should come there and soon. We were able to spend a few days with him and to let him know how much he was loved.

The whole time we were there, doctor after doctor said they had no real idea of what to do. Some thought he has some unknown lung fungus, others said he had lymphoma cancer and started treating him for that. The treatment they said looked as though it was working (special new treatment). But his lungs would not work. Greg passed away on April 24, 1992 with us standing there helpless.

At the time of his death he still looked healthy except he had lost his hair from the treatment.

When the doctors came to the waiting room after his death for me to sign papers, they said they were listing the cause of death as Lymphoma because they didn't know how else to list it.

Since my son was a Yeoman and very health conscious, he kept a duplicate copy of his health records with all the test results of all those tests run on him. I have all of these papers and will make them available to you to help others. He spent a big part of his life in service to others, maybe in death he can help again.

If I can be of any service , please do not hesitate to contact me. I know that if my son had not gone to the Gulf War, he would be here with me now.

Sincerely,

Jean Kumler

Elner Jean Kumler

Enclosure: Copy of death certificate

NAVAL MILITARY PERSONNEL COMMAND, DEPARTMENT OF THE NAVY, WASHINGTON, D. C. 20370

lrw

REPORT OF CASUALTY

1. REPORT NUMBER AND TYPE: 117573-A-1-a Corrected Sup Rpt 92 May 18 Final

2. DATE PREPARED: 1992 Apr 30

3. SERVICE IDENTIFICATION (Name, Social Security Number, Grade or Rate, Component, Branch and Organization), (NOS/NJC): 1st Enl: 1981 Jun 3

KUMLER Gregory Lee 299-62-8356 PO2 E05 USN E

4. CASUALTY STATUS a. ☐ BATTLE ☒ NON-BATTLE b. COMMENCED TOUR DATE U.S. 922

c. STATUS ☒ DEATH ☐ KIA ☐ MISSING ☐ MISSING IN ACTION ☐ CAPTURED ☐ OTHER _____ (Specify)

d. DATE 1992 Apr 24 e. PLACE NIH Bethesda MD

f. CAUSE & CIRCUMSTANCES Malignant Lymphoma

5 a. DATE AND PLACE OF BIRTH: 1959 Sep 28 North Chicago IL

b. RACE: White

c. SEX: Male

d. RELIGIOUS PREFERENCE: Presbyterian Churches

6. DATE AND PLACE OF LAST ENTRY ON ACTIVE DUTY IN CURRENT STATUS AND HOME OF RECORD AT TIME: 1981 Jul 1 Cincinnati OH Cincinnati OH

7 a. PAY GRADE: E05

b. BASIC PAY: $1430.10 Over 10 Yrs

c. INCENTIVE/ADDITIONAL PAY ☐ YES ☒ NO

d. CHECK IF APPLICABLE ☐ CREW ☐ PASSENGER

8. DUTY STATUS

ACTIVE DUTY DUSTA: BUPERS WASHINGTON DC

9. INTERESTED PERSONS (Name, Address, Relationship) DATE OF RECORD OF EMERGENCY DATA FORM 91 Dec 6

Elner Jean (Wright) Kumler[1] 10 Town Commons Way #21 Cincinnati, OH 45215 Mother

10. REPORT FOR VA TO FOLLOW ☐ YES ☒ NO

11. REPORTING COMMAND AGENCY AND DATE REPORT RECEIVED IN DEPARTMENT: NATNAVMEDCEN BETHESDA MD 92 Apr 24

12. PRIOR SERVICE DATA ☐ YES ☒ NO

13. REMARKS

Item 9 cont'd:

Linda Lee (Bezich) Kumler[2,3] 14701-D Flint Lee Road Chantilly, VA 22021 Widow

Joseph Edwin Kumler III Address Unknown Father

FOOTNOTES:
1. Adult next of kin.
2. Beneficiary for gratuity pay in event there is no surviving wife or child, as designated on record of emergency data.
3. Beneficiary for unpaid pay and allowances, as designated on record of emergency data.

14. DISTRIBUTION F

COMNAVBASE
PHILADELPHIA PA
COMNAVDIST
WASHINGTON DC

15. SIGNATURE ELEMENT

Certified to be a true Certification of Casualty.

B. E. MacDonald

for Head, Casualty Assistance Branch
By direction of the Commander, Naval Military Personnel Command

DD FORM 1 FEB 73 1300

REPLACES OP FORM 1310, 1 MAR 60, WHICH IS OBSOLETE

CERTIFIED TO BE A TRUE COPY
WHHolmes, YNC, USNRT