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GULF WAR VETERANS' ILLNESSES: HEALTH OF COALITION FORCES

HEARING

BEFORE THE

SUBCOMMITTEE ON NATIONAL SECURITY, VETERANS AFFAIRS AND INTERNATIONAL RELATIONS

OF THE

COMMITTEE ON GOVERNMENT REFORM

HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTH CONGRESS

SECOND SESSION

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GULF WAR VETERANS' ILLNESSES: HEALTH OF COALITION FORCES

THURSDAY, JANUARY 24, 2002

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON NATIONAL SECURITY, VETERANS AFFAIRS AND INTERNATIONAL RELATIONS,
COMMITTEE ON GOVERNMENT REFORM,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:02 a.m., in room 2154, Rayburn House Office Building, Hon. Christopher Shays (chairman of the subcommittee) presiding.

Present: Representatives Shays, Putnam, Gilman, Platts, Schrock, Otter, Kucinich, Sanders, Schakowsky and Tierney.

Staff present: Lawrence J. Halloran, staff director and counsel; Kristine McElroy, professional staff member; Jason M. Chung, clerk; Sarah Despres, minority counsel; and Jean Gosa and Earley Green, minority assistant clerks.

Mr. SHAYS. A quorum being present, the Subcommittee on National Security, Veterans Affairs and International Relations hearing entitled, "Gulf War Veterans' Illnesses: Health of Coalition Forces," is called to order.

We extend a very warm welcome to our distinguished colleagues from the United Kingdom. On the right, the Honorable Lord Morris of Manchester, a member of the House of Lords and a former member of the House of Commons, and the Right Honorable Bruce George, a member of Parliament.

Throughout his public life Lord Morris has been a tireless advocate for the disabled. He currently serves as the Parliamentary Advisor to the Royal British Legion and is a member of the Inter Parliamentary Gulf War Group.

Mr. George has chaired the Defence Select Committee in the House of Commons since 1997. He, too, is a Parliamentary Advisor to the Royal British Legion. He has been an invaluable ally and friend to this subcommittee in pursuing oversight of Gulf war veterans' issues.

I think I'm stumbling over these words because as I went through a passageway in the Capitol I noticed the bullet holes from the war of 1812. So I'm just a little uneasy about this.

We welcome their knowledge, expertise and insight, and we look forward to continuing our collaborative efforts on behalf of our veterans. I ask unanimous consent they be afforded the parliamentary privilege of participating as members of the subcommittee hearing. Without objection, so ordered.

This subcommittee has also been in contact with the Honorable Bernard Cazeneuve, a member of the French National Assembly and president of the Commission on Gulf War Illnesses. Mr. Cazeneuve was unable to attend the hearing today, but his office offered to provide material for the record on French efforts to determine post-war health effects. I ask unanimous consent that the hearing record remain open for 2 days for that purpose and that, after consulting with the minority, the material provided be included in the record. It's in French. So, without objection, so ordered.

The book and film Blackhawk Down vividly depict the unique physical and moral hazards of modern warfare. In the twisted streets of Mogadishu, Somalia, elite U.S. Army Rangers fought, and died, to redeem their pledge never to leave a fallen comrade behind.

That same debt of honor is owed to the men and women from the coalition of nations who fought, and prevailed, in the toxic battlefields of the Persian Gulf war, and they came home sick. So today we ask again if the delayed casualties of Operations Desert Storm and Desert Shield are being left behind by a stunted research effort to find the causes and cures of their war-related illnesses.

In our previous hearings on management of the joint Department of Defense [DOD], and Department of Veterans Affairs [VA], research protocol, witnesses raised troubling questions about the reach and rigor of an increasingly expensive, if not expansive, research program. These questions persist.

Why does it appear privately funded studies have yielded more tangible results and more promising hypotheses than Federal projects? Does the interagency review process ignore or actively stifle research that does not conform to preconceived notions of a war without lingering toxic aftereffects? Is the Federal research agenda skewed toward long-term epidemiological studies at the expense of the clinical data needed now by Gulf war veterans and their doctors? What is known about the health of veterans from other coalition nations? Are different approaches by other nations to the use of pesticides, vaccines and experimental drugs being studied for clues to explain veterans' susceptibilities and symptoms?

Befitting the importance of the questions under discussion, we are joined this morning by an impressive list of witnesses, all of whom share a commitment to improving the health of Gulf war veterans. VA Secretary Anthony Principi yesterday signaled a willingness to accelerate and broaden the research effort by appointing an advisory committee bringing new voices and new perspectives to these issues. And we sincerely thank you for doing that, Mr. Secretary. The DOD Assistant Secretary for Health Affairs will discuss health monitoring of Gulf war veterans and efforts to translate the medical lessons and mistakes of that war into better force health protection in the current and future conflicts. We welcome their participation.

Witnesses from the General Accounting Office will discuss their ongoing work, undertaken at the subcommittee's request, to assess differences in health monitoring, health outcomes and defense strategies among Gulf war coalition members.

Mr. Ross Perot, who has privately sponsored significant studies into Gulf war veterans' illnesses, will speak to the need for a renewed focus by VA and DOD on a Federal research program that is scientifically, not politically, driven. And a panel of researchers will describe sometimes Herculean efforts to overcome bureaucratic hurdles in their quest to unravel the tangled web of genetic, toxicological, neurological and immunological factors at work in causing the illnesses known as Gulf war syndrome.

We look forward to their testimony.

In closing, let me once again welcome our colleagues from the United Kingdom. We appreciate their work on behalf of all Gulf war veterans. We look forward to continued international cooperation on research and treatment protocols. The coalition that prevailed against Saddam Hussein still has men and women battling for their lives. We know they can't be left behind.

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

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Statement of Rep. Christopher Shays
January 24, 2002

The book and film *Blackhawk Down* vividly depict the unique physical and moral hazards of modern warfare. In the twisted streets of Mogadishu, Somalia, elite U.S. Army Rangers fought, and died, to redeem their pledge never to leave a fallen comrade behind.

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In our previous hearings on management of the joint Department of Defense (DOD) and Department of Veterans Affairs (VA) research portfolio, witnesses raised troubling questions about the reach and rigor or an increasingly expensive, if not expansive, research program. These questions persist.

Why does it appear privately funded studies have yielded more tangible results and more promising hypotheses than federal projects? Does the interagency review process ignore, or actively stifle, research that does not conform to preconceived notions of a war without lingering toxic after effects? Is the federal research agenda skewed toward long-term epidemiological studies at the expense of the clinical data needed now by Gulf War veterans and their doctors? What is known about the health of veterans from other coalition nations? Are different approaches by other nations to the use of pesticides, vaccines and experimental drugs being studied for clues to explain veterans' susceptibilities and symptoms?

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In closing, let me welcome our colleagues from the United Kingdom. Throughout his public life, Lord Morris has been a tireless advocate for the disabled. He currently serves as the Parliamentary Advisor to the Royal British Legion and is a member of the Inter Parliamentary Gulf War Group. Bruce George has chaired the House of Commons Defence Select Committee since 1997. He too is a Parliamentary Advisor to the Royal British Legion. He has been an invaluable ally and friend to this Subcommittee in pursuing oversight of Gulf War veterans' issues.

We appreciate their work on behalf of all Gulf War veterans and we look forward to continued international cooperation on research and treatment protocols. The coalition that prevailed against Saddam Hussein still has men and women battling for their lives. They cannot be left behind.

Mr. SHAYS. Mr. Secretary, you see a number of members who are going to speak, but I assure you you will get out of here by 10:30.

At this time I would invite Mr. Kucinich to give a statement, the ranking member of the committee.

Mr. KUCINICH. Thank you very much, Mr. Chairman and members of the committee. And to our honored colleagues from across the pond, welcome. We appreciate your dedication on this issue.

I want to thank the Chair for making it possible for this interparliamentary exchange here and to Mr. Secretary and the witnesses, welcome. I want to thank all of you for your dedication and concern for our veterans and for our active service personnel.

I want to also thank those who represent the private sector for their commitment to the health of those who serve this country.

In particular, Mr. Chairman, before I make my formal statement I want to thank Ross Perot. Long before other people began to pay attention to these issues, Ross Perot's voice was one which raised this issue to a national consciousness. I want you to know that it's made a difference; and all of us in the Congress salute you for your passion and involvement, Mr. Perot. Thank you.

Mr. Chairman, thank you for your continued attention to this important issue of the health of our soldiers, support for this country.

Often in our work on military issues in Congress the human element of our defense, the sacrifices of the men and women who wear the uniform, their health and welfare, their goals and ideas, get lost amid endless discussion over hardware, over bombers and their budgets, over artillery and avionics. But as the military strategist Colonel John Boyd always stressed, and as I firmly believe, machines don't fight wars, people do. And it is these individuals, not our planes, tanks and guns, who daily place themselves at risk of injury and even death in serving our country.

We thus have an obligation to the men and women who continue to suffer illness as a result of their service during the Gulf war to discover why they're sick and do all in our power to help them. I know, Mr. Chairman, you share this commitment. I know that commitment is shared by Mr. Sanders, who has made this a part of his important work in the Congress; and it's shared by all of our witnesses.

I would like to draw attention to a few key issues surrounding Gulf war illness. The Institute of Medicine has looked at possible connections between certain drugs and vaccines troops received and Gulf war illness and has concluded that further research is necessary to make a final determination. If indeed Gulf war illness can be attributed to the drugs or vaccines, or some combination, that were issued to U.S. soldiers, the question of how the Pentagon evaluates the safety of these treatments assumes paramount importance.

How rigorous are the processes by which the Defense Department assesses vaccines and other treatments and whether they are appropriate for American military personnel? If our soldiers are given unapproved or investigational medication such as the drug PB which during the Gulf war was used as a pretreatment for exposure to nerve agents, how does the Department of Defense assure that these medications are safe? To the extent possible, proven, science-based criteria for evaluating the safety of these treat-

ments must be utilized; and, where such criteria are unavailable, thorough consideration must be given before exposing American service members to these substances.

Related to the question of how the Pentagon determines medical treatments are safe for soldiers is how the Department of Defense decides what prophylactic treatments are necessary. The GAO report on Gulf war illness requested by the chairman makes plain the lack of consensus between the United States, the French and the British regarding the threat of biological warfare and of specific chemical agents to allied troops during the Gulf war. This begs the question: Why did our assessments different from those of our allies? If our military was relying on different intelligence than the French and the British forces, why weren't efforts made to share information? Clearly, decisions to issue prophylactic medical treatments to counter potential exposure to chemical and biological agents must be based on detailed and credible intelligence. I look forward to hearing the account of the Department of Defense about their efforts to precisely verify the biological and chemical threats to U.S. troops before issuing vaccines during the Gulf war.

Finally, I'd like to raise an issue that transcends questions regarding the health of our troops. There is concern that Gulf war illness may be connected to the bombing industrial facilities in Iraq and resulting release of toxic substances. If this conclusion is borne out, it would seem logical that the Iraqi civilian population was also impacted. Did the Department of Defense consider that the bombing of certain targets may put both American soldiers and Iraqi civilians at risk and does the Department of Defense consider this possibility now when choosing now targets in the periodic air strikes against Iraq?

I hope our witnesses will shed some light on these questions, and I thank the Chair for holding this hearing.

Mr. SHAYS. Thank you.

[The prepared statement of Hon. Dennis J. Kucinich follows:]

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Opening Statement
Representative Dennis J. Kucinich
Ranking Member
Subcommittee on National Security, Veterans Affairs and International Relations

Hearing on "Gulf War Veterans' Illnesses: Health of Coalition Forces"

January 24, 2002

Thank you, Mr. Chairman, for calling this hearing and for your continued attention to this important issue of the health of our soldiers. Let me also thank our distinguished witnesses for appearing before the committee today.

Often in our work on military issues in Congress, the human element of our defense - the sacrifices of the men and women who wear the uniform; their health and welfare; their goals and ideas - get lost amid endless discussion over hardware: over bombers and their budgets; over artillery and avionics. But as the military strategist Colonel John Boyd always stressed, and as I firmly believe, "Machines don't fight wars - people do..." And it is these individuals - not our planes, tanks, and guns - who daily place themselves at risk of injury and even death in serving their country.

We thus have an obligation to the men and women who continue to suffer illness as a result of their service during the Gulf War to discover why they are sick and do all in our power to help them. I know, Mr. Chairman, that you share this commitment, as do all our witnesses, and I hope as a result this hearing will be fruitful.

I would like to draw attention to a few key issues surrounding Gulf War illness. The Institute of Medicine has looked at the possible connection between certain drugs and vaccines troops received and Gulf War illness, and has concluded that further research is necessary to make a final determination about whether there is, in fact, a connection. If Gulf War illness can be attributed to the drugs or vaccines, or some combination, that were issued to U.S. soldiers, the

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question of how the Pentagon evaluates the safety of these treatments assumes paramount importance. How rigorous are the processes by which the Defense Department assesses vaccines and other treatments and whether they are appropriate for American military personnel? If we give soldiers unapproved or investigational medications, such as the drug PB which, during the Gulf War, was used as a pre-treatment for exposure to certain nerve agents, how is DOD assuring that these medications are safe? To the extent possible, proven, science-based criteria for evaluating the safety of these treatments must be used, and where such criteria are unavailable, thorough consideration must be given before exposing American service members to these substances.

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Finally, I'd like to raise an issue that transcends questions regarding the health of our troops. There is concern that Gulf War illness may be connected to the bombing of chemical and industrial facilities in Iraq and the resulting release of toxic substances. If this conclusion is borne out, it would seem logical that the Iraqi civilian population was also impacted. Did the Department of Defense consider that the bombing of certain targets may put both American soldiers and Iraqi civilians at risk, and does the Department of Defense consider this possibility now when choosing new targets in the periodic air strikes against Iraq?

I hope our witnesses will shed some light on some of these questions. Thank you, Mr. Chairman.

#

Mr. SHAYS. The Chair is getting a little nervous with time. I'm just going to recognize Mr. Sanders just for a brief comment. We're going to allow you, Mr. Principi, to go. Then we're going to come back to the statements because I want to hear from the rest of the Members.

Mr. SANDERS. I'll be very brief now.

Mr. Secretary and staff, thank you all very much for coming.

The bottom line, Mr. Secretary, is that in the recent statement from the Department of Defense they say, "we note that similar poorly explained symptoms have been observed among veterans after all major wars in the last 130 years," etc. My understanding of that is that, after all of the evidence, after all of the work, after 140,000 veterans reporting themselves ill, the DOD today does not believe in Gulf war illness. That is their position. There have been similar problems after World War I, World War II. They go back to the Civil War. In their interpretation there is no Gulf war illness.

I want to applaud you for recognizing and working with Dr. Feussner and the others to get the study about ALS out. That is the first time, as I understand it, the government has finally acknowledged that service in the Gulf is likely to cause a particular—more likely to cause a particular illness than nonservice. I believe that is the first of many discoveries that you're going to find. I hope that you will not continue the unfortunate position of the government in terms of radiation illness after World War II, Agent Orange after Vietnam. Our veterans deserve more.

I appreciate your willingness to jump on this issue. It's a controversial issue. You have some good people there, but, in general, the DOD and the VA have not done a good job, and I am hopeful that you will turn that around.

That's my brief statement.

Mr. SHAYS. I thank the gentleman. Mr. Sanders has been the most active member on this committee on this issue, and I thank him.

I'm going to announce and welcome our first panel, the Honorable Anthony Principi, Secretary of Veterans Affairs; accompanied by Dr. Feussner, Chief Research and Development Officer; Dr. Mark Brown, Director, Environmental Agents Service; Dr. Han Kang, Director of Environmental Epidemiological Service; and then testimony as well from Dr. William Winkenwerder, Assistant Secretary of Defense for Health Affairs, Department of Defense.

I invite all of you to stand so I can swear you in, please.

[Witnesses sworn.]

Mr. SHAYS. Note for the record that all five have responded in the affirmative.

Mr. Secretary, we're going to have you testify. I want to get you out of here so you can go to your other meetings.

Then we're going to go back to the statements of the Members; and then we're going to go to you, Dr. Winkenwerder. Then we'll take questions. Thank you.

STATEMENT OF ANTHONY PRINCIPI, SECRETARY, DEPARTMENT OF VETERANS AFFAIRS, ACCOMPANIED BY DR. JOHN FEUSSNER, CHIEF RESEARCH AND DEVELOPMENT OFFICER; DR. MARK BROWN, DIRECTOR, ENVIRONMENTAL AGENTS SERVICE; AND DR. HAN KANG, DIRECTOR, ENVIRONMENTAL EPIDEMIOLOGY SERVICE

Secretary PRINCIPI. Thank you, Mr. Chairman. Chairman Shays, Mr. Kucinich, members of the committee, distinguished parliamentarians, thank you for inviting me to appear before the subcommittee this morning. I ask that you include in the record the formal written statement of Dr. John Feussner, the VA Chief Research and Development Officer.

Mr. SHAYS. That will be in order.

[The prepared statement of Dr. Feussner follows:]

Statement of

John R. Feussner, M.D.

Chief Research and Development Officer

Veterans Health Administration

Department of Veterans Affairs

Before the National Security, Veterans Affairs and

International Relations Subcommittee

Committee on Government Reform

U. S. House of Representatives

Regarding

Research and Treatment of Gulf War Veterans' Illnesses

January 24, 2002

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Mr. Chairman and members of the Subcommittee, thank you for providing VA this opportunity to discuss the current status of the federal research program on Gulf War veterans' illnesses. I serve as the Department of Veterans Affairs' (VA) Chief Research and Development Officer and the Chairperson of the Research Working Group (RWG) of the Military and Veterans Health Coordinating Board (MVHCB). I am accompanied today by Dr. Mark Brown, Director, Environmental Agents Service, and Dr. Han Kang, Director, Environmental Epidemiology Service.

In your invitation letter, you indicated that the purpose of the hearing was to assess the status of research and treatment of Gulf War veterans' illnesses among U.S. and coalition forces. You also requested follow-up of the recent General Accounting Office (GAO) report, *Coalition Warfare: Gulf War Allies Differed in Chemical and Biological Threats Identified and in Use of Defensive Measures*.

As you know, the United States deployed nearly 700,000 military personnel during the Gulf War from August 1990 to the cease-fire on February 28, 1991. Within months of their return, some Gulf War veterans reported various symptoms and illnesses

that they believed were related to their service. Veterans, their families, and the VA have been concerned about possible health effects from exposures during the Gulf War.

Overview of the Research Portfolio on Gulf War Veterans' Illnesses

To date, the Federal government is projecting cumulative expenditures of $174 million for research related to Gulf War veterans from FY 1994 through FY 2001. There are 193 projects at various stages of completion in the research portfolio on these veterans' illnesses. In FY 1999 and FY 2000, 43 new projects were added to this portfolio. Research projects have been funded in the categories of basic research and applied research, such as clinical epidemiology and population-based epidemiologic research. To date, 116 federally funded projects have been completed. All projects and their focus areas are described in detail in annual reports to Congress.

An important role of the RWG is programmatic review and recommendations to funding agencies on research proposals that have been competitively and scientifically reviewed. The RWG continues to work diligently to foster the highest standards of competition and scientific merit review for all research on illnesses in Gulf War veterans.

Mr. Chairman, I will highlight the following topics in my testimony today: 1) an update on the status of several major research and treatment initiatives; 2) the status of two major Institute of Medicine studies; and 3) a brief description of our collaboration on research and other initiatives with our Gulf War coalition partners.

Status Report on Research and Treatment of Gulf War Veterans' Illnesses

We know that combat casualties do not always result in visible wounds, and that historically after all conflicts, some veterans have returned with debilitating health problems. VA recognizes its responsibility for developing effective treatments and prevention strategies for service-related diseases. Studies clearly show that some Gulf War veterans report a variety of chronic and ill-defined symptoms including fatigue, cognitive problems, and musculoskeletal problems, at significantly higher rates than the rates reported by non-deployed veterans.

Four National Research and Treatment Initiatives on Illnesses in Gulf War Veterans

Highlights of the ongoing research efforts include Phase III of the VA National Health Survey of Gulf War Era Veterans and Their Families, an epidemiological study of amyotrophic lateral sclerosis (ALS) in Gulf War veterans, and two major treatment trials.

The VA National Health Survey of Gulf War Veterans and Their Families began in 1995 when health surveys were mailed to 15,000 Gulf War veterans and 15,000 non-deployed veterans. The self-reported survey results have been published and provided to the Subcommittee. Results from the initial two phases of this study show that Gulf War veterans are reporting significantly higher rates of diverse symptoms, including joint, muscle, respiratory, gastrointestinal, and skin problems. This population also reports higher rates of chronic fatigue and symptoms of post-traumatic stress disorder (PTSD).

In 1998, the third phase of this study began, which was designed to perform medical evaluations on a randomly selected subgroup of the veterans who completed the earlier mailed surveys. Phase III included 1,061 Gulf War veterans and their spouses and children, and 1,128 non-deployed veterans and their spouses and children. Veterans and spouses were examined for illnesses that had frequently been reported by Gulf War veterans in previous studies, namely, chronic fatigue syndrome, fibromyalgia, post-traumatic stress disorder, neurological abnormalities (including cognitive dysfunction and peripheral neuropathy), arthritis, hypertension, asthma, and chronic bronchitis. Children were examined for birth defects, which were diagnosed through pediatric examinations.

Each individual received a complete physical examination, including a neurological exam. In addition, veterans received several blood tests, neuropsychological testing, nerve conduction velocity tests, and pulmonary function tests. The preliminary results show that Gulf War veterans demonstrated significantly increased rates of two disorders, compared to non-deployed veterans. These were chronic fatigue syndrome (1.6% vs. 0.4%) and post-traumatic stress disorder (10.1% vs. 3.2%). There were no observed differences in veterans in the rates of fibromyalgia, cognitive dysfunction, peripheral neuropathy, arthritis, hypertension, asthma, and chronic bronchitis. There

were no observed differences in the rates of the primary or secondary outcomes among the spouses of Gulf War veterans and non-deployed veterans.

Gulf War veterans have voiced concerns about a possible association between ALS and service in the war. This fatal neurological disease is also called Lou Gehrig's disease. Neither a cause nor an effective treatment for ALS is known. Preliminary data suggested that the age distribution of cases of ALS in Gulf War veterans appeared to be younger than the age distribution of cases of ALS in the general U.S. population. Accordingly, in March 2000, VA began a research effort to identify all cases of ALS, occurring among Gulf War veterans deployed to the Gulf during Operations Desert Shield/Desert Storm and non-deployed veterans. VA collaborated with the Department of Defense (DoD), and the Centers for Disease Control and Prevention (CDC), university experts, and the ALS Association to determine the veterans' health status and to describe their exposures to potential risk factors for ALS, based on clinical examinations at centers of excellence in neurological diseases. The case-finding and medical confirmation of cases was recently completed.

The preliminary results show that Gulf War veterans deployed to Operations Desert Storm and Desert Shield had almost a two-fold increased rate of ALS, compared to non-deployed veterans. There were 40 cases of ALS diagnosed among almost 700,000 Gulf War veterans. There were 67 cases among almost 1.8 million non-deployed veterans. The next step in this investigation will involve careful evaluation of possible risk factors in the veterans, including family history, military occupation, injuries and trauma, and exposures to hazardous chemicals.

As a result of the study, the Secretary of Veterans Affairs decided to take steps to compensate veterans with ALS who were deployed to the Gulf region during Operations Desert Shield/Desert Storm. VA has contacted the Gulf War veterans identified in the study to help them file new claims or to expedite existing claims.

In 1998, the VA Cooperative Studies Program initiated planning for two treatment trials, known as the "ABT" (antibiotic treatment) and "EBT" (exercise-behavioral therapy) trials. Patient characteristics for entry into both trials were similar. All veterans who served in the Gulf War between August 1990 and August 1991 were eligible for the studies. Patients were eligible if they had at least two of three symptoms (fatigue,

musculoskeletal pain, and cognitive dysfunction) that began after August 1990. In addition, patients had to be symptomatic when the study began with symptoms that had lasted for more than six months.

The ABT trial initiated its enrollment of 491 Gulf War veterans in May 1999 at 26 VA sites and 2 DoD sites. The primary hypothesis of the study was that antibiotic treatment, with doxycycline for 12 months, would improve the health status of patients with chronic symptoms who tested positive for *Mycoplasma* infection at baseline. The secondary hypotheses were that doxycycline treatment would reduce symptoms of fatigue, pain, and memory problems; and that doxycycline treatment would convert patients who were *Mycoplasma* positive to *Mycoplasm*a negative. The trial was completed in December 2001, when patient follow-up was finished.

Of the patients enrolled in the ABT study, 84% exhibited all three symptoms of fatigue, pain, and neurocognitive difficulties. The preliminary results show that doxycycline was not an effective treatment. The antibiotic did not lead to an improvement of physical function or to reductions in fatigue, pain, or memory problems. In addition, this study does not support a possible relationship between chronic symptoms experienced by some Gulf War veterans and persistent *Mycoplasma* infections.

The EBT trial initiated enrollment of 1,092 Gulf War veterans in April 1999 at 18 VA sites and 2 DoD sites. The primary hypotheses of the study were that both aerobic exercise and cognitive behavioral therapy (CBT) would significantly improve physical function in veterans, and that the combination of exercise and CBT would be more beneficial than either treatment alone. The secondary hypotheses were that treatment would lead to improvement in mental health function, and to improvement in symptoms of fatigue, pain, and memory problems. The EBT trial was completed in December 2001.

After 12 months of treatment, the functional status and symptoms of each individual were compared to his or her baseline. The preliminary results show that exercise and/or CBT did not improve physical function. However, exercise, CBT, or the combination did lead to significant improvements in mental health function. In addition, exercise, with or without CBT, lead to significant improvements in symptoms of fatigue and memory problems. Aerobic exercise appears to be a promising treatment for Gulf War veterans who have chronic symptoms of fatigue and memory problems.

Longitudinal Studies to Determine the Long-Term Health of Gulf War Veterans

The Research Working Group determined that continuing longitudinal studies that evaluate the health status of Gulf War veterans are a high priority, to determine whether their health is getting better or worse over time. There are five ongoing studies, which are supported by VA, DoD, and CDC. The five studies in Boston, New Orleans, New Jersey, Iowa, and the United Kingdom are following approximately 18,000 veterans, altogether. Each of these studies has included questionnaires on physical symptoms, psychological symptoms, and exposures during the Gulf War. The New Jersey, Iowa, and U.K. studies have also included comprehensive medical histories and physical examinations. The Boston and New Orleans scientists have evaluated their cohorts at four time points, beginning soon after service personnel returned from the war. The British scientists have evaluated their cohort at three time points, and the New Jersey and Iowa scientists have evaluated their cohorts at two time points. The RWG continues to be committed to facilitating the long-term monitoring of the health of Gulf War veterans. To aid in such an assessment, the VA Office of Research and Development released a Request for Proposals in 2000. Multiple proposals were submitted in response to this solicitation in 2001. DoD funding has recently been approved to perform a longitudinal study of the participants of the VA National Health Survey of Gulf War Era Veterans and Their Families.

In addition to the follow-up of the health of Gulf War veterans, the RWG has made a commitment to monitor the health of service members after future deployments. The Millennium Cohort Study is a prospective study of U.S. military forces, which was designed to collect population-based demographic and health data systematically to evaluate the health of service personnel throughout their military careers and after leaving military service. This study is a cross-sectional sample of 100,000 military personnel who will be followed prospectively by mail surveys every three years over a 21-year period, starting in 2001. In 2004 and 2007, 20,000 new personnel will be added to the cohort. The total of 140,000 veterans will be followed until 2022. The principal objective of the study is to evaluate the impact of military deployments on various

measures of health over time, including chronic diseases such as cancer, heart disease, and diabetes. This ambitious study requires the collaboration of DoD and VA scientists over an extended period of time.

Other Research Initiatives on Illnesses in Gulf War Veterans

VA recently established two new Centers for the Study of War-Related Illnesses at the VA Medical Centers in East Orange, New Jersey and Washington, D.C. These new Centers will assist VA in the development of appropriate preventive strategies to minimize illness following future conflicts, including both combat and peacekeeping operations, and to develop new approaches for improving the treatment of active-duty and veteran patients with war-related illnesses. Each Center will focus on medical care and risk communication for veterans, education for health care providers, and center-initiated research.

In September 2001, CDC funded two research projects designed to develop and implement more effective methods of risk communication for active-duty service members, veterans, and their health care providers. The project at Rutgers University is entitled "Improving Health Risk Communications to Prevent Unexplained Illnesses Related to Military Deployments." The project at the Jackson Foundation and Walter Reed Army Medical Center is entitled "Health-e VOICE: Optimized Implementation of a Stepped Clinical Risk Communications Guideline." These two projects will be funded for three years.

In 2000, DoD published three Broad Agency Announcements to announce the availability of research funding. The review of projects and awarding of funds were completed in 2001. The number of new projects funded in each area is:

- Toxicity of heavy metals that are relevant to the military, including depleted uranium and tungsten (5 projects);
- Biomarkers to assess toxic chemical exposures and health effects (7 projects); and
- Consequences of deployment stress on health and performance (6 projects).

A study at the University of California at San Francisco and the San Francisco VA Medical Center, which DoD recently funded for five years, will focus on neuroimaging

of veterans with symptoms of central nervous system dysfunction. A preliminary study of 12 ill Gulf War veterans in Texas suggested that these individuals showed normal brain anatomy on magnetic resonance imaging (MRI), but showed biochemical abnormalities on magnetic resonance spectroscopy (MRS). This study was limited because of the small sample size and because there was no control for alcoholism, depression, PTSD, or drug treatments. The San Francisco study will carefully evaluate 200 Gulf War veterans and 200 non-deployed veterans, through neurological exams and neuropsychological testing. Then, MRI and MRS will be performed to detect anatomical and biochemical abnormalities, while controlling for the effects of other concurrent illnesses.

Institute of Medicine Studies Related to Gulf War Veterans' Illnesses

In 1998, VA contracted with the Institute of Medicine (IOM) to perform periodic reviews of the scientific and medical literature regarding adverse health effects associated with the exposures experienced during the Gulf War. The first phase of this study focused on pyridostigmine bromide, depleted uranium, sarin, cyclosarin, and the anthrax and botulinum toxoid vaccines. This first phase was funded for 27 months, and a report on this first phase was published in September 2000, entitled *Gulf War and Health: Volume I. Depleted Uranium, Sarin, Pyridostigmine Bromide, Vaccines.*

The IOM has already begun its next two-year review, focusing on health effects from pesticides and solvents used during the Gulf War. That report is expected to be completed in August 2002.

In 1999, VA requested the IOM to perform a study to identify effective treatments for health problems in Gulf War veterans. The IOM Committee's charge was as follows:

1. Identify and describe approaches for assessing treatment effectiveness.
2. Identify illnesses and conditions common among Gulf War veterans, including medically unexplained symptoms, using data obtained from the VA and DoD Gulf War registries, as well as information in published articles.

3. Identify validated models of treatment for these identified conditions and illnesses; or identify new approaches, theories, or research on the care of patients with these conditions, if validated treatment models are not available.

In July 2001, IOM published the results of this study, entitled *Gulf War Veterans: Treating Symptoms and Syndromes*. IOM stated that difficult-to-diagnose symptoms experienced by some Gulf War veterans have a large overlap with the following seven diagnoses: chronic fatigue syndrome, depression, fibromyalgia, headache, irritable bowel syndrome, panic disorder, and PTSD. A major focus of the report was the evaluation of proven treatments for these recognized diagnoses, and IOM provided recommendations for improving health care for patients with these disorders. It concluded that available studies of proven therapies for persons with these disorders are a valuable resource for deriving effective treatments for undiagnosed illnesses. VA has already implemented many of IOM recommendations. For example, VA is developing clinical practice guidelines for chronic fatigue syndrome, fibromyalgia, and depression.

Collaboration on Research and Other Initiatives with Gulf War Coalition Partners

There has been extensive international coordination and collaboration on research between the United States and its Gulf War coalition partners. For example, there have been three research conferences that were organized by the Persian Gulf Veterans Coordinating Board (now called the Military and Veterans Health Coordinating Board, or MVHCB). British scientists have provided presentations at all 3 conferences in 1998, 1999, and 2001. The 2001 Conference had extensive international participation. The participants included 400 scientists and clinicians from Great Britain, France, Canada, Australia, the Netherlands, Denmark, and Israel.

Research scientists from the U.S. and the UK are in continual communication. DoD funded the first large British study of Gulf War veterans in 1996, which has been directed by Dr. Simon Wessely. DoD is now funding a joint research project on the health of Gulf War veterans in Iowa and Great Britain, which includes the cohort studied by Dr. Wessely. Dr. Wessely, who is an expert in cognitive behavioral therapy, is on the Data Safety Monitoring Board of the EBT study. Since 1998, a British medical officer

from the Ministry of Defence has been based at the office of the MVHCB. In addition, another British medical officer is an *ex officio* member of the Research Working Group of the MVHCB.

Research scientists from the U.S. and Canada are also in frequent communication, particularly in regard to the potential health effects of exposure to depleted uranium. In addition, scientists working for the Canadian Department of National Defence adopted the questionnaire developed by Iowa scientists for a survey of all Canadian Gulf War veterans, which was published in 1998.

As the Chair of the Research Working Group, I was asked to brief a French scientific delegation on April 4, 2001. Several of the issues discussed at that briefing were related to the findings in an 135-page report on illnesses in Gulf War veterans that was published a few weeks later. This French report was entitled: *Mission Report from the Working Group responsible for analyzing health data relating to French veterans of the Gulf War.* This report reviewed 350 American and British studies of illnesses in Gulf War veterans. The conclusions of this exhaustive review by the French Working Group were as follows:

- "None of the articles reported mortality excess among members deployed during the Gulf War as regards to members who were not deployed, except for mortality excess due to road accidents."
- "No life-threatening effects on offspring have been reported."
- "No known diseases were found in excess among members deployed in the Gulf."
- "Hospitalizations were slightly more frequent among personnel deployed in the Gulf War compared to a monitored control group of members who were not deployed during that same period of time. This slight increase relates to "non-focused signs and symptoms" that could be explained by providing routine medical check-up to members deployed in the Gulf."
- "Various signs and symptoms, functional in most cases, were found in all the studies and obviously the frequency was higher among the members involved in the Gulf War compared to the control group members. These signs and

symptoms often reflect chronic fatigue, depressive symptomatology, and also arthralgia, mood or memory disorders."

- "The identification of these signs does not clearly show a specific Gulf War syndrome concept. Consequently, an analysis of the data or factorial analysis was carried out by several authors; it shows a 'construct' of these signs depending on the factors that could have these syndromes in common. These factors are also found (though in lower quantity) among members not deployed during the Gulf War. This led to the rebuttal of a specific Gulf War syndrome concept by four out of five authors."
- "No unique cause could be distinctly attributed to the excess of detected signs and symptoms."
- "No specific link found by the authors as far as depleted uranium, fumes from burning oil wells or nerve agent sarin are concerned."
- "No publication established a link between pyridostigmine and the detected signs and symptoms, even though the assumption of a causal relation cannot be totally dismissed."
- "There are uncertainties and controversies on the possible long-term effects of low dose exposures to organophosphorous insecticides, predominantly when they are related to other factors such as stress, heat, etc."
- "The various vaccinations used during deployment and mainly those used to protect against bacteriological weapons (such as anthrax, botulism and plague etc.) seem to be responsible for an excess of some of the signs and symptoms observed."

The French Working Group concluded, "The medical data pertaining to French Veterans are not accessible. Thus, it prevents us from upholding or overturning the findings drawn from the international [American and British] literature. . . The questions that are being asked about the Gulf War have revealed, or confirmed, to the members of the Working Group that epidemiological monitoring in France for war veterans is totally inadequate."

The recommendations for a health study of French Gulf War veterans were: "In order to bring reliable and clear answers to questions raised by public debate and to concerns expressed by soldiers deployed in the Gulf, we are adamant in proposing several projects that we have classified as epidemiological studies, other research and mid-term and long-term monitoring. We feel it is essential to carry out an in-depth study using a questionnaire for all the veterans who participated in the Gulf War."

A comprehensive epidemiological study will begin with the evaluations of approximately 25,000 French Gulf War veterans in February 2002, and is planned to take two years. Dr. Roger Salamon, a professor at the University of Bordeaux, is directing the study, which will include a comprehensive questionnaire covering a full range of health effects, and a medical examination in a civilian or military medical facility.

Mr. Chairman, you also requested follow-up of the recent General Accounting Office (GAO) report, *Coalition Warfare: Gulf War Allies Differed in Chemical and Biological Threats Identified and in Use of Defensive Measures*. This report summarized the experience of troops from the U.S., UK, and France during the Gulf War. It outlined each country's approach to "chemical, biological, and radiological defense, including their use of protective gear and specific drugs and vaccines." One of GAO's major conclusions was that "owing to the number of differences in the experience of the three sets of veterans, they do not point unambiguously to any single cause for the reported illnesses." The GAO report drew "no conclusions regarding the cause or causes of health problems reported by veterans of the Gulf War." GAO also stated that they could "not preclude the possibility that additional time or more thorough examination could yield additional reports of health problems among French veterans." Indeed, plans for a "more thorough examination" of the 25,000 French Gulf War veterans are being implemented.

Summary of Major Research Findings To Date

The Federal research program has yielded several important results, as follows:

- Gulf War veterans have consistently reported increased rates of self-reported symptoms related to a wide variety of organ systems, compared to non-deployed

veterans. Several large epidemiological studies in the US, UK, and Canada have shown increased rates of self-reported illnesses in Gulf War veterans, including chronic fatigue, memory problems, posttraumatic stress disorder, major depression, musculoskeletal problems, and asthma.

- Several large epidemiological studies have shown that Gulf War veterans do not suffer from a unique, previously unrecognized "Gulf War syndrome." Five controlled studies have been published, that used a statistical technique, factor analysis, to identify patterns of symptoms. Thousands of Gulf War veterans and non-deployed veterans have been evaluated in three American and two British studies. In all five studies, the patterns of symptoms reported by Gulf War veterans were similar to the patterns reported by non-deployed veterans. These five large studies are consistent with the conclusions of an Institute of Medicine report, published in 2000: "Thus far, there is insufficient evidence to classify veterans' symptoms as a new syndrome. . . All Gulf War veterans do not experience the same array of symptoms. Thus, the nature of the symptoms suffered by many Gulf War veterans does not point to an obvious diagnosis, etiology, or standard treatment." The General Accounting Office was the most recent oversight group to perform a general evaluation of illnesses in Gulf War veterans. Their report, which was dated July 31, 2001, concluded, "Seven expert panels have concluded that no unique Gulf War syndrome exists. . . No one diagnosis predominates; diagnoses include all types of injuries and illnesses."
- There are few differences in the rates and causes of hospitalizations among Gulf War veterans and non-deployed veterans, when all 697,000 Gulf War veterans were compared with an equal number of non-deployed veterans. Hospitalizations for fractures and soft-tissue injuries were more frequent in Gulf War veterans in military hospitals nationwide and in civilian hospitals in the state of California. In VA hospitals nationwide, hospitalizations for respiratory system and digestive system diagnoses were more frequent in Gulf War veterans.
- Phase III of the VA National Health Survey of Gulf War Veterans and Their Families has recently been completed and the analyses of the data have just begun. The preliminary results suggest significant increases in the rates of chronic fatigue

syndrome and post-traumatic stress syndrome in Gulf War veterans, compared to non-deployed veterans. There were no differences in the rates of several other diseases, such as fibromyalgia, cognitive dysfunction, and peripheral neuropathy. Because there are few published data on the results of medical evaluations of patients, three other large studies continue to evaluate objective medical diagnoses, in Portland, Iowa, and the UK.

- Mortality rates in both Gulf War veterans and non-deployed veterans are about 40% of the mortality rates in the general U.S. population, which means that veterans are much healthier. This has been referred to as a "healthy warrior effect." In both the U.S. and the UK, Gulf War veterans have had a significantly higher mortality rate due to unintentional injuries, mostly motor vehicle injuries, compared to non-deployed veterans. This is the only difference in mortality rates, to date. In the U.S. study, the rate of motor vehicle fatalities has recently declined in Gulf War veterans, so that it is now equal to the rate in the non-deployed veterans.
- Two very large, population-based studies of hospital records have demonstrated that the rates of birth defects were the same in the offspring of Gulf War veterans and non-deployed veterans. These studies were performed by the Walter Reed Army Institute of Research in Washington, DC, and the Naval Health Research Center in San Diego, respectively. In addition, the preliminary results of the VA National Health Survey of Gulf War Veterans and Their Families seem to be consistent with these earlier findings. This study relied on the most valid method of determination of birth defects, which is a medical examination by a pediatrician. There seem to be no significant differences between the rates of birth defects in offspring of Gulf War veterans and non-deployed veterans.
- Neurological examinations have been performed in several populations of Gulf War veterans, and these studies have shown mixed results. The preliminary results of the study of amyotrophic lateral sclerosis (ALS) demonstrated 40 cases of ALS among 700,000 Gulf War veterans and 67 cases of ALS among 1.8 million non-deployed veterans. There was almost a two-fold increase in the ALS rate in Gulf War veterans.
- In contrast, other studies have shown that Gulf War veterans do not demonstrate objective evidence of neurological diseases at higher rates than non-deployed

veterans. The rates of hospitalization for neurological diseases were low in military hospitals nationwide, and the rates were the same among Gulf War veterans and non-deployed veterans. In VA hospitals nationwide and in civilian hospitals in California, the rates of neurological diseases were low, and the rates were significantly lower among Gulf War veterans, compared to non-deployed veterans. In the VA National Health Survey, neurological examinations, neuropsychological testing, and nerve conduction velocity tests were performed. There were no significant differences in the rates of cognitive dysfunction and peripheral neuropathy between Gulf War veterans and non-deployed veterans. Large population-based studies in Portland, Iowa, and the UK are using similar methods to evaluate the central and peripheral nervous systems, and these studies will be completed in 2002. Also, eight studies are performing neuroimaging in Gulf War veterans and non-deployed veterans, including conventional magnetic resonance imaging (MRI), functional MRI, magnetic resonance spectroscopy, and single-photo emission computed tomography.

- Studies of several populations of Gulf War veterans and non-deployed veterans have demonstrated consistent results on neuropsychological testing, including the VA National Health Survey. Self-reports of memory and concentration problems have often been more common among groups of Gulf War veterans than among control subjects. However, on objective neuropsychological testing, overall performance has been similar on most tests in Gulf War veterans and control subjects. In a small proportion of tests, such as attention or response speed, Gulf War veterans have performed significantly more poorly than controls.
- In many studies, Gulf War veterans have been diagnosed with significantly higher rates of PTSD and major depression than non-deployed veterans. These higher rates have been demonstrated through structured psychiatric interviews, as well as through self-administered questionnaires. The VA National Health Survey is the largest population-based study that used structured psychiatric interviews, which are the most valid method of diagnosing diseases such as PTSD. The rates of PTSD appear to be significantly higher in Gulf War veterans (10.1%) than in non-deployed veterans (3.2%)

- Four studies have shown that the rates of infectious diseases have been low in Gulf War veterans, and significantly lower than the rates in non-deployed veterans. Two studies have demonstrated no differences in the rates of infection with *Mycoplasma fermentans* in Gulf War veterans, compared to non-deployed veterans, either before or after the war. The Antibiotic Treatment Trial was a national clinical trial designed to determine whether long-term treatment with doxycycline would lead to improvement in *Mycoplasma*-positive Gulf War veterans. The preliminary results of the ABT suggest that doxycycline does not lead to an improvement of physical functioning or chronic debilitating symptoms. The study also shows no relationship between the presence of chronic symptoms, changes in clinical health status, and the results of *Mycoplasma* blood tests.
- US soldiers destroyed many of the chemical rockets at Khamisiyah, Iraq, on March 10, 1991. DoD assessed that some US troops were likely exposed to very low levels of sarin and cyclosarin from the demolitions. This is the only known event during the Gulf War that may have exposed large numbers of troops to chemical warfare agents, even at low concentrations. There are 6 research projects that focus on the possible long-term effects of exposures due to the demolitions at Khamisiyah, two of which have been published. One study demonstrated no differences in the rates or causes of hospitalizations among veterans who may have had low-level exposure due to Khamisiyah, compared to veterans who had no exposure. A second study showed no differences in the rates or causes of mortality among veterans with possible low-level exposure, compared to veterans with no exposure. The Institute of Medicine is performing one of the ongoing studies, which will finish in 2002. This study is comparing the rates of mortality, hospitalization, and self-reported symptoms in Gulf War veterans with possible low-level exposure due to Khamisiyah, with the rates in Gulf War veterans with no exposure.
- Several studies have been published recently that focused on the potential health effects of pyridostigmine bromide (PB) and pesticides, alone or in combination. The key research question is whether PB can cross the blood-brain barrier. Several studies have evaluated whether other chemicals, such as pesticides, or stressful stimuli, such as heat stress or swimming stress, can increase the permeability of the

blood-brain barrier, and can therefore enhance penetration of PB into the brain. All these recent studies have reached the same conclusion, that other chemicals or stressful stimuli do not increase the permeability of the blood-brain barrier to PB, and that PB does not penetrate the brain, even at very high doses. If PB does not cross into the brain, it is unlikely to cause changes in brain function.

- The available scientific and medical evidence to date does not support concerns that depleted uranium (DU) has caused or is causing illnesses in Gulf War veterans. No Gulf War veterans experienced intakes high enough to cause adverse health effects. A total of 104 individuals were exposed to DU in friendly fire incidents, some of whom have retained metallic fragments. While there has been no clinical evidence of illness associated with DU exposure to date, the veterans involved in friendly fire incidents will remain under medical surveillance indefinitely.
- During the Gulf War, about 150,000 service members received the anthrax vaccine. There is inadequate evidence to determine if this vaccine can cause long-term adverse effects, because studies of this vaccine have not used active surveillance to systematically evaluate long-term health outcomes. DoD and CDC are performing several studies to evaluate the potential long-term effects of the anthrax vaccine. These new studies focus on safety in humans and lab animals and studies of efficacy in non-human primates. They will also follow-up the health status of military and non-military populations who received the anthrax vaccine during the 1960s to 1990s.

Conclusion

As the federal research program continues to provide more results, we will substantially increase our understanding of Gulf War veterans' illnesses, which, in turn, will enhance our ability to diagnose and treat them. In addition, this newly gained knowledge may enhance prevention and intervention in illnesses in participants of future deployments.

Mr. Chairman, thank you again for providing this opportunity to summarize our work to date to understand the health problems of Gulf War veterans. You have my assurance that we will continue this effort to resolve or ameliorate health problems in this population to the greatest extent possible.

Mr. Chairman, this concludes my testimony. My colleagues and I are ready to answer any questions that you, the other subcommittee members, or the distinguished guests may have.

Secretary PRINCIPI. I am honored to be included in the ranks of committee members, distinguished parliamentarians and today's panel of eminent and accomplished witnesses. We are all united in the pursuit of an answer to questions surrounding the health of members of the coalition forces. We are united in a commitment to the health of those men and women who today, more than a decade after the war, suffer from illnesses we cannot define, from symptoms we all too often cannot alleviate.

My commitment to these men and women is both professional and moral. It springs from the obligations I accepted when I was entrusted with the responsibilities of Secretary. It is also rooted in my experiences in the Brownwater Navy of Vietnam when I and my shipmates were exposed to Agent Orange.

I understand that the effects of war are not limited to those created by bullets and bombs. But no matter how profound my desire to ensure a complete and professional response to the medical and benefits needs of the veterans I serve, no matter how diligently I apply my response to my responsibilities as Secretary, no matter how unambiguous my instructions to those who work in the Department, no matter how much weight I assign to the issue, I can never forget that the resources of time and attention I devote to addressing the needs of these veterans pale in insignificance compared to the effects of these symptoms on the once vigorous men and women who now awaken each morning to face another day weighted by a burden no less heavy because it remains undefined, no less debilitating because the origin remains mired in controversy. That knowledge drives me to take every step possible to ensure that our government addresses the needs and concerns of Gulf war veterans afflicted by symptoms we do not understand.

My commitment to Gulf war veterans is long-standing. The fires were still burning in Kuwait when, as Deputy Secretary, I ordered VA to create a registry of Gulf war veterans who developed health problems, a clinical data base upon which decisions in the future may be made.

I believe my commitment is reflected in the President's commitment to veterans. That is why he signed legislation expanding the scope of conditions subject to presumptive service connection and extending the deadline before which those symptoms must appear.

My commitment is reflected in the immediate action I took when presented with research findings indicating an increased incidence of ALS in Gulf war veterans, and that is why I insured the VA's Research Advisory Committee on Gulf War Veterans' Illnesses include members who will challenge the conventional wisdom as well as those who support it.

The Advisory Committee will review all relevant research and investigation as well as the processes for funding research. They will assess research methods, results, and implications. Their task is to ensure that research's fundamental goal is improving the health of ill Gulf war veterans, either by increasing understanding through basic research or improving treatment through applied research.

One of my responsibilities as Secretary is to ensure that every member of my department shares my focus and my sense of urgency. I acknowledge that clear-cut results through scientific research and the development of successful medical treatment re-

quire more than strength of will, depth of desire, and clarity of direction. Nature sometimes resists divulging her secrets. But I can and will ensure that my department attacks the problems of Gulf war veterans with unflagging energy and tightly focused commitment.

Our obligation to the veterans who served in the Gulf is not contingent on assigning a name to their problems or discovering the origin of their illnesses. It is enough that they are ill and that they need our help.

We will tear away the veils of uncertainty and illuminate the darkness now cloaking understanding. And, regardless of the results, we have an obligation to provide effective treatment and timely compensation.

I am pleased that I can count on the leadership of members of this subcommittee as allies in this cause.

I also want to recognize and thank a tireless advocate for veterans who shares this room with us this morning. Ross Perot combines advocacy with direct action in a way that touches the lives of veterans of all eras but most of all the lives of veterans who served in the Gulf war. He has been generous with his advice to me and to other officials of my department; and, most importantly, his support for veterans is heartfelt and very profound. We are all indebted to Ross Perot. I believe that the best way to satisfy that debt is to look to his example for inspiration as we meet the responsibilities entrusted to us by the American people.

Thank you very much, Mr. Chairman and members of the committee.

Mr. SHAYS. Thank you have very much, Mr. Secretary. I appreciate you being here.

We're going to let you get on your way. You have either members of your staff who can respond to questions.

I'm going to at this time to invite Mr. Putnam if he has any statement.

Thank you, Mr. Secretary.

Mr. PUTNAM. Thank you, Mr. Chairman; and we thank the Secretary for his eloquent opening statement.

I'd like to echo his remarks about Mr. Perot. Between the support of the POWs and his support for Gulf war illness, Mr. Perot, your commitment to America's patriots is without equal. We appreciate that.

The researchers who slave away day in and day out to peel away the questions to find the answer for our veterans are also to be commended, and we appreciate your presence here to help us better understand and continue toward that goal.

The young men and women that we ask to serve our Nation and put themselves in harm's way give up an awful lot for the freedoms that we take for granted. They leave behind pieces of themselves, comrades, buddies, and scarred psyches that never heal. But some of those wounds are not as visible, and they come back and are in need of additional help and additional support from the government even if, as the Secretary said, we don't have an easy name to apply to their symptoms.

So the purpose of this hearing, then, is to continue to advance the cause of research and resources toward that objective, to give

those young men and women who gave so much the support they deserve. Mr. Chairman, I appreciate your commitment to this and Mr. Kucinich's ongoing commitment by this subcommittee to get to the bottom of this issue.

Mr. SHAYS. Thank you.

I appreciate all the Members who were willing to let Mr. Principi make his comments.

Mr. Tierney, do you have an opening statement?

Mr. TIERNEY. Mr. Chairman, I'll be happy to just put my remarks in the record so we can get to the witnesses. Thank you. If we have unanimous consent for that.

Mr. SHAYS. Then we have Mr. Gilman.

Mr. GILMAN. Thank you, Mr. Chairman. I'll try to be brief.

Mr. Chairman, I want to commend you for holding this morning's hearing to examine the current levels of cooperation between our Nation, France, and the United Kingdom regarding ongoing research and illnesses experienced by our veterans of the Persian Gulf war. It's an extremely important issue.

We're now 11 years removed from that conflict. In that intervening time we've seen some considerable progress on the issue of the Gulf war syndrome for the veterans of Operation Desert Storm. I have a number of veterans in my area who have been affected by that.

Mr. Chairman, your leadership at the helm of this subcommittee has been instrumental and served as the driving force behind much of our progress. It bears noting, however, that the majority of the movement on this issue has come from the Congress. While the Department of Defense eventually admitted to troop exposure to chemical weapons, they did not believe it was necessary to suggest that the VA initiate research in the long-term health effects of low-level chemical exposure. Both DOD and the VA adopted a position that only definitive, proven linkages between toxic exposure and illnesses would be accepted as any evidence that military personnel were becoming sick as a direct result of their service in the Gulf.

The burden of proof, of course, was then on the veteran, not the government. Consequently, more than 90 percent of the veterans' claims for Gulf war-related injuries were denied prior to 1998.

The Gulf War Veterans' Claims Act of 1998, which came out of numerous hearings by this subcommittee on the subject, directed the VA to look for plausible relationships between presumed exposures and later ill health. Recent applicability of this law came last month when the VA announced that it would now treat amyotrophic lateral sclerosis as a Gulf war service-connected illness.

Despite all of this, I don't believe that the original positions of the VA and DOD have very much changed. Both departments have been critical of oversight reports on this subject by the General Accounting Office and this subcommittee. Moreover, it seems that many in these organizations would prefer to see the lack of a single definitive cause of Gulf war syndrome to be evidence of a lack of such a disease, rather than incentive for more research and greater involvement of the scientific community.

I am, therefore, very much interested to hear how our government is cooperating with our allies, with France, with the United

Kingdom and the overall research. All three countries had veterans who became sick after serving in the Gulf war, and each co-shared research and intelligence. Moreover, since each country approached the issues of chemical biological force protection differently and since their troops were exposed to a different variety of the more than 30 toxins that have been subsequently identified on the battlefield environment, shared research and greater cooperation would potentially help facilitate increased linkages between exposures and illness.

Accordingly, I want to thank you once again, Mr. Chairman, for holding this hearing. We look forward to hearing from our expert witnesses who are before us. Thank you, Mr. Chairman.

Mr. SHAYS. I thank the gentleman.

Ms. Schakowsky.

Ms. SCHAKOWSKY. Thank you, Mr. Chairman. I will try to be very brief.

I'd like to thank Chairman Shays and Ranking Member Kucinich for giving us yet another opportunity to discuss this issue. I'm confident that their leadership will lead to progress on this matter.

I would also like to welcome and thank all of our witnesses but especially the Right Honorable Bruce George and Right Honorable Lord Morris of Manchester for traveling from the U.K. to be here with us.

As you know, in late 1991, almost immediately after the Gulf war, the first reports of symptoms and illnesses flooded doctors offices and VA facilities across the country. Veterans who before the war were in perfect physical health were suffering from debilitating symptoms. In the years following the war, the media highlighted stories of the symptoms, ranging from chronic fatigue, headaches and muscle pains, coupled with reports of the diagnosis of Gulf war veterans with cancer, heart and lung problems and Lou Gehrig's disease. This committee alone has held four hearings on this issue.

I am glad that we have a chance to discuss the GAO's finding. Their hard work provides further evidence of Gulf war service and illness. As studies continue and revelations are made, we should give these soldiers the benefit of the doubt and provide treatment for those suffering. Individuals exposed to illness cannot afford to wait until we establish links beyond a reasonable doubt. Lives are at stake now.

Just over a month ago the VA and DOD released a study that found preliminary evidence that veterans who served in Desert Shield/Desert Storm are nearly twice as likely as nondeployed service personnel to develop Lou Gehrig's disease. As in his testimony, Secretary Anthony J. Principi said that the VA would immediately begin providing additional benefits and compensation to veterans who were deployed in the Gulf and develop the disease.

The startling confirmation of a 10-year suspicion is evidence not only for the need to continue and intensify research on this issue but the need to emphasize findings and answers, finding answers and solutions. I am pleased to see that health care providers are helping those suffering from diseases. I believe it's necessary and fair. In fact, we should do more. It's our responsibility to do whatever we must to determine the causes and symptoms and illnesses related to the Gulf war immediately.

America is at war. Our troops are deployed as we speak fighting to rid the world of the threat of terrorism. When our troops return they should not have to wait 10 years to find that they were becoming ill because we didn't protect them. Our troops returning from war abroad should not have to fight for their lives at home. I hope we are all committed to providing answers for veterans through this time of uncertainty.

I want to thank each of our witnesses, our chairman, and I look forward to hearing and learning from the coming testimony.

Mr. SHAYS. I thank the gentlelady.

I would not want to give the impression to any Member that we don't welcome your testimony because you all have been giants in this effort for years. I appreciate the panel's patience, but these have been very hard-working Members who have cared about veterans for years.

Mr. Otter.

Mr. OTTER. I have no statement.

Mr. SHAYS. Then I have the distinct pleasure to recognize two of our colleagues from Great Britain. The Republican in me wants to recognize the Lord, but——

Mr. SANDERS. We put him on our side.

Mr. SHAYS [continuing]. But I would point out that both members have been members of the Labour Party.

With that, I would welcome Mr. Bruce George, a member of Parliament, to address this Congress.

STATEMENT OF THE RIGHT HONORABLE BRUCE GEORGE, MP, CHAIRMAN, DEFENCE SELECT COMMITTEE, HOUSE OF COMMONS, LONDON

Mr. GEORGE. Thank you, Mr. Chairman. It's an enormous honor being here.

Frankly, I find it almost beyond belief that a British member of Parliament, a member of the House of Lords should be sitting in this dignified position.

Mr. SHAYS. You honor us, sir.

Mr. GEORGE. Our chairman was incredibly discreet when he referred to the bullet holes. I would have liked to have asked him, in light of friendly fire, whether they were ours or yours. I suspect from history more likely to be yours than ours.

May I say—and I must apologize. I'm Welsh, and brevity is not a trait for which the Welsh are renowned—I am glad I have not brought members of my committee here. Because if they thought I would be as tolerant as you, chairman, in allowing personal statements—they know I am not tolerant. There is only one person allowed a personal statement on the Defence Committee, and you're looking at him.

Your lax ways—I went into the dining room yesterday, and my host discreetly sat me with my back to the painting of the British surrender at Yorktown. Therefore, I discreetly did not point out our acts of revenge, which were gestures, I must say, rather than serious military reprisals.

But may I say at the outset, our relations as two nations have often been rocky and for most of your country's history they've either been pretty awful or barely acceptable, inadequate. But, since

1940, I can't think of any two nations in the history of the world whose relationship has been so very close. Time and time again, academics and politicians tell us that this good relationship has terminated. I actively took part in the debate 6 months on that very subject. And who would have imagined, I suppose, that a Republican president would enjoy such an excellent relationship with hardly a left wing labour Prime Minister. But it is truly exceptional.

I'm so very proud of the support that we have given to the United States, particularly since the atrocities on September 11th. The conflict which we participated in a secondary but not unimportant role was merely one stage in a continuing struggle against terrorism, and we are proud to be participating and will participate even more in the future.

Something that has been said—and I apologize for inflicting this on witnesses who have heard this a million times—fighting a war has always been dangerous. But when I was watching a study of my local regiment and its history I reached the inescapable conclusion that the chances of being killed by disease were infinitely greater than the chances of being killed either by your soldiers fighting—playing dirty pool, as my wife would say, until we reciprocated or fighting against the French. The chances were not high with exceptions for the First and Second World Wars. But we lost 100,000 men in the Caribbean in the 1780's and 1790's, and Wellington would not take any regiment in his peninsula war that had served in the Caribbean. Appalling diseases that eventually the causes were discovered.

Even though I am a parliamentarian and we have great fun in mocking ministers and all sorts of people, I recognize that we are basically on the same side. Maybe we are rather more vocal than you are, but we really have to resolve the problem. If, as some people say, there is a Gulf war syndrome and if there is not, and I have no idea, then how are we going to treat the consequences of something that we don't know?

And let us not forget other side of it, namely the financial side. I was amazed when you instructed your witnesses to stand up and promise to be honest. It is not something I could ever demand of witnesses to my committee, and certainly politicians would never leap and affirm that principle, which would be an appalling violation of our human rights. One has to remember that—I think it is the American expression—the first law of politics is never cheat or lie unnecessarily.

If I might return with your indulgence, Mr. Chairman. Briefly, I have submitted a rather lengthy document for your consideration. If I might just for 2 or 3 minutes say the Defence Committee that I chair has been very, very interested and involved along with members of the House of Lords. I must say it's truly amazing coming 4,000 miles to share a platform with a member of the House of Lords because our relationship is as hostile in many ways as it has been with the United States. So it's rather ironic that it is in the United States the two members of the British Parliament should be sharing a table together.

But we have been very much involved, working with outside organizations like the Royal British Legion, in keeping the issue of

the Gulf war syndrome alive. As each month goes by the temptation to allow the subject to drift away and to concede defeat becomes enormous. It is very important that members of legislature, if they could no more than keep the issue alive and, therefore, keep members of the executive and the medical profession aware that this is something that really has to be resolved.

We've had some bad relations with the Ministry of Defence. If I could just give you a few diplomatic phrases we used. This was 7 or 8 years ago with the previous government. We said in our report, in dealing with its own service personnel, the British public and parliament on the subject of the Gulf war syndrome, we do not believe that the Ministry of Defence has been dogged in pursuit of the facts. The culture of denial has influenced the way the department has handled the whole question of Gulf-related illnesses and may have contributed to the administrative failings which led to parliament being misled.

We went on to say, in using the same phraseology, Mr. Chairman, that you used, the new government believes that we have a debt of honor to those who have served their country in the armed forces and to be determined that a fresh start will be made in dealing with this difficult and complex issue.

Well, there has been an improvement in research and activity by the government, but I'm afraid the veterans remain discontented. We produced a number of reports in the last parliament, Mr. Chairman. Our very first inquiry, our very first public session in the last parliament was on Gulf war illnesses; and, ironically, the very last session in the last parliament of our committee was on the very same subject.

So we will continue to work with the United States, with your committee, with the medical profession, with our own Ministry of Defence in the hope that we will be able to provide more than hitherto we have been able to.

Our committee has announced its intention to examine the Ministry of Defence's new proposals for providing pensions and compensation for armed forces personnel and an improvement on what has gone before. Unfortunately, the events of September 11th have somewhat delayed that. But even though the committee has been preoccupied and will be preoccupied with the consequences of September 11th, we are coming over to the United States in 10 days. We will never allow the issue of the Gulf war syndrome to fade into distant memory.

Because every war we fight, each one is different. Maybe the number of casualties on the battlefield are few, because that is what our publics demand, but even if we are entering an era of military history where our casualties are very few, we are more than aware, as you gentlemen are aware, the casualties may not be reflected in wounds but in psychological or other physical damage.

I wish this committee well, and I wish all of those engaged in the research to achieve what we are all desperately anxious to achieve, and I on behalf of my committee wish you well. Because

we have an obligation to our military personnel that must and I'm sure will be properly discharged.

Thank you for your tolerance.

Mr. SHAYS. Thank you for your very eloquent statement.

[The prepared statement of Mr. George follows:]

Sub Committee on National Security, Veterans Affairs and International Relations Oversight Hearing on Gulf Veterans' Illnesses
24 January 2002

MEMORANDUM SUBMITTED BY RT HON BRUCE GEORGE MP, CHAIRMAN OF THE DEFENCE COMMITTEE OF THE UNITED KINGDOM HOUSE OF COMMONS

1. The Defence Committee in the current Parliament was appointed by the House on 16 July 2001, following the General Election in June. I was honoured to be elected Chairman of the Committee again, following my chairmanship through the 1997–2001 Parliament.

Defence Committee inquiries into Gulf veterans' illnesses

2. The Defence Committee has taken a keen interest in Gulf veterans' illnesses since the first evidence of ill health began to emerge in the early 1990s. This paper focuses on the work which successive committees have carried out and highlights some of the conclusions and recommendations in our various reports. In addition to the Committee's own reports, at regular intervals we ask the Ministry of Defence (MoD) to submit a detailed memorandum on recent developments in dealing with Gulf veterans' illnesses, usually in advance of an oral hearing. We publish these memoranda with the oral evidence and, with our permission, the MoD itself publishes them on its Gulf veterans' website so that all interested parties have ready access to the latest information. The most recent submission from the MoD was received earlier this month and will be available on the MoD's Gulf illnesses website shortly.[1] We last heard oral evidence from the Minister for Veterans Affairs in May last year; the transcript is available on the Committee's website.[2]

3. The Committee in the 1992–97 Parliament produced two Reports[3] which highlighted, in particular, the lack of progress in identifying possible causes of veterans' illnesses and the difficulty veterans had encountered in obtaining a satisfactory response to their health and associated problems from the Ministry of Defence. In its October 1995 Report, the Committee looked at some of the most frequently cited possible causes of illness amongst Gulf veterans based on the research available at that time; one of the key

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[1] At http://www.mod.uk/issues/gulfwar/index.html
[2] At www.parliament.the-stationery-office.co.uk/pa/cm200001/cmselect/cmdfence/517/1050901.htm
[3] Eleventh Report, Session 1994–95, *Gulf War Syndrome*, HC 197; Sixth Report, Session 1996–97, *Gulf War Illnesses: Latest Developments*, HC 158

focuses was medical countermeasures. The Committee concluded that the MoD had been 'quick to deny but slow to investigate' Gulf War illnesses and said that its response had been characterised by 'scepticism, defensiveness and general torpor'.[4] It recommended a comprehensive programme of research 'to investigate the short term and long term effects of the full range of chemical and biological counter measures available to our Armed Forces, in a variety of operational environments' and that the results of the research be published.[5] The Report also looked at the effectiveness of the MoD's Medical Assessment Programme for Gulf veterans and at access to medical records.

4. The 1997 Report discussed at some length the circumstances which contributed to incorrect information being given to Parliament about the use of organophosphate pesticides during the Gulf War, the measures which were subsequently necessary to correct this, and the internal inquiries carried out by the MoD to establish how this sequence of events had arisen. The Committee believed that the MoD's response to the whole question of Gulf War illnesses had been affected by a 'culture of denial' within the Department and by its potential liability to compensation claims from veterans.[6]

5. The Committee in the 1997-2001 Parliament resumed the work on Gulf veterans immediately after it was appointed in July 1997. Its first evidence session of the Parliament was with the minister responsible for Gulf veterans (then Dr John Reid, Minister of State, Ministry of Defence). The new Government had itself accepted that there were problems in the way Gulf veterans had been dealt with up to that point, and it set out its plans for change in a document entitled *Gulf Veterans' Illnesses: A New Beginning,*[7] published in July 1997. A further evidence session was held with the Minister of State (then Mr Doug Henderson) in April 1999, followed at the end of the year by evidence from representatives of Gulf veterans. The Committee then published a report in May 2000[8] which assessed the MoD's performance since 1997 against the standards the Government had set for itself in its policy document.

6. The Committee's report in 2000 commented on the long history of Gulf veterans' dissatisfaction with the response they have received from the MoD, and in particular the MoD's Gulf Veterans' Medical Assessment Programme (~~GVMAP~~), which had been a key factor in the troubled relationship. The MoD had itself attempted to address some of the GVMAP's weaknesses through a management audit, which reported in April 1999. The

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[4]Eleventh Report, Session 1994-95, *op cit*, para 60
[5]Eleventh Report, Session 1994-95, *op cit*, para 53
[6]Sixth Report, Session 1996-97, *op cit*, para 75
[7]*Gulf Veterans' Illnesses: A New Beginning*, MoD, July 1997
[8]Seventh Report from the Committee, Session 1999-2000, *Gulf Veterans' Illnesses*, HC 125. This document is available of the Defence Committee website at www.parliament.uk/commons/selcom/defhome.htm

Committee welcomed the implementation of the audit report recommendations but considered that '... it remains to be seen whether this will have a noticeable effect on the services veterans receive from the [redacted]. We look forward to seeing evidence that the improvements put in place are having a significant effect on the way the MAP operates.'[9] Whilst acknowledging that there had been improvements in the GVMAP's services, the Committee believed that veterans' suspicion and unhappiness with the GVMAP had not been overcome and concluded that 'It may now be time for the MoD thoroughly to review the way it provides medical assistance to Gulf veterans, taking full account of the views of veterans themselves, so as to provide a service which meets their needs and fulfils the MoD's obligations to them.'[10]

7. The MoD has told us that a satisfaction questionnaire showed that, as at 3 January 2002, 96 per cent of the 396 GVMAP patients who had responded to the survey were satisfied with its service. Feedback from the survey is helping the MoD further to improve services. For example, for veterans who have difficulty travelling to London where the GVMAP is located, a trial has been conducted since May 2001 allowing patients to be seen at a clinic in Northallerton (in the north of the country) which is held every two months. The trial seems to be a success.[11]

8. The Committee's 2000 report also assessed in some detail the research into possible causes of illness which the MoD had initiated since 1997, which included research into organophosphate pesticides, vaccinations and medical countermeasures, chemical and biological warfare, and depleted uranium. Our conclusion was as follows: 'It is regrettable that these studies took so long to get off the ground as the time lapse can only have had an adverse effect on the discoverable evidence. However, we are impressed with the level of detail contained in the studies, and the clarity with which they explain what occurred and the implications for UK personnel. In producing such research studies, the government is abiding by the principles it set out in 1997, that there would be 'appropriate research into veterans' illnesses and factors which might have a bearing on these' and that the MoD would 'make available to the public any information it possesses which is of potential relevance to this issue'. The MoD has made good progress, therefore, in establishing what took place and addressing specific areas of concern which have been highlighted by veterans. The findings of this research are consistent with the view expressed to us in the United States, that it is likely that there is no single cause of Gulf veterans' illnesses. If further progress is to be made in understanding the nature of Gulf veterans' illnesses, detailed work will need to be carried out to ascertain whether there are any links between

[9] Seventh Report, Session 1999-2000, *op cit*, para 23
[10] Seventh Report, Session 1999-2000, *op cit*, para 29

possible exposures veterans might have suffered and the symptoms which some are now exhibiting.'[12]

9. The report then assessed the Government's record in seeking to address the financial and medical problems which Gulf veterans face. The Committee's view was that progress in these areas had been much less impressive: 'We wish to see a great deal more progress in terms of ensuring Gulf veterans have access to adequate financial provision and to appropriate medical treatments and advice. Urgent action from the government is required in both these areas if it is to fulfil the debt of honour which it has acknowledged. Research must continue into possible causes of Gulf veterans' illnesses. However nine years on from the Gulf War, the highest priority now is to try to deal with the symptoms of ill health which veterans suffer by providing care and treatment which will improve their quality of life. It may not be possible at present to cure such illnesses, but maximum efforts should be made to identify treatments which will reduce their effects.'[13]

10. The Committee pursued developments since the 2000 Report in its final evidence session of the last Parliament, on 9 May 2001, with the Minister for Veteans' Affairs (Dr Moonie) and the Head of the MoD Gulf Veterans' Illnesses Unit (then Mr Chris Baker) as the witnesses. The evidence session also focused on the specific issue of depleted uranium, which is discussed below. The results of a number of major government-funded epidemiological studies of UK Gulf veterans had been published since the Committee reported in 2000.[14] The Committee was interested in the findings of the University of Manchester study, which showed that Gulf veterans report more ill health than non-Gulf personnel and asked the Minister what further research was being carried out in this area. He told us that a further12 research projects into illness amongst Gulf veterans were due to report in the next year but his view was that despite all this information, there might not be any more conclusive findings about causes of illness and he went on to say: 'We are left then again with the situation where we have many people who are suffering as a result of the symptoms they have and for whom we can produce no convincing aetiology and who therefore we have to look to treat, largely in a sympathetic and symptomatic manner. Symptomatic treatment where there is no identifiable cause is all that is available to us. I do not like that as a doctor but I have to accept it.'[15]

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[11] See MoD Memorandum to the Defence Committee, January 2002, para 7

[12] Seventh Report, Session 1999-2000, *op cit*, paras 64-65

[13] Seventh Report, Session 1999-2000, *op cit*, paras 99-100

[14] *Health and exposure of United Kingdom Gulf war* veterans, University of Manchester Centre for Occupational and Environmental Health, published in *Occupational and Environmental Medicine*, May 2001 (two part study); *Ten Years On; What Do We Know about Gulf War Syndrome?*, Guy's, King's College and St Thomas's School of Medicine, published in the *Journal of the Royal College of Physicians*

[15] Evidence to the Defence Committee, 9 May 2001, Q 60 (available on the Defence Committee website at www.parliament.uk/commons/selcom/defhome.htm

11. The Committee was also interested in the work the MoD is doing on Post Traumatic Stress Disorder (PTSD). The MoD told the Committee in their memorandum that the GVMAP will meet the admission, assessment and travel costs of Gulf veterans who are assessed as likely to benefit from a psychiatric assessment and who are referred to specialist PTSD clinics. A fast-track system had been introduced for Gulf veterans. An assessment of the outcome of treatment recommended by the PTSD centres is being carried out and the results are expected to appear in a medical journal in the next few months.[16]

12. On the issue of financial provision, the Committee said in its 2000 report that what was important was 'that those who have served their country feel that they are adequately compensated if they have suffered illness as a result of their service'[17] and in our report on the MoD's *Policy for People* last year, we took the view that 'Financial assistance is not the whole story in satisfying the legitimate needs of sick veterans but it is an important part'.[18] At present, no-fault compensation for Service personnel disabled as a result of their service is provided in the form of the War Pensions Scheme, administered by the War Pensions Agency (WPA). Responsibility for the WPA was transferred from the Department of Social Security to the MoD in June last year. The recent information the Committee has received from the MoD shows that, as at 30 November2001, the WPA had received 1,263 claims for Gulf-related illnesses, of which 1,078 have been accepted.[19]

13. In March last year the MoD published a long-awaited consultation document on compensation arrangements, following a joint review with the Department of Social Security. This was published at the same time as the equally long-awaited consultation document on the Armed Forces Pension Scheme. Previous Defence Committees had pushed for these reviews to be carried out and had criticised the length of time the MoD was taking to publish the results. The first inquiry which the new Committee announced in July was into the outcome of the reviews, with the intention of reporting by the end of 2001. The MoD's own timetable for completing the consultation

[16] MoD memorandum to the Defence Committee, January 2002, para 12
[17] Seventh Report, Session 1999-2000, *op cit*, para 74
[18] Second Report, Session 2000-01, *Strategic Defence Review: Policy for People*, HC 29-I, para 170
[19] MoD memorandum to the Defence Committee, January 2002, para 40

process has slipped, which has affected our own timetable for undertaking our inquiry. We now intend to take evidence on the proposals for revised compensation arrangements in March and to report shortly thereafter, in time to inform the MoD's decisions on the new arrangements.

14. As presently set out, the new proposals will not affect benefits available for Gulf veterans as they are intended to deal only with claims for exposures which occur after the date of implementation of any new scheme. Gulf veterans have therefore gained no benefit from the review, yet it could be argued that the new scheme was devised on the basis of lessons the MoD has learned from dealing with them. In oral evidence in May, the Minister asserted that 'new schemes are never made retrospective' and that no special arrangements could be put in place for Gulf veterans without disadvantaging other veterans.[20]

15. The only other recourse for Gulf veterans who are not satisfied with the financial compensation they have received is to sue the MoD for negligence. The MoD inform us that they have received about 2,000 notices of intention to claim from veterans and members of their families in respect of illness arising from the Gulf conflict, although no writs or detailed claims have yet been received.[21] A firm of solicitors acting for over 600 Gulf veterans claimed in written evidence to the Committee that, despite the Government's declared policy of using mediation wherever possible, the MoD had informed them that they are not prepared to engage in mediation as they do not see the evidence as likely to succeed in court. The Minister was very clear in his oral evidence in May that the MoD was not prepared to accept that it had been in any respect negligent in the way it had dealt with Gulf veterans, that it could not therefore pursue a compromise position through mediation, and that Gulf veterans who believed they had a case should test it in the courts.[22]

Depleted Uranium

16. The Committee discussed the possible risks from depleted uranium in its 2000 report on *Gulf Veterans' Illnesses* and concluded that appropriate testing should be offered to veterans, with the limitations of any tests clearly explained to them, and that the MoD should be driving research in this area, rather than adopting the reactive approach which had characterised its response to date.[23] The Minister of State for the Armed Forces

[20] Evidence to the Defence Committee, 9 May 2001, QQ 42–44
[21] MoD memorandum to the Defence Committee, January 2002, para 42
[22] Evidence to the Defence Committee, 9 May 2001, QQ 53–55
[23] Seventh Report, Session 1999-2000, *op cit*, paras 33–40

(then Mr Spellar) announced on 9 January 2001 that an 'appropriate voluntary screening programme' for exposure to depleted uranium would be set up for Service personnel and civilians who had served in the Balkans. This was in response to public concern, following reports that Service personnel from other nations who had served in the Balkans had suffered ill health as a result of exposure to DU. In particular, there were claims of an unusually high occurrence of leukaemia amongst Italian troops who had served in Bosnia and Kosovo. The Minister said that the screening programme would draw on the 'best available science' and that the UK would co-ordinate its approach with its allies. Screening would also be available to Gulf veterans.

17. The Committee obviously has a keen interest in the screening programme, both from the background of its long interest in Gulf veterans, and from the wider perspective of the health and safety of all UK Armed Forces personnel. We explored the MoD's progress in developing the screeing programme in evidence from the Minister in May. The MoD's first step in establishing the programme had been to set up an Expert Advisory Group, under the Surgeon General, to assess the medical and technical issues, and this resulted in a consultation document, published in February. The feedback from the first consultation exercise was incorporated into a second consultative document, published in April, which made four proposals.[24] *Biological monitoring* would be introduced for those assessed to be at risk from DU exposure whilst on current and future military operations. This would form part of health and safety arrangements, to confirm the effectiveness of existing measures, and to monitor and control individuals' exposure. *Tests for past exposures to DU* would be available to Service personnel, to assess whether they were exposed, and if so, the degree of exposure, with a view to offering counselling about any residual risks. The results would form an epidemiological study aimed at answering the question: has DU harmed the health of those who were in the Gulf or the Balkans? An *Oversight Board* would be set up, composed primarily of external members, including veterans' representatives, to oversee the process of letting the contract and undertaking the testing and to ensure openness and transparency. The need for a *permanent mass testing programme* for historic exposures will be assessed when the results of the studies are known. The document sets out a timetable for putting the final arrangements in place for testing, with the contract to be let by December 2001 and testing beginning as soon as the Oversight Board is satisfied that a 'robust and scientifically valid test' is available.

18. There is a substantial body of scientific and medical research on DU on which the MoD has been able to draw. The Royal Society had previously announced in

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[24] *Second Consultative Document on the Introduction of a Voluntary Screening Programme for Depleted Uranium*, Ministry of Defence, April 2001

January 2000 that it was embarking on an independent study of the effects on human health and the environment of DU in missiles and shells. The findings of Part I of the study were published in May.[25] The MoD has contributed to the study and has said that it will use the Royal Society's findings to inform the development of the testing programme. The MoD has reiterated that its position remains that the only significant risk to Service personnel from DU would occur if they are in the vicinity of a DU projectile or round when it strikes a hard metal target, or if they enter and remain for a protracted time in an area where such a strike has occurred. The second consultative document states that, even in those circumstances: 'It needs emphasising ... that the scientific and medical evidence continues to show that the use of DU munitions will not cause a detectable increase in ill health in potentially exposed populations'.[26] The MoD cites authoritative reports from the BMJ, *The Lancet*, the European Commission, the United Nations Environment Programme, and the World Health Organisation which have found no convincing evidence to date of adverse health impacts from exposure to DU. For example, *The Lancet* article concludes: 'no study has provided evidence that either depleted or natural uranium is carcinogenic ... It can be safely concluded that at any conceivable level of uptake of depleted uranium will have no appreciable radiological or chemical carcinogenic potential'.[27]

19. Following the increase in public concern about the effects of DU at the beginning of the year, the Defence Committee in the last Parliament decided to commission the Parliamentary Office of Science and Technology (POST) to examine the current state of scientific opinion on the military utility of the use of depleted uranium and the possible risks posed to human health. A briefing paper resulting from the research was published by POST in April.[28] This set out that the MoD's position on the military use of DU-based ammunition was that it was brought into service because of its unique capability as a kinetic (moving) penetrator against modern types of main battle tank armour and that no satisfactory alternative currently exists to achieve the required levels of penetration. Research is being conducted into alternative materials but none has so far demonstrated significant potential. The use of DU therefore remains an important option in military operations and MoD has no plans to cease using or testing DU-based ammunition. The POST paper describes the way DU is used in ammunition: UK forces use it in 120 mm anti-tank rounds in the Army's Challenger 2 tanks and in 20 mm rounds for the Phalanx close-in weapon system, deployed on some Royal Navy ships, although the latter are now being phased out. UK forces fired less than 100 DU rounds in the Gulf War and did not use

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[25] *The Health Hazards of Depleted Uranium Munitions: Part I*, The Royal Society, May 2001, available on the Royal Society website at http://www.royalsoc.ac.uk/policy/index.html

[26] Second Consultative Document, *op cit*, para 29b

[27] *The Lancet*, vol 357, January 27 2001, pp 244-245

[28] *Depleted Uranium*, Parliamentary Office of Science and Technology, Postnote No. 154, March 2001, available on the POST website at www.parliament.uk/post/home.htm

DU in the Balkans. About 10,000 DU rounds have been fired at ranges at Eskmeals and in the Solway Firth in test firing since 1981. The study concludes that the calculations involved in cost benefit analysis of DU's military advantages against its potential health effects are likely to be extremely complex, and the results subjective and inconclusive. The Minister confirmed in evidence that research into alternatives to DU was ongoing, in the UK and elsewhere, but in the meantime the intention was to continue using DU in Challenger tank rounds.[29]

20. When the Committee questioned the Minister about the DU screening programme last May, he was confident that the screening programme would be up and running by the end of the year, although this has not proved to be the case.[30] The DU Oversight Board was set up and had its first meeting in September. Its membership includes veterans' representatives. MOD tell us that 'At present, work is concentrated on obtaining expressions of interest from suitably qualified laboratories to carry out the tests for uranium isotopes in urine ... The MoD believes that this is a significant development in the implementation of a voluntary screening programme.'[31] We will continue to monitor progress in establishing the screening programme.

Future work of the Committee

21. The Ministry of Defence created a new post of Minister for Veterans' Affairs in March with the Parliamentary Under Secretary of State (Dr Moonie) as the minister responsible, and he continued in this role following the election. A Veterans' Task Force has recently been set up. Its terms of reference include: ensuring an integrated response to veterans' needs from government departments; prioritising needs and developing policies to address them; improving co-operation between government and veterans' organisations; and ensuring that the contribution of ex-Service personnel is appropriately recognised. A Veterans' Forum is also to be established, which will include representatives of veterans' groups and which will offer veterans an opportunity to express their views and concerns.

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[29] Evidence to the Defence Committee, 9 May 2001, QQ 29-36
[30] Evidence to the Defence Committee, 9 May 2001, Q 5
[31] MoD memorandum, January 2002, paras 18-19

22. We hope that these developments will provide an improved structure to enable the MoD to deal with Gulf veterans' issues more effectively and, in a wider context, to offer the quality of services to veterans which they deserve. In its report on the MoD's *Policy for People* last year, the previous Defence Committee said that 'There is of course ... an overriding moral duty on the Services to continue to address the needs of those who have served their country ... the MoD has not in the past handled the issue of sick veterans with anything like the sympathy and concern which it should demonstrate. That has been counter-productive, and the lessons learned have to some extent been applied. Everyone must accept that military service is not the same as other jobs, but this does not absolve the Services from acting as responsible and caring employers. If they do not, those they are seeking to recruit will reject them.'[32] It is vital for both moral and practical reasons that the Armed Forces are seen to act as good employers, while personnel are serving and when they leave the Services.

23. The programme of work of the Defence Committee has inevitably been substantially influenced by the tragic events of 11 September and since then we have focused our inquiries on issues arising from the threat from terrorism. Nevertheless, it is our intention to continue the work of assessing the MoD's performance in the specific areas of Gulf veterans' illnesses and depleted uranium, and on the broader issues which veterans' welfare raises. This work has already begun: our inquiry into the outcome of the MoD's pension and compensation reviews will clearly be relevant to Gulf veterans and we intend to report our findings in the late spring. We also intend to arrange an oral hearing with the Minister for Veterans' Affairs to take evidence on Gulf veterans and on the depleted uranium screening programme as soon as our current programme of work allows.

[32] Second Report, Session 2000-01, *Strategic Defence Review: Policy for People*, HC 29-I, paras 153 and 170

Mr. SHAYS. At this time, the Chair recognizes Lord Morris.

STATEMENT OF THE RIGHT HONORABLE THE LORD MORRIS OF MANCHESTER, AO QSO, HOUSE OF LORDS, LONDON, ACCOMPANIED BY COLONEL TERRY H. ENGLISH, CONTROLLER WELFARE, THE ROYAL BRITISH LEGION; AND MALCOLM HOOPER, EMERITUS PROFESSOR OF MEDICINAL CHEMISTRY, UNIVERSITY OF SUNDERLAND

Lord MORRIS. As you know, Congressman Shays, I count it an honor to be here as a parliamentarian with 38 years service in the two houses of parliament at Westminster, 33 of them in the House of Commons, to be taking a part in the dias with the honorable members of your subcommittee in this oversight hearing on Gulf war veterans' illnesses.

Moreover, I take pride in being here as a representative of the Royal British Legion of the U.K. together with Colonel English and Professor Malcolm Hooper and in the company, joke and company of my very good friend and right honorable parliamentary colleague Bruce George.

I'm grateful to the subcommittee also for asking me to contribute a statement for inclusion in the hearing record which I hope will be of parliamentary and public interest here in the United States and in providing a British perspective on the issue your subcommittee is addressing.

It was 38 years ago that I made my maiden speech to the British House of Commons as a member of parliament before my home place in Manchester, and this is my maiden speech in proceedings held under the aegis of the House of Representatives. Indeed, it could well be a maiden speech in more ways than one since there can't have been many, if any, previous speakers in congressional proceedings from the House of Lords.

Mark Twain, asked for his opinion of Wagner's music, said famously that, "Wagner's music is not as bad as it sounds. This occasion for me is even better than my only ever previous incursion into congressional proceedings when briefly addressing the U.S. Senate as a parliamentary guest of this country in my early years in the House of Commons."

Congressman Shays, no one here in Washington or in Westminster wants to see the afflicted and the bereaved of the Gulf conflict made to suffer the added strain and hurtful and gratuitous and demeaning indignities that preventable delay in dealing with their concerns can impose. Yet in fact many veterans feel that such delay has occurred and that public representatives must try to help when and wherever they can. That is what this subcommittee's proceedings are all about, and I wish its members God speed in all their work.

For it is deeply important not only to gulf veterans and their dependents. Learning the lessons of the Gulf war is important also in safeguarding the well-being of our troops now on active service against those responsible for the hideously acts of terrorism perpetrated in New York and here in Washington on September 11th.

The issues my statement addresses include the effects on the health of our Gulf war troops of the interactive effects of combining NAPS tablets with an immunization station program of unprece-

dented range and severity, of the massive oil pollution caused by the Iraq's firing of Kuwait's oil wells, of the destruction by coalition forces of Iraqi rockets at Khamisiyah containing nerve agents, of the use of organo phosphate substances as pesticides, and of the heavy deployment of depleted uranium.

The subcommittee will, I know, constructively address all of these issues; and veterans organizations in all the coalition countries are most grateful and indebted to you.

Congressman Shays, of all the duties that falls to parliamentarians to discharge, none is of more compelling priority than to act justly to citizens who are prepared to lay down their lives for their country and the dependents of those who do so.

There was no delay in the response of our troops to the call of duty in 1990, 1991, nor should there be any further delay now in discharging in full our debt of honor to them. In the words of the Magna Carta, let right be done. Let right be done to those who served our two countries and the civilized world so admirably and with distinction in the Gulf war.

Thank you again for asking me to be with you today.

Mr. SHAYS. Thank you, Lord Morris, for your eloquent comments.

[The prepared statement of Mr. Morris follows:]

The Right Honourable The Lord Morris of Manchester's Statement
to an Oversight Hearing of the
US Congressional Subcommittee on National Security, Veterans Affairs and International Relations
Entitled
Gulf War Veterans' Illnesses: Health of Coalition Forces

I was delighted to be asked – as a fellow parliamentarian and former British Minister for War Pensions – to join Members of the Subcommittee in their oversight hearing to assess the status of research into and the treatment of Gulf War veterans' illnesses among US and coalition forces; and also to be invited to submit this written statement for inclusion in the hearing record.

My statement is informed by long parliamentary and ministerial experience in the United Kingdom, but no less importantly by my work as a member since its inception of the Inter-Parliamentary Gulf War Group set up in 1994 by the Royal British Legion (RBL), the sister organisation in the UK of the American Legion. The Group's purpose is to focus parliamentary and public attention on the problems and needs both of veterans with war-related illnesses and the dependants of those who have died since the conflict.

The Gulf War Group comprises parliamentarians from the UK's main political parties, distinguished medical specialists and researchers, legal experts and representatives of the principal ex-service charities, as well as service men and women who fought in the Gulf

War. The Ministry of Defence (MoD) is also represented. We hold regular meetings under the chairmanship of Colonel Terry English, the RBL's Controller of Welfare, who together with Professor Malcolm Hooper, another of my longstanding colleagues in the Gulf War Group, is in Washington DC with me for the oversight hearing.

The Group maintains direct contact with British Government ministers responsible for the well-being of war pensioners and briefs participants in debates on Gulf War issues in both Houses of Parliament. We have twice visited the United States for briefings by Government departments including the Pentagon; by senior personnel at the Walter Reid Memorial Hospital; and by US veterans' organisations. Both of our visits, in 1995 and 2000, were of enduring value in our continuing efforts to help Gulf veterans in the UK.

SCALE OF THE CONFLICT: PROTECTIVE MEASURES TAKEN

The Gulf conflict was on a scale bigger than any that British troops had been involved in since the Korean War forty years before. It was also the first since 1918 against an enemy known to have chemical weapons readily available for deployment. Thus the MoD in London, like the Pentagon, had to prepare for the liberation of Kuwait on the assumption that these weapons would be used. In fact millions of people in Britain and the United States, as in countries all across the world, had seen TV reports of the stark effects of Saddam Hussein's use of chemical weapons, against the civilian population of a neighbouring Muslim country, only months before his invasion of Kuwait.

On November 9 2001, President Bush said of al-Qaeda:

> "They are seeking chemical, biological and nuclear weapons."

But US and British troops deployed to the Gulf in 1990-91 faced an enemy who not only already possessed but had *already used* such means of mass destruction, utterly without scruple or mercy, first for the massacre of Kurds in Halabja in 1988 and then against the civilian population of Iran in 1990.

Aware of the range of weapons facing the troops they were deploying to the Gulf, both the Pentagon and the MoD gave high priority to doing all they could to safeguard them against the effects of their use. Nevertheless the likely death toll seemed certain to be high. Indeed the Pentagon is reported to have sent 150,000 body bags to the Gulf.

Steps taken by the MoD correctly assessed the threat faced by British troops, but not all of the health risks of the measures taken to protect them. These comprised a multiple immunisation programme of up to 14 inoculations – itself a veritable *blitzkrieg* on the immune system – that included protection against anthrax, then known to be stockpiled in Iraq; the first-ever issue of nerve agent pre-treatment sets (NAPS) tablets as antidote against chemical weapons; the deployment of toxic sensors; and the use of pesticides – including organophosphates – to prevent fly-borne diseases.

While accepting that these measures were taken in what were thought to be in their best interests, British Gulf veterans who are now in broken health – many with severely debilitating but still undiagnosed illnesses – trace some of the worst of their problems to the MoD's efforts to protect them in facing the reality of living within range of Iraqi weapons known to be capable of carrying chemical, biological and nuclear warheads.

To date over 5,000 of the more than 52,000 British troops deployed, all of them medically A1 in 1990-91, have reported illnesses which they attribute to their service in the Gulf. Of these many are convinced, as are their medical consultants, that their illnesses are linked directly to gravely damaging effects on their immune systems of combining NAPS tablets – often indiscriminately taken – with an immunisation programme of unprecedented range and intensity. As of now all they (and the British Parliament) are told officially is that studies on the "possible adverse health effects" of that combination are continuing at the Government's science and technology research centre at Porton Down but that final results will not be available until **2003**.

By then the jury will have been out for **13 years** on this issue: one of deep concern to veterans and their medical advisers alike and one, moreover, that begs important questions about the protection of troops now engaged in the struggle with an adversary known, as President Bush said, to be seeking "chemical, biological and nuclear weapons".

Like many others in the UK's ex-service community, my colleague in the House of Lords, Field Marshal The Lord Bramall – a former Chief of the Defence Staff – is in no doubt about the importance of this issue in terms both of explaining many of the still undiagnosed illnesses of Gulf War veterans and safeguarding the well-being of troops now on active service against those responsible for the barbaric acts of terrorism perpetrated in New York and here in Washington DC on September 11.

Speaking in a debate on Gulf War illnesses I initiated in the House of Lords on January 15 2001, Lord Bramall said that

> "...one glaring question stands out above all others. Was the cocktail of inoculations... liable to cause, in some individuals, a harmful chemical or physiological reaction that would lead to loss of future immunity?" [Official Report, House of Lords, January 15 2001, col. 10014.]

In the same speech my colleague went on to describe the combination of NAPS tablets and vaccines, all administered at the same time, as

> "...by far the most likely common factor in causing subsequent indisposition or worse among Gulf veterans".

More recently, Lord Bramall has spoken with feeling about his related concern for the health and safety of our troops now deployed or awaiting deployment in the war against terrorism. A defence costs study had, he said

> "...knocked the stuffing out of the Defence Medical Services and led to a mass exodus of specialists."

This pointed to the need for "very high priority improvements" and had to be put right, he said, *as a matter of the greatest urgency:*

> "If not "said the former Chief of the Defence Staff "the Government can forget about the Armed Forces, in particular the Army, being used as a force for good, in what has been described as Britain's now pivotal role. For without proper medical back-up, no extended deployment of military forces, even in a humanitarian role, let alone in warlike operations, can be safe or can even be contemplated." [Official Report, House of Lords, January 16 2002, Cols. 1082/3.]

POSSIBLE CAUSES OF ILLNESS AMONG COALITION FORCES

The Gulf conflict - a short but ferocious one, aptly named *Desert Storm* – resulted in fewer fatalities than expected, but is still taking its toll on the health of those who returned. The adverse effects of vaccines interactions is but one possible cause. Others likely to have contributed to the incidence of "Gulf War illnesses" to a greater or lesser extent include:

1. **Oil pollution from fired oil wells**

Among the most striking recollections of the Gulf conflict is that of Squadron Leader Philip Congdon of the RAF, as he then was, who led the British training team that went to Saudi Arabia after the invasion of Kuwait to train expatriate Saudi Arabian military and civil defence personnel in chemical and biological warfare defence

> "Everybody who served in the Gulf" he writes "will remember the smoke cloud generated after the oil fields were set on fire. The result was not a fog but rather the pollutants rose into the atmosphere producing a dirty sable black dome that extended from horizon to horizon over Kuwait and often drifted well into Saudi Arabia. Within this dome a mist of oil particles would occasionally precipitate. We now know that the atmosphere was saturated with pollutants of the most profoundly life-destroying type".

The burning of six hundred oil wells released into the atmosphere 50,000 tons of sulphur-dioxide, 100,000 tons of soot and 85,000 tons of carbon-dioxide every 24 hours. Air samples detected the presence of carbon monoxide, nitrogen oxide and polycyclic aromatic hydrocarbons, together with benzine, cadmium copper, molybdenum, nickel, lead, vanadium and zinc in "above average" concentrations.

Squadron Leader Congdon describes the result as

> "...passive smoking of the most deadly type."

It was compulsory "smoking" not only for US and British troops but also for the civilian population of Kuwait many of whom – as I was informed by ministers, including the Minster of Health, on a visit there in 1999 – succumbed to its deadly effect. My visit to Kuwait left me in no doubt that much of value to the study of Gulf War illnesses could have been gained from increasing our knowledge of the effects of the conflict on public health there, not least those of setting its oil fields on fire.

2. **The destruction by US troops of Iraqi rockets containing nerve agents**

   In March 1991, US troops demolished 122-millimetre rockets stored adjacent to Iraqi ammunition bunkers at Khamisiyah in southern Iraq. UNSCOM inspectors later identified the site as an Iraqi chemical weapons storage plant and found there ammunition containing the nerve agents sarin and cyclosarin,

   In reply to a parliamentary question I tabled in the House of Commons in 1996 about a possible link between the undiagnosed illnesses of some Gulf War veterans and the destruction of the Iraqi weapons stored at Khamisiyah, the then Minister for the Armed Forces stated that only one British serviceman was deployed in the area of fall-out plume; but the reply subsequently had to be substantially revised.

3. **Post traumatic stress disorder (PTSD)**

   The general expectation of a high death toll, awareness of the range of weaponry available to the Iraqi forces and recollection of the effects of its use against the Kurds and in the war between Iraq and Iran, made it probable from the outset that PTSD and other stress-related disorders would afflict at least some of our troops deployed to the Gulf.

   Although in the event the number of fatal British casualties during the conflict was low, many of our troops witnessed events that were psychologically highly disturbing. The horrendous injuries sustained by Iraqi soldiers had a marked traumatic effect on some of those who came in close contact with them and especially on many of the service men and women responsible for treating their injuries. The relief of stress was not assisted when the civilian doctors of many of our troops, not least of

Reservists, were inadequately briefed about them when they returned home.

Others affected by traumatic stress included members of aircrew and ground troops who encountered the Iraqi casualties subjected both to relentless bombing and ground attacks in fighting to defend the Mitla Pass.

The extent of suffering caused by PTSD was brought home to me, when I was a Member of the House of Commons, by the case of a young British soldier from a locality close to my former electorate in Greater Manchester who had served in the Gulf with the Royal Artillery. Such was the deterioration in his health after the conflict that he became subject to severe depression, panic attacks and acute breathing difficulties. On two desperate occasions he tried to end his own life and, like many other Gulf veterans with PTSD, he is now classified as permanently disabled.

4. **The use of organophosphate substances in locally purchased pesticides**

Had we known then what we know now about the health hazards associated with organophosphates, our troops would certainly not have used them to the extent that they did in 1990-91.

Throughout the deployment, the tented accommodation occupied by British forces in the Gulf was regularly sprayed with pesticides to prevent fly-borne diseases. Initially most of the pesticides used were free of organophosphates, but when it became necessary to make purchases from local suppliers, there was widespread and substantial use of them.

Tents, clothing and equipment were regularly sprayed by locally purchased pesticides. Some veterans employed in spraying speak of having been soaked to the skin in organophosphates and undoubtedly that level of exposure to their effects was another cause of illnesses among Gulf veterans.

5. **Effects of Depleted Uranium**

Gulf War illnesses are rarely discussed now without mention of the very heavy use of depleted uranium (DU) during the conflict. Notwithstanding all that is said by ministers and others about the "minimal risk" posed by DU on the battlefield, there is widespread belief among veterans that the effect of spent DU munitions is the cause of their ill-health.

They believe that the dust created following impact by shells containing DU was contaminated and, when inhaled, was the cause of illnesses especially among rescue workers and field staff involved in the clean-up and decommissioning of vehicles and sites attacked by DU weapons.

In response to this concern the MoD is now undertaking a DU screening programme to establish whether exposure to its effects is linked to ill-health among veterans. But we shall not know the outcome until some indeterminate future date.

In the UK, because so many veterans were reporting war-related illnesses after the conflict, it was initially thought that there could be a single underlying cause. Yet the range of symptoms was very wide. And while this does not exclude damage to the

immune system as the single most common cause of Gulf War illnesses, it was demonstrably not the only cause when many veterans were presenting symptoms of the effects of massive oil pollution; of PTSD; of organophosphate poisoning; and of involvement in the clean-up of vehicles and sites attacked by DU weapons.

The complaint most frequently aired for veterans by their associations was that official response to their illnesses was tardy: for example, it is seen as self-evident that research commissioned by the Government into the effects of vaccines interactions – the need for which, as we have seen, Field Marshal Lord Bramall was to describe as "glaring" – should have started much earlier. There is continuing concern too that a Medical Assessement Centre was not established more quickly, due to official disbelief that the health of Gulf veterans could possibly have been damaged by the very precautions taken to protect them or the environment in which they were called upon to serve.

Help for veterans with war-related illnesses was hampered also by poor medical record-keeping during the conflict and inadequate debriefing of our troops, particularly of Reservists, on their return to the UK. Again, the often very poor briefing of their civilian doctors led to failure to link many veterans' illnesses to their service in the Gulf.

WHERE WE ARE NOW

The RBL describes veterans with still undiagnosed illnesses as having had "a long hard fight" to have them accepted as war-related. And although epidemiological studies iniated by the MoD confirmed that British troops who deployed to the Gulf were more likely to be unwell than their peers who did not, full official recognition of their needs

has been difficult to achieve. While the RBL and our their associations have had many successes in promoting veterans' interests, there is deep concern in Britain's ex-service community that too many lessons of the Gulf conflict have still to be learned.

The RBL campaigned, with eventual success, for a Minister for Veterans' Affairs; but the first appointment was not made until 2001 and the Legion's call for a full Public Inquiry into the issues raised by Gulf War illnesses is still resisted. In seeking the inquiry the Legion said it was

> "...very conscious that in the United States a Presidential Commission was established very soon after the conclusion of the war",

and that a Public Inquiry of comparable standing in Britain

> "...would be providing our veterans and service people with no more than parity of treatment".

When thousands of the men and women we deployed to the Gulf, then fit and well, had become severely disabled by war-related illnesses, no one could argue that the Legion acted precipitately in calling for a Public Inquiry. It did so in May 1998 – seven years after the conflict ended – both in fairness to those affected and to maximise public confidence that our troops "would be fully prepared and protected in future deployments".

The reason given for rejecting a Public Inquiry was the traditional one that had been used, at first, to reject the RBL's call for the appointment of Minister for Veterans' Affairs. It was argued that nothing would be gained; but more recently, in words clearly chosen with clinical care, a Defence minister has stated that

> "...the possibility that a Public Inquiry might become an appropriate mechanism is not excluded".

This is seen as modest progress by an ex-service community that just cannot believe that, if there had been a Public Inquiry, work on the interactive effects of all the tablets and inoculations given to our Gulf War troops in 1990-91 would not have been completed before 2003. Nor is it credible that a Public Inquiry would have failed to tackle questions raised in parliamentary debates that went unanswered: for example, how many of Britain's 88 Gulf War veterans who have committed suicide since the conflict were service men and women with PTSD and how many, successfully or otherwise, had applied for a war pension for the disorder?

Again the ex-service community thinks it inconceivable that a Public Inquiry would not have increased our knowledge of the effects of the Gulf conflict on public health in Kuwait; or that it would not have reported on complaints about the Medical Assessment Programme and why veterans were not given copies of their medical records on discharge to assist their civilian doctors in early diagnosis of illnesses that could be attributable to their service.

The RBL acted in keeping with its highest traditions in calling for a Public Inquiry into all aspects of the handling of Gulf War illnesses; and there are those on both sides of both Houses of the British Parliament who feel that the question now is not whether but when a Public Inquiry will be held. They fully accept that mistakes made in 1990-91 were not deliberate. They know as well as anyone in executive government that decisions about protective measures often have to be made on a "needs must" basis; but they rightly insist

– and believe that any Public Inquiry worthy of the name would strongly insist – that the nation as a whole must play its full part in meeting the cost of such decisions. That quintessentially is the case for the Public Inquiry called for by the RBL.

None of us at Westminster, least of all British ministers – any more than anyone in Congress or executive government in the United States – wants to see the afflicted and bereaved of the Gulf conflict made to suffer the added strain and hurtful and demeaning indignities that preventable delay in dealing with their concerns can impose. Yet sadly many veterans feel that such delay has occurred and their public representatives must try to help when and wherever they can.

Of all the duties it falls to parliamentarians to discharge, none is of more compelling priority than to act justly to citizens who are prepared to lay down their lives for their country and the dependants of those who do so. There was no delay in the response of our troops to the call of duty in 1990-91. Nor should there be any delay now in discharging in full our debt of honour to them. That was and remains much the best way – better by far than words of praise – of showing our regard and admiration for the men and women who served our two countries with such gallantry in the Gulf War.

Mr. SHAYS. We have been joined by two other members. We want to get right to our panel. We have been joined by Mr. Platts from Pennsylvania, Mr. Schrock from Virginia. Do any of you have any statements you wish to make?

Then we are going to proceed, Mr. Winkenwerder, with—Doctor, I'm sorry.

I would say that I'm going to be absent for a few moments because the Speaker has asked me to see him, but I will come back. Our vice chairman, Mr. Putnam, will take the Chair. You may begin.

STATEMENT OF DR. WILLIAM WINKENWERDER, ASSISTANT SECRETARY OF DEFENSE FOR HEALTH AFFAIRS, DEPARTMENT OF DEFENSE

Mr. WINKENWERDER. Thank you, Mr. Chairman, distinguished members of the committee. I welcome this opportunity to appear before you today to discuss the Department of Defense's continuing efforts related to the illnesses and undiagnosed clinical and physical symptoms of veterans of the Gulf war. I will provide testimony for your record but would like to highlight a few key points.

Today as our soldiers, sailors, airmen, Marines and Coast Guardsmen are deployed throughout the world in support of Operation Enduring Freedom and other contingencies, we remain mindful of their sacrifice and are dedicated to providing the health care they deserve. While we continue to learn lessons from current deployments, issues and concerns from the Gulf war remain. I intend to continue our vigorous efforts to address and resolve these issues. Moreover, I plan to broaden the focus of those efforts to include current and future deployments.

To that goal, through my Deputy for Force Health Protection and Medical Readiness and through our Office for Gulf War Illness and working in cooperation with the joint staff and the military services, this will provide me with a critical assessment of deployment health-related processes and issues. With this information I will closely monitor deployment force health protection issues so that the military health system can be responsive to the health concerns of our service members, veterans, and their families.

One very important area in which we will continue to advocate the health concerns of service members, of veterans is through our support of medical research.

I want to just take a point to note here the scope and magnitude of this research and my views about it. We have conducted over 193 studies over the past few years, 5 or 6 years, expending about $175 million. In addition to that, there have been 44 separate investigations of incidents conducted by the Office of Gulf War Illness that have expended another $160 million. There's been a total of about $350 million that has been spent in this combined effort of research and investigation and outreach.

The Department of Defense has funded about $300 million of that $350 million. So the preponderance of the dollars has come from the Department of Defense.

What's important, however, is not how many dollars. It is the following point with respect to research as far as I am concerned.

It is, first, that we set the appropriate agenda and to that even I support what Secretary Principi has indicated in terms of making sure that we cover the waterfront in terms of the questions that need to be examined and raised and pursued. One. Two, that we fund and conduct excellent research and that it is conducted by good researchers. And, three, that we pursue answers. That's the objective, is to get answers. Sometimes we don't always get the answers we want or we don't get answers. But our goal should be to get answers.

The Department of Defense remains an enthusiastic partner in a cooperative, interagency, federally sponsored research agenda with the Department of Veterans Affairs and Health and Human Services.

Our recent joint release of the information concerning Gulf war veterans and the small but statistically significant risk of ALS in this population following their service is an example of our effort. I might have you note that at the same time that Secretary Principi was presented with this information so was I. And, as Dr. Feussner can tell you, because he was the one who presented me the information along with the principal researchers, upon learning of that information I without hesitation made the recommendation that we move forward with this information and release it.

This may have been a turning point for the Department of Defense. I cannot and will not make any judgments about how we have approached things in the past, but it is pretty clear to me that when we have information that indicates that there is a problem and that it is statistically valid and well-conducted research, we have a high obligation to bring that information forward and to take the steps that need to be taken. I am committed to investigating the possible causes of illness and treatments for medically unexplained physical symptoms that are affecting veterans.

Let me just also add that with respect to the whole notion of Gulf war illness, obviously, the information that I have seen, and I am—and I would not characterize myself as an expert, but that I have seen—indicates that there is a clear increased rate of symptoms and illnesses in this population. The challenge is tying those symptoms and illnesses to underlying physiopathological mechanisms. That's what science and research is all about. When we do that, we can give those illnesses or symptoms names. And I think that's important for people. That's important, in my experience as a physician, for people to be able to put a name to what it is their problem is.

That said, this is difficult research. It's difficult research because there are many different possible factors that could be involved. We're dealing with environmental exposures. We're dealing with information—a situation in which the information base underlying may not—it's not ideal for getting the answers that we may want. But that said, that does not mean that these altered physioclinical pathologic mechanisms don't exist. The fact that we don't have evidence doesn't mean something doesn't exist; just means we don't have the evidence. So our goal should be to pursue that.

In addition, we continue a close collaboration with the Department of Veterans Affairs to improve medical services for our veterans. We developed and tested a patient-oriented, evidenced-based

clinical practice guideline that will aid primary care physicians and caregivers in the assessment of illnesses that can occur after deployments, and we'll be using that in the current situation. Implementation of this guideline will begin next month. Among our many other collaborative efforts, we also have instituted a common DOD-VA separation medical examination, which efficiently serves the needs of veterans, the DOD and the VA.

In conclusion, the Department of Defense is committed to ensuring the health of our military forces, and you have my commitment that I will aggressively address the challenges that lie before us and fully execute my responsibilities to oversee the health protection, fitness, casualty prevention and care of the men and women who are asked to defend our country.

Thank you, Mr. Chairman and distinguished committee members, for giving me the opportunity to discuss the work of the military health system and our efforts at the Department of Defense. I would be happy to answer any questions you may have.

Mr. PUTNAM. Thank you Dr. Winkenwerder.

[The prepared statement of Dr. Winkenwerder follows:]

House Committee on Government Reform
Subcommittee on National Security, Veterans Affairs,
and International Relations

Statement
by
Dr. William Winkenwerder, Jr.
Assistant Secretary of Defense for Health Affairs /
Special Assistant for Gulf War Illnesses, Medical Readiness,
and Military Deployments

Department of Defense

"Gulf War Veterans' Illnesses: Health of Coalition Forces"

Mr. Chairman, I appreciate the opportunity to appear before the Subcommittee on National Security, Veterans Affairs, and International Relations to report on the Department of Defense's continuing efforts related to the illnesses and undiagnosed physical symptoms of veterans of the Gulf War, to review the ongoing medical research into the health of veterans of all deployments, and to provide information on the status of some deployment health surveillance programs.

First, let me emphasize that the Department of Defense is committed to providing a world-class health care system for its servicemembers and their families. This commitment is especially strong today when our soldiers, sailors, airmen, Marines and Coast Guardsmen are deployed throughout the world in support of Operation Enduring Freedom and other contingencies. As America's sons and daughters serve and protect our nation, I recognize they may encounter unique challenges from operational or environmental conditions as well as from combat. The Gulf War and subsequent deployments to Somalia, Bosnia, and Kosovo provided the Department of Defense important insights into the importance of deployment health protection. In response, we have changed processes, revised procedures, and invested heavily in research to develop more effective force health protection measures and equipment for our people, but we are not finished. We are assessing and monitoring current deployments and are committed to provide for all who have health concerns related to deployments.

Issues and concerns from the Gulf War remain and I intend to continue our vigorous efforts to address and resolve these issues. I am equally committed to broaden those efforts to include issues and concerns arising from current and future deployments. I take seriously my role as the Special Assistant for Gulf War Illnesses, Medical Readiness, and Military Deployments and have begun to focus on deployment health issues as they affect the entire military health system.

I have aligned the staff of the office of the former Special Assistant into my Deployment Health Support Directorate, which will continue to provide support and outreach to all those with issues associated with any deployment. Through my Deputy Assistant Secretary of Defense for Force Health Protection and Readiness, the Deployment Health Support Directorate, in cooperation with the Joint Staff and the military services, will provide me critical assessments of deployment health related processes and issues. As a result, I can more closely monitor force deployment health protection issues. Improving the adequacy of environmental surveillance, completeness of individual medical records, and implementation of other lessons learned will allow the military health system to be responsive to the health concerns of our servicemembers, veterans, and their families.

One area in which we continue to advocate the health concerns of servicemembers and veterans is through our support of medical research. As you may know, Health Affairs, and the Deputy Under Secretary of Defense for Science and Technology participate on behalf of the Department on the interagency Research Working Group of the Military Veterans Health Coordinating Board. This Research Working Group facilitates coordination and collaboration of research among the Departments of Defense, Veterans Affairs, and Health and Human Services. I believe the veterans are best served by following accepted scientific processes for selection and funding of medical research. I am committed to investigating the possible causes of illnesses and treatments for medically unexplained physical symptoms that are affecting veterans.

Numerous studies have documented that Gulf War veterans report physical symptoms and medical problems at a greater frequency than do their contemporaries who did not deploy to the Gulf. Although the precise reasons for these differences are unclear, we must evaluate these observations to better understand the potential health effects of military deployments.

The Department's research priorities for this fiscal year include:

- Evaluating the long term health effects of low level chemical exposures and their interaction with the central nervous system and immune function;
- Developing improved and more sensitive biological, neuropsychological, and chemical methods to detect exposures from specific chemicals in individual servicemembers;
- Evaluating toxicity of heavy metals used in weapons systems and improved methods to diagnose persistent infections such as leishmaniasis;
- Evaluating the implementation of comprehensive health monitoring of servicemembers and their families;
- Understanding environmental and occupational health risks, including how to convey these risks to servicemembers; and

- Understanding the causes of chronic fatigue conditions, and their objective diagnosis and treatment. We are also validating suggestive findings of biochemical changes in the brain that might provide early indicators of progressive neurodegenerative disease.

In addition, we have begun research on the health of military personnel over their entire careers and beyond. A prospective study of U.S. military forces, called the Millennium Cohort Study, responds to the need for a longitudinal study to assess the health impact of major elements of military service, especially deployments and their associated risks. This study also responds to recommendations from Congress and the Institute of Medicine to systematically collect population-based demographic and health data to evaluate the health of servicemembers throughout their military careers and after leaving military service. This study will eventually use a cross-sectional sample of over 140,000 military personnel who will be followed prospectively every three years over a 21-year period through 2022.

Further, in response to veteran concerns and congressional direction, we have established three centers focused on deployment health issues. These centers provide research, medical surveillance, and clinical care services. For example, the Center for Deployment Health Research in San Diego has established a DoD birth defects registry and monitors reproductive outcomes among all military families, including those of personnel who have deployed. All three centers work closely with their VA counterparts—two centers for the study of war-related illnesses.

The Department also has taken steps to ensure that military personnel are fit and healthy when they deploy, that we monitor their health while they are deployed, and that we assess their health when they return. The Center for Deployment Health Surveillance at Walter Reed Army Medical Center in Washington D.C. is our key to tracking and analyzing these deployment health data. Our policy and practice is to assess potential health threats in areas of deployment, and minimize such threats where feasible. All of these principles are incorporated in DoD policy letters and directives and into a policy memorandum of the Joint Staff. The combatant commanders and their component commands through the extensive professional efforts of the military services' medical departments execute these policies and directives in the field.

As documented for Gulf War veterans, the majority of ailments found in deployment participants have been medical conditions seen commonly in other military, veteran, and civilian outpatient populations. The Deployment Health Clinical Center, also at Walter Reed Army Medical Center, in cooperation with the Department of Veterans Affairs, has developed and tested a patient-oriented, evidence-based clinical practice guideline to aid primary caregivers in the assessment of illnesses that occur after deployments. Implementation of this guideline will begin next month. My expectation is that all beneficiaries who have been involved with deployments – including families of deployed servicemembers – will receive health care that is fully responsive to any special

health issues which arise after deployments. I believe this clinical practice guideline will foster an important partnership between the individual with the health concern and the caregiver who directs individualized treatment for better continuity of care. This guideline is the most recent in the DoD's and the VA's history of collaboration on clinical practice guidelines for medical problems in our beneficiaries.

In addition, the Department continues to work towards fielding medical information systems to provide complete patient health records electronically, including all immunizations. Such systems will greatly facilitate the preservation of individual health records, epidemiological studies of military health, and transfer of health records to the Department of Veterans Affairs.

We will continue our close collaboration with the VA to improve medical service to our veterans. In addition to the clinical practice guideline, we have instituted common separation medical examinations, which efficiently serve the needs of veterans, the DoD, and the VA. Another result of DoD-VA partnership is "FEDS HEAL". This program establishes a network that links the provider resources of the VA and the Department of Health and Human Services Division of Federal Occupational Health to furnish physical examination, immunization, dental screening, designated dental treatment, and other specified diagnostic services to units and individuals in the National Guard and Reserve components. I fully expect additional successes from our continuing collaboration with the VA.

In conclusion, the Department of Defense is committed to ensuring the health of our military forces, and I am committed to doing everything in my power to provide a world-class health care system for our servicemembers and their families.

Mr. PUTNAM [presiding]. At this time the Chair recognizes Mr. Sanders for 5 minutes.

Mr. SANDERS. Thank you very much, Mr. Chairman. Frankly I am very disappointed by the DOD's comments. 140,000 people are ill. A recent study, as you indicated, came out which suggests, A, not only is the incident of Lou Gehrig's Disease significantly higher for people who serve in the Gulf than for military people who did not, but if you understand that ALS is an old person's disease and that the persons who served in the Gulf are primarily younger people, you're talking about substantially a higher rate of incidence.

After 10 years what you basically have told us is you think in spending $300 million there may be an illness. You're not quite sure. I don't hold you personally responsible. I know you haven't been doing everything for 10 years.

Let me read what I consider—and I think we got to lay these things right on the table—an insulting statement from the DOD. This is a letter March 2, 2001, in response to the GAO's draft report. I will read the last paragraph. This is signed by Dale Vesser, acting special assistant, "Finally we note similarly poorly explained symptoms have been observed among veterans after all major wars in the last 130 years, and that the British, Australians, Canadians and Americans have found similar symptoms among Gulf war veterans despite different exposures. These observations argue strongly that health problems among Gulf war veterans are the result of multiple factors that are not unique to the Gulf War."

In other words, what the DOD is saying is there is no Gulf war illness. That's what this is saying. And I think we have to cut the air right now. If, after $300 million and 10 years of research, the DOD does not believe that there is such a thing as a Gulf war illness, that 140,000 people are either suffering hysterical symptoms or they're lying or they're malingerers, then say it and get out of the research.

You may note that in 1997, this committee said the following reluctantly—and I pushed for this statement—finally we reluctantly conclude the responsibility for Gulf war illnesses, especially the research agenda, must be placed in a more responsive agency independent of the DOD and the VA. The statements of the DOD tell me today that they should get out of the business. I respect your point of view. You don't believe in Gulf war illness. That's fine. Let's go to people who do believe that there's a Gulf war illness.

You are going to see today private researchers, some funded by Mr. Perot, who are going to come up here today and show us pictures of brain damage. They don't have much doubt about the issue. And there is other important research going on. So I would say, Mr. Chairman, and I know Mr. Shays is not here, that there is some important research going on that is not going on with the DOD. We respect and thank them for their work. Let's get on and deal with people who take this issue seriously.

In my little State of Vermont where we do not have a huge contingency of people in the Gulf war, I personally have met with hundreds of people who are suffering. When they go near perfume or when they go near detergents, they become ill. They cannot work in many instances. Please do not tell me that you're still studying whether or not there is a Gulf war illness. I want serious people

to solve this serious problem, and unfortunately I think the DOD is not that agency to do that.

Dr. WINKENWERDER. Would you like me to respond? I never made the statement that there is no Gulf war illness. And as far as I know, I am not—I will check for the record, but I am—have no information to suggest that the DOD has never indicated that there is no Gulf war illness.

Furthermore, let me make the point, sir, that we are committed to finding answers and to funding research that will provide answers. That is what I have given you. That's what I've said. That's my pledge.

Mr. SANDERS. But can you explain to me, just explain to me, if the statement is, hey, what this is basically saying—I have been doing this for 10 years, and the issue is after every war, there are symptoms. I suspect that's true from the Civil War on today. Ain't nothing new. If that's your position, then there is nothing. You are saying people suffer stress in wars. Every war, they come home, they get sick. Nothing different about the Gulf war. That's what this says to me. Am I missing something?

Dr. WINKENWERDER. That's not what I have said.

Mr. SANDERS. This guy is the Acting Special Assistant for the DOD.

Dr. WINKENWERDER. When was the letter dated?

Mr. SANDERS. March 2, 2001, in response to the report done by the GAO.

Dr. WINKENWERDER. I'm not sure that what you have just read is consistent with the statements I have just made to you.

Mr. SANDERS. Then talk to each other, please.

Dr. WINKENWERDER. I don't know who wrote that statement. I'll be glad to look at it and be glad to followup with you. But I think my statement today indicates that, No. 1, we consider this a serious issue. We are committed to the research. I personally am committed to taking the steps that are needed to find answers. That is—I just indicated what the goal should be. The goal should be—is an agenda that looks openly at questions, that pursues excellent research and that finds answers.

Mr. SANDERS. But you have spent $300 million, and you have not found very many answers. The recent study on ALS is a step forward. I acknowledge that.

Dr. WINKENWERDER. We have found that answer. I am going to leave it to the other researchers who can probably give you a better summary than I can about the various studies and the state of the research and what the answers are that we found. I don't think it would be accurate to say that we don't have any answers to things that have been investigated.

Mr. SANDERS. Thank you.

Mr. PUTNAM. Gentleman from the State of Vermont has expired. We have a vote ongoing. We have 10 minutes remaining in the vote. We will recess and come back as quickly as possible. Contrary to the agenda, at the conclusion of the questions for this panel, we will be taking up Mr. Perot as the next panel. With that, committee stands in recess.

[Recess.]

Mr. PUTNAM. The subcommittee will reconvene. Before the recess, Lord Morris had asked for time, and I think it's appropriate that the Chair recognize the gentleman from Great Britain.

Lord MORRIS. Mr. Chairman, can I put two brief points to Dr. Winkenwerder? The first, I understand from a highly authoritative source that the clinical neurology immunology studies in which Professor Simon Wessely is involved have basically confirmed the Ruch Zummler hypothesis. Do you have any comments on that? And in regard to the recent statement by the Secretary for Veterans Affairs about the increasing significance of motor neuron disease among Gulf war veterans, how does he respond to the Secretary's obvious concern about that finding?

Dr. WINKENWERDER. I'm sorry, the second question had to do with the finding of ALS increased rates?

Lord MORRIS. I am basing myself, Mr. Chairman, on the recent published statement by the Secretary on Veterans Affairs about motor neuron disease, the incidence of motor neuron disease among Gulf war veterans in the United States. We have cases as well, some very deeply concerning cases in the United Kingdom.

Dr. WINKENWERDER. And your question is about what are my thoughts——

Lord MORRIS. How do you react?

Dr. WINKENWERDER. Well, I don't know what research has been done in the U.K. in this issue, but I would urge given the findings that we have such research be done.

Lord MORRIS. And on the first point about the research in which Professor Simon Wessely is involved on fatal neurology, immunology and the finding that the Ruch Zummler hypothesis is basically confirmed, which I think is a very important finding, what is the DOD's response?

Dr. WINKENWERDER. To be quite candid, I am not familiar with that work, and I am kind of getting the feeling that Dr. Feussner is and let him respond.

Dr. FEUSSNER. Yes, sir. Two issues. We are quite familiar with Dr. Simon Wessely's work. Dr. Simon Wessely has collaborated with us in regards to the large-scale U.K. epidemiological study. The initial parts of that study were funded by the Department of Defense, and I think the follow-on analyses are going to be funded by the Minister of Health.

The hypothesis that you are referring to is a scientific hypothesis that basically addresses the issue of imbalance in the immune system between the several components of the immune system, and you're quite correct. Dr. Wessely, I believe, will be publishing a paper in the British Medical Journal next month which will confirm that there is an immunological imbalance in patients who were deployed to the Gulf. I think that will be—I haven't read Simon's piece carefully, but I think that will be a first observation of a significant immunological perturbation. And then the question is going to be what are the clinical consequences of that.

I think with regards to your second question, the—I would make two comments. The first is that we are aware of the situation with motor neuron disease in the U.K. and that there are several U.K. veterans suffering from motor neuron disease. I think that, as with the earlier studies that were done in the United States by the VA

and by DOD, there has not been an increased—observed any incidence of such neurological diseases.

This study that the Secretary had commented on and Dr. Winkenwerder had commented on is actually the first in a series of research projects that has shown a significant increase in the rate of ALS, almost a twofold increase. It is a study, in a sense, that is a bad news/good news study. The bad news is that there's an increased rate of the disease. The good news, inasmuch as it is good news, is that the disease is very rare. So the absolute rate of the disease is quite low among the deployed veterans, about six or seven patients per million.

But we're going to continue with DOD. The ALS study was a joint project between DOD and VA and was a jointly funded project between VA and DOD, and we're going to continue to do some follow-on research in this area, and then we'll bring in the National Institutes of Health as well.

Mr. PUTNAM. Followup? Dr. Winkenwerder and Dr. Feussner, as the respective heads for VA and DOD's medical system and as clinicians, what is your advice to Gulf war veterans who may be at risk of having ALS as a result of exposure to organophosphates and pesticides and other things such as that? What is your advice to them?

Dr. WINKENWERDER. The advice I would have for any veteran that has symptoms that give that individual the sense that something is not right and that something is going on with me that doesn't feel right, that person needs to obviously get to a physician and, if needs be, get to a specialist, get to a neurologist, someone that can conduct a detailed evaluation of those symptoms. I think the fact now that this information is out there, is public, should give clinicians across the country, at least here in the United States, a heightened sensitivity to the possibility of symptoms that could be early and may be related to this particular disease.

Dr. FEUSSNER. Mr. Chairman, if I may respond, I would echo Dr. Winkenwerder's comments. I would say, however, that we should clarify that the cause of ALS or factors that cause any individual patient to develop ALS are not known. And one of the additional motivations that we had in doing this study is if there was a cluster of ALS developing among Gulf war veterans, in addition to knowing that, it could provide us an opportunity to do additional basic research to try to look at what factors or what exposures may be associated with development of the disease.

About 10 to 12 percent of ALS cases is due to genetic mutations, and in the follow-on studies we will conduct jointly with DOD, we'll look at both the interview information we have on the Gulf war veterans looking at exposure issues, and then we'll also do subsequent DNA analyses to see if any of these patients have the genetic—the underlying genetic abnormalities that could lead to ALS.

So I'm afraid we can't really tell the veterans what to do to avoid the disease because we don't know what causes it, and I'm also afraid that the treatments—there is no cure for this disease, and the treatments are symptomatic. And I think the best we can offer is to offer the patients who have ALS the best medical therapy we can give them.

Mr. PUTNAM. The GAO's testimony states there is unpublished data regarding Gulf war illnesses collected by the Department of Veterans Affairs. What were Dr. Kang's findings regarding Gulf war illnesses? Dr. Kang.

Dr. KANG. I'm not sure exactly which research project the GAO report you are referring to. Almost all of our completed study is published, so perhaps if I know which project that statement refered to, I can provide more detailed information.

Dr. FEUSSNER. The most recent study that Dr. Kang was involved with has not been published, and that is the physical examination component of the phase 3 or the phase 3 of the national survey. Dr. Kang can correct me if I am wrong, but those data have not been published because the study has just been completed and the data are currently being analyzed. Preliminary results from the phase 3 study were presented at our research meeting in December. That's a study that includes about 2,000 veterans, about a little over 1,000 spouses of the veterans, and about 1,600 children. And in addition to the previous studies that looked at self-reported symptoms, this particular study involves physical examination and neurological examinations required of the veterans, the spouses and the children looking for array of medical diagnoses among the veterans, the spouses and the children. Those data have not been published in part because that manuscript has not been prepared, and the data analysis is incomplete. I would expect that those data or that analysis will be completed in a manuscript submitted perhaps this calendar year.

Does that answer your question, sir?

Mr. PUTNAM. Does that include the potential for vaccine—potential role for, say—the potential role of the anthrax vaccine, was that reviewed?

Dr. KANG. That started. It did not include etiology of any adverse health outcomes. So we didn't study cause and effect. So that study does not answer the question.

Mr. PUTNAM. Thank you.

At this time, the Chair recognizes the Right Honorable Mr. George for 5 minutes.

Mr. GEORGE. One of the few good things that come out of any war is that if the politicians and military are smart enough, sometimes they are and sometimes they are not, you can learn how better to fight the next one, although you must not always look backward in projecting the future.

I want to ask Dr. Winkenwerder and Dr. Feussner if they could comment on lessons learned. Dr. Winkenwerder, to what extent has the Department of Defense learned from the Gulf war experience in terms of how to better protect the health of military personnel for subsequent wars, and in particular, what do you think you have gained from the Gulf war and maybe other deployments in other dangerous areas so that your men and women are exposed to less risk?

And a question to Dr. Feussner, again the lessons of the past. We, as I mentioned, or I should have mentioned, in my presentation—the British Minister of Defence is undertaking a study of compensation for sick or injured Armed Forces personnel, and my committee is monitoring that in coming up with our own proposals.

What has Veterans Affairs, perhaps the Department of Defense, learned about the most appropriate methods of compensating the sick or injured Armed Forces personnel from the experience—the scarring experience I am sure you have had over the last decade in dealing with the problems of veterans of the Gulf war? Thank you.

Dr. WINKENWERDER. Mr. George, that is an excellent question and I think cuts to the heart of what are we doing and what have we learned and what we are going to do going forward. I would say this is a good news and bad news story, bad news in the sense that sometimes our best lessons are our most painful lessons. But as those lessons occur, changes can be made, and I think in this case have been made. And I will talk just about a few of them.

To try and summarize, I think in order to understand and respond to and treat people in the Gulf war situation, it is important that we collect the information so there is a baseline of information. And that needs to occur both before people get deployed on the battlefield even before the fight begins, if you will, and then after. And with that kind of information, it's much easier to draw a picture of what might have happened to any given individual.

I think that's one of the problems that we face with the Gulf war situation. The data base to start with was not optimal. So we've learned a lot about that. Currently and just in the past 2 to 3 years, we have begun doing pre- and postdeployment assessments so that there is a standardized form that the medical provider goes through, a checklist of information, and that is collected prior to deployment, also after deployment.

Another sort of predeployment activity relates to assessment of battlefield risks. The U.S. Army Center for Health Promotion and Preventive Medicine [CHPPM] does an industrial hazards assessment for base camps and for surrounding areas. And it is sort of an on-the-ground sample assessment of air, water, other risks. And that has been done in the current deployment in Afghanistan.

There is also the Armed Forces Medical Intelligence Center, which gathers information regarding things that might be known about various installations or plants or chemicals, and that gets incorporated into the medical planning effort.

In addition to that, it's very important that information be collected during the engagement, and we have a reporting system that is known as the DNBI, disease non-battle injury, surveillance. Weekly reports are generated from the battlefield, from the unit level, and are placed into software systems for each of the services and then aggregated up to DOD wide level again through this CHPPM organization. We have future plans to have this more realtime, but even now we believe it serves as an early warning system for chemical, biological or radiologic weapons. And I can tell you that this information is being collected.

I was just visiting last week with our Central Command headquarters with General Franks and Deputy General DeLong and the leader of our Special Operations Command—so many of our forces are Special Operations right now—and spoke with the medical leadership of those commands, and they are collecting that information.

One of the things that we're working on as just an example is Palm Pilot sorts of tools. Particularly you can imagine for the Special Operations soldier, that kind of soldier could be out in the field—who knows where they are for what period of time. They are in small units. So it's difficult to collect that information, but we're funding a Palm Pilot system for that kind of collection of information.

So the other thing that has changed since the Gulf war is immunization tracking. Again, that has been placed on the software so that we have that information about who got what vaccines at what point in time. And then the final stage is really the capability to do the research and analysis, and we have done three things there. One is to set up a research center, the Naval Research Center in San Diego, and that was done just 2 years ago; and second, a clinical center, which is at the Walter Reed Army Hospital here locally, that looks at things like development of practice guidelines. And then finally, the deployment of the Health Surveillance Center, which is part of the CHPPM organization that I spoke of earlier.

So I think we're doing a lot more. I feel much better about what we're doing today than what we've done in the past. Time will tell how effective all these efforts are at getting to answers that have been elusive in the past.

Mr. GEORGE. And if—with your permission—there is something called an Afghanistan War Syndrome. Although the numbers perhaps involved will be rather different, are you collecting information or examining multi personnel upon return to be able to get off to a swift start should there be any psychological or physical injuries or illnesses as a result of this current conflict?

Dr. WINKENWERDER. Absolutely. And to that end, there is a clinical practice guideline. One of the important things is as people come back, they're not all going to come to one place. They are going to be seen in multiple places. So the question is what sort of a standardized tool that care providers will have across all services so the right questions get asked and the right information gets collected, and that is this clinical practice guideline that is going into implementation just next month.

Dr. FEUSSNER. Might I respond as well, sir? I would only add at least three lessons learned. The axiom in clinical medicine, the first task for the physician is listen to the patient. And I think the first lesson we have to learn from this experience is when our patients tell us they are sick and how they are sick, we have to pay attention to that and try to figure out how and why as quickly as we can.

I think the second lesson we've learned, and it has sometimes caused us difficulty with the Congress, is that there can be a long latency time from the time that a soldier may be exposed or a patient may be exposed to the time they develop the disease. The ALS situation is a case in point. We looked in 1993, 1994 and 1997 and found nothing. And it's important that we kept looking because it took time for this illness to develop.

And then I think the third lesson I would say is we sometimes get confused, and we think we have to understand something before we can treat it. And this committee has been particularly per-

sistent in asking us to think out of the box and not be hostage to that paradigm, but rather to try and come up with therapeutic strategies that might improve the patients simultaneous to doing research and trying to understand the disease.

Mr. PUTNAM. I'm sorry. We need to come back to Mr. Sanders. I apologize. And then we are going to seat the next panel.

Mr. Sanders, you are recognized for 5 minutes.

Mr. SANDERS. I would like to ask Dr. Feussner a question.

Dr. Feussner, let me quote from the 1997 report that this committee published on Gulf war illness. Dr. Rosker, who worked for the DOD, was basically saying back then that the incidents of ALS was typical with the general population. And as I understand it, about 1 in 100,000 people come down every year with ALS. And I am going to quote from the report.

However, in Dr. Rosker's claim the director of the Cecil B. Day Laboratory for Neuromuscular Research at Mass General Hospital, Dr. Robert Brown, stated the following: The incidence of new cases of ALS is about 1 in 100,000 individuals in our overall population. Thus it is true to say that group of 700,000 individuals might in the aggregate be expected to show seven or so new cases of ALS over a year's time. However, these statements about aggregate populations must be interpreted carefully. In particular, they assume an age spread that reflects an entire population. If one looks at the age of onset of ALS, the mean onset age is 55. The number of cases showing onset below the age of 40 is probably no more than 20 to 25 percent or so of the total.

In other words, what he's saying is we assume we have a younger population in the Gulf. And your study indicated that there was already a fairly—that people who served in the Gulf had a significantly higher rate of ALS than those military personnel who did not. But what about if we take the age factor into consideration? Are we not looking at a substantially higher rate of ALS, say, for people below 40 years of age?

Dr. FEUSSNER. I would like to say three things about that. And I think you know that one of the factors that motivated us to continue looking at this disease is that the cases of ALS that were identified, the soldiers, patients who had ALS were much younger than we would have expected. ALS is supposed to be quite rare in individuals under 45, and many of our patients who have ALS are, in fact, under age 45 so it motivated us to continue looking. Is the concern that our patient population, while not having a rate greater than the general population, did represent a skewing of the development of disease to a younger age.

So you are correct on two counts: One, that was a factor that kept us onto this problem; and two, that most of the patients that we've identified with ALS are younger, and that is in spite of the fact that there is no increased rate of ALS among our soldiers when compared to the general population. I think that is not a fair comparison, and that's why in this study we compared the deployed population to the nondeployed population.

Mr. SANDERS. I don't know if you can give me this answer in your head, but if you took 700,000 people who are the same age as the young people who went over to the Gulf in 1991, how much

greater would be the incidence for those who went to the Gulf than for the general population of young people who did not?

Dr. FEUSSNER. I don't know if I can do that calculation in my head. What I would say is that you're correct. The incidence rate is about 1 to 2 per 100,000 of the general population. The rate we have observed among the Gulf deployed population is a fraction of that. It's about 0.7 per 100,000, or about 7 per million. When we did the analysis, we did age-adjust the data so that the rate would reflect the age skewness in our patient population. So we believe that the rate of approximately 2 is an accurate number.

Mr. SANDERS. As you know, I have been very disappointed overall by the VA and the DOD's research not only because I think it has been unfair to the people who serve, but because if there's a silver lining out of the disaster that so many people are facing today is that we can learn a lot about illness in the general population. For instance, many of the symptoms that people in the Gulf have developed are not dissimilar from people who have been exposed, for example, to chemicals in the general population.

Specifically with regard to ALS—what is the VA going to do in terms of working with the ALS community and the private folks. Given the fact that you have done a major epidemiological study in terms of genetics, in terms of perhaps developing some correlation between exposure to certain types of environmental hazards, might we learn something from that in terms of better understanding ALS in general and how it affected—how it affects people in the civilian population?

Dr. FEUSSNER. Well, the answer to your question is absolutely. And one of the—again, as you say, if there is a silver lining in this, if we did identify a cluster of ALS patients in the Gulf war, then that would give us an opportunity not only to know that fact, but then also to see if we could gain some clues about cause, maybe even treatments.

In the current study, the current study is not done. The initial data that we presented in a shared way with VA and DOD leadership is just the rate. We have additional information on a subset of those patients in the study that had in-home interviews that talked about occupational exposures, family's history, etc. Those analyses are ongoing and hopefully will be finished this calendar year. We did ask the patients to give us samples of DNA, and we also asked them to give us urine samples to look for heavy metal toxicities. We will contract with the CDC to do the heavy metal analyses, and one of the investigators, I believe, at the University of Kentucky will follow on with a DNA analysis.

From the beginning, you may recall, Congressman Sanders, that we engaged both the ALS Association of America in the original discussions about whether to do a study. The ALS Association helped us identify patients by putting this study information on their Web site and did actively refer veterans to us during this study. And we also engaged the help of the American Academy of Neurology thinking that almost all patients who have ALS would go see a neurologist. The study is still open. And the number that the veterans can call to continue to identify themselves as having ALS is still open.

So we are going to continue to collect information on additional cases or new cases that we identify, both through the ALS, the Neurology Society, from the patients themselves, but we've always created a coordinated mechanism with the VBA, Veterans Benefits Administration, so that as additional patients are identified by VBA, they will notify us.

One of the things we did to facilitate Secretary Principi's action was—as you know, this information is private and confidential, and the patients asked us to keep information private and confidential. We contacted the—we attempted to contact the 40 Gulf war veterans who were deployed with ALS to gain their permission to give their personal identifier information to VBA, the benefits side, to facilitate patients being contacted by the VA and getting compensation.

Mr. SANDERS. Let me conclude, Mr. Chairman, by saying, thank you, Dr. Feussner, for your work on this study. To the best of my knowledge, correct me if I'm wrong, this is the first part acknowledgment on the part of VA or DOD that service in the Gulf could result in a higher rate of incidence of a particular disease; is that correct?

Dr. FEUSSNER. Yes, sir.

Mr. SANDERS. For many, many years people up here have been saying that there are a lot of folks who are ill because they served in the Gulf. This is the first time it has been an official acknowledgment.

This is my prediction, Mr. Chairman: In the years to come you are going to hear a lot more acknowledgments. This is the tip of the iceberg.

And I want to thank you, Mr. Feussner, for your work.

Mr. PUTNAM. The Chair recognizes the gentleman from New York Mr. Gilman for 5 minutes.

Mr. GILMAN. Thank you, Mr. Chairman.

Gentlemen, I address this to the whole panel. There has been a great deal of talk in programming recently about a possible U.S. return to Iraq as part of the ongoing war on terrorism. Should that occur, it's a safe assumption that Saddam Hussein will probably utilize all means and weapons at his disposal. If that happens, the battlefield will be as toxic, if not more so, than it was in 1991 at the Gulf war. What is DOD doing to prepare for this kind of a repeat on health problems among the veterans of our military? I address that to any of our panelists.

Dr. WINKENWERDER. I will attempt to answer that question for you. There are a number of things that we would be doing should that eventuality occur, and they range all the way from the level and types of protective equipment and clothing that we would use and things that we've learned in that regard to improved detection devices.

And as I read the history, and again, I'm coming into this with not believing I'm an expert on it, but just trying to learn some of the history, that although we had some things in place at that time, they were not optimal. I think we are further along in that area. In the area of vaccine, a whole other subject. I think it would be fair to say that the sort of rushed timeframe that the vaccine had been administered to troops at that time, we should not be in

that position again. So I think we're in a better position. If there are more specific details that will be useful to offer up to you, we would be glad to provide that to you.

Mr. GILMAN. What about the series of vaccinations that we undertook at the last—in the Gulf war that we found to be debilitating?

Dr. WINKENWERDER. I am going to have to maybe refer that to Dr. Feussner. I can't comment on that.

Dr. FEUSSNER. I think one of the U.K. studies actually done by Simon—by Dr. Wessely looked at the issue of the vaccination patterns, and there were some differences among the Coalition partners this regard. I think one of the lessons we should learn from this research effort is the U.K. investigators found that when the soldiers got all their vaccinations all updated all at once just as they were getting ready to deploy, that subset of the soldiers had a higher rate of subsequent symptoms and illnesses than when that was not the case. And I think one of the things that DOD has worked on specifically is to have the base immunizations done in the basic way so that by the time deployment might occur, the only additional immunizations that might be required would be the ones that are specifically related to the perceived threat in that war.

Mr. GILMAN. Besides phasing them out, is there any deleterious effect of combining all of them in one big mouthful?

Dr. FEUSSNER. I think that the U.K. study suggests that there are some deleterious effects to giving them all at once. And it's conceivable that the question that Lord Morris asked previously about the imbalance—the immunological imbalance, that's an observation that is going to require additional follow-on research to see what may be contributing to that imbalance.

Mr. GILMAN. Are we prepared to respond to that today? Suppose there was an outbreak of hostility with Iraq next week or next month? Are we prepared to answer that problem?

Dr. WINKENWERDER. What I can tell you is that for most of the sort of base immunizations schedule, that information I am familiar with suggests that we're well vaccinated and prepared in that regard. With respect to the——

Mr. GILMAN. That's not what I'm asking. I'm asking about the deleterious effect of putting them all together in one human being.

Dr. WINKENWERDER. I do not believe we would be in that same situation today. But what I want to add onto is that because of the fact of the limited supply that has occurred recently because of the shortage of the anthrax vaccine and for protection against that particular biowarfare agent, that obviously given the timeframe you asked the question today, there would be people who might not be vaccinated at all, and, of course, those that are in theater that fall into the group that we're protecting right now, they are fully vaccinated, the Special Operations forces.

Mr. GILMAN. I submit your response is pretty ambiguous, and I hope you can tie this down.

Mr. PUTNAM. Mr. Gilman——

Mr. GILMAN. One more question, Mr. Chairman.

What studies is DOD funding relating to the anthrax vaccine and the health effects? This subcommittee conducted numerous hear-

ings on the anthrax and its impact upon military personnel. Where are we today with regard to your studies?

Dr. WINKENWERDER. First of all, I would just say there has been quite an effort over the last 12 to 18 months working with the FDA and DOD and BioPort, the manufacturer of the vaccine, to look at the manufacturing process to ensure that—in particular FDA believes that the vaccine is safe and effective and that any concerns that might relate to any effects that the vaccine could have are not there, that they feel good about that situation.

Mr. GILMAN. Are you satisfied with the quality of the anthrax vaccine coming from BioPort?

Dr. WINKENWERDER. I believe it is a good vaccine. Based on the information I have seen, I believe it is safe and effective. If you're to ask me is it a perfect vaccine, I would say no. It is the vintage, if you will, of the technology and the timeframe in which it was originally made is not the same technology that we would use today. And so, therefore, I think there is an opportunity to develop, and we should be investing and developing an improved 21st century vaccine.

Mr. PUTNAM. Mr. Gilman, your time has expired. We have agreed to—Dr. Winkenwerder, I know that Chairman Shays agreed to have you out by noon, and we need to seat the second panel. With that, we will excuse panel one and allow a few moments for the second panel, which will be Mr. Perot, chairman of Perot Systems.

This time we will seat the second panel, Mr. Ross Perot, chairman of Perot Systems. Out of deference to your skiing accident, we are going to allow you to remain seated for the swearing in, and please raise your right hand.

[Witness sworn.]

Mr. PUTNAM. For the record, the witness responded in the affirmative.

We welcome you to this subcommittee, and we look forward to your testimony at this time. You are recognized for your opening statement.

STATEMENT OF ROSS PEROT, CHAIRMAN, PEROT SYSTEMS CORP.

Mr. PEROT. Thank you very much. What I would like to do is make a very brief opening statement and then have these tough questions that have just been asked, just hit them straight on with me, and then I will go in for my word-for-word testimony, but you have got that already copied.

But I first want to thank you and your committee for staying on top of this problem for all these years while our men and women have been suffering. They haven't had a lot of advocates, and you have certainly been there. I really got excited during the Presidential campaign when President Bush and Vice President Cheney promised that they would face this problem and deal with it, and I see great progress now being made—I don't think there's a minute we have to worry about Secretary Principi standing on principal going wherever it takes and doing whatever it takes to get it done. But what we have is almost 10 years of where these men have been neglected and women have been neglected and chil-

dren have been neglected. And I think it's very important that the American people understand the whole strategy under the Clinton administration was public relations and to denounce this whole thing as stress. And if any of you want to get into the stress situation, I'd be glad to take that one head-on with you because that's history.

Now, this great doctor who just joined the Defense Department who was talking to you, he's new. He's just getting his feet on the ground. I've spent enough time with him to feel very comfortable that once he understands this, he will do things. There are holdovers who were carefully moved around at the end of the administration before the last administration went out who are still in key positions, and some of them have testified today who are part of the stress team.

Now the captain of the stress team is a man named Bernie Rosker. Fortunately he has gone back to the RAND Corp. He bounces back and forth. If you wonder was there really a stress team, I'm sure you know, but the American people don't know, it did exist. I've got the document here that describes their strategy written by them. So there's a Forrest Gump somewhere in their organization.

No. 3, they spent a fortune on public relations, and only in America would they hire a person who had been a lobbyist for the tobacco industry to lead the effort. How would you like to be a wounded marine corporal and have to put up with all that? How would you like to be a Tiger that flew in the Air Force who was Captain America who is in a wheelchair dying and only has 2 or 3 months? I have his pictures in my office, his two little children on each side. I know from listening to you today those are the people that you care about.

Now, the thing that I cannot understand and will never understand is that for over 30 years, I have worked with the Pentagon on wounded soldiers. You say, well, what were you doing? I was getting calls from generals and admirals in the middle of the night about privates and corporals and sergeants who had some terrible problem that couldn't be fixed in the military, and we would get the top doctors in the civilian world to do it. And the touching thing in my memory is most of those doctors would never send me a bill. They did it from the heart. And what they've done was just incredible.

Now that always existed. And suddenly Desert Storm occurs, we have all of these problems, and nobody's doing anything. The men came to see me in 1993. They brought pictures of themselves going into combat. They looked like Captain America and Superman. In my office, they look liked people coming out of Dachau. That got my attention.

So then I enlisted the aid of one of the top medical schools in the world, medical school that has more Nobel Prize recipients than any other medical school and impeccable credentials. They chose a doctor who worked for the CDC for 10 years, who received its highest award, and on its 50th anniversary received an award for one of the five greatest contributions in the history of the CDC. Dr. Haley's an epidemiologist. You don't want to hear the abuse this

great man has taken, but he's ignored it and kept working for the troops.

You get into all these problems like anthrax. You don't need a medical degree to understand the problem. BioPort is a mess. BioPort should not be able to keep that contract. For years they never met any goals or objectives. You heard all this squishy stuff this morning. This is plain Texas talk. I am not part of the stress team. For years they got bonuses that equaled or exceeded their salaries and didn't accomplish their goals.

The damage that was done to our Tigers in the Armed Forces is incredible. Hundreds of pilots have left the Air Force rather than take the shot. $6 million to train one pilot. That's a high price to pay, right? They didn't want to leave the Air Force. A lot of them went into the Reserves and National Guard, and then they insisted they take the shot there. And they had seen what it had done to their buddies, and they wouldn't take it. And none of this comes out in this squishy stuff you heard this morning, and I know that's what you are looking for. It got so bad that the attorney general of Connecticut filed a lawsuit against the U.S. Government because they were losing all the talent in the Air National Guard.

And then the kinds of things that have come up, for example, when ALS first came up and everybody dismissed it, I contacted the government and said, I will fund the research. All I need is the names of the people who have it, and it is a fairly small number out of 100,000. And they said, we can't give you that because it would violate confidentiality. I said, OK, write them all, tell them I will do it, and 100 percent of them are going to contact me because nobody else is helping them, and we'll move forward on the research. Oh, we can't do that. So they just let them rot and die. Now that's history.

I can go on and on and on about specific cases like this. Now keep in mind you are going to hear about these numbers, about what was spent examining these veterans. What you get from a doctor is an annual physical. When Dr. Haley came in, he came in with an open but skeptical mind. He studied all this very carefully. And then his first theory—now if you're a medical researcher, you start with a theory, then you test your theory with a limited sample. And then if that confirms your theory, you do a broad-scale test. He had the finest, most sophisticated brain-scanning equipment available in the world, and each of these physicals, if I recall correctly, cost about $65,000. We did these physicals on a broad array to get the initial theory tested. He can show you—I can't—he can show you the brain scans, and you as a lay man can see the damaged parts of the brain, and you can ask him, well, what is the effect? And you will see a direct correlation between the damaged parts of the brains and the problems these men have.

Now, this is the way it's always been. One of the most senior officers in the Pentagon, a military officer, called me and said, I have a man who served with me. I have the highest regard for him. He's a colonel and has got this problem. Can you put him in the study? And we put him in the study, and his brain was damaged. The good news is that as he walked out of the office, he casually mentioned to Dr. Haley that he had an identical twin. That's a researcher's dream. We can show you pictures of the identical twin's

brain, and it's a clear, functioning brain. We can show you the pictures of the officer who was damaged, and, you know, his brain has been damaged.

Now, the points you keep raising, and now that we know this goes on, what have we done to prepare if we go into Iraq? We're not ready. I am not going to give you the squishy answer. We're not ready, and the sooner we start, the sooner we finish. For example, on anthrax, which is—you're not going to get it done in BioPort. You are going to take care of some of these buddies. I said all I want to know is who are the investors. Nobody will tell me who are the investors in BioPort. That sounds off a big bell in my head.

Then I said, well, you know, I did start to do some research on my own, and it turns out the leading investor and the point person is a person from Lebanon. Now, only in America would you have someone from Lebanon controlling something this sensitive. Oh, he's an American citizen now. Well, he married an American girl. That takes care of that.

But you see, this is the kind of stuff I keep finding again, again and again, and there is no pressure on them to perform. And no matter how much damage this shot does, and believe me, I have talked to all the Tigers that have been damaged, there is a group of Air Force officers who have taken this as a major mission. They had to get out of the Air Force, but, boy oh boy, they are all over it for their friends, and the medical data they have pulled together are overwhelming. It's the kind of information you keep reaching for. They just pull together everything that's been done.

You can see you can't give this shot. When you guys—when the members of this panel started talking about having a lot of shots at once and does that cause damage, the answer is an absolute yes. And if you look at the preservatives and all the things that are in a shot that have nothing to do with a shot, and you compound too much of that all at once, that should never be done. Now you've got soft answers on what's happening there.

I think as quickly as possible, and I know the new administration—I know that Principi and I am certain that Rumsfeld wants to do the right thing, but we have got to get past—you say, what's our problem with the new administration wanting to do that? They have a lot of the old players still in place. Some of them have testified here today. They are still in place. I understand it's very difficult to get rid of people in the government if they are career employees, but you could transfer them. Put them on your staff or something, but get them away from this.

I don't have to tell you, it's obvious that everyone is committed to the men and women who fight for our country. And thank God for you, because this has been—interesting enough today, we've got Enron going on, and we've got the Walker trial going on, and all the cameras are over there. All the cameras should be here with concern about our fighting forces. And we understand the press and all that stuff. We've got to switch from the stress PR theme and go hard-minded into research.

But, for example, in anthrax—see, I've offered to do the research on ALS, and they wouldn't give me the names. Well, you can't do the research. I love having 700 or 800 people you have to work

with. That's better than a million. Then the Dr. Kang that was here a while ago, you see, I don't think you could figure out the papers that he had, but he had one paper on the damage to the children. I have seen pictures of these damaged children. We're not talking about something that is a fantasy. This is not something that is buried inside their bodies. We need to immediately identify those children because here is a great research paper written by a doctor that was here, but it was never printed. It was never published because they weren't sure that the families weren't lying about the conditions of their children. Right away you can see—and I will take care of it. Identify the children and get the top doctors in the area where these children live, and have the top doctors provide you in days in 400 cases, and open or shut we know if it's real or not real. But it is real, and you will stop getting all this blurred conceptual talk, and you'll get action.

There is new technology called genetic sorting. Don't ask me to explain it. I am not smart enough. But the doctor who is the quarterback on this has great credentials, highly regarded throughout the medical community. He's done all kind of research for many government agencies, including DARPA. He believes that he has a new technology that will develop safe vaccines that can be FDA-approved in less than a year. That's what we need. We don't know all the chemical and biological weapons that are out there, but wouldn't it be neat if we had something that really could work in that timeframe? I am prepared to fund that research. I won't ask the government. I will fund that research. I need collaboration from the Centers for Disease Control and from the National Institutes of Health, and I prefer not to have these other groups involved because they still have the holdovers. I want really qualified doctors working with this team of geniuses, and within a year they are either going to make their goal or they're not. I will ask them to come up with an anthrax vaccine now.

Worst case—and there may be three or four other things like that need to be pursued, but this is the type thing we need to do, and we need to do it without all of this hazard going to look.

I can sum up everything I have said so far. A very prominent Senator that all of you know and respect—former Senator now—after all this occurred, I went to see him because he has been concerned about the veterans. And when I discussed this with him, he said, Ross, don't you know what your problem is? And I said, no, sir, I wish I did. He said it's the perfect war syndrome.

This was the perfect 100-hour nonwar. And nobody wants to admit that we have all these casualties. Forget that. Let's assume that maybe that did exist. Right now if the whole Nation would take the position you on this committee are taking, we could move in and solve this problem. Now I know your questions, I listened to all of you. That's what you want. You want action this date. Not talk and not theory and not obfuscation about well, you know, maybe this maybe that and so on and so forth. You want to get something done. And I thank you so much for all you're doing and now, please ask me any direct questions. If you think I give you a soft answer, nail me.

Mr. PUTNAM. Thank you, Mr. Perot, for your typically mealy-mouthed warm, noncommittal remarks that typify your personal-

ity. I'm going to attempt to make up to the distinguished chairman emeritus that I had to cutoff on the last panel by allowing him to ask the first questions.

Mr. GILMAN. Thank you very much. It's a real honor to have Ross Perot before us today. And we thank you for your precise and eloquent testimony. The Pentagon has repeatedly stated that the results of many of these private studies were not peer review. Your testimony indicates otherwise.

What standards does DOD and the VA use in determining peer review status?

Mr. PEROT. All of Dr. Haley's work, he's written over 10 publications that I know of that are in our top medical journals before they ever print a word of it the top doctors in that field, take it through peer review, and that peer review is public and you know who those doctors are. In the Pentagon when they take something through peer review, it's secret and you don't know who did it, if anybody did it.

I'll stick with the civilian side on that one. Where you get the top doctors and nothing that Dr. Haley would have come up with would have been allowed to be printed unless the finest doctors in the private sector in our country had endorsed it.

Mr. GILMAN. I note that you mentioned that Dr. Haley, after being denied appealed to the chiefs of staff and they partially funded his work so he could continue. Is he still continuing?

Mr. PEROT. He continues but we don't get collaboration. It's like Ft. Detrick. If Ft. Detrick does anything productive, I hope someone will tell me. Because all Ft. Detrick does on this one is shut things down. I could go on and on. It doesn't stop at Ft. Detrick. A lot of this is "has been." I think things are going to be much better. The reason I bring things like this up is all these are career people. They were doing things that were good for their career. These are things now that should be bad for their career and they need to be transferred out of those jobs and get people in those jobs who care about the troops and want solutions and basically are not interested in how things look but how things are.

Mr. GILMAN. What can we do to assist Dr. Haley in his continued work?

Mr. PEROT. I think the best thing that we can do is right now Congress funds his work. I'd like to see his work funded as long as it's worth it. He would be the first to see—he could be doing 50 things now that are not controversial. On the other hand, he is a first—I love to find people of principle and people of character and integrity. He's involved with this because he has seen the families, he has seen the children. He has seen the wives which we haven't talked about yet.

Some of them are affected too. Many of them I think were affected when they washed the clothes that came home before the men got home that were covered with chemicals. Then they got some of it. But anyhow, they are affected. He's been through this with all of them. He works 7 days a week. This is a mission for him. He ignores the criticism. He ignores the cheap shots and so on and so forth that keep coming from the stress team and the hundreds of millions of dollars that are being spent on PR. I can

show you some of the letters these people wrote that are just bizarre.

Mr. GILMAN. What more, then, should we do to help him?

Mr. PEROT. I would say that the work that he's doing that you think is worthwhile, Congress should just continue to fund it directly. And I know that he would be more than comfortable to have the Center of Disease Control or some group that knows how to do this overseeing his work. Certainly he would expect to have it overseen. But have a group within the CDC or some group like that—now Dr. Haley may have a better idea when he talks to you, but based upon everything I've seen so far, no question about his integrity, no question about standing on principle. You know, once he knows something is there, he won't back off just because everybody is pressing him to back off.

What happens again and again when he comes up with the theory which is step one, they say, well, we need to replicate it. That's step 2. They should fund it and let him do it on a much broader base. Then they won't let him do it and they don't ask anybody else to do it. Don't you find that interesting?

Mr. GILMAN. Very interesting. Mr. Perot, regarding anthrax, why do you suppose the government has relied on a sole source production contract in a crude 1950's technology vaccine.

Mr. PEROT. I think it's an Arkansas business deal.

Mr. GILMAN. What should we be doing to correct that?

Mr. PEROT. I'd like to know. I expect to see some names we've read about in the paper when we get all the investors. That's the first thing I want to see is who's cashing in on this thing. But the point is they can't stand scrutiny. But here's what you keep hearing from the bureaucrats in the Pentagon: It's all we've got. Well, let's assume you've got Lysol and you want to give me a shot. That's all you've got, I'd rather take the risk, right?

Mr. GILMAN. Ross, we can't thank you enough for your eloquent testimony today in pinpointing some of these problems. How do we better prepare ourselves to avoid future problems of this nature?

Mr. PEROT. I think, first off, we need to understand we're in a whole new era. We can be in wars where we don't even know who the enemy is. Terrible things can be—let's assume that we've got some segments of population, which I don't think we do, that don't care about our troops. Our whole population is as vulnerable to these chemical weapons as our troops are. They can be distributed anywhere. We don't know what to do now when that happens. Think of the chaos on the anthrax that came up here in Washington. That was fortunately tiny and not so big. But we don't know what to do. We've got to be prepared as a Nation to know how to deal with this. And that's going to take tremendous research from some of our most talented people.

Now, an interesting problem you'll have, a huge number of people in Dr. Haley's category, they're up here in the stratosphere, the best of the best, they wouldn't want to touch this now because all you do is get beaten up when you find something. So we have to have a new environment where the best of the best are willing to work on it.

Mr. GILMAN. We can't thank you enough for your time and for your great testimony. Thank you. Thank you, Mr. Chairman.

Mr. SHAYS. Thank the gentleman. Before recognizing Mr. Sanders, I just would like to explain, Mr. Perot, when you use these phrases like an Arkansas business deal, I don't know if our Brits understand that. So you may have to translate some of that.

Mr. PEROT. Whatever it takes.

Mr. SHAYS. I also would like to counsel our two colleagues from Great Britain that we invited you to come to participate, but not to show us all up, which is what I'm hearing has happened so far. And before recognizing Mr. Sanders, I would just ask unanimous consent that all members of the subcommittee be permitted to place any opening statement in the record and that the record remain open for 3 days for that purpose. Without objection, so ordered. I ask further unanimous consent that all witnesses be permitted to include their written statements in the record and without objection, so ordered.

Mr. Sanders, you have the floor. I'm sorry, Mr. Sanders, if you have any documents that you want to submit, you refer to, we'd like that for the record. Some of them are——

Mr. PEROT. Here's one I love. Bronze Anvil. Now, you are sitting up here totally focused on wounded men and women. This is totally focused on PR. This is the stress team strategy. It is sick. Now, I'd like you to ask for the Defense Department to give it to you. Bronze Anvil. If they don't give it to you, tell them I have it.

Mr. SHAYS. We will have you to give it to us, if you would, since you referred to it. Then we're going to ask to make sure that the Defense——

Mr. PEROT. Do it however you want to. This is absolutely unacceptable.

Mr. SHAYS. We want to make sure they're both the same hire.

Mr. PEROT. Fine. Fine.

Mr. SHAYS. Mr. Sanders, thank you for your patience.

Mr. SANDERS. Thank you, Mr. Chairman. And thank you very much, Mr. Perot. I want to thank you for funding many important aspects of the research that is going on right now. Some of us, as you know, have been very frustrated over the years with a lack of progress. You heard the DOD talk about $300 million in research. And yet the results have not been terribly significant. I want to thank you for funding people like Dr. Haley and other people. It's been very important for us.

You talked a moment ago when you said that we're not prepared for potential disasters that might befall the United States right now. You talked the possibility of a terrorist attack. I would agree with you. Take it a step further, though, would you or would you not agree that, in fact, one of the things that we might learn from Gulf war illness is that many of the illnesses being suffered by the people who served there are being suffered by people today in the United States of America——

Mr. PEROT. Oh.

Mr. SANDERS [continuing]. As a result of chemical exposure. In general. Do you see us——

Mr. PEROT. Absolutely. Huge. There's a huge bonus from all of this, if we ever crack it, to the civilian population. And we do have people who are sensitive to chemicals, who are more vulnerable to chemicals and others and so on and so forth. One of things that I

would like to make sure everybody understands is why pesticides kill insects and don't kill us, normally. We have blood barriers in the brain that keep the pesticide from going into our brain. The insect doesn't have that. But, there are some interesting theories, I don't know if they've ever been proved or not that some of these things we've given our troops tend to damage the blood barriers in the brain.

Mr. SANDERS. That's right. We've heard evidence to that.

Mr. PEROT. That's valuable nationwide. Worldwide.

Mr. SANDERS. Several years ago I met with a number of Vermont men and women who were over in the Gulf. What they told me, and I will never forget, is that when they're exposed to perfume, when they're exposed to detergents they become very sick. I don't think it takes a genius to figure out that these people are suffering from chemical problems. Obviously there are many people in the civilian society who are suffering from similar type problems. Would you agree that the issue of multiple chemical sensitivity is an important issue that has not been fully explored?

Mr. PEROT. Absolutely. I would say going back—absolutely. We need to explore it. And going back to wars, we need to never forget. See, we're focused on chemical, biological, but as you all know, you can carry a nuclear weapon with the destructive power that you dropped on Hiroshima in a suitcase and you can carry one with half that power in a briefcase. And when you think how vulnerable our borders are and how easy it is to get in and out of our country and so on and so forth, you realize that carefully planned and positioned like we thought bin Laden might have been, incredible damage can be done and we don't know who the enemy is.

Now, in all of this, to wait 10 years and do nothing on problems that we have faced in a prior war, there is no excuse. President Bush said it beautifully. He said when something like this comes along, your only response to the military is no excuse. But we start now.

Mr. SANDERS. Let me ask you this, Mr. Perot. My time is running out. Because this has gone on Republican administrations and Democratic administrations. One of the saddest aspects of this whole business is, as you know, the government denied at the beginning that exposure to nuclear radiation for our World War II veterans was a problem. I believe it was a lawsuit from the American Legion that brought it about. And Agent Orange, as you know, has been a horrible example of government in activity. It took lawsuits on the part of, again, the veterans' organization, and we're dealing with Gulf war illness today. Why do you think the government has, it seems, to be always reluctant to acknowledge these illnesses?

Mr. PEROT. It's a pattern. And we need to break—let's learn from history and let's not repeat the pattern. Now, for example, you mentioned the exposure of our men to radiation, then you mentioned Agent Orange is a huge one that for 20 years people fought long, lonely battles. My roommate for 4 years at the Naval Academy died from Agent Orange, Dick Meadows, a close friend of mine, one of the founders of the Delta Team died from Agent Orange. These were people that literally dedicated their lives to their country and we were in denial the whole time.

So these are things that we need to move on and just say all right, we're going to learn from history. We're going to stop living in denial. And every time something like this comes up—see, if we had spent a fraction of the money that we had spent on PR trying to solve these problems, we would be prepared if we had to face Iraq in the future and things like that.

One thing I have to mention to you, you probably already know it, the top technologist on the chemical and biological weapons and the ones that had all the weapons systems that we used were the Czechoslovakians. Don't you find that interesting? Those are the people that knew the most about this going into Desert Storm. Then a doctor who defected from Czechoslovakia who was working on all of this during the cold war who worked for the CIA and then worked for the Pentagon, so he must not be a total nut case, I heard him speak about how they developed this technology.

They took our men who were POWs out of Vietnam and brought them over there and used them as medical guinea pigs. They would expose them to these various chemical biological agents and then try to develop methods to treat them, then they developed the alarm systems that went off and so on and so forth. Anybody that survived that, they exposed them to nuclear radiation and then tried to figure out how to treat them.

So the technology we used in Desert Storm is a by-product of a number of our POWs who gave their lives as guinea pigs. This is not the way to do things. The way to do things is all right, here's the problem, let's fix it. Right. Let's just go to work and get it done. There are always solutions. It just takes dedicated high talent teams totally committed, no bureaucracy. Now the teams that always win are the ones that go around the clock. They're on fire to do it. It's their life and so on and so forth. Whether it's the Wright brothers inventing the airplane, Thomas Edison inventing the electric light. You know, how could two bicycle repairmen invent the airplane? Dr. Langley had all those government grants. I don't want to wander, but do you see how things really get done?

Mr. SANDERS. Yeah. OK. Well, thank you very much.

Mr. SHAYS. Thank you.

Mr. Platts.

Mr. PLATTS. Thank you, Mr. Chairman. Mr. Perot, I just want to thank you for your testimony. As a new Member of Congress and of this committee, your testimony has given a great deal of history of the ongoing struggle that these brave men and women of our armed services have faced over the last 11 years, and I commend you for your efforts in trying to assist them and keep this issue in the forefront. I commend you for your involvement, as you reference over 30 years, in responding to those calls from generals and admirals. I'm also sad to hear that is necessary. That we as a Nation aren't providing the assistance as we should to every brave American who served their Nation. So as one who is working hard to get more up to speed on this issue, your testimony and frankness today has been very helpful to me and I thank you for being here. Thank you, Mr. Chairman.

Mr. PEROT. Thank you.

Mr. SHAYS. I thank the gentleman. At this time we'll recognize Lord Morris.

Mr. MORRIS. Mr. Chairman, I, too, pay warm tribute to Ross Perot for the force and clarity of his testimony to the subcommittee. He heard earlier today speakers for the administration say that one lesson that had been learned from Gulf war experience was that it's dangerous to give as many as 14 inoculations all at the same time. But how does that help reservists? How does it help reservists now being deployed who haven't had their immunizations topped up from time to time? When you come in as in the case of reservists in the Gulf war, in need of a mass immunization program, how does it help them? How does it help the reservists? We are calling up reservists in the United Kingdom.

Mr. PEROT. I understand. We have got to have good, safe vaccines. The time to develop them is when things are quiet. We had a 10-year quiet period. Didn't do a thing. Let's start today and start developing good, safe vaccines. Once we have good safe vaccines, let's assume there were 14 we were going to have to give to this young tiger going into the reserves, I would suggest that we look at which ones can we give them in advance that are the safest and so on and so forth and not wait until the last minute. Then he takes—then one of the things you have to do when you give a whole lot of ones is look at the menu and look at the preservatives and look at the cumulative things of hitting the body at once. And at some point you just can't do it. Then you say, well, we'll have to keep this man out of harm's way until we have time to properly inoculate him, or if it an absolute emergency and he has to go anyhow, that's the risk you take. And he would take that risk rather than being permanently damaged by all these shots at once. No question.

Mr. MORRIS. I am most grateful.

Mr. SHAYS. At this time the Chair recognizes Bruce George. Do I need to say you have 5 minutes, sir?

Mr. GEORGE. I shan't take 5 minutes.

Mr. SHAYS. You have 5 minutes.

Mr. GEORGE. Thank you, Mr. Perot. The last thing I will do is to ask you a hostile question, because clearly, the admiration for you on this side and on that side of this room is enormously high. I thank Mr. Shays for helping to interpret Texan into English, although I did manage to work out what Mr. Perot had said. I hope everyone is protected by privilege, although I can't imagine anyone is wealthy enough to wish to sue Mr. Perot for any indiscreet language he might use.

What I want——

Mr. SHAYS. Mr. Perot, did he understand what he just said?

Mr. PEROT. Did he say someone might sue me? I say come on.

Mr. GEORGE. Absolutely.

Mr. PEROT. Bring their helmets and their teeth guards when they come. Then we'll get this dang thing out on the table. If they want to get it out on the table, no better way than for someone to come whining in like that.

Mr. GEORGE. I think most people are aware of what a formidable adversary you are. I want to ask you this: We politicians must explain, interpret things for Americans. We play soccer which is an international game. And it's becoming fairly popular in this country. But when I was a kid and we played soccer, wherever the ball

went we all ran after it. When the ball was kicked up the other end of the pitch we would all run after it with no sense of strategy or tactics. Now as a politician, I can recall myself and my colleagues whenever the media raised the possibilities of the cause of the Gulf war syndrome, then parliament was filled with people asking hostile questions. I can just recall some of the causes: Bacteria, sand, organic chemicals including organophosphates, burning oil wells, known illnesses such as post traumatic stress disorder, chronic fatigue syndrome and multiple chemical sensitivity, exposure to depleted uranium contained in shell tips and tank armor, chemical and/or biological attack from the Iraqis, medical counter biological chemical warfare measures, etc. And all of these were seen to be causes.

If you were a betting man, and I have no idea if you are, what advice would you give a foreigner to perhaps where the answer lies? It is in any of these, all of these, others, combination.

Mr. PEROT. Everything that anybody brings up that has possible validity, I would put a small high talent team of medical scientists on it, say check it out. That doesn't cost much money. Then you find out is this fact or fiction. One of the things that people working on, now let's go back to World War II, the real question was did you have flat feet? Remember that? The real question in future wars might be what is your genetic make up because your genetic make up could make you far more vulnerable to all of this.

Why don't we solve that, know it and know how to offset it? I would have everything you brought up, unless the geniuses told me, no, these go fit together, I would just have them start off testing theories finding out if it has any validity and learning quickly. This doesn't take long if you get it away from your bureaucracy and you get it into the researchers and you put them under tremendous pressure to come up with answers, you not take forever. God created the heavens and earth in 6 days. It doesn't take forever to get great things done.

Now, we don't have God working on this, but the point is good things tend to happen when dedicated teams just hit the wall and go do it. If we did that in everything you mentioned and any new ideas that come up, that had any validity, but you can't have a bureaucracy trying to cover up for their mistakes looking at what to do and what not to do. You've got to have people dedicated to science and research doing it.

And based on everything everyone has told me, the Center for Disease Control, the National Institutes of Health are the ideal places to run this because of the professionalism and the quality of those organizations. If they turn out not to be, I would turn it over to the highest and best medical schools in our country. And just leave the full pressure on them to get it done for our whole Nation and not live in denial. We've been in denial forever. You know if you're drinking too much the first thing to do is admit it, right? Well, that's the problem we've had. You heard some of this testimony this morning from old members of the stress team. I couldn't even understand what they were saying they were so vague. The point being is what we need is somebody who goes for the facts and gets you the answers, right? Just put the teams on the field and do it. And for a fraction. I promise you this: For a

fraction of what they have spent over the past 10 years accomplishing nothing, it all adds up to almost $500 million, you can get it done for a whole lot less than that. You'll have answers. You'll have our population protected. More importantly anywhere there is infectious disease in the world let's assume in Africa or India, suddenly millions of people have a new disease, if genetic sorting works in a few months we can figure it out and have a safe vaccine for them. That's what we ought to be doing. That never even comes up in the discussions up here.

Mr. SHAYS. Do you want the last word?

Mr. GEORGE. No. I don't think it is physically possible to have the last word except—even my wife has taught we that. And she's American, so I won't tangle with her.

Mr. SHAYS. So you have some humility, Mr. Perot. You're an awesome gentleman. I would invite you to make any closing comment would you like.

Mr. PEROT. I'll keep it brief. First, I've told you so many bad stories. I want to tell you—I have told you that for decades I've been called on. I want to tell you one story about how the men and women in the Armed Forces take care of one another. Desert Storm was just completed. I'm sitting at home on a Sunday afternoon. An AT&T operator calls me. He said Mr. Perot, your number is unlisted but you have to talk to this lady. Suddenly I'm talking to a lady named Gail Campbell. Her husband is a sergeant. He was in the barracks that was hit by the SCUD missile. She has been talking to his doctor over the telephone, a Commander Wallace. When I was in the Navy, No. 1, we wouldn't have had the technology to do that. And No. 2, an enlisted man's wife probably couldn't talk to a doctor anyhow, he's too busy. And Dr. Wallace had told her, Commander Wallace had told her that her husband was going to die within 72 hours and her purpose in calling me was to ask if I could get tickets so that she and her daughters could see her husband before he died. I said certainly, they'll be at the Pittsburgh airport but tell me what you know about his wounds. She knew all about his wounds. Then I asked her how do you know so much? Then she told me she had been talking to commander Wallace. I said I happen to know the top trauma doctor in the United States. Would you allow me to have him call commander Wallace. She gave me his telephone number. Dr. Wygelt, the top trauma doctor fortunately he was at home, he called across the world—now keep in mind let's go back to the American Revolution, we had to send messages to France, George Washington sent a message and Ben Franklin had to go on a sailing ship. Bing, you're talking to the doctor in Bahrain.

Then the doctor said—here is my kind of doctor. He said I can't save him, but the right team of specialists could. That's the magic word there. Dr. Wygelt called me, he said my team would leave immediately. I hadn't asked him. But he'll be dead when I get there. But said Ross, the good news is there are three geniuses called up in Desert Storm, big genius doctors. You got to get all three of them in the room immediately, but they can save him. He gave me their names. I called the National Command Center of the Pentagon. There is a General and Admiral on duty around the clock. Imagine how busy they were at that time.

I never forget Admiral Roberts, he took the call, the names and everything I gave him. Never said a word. The only words he said, Don't worry, Ross, I'll take care of it. There's a whole lot different from what you've heard over here today. I'll take care of it.

A few hours later, Dr. Wygelt, the genius doctor in the country called me laughing. He said, Perot, you're not going to believe this, but Commander Wallace just called me. The three genius doctors are in the room with the sergeant. The sergeant is stabilized and today he is back at work in Greensburg, PA because generals—General Neal was a Marine general. I didn't know this until several months later. They sent a Marine general out to find the three doctors. He found them. And when I finally got to meet General Neal and thank him he said—he made it clear that's why they called in the Marines because we get something done. But to make a long story short, that's all I've ever seen. Isn't that wonderful? That's what we need to have from this point forward even over here on the civilian side of these bureaucracies. When you get out in the field keep in mind those generals and colonels and admirals would go out to rescue a private or a seaman with shots being fired everywhere. And if we had that environment in Congress and in the Defense Department, the VA, we'll have state-of-the-art medical technology that will benefit people all over the world.

My last comments I want to quote from the chaplain of the U.S. Marine Corps. Put it all in perspective. It is the soldier, not the reporter, who has given us freedom of press. It is the soldier, not the poet, who has given us freedom of speech. It is the soldier, not the campus organizer, who has given us the freedom to demonstrate. It is the soldier who salutes the flag, who serves beneath the flag, and whose coffin is draped by the flag. Think of Sergeant Chapman. Great young tiger we just lost who allows the protester to burn the flag.

Now, I think that puts—I know I'm preaching to the choir. But that's why we have to do whatever it takes to make sure that our people in the military have everything they need, including the proper medical shots and the proper after action and so on and so forth. And I know that you will do everything you can to see that they get it. If I can ever help you in any way, don't hesitate to call me. I'll give you a number where you can reach me around the clock.

Mr. GILMAN. Mr. Chairman, before Mr. Perot leaves the panel table, we can't thank you enough for your good work over the years and particularly with regard to this issue. God bless you and Semper Fi.

Mr. SHAYS. That comes from kind of the dean of this full committee, many years of service here. He speaks for all us. Thank you for being here.

Mr. PEROT. Privilege to be here and don't hesitate to call if I can help.

Mr. SHAYS. The committee is pleased to call Dr. Nancy Kingsbury who is Director of Applied Research and Methods, General Accounting Office, accompanied by Dr. Sharma, Assistant Director of Applied Research and Methods, and Dr. Ward-Zuckerman, Assistant Director.

Dr. Kingsbury, I want to personally thank you and obviously, on behalf of my committee, for your willingness to be panel three and not panel two. And also to thank the General Accounting Office for the outstanding work that the people do 99 percent of the time. It's quite a record of accomplishment. We are absolutely dependent upon your work. So you're going to deliver your testimony and then all three can be prepared to respond to questions.

Ms. KINGSBURY. Do you want to swear us in, sir?

Mr. SHAYS. I do need to swear you in. I'm a little out of practice here. My vice chairman has been doing all that.

[Witnesses sworn.]

Mr. SHAYS. Note that all three of our witnesses have responded in the affirmative. Doctor, you may begin your testimony.

STATEMENT OF NANCY KINGSBURY, DIRECTOR, APPLIED RESEARCH AND METHODS, GENERAL ACCOUNTING OFFICE, ACCOMPANIED BY SUSHIL SHARMA, ASSISTANT DIRECTOR, APPLIED RESEARCH AND METHODS, GENERAL ACCOUNTING OFFICE; AND BETTY WARD-ZUCKERMAN, ASSISTANT DIRECTOR, GENERAL ACCOUNTING OFFICE

Ms. KINGSBURY. Mr. Chairman, I've had a wonderful career at GAO and at GAO I've had a wonderful time working with this subcommittee on this issue. I have to say that never in my wildest dreams did I think I would have to follow an act like that.

So, that said, you have my full statement for the record. I would like to briefly read my oral statement. I'll move it as quickly as I can. Then if you have any questions that will be fine. I think we're all now very anxious to hear the researchers who came to join us. So I look forward to their testimony as well.

First of all, I want to say as much as I'm pleased to be here, I have to acknowledge that Dr. Sharma, Dr. Ward-Zuckerman have been with this issue since the mid 1970's on behalf of this subcommittee and others in the Congress. It gives me a great deal of pleasure, and I think it gives our institution a great deal of pleasure right now, to have help to bring in issue to the day when the sunshine could start showing on it. And we look forward to a lot more progress being made in the future.

As you know, starting in 1997, 1998 we reported on the status of DOD's and VA's monitoring of veterans with symptoms that may have been caused by their service in the Gulf war and on the research strategy then underway with funding from DOD, VA HHS and notably the private sector. At the time, we observed that more could be done to monitor the health status of Gulf war veterans and whether that status improved or declined over time. What treatments were used or possibly useful and we made recommendations accordingly. We also recommended that the research into the possible role of low level of exposures to chemicals and/or the interactions of medical interventions during the war be further expanded. I think what we've heard this morning is those recommendations were sorely needed then and are still needed now.

In 2000, we reported further on the government's investment in Gulf war illness research and observed that basic questions about the causes, course of development and treatment of Gulf war veterans' illnesses remained unanswered. While a lot of research was

underway at the time, some studies were taking longer than expected or had not yet been released. We made further recommendations to improve the scope and effectiveness of research and to address certain coordination and contracting problems we identified.

As epidemiological research on Gulf war illnesses, both here and abroad, began to be published in the late 1990's and 2000, some differences emerged in the health status of veterans of coalition countries that warranted further exploration. And to that end, you asked us to review the extent to which the United States the U K and the French had differing perceptions of the threat in the Gulf war, of chemical and biological exposure, their respective approaches to chemical and biological defense and the extent of illnesses reported by each country's veterans.

We issued our report to you on these matters in April 2001. Because of your continued interest in these matters, we continue to monitor the research into veterans health status in each of these countries through the present time, including additional visits to the U.K. and France in the fall and early winter of 2001.

Our statement today summarizes our updated assessment as a stimulus for you to bring together the key players for this hearing.

We found that the United States, the U.K., and France differed in their assessments of the types of weapons of mass destruction that Iraq possessed and the potential for its using these weapons in the war. For example, with respect to biological agents, both the United States and the U.K. regarded anthrax and botulitum toxin as potential threats, but only the U.K. thought it likely that Iraq would use plague. France did not identify any imminent biological warfare threat.

All three countries thought Iraq might use some form of chemical weapon, but they did not agree about the specific agents that might be employed. The three coalition members also took different approaches to defense against these weapons of mass destruction. The sensitive of the detectors they used varied widely and the French forces had greater access to collective protection and a greater reliance on individual protection than other forces.

In addition, the three countries varied not only in the extent to which they used drugs and vaccines to protect against the perceived threats, but also in the drugs and vaccines that they used and their policies on consent to use them.

Finally the forces were deployed in different parts of the region and experienced different exposure to other environmental protections, for example, pesticides or dangers, for example, the oil smoke that has been commented about this morning.

With regard to the health of veterans, we found that research indicated that veterans of the conflict from the United States and U.K. reported higher rates of post war illnesses relative to their compatriots deployed elsewhere.

To date, there is little, if any, evidence of emerging health problems in French Gulf war veterans compared to non deployed forces although a new epidemiological study is planned. The disparity in the numbers of illnesses reported by the three countries' veterans do not point unambiguously to any single or multiple causative agents. It is accompanied by multiple differences in the veterans' reported experiences and exposures. This complexity creates sig-

nificant methodological obstacles to achieving definitive research results. Nonetheless, recent population-based studies are suggesting that there may be a statistically significant correlation between the symptoms of illness in Gulf war veterans and reported exposure to chemicals and/or vaccines.

Research continues to emerge, some of it presented here today on a variety of hypotheses about the possible causes for the various symptoms that have been identified that are only just beginning to be explored. We agree that with Mr. Perot, that much more work remains to be done with respect to possible causes so that problematic exposures or circumstances can be avoided in a future conflict, and equally importantly, on workable treatments.

We hope this hearing helps stimulate that much-needed work. I want to return because of the questions on the anthrax vaccine issue to the recommendations we made to this committee just a couple of months ago, that somebody needs to accept the responsibility for better monitoring of adverse reactions to vaccines under any circumstances. I want to put that back into record for the moment. I think I'll end my statement there, Mr. Chairman. I'll be happy to answer questions along with my colleagues.

Mr. SHAYS. Thank you very much.

Before asking questions, I would like to ask if Derek Lee might be present in this room? Is Derek Lee a member of the Canadian parliament? If anyone knows where he might be, I'd love to speak with him and actually invite him to participate in this hearing if he's here.

Mr. Gilman, would you like to begin?

Mr. GILMAN. Yes. I appreciate your presentation and Mr. Chairman, I appreciate our exploring further the anthrax question. You heard Mr. Perot's statement with regard to the lack of credibility with regard to what we've done with our anthrax investigation. And that the anthrax program is still a problem. And I recall when your colleague, who is with you today, testified with regard to Dr. Sharma, testified with regard to anthrax when we were in this subcommittee, under Mr. Shays, was fully exploring this problem. Have those problems been cleared up? Are we still concerned about the quality of the anthrax vaccine? Has the manufacturer really resolved the problem today?

Ms. KINGSBURY. You heard Dr. Winkenwerder express his confidence that those problems had been resolved. We have not seen the evidence that was presented to FDA to reestablish the licensure for that vaccine. Until we see it, we're not going to be in a position to comment. I think there are questions remaining about whether adequate tests have been done on that vaccine to assure its safety and efficacy that we would want to look at if we were to continue such work.

Mr. GILMAN. Have you requested that information?

Ms. KINGSBURY. We have not because at the moment, we don't currently have a pending request for work on that issue. But we've been certainly following the information. I don't think we get the information until the license was issued.

Mr. GILMAN. I would like to make a request of General Accounting Office to pursue that information for us and to present it to our committee.

Dr. Sharma, are you satisfied with what you've seen so far?

Mr. SHAYS. Let me make sure that's a request. Is that a doable request?

Ms. KINGSBURY. I believe so, sir, but I'm not sure what the timing will be on it. We'll have to look into it for you.

Mr. SHAYS. So the committee will just expect that will come back to the committee.

Mr. GILMAN. Dr. Sharma, have you examined the status now bio report and the qualities of the vaccine?

Dr. SHARMA. No, I have not. Because we do not——

Mr. GILMAN. Would you put that mic a little closer to you.

Mr. SHARMA. We have not examined any data that was submitted to FDA in support of relicensure of this vaccine. So I am not in a position to make any comment about the quality of this vaccine today.

Mr. GILMAN. Has that information been requested of the FDA?

Mr. SHARMA. No, because we do not have any request and as you're asking, we will try to obtain that information.

Mr. GILMAN. Thank you. Dr. Zuckerman, do you have any thoughts about the anthrax quality?

Dr. ZUCKERMAN. No, there's not an issue I've worked on. I said that's not an issue I've worked on.

Mr. GILMAN. That's not an issue that you work on.

Ms. KINGSBURY. These two folks are responsible for two different bodies of work for this subcommittee.

Mr. GILMAN. We're very much concerned about the quality of anthrax, its impact on the human body and whether BioPort, an appropriate agency to provide this anthrax. We welcome your pursuing that further for us and presenting your report to our committee. With that, Mr. Chairman, I hope that would be recognized as a formal request. Thank you, Mr. Chairman.

Mr. SHAYS. Thank the gentleman.

Mr. Platts. No question. At this time——

Mr. PLATTS. No questions. Apologize, I need to run to another hearing. But do appreciate the testimony that's been provided I can take with me.

Mr. SHAYS. I appreciate your participation in this hearing. Thank you. I think then what we'll do is we'll go to you, Mr. George.

Mr. GEORGE. I thank you. The effusion of praise this committee directed to Mr. Perot I would wish to direct to the General Accounting Office whose work I view from afar and it is of exceptional quality. You made the journey over to the U.K. seeking information from the British Ministry of Defence. I'm sure you were hospitably received. Did you receive the information, did you get access to information from the Ministry of Defence that you wished—were you satisfied with your meetings and the quality and quantity of information and has it helped in any way in your pursuit of the cause of the Gulf war syndrome?

Mr. SHARMA. I would like to thank you in this regard. Because since you intervened on our behalf, we have been getting all the information that we need. We have been quite satisfied with the quality of the information. And the team has made themselves available to us, but we really want to thank you for making this possible.

Mr. GEORGE. Well, thank you. Having helped you get more information, I must now turn my talents on getting more information from my own committee, maybe Dr. Sharma, you can reciprocate by helping me, because our Ministry of Defence are a wonderful bunch of people but a little bit on the secretive side. And we do have one or two battles with them over the information we get. I must say how envious I am of individual members and a committee being able to elicit information from the GAO, which is not something that we have in the U.K. We have an excellent counterpart to your organization, but responding to individual requests is something we merely aspire to.

A second question I'd like to ask you is this: It sounds a simple question but it's—I'm sure the answers are complicated. Although I have a healthy mistrust for bureaucrats, which again is reciprocated, I am not convinced they are frauds, crooks, malevolent, stupid, they've had 10 years to advance——

Mr. SHAYS. I'm tempted of what they think of you, though.

Mr. GEORGE. I'm sure they think far worse of us. With some justification I might add, Mr. Chairman. After 10 years of want of success, why is it because the causes are too complicated? And I do recall my ailment of psoriasis, not cirrhosis, psoriasis, which the cause is yet to be found. People die of cancer after vast amounts of expenditure, charitable donations. Is this too big to be solved? Are the researchers in my country and yours not up to the task? Should we be more patient? Have they misspent money? Is there any justification in the conspiracy theories that one hears? Your organization knows where the bodies are buried. You know where there's been success and where there has been failure. Can you advance to me why you think researchers in my country and yours, administrators in my country and yours, politicians in my country and yours have not yet come up with the goods? Why?

Ms. KINGSBURY. Whatever answer I give will be puneous. I appreciate the starting point which is that bureaucrats—and I have considered myself proudly to be a career bureaucrat my entire 32-year career with the Federal Government—good bureaucrats take leadership and try to follow it. And I think that's probably what's going on now. We met this morning with the secretary of Veterans' Affairs. I was very encouraged by what he was saying. I think the people who work for him who are good civil servants will listen to him and move with him in the direction he wants to go. That's my hope. That is how it's supposed to work. That said, in talking to some of the researchers who were here today, and I am not a public health researcher myself, but I do have methodological background, I am persuaded.

The other thing that's changing is the nature of the research is getting much more sophisticated. I'm not sure we could have had the findings that are beginning to emerge today in the gene area and others in the brain scan area 5 and 7 years ago. The difficulty is that 5 and 7 years ago, there was a tendency to respond to that fact by denying there was a problem. And I think that's unfortunate.

But I'm very encouraged by both the commitment that we seem to be hearing, Mr. Perot's healthy skepticism notwithstanding, and the development in the science itself. If we can just now get some

resources invested with the top people, as Mr. Perot suggests, the potential for making some real progress not only to help the Gulf war veterans, but to help many other people suffering from diseases such as ALS that have no viable treatment today, we might find a way to help them. I'm happy to be alive while that's possibly happening.

Mr. GEORGE. Thank you.

Mr. SHAYS. Thank you. At this time we'll recognize Lord Morris.

Mr. MORRIS. Briefly, and just one question, Congressman Shays, can the witnesses say how compulsory it was for U.S. troops deployed to the Gulf to have anthrax vaccine? And how compulsory it is now for those now deploying, those U.S. troops now on active service?

Ms. KINGSBURY. My understanding was that it was compulsory for the previously deployed troops and it is compulsory for the special forces that are deployed in Afghanistan. I think they have pulled back from the compulsory vaccination program for much of the rest of the military in recent months, but that's because of the shortage of vaccine, not, I think, yet because of a change in their view of whether or not the program should be compulsory. I think the debate is going to continue with the help of this subcommittee I suspect.

Mr. SHAYS. This has been a very long battle for a lot of people. One of the things that I'll never forget was in the process of our committee working on this years ago, there was a question whether our troops were exposed to chemical weapons, chemical weapons, not chemicals, chemical weapons. And we began to notice that they started to say the Defense Department, they weren't exposed to offensive use of chemical weapons. And the word "offensive" began to be a word we noticed.

Then we found a witness that actually came before our committee who was scheduled to testify the next week on a Tuesday, where he actually had the videotape of our blowing up Khamisiyah, and he actually had pictures of some of the projectiles, some of which were, in fact, chemical weapons. And so DOD had a press notice at 12 on Friday there would be a press conference at 4 on Friday to disclose that our troops have been exposed to defensive chemical weapons, in other words, in the sense that we had blown up this chemical offensive weapons, but it was defensive.

And they had that press conference. And then when we had our hearing on that Tuesday, they acted like, well, this is an old story. Well, it wasn't an old story. It was a stunning story. But it told us something about the mentality of the challenge that the Department of Defense had dealing with the whole issue of Gulf war illnesses. I began to conclude that it was almost a sense that we wanted people to think that the only cost in the war was the money spent in which we actually made money from our allies, and the very sad number of people killed and injured, some by friendly fire. But it was a small amount and we celebrated as a Nation without having to come to grips with the fact that some men and women came back sick and injured and 10 died. It was almost like they didn't want there to be a bad part to the story.

Well, in my judgment, the only bad part to the story was the failure of men and women to have the acknowledgment on the part of

their own country that they had been injured and in some killed in battle, but it was a deferred death.

So when I read this letter that you received from Dale Vesser, acting special assistant sent to Mr. Chan, I wanted to know what your reaction was to all of it. Was this business as usual? Tell me your reaction, not particularly on that last paragraph, that's been dealt with, but whatever you like, this is on your document on appendix 7. But it was a one-page document responding to your report on coalition warfare, Gulf war allies differed in chemical and biological threats, identified and use of defensive measures. So this letter that Mr. Sanders rightfully was outraged with, what was your reaction?

Ms. KINGSBURY. When we get a letter like that, we often respectfully request the Department to either clarify it or perhaps revise it because it didn't make a lot of sense to us. If they don't and they send it to us anyway, we do respond to it in the report. I bring your attention to page 24 of the report where we said, finally, DOD asserts that health problems among Gulf war veterans are common to veterans of many wars over the past 130 years, and the result of multiple factors not unique to the Gulf war.

We note that our report draws no conclusions regarding the cause or causes of health problems reported by veterans of the Gulf or other conflicts. We were just saying more research needed to be done. Nevertheless, we were hesitant to compare clinical data across two centuries or to draw a conclusion by comparing the illnesses of military populations from different historical periods.

In other words, we answered it routinely, straightforwardly, and to some extent, a little bit bureaucratically. We didn't think it was, frankly, worth arguing about.

Mr. SANDERS. Can I jump in? Let's see if we got it right. Mr. Perot urged us to do some straight talking, so let's talk about straight talking. They just told us, the DOD told us they spent $300 million on research. I interpret what Mr. Shays just told you as to say Gulf war illness does not exist, the same problems exist after every single war. There is no specific problem called Gulf war illness. Is that a fair interpretation of that letter?

Ms. KINGSBURY. That's certainly the implication of the letter, yes, sir.

Mr. SANDERS. Give us your opinion of an agency that has spent $300 million on research who presumably remains in the lead in research and basically tells us, we're doing the research, we're spending taxpayer money, we don't believe there's a problem. Can you tell us why you think the U.S. Congress should continue funding such an agency?

Ms. KINGSBURY. There is—thanks for the laughter. It gives me a minute to think. I look back on that decade of research with every bit as much disappointment, sir, as you do. You would have thought we would have gotten further for that amount of money. I can only come back to the table and say we can only hope that the new initiative that Secretary Principi mentioned this morning, the new advisory council revisiting what this research ought to be combined with the improved sophistication of the research methodologies available would suggest that if we continue to invest in

this going forward, we will make more progress in the next few years. That's the only thing I can hope.

Mr. SANDERS. My point is I respect people who say hey look we don't believe it. That's OK. But why if they don't believe it, why do we continue trying to tell them to do work in areas they don't believe and take that money and give it to people—there are people in this room who very seriously believe that there is a thing called Gulf war illness, and the tens of thousands of our people are suffering from that. I don't know why we would want to continue giving another nickel to people who don't believe there's a problem.

Ms. KINGSBURY. I think you have a good point and those decisions are Congress's to make.

Mr. SHAYS. Now that was a bureaucratic answer.

Ms. KINGSBURY. I know where I am not supposed to go, sir.

Mr. SHAYS. Actually, you're totally right. It is our decision. You gave a very straightforward answer actually. I was just poking fun.

In the report—in what letter it made reference to French veterans and their experience. Why do you believe French veterans have not reported as many illnesses since the conflict as the U.K. and the United States?

Ms. KINGSBURY. I'm not in a position to talk about single causes. It's clear they treated their veterans differently with respect to their exposure to medical countermeasures. It's clear that the veterans, French veterans were deployed in different places and may have had different exposures. It's clear that they had better collective and individual protections strategies, vis-a-vis medical countermeasures as a choice to deal with these threats. Somewhere in that mix of differences, some of those answers lie. But we don't have enough information to say what it is.

Mr. SHAYS. OK. In your testimony, you said according to studies in both the U.K. and the U.S. veterans of the Gulf war who reported receiving biological warfare inoculations for anthrax or other threats were more likely to report a number of symptoms than non Gulf war veterans who did not report receiving such inoculations. This pattern was observed in data collected in the United Kingdom in an unpublished data collected by the U.S. Department of Veterans Affairs. Why do you think the VA has not published its finding regarding the link between advance symptoms and the anthrax vaccination?

Ms. KINGSBURY. I don't know why they didn't publish it. We are aware of it. We have asked them. They said to us what they said to you this morning, things about the analysis not being completed and that sort of thing. I'm not in a position to second-guess it. We consider it to be valid, useful information that ought to be in the public domain.

Mr. SHAYS. Other challenges we have is the Inspector General, a few years ago, did a major study on our mask, our protective masks in the Army and determined that these new masks that only about 40 percent of them actually did not function properly. And I was prevented from disclosing that information because they kept that information—they said the same thing you said, further study was necessary. And about 8 years later, we had further study and it pretty much affirmed what the Inspector General had found that the masks we had our soldiers take—excuse me, use, they

didn't know how to store it well, they didn't know how to maintain it as well as they should. And that, but even the new masks did not meet the standards that they had been required and under contract to provide.

And so when I hear that kind of response, more study needed, I just wonder in the light of our having to depend on BioPort for anthrax, if this isn't an effort to just kind of put off that dialog until it's more convenient for the military to deal with it.

So at any rate, Dr. Sharma, do you have any sense of it?

Mr. SHARMA. No, I think Nancy has answered just about everything you had asked.

Mr. SHAYS. Now, do you have any questions you want to ask?

Lord MORRIS. Referring to the destruction of Iraqi weapons, my understanding is that the agents released were sarin and cyclosarin. Do you have any comments on the significance of that action?

Mr. SHARMA. In one of our reports—and we'll be happy to send you a copy of this report; we did this at the request of Chairman Shays—we looked at what does the research show about the health effects of low-level exposure to chemical warfare agents. We did the study because the committee was told in absolute terms that there are no health effects and there is no research or data that shows that low-level exposure to chemical warfare agents could have any effect.

But we looked at the published literature, and most of the research that we looked at was DOD because this is kind of the stuff—you know, you just don't see it on the street—and that research showed that low-level exposure, to sarin particularly, has adverse health effects, and these effects essentially affect different categories of troops.

For example, pilots who have a very specific function to perform and their tasks are very carefully monitored, they experience myopia. And because of that, the Air Force concluded that these effects are very serious because it will impair their ability to land or target.

So, yes, we did find some evidence to show that sarin does have long-term adverse health effects.

Have I answered your question?

Lord MORRIS. Yes.

Mr. SHAYS. Before recognizing my colleague from Great Britain, Mr. George, most State legislators have great experience in the whole issue of low-level exposure to chemicals because we pass laws dealing with occupational health and safety, protecting the worker in the workplace from low-level exposure to chemicals.

And it's almost like there's a different mind-set at the military that somehow those same basic concerns that apply to the general worker in the work force shouldn't apply to our military; and if anything, they should apply even more so because the military is ordered to.

So I think of one of our constituents in Connecticut who spent every day for—day in and day out, 8 hours a day, in a tent that had no ventilation, spraying Iraqi prisoners with chemicals that in the United States of America we would not allow them to do—not to spray for 8 hours and certainly not to be ventilated.

And he was under orders, and by the way, he passed away.

Mr. George.

Mr. GEORGE. Thank you. In your latest report you indicated that very, very few French veterans have been subject to this debilitating ailment—disease. And the French Government, probably because there haven't been many problems, hasn't done very much research.

Would French research on a more significant level give American or British researchers greater insights into the ailments within—amongst veterans? I had thought that it was the French obsession with garlic.

Garlic was a very useful protection in Romania, as I recall. But their lack of proximity to the action might be an explanation.

If somebody else—if Mr. Perot funded French research, would that give you more of a chance of understanding what the problems are now, to deal with them?

Ms. KINGSBURY. First of all, I think our experience in looking at the French situation, while they have not done research until recently, their veterans' organizations were very public about looking for these kinds of problems, and the availability of compensation was well known. So my own best guess is the research will not uncover a whole lot more.

That said, systematic research into what their exposures were, what their experiences were, what their medical conditions are, by contrast if nothing else, may be helpful in further informing the U.K. and U.S. research. I will leave that question to the researchers themselves to answer with more sophistication than I can, but I can't imagine it wouldn't be at least somewhat helpful.

Mr. GEORGE. I would like to have Mr. Perot offer advice to our French colleagues.

One last question, if I may: GAO identified differences between the United States, U.K. and France in the use of medical countermeasures. Now, in the U.K., the Ministry of Defence is conducting a vaccines interaction research program at our chemical weapons research establishment at Port Down to assess whether the combination of NAPS tablets and vaccines might have given rise to adverse health effects. This research is not due out until next year.

Has there been any similar research been undertaken in the United States?

Mr. SHARMA. Not to the best of my knowledge.

Mr. GEORGE. And last, very last, is the GAO evaluating care and treatment programs for Gulf veterans to assess which ones work best to alleviate the symptoms of ill health?

Mr. SHARMA. We made a recommendation to the Department of Defense and the Veterans' Administration to monitor patients over time to see if they are getting better or worse. Typically they are in much better positions because they have the medical data bases. They are seeing the patients. And their response was that it's a very difficult thing to do to monitor people over time.

We have, you know, not monitored them over time. But we have looked at the research, you know, which essentially is showing over and over that there seem to be more sicker than those who were not deployed.

Mr. SHAYS. I thank all of you for your testimony.

Dr. Kingsbury, any last word before we get to the next panel?

Ms. KINGSBURY. Thank you again for the opportunity to participate, sir.

Mr. SHAYS. We always appreciate your work and thank you again, as a government official, for allowing another panelist to go ahead of you.

It's my pleasure now to introduce our final panel and to express to each of them their patience in waiting to testify. Dr. Goran Jamal, Imperial College School of Medicine, London University; Dr. Nicola Cherry, Department of Public Health Services, University of Alberta; Dr. Robert Haley, Southwestern Medical School, University of Texas; Doctor Lea Steele, Kansas Health Institute; Mr. James Tuite III, chief operating officer, Chronix Biomedical, Inc.; Dr. Howard Urnovitz, scientific director of the chronic illness research foundation.

This is an outstanding panel. We could have each of you testify on your own. I appreciate your willingness to testify with each other.

I need to swear you all in. If you would rise, please.

[Witnesses sworn.]

Mr. SHAYS. For the record, all our witnesses responded in the affirmative.

All of our panels are very important, and this panel is equally as important as the preceding ones. You all have an advantage in one sense. You have heard testimony that has been given to the committee by others, so you know in the course of testifying if you want to make reference to anything you have heard, or any question. You know, we welcome that; that's helpful.

And I would also say to any panelist who had spoken before, if you want to address this committee with any footnote of some comment, we welcome that as well. So if you have heard something in the other panels that you think you need to make a comment on, that helps us do our job better.

Dr. Jamal, I think you are first. And we are going to try to be close to the 5 minutes. And obviously you may run over a little bit.

STATEMENTS OF GORAN A. JAMAL, M.B., Ch.B., M.D., Ph.D., FRCP, IMPERIAL COLLEGE SCHOOL OF MEDICINE, LONDON, ENGLAND; NICOLA CHERRY, M.D., Ph.D., FRCP, DEPARTMENT OF PUBLIC HEALTH SCIENCES, UNIVERSITY OF ALBERTA, EDMONTON, ALBERTA, CANADA; DR. ROBERT W. HALEY, M.D., UNIVERSITY OF TEXAS SOUTHWESTERN MEDICAL CENTER, DALLAS, TEXAS; LEA STEELE, Ph.D., KANSAS HEALTH INSTITUTE; JAMES J. TUITE III, CHIEF OPERATING OFFICER, CHRONIX BioMEDICAL, INC.; AND HOWARD B. URNOVITZ, Ph.D., SCIENTIFIC DIRECTOR, CHRONIC ILLNESS RESEARCH FOUNDATION

Dr. JAMAL. Yes, Mr. Chairman, I will try my best.

Mr. Chairman, members of the subcommittee, Right Honorable Bruce George and Lord Morris, it's a great honor to be here today to discuss the involvement of myself and my research team on studies of the Gulf war syndrome and related subjects.

I should perhaps begin by stating something about my background. I am a consultant neurologist and senior clinical lecturer

and London and Glasgow Universities since 1988. My qualifications are M.B., Ch.B., M.D., Ph.D., FRCP. I head an active research team and have written two theses and more than 145 original publications.

Mr. SHAYS. Let me say this for the advantage of all the witnesses. You're here because you are truly experts. So I don't want you to take your 5 minutes to document that. And we are going to start the clock over, but we really—I can't emphasize enough, you are all pros, you are all experts and that's why you're here.

Dr. JAMAL. In 1993, we completed some research concerning possible long-term effects of organophosphate compounds, and these findings were serious to our scientists from three British Ministries of MAFF, the Department of Health and Health and Safety. Following advice, the government of the day formed the medical and scientific panel with representations from the three government departments in February 1994, to which I was appointed. Soon afterwards, I became concerned about the quality of advice given to ministers on the subject.

In 1995, we were selected from amongst 12 major regional neuroscience centers by a joint scientific committee of the three government departments to conduct extensive research on possible long-term effects of organophosphate compounds. In the meantime, my expert advice was sought in some British and international British legal courts for organophosphate-related neurological damage. The Medical and Scientific Panel committee tried to enforce a new code of conduct in late 1996, which would have effectively prevented me from providing expert advice to the courts.

As a result, I resigned from the committee in December 1996. This was accompanied by media publicity highlighting faults in the system of provision of impartial and unbiased scientific advice to responsible ministers, and the secrecy and closed-shop style surrounding such a system. And as a result, I was awarded the 1997 award of the Freedom of Information Campaign in Britain.

All attempts by labor ministers after 1997 to reinstate me on the committee were unsuccessful. A nomination by the Royal College to go on the committee was also turned down.

In early 1997, largely through my expert evidence in courts, two major cases were won in Australia and Hong Kong. And I won't go into the details of this, Mr. Chairman, because it is in the long version of my submission.

Our involvement in Gulf war syndrome started around the middle of 1994 with a study completed in February 1995 and eventually published in March 1996. That was the first study on Gulf war syndrome published. We found evidence of neurological abnormalities and markers of neurological dysfunction in a group of veterans compared with an age-and-sex matched control group. We discussed the possible potential causes and called for further neurological research.

We used sound methods, which we used and extensively published in peer review journals. We sent a copy of our findings to the Minister of Defence in May 1995 and welcomed any discussions on the findings. We were visited in August 1995 by a delegation headed by Wing Commander Bill Cocker, who was the head of the medical assessment program in Britain. Following the visit, Bill

Cocker recommended referrals to our department and that our work should be supported. This was ignored, and a year later he was transferred to another post outside of the U.K., away from the medical assessment program.

The publication of our paper in March 1996 attracted huge national and international media attention and it was followed a month later by publication of an important study on neurological damage in an experimental animal model from Duke University in South Carolina.

Following this, I was invited to one meeting at the MOD in which I was promised supply of pertinent information and support, but none of that materialized. At that meeting, I raised the question of organophosphate use, which was dismissed. I pushed for this information through a parliamentary question, and in October 1996, the then-Minister of Armed Forces, Nicholas Soames, conceded that the country and Parliament were misled about this matter.

It's ironic that not only before but even after such announcement, and while we were heavily involved in research on the long-term effect of organophosphates on behalf and through funding of three government departments, the MOD has never sought our advice about this to date.

In January 1997, Dr. Haley's works were published. This was high-quality research in several papers which confirmed and shed favorable light on the nature and extent of the neurological damage. Dr. Haley's group have published several more high-quality papers since then on the subject.

In addition to repeated requests on every available opportunity for funding, we have made several formal written and detailed proposals for research. These included submission to the MOD in 1995 and 1996, a joint proposal with the Institute of Occupational Medicine in Edinburgh, to the MRC committee in 1996, a joint proposal with Oregon University and two other U.S. institutions to the U.S. Department of Defense, and a joint proposal with 15 other senior academics from five British universities to the MOD.

All proposals have been turned down. No explanations have been forthcoming as to the reason, even to questions from members of both houses. The MRC has failed even to provide a written reason for refusal or even an indication whether the proposal was put through the customary referring process. In the case of joint U.K.-U.S. proposal of 1995, the MOD did not agree to provide us with a satisfactory letter of support.

We continue to do research with limited resources, the only source of this being an income from royalties from equipment invented by myself in the late 1980's; and I have donated entirely the proceedings of that for the research fund.

We have published a total of eight papers on the subject and related subjects. Our most recent paper is on abnormalities of the autonomic nervous system in Gulf war veterans. This is part of the nervous system that autonomically, i.e., outside the individual's control, regulates the functional conduct of all the vital internal organs during rest, exercise, and physical as well as mental challenges. Its proper functioning is absolutely vital for the well-being of every individual.

We have found a unique pattern of autonomic lesion in these people, which points to a possible underlying neurotoxic cause. Our autonomic findings explain many of the incapacitating symptoms. We have also jointly examined with the Cyclotron Unit of the Hammersmith Unit in London two veterans using a carbon–11-labeled biomarker of neurotoxicity.

This is a very expensive technique, Mr. Chairman. Using PET scanning and ligand binding, we found a unique pattern of neurological damage. We need funding to pursue this further and we need to study larger numbers with this expensive technique.

We think that the underlying cause of Gulf war syndrome is multifactorial, as mentioned in our first publication. And today, more than 6 years later, this still stands as the most plausible explanation. In order to go forward, we need to have bi- or multinational studies, combining mechanism and causative research, carefully interlaced with proper epidemiological surveys. Such has been successfully applied in our studies on the long-term effects of organophosphates.

We would very much welcome the opportunity to put our ideas into research and in close collaboration and liaison with Dr. Haley and other groups in the United States, both to reproduce their valuable work on the U.K. and European scene, as well as to proceed further ahead. This is important not just to understand the illness of the veterans so that we find best ways to treat them but also to help in designing proper medical protection programs based on best science against likely potential threats on the health of troops in the future and similar circumstances.

Mr. Chairman, that concludes my statement. I will be happy to answer any questions.

Mr. SHAYS. Thank you. I'm sorry I made you read so quickly. You have come all the way from Great Britain, and it's an honor to have you before our committee.

[The prepared statement of Dr. Jamal follows:]

Testimony of

Dr Goran A. Jamal, MB ChB MD PhD FRCP
Consultant Physician and Senior Lecturer
Imperial College School of Medicine, London University and
West London Regional Neurosciences Centre

before

the Subcommittee on National Security, Veteran's Affairs and International Relations Committee on Government Reform, US House of Representatives

LONG VERSION (FOR SUBMISSION)

Mr Chairman and Members of the Subcommittee

I am pleased to be here today to discuss the involvement of myself and my research team with studies on the Gulf War Syndrome (GWS) and related subjects. I should perhaps begin by stating something about my background and the reason of my involvement and interest in GWS. I am a neurologist holding the position of Consultant in the British NHS and Senior Clinical Lecturer at Imperial College of London University and Glasgow University since 1988. In addition to my very busy NHS clinical duties, I head an active research team at IC including PhD students. I have written two theses and more 145 original publications on the various aspects of neurology particularly in relation to assessment and characterisation of neurological injuries and their potential for regeneration. We have introduced some new innovative techniques for assessment with international recognition.

In 1992 we performed some research funded by the Joseph Rowentree Charitable Trust concerning the possible long-term effects of supposedly safe Organophosphate (OP) compounds. The results became available towards the end of 1993 and caused us to be concerned and so we informed the British MAFF and HSE and invited them to discuss the findings. In October 1993 we received a top joint scientific team from 3 British Ministries of MAFF, DoH and Health & Safety. They were equally concerned about the findings and passed them to the relevant Government Committee the Veterinary Products Committee (VPC). We were invited to a special meeting in October 1993 following which it decided to advise the formation of a special subcommittee top study OP effects. The Government of the day took on the advice and formed the the Medical & Scientific Panel (MSP) with representations from the three Government departments concerned in February 1994. I was invited to serve on it by the Minister responsible and I agreed to signing the non disclosure clauses of the Medicines Act of 1968. Throughout my membership of the committee I was concerned about the quality of advice given to ministers. In the meantime my expert advice was sought in some British and international legal cases for OP related neurological damage. However, on the first opportunity that the MSP committee became aware of my involvement in the middle of 1996, they sought to enforce a new code of conduct which would have effectively prevented me from providing expert advise to the courts. They were uncompromising and I was left with no alternative but

to resign from the committee, which I did in December 1996. As a result of the media publicity surrounding my resignation with the subsequent highlighting of the faults in the system of provision of impartial and unbiased scientific advice to responsible ministers and the secrecy and closed-shop style surrounding such a system, I was given the 1997 Annual award of the Freedom of Information Campaign of Britain.

In January 1997 I gave evidence as the main expert to an Australian Court and two months later to a court in Hong Kong. The former was in relation to long lasting neurological damage in 4 sheep sheerer and the latter was in relation to an American citizen who was suing for damages against Ciba Geigy the manufacturer of diazinon which was implicated in both court cases. Both judges preferred my evidence on the alternatives and in the latter case Ciba Geigy lost more than 37 million Dollars in damages and costs.

In 1995 we were selected from amongst 12 major regional neuroscience centres by a joint scientific committee of 3 ministries to conduct extensive research on possible long term effects of OP compounds and were funded £0.5 million (US$ 0.75 million). This work was completed in 1999 concluding the existence of a definite link to neurological damage following which we wrote a three volume extensive report about the subject. As a result of our findings the UK Government changed its policy and forced the OP manufacturers to alter the design of the concentrate material containers and introduce special training certificate for those who handle these compounds.

In May 1997 the Labour Party won the general election and within a few weeks of the appointment of the new minister Jack Cunningham I received an invitation to go and meet him and his deputy Jeff Rooker to discuss their concerns about the circumstances of my resignation from the MSP in December 1996. After listening to the story supported by documentations in the presence of senior civil servants, they were appalled by the events and wished to re-instate me on the advisory committee to which I agreed with extreme reluctance. However, despite their attempts over many months they discovered that they were unable to reinstate me against the wishes of the committee chairman. A few months later I was nominated by the Royal College to join the committee and that was turned down with no explanation. It is perhaps pertinent to state that many members of the committee declared direct or indirect

interest as dictated by the rules. In the last two years alone we have published 5 major papers on the subject in addition to a large three volume report to the UK Government. We are currently involved in a large study jointly with The London School for Hygiene and Tropical Medicine to study the health effects of OP compounds on sheep dippers.

Our involvement in GWS started around the middle of 1994 initially by referring to us veterans and then by a fund award from the Joseph Rowentree Fund to conduct studies on a relatively small group. We completed this work and analysed the findings by February 1995, written it up and submitted the paper for publication. We found evidence of neurological abnormalities and markers of neurological dysfunction in a group of veterans compared with an age and sex matched control group. We discussed the possible potential causes and called for further neurological research. We used sound methods which we used and extensively published in peer review journals.

We sent a copy of our findings to the MoD in May 1995 and welcomed any discussion on the findings. We were visited in August 1995 by a delegation headed by Wing Commander Dr Bill Cocker who was the head of the Medical Assessment Program (formed in October 1993). Despite their pre-visit scepticism they became very impressed and concerned by the end of the visit. Cocker expressed the wish to refer to us at least some but preferably all or of the veterans for proper neurological assessment but he added that though he would strongly recommend this, the final decision to do so lies with some superiors in MoD. I know as a matter of fact that he kept pushing for this and for instigating neurological research but without success. We requested funding from the MoD to continue and expand our research but this was repeatedly refused with no reasons given. Our joint input to an audit exercise of the Royal College later on that year materialised in calling for research on neurological and immunological aspects. The following year, Bill Cocker, who was one of the most senior military physician and perhaps most clinically experienced in the country, was transferred to another post outside the UK away from the MAP.

In April 1996 our study was published in the Journal of Neurology, Neurosurgery and Psychiatry (the official Journal of those associations in UK) having passed through

the toughest scrutiny and scientific refereeing of all my other publication. This attracted huge national and international media attention and the British Medical Association held a conference on the subject on the day of publication. This was then followed a month later by the publication of an important study on neurological damage in experimental animal model from Duke University in South Carolina by Abou Donia and group which also attracted extensive media attention. Only after then on 17th June 1996 I was contacted by the MoD and was invited to meet with their Gulf War Illnesses team headed by Colonel John Graham. I met them on 2nd July 1996. I was promised that as much information as was allowable would be made available to us and that we would receive support but none of those materialised. I was provided with very limited amount of information at the meeting. When I raised the question of the extent of the use of OP, based on accounts from veterans, this was dismissed but on my insistence I was promised that this would be investigated and I would be informed of the outcome. I kept pushing for this information through a parliamentary question. In October 1996 the then Minister of Armed Forces, Nicholas Soames conceded that the Country and Parliament were mislead and that OP was used in the Gulf more extensively than thought and announced an investigation into the subject. It was later conceded that even some unlicensed OP compounds were used. It is ironic that not only before but even after such announcement and while we were heavily involved in research on the long term health effects of OP compounds on behalf and through funding of three other Government Departments, the MoD have never sought our advice about this.

Around Mid 1996 the MoD set up a Gulf War Illness Research Committee (GWIRC) under the auspices of the Medical Research Council (MRC). The membership was secretive and was only disclosed following a parliamentary question in the House of Lords asked by my friend the Countess of Mar. It was made largely of people not involved in examination of veterans and it included several members of the already existing MSP on organophosphates.

In January 1997 Dr Haley's work was published. This was high quality research in several papers which confirmed and shed further light on the nature and extent of the neurological damage. Dr Haley's group have published several more high quality papers since then on the subject. There is, however, much more work needed to be

done to determine the extent and nature of the neurological abnormalities and characterise them. We did not and still do not get any support in the UK to conduct such further studies.

In June 1995 the then shadow Defence Secretary Dr David Clark raised the matter of our study's findings with the then Defence Secretary Malcolm Rifkind. He replied on 27th June 1995 stating "The general cogency and significance of the research would, of course, be increased if it were to appear in an article in an accepted medical journal after the normal procedures of referencing and peer review". When the Shadow Defence Secretary wrote back to the Minister after publication of our research, he received a written reply from the then Defence Secretary Michael Portillo dated 27th February 1997 which indicated that his department was not interested in "causal research" of the type advocated by Dr Jamal and that his "Department's view of Dr Jamal's work has not changed" without providing any clarification.

In addition to repeated requests on every available opportunity for funding, we have made several formally written and detailed proposals for research. These could be summarised as follows.

Our submission for funding to the MoD throughout 1995 and early 1996 was acknowledged by the Minister Earl Howe who replied to a direct question to the House on 8th May 1996 "We had to reject a request from Dr Jamal for assistance with further research because we had not at that stage decided what areas of research to pursue".

In August 1995 I was approached and visited by Professor Peter Spencer of Oregon University in Portland for discussion on writing a joint proposal for US DoD on a bi-national study. This included our team and three other teams from the US. We prepared a carefully integrated, hypothesis driven and detailed proposal. It required a letter of support from the British MoD. I communicated with Mr B W J Pitts of the Chief Scientist Office of the MoD. We had great difficulty in obtaining this and at the end we were not provided with the kind of support requested making it perhaps the only weak point of the application. On 26th February 1996 Professor Spencer

informed us of the decision of decline for funding of the only bi-national study submitted. The proposal was described as "good".

Following a call for research proposal by the newly appointed MRC GWIRC we, in collaboration with the Institute of Occupational Medicine OF Edinburgh, made a joint application with detailed proposals for research. We drew largely on our immense experience in conducting the ongoing epidemiological and hospital based research funded by 3 Government Departments on the long term health effects of OP compounds. Shortly afterwards, on July 16th 1996, we received a pre-typed kind of standard letter of 5 lines informing us of decline of funding. There was none of the customary written explanation of refusal, nor any referee comments, nor was there even an indication that it was sent for peer reviewing, all of which are standard procedures by the MRC. One of my senior colleagues phoned asking for an explanation. He was told that our "proposal was considered to be good and clear and we had a strong team with appropriate skills" but no reason for refusal was provided. When later on the chairman of the committee Dr A McGreggor was asked about the matter he was quoted to state that he "was not aware that Dr Jamal has made an application for research to the committee". I requested an explanation from the MoD directly but I received a letter dated 23rd December 1996 from Colonel Graham of the MoD (who attended the meetings of the committee as transpired later) stating that he was "not in a position to comment" copying his reply to the secretary of the committee. When at a later date the MRC was asked again about the proposal, it replied that there was a request which was refused and that "verbal feedback" was provided (Herald 15 January 1998).

In January 1998 and following communication with Dr Haley we prepared another detailed proposal in two volumes for detailed animal and human based comprehensive studies including neurological, toxicological, autonomic, imaging and immunological examination. The proposal was prepared by 15 senior academics from 5 universities across the UK. We sent it to the Perot Foundation who had promised supportive representation to the British MoD but so far the MoD support has not been forthcoming.

We continue to do research on both programmes of OP and GWS but with limited resources. The only source for this being the income from Royalties from an equipment invented by myself in the late eighties which I have donated entirely to our research fund. We do most of the research work in our own time.

Our most recent paper on the subject is on the abnormalities of the autonomic nervous system in GW veterans which I have in first draft format and we hope it will be ready for publication soon. We used our novel target orientated autonomic nervous system examination. This is the part of the nervous system that autonomically (i.e. outside the individual's control) regulates the functional conduct of all the vital internal organs during rest, exercise and physical as well as mental challenges. Its proper functioning is absolutely vital for the well being of every individual. We comprehensively examined this system in a cohort of GW veterans and found a unique pattern of autonomic lesion which points to a possible underlying neurotoxic cause. Our autonomic findings explain many of the incapacitating symptoms that the veterans have such as fatigue, dizziness, nausea, hot flushes and disturbances of sweating. Such symptoms have been reported in our earlier studies as well as Dr Haley's and other studies.

We have also jointly examined with the Cyclotron Unit of the Hammersmith Unit in London two veterans using a carbon-11-labelled biomarker of neurotoxicity using advanced PET scanning and ligand binding. This method "is considerably more sensitive than traditional surveying imaging techniques". We found abnormalities in both subjects. In a report to me on the findings from the unit it is stated that it "revealed an abnormal pattern of ligand binding in the absence of abnormal MRI signals. The pathology shows a peculiar distribution in the pontine region and in certain areas of the thalamus. Such localisations seem consistent with the hypothesis that the peripheral neuropathic changes found in these patients are accompanied by, if not causally linked, with lesions in the central nervous system. The patterns found are unusual and have not been seen in any other patient studied so far". We need funding to pursue this further as we need to study larger numbers with this expensive technique.

We think that the underlying cause of GWS is multi-factorial as mentioned in our first paper and today, more than 6 years afterwards, this still stands as the most likely explanation. In order to go forward we need to have bi- or multi- national studies combining mechanism and causative research carefully interlaced with proper epidemiological surveys. Such has been successfully applied in our studies of the long term effects of OP. We would very much welcome the opportunity to put our ideas into research and in close collaboration and liaison with Dr Haley and other groups in US both to reproduce their valuable work on a UK and European scene as well as to proceed further ahead. This is important not just to understand the illness of the veterans so that we find best ways to treat them but also to help in designing proper medical protection programmes based on best science against likely potential threats on the health of troops in the future under similar circumstances.

Mr Chairman, this concludes my statement. I will be happy to answer any questions you or members of the subcommittee may have.

Mr. SHAYS. Dr. Cherry.

Dr. CHERRY. First, could I thank the committee for inviting me to speak? I am here in my capacity as principal investigator of one of the U.K. studies. I am a epidemiologist and a physician and have spent most of my working life looking at the effects of chemicals on the nervous and reproductive systems.

Mr. SHAYS. You have been doing what?

Dr. CHERRY. Principal investigator of one of the key U.K. studies of Gulf war.

Mr. SHAYS. You have been spending "most of your life"; that's the part I wanted to make sure I heard.

Dr. CHERRY. Most of my working life looking at the effects of chemicals on the nervous system and the reproductive system.

Mr. SHAYS. That makes you fairly unique in the world. We lost so many experts in that area. Thank you.

Dr. CHERRY. With that background in interest, we responded to a call from the Medical Research Council to put together a proposal to carry out an epidemiological study of Gulf war veterans, the same research Dr. Jamal put in his proposal.

This was in two parts. The first was a large questionnaire study of people who went to the Gulf and those who didn't to look at the extent to which those who went to the Gulf were in good health and see if we could identify exposures that might be responsible. And the second part of the study was to look in detail at people who have become ill, and to try and identify what the illness was and to document as best we could, with the help of the MOD or other sources, what the exposures have been.

At the time we put the proposal in, it was approved and both stages were approved. But in practice, the funds didn't become available to do the second stage. So I can only talk today on the questionnaire study. And as you all be aware questionnaire studies, as such, have their limitations. They can generate hypotheses. They can identify problems. But they are not necessarily the best means of answering those problems. What we found—and I will be very brief about this because it is in my written testimony and in the published papers—we found, indeed as I think probably every other study has done, there was an excess of ill health in people who went to the Gulf.

I perhaps should say a word here. I think the epidemiological studies that have been done both in the U.K. and the United States have been excellent. There have been difficult questions. On the whole, the quality of the epidemiological logical work has been first rate, including people on this panel.

We found, as I say, from that study that people who have been to the Gulf perceive themselves as having health problems to a much greater degree than people who haven't. And 14 percent of those people with ill health, we felt that was attributable to their direct experience in the Gulf—14 percent had got ill health.

We also looked at the self-report exposures. And by setting up very harsh criteria we were able to produce relationships that we felt were defensible in every way except self-report. And there we found, as has been referred to here, exactly the same pattern which was found by Dr. Wesley in the U.K. troops, that with increasing numbers of vaccinations was increase in health. And I think that

is quite an independent study, and that it is fortunate that we are in a position to be able to say we are getting exactly the same finding.

Again, as has been mentioned in the last few minutes, we know the vaccines used weren't identical. It is interesting to hear that similar data may be existing in the United States, but we haven't actually yet seen it.

The other major result that we reported related to people handling pesticides, which is a relatively small group of people who went to the Gulf in the U.S. forces, probably about 6 or 7 percent, not a large number, who 8 hours a day or for substantial periods of their time were handling these pesticides. And they had neurological symptoms that were consistently related to the handling of pesticides. Those were the main results of that epidemiological study.

We also carried out the first stage of the U.K. mortality study, which was carried out 8 years after the Gulf. And at that point, we weren't able to identify significantly great number of deaths in those who had been to the Gulf. But 8 years is too soon to have found the sorts of illnesses, such as ALS and cancers, we have been looking at.

The second part of the proposal wasn't funded, eventually; and in that, one of the many good things we wanted to do was to assess whether we could find objective signs of neurological damage to work with the MOD and elsewhere to get information on exposures that might help us look at the strength of that relationship. Since we couldn't, at that point, take that forward, we did—in fact, were able to look at another group which has lessons for the Gulf war, I think. And this was initially put actually to the MRC-MOD panel who was possibly funding this work that wasn't funded.

I responded to the Chair's comment about protecting the health of workers, because it was the U.K. health and safety executive who was prepared to fund the work that we are now reporting, which was looking at the effects of organophosphates on people who were exposed to sheep dips, which is a big issue in the U.K.

Mr. SHAYS. Exposed to what?

Dr. CHERRY. In sheep dipping. You dip the sheep so they don't have skin problems. This is a study which is now completed.

Mr. SHAYS. I have been wondering if my two colleagues from Great Britain have had trouble understanding your accent.

Dr. CHERRY. The colleagues from Great Britain have?

To cut a long story short, the sheep dippers who have become ill after handling the organophosphates do have a different genetic makeup. They don't simply express the gene. The genetic polymorphises are different than those who become ill. I would hope that it would appear by today, but it will be appearing in an answer in the next 2 weeks.

That's all I want to say in terms of our research.

Could I just say one thing about why I think it is perhaps difficult to get research funded? The epidemiology has been good, and so there is a question about why it has been difficult for, I think, everybody who has been here today, difficulty to get the funding to followup the hypotheses that have been generated by the research. And I think there are obviously three possible reasons.

One is the one, and I like the phrase "the stress team" being against it. I think part of the problem is that many of the hypotheses go into areas of basic research where the people who are asked to advise on the research aren't really aware of the background to the Gulf war. To do research on the Gulf war we had to be very open-minded. There may be things that are happening—maybe something new is happening; we have all made that commitment, to have an open mind—the review doesn't necessarily come from that position—and second, though we have to be very open-minded about the hypotheses, we're going to test. We mustn't throw out science at the same time.

So there is a dilemma. You have got to have studies that can test the hypotheses. There's no point in doing the studies if, in the end, you've got no answers. So you somehow have to get people who are sufficiently open-minded about the hypotheses, but good in the science and also able to review the research and give it credibility in the scientific community.

I am sitting here today feeling very privileged to have been appointed yesterday to the Research Advisory Committee on Gulf War Illness, as I think the next two witnesses have been. And perhaps in that position we'll be able to affect both the open-mindedness in testing the hypotheses and the quality of the research.

Thank you.

Mr. SHAYS. Thank you very much, Dr. Cherry.

[The prepared statement of Dr. Cherry follows:]

Health and Exposures of United Kingdom Gulf War Veterans

Testimony to the Congress of the United States of America

House Committee on Government Reform

January 24, 2002

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Following the return of UK Forces from the Gulf States in 1991, and subsequent reports of ill health, the UK Medical Research Council, with funding from the UK Ministry of Defense, invited proposals to examine whether UK Gulf War veterans had worse health than similar service personnel who had not been deployed, and to examine possible causes of such ill health. More than 30 research teams submitted proposals. Two were funded, one of morbidity and mortality in Armed Forces personnel (from the University of Manchester) and a second of possible effects on reproduction (from a team at the London School of Hygiene and Topical Medicine). A third UK study, from Kings College in London, was funded by the US Department of Defense. My testimony to this committee is based on findings from the study carried out at the University of Manchester, of which I was principal investigator.

The study proposed by the Manchester team was in two phases; the initial study was of a large random sample of men and women deployed to the Gulf and an equivalent sample of Armed Forces personnel who were medically fit but were not deployed. The second phase, to carry out detailed investigations of men and women who had been deployed to the Gulf and had become unwell, together with comparison groups, was initially approved but in the event funding was not available and this testimony is based only on the initial questionnaire study.

For this study, the UK Ministry of Defense identified, at our specification, three groups (or "cohorts") of service personnel each of just under 4,800 men and women. Two cohorts were of those who had been to

the Gulf, the third of non-deployed men and women. We were able to contact more than 85% of those who were alive in the period of the study (December 1997 to September 1999). We thus have descriptions of the health, seven years after the Gulf War, of 12,191 men and women in the three cohorts, and of experiences in the Gulf from 8,085 of those who had served there in 1990-1991. Results from the analysis of self reported health of the men and women in these three cohorts, and of the relation between health and exposure in those who went to the Gulf were reported in two papers published in 2001[1,2]. The comparison[1] of the health of Gulf War veterans and non-deployed service personnel concluded that those who had been to the Gulf were more likely than those who did not to have symptoms suggestive of ill health, with some 14% of reported ill health attributable to deployment in the Gulf or to related events. An initial mortality study[3] of all 53,462 UK service personnel who went to the Gulf and a comparison group of non-deployed service personnel showed only a very small increase in deaths in those who had been to the Gulf. However the period of follow-up (eight years after the War) was too short to detect any excess of mortality from diseases (such as cancer) with a long latency between exposure and death.

I understand that this Committee is particularly interested in the possibility of a relationship between exposures to chemicals or vaccines and subsequent ill health. Analyses of these data from the Manchester study have been published[2]. The information on current health (six to eight years after the conflict) and on exposures both came from questionnaires completed by the service men or women. The reports of ill health were given in response to a list of 95 complaints such as "waking with an attack of shortness of breath" or "difficulty concentrating". For each item the respondent was asked to indicate how seriously he or she had been troubled about this aspect of health during the past month. This approach was designed to give the best possible opportunity to detect a new syndrome, if one existed. The questions asked did not reflect pre-existing syndromes and cannot be used directly to answer research questions about, for example, post traumatic stress disorder or multiple chemical sensitivity. In addition to these 95 items, the respondents were asked to indicate whether they had experienced pain in the past month and if so to mark on a "manikin" (a cartoon body shape) where they had felt the pain. They were also asked if they had experienced numbness and tingling in the past month and to indicate, on a separate manikin, where this numbness and tingling had been; these latter data were used to identify people with a pattern of pain and tingling consistent with toxic polyneuropathy.

Exposures were reported quantitatively (number of days of exposure or number of inoculations) and included exposures over which the service man or woman had little or no control (for example: duration in the Gulf, immunizations/vaccinations, living in accommodations sprayed with insecticides) as well as those over which he or she had some option (for example: use of insecticides on the skin). All of these exposures were self reported and, in the study reported here, no attempt could be made to verify them. The reports on exposures were however examined for consistency. Correlations between exposures were found to be in the direction expected from known events during the engagement, and were similar in the two Gulf War cohorts studied in Manchester. Among those who went to the Gulf, 28% reported that they had a record of the vaccinations they had received around the time of the deployment.

Careful analysis of the relation between reported exposures and symptoms, having allowed for all other exposures and other factors that might confuse the picture, found that overall severity of symptoms was related to the number of inoculations, number of days handling pesticides and the days exposed to smoke from oil fires. When scores on factors derived from the 95 symptoms were examined in relation to reported exposures, increasing numbers of inoculations were associated, with increasing scores on a factor heavily weighted with skin problems and muscle spasm. The number of days handling pesticides was related to scores on a neurological factor, but the score did not increase in direct relation to the number of days for which pesticides had been handled. The handling of pesticides was also related to a pattern of pain and tingling, recorded on a manikin, that was consistent with a toxic neuropathy.

Studies that rely on self report for information on both exposures and health must be interpreted with caution. As discussed above, we had from the onset planned to do follow-up studies to establish whether or not those complaining of symptoms had objective signs, and to determine – as best possible from Ministry of Defense records or elsewhere -- the likelihood of exposure. In the absence of funding, this part of the study could not be completed and this is a serious limitation in the usefulness of the data. However a putative relation between exposure and effect is established by the results of this questionnaire study.

Given the uncertainty, particularly in the UK Forces, about the type and extent of pesticide use, it would have been desirable to carry out investigations not only of exposures and effect, but also of susceptibility. Several authors have suggested that those affected by exposures in the Gulf may have a genetic make-

up that would make them more susceptible to organophosphates. In the unfunded second phase of our proposal we included a plan to investigate whether those who became ill had this susceptibility gene. We have meanwhile tested this hypothesis in a separate group of exposed workers, sheep farmers in the United Kingdom who have, over many years, used chemicals, particularly organophosphates, to treat and prevent skin problems in sheep. The results of this study[4], support the hypothesis that organophosphates have contributed to the ill health of farmers; those who are sick are more likely than those who have remained well to have the genetic polymorphisms hypothesized to lead to greater susceptibility. Given this result, it may be important, to design and conduct a study among the UK Gulf War veterans who reported handling pesticides. The aim of such a study would be to determine which veterans now have objective signs of neurological damage and to examine the frequency of the genetic polymorphism associated with greater susceptibility in these cases and in a comparison group without signs or symptoms. Even in the absence of objective measures of exposure, a greater proportion of genetically susceptible individuals in those with neurological damage would implicate organophosphates in causation.

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Mr. SHAYS. And, Dr. Haley, good to have you here. And you have the floor.

Dr. HALEY. Well, what I want to do is very briefly describe some of the main findings that we have come up with, emphasizing the key finding in science, which is the ability for others to replicate your work. That is the key thing.

I would submit that—in fact, I am going to disagree very dramatically with Dr. Feussner's comment. I read these this morning, and I was dismayed and shocked with what I see as a piece of scientific fraud, and I am really, really upset. This is a white paper.

I don't know if Dr. Feussner intended this as some sloppy staff work, but basically they have minimized our work, the work of physical scientists and emphasized their work in very dramatic ways, including complete inaccuracies of what we have done, leaving out key aspects, suppressing published data. And I just think that you should be shocked by this; and I would like the opportunity to reply to this in a detailed manner later.

But let me——

Mr. SHAYS. Let me say that would be very helpful to us, and you might have an opportunity to come back to publicly talk about that.

Dr. HALEY. I would love to, because part of the problem that we have holdovers from the last administration is during the stress era that Mr. Perot referred to, and these people are selectively quoting literature. They are masking findings. They are withholding their own findings that would bear importantly on these issues if they don't agree with the stress policy. And I am just fed up with it.

I think it is scientifically dishonest. In fact, in academia we would call this scientific misconduct, and they would be eliminated from the faculty if they did stuff like this.

Let me show you some findings. This was the main finding from our initial study. We collected symptoms of 249 members of the Seabees battalion. We applied a well-known technique called factor analysis that attempts to see if there is a structure to the data, if there are actual Gulf war syndromes that would be structured that would reflect those.

This shows the factor analysis, and you see there are three very high points on this graph. I won't go into all the details, but this is a result of the factor analysis showing there appear to be three clinical entities, three unusual clusterings of symptoms that could well be—three possible Gulf war syndromes.

In this document they say on page 13 that there are no Gulf war syndromes, no evidence of Gulf war syndromes.

In fact, aspects of this have been replicated by the CDC study that found the first and third syndromes. The British study found the first and third syndrome, and those two studies didn't ask the questions that would have found the second syndrome.

Dr. Kang at the VA previewed a study 3 years ago at the Conference on federally Sponsored Research in which his factor analysis of 10,000 Gulf war veterans and 10,000 nondeployed veterans replicated the same thing, exactly the way we had it. And the identities of those three—the symptom characteristics of these three were almost identical to what we found.

Moreover, he found No. 2, the second syndrome, which in our study was the most serious. And people who were exposed to nerve gas, had nerve gas exposures around where the alarms went off were seven times more likely to have this syndrome 2 in our study. Dr. Kang's study showed that; in his study, this was the most serious also.

It was a neurological-type syndrome, and it was 6.9 times more likely in people who were exposed to nerve gas. He found the identical thing we had; and yet 3 years later, that study's not published. It has been withheld from publication.

This study says there is no evidence that there is a Gulf war syndrome. Well, in fact, there's evidence there are three Gulf war syndromes at least; and the second one—there's two studies, including their own study, that Dr. Feussner and his staff are aware of, that shows the second one is highly associated with nerve gas exposure. So I take complete issue with this.

Now, the second point is, we looked at the possible genetic predispositions to this problem. There is an enzyme called paraoxynase, the PON enzyme that you have heard of, particularly the Q form of this enzyme. This enzyme's only purpose in the toxicological area is protecting your brain from nerve gas. It doesn't help you much against common pesticides. It's very, very specific.

Our theory was that the reason people, some people got sick and others didn't is that some people were born with low levels of this body enzyme. So when the nerve gas cloud came over, they would be the ones who would be damaged.

Here's the results that suggest that. These are our controls, syndrome 1, 2 and 3, those same three big dots. Here is the level of that enzyme in the blood. And that level of enzyme—whatever you have today what is you have all your life. It doesn't change day to day.

What we see is, the controls are distributed primarily here above about 70 on this scale, as you can see. And the syndrome 2, the most severe ones, the ones where there is a strong association both in our study and Dr. Kang's unpublished study associated with nerve gas, these guys have very low levels of PON. This means that these were the ones who were unprotected by their own body enzymes.

So this not only explains why some people got sick while others working right next to them didn't, but it also links the disease to the cause. This suggests that sarin is the cause because that's all this enzyme does, protects you from sarin.

So if it wasn't sarin, why would this relationship be true? This work has been addressed by Dr. MacNess and others at the University of Manchester. They have a similar finding, but not exactly. There are differences that we are still working out. But this is a promising research that was not mentioned by Dr. Feussner's commentary. He just left this out, which is one of the most important findings of the entire investigation.

Third, as to the nature of the brain injury, what causes the symptoms in Gulf war syndrome and what we hypothesize by knowing the symptoms—the neurologist will look at the symptoms a person has and they will ask, now what part in the brain or what

part of the body, if you had an injury there, would explain these symptoms?

Well, if you have difficulty in concentrating, you have pain that isn't related to the body, if you have chemical sensitivities, if you have all of these symptoms of the Gulf war syndrome, what is the one organ, if you could injure it, that would produce all of those symptoms? It's the brain. In fact, it's not just any part of the brain, it's the deep brain structures, specifically—here is a side view of the brain—specifically, these deep brain structures down in here, the brain stem and the basil ganglia. These are the areas that if they are damaged, they will produce the symptoms of the Gulf war syndrome.

We also know that sarin and other organophosphates have a selective effect on these areas. They are most likely to affect this area of the brain.

What we did is, we did the standard brain imaging called Magnetic Resonance Spectroscopy. It is like an MRI scan, but it's an MRS scan that measures the chemical composition of a specific area like this. And we put a box right there in the brain stem. We put another one in the basil ganglia and we did the scan and found the chemical signature.

Now, here's what you find when you do such a scan. You see these squiggly lines; each one of these peaks tells you the concentration of a certain chemical in that part of the brain that you're studying. And this big peak here is called NAA. What happens is in diseases like multiple sclerosis, strokes, Alzheimer's disease and areas where the brain is sick, those brain cells show a reduction in NAA. And if that disease is cured and those cells recover, NAA goes back up. So it is a good barometer of the health of those neurons.

This is a typical scan of one of our controls, one of the well veterans who does not have Gulf war syndrome, and you see a very large healthy peak of NAA. Here is the peak in a veteran with our syndrome 2, the Gulf war syndrome that both our study and Dr. Kang's study show is 6 to 7 times more common in people who were exposed to nerve gas.

What we see is a dramatic reduction, and this is true throughout the group with syndrome 2. They all have this reduction indicating those brain cells in these deep brain structures are injured and sick. And that is just the area that would account for the symptoms.

Now, in here, Dr. Feussner says without even mentioning who did this study, that there is some little pilot study including only 12 veterans and they found something having to do with brain chemistry. In fact, this had about 40 patients in it, not 12 patients. It has a very, very strong finding.

And then he says we have funded another study at the University of California San Francisco to try and see if this is true. That is a complete fabrication. When we published this study—actually presented it to scientific meetings, the Radiological Society of America about 1½ years ago, Dr. Michael Weiner of the University of California at San Francisco, who is the No. 1 magnetic resonance spectroscopy brain imaging expert in the world—he has written most of the literature on this, using this technique in the brain—

he called me up and said, Dr. Haley, I doubt your findings; I want to disprove you. And as we do in science I said, That's great; what can I do to help?

I flew out about 3 days later and showed him how to pick our syndrome 2 patients, the ones with the nerve gas exposure profile. I showed him how to pick the patients so he would pick them exactly right—went to his clinic and picked 11 Gulf war veterans with syndrome 2; and he picked 11 controls, and we shared our exact brain scanning protocol with him so he would do it exactly the way we did it. He put one of these little boxes right in the basil ganglia like this, used MR spectroscopy and got the same thing we did. That is a direct replication of our findings.

In science that is extremely important. We have letters going back and forth from Senator Rudman's Presidential oversight board saying, Don't fund Haley's work until someone replicates it. This has been directly replicated, and we are still in the hold-out mode; and they are still saying that this isn't replicated, we're going to replicate it maybe within 5 years. This study can be done in 3 months.

There's a lot more to this, but what I'm saying is, this is what we're putting up with. The reason you don't have the real scientific world working on this is because this is the kind of stuff you get. You get these bureaucrats in here basically minimizing your work, lying, saying the things that have been done have not been done and trying to give a completely skewed picture.

By the way, most recently, unpublished yet, we have recently completed two studies that directly replicate Dr. Jamal's work, his original study using quantitative sensory testing. We have shown that there is exactly the same pattern he found in Gulf war veterans in the U.K. versus controls. We found the same thing in American veterans. And also his autonomic findings he just published, we have a study ongoing that shows exactly the same thing, that the brain areas injured by chemical exposures, or whatever else, in these deep brain structures have affected primarily the autonomic nervous system, the sympathetic and parasympathetic nervous system. And we've now got very strong evidence that is now functioning in these veterans, so we now have replication.

I would love the opportunity to respond in detail and show you what an unfortunate——

Mr. SHAYS. You have that commitment. Done. If you come before the committee, you have that commitment as well.

I have totally lost control of this panel and I guess I asked you to do the impossible. So I am going to concede that better judgment told me I should allow you to go beyond 5 minutes.

[The prepared statement of Dr. Haley follows:]

Findings on the Nature and Causes of Gulf War Syndrome and Plans to Extend the Research

Testimony of

Robert W. Haley, M.D.
University of Texas Southwestern Medical Center
Dallas, Texas

Before the Subcommittee on National Security, Veterans Affairs and International Relations, Committee on Government Reform, United States House of Representatives

Washington, D.C.

January 24, 2002

I want to thank you for the opportunity to speak to you about the research on the nature and causes of Gulf War syndrome, conducted and coordinated by my group at the University of Texas Southwestern Medical Center in Dallas. Our research began in 1994 under initial funding support from the Perot Foundation of Dallas and has been continued under a 1997 cooperative agreement with the Office of the Secretary of Defense administered through Ft. Detrick. We are presently negotiating a new cooperative agreement for funding a new phase of our research.

Initial Findings

Our initial studies focused on 249 members of a Reserve Naval Mobile Construction Battalion, or Reserve Seabees. In that work, we made four important observations. First, we found strong evidence of a single Gulf War illness with three variants. Second, those with the illness have more abnormal brain function by objective tests than well veterans, suggesting a brain injury or illness. Third, the sick veterans were 4 to 32 times more likely to report exposure to combinations of certain chemicals in the war, specifically sarin nerve gas, side effects from pyridostigmine, highly concentrated government-issue DEET insect repellant, and pesticides in flea collars. And fourth, in collaboration with researchers at Duke and Kansas State universities and the EPA, we experimentally produced brain and nerve damage in hens with combinations of some of these same chemicals, not previously thought to be neurotoxic. In January 1997 this work passed rigorous peer review and was published in three scientific papers, appearing back to back in the *Journal of the American Medical Association.* A research group in India led by K. Husain, has extended these findings by demonstrating neurological damage from low-level sarin nerve agent in two animal species. These findings are also supported by published papers demonstrating chronic neurologic damage in survivors of the sarin attack in the Tokyo subway.

Most Recent Findings

Later in 1997 we submitted a $16 million proposal to extend and replicate our initial findings in a national survey, but it was not funded by the government peer review system administered by the Persian Gulf Veterans Coordinating Board. Later the Joint Chiefs and the Secretary of Defense conducted a special peer review of the proposal and granted us partial funding of $3 million through a cooperative agreement to begin further testing and plan a national random-sample survey to replicate our findings. With that funding, we have published five additional important observations.

First, we identified the same syndrome structure in the symptoms of a new group of mostly Army veterans from north Texas area. This was the first study to use the preferred method of structural equation modeling to demonstrate the same syndrome present in a second veteran population.

Second, we identified a gene, the PON1 gene, that appears to have predisposed soldiers to getting the Gulf War syndrome and appears to link the illness with low-level sarin nerve gas exposure.

Third, we demonstrated the site of brain damage with a new brain scanning test called Magnetic Resonance Spectroscopy (MRS). This brain scanning technique detected a lower level of a brain chemical in the deep brain structures of ill Gulf War veterans than well controls, indicating brain cell damage or illness.

Fourth, we found abnormal increases in the brain hormone *dopamine* in those veterans with the worst brain damage measured by the MRS scans. This indicates that the brain cell

damage documented by the MRS scans is causing physiologic dysfunction of those brain structures and thus is a medically meaningful finding.

Fifth, we found that veterans with Gulf War syndrome satisfying our case definition are substantially more physically impaired than prior research had showed. Using the SF-36 questionnaire, the most widely validated measure of physical functioning, we showed that subgroups of the ill veterans were more impaired than the average civilian patient with emphysema, recent heart attack or clinical depression. The prior Iowa survey, using the SF-36 questionnaire, suggested only mild impairment, but by combining the sick veterans and well veterans their average impairment level underestimated that of the sick veterans. Our study using a case definition to separate out the sick veterans has corrected the misconception.

All of the above findings were published in prominent peer-reviewed medical journals.

Along the way, I published important commentaries in peer-reviewed journals showing a) that the government studies pointing to stress as the cause of Gulf War syndrome were based on statistical errors that invalidated them and b) that the government findings of no excess mortality, hospitalization or death in the Gulf War veteran population were flawed by systematic errors that, when corrected, let to just the opposite conclusions.

Limitations of the Research

To put our research findings into proper perspective, it is important to realize that we have framed a theory or hypothesis which could explain the nature and causes of the Gulf War syndrome, but this theory is not thoroughly proven. Since our studies were the first to blaze this trail toward evidence of a physical basis for Gulf War syndrome, they were relatively small and focused in a single battalion and therefore might not be representative of what is true in the larger Gulf War veterans population. On the other hand, past CDC investigations that solved hundreds of epidemic mystery diseases in the past have traditionally been very similar to our studies on Gulf War syndrome. Epidemic diseases have unique characteristics that make these studies useful.

Consequently, our theory is in need of extension by us and replication by other researchers working independently but using the same methods as we have used in deriving the theory. At present we have replicated parts of our work in a new group of Gulf War veterans recruited through the Dallas VA Medical Center, and an independent researcher in another state has replicated our MRS brain scanning finding in a small group of sick and well Gulf War veterans, as described below. Several other studies have questioned our theory, but none has actually tested our findings using the same methods. Scientifically, a replication requires use of the same methods.

Replication of our Findings by Others

Researchers in the VA Central Office have analyzed symptoms of approximately 10,000 deployed and 10,000 nondeployed Gulf War-era military personnel and found the same three syndrome variants that we reported; they found their second syndrome variant to be "neurologic" in character, like ours, and to be a "unique Gulf War syndrome." They also found their second syndrome to be approximately 7 times more common in veterans giving a history of exposure to chemical nerve agent in the war than in those without such a history, replicating our finding almost exactly. They reported these key findings at a national research meeting in 1998 but have not published them in a medical journal.

A leading brain imaging research group at the University of California at San Francisco and the San Francisco VA Medical Center has performed our MR Spectroscopy brain scanning protocol on 11 ill Gulf War veterans and 11 controls from the San Francisco area and found the same degree of brain cell loss or injury in the right basal ganglia in the Gulf War syndrome patients *(Proc. Intl. Soc. Mag. Reson. Med.* 2000;9:994).

A chemical weapons researcher (C. A. Broomfield) at the U.S. Army research laboratory at Ft. Detrick, MD, analyzed the serum samples from the Gulf War veterans and controls studied in our paraoxonase study. He found markedly low hydrolytic activity against sarin and soman in the blood of the Gulf War veterans with Gulf War syndromes and normal levels in the well control veterans, thus corroborating and extending our original finding (La Du et al. *Drug Metabolism and Disposition* 2001;29:566-569).

Leading enzyme researchers in the U.K. have measured plasma paraoxonase enzyme concentrations in a large cohort of ill British Gulf War veterans and well controls and found it to be substantially reduced in the ill group, as we found (*Biochem Biophys Res Comm* 2000;276:729).

Current Research Proposal

Last summer my research team submitted a new proposal to extend and replicate our work. We asked for grant funds to establish an independent Gulf War Illness Research Center to do the studies necessary to advance the findings substantially. Initial amounts were included in the 2001 and 2002 Defense Appropriation to support this center, and we are currently in negotiations on funding from USAMRMC at Ft. Detrick. Briefly, we proposed to:

1. Perform a national survey in random samples of Gulf War-era deployed and non-deployed veterans to compare the prevalence of the illness we have identified. DoD has already invested $500,000 in planning this survey, and it is virtually ready to go. An independent survey firm will carry out the survey to ensure objectivity.
2. Upgrade to the latest brain imaging technology to explore deeper into the nature of the brain cell damage and attempt to develop a cost-effective diagnostic test that could be widely applied to make objective diagnoses.
3. Extend our genetic studies to learn more about the genetic predisposition to Gulf War syndrome and chronic illness from low-level chemical nerve agent and pesticide exposure.
4. Extend our new laboratory animal model of Gulf War syndrome by testing for chronic behavioral effects of low-level sarin alone and in combination with pesticides and pyridostigmine.
5. Re-study veterans from our prior studies to determine whether they are getting better or worse or remaining the same over time.
6. Identify and test promising treatments and preventive measures, including a gene therapy technology to protect against nerve agent exposure.

For this new work to be successful, it will be important to receive funding under terms in the cooperative agreement that will give us an appropriate degree of independence to follow our own instincts on research directions and to accomplish the work in a timely manner. In addition, we will need the cooperation of the Department of Defense in providing the computer list of Gulf War-era military personnel for us to draw our national random samples, computerized background information such as plume exposures needed to analyze the survey, and research

dilute solutions of sarin for our laboratory animal experiments.

List of Publications in Peer-Reviewed Scientific Journals

PRIMARY RESEARCH PAPERS

1. Haley RW, Kurt TL, Hom J. Is there a Gulf War syndrome? Searching for syndromes by factor analysis of symptoms. Journal of the American Medical Association 1997;277:215-222.

2. Haley RW, Hom J, Roland PS, Bryan WW, Van Ness PC, Bonte FJ, Devous MD, Mathews D, Fleckenstein JL, Wians FH, Wolfe GI, Kurt TL. Evaluation of neurologic function in Gulf War veterans: a blinded case-control study. Journal of the American Medical Association 1997;277:223-230.

3. Haley RW, Kurt TL. Self-reported exposure to neurotoxic chemical combinations in the Gulf War: a cross-sectional epidemiologic study. Journal of the American Medical Association 1997;277:231-237.

4. Abou-Donia MB, Jensen KF, Oehme FW, Kurt TL. Neurotoxicity resulting from coexposure to pyridostigmine bromide, DEET, and permethrin: implications of Gulf War chemical exposures. Journal of Toxicology and Environmental Health 1996; 48:35-56.

5. Abou-Donia MB, Wilmarth KR, Abdel-Rahman AA, Jensen KF, Oehme FW, Kurt TL. Increased neurotoxicity following concurrent exposure to pyridostigmine bromide, DEET, and chlorpyrifos. Fundamental and Applied Toxicology 1996; 34:201-222.

6. Hom J, Haley RW, Kurt TL. Neuropsychological correlates of Gulf War syndrome. Archives of Clinical Neuropsychology 1997;12:531-544.

7. Haley RW, Billecke S, La Du BN. Association of low PON1 type Q (type A) arylesterase activity with neurologic symptom complexes in Gulf War veterans. Toxicology and Applied Pharmacology 1999; 157:227-233.

8. Roland PS, Haley RW,Yellin W, Owens K. Vestibular dysfunction in Gulf War syndrome. Otolaryngology--Head and Neck Surgery 2000;122:319-329.

9. Haley RW, Marshall WW, McDonald GG, Daugherty M, Petty F, Fleckenstein JL. Brain abnormalities in Gulf War syndrome: evaluation by ^{1}H magnetic resonance spectroscopy. Radiology 2000;215:807-817.

10. Sinton CM, Fitch TE, Petty F, Haley RW. Stressful manipulations that elevate corticosterone reduce blood-brain barrier permeability to pyridostigmine in the rat. Toxicology and Applied Pharmacology 2000;165:99-105

11. Haley RW, Fleckenstein JL, Marshall WW, McDonald GG, Kramer GL, Petty F. Effect of basal ganglia injury on central dopamine activity in Gulf War syndrome. Archives of Neurology 2000;57:1280-1285.

12. La Du BN, Billecke S, Haley RW, Broomfield CA. Serum paraoxonase (PON1) isozymes: the quantitative analysis of isozymes affecting individual sensitivity to environmental chemicals. Drug Metabolism and Disposition. 2001; 29:566-569.

13. Cowan J, Sinton CM, Varley AW, Wians FH, Haley RW, Munford RS. Gene therapy to prevent organophosphate intoxication. Toxicology and Applied Pharmacology 2001;173:1-6.

14. Haley RW, Luk GE, Petty F. Use of structural equation modeling to test the construct validity of a case definition of Gulf War syndrome: invariance over developmental and validation samples, service branches and publicity. Psychiatry Research 2001 102:175-200.

15. Haley RW, Maddrey AM, Gershenfeld HK. Severely reduced functional status in veterans fitting a case definition of Gulf War syndrome. American Journal of Public Health 2002; 92:46-47.

16. Haley RW, Maddrey AM, Gershenfeld HK. Severely reduced functional status in veterans fitting a case definition of Gulf War syndrome. American Journal of Public Health 2002; 92:46-47.

REVIEW ARTICLES AND META-ANALYSES

17. Haley RW. Is Gulf War syndrome due to stress? The evidence reexamined. American Journal of Epidemiology 1997;146:693-703.

18. Haley RW. Point: Bias from the "healthy-warrior effect" and unequal follow-up in three government studies of health effects of the Gulf War. American Journal of Epidemiology 1998; 148:315-323. (With counterpoint replies by three government authors and a countercounterpoint rejoinder by Dr. Haley).

19. Kurt TL. Epidemiological association in US veterans between Gulf War illness and exposures to anticholinesterases. Toxicology Letters 1998;102-103:523-6.

20. Marshall WW, Haley RW. Use of a secure Internet Web site to collect data in collaborative medical research. Journal of the American Medical Association 2000;284:1843-1849.

SCIENTIFIC LETTERS

21. Haley RW, Kurt TL, Bryan WW, et al. The authors reply [Letter]. Journal of the American Medical Association 1997;277:385-386.

22. Haley RW. Is the Gulf War syndrome due to stress? The evidence reexamined, the author replies [Letter]. American Journal of Epidemiology 1998:148:405-406.

23. Haley RW. Re: Chronic multisystem illness in Gulf War veterans [Letter]. Journal of the American Medical Association 1999; 327:328-329.

24. Haley RW. The Gulf War syndrome controversy: Dr. Haley replies [Letter]. American Journal of Epidemiology 1999;150;216-7.

25. Haley RW. Re: Is there a Gulf War syndrome? [Letter] The Lancet 1999; 354:1645-6.

26. Haley RW. PON1 and low-Dose sarin in marmosets [Letter]. Journal of Psychopharmacology 2000;14:87-88.

27. Haley RW. Gulf War syndrome: another side of the debate [Letter]. Mayo Clinic Proceedings 2000; 75:1221-1222.

28. Haley RW. Re: "Factor analysis of self-reported symptoms: does it identify a Gulf War syndrome?" [Letter]. American Journal of Epidemiology 2000; 152:1204-1206.

29. Haley RW. Will we solve the Gulf War syndrome puzzle by population surveys or clinical research? [Letter]. American Journal of Medicine 2000; 109:744-745.

Mr. SHAYS. And now we are with—thank you—I think Dr. Steele.

Ms. STEELE. I timed it for 5 minutes.

Mr. SHAYS. This is a wonderful panel and thank you all for being here.

Ms. STEELE. My name is Dr. Lea Steele, and I am also a epidemiologist and senior health researcher at the Kansas Health Institute. Since 1997, I have conducted studies on the health of Gulf war veterans for the State of Kansas.

Like veterans from other States and countries, Kansas veterans have reported enormous health problems since returning from Desert Storm. In 1997, the Kansas legislature funded a State program to look into these concerns. Our first objective was to find out if Gulf veterans had more or different health problems than veterans who did not serve in the war.

In 1998, we launched a population-based study of over 2,000 Kansas Gulf war-era veterans. Our study results were published about a year ago in the American Journal of Epidemiology. Briefly, the key findings from our research are as follows:

First, we identified a pattern of symptoms that distinguishes Gulf war veterans from veterans who did not serve in the Gulf war. Overall, about one-third of Kansas Gulf war veterans reported a pattern of chronic symptoms that include joint pain, respiratory problems, neurocognitive difficulties, diarrhea——

Mr. SHAYS. Move the mike. You are getting the puff sound.

Ms. STEELE. These symptoms that I have described individually can happen in anyone from time to time, but what we see uniquely in Gulf war veterans is a pattern of several symptom types together that can persist for years. These conditions range in severity from relatively mild to severe and quite disabling.

Our second major finding is that Gulf war illness occurs in clearly identifiable patterns. For example, Army veterans are affected at much higher rates than Air Force veterans, and enlisted personnel, more than officers. Most importantly, illness rates differ by where and when veterans served in the Persian Gulf area. Veterans who served primarily on board ship during the war had a relatively low rate of illness. The highest rate, about 42 percent, was seen in veterans who entered either Iraq or Kuwait, countries where the ground war and coalition air strikes took place.

To be clear, what I am saying is that overall more than 40 percent of veterans who entered Iraq or Kuwait had this pattern of chronic symptoms that we're calling Gulf war illness. But more than half of the Gulf war veterans in our study were never in Iraq or Kuwait. They remained in support areas during their deployment.

We found another striking pattern in this group. Veterans who were in theater only during Desert Shield, but left before the air strikes began had a very low rate of illness, only about 9 percent. There was a somewhat higher rate for those present during Desert Storm, but who left by March 1991, just after the cease-fire. The highest rates of illness were found in veterans who stayed in the region for at least 4 or 5 months after the war ended; and I am talking about veterans who served in support areas and were never in battlefield areas.

Just related to this and relevant to some earlier comments about whether looking at veterans in different countries might be instructive to us, I can tell you that American veterans, groups of American veterans, can be identified who have high rates of illness and low rates of illness. I will tell you specifically in Kansas we have groups of veterans who were stationed in some areas, for example, eastern Saudi Arabia, who have moderately high rates of illness. People by the Red Sea and western Saudi Arabia have low, low rates of illness. I think it would be very instructive to compare the experiences and exposures of different groups of veterans who are clearly defined and have clearly different illness experiences.

Let me touch on my third major point and that is that veterans who did not deploy to the Persian Gulf, but said they received vaccines from the military during the war may have some of the same health problems as Gulf veterans. Preliminary data from our study indicates that about 12 percent of Kansas veterans who did not serve in the Gulf, but said they received vaccines during that time had symptoms of Gulf war illness. By comparison, less than 4 percent of Gulf era veterans who did not receive vaccines had these symptoms. In veterans who never served in the Gulf region, the rate of Gulf war illness symptoms was three times higher for those who said they got vaccines during the war, compared to those who did not.

All right, so what does all of this mean? It means, first, that Gulf veterans are affected by excess health problems and that these conditions are connected to their experiences during the war. The patterns we described cannot be explained by chance, by a veteran overreporting or by stress.

Second, it suggests that veterans are affected by a number of different problems caused by a number of different exposures. Veterans who were in a position to experience more exposures had the highest rates of illness.

Gulf veterans may be dealing with a number of pathologies, illnesses that may have been caused by different combinations of different things in different people. In turn, these problems show up as different combinations of overlapping symptoms in different people. From the health scientist's perspective, the scenario is quite complex.

I believe the take-home message from our research is that these complexities are not insurmountable, that questions about these health problems can be answered. We should not accept the view that methodologic difficulties mean we can never really know if or why these men and women are ill. Our major finding may actually be that we had clear findings.

In the context of the many millions of dollars in Federal research expenditures, our Kansas study consumed relatively little time and few resources, 2 years, about $150,000, and yet we were able to make significant progress. As I said, these questions are complex but not unanswerable.

And one final comment: Let me say that the majority of Gulf veterans in our study only reported specific symptoms because we asked about them. Most have never come forward to the VA to request medical care or disability compensation. Among the thousands of veterans I have met or interviewed many are suspicious

of the government and many tell me they don't want benefits. They want their health back and they want answers. It should go without saying that their service demands that we exert our best effort in finding those answers.

[The prepared statement of Ms. Steele follows:]

Testimony of Lea Steele, Ph.D.
before the Subcommittee on National Security, Veterans Affairs, and International Relations
U.S. House Committee on Government Reform
January 24, 2002

Good afternoon Mr. Chairman and members of the committee. My name is Dr. Lea Steele. I'm an epidemiologist and Senior Health Researcher at the Kansas Health Institute. I've conducted studies on the health of Gulf War veterans for the state of Kansas since 1997.

Like veterans from other states and countries, Kansas veterans have reported anomalous health problems since returning from Desert Storm. In 1997, the Kansas legislature funded a state program to look into these concerns. Our first objective was to find out if Gulf veterans had more or different health problems than veterans who did not serve in the war. In 1998, we launched a population-based study of over 2,000 Kansas Gulf War-era veterans. Study results were published about a year ago in The American Journal of Epidemiology.

The key findings from our research are as follows:

- **A pattern of chronic symptoms, "Gulf War illness," was identified.** Overall, about a third of Kansas Gulf veterans reported a pattern of chronic symptoms that include joint pain, respiratory problems, neurocognitive difficulties, diarrhea, skin rashes, and fatigue. Although individually, some of these symptoms might occur in anyone from time to time, veterans with Gulf War illness experience a distinct pattern of multiple symptom types together that can persist for years. These conditions range in severity from relatively mild to severe and disabling.

- **Gulf War Illness occurs in clearly identifiable patterns.** For example, Army veterans are affected at a much higher rate than Air Force veterans, and enlisted personnel more than officers. Most importantly, illness rates differ by where and when veterans served in the Persian Gulf area.

  Veterans who served primarily on board ship during the war had a relatively low rate of illness. The highest rate–about 42%– was seen in veterans who entered either Iraq or Kuwait, countries where the ground war and coalition air strikes took place. To be clear, what I am saying is that, overall, more than 40% of veterans who entered Iraq or Kuwait had this pattern of chronic symptoms we are calling Gulf War illness.

  But more than half the Gulf veterans in our study were never in Iraq or Kuwait–they remained in support areas during their deployment. We found another striking pattern in this group. Veterans who were in theater only during Desert Shield, but left before the air strikes began, had a very low rate of illness–only about 9%. There was a somewhat higher rate for veterans present during Desert Storm, who left by March of 1991, just after the cease fire. But the *highest* rates were found in veterans who stayed in the region at least 4 or 5 months after the war ended. Again, I'm talking about veterans who served only in support areas, never in battlefield areas.

- **Veterans who did not deploy to the Persian Gulf, but reported getting vaccines from the military during the war, may have some of the same health problems as Gulf War veterans.** Preliminary data from our study indicate that about 12% of Kansas veterans who did not serve in the Gulf, but said they received vaccines during that time, had symptoms of Gulf War illness. By comparison, less than 4% of Gulf-era veterans who did *not* receive vaccines had these symptoms. Again, to be clear, in veterans who never served in the Gulf region, the rate of Gulf War illness symptoms was 3 times higher for those who said they received vaccines during the war, than for those who did not.

So, what does all of this mean? It means, first, that Gulf War veterans *are* affected by excess health problems and that these conditions are connected to their experiences during the war. The patterns we described can not be explained by chance, by veteran overreporting, or by stress. Second, it suggests that veterans are affected by a number of different problems caused by a number of different exposures. Veterans who were in a position to experience more exposures have the highest rates of illness.

It appears that Gulf veterans may be dealing with a number of pathologies—illnesses that may have been caused by different combinations of different things in different people. In turn, these problems show up as different combinations of overlapping symptoms in different people. From a health scientist's perspective, the scenario is quite complex.

But I believe the take-home message from our research is that these complexities are not insurmountable, that questions about these health problems can be answered. We should *not* accept the view that methodologic difficulties mean that we can never really know if or why these men and women are ill. Our major finding may actually be that we *had* clear findings. In the context of the many millions of dollars in federal research expenditures, our Kansas study consumed relatively little time and few resources--2 years, about $150,000–and yet was able to make significant progress.

I actually view our research as very basic, but essential--the kind of first step that epidemiologists must take in approaching any unexplained health problem. It can be followed by further refinement of the process until we identify the most likely causes of the problem. As I said, these questions are complex but not unanswerable.

As a final comment, let me say that the majority of Gulf War veterans interviewed for our study reported specific symptoms only because we asked about them. Most have never come forward to the VA to request medical care or disability compensation. Among the thousands of veterans I have met or interviewed, many are suspicious of the government, many tell me they don't want benefits. They want their health back, and they want answers. It should go without saying that their service demands that we exert our best efforts in finding the answers to which they are entitled.

Lea Steele, Ph.D., is Senior Health Researcher with The Kansas Health Institute in Topeka, Kansas. From 1997-2001, Dr. Steele served as Director of The Kansas Persian Gulf War Veterans Health Initiative for the Kansas Commission on Veterans Affairs, and Principal Investigator of the Kansas Gulf War Veterans Health Study.

What is "Gulf War Illness"?
Elevated Symptoms in 3+ Domains, Lasting 1 Year or Longer

PAIN SYMPTOMS
Joint Pain
Muscle Pain

NEUROLOGIC SYMPTOMS
Memory Problems
Headaches
Dizziness
Mood Changes

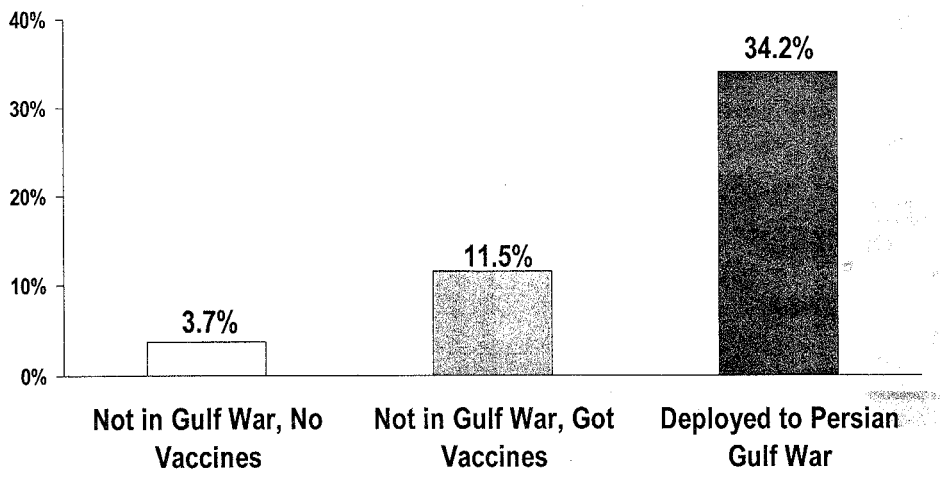
FATIGUE SYMPTOMS
Fatigue
Sleep Problems

GASTROINTESTINAL SYMPTOMS
Diarrhea
Nausea

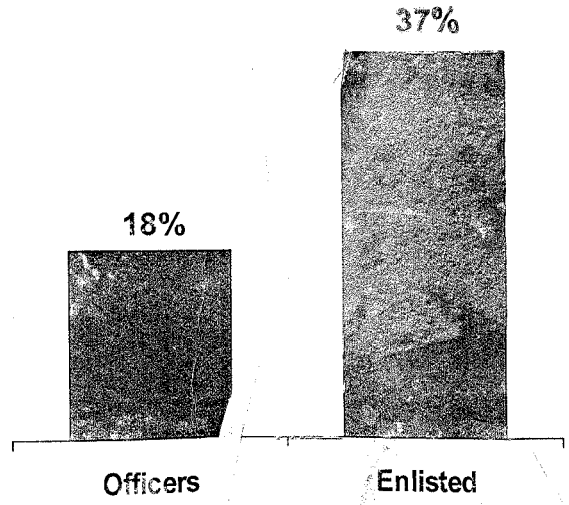
RESPIRATORY SYMPTOMS
Persistent Cough
Wheezing

SKIN PROBLEMS
Rashes
Other Problems

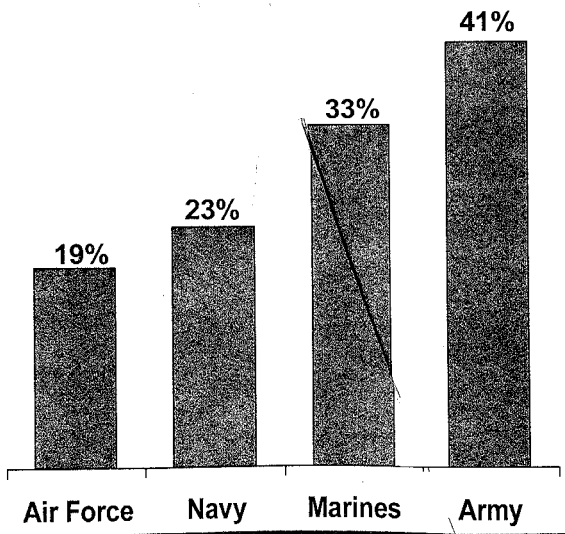
% of Veterans With Gulf War Illness: By Deployment and Vaccine Status



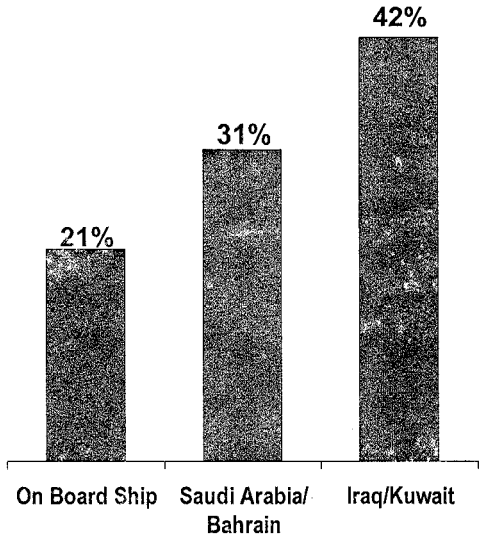
% of Veterans With Gulf War Illness Rate Differs by Rank



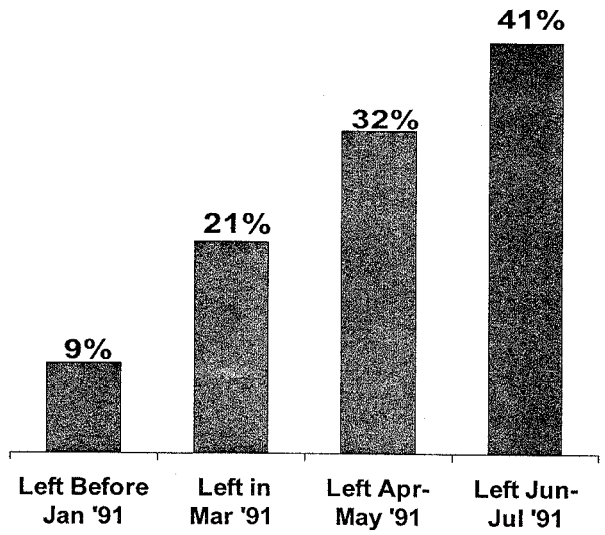
% of Veterans With Gulf War Illness: Rate Differs by Branch of Service



% of Veterans with Gulf War Illness: Rate Differs by Location in Theater



Veterans Serving Only in Support Areas: Illness Rate Differs by Time Period in Theater



Mr. SHAYS. Mr. Sanders has to leave, and I want to give him an opportunity to make a closing comment.

Mr. SANDERS. I have another meeting.

I want to pick up on a point that Dr. Haley made. What often happens—and you and I have spent dozens of hours at hearings like this, hearing from some of the best people. What often happens, we hear presentations like this and hear presentations from the government.

What I would respectfully suggest is that we do something different, perhaps, the next time; and that is, we allocate 5, 6 hours, however long it takes, and we have on one panel—Dr. Haley made some very serious allegations, correct—I want the government to be able to respond or not be able to respond. I want the panel to be here in full and I want the reward, so to speak. I want to know what is at stake, the huge amounts of money this government spends in research. I want that debate to take place face to face.

And I think for too long—is the DOD here anymore? I think we have some people here in the back. But the people who spoke are not here, and we keep going around in a circle. Let's have it out.

You made some charges, let's have that debate and let the result of that debate be where we continue to spend our research dollars.

Thank you for an excellent hearing. I apologize for having to step out.

Mr. SHAYS. What we found in the beginning was, the government witnesses would testify; then we would have the sick veterans testify, but the government officials would have left. So what we did is we had our veterans speak first so they would stop denying at least one thing—they would deny that they were even sick—first, saying they were sick, and the next thing was to connect the sickness to their service in the Gulf.

But in the beginning they were even denying that people had rashes. They were denying that people were literally sick when they were sick.

So I think your suggestion is an excellent one, and I think that's what we'll do. We will have a real dialog and mature debate about all the different information and have it on the same panel.

Mr. Tuite, you have the floor.

Mr. TUITE. Is that better?

Chairman Shays, members of the subcommittee, Lord Morris and Mr. George, thank you for your invitation to present testimony today. I provided the subcommittee with a written statement which I will summarize here.

Having previously testified on some of the scientific findings made by myself and others, today I would like to address issues affecting the scope and pace of the scientific research on Gulf war illnesses and then suggest four initiatives to address the problems. I commend you for our ongoing interest in the health of Gulf war coalition veterans.

Continuing oversight will be necessary to ensure the provision of appropriate care to these veterans. As you know, the 1998 Gulf War Veterans Act established a time line for reviewing the science to determine what illnesses might have been connected to wartime exposures, to assist the Secretary of the Department of Veterans' Affairs in making determinations of service connection for veterans

who are suffering from often debilitating chronic and degenerative diseases. However, the time lines outlined in that legislation have been waved aside by the implementing agencies.

Millions of dollars spent on this issue have been wasted, in my opinion, on badly designed internal studies and ongoing reviews of the literature. Literature reviews are a basic fundamental step for any researcher. Stand-alone literature reviews reduce the funding available for basic research and treatment and delays caused by the bureaucracies' technical and policy reviews of the reviews waste precious time in providing health care to suffering veterans.

Continuing oversight is also necessary to ensure that scientific findings are not suppressed or delayed by bureaucratic concerns over political fallout or embarrassment. Inadvertent or even intentional bias can be imposed on a scientific study design or methodology as a result of the government's control of research conducted using government's funds.

Study design and research results should not be stifled. Rather, the open, independent, scientific peer review process should be allowed to evaluate the scientific validity and importance of the study and its results. Research and the unconstrained dissemination of research results can only further the effort to assist Gulf war veterans.

In addition to government research, increased efforts need to be made to encourage greater private sector participation in these research efforts. There are a number of indirect deterrents to private partnerships with the government in addressing some of the public health and other issues.

For example, in some cases, the U.S. Government will retain a nonexclusive, nontransferable, irrevocable and paid-up license to practice inventions developed in cooperative research. If the discovery in question will be used primarily for government purposes, rather than confront this obstacle, private companies often opt to avoid these types of arrangements.

In some cases, the royalties being paid to the Federal Government add to health care costs; in other instances, they are affecting the health of the biotechnology industry, particularly in the case of low-margin diagnostics. When profit margins are tight and under pressure, paying a several-percentage-point royalty to the Federal Government may push a diagnostic out of the realm of good business sense. This practice can discourage private-sector firms from working with the government agencies in tackling even high-priority public health issues. In cases such as this and other important veterans' issues, public health issues and food safety issues, waivers to some of these financial deterrents need to be encouraged.

A further deterrent and perhaps a more important deterrent to private sector involvement in Gulf war illness issues is the official stigma that has been attached to this issue. Denials by the government that any problem existed and the government's efforts to debunk or undermine scientific medical research conducted outside of the government agencies or outside government control may have resulted in a reluctance on the part of many researchers and the pharmaceutical and biotechnology industries to become involved in efforts to identify treatments for these soldiers. When the government would be the primary market for such diagnostics or thera-

pies and the government insists that the illnesses are psychological and not physiological, few researchers and fewer companies will risk their reputations or capital.

Our understanding of the nature of the health consequences of many of these exposures may not only help us in treating these veterans, but also may be of great value in our current war against terrorism.

We must look forward to innovative solutions to these problems if we are to move forward. We are all here today to assist in accomplishing that goal. To that end, I encourage the committee, the Department of Defense and Veterans' Affairs and the White House to demonstrate leadership and support of our veterans by promoting private-public partnerships with the pharmaceutical and biotechnology industries for the purpose of identifying treatments for Gulf war veterans and removing deterrents to such partnerships. This could be accomplished by establishing programs similar to those used with the so-called "orphan diseases."

Attempting to return to the time line cited in existing legislation to expedite the determination of illnesses that are presumed associated with many of the varied exposures suffered by these veterans.

Focusing research increasingly on treatment and looking for success stories in veterans who have received treatments that have improved the qualities of their life.

And establishing an appropriate mandatory diagnosis-based data collection system within the VA and DOD to be published and updated annually of all Gulf war veterans receiving care in the government health system, listing specific diagnoses and categories of illnesses. Annual mailings to all veterans who served in the Southwest Asia theater of operations; would solicit their health information for inclusion.

We must keep in mind that many Gulf war veterans were in Reserve components and are now receiving health care outside of these systems. This information would allow the Secretary of Veterans Affairs to identify statistically significant increases in the incidence of illnesses and make determinations of service connection. The information system should be capable of distinguishing who served during what phase of the operation, before, during and after the war, to determine if there is a significant difference in the illness rates between these populations.

Old technology treatment protocols are not providing us with the answers we need in part because of the varied and multiple exposures experienced by the veterans affect different individuals in different ways. A one-size-fits-all treatment protocol will fail. Unconventional or outside-the-box thinking that takes advantage of the newest advances in genomics research is also needed.

The success of such an initiative will require the kind of public-private cooperation that I have suggested. If this can be done, the Gulf war soldiers can be aided, and we will have a much better understanding of the health of the Coalition forces and the conditions that led to their illnesses. With the information that is developed, we may also be able to aid millions of other Americans with similar chronic illnesses.

More real progress has been made by the Department of Veterans Affairs in recognizing the problems of Gulf war veterans in the

last few months than was made in the proceeding years. More remains to be done. I hope that I have provided some suggestions for alternative approaches to be taken that might prove useful, and I thank the committee for the opportunity to testify and ask that the full text of my statement be included in the record.

Mr. SHAYS. Your testimony will be part of the record. Thank you so much.

[The prepared statement of Mr. Tuite follows:]

Testimony of
James J. Tuite, III
Chief Operating Officer, Chronix Biomedical, Inc.
Before the
Subcommittee on National Security, Veterans Affairs, and International Relations
Of the
Committee on Government Reform
U.S. House of Representatives
January 24, 2002

Chairman Shays, Ranking Member Kucinich, Members of the Subcommittee, Lord Morris and Mr. George, thank you for your invitation to present testimony today on "Gulf War Veterans' Illnesses: Health of Coalition Forces." As you know, I have been involved in this issue since 1993, first as a professional staff member of the Senate Committee on Banking, Housing, and Urban Affairs, and then as an independent consultant and researcher associated with the Gulf War Research Foundation. I have continued to follow this issue after I moved into the biotechnology industry. I have also co-authored a paper on this subject, published in the May 1999 edition of Clinical Diagnostic and Laboratory Immunology along with Dr. Urnovitz and others, entitled "RNAs in the Sera of Persian Gulf War Veterans have Segments Homologous to Chromosome 22q11.2." Dr. Urnovitz and I have previously testified before this subcommittee on that research.

I commend your ongoing interest in the health of Gulf War coalition veterans. Continuing oversight will be necessary to ensure the provision of appropriate care for Gulf War veterans. As you know, the 1998 Gulf War Veterans Act established a timeline for reviewing the science and making determinations of service connection for veterans who are suffering often debilitating, chronic, and degenerative illnesses to determine what illnesses might have been connected to their wartime exposures. However, the timelines outlined in that legislation have been waved aside by the implementing agencies.

Many millions of dollars have been spent by the Department of Veterans Affairs (VA) and the Department of Defense (DOD) on this issue, and much of that money has been wasted in my opinion. Far too much money has been spent on badly designed internal studies and ongoing reviews of the literature. The Department of Defense, for example, awarded monies to RAND to conduct scientific literature reviews, as though other researchers had not already done so. I venture to guess that there is not a researcher worth his or her salt in this room who did not conduct, and who does not frequently update, their review of the literature relating to the veterans' exposures and illnesses. Literature reviews are a basic, fundamental first step in any scientific initiative. Asking RAND analysts to read the same papers may make those analysts smarter, but it does little to further the science, and may hamper it by reducing the amount of funding available for basic research and treatment. Further, the delays caused during the bureaucracies' technical and policy review of the reviews waste precious time in providing the needed health care to these veterans.

As noted above, the Institute of Medicine (IOM), in response to the 1998 Act, is also conducting literature reviews on behalf of the VA and the National Academy of Sciences. However, the IOM is not adhering to the timeline prescribed by the law and has chosen to follow a much longer timeline. In testimony before this subcommittee, the IOM explained that their methodology is one based upon consensus. While consensus and compromise is an absolute necessity in politics, it will very often be wrong in science. In science, the goal is to achieve the right answer, not simply the answer that everyone can agree upon. Some people will be wrong or have preconceived ideas based upon outdated or biased information. Why should their errors be allowed to skew the answer away from the truth?

Congressional oversight of this issue also continues to be necessary because of this government's history of withholding information that might prove embarrassing or expensive. Studies showing excessive rates of a specific neurological disease among veterans and of birth defects among the children of Gulf War veterans were in official review for years, even as Congressional efforts to provide assistance to the children of Gulf War veterans were being directly opposed by past administration officials.

Inadvertent or even intentional bias can be interposed upon a scientific study design or methodology as a result of the government's control over research conducted using government funds. Study design and research results should not be stifled; rather, the open, independent, scientific peer-review process should be allowed to evaluate the scientific validity and importance of the study and its results, not a government bureaucracy concerned with the potential political fallout of research conclusions. Research, and the unconstrained dissemination of research results, can only further the effort to assist Gulf War veterans.

We also need to take steps to encourage greater private sector participation in these and similar research efforts. There are a number of indirect deterrents to private partnerships with the government in addressing some public health and other issues. For example, in some cases the United States Government retains a nonexclusive or nontransferable, irrevocable, and paid-up license to practice, for governmental purposes, inventions that are developed in cooperative research. If the discovery in question will be used primarily for government purposes, rather than confront this obstacle, companies often opt to avoid these types of agreements.

In some cases, the royalties being paid to the federal government add to healthcare costs. In other instances, they are affecting the health of the biotechnology industry – particularly in the case of low-margin diagnostics. When profit margins are tight, as they are in a competitive market, and particularly in the area of supplemental diagnostic tests, and are further pressured by HMO payment schedules, paying a several percentage point royalty to the federal government may push a diagnostic out of the realm of good business sense. This practice can discourage private sector firms from working with federal agencies in tackling even high priority public health issues.

Government agencies and officials must be cognizant of the role, influence, and power of government. The federal government was not intended by our nation's founders to interfere with private business except in the interest of the greater public good. However, the greater public good is not well served by government policies that add burdensome costs that discourage private companies from addressing public needs.

Nor should government agencies or officials discourage private companies from investigating emerging health issues by attaching to them official stigma. In the case of Gulf War Syndrome, for example, the denials of the government that any problem existed, and the government's efforts to debunk or undermine scientific and medical research conducted outside of government agencies or outside of government control, may have resulted in a reluctance on the part of many researchers, and the pharmaceutical and biotechnology industries, to become involved in efforts to identify treatments for these soldiers. When the government, in this case the DOD or the VA healthcare systems would be the primary market for such diagnostics or therapies, and the government insists that these illnesses are psychological and not physiological, few researchers and fewer companies will choose to risk their time, their reputations, or their capital. It is simply not cost effective, no matter how tragic the consequences might be for the soldiers and their families.

Yet another example of the consequence of misuse of government influence is also linked to the Gulf War. An inherent aspect of the security problems being experienced by the U.S. after the Gulf War results from the fact that during the war, we often ignored our equipment. Over 14,000 chemical agent detection devices sounded repeatedly during the air war and every single alert was ultimately discounted as a false alarm. In many instances, soldiers simply stopped putting on their protective gear, or were not ordered to don their protective gear because the alarms were not heeded. For over ten years, the validity of these alarms and the soldiers' accounts have been countered by official denials. So now we are many years behind in improving our chemical and biological detection gear, many years behind in modifying operational doctrine to better defend against similar exposures, a threat that now exists not only on the battlefield but may also exist on our streets, many years behind in identifying treatments for ill soldiers, and many years behind in complying with the VA's mission to care for our soldiers, their widows, and their orphans.

To sum up, the U.S. has failed on three fronts: First, military leaders failed to recognize the threat that confronted our forces during the war, to properly use existing detection and protection equipment, and to implement existing doctrine. Second, the government failed to listen to our soldiers when they returned from the conflict. Instead, the government questioned them, criticized them, scrutinized them, and dismissed them. These soldiers still await a new initiative in which their illnesses are publicly recognized and in which the government attempts to heal them. Finally, officials failed to correct the problems that led to these illnesses, primarily because they did not wish to admit that the illnesses existed or that they might have made mistakes. The resultant situation is one in which our troops today remain at risk of facing the consequences of similar miscalculations in current or future conflicts.

We will make significant progress in overcoming these failures only when we accept that something is wrong and look for innovative solutions. We are all here today to assist in accomplishing that end. On the veterans' health front, the search for innovative solutions must come by encouraging public-private partnerships specifically focused on treating the illnesses associated with the many exposures suffered by these veterans. Such an approach will benefit millions of other Americans suffering from similar chronic diseases. To that end, I encourage the Committee, the Departments of Defense and Veterans Affairs, and the White House to demonstrate leadership in support of our veterans by:

- Promoting public-private partnerships for the purpose of identifying treatments for Gulf War Veterans. This could be accomplished by establishing programs similar to those used with orphan diseases to encourage the participation of the pharmaceutical and biotechnology industries in identifying ways to treat these veterans.

- Attempting to return to the timelines cited in existing legislation, to expedite the determination of the illnesses that are to be presumed associated with the many and varied exposures suffered by these veterans.

- Focusing research increasingly on treatment and looking for success stories by attempting to identify veterans who have received treatments that have improved their quality of life.

  A European study recently revealed that in France, prescription drugs are prescribed about six times as often as in the United Kingdom – and the French government pays 100% of the cost. This may suggest that French physicians are a bit more proactive in the treatment of their patients. That fact, combined with the reported stricter adherence to their chemical warfare doctrine, may provide insight into why there seem to be fewer reported cases of Gulf War illnesses among the French forces. In the U.S., many veterans find themselves outside of the government healthcare system altogether. Others are faced with physicians skeptical of the seriousness of their complaints, in part because of pejorative comments that have been made by government officials regarding their condition. Consequently, U.S. veterans may not be receiving the most aggressive treatment or the most innovative treatment of their symptoms.

- Establishing mandatory diagnosis-based registries, to be published and updated annually, of all Gulf War veterans receiving care within the Department of Defense and Department of Veterans Affairs healthcare system, to identify specific diagnoses and categories of illnesses, e.g. cancers, neurodegenerative, and neuroimmune diseases. Annual mailings should be sent to all theater veterans, to solicit inclusion in these registries information regarding the health status of those veterans no longer within the government healthcare system.

Contrary to the belief of most Americans, veterans' health care at no cost is not, and has not been, available to all veterans for several decades. This outreach is particularly critical since many Gulf War veterans were reservists and may now be receiving care through the private healthcare system. Others not counted within the VA and military system will be those veterans receiving private care as a result of the private health care coverage of their spouses.

A strategy such as the one described above is necessary to assist the Secretary in identifying statistically significant increases in incidence of illness and providing medical care to these deserving veterans.

These registries should also distinguish between those who served during the different phases of the operation -- before the war, during the war, and after the war -- to determine if there is a significant difference in the illness rates within these populations.

Old technology treatment protocols are not providing us with the answers we need, in part because the varied and multiple exposures experienced by these veterans affect different individuals in different ways. A one-size-fits-all regime will fail. Unconventional or outside-the-box thinking that takes advantage of the newest advances in genomic research is also needed. The success of such an initiative will require the kind of public-private cooperation that I have suggested. To foster that cooperation, existing hurdles must be removed and the enthusiastic support of the Department of Defense and the Department of Veterans Affairs will be required. If this can be done, the Gulf War soldiers can be aided, and we will have a much better understanding of the health of the coalition forces and the conditions that led to their illnesses. With the information that is developed, we may also be able to aid millions of other Americans with similar chronic diseases.

More real progress has been made by the Department of Veterans Affairs in recognizing the problems of Gulf War veterans in the last few months than was made in the preceding years. Much more remains to be accomplished. I hope that I have provided some suggestions for alternative approaches to be taken that might prove successful.

I thank the Committee for the opportunity to present this testimony.

Mr. SHAYS. Now we will hear from Mr. Urnovitz. Doctor. Sorry.

Mr. URNOVITZ. Thank you. Thank you, Chairman Shays. I'm grateful to your subcommittee for allowing me to present my views on the status of Gulf war syndrome research. And my entire response is also submitted in the written testimony.

So what is the status of Gulf war syndrome research? It's a stalemate. My purpose today is to explain why. It's my opinion that cluster diseases like Gulf war syndrome are genomic in nature. Government-funded doctors take the position that cluster diseases are caused by germs. In the late 1800's, Louis Pasteur hypothesized that bacteria might be a cause of human disease, starting a major revolution in medicine, the germ theory. However, the theory that germs cause most, if not all, human disease fell apart immediately in the early 1900's when doctors investigated the transmissible agent in polio.

The conceptual failure to see that a single germ does not always cause diseases is why we have not cured or prevented all of the so-called viral diseases. In fact, the common perception that vaccines can stop all diseases is just plain wrong.

This book I hold in my hand, this remarkable book I hold in my hand, is the 1957 final report of the polio virus vaccine field trial. It contains no evidence to support the claim that it was the antibodies to the polio virus that prevented some cases of childhood paralysis. This report and the medical literature I have read so far calls into question the use of antibodies as surrogate markers for a protective response to germs like polio and certainly anthrax. In fact, it's my opinion that the strategy of anthrax protection through vaccines is based on very weak science.

I applaud the work of the early polio virus researchers who were true pioneers. I believe we should view the early polio vaccine efforts as we view Columbus' voyage. Columbus did not discover America. He found a new world that allowed his successors to discover the Americas. Doctors Salk and Sabin did not prevent all cases of childhood paralysis, but they did show us the way to do it and perhaps how to prevent many chronic diseases through postexposure treatment.

So why haven't we eliminated diseases like Gulf war syndrome, AIDS childhood paralysis, mad cow disease? Why don't we have a foolproof way to prevent illness from chemical and biological terrorism? I blame this genome versus germs stalemate on the largest, most powerful medical research entity in the world, the U.S. Department of Health and Human Services, HHS.

In my opinion the most recent request of HHS to control all inquiries from Congress and the media on medically related issues is an another sign that HHS is completely out of control. Over the last year and before September 11 events, I have repeatedly asked that HHS officials explain why the agency allowed 93 employees to abuse the power of their positions by signing a public document calling for the end of a scientific debate on the role of viruses in human diseases. This flagrant violation of medical ethics can be documented on my Website, chronicillnet.org, under government relations, clearly establishes a government sanction against important independent medical discovery.

All right. So how do we break the stalemate? Let me share with you some of my thoughts. First, if science and government wish to continue any kind of responsible partnership, a new paradigm must be developed that allows for scientific and public discourse on fresh research ideas. Second, the Federal structure must resolve to end the de facto government sanctions that exist as a result of an inherent bias against innovative research.

Third, we must leave behind a dim decade of "denying clues" that has deprived Gulf war veterans of a possible pathway out of illness. We must not continue to allow stale dogma to trash true science.

I am certain we will overcome this stalemate. Scientific discovery and new treatment modalities will prevail. For example, German scientists asked me if my Gulf war syndrome research could be used as a basis for a mad cow disease test in which the animals did not have to be killed to make the diagnosis. It only took 2 months, one other scientist, to generate the data to file a new patent for a new testing method. We begin validation studies next month, and we hope to be saving the German beef industry and protecting the food supply by this summer.

I see no reason why we cannot design a similar program for Gulf war syndrome research; that is, to identify new diagnostic markers and start a discovery program to produce antigenomic drugs to dampen down the Gulf war syndrome veterans' ailments. These same antigenomic medications would better protect our troops against biological and chemical weapons than still unproven vaccines.

The role of Congress should be to do what it does best, keep the pressure on. As you are all too aware, we are engaged in a long-term war that involved hideous brands of terrorism and a life-and-death necessity to realize we don't have years to change the way we protect our troops and our people against chemical and biological warfare. At best we have months. You will never be able to protect the citizens of this country, if HHS is not held accountable for its actions that continue to discourage scientific discovery in the ways I've described.

In conclusion, I want to thank the subcommittee for its leadership in trying to understand the complexities surrounding the treatment of Gulf war syndrome. I also want to thank the staff of the GAO for its first class reports on Gulf war syndrome-related issues as well as calling them as they see them. I also thank the subcommittee for recognizing my contributions that I made to the medical literature and for my modest attempt at trying to keep the scientific debate open.

I would ask that my full text and both my oral and written statements be submitted for inclusion in the record of the hearing. Thank you.

[The prepared statement of Mr. Urnovitz follows:]

TESTIMONY OF HOWARD B. URNOVITZ, PH.D.

January 24, 2002

U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON GOVERNMENT REFORM

SUBCOMMITTEE ON NATIONAL SECURITY, VETERANS' AFFAIRS AND INTERNATIONAL RELATIONS

I am grateful to the Subcommittee for allowing me the opportunity to present my views on Gulf War Syndrome or GWS. My name is Dr. Howard B. Urnovitz. I received my doctorate degree in Microbiology and Immunology from the University of Michigan in 1979. My entire CV is submitted with my written testimony. I currently hold the position of Scientific Director of the Chronic Illness Research Foundation as well as my current position as Chief Executive and Science Officer of Chronix Biomedical, a privately-held genomics company. I receive no government grants or support for my work.

The Subcommittee has asked me to testify on the status GWS research. My reply is simple: We have reached a stalemate. My purpose of being here today is to explain why.

In my last testimony to this Subcommittee, on February 2, 2000, I pointed out that the human genome appeared to play a critical role in GWS. In fact, I testified that the major opportunity GWS presents to medical science is that neither a single bacterium nor a virus could be blamed for the illness. I have stated repeatedly in public for the past several years that the mycoplasma causal theory for GWS was based on poorly conducted research and the claims had never been validated. Finally, an excellent controlled scientific study has put this matter to rest. I will state again for the record what I believe to be the basis of GWS: it is the genome, not the germs.

So why is there a stalemate?

The letter from the Pentagon included in the GAO Report (GAO-01-13, April 2001) cautioned the authors of the report not to be "hasty" in drawing the conclusion that there might be fewer health complaints from the French troops. This letter indicated to me that the military continues to take what I would call a "denial of the clues" position. Denying or refusing to recognize scientific clues, controlled studies (including ours) and even facts about GWS has created this stalemate, a stalemate that has implications bigger than the disease itself. These denials are manifestations of the weaknesses of large-scale, government-funded research. This weakness delays any and all attempts to treat GWS veterans and hinders any and all attempts for a medical defense against the next generation of chemical, biological and radiation terrorist weapons.

What is the source of this "denial of clues" position with regard to GWS and other medical mysteries? I believe it is the US Department of Health and Human Services

(HHS). HHS is the largest and most powerful medical research entity in the world today. It strongly influences the financing, communication, and priorities of the world's medical research agenda, including military medicine. Its Fiscal Year 2001 budget was $429 billion (http://www.hhs.gov/news/press/2001pres/20011231.html). In my opinion, this agency is completely out of control because of, in part, its continued violations of medical ethics.

I argue that the response of the entire federal health establishment to recent acts of bioterrorism constitutes a violation of medical ethics. Despite ample evidence from military usage over the last decade that the existing anthrax vaccine is highly reactive with possible deleterious long-term health effects, the October 2001 terrorist attack that employed mailed anthrax spores triggered an extremely questionable reaction from the Health and Human Services Department and its Centers for Disease Control and Prevention.

Both HHS and CDC made the still unlicensed vaccine available to potentially exposed postal workers and congressional staffers not as an immunization, but as a treatment supplemental to antibiotics - without a scintilla of scientific evidence that such inoculations could help prevent the disease in exposed individuals. Even the HHS and CDC officials responsible refused to recommend the workers actually take the shots. In the fields of advertising, public relations, and political speech writing, this approach is sometimes called the "The Spaghetti Theorem" - throw an untried idea against the wall and see if it sticks. It has no place in science or medicine.

And now we learn from the CDC-authored informed consent documents for such civilian shots that the anthrax vaccine may be connected to birth defects if the inoculation is given during pregnancy. The data come from a preliminary Navy study still under review. So far the Pentagon has refused to provide further details.

Further, we now have learned from the October 23, 2001, GAO report "Anthrax Vaccine: Changes to the Manufacturing Process" that the FDA has blatantly turned a blind eye in its oversight and surveillance of the Bioport anthrax production facility.

A less recognized yet more flagrant medical ethics violation by HHS is its endorsement and defense of the so-called "Durban Declaration." Ironically, the Durban Declaration memorialized 20 years of frustration and failure by the AIDS research community to successfully treat the disease by eliminating the associated virus, HIV, with either drugs or vaccines. The Declaration claims to be based on an exhaustive medical literature. But this literature is substantially comprised of opinions, poorly conducted studies, and reviews of poorly conducted studies. Instead of using the milestone of 20 years as a "call to arms" to encourage novel and non-traditional research approaches, 93 HHS employees from agencies including the NIH, FDA and CDC, published a declaration in the journal *Nature* stating that HIV is the sole cause of AIDS and that the scientific debate is closed. As a scientist, I was outraged to see such a declaration which seems totally at odds with the tradition of the scientific method.

Here is what lies ahead for people who suffer from emerging chronic diseases like GWS and AIDS as well as for efforts to protect the population at large from mad cow disease and chemical and biological terrorism. Rather than recognizing and reporting on the failures to cure, prevent, or successfully treat a disease, HHS scientists will continue to deny that billions of taxpayer dollars and decades of medical research has yielded little or no progress in the understanding of chronic syndromes. Yet, they will publish documents that will mandate how future medical research should and should not be conducted. Scientific journals will publish these documents and imply that they are scientific in nature. Mainstream media, without asking any hard questions, will then distribute the information to the general population and label all who challenge the documents as "dissidents."

Label us what you want, but misrepresentations are misrepresentations. We continue to use the Internet to describe our scientific position. You can view our correspondence with the HHS on our website, www.chronicillnet.org (Government Relations). It asks how HHS scientists can take the position that a virus is the sole cause of AIDS based on opinions, poorly conducted studies and reviews of poorly conducted studies.

By allowing its 93 employees, all of whom are ostensibly public servants, to abuse their powerful government positions by signing the Durban Declaration, HHS has signaled the American people that it will permit its scientists to take a public position on unsolved medical problems instead of finding the answers through rigorous research. Research into GWS is directly affected by these unethical practices. How?

Genomes and germs.

Exemplified by the Durban Declaration, the American medical science complex is unwilling to accept and, in fact, vigorously opposed to the idea that epidemics and disease clusters can happen without a single microbe as the prime causative agent. The original successes of Pasteur and Koch in the late 1800's with a select number of bacterial maladies do not hold true for all diseases, especially the chronic diseases. This "one size fits all" single-germ approach of medical science is why diseases like GWS, childhood paralysis, and AIDS have not been conquered. By allowing HHS to mandate how science will be conducted, a clear government sanction has been established. This sanction will prevent the discovery and innovative research needed to attack the tough medical issues we face today.

Allow me to give you an example of why the "one size fits all" approach does not work for chronic illnesses. For 100 years, since Landsteiner and Popper transmitted poliomyelitis from a boy to a laboratory animal, every doctor in the world will tell you that the childhood paralysis was caused by a single entity called the poliovirus and can be completely stopped by polio vaccine. The chronicillnet.org web site has posted a detailed special report questioning why the polio vaccine has not eliminated childhood paralysis world-wide and even challenging medical researchers to produce the hard science to show if there was ever was a poliovirus epidemic. Diseases cannot be

conquered if scientists refuse to admit they are wrong, go back into the laboratory, and work until they find the truth.

This astonishing abuse of the scientific method by political scientists has led us to the stalemate we are in today. Clearly, science has been trapped in similar stalemates before. In the 1600's, Galileo, equipped with a new invention, the telescope, was able to confirm Copernicus' heliocentric theory that the Earth revolved around the Sun and not the reverse. The political system and religious institutions of the time made sure Galileo's ideas, teachings and writings were suppressed. Galileo was charged by the Inquisition with heresy and sentenced to house arrest for life. It took hundreds of years for scientific fact to overturn political opinion. We are facing the Galileo effect today in medicine.

What are the implications of our current stalemate?

The world cannot defend itself against biological/chemical/radiation terrorism until this stalemate is brought to an end. The single-germ-theory will not allow science to define the genomic conditions necessary to render an individual susceptible to a disease process. Terrorists will soon learn how to make their next move so that the weapons become more effective. Our next move has to be the development of medications that can focus and strengthen the genomic reaction to toxic injury. The current scientific stalemate prevents us from making this type of progress. We cannot take this critical next move because the stalemate has you believing that vaccines and conventional antibiotics are the way to stop terrorism even though none of the data I have seen support this claim.

Scientific Revolution Tactics: Where Do We Go From Here?

I would like to go on record stating that the single-germ-theory as the cause of chronic diseases will disappear once scientists learn the proper use of their new "telescope," i.e. genomics.

I am sure you have heard about the power of genomics, but even in this brand-new discipline we have a stalemate created by scientists trying to cram square pegs into round holes. Most genomic scientists want you to believe that diseases occur as a result of mutations in the genes that make proteins. Nature is telling you that many of the major diseases are not in the protein coding genes but in what are misleadingly referred to as the "junk" DNA. A quarter-century ago, I began my doctoral research in a lab that studied how to create poliomyelitis in mice without any poliovirus: by manipulating the junk DNA with toxic chemicals or radiation. GWS has convinced me that these same interactions of toxic exposures and chronic diseases occur in humans as well. So, the clues are now telling us that the cause of chronic diseases is the JUNK genome, not the germs.

Who is listening to me?

I predicted in my last testimony to this Subcommittee that GWS research would lead to medical breakthroughs in all areas of chronic disease research. I subsequently chose to

study a disease that would have commercial implications so as to raise investment capital to prove my point. In less than 3 months' time and with only one other scientist, we are now validating a new test for Mad Cow Disease that does not require the cow to be killed before testing. Our test looks at the same genomic elements I found in GWS veterans. I am confident that the validation of this test will prove the positive predictive value of blood junk gene tests and have enormous value in protecting the food supply and human health.

It is unfortunate, due to the stalemate, that this genomics test probably will never be used in GWS research. The April 2001 GAO report on GWS has clearly outlined the obvious study that should be done: use a variation of the genomics test on the Persian Gulf War vets, deployed and non-deployed, from the US, UK and France. If the French soldiers truly have a lower incidence of GWS, the genomics test will confirm it. The follow-up studies can then refine the testing procedures so that treatment options can be judged against a soon to be validated laboratory marker.

How do we break out of this stalemate? Let me share some of my thoughts.

First, if science and government wish to continue any kind of responsible partnership, a new paradigm must be developed. It must allow scientific and public discourse on fresh research ideas, even if they contradict long-held doctrines. .

Second, the federal structure must end the *de facto* government sanctions that exist as a result of an inherent bias toward "maverick" research -- defined as any study that contradicts the conventional wisdom that germs cause all infectious diseases and ignores an avalanche of findings about the human genome. It's the genes, not the germs.

Third, we must leave behind a dim decade of "denying clues" that has not only deprived Gulf War veterans a possible pathway out of illness, but even worse has established a template of refusal to consider almost any new ideas on any medical subject. We must not continue to allow stale dogma to trash true science.

I am certain we will overcome this stalemate. Scientific discovery and new treatment modalities will prevail. Results-minded researchers will go to the private sector, as the global marketplace is proving.

The role of Congress should be to do what it does best -- keep the pressure on. As you are all-too-aware, we are engaged in a long-term war that involves hideous brands of terrorism, invasions of our homeland for the first time in 187 years, and a life-and-death necessity to realize: We don't have years to change the way we protect our troops and our people against chemical and biological warfare -- at best, we have months. You will never be able to protect the citizens of this country if HHS is not held accountable for its actions that continue to discourage scientific discovery in the ways I have described.

In conclusion, I want to thank this Subcommittee for its leadership in trying to understand the complexities surrounding the treatment of GWS. I also want to thank the staff of the

GAO for its first class reports on GWS related issues as well as calling them as they see them.

I again thank the Subcommittee for recognizing the contributions I have made to the GWS medical literature and for my modest attempt at trying to keep the scientific debates open.

I ask that the full text of my statement be submitted for inclusion in the record of the hearing.

Mr. SHAYS. What excellent testimony we've received from all of you. I am going to call on my colleague Mr. George to ask the first round of questions, but I have a number of questions. I am going to inject myself, though, into a comment that you made in regards to, Mr. Urnovitz, Doctor, as it relates to what HHS is doing. They're doing this as the result of the war on terrorism. We are a committee that has in this full committee jurisdiction over the terrorist issue. As you know we spent—we've probably had close to 30 hearings on this issue. And we intend to look at just your concern because the implications are gigantic. They're gigantic. A number of you have raised other concerns as well that I'll share with you in the course of our questioning.

You're on.

Mr. GEORGE. Thank you.

What has emerged this morning and this afternoon is how the Americans beat the Brits in the American War of Independence. It was clearly the Brits have got more staying power than the Americans, but that is something that I won't push too far. I shan't make any party political speeches, but things are getting slightly better with the British Government. Maybe our British witnesses will object. The government seems to be more prepared to disseminate information, more money spent on research, although minuscule compared to the United States. They seem rather less dogmatic than their predecessors. Despite that, the problems remain.

And where I am truly perplexed is this: I have said for years and years there is a Gulf war syndrome. Not enough research has been done in the United Kingdom. And more research has been done, but when that research is published by very distinguished academics and very distinguished universities, are published in very distinguished journals, then I am less certain I even understand the problems.

And what I ask, and, please, I ask those who are responding and those in the audience not to shoot the messenger, but I would like your views on a number of reports published in the U.K. and say whether this is bad research, whether it is part of a conspiracy by the government, which I doubt, to undermine the whole case of the concept of the Gulf war syndrome that I believe exists. So I don't ask any individual specifically, but perhaps you would comment.

There was some research done by a team from Guys, Kings and St. Thomas' School of Medicine entitled, "Ten Years On: What Do We Know About the Gulf War Syndrome?" And this was published in the Royal Journal, the Journal of the Royal College of Physicians. And it coincided with the 10th anniversary of the ending of the Gulf conflict. It said this, The paper noted that a syndrome implies a unique constellation or sign or symptoms, and that, this is the contentious part, "the balance of evidence is against there being a distinct Gulf war syndrome." It said in its report that, "no evidence has emerged to date of either distinct biomedical abnormalities nor premature mortality." But it goes on to say that it noted, "Gulf service has affected the symptomatic health of large numbers of those who took part in the campaign."

The team speculated, says our Ministry of Defence, that the most plausible causes were exposures that affected the majority of those

in theater such as medical countermeasures or psycho or social factors.

The question I wish to ask is is it that there's a dispute over the definition of what a syndrome is, or is this research an aberration? Is there such a thing as the Gulf war syndrome? It's an elementary question that I as a politician have been asking, simply have no idea from scientific evidence if there is an answer.

Mr. SHAYS. Why don't we go right down. That's a wonderful way to start the panel. So thank you for asking.

Dr. HALEY. This was one of the major conclusions of what I said a moment ago is that a syndrome is defined, as you said, a group of symptoms that hang together. Many people have the same symptoms. Well, the people coming back from the Gulf war, large numbers complain of the same constellation of symptoms. And factor analysis, which is just a mathematical way of showing that, demonstrates that. It's been seen in almost every study that's been done. The unpublished, the withheld study from Dr. Kang and his work shows that the Syndrome II, which is the most severe, is found only in Gulf war veterans. At the end of that abstract that he previewed at the meeting 3 years ago, he said this could be seen as a unique Gulf war syndrome. And now the VA people continue to say, well, there is no unique Gulf war syndrome, when, in fact, their very study says that there is. There is a Gulf war syndrome. You're right. It's been shown, it just hasn't been published, and they won't talk about it.

Mr. SHAYS. Anyone else?

Dr. JAMAL. If I may comment. I think the point I would make is that in any epidemiological cross-sectional study that you do, the first and the most important step you have to do is to define what you are looking for. If you can't define the end target, then you may actually miss it. The epidemiological cross-sectional study may confuse the picture. And that is what we've done in the case of the long-term low-level exposure to organophosphate.

I think that is one of the problems. And the U.K. authorities, up until even now, they're not interested in funding mechanismal causative research. I give you a small example. The autonomic study that we did, we found that there are—this is very elusive to clinical examination. Even the best neurologists will not detect abnormalities. It's just what the patient tells you. Until you go and do very detailed high-cost studies, you will not detect what is wrong with the patient.

Now, if you do cross-sectional question survey study, and you're unaware about that, you do not look for that, you will not find the answer.

Dr. CHERRY. I am probably going to fall out with the rest of the panel for what I say now. We did try very hard to find a unique syndrome. We didn't find one. What we did find was that the clusters of symptoms that the people from the Gulf war had were not different or unique, but there were just a great deal many more of them who fell into the clusters that were sick.

So though we tried and spent a lot of ingenuity in trying to get the right methodology to find a unique syndrome, we didn't. I don't think that means that people who went to the Gulf war aren't sick. I'm sure that from our findings and from everybody else's findings

on this panel that there are neurological problems much more frequently in people who went to the Gulf war than people who didn't. But statistically we were unable to find that there was a unique syndrome that wasn't found in the rest of the population.

Mr. SHAYS. Dr. Steele, Mr. Tuite.

Ms. STEELE. I think when you ask if there's a unique Gulf war syndrome, you're actually asking two questions. One, is there a single unique syndrome. I think just from the data that we've heard today it sounds like no, there are several things going on, different things in different people. So if some official person says there is no single unique Gulf war syndrome, are they saying there's nothing wrong or are they just saying there's not a unique new syndrome.

So when you make conclusions you have to distinguish if you're really saying is there really anything wrong with Gulf war veterans or are you just saying no, there's no single unique syndrome.

The second point is that when you look at the symptoms that Gulf war veterans have, these are symptoms that you would find in the general population. If you ask anyone, any group of people, what symptoms you're experiencing, some people in those groups will have symptoms. So similarly, when you ask people who are veterans who didn't go to the Gulf war if they have symptoms, some of them will have symptoms. Then if you compare their symptoms to people who did go to the Gulf war, you'll see there are some similarities in the symptoms.

Many of the studies that are cited for that report that you're describing have emphasized the similarities in the symptoms without really trying to see if there are differences in the patterns in which the symptoms occur. And I think Dr. Cherry and Dr. Haley both have pointed out you really need to look at the quantity of symptoms that these folks are experiencing. They're experiencing lots of symptoms at the same time, and the symptoms persist. It's really quite different than the kinds of symptoms we see in the nondeployed population.

So my conclusion would be that there are Gulf war-related illnesses, perhaps not a single syndrome.

Mr. TUITE. Again, you know, I think a lot of this has to do with what Dr. Urnovitz talked about earlier. We're mixing two different issues. We've got the environment, and we've got the host. The hosts will respond differently to the environment. As Dr. Haley found, certain patients who responded in a certain way to certain exposure events had more serious manifestations and represented one cluster of symptoms.

So we may see multiple symptoms, some of which may be dominant and others may be lesser, and you are going to see some of those in the general populations because you have people that may have more severe susceptibilities and maybe less severe exposures so that it's not going to be unique to the Gulf war. But the fact remains that we have a cluster of people from the Gulf war who should not be experiencing these illnesses or this collection of syndromes, if you will, to the extent that they are. They're far in excess of what you should see in the general population.

Mr. SHAYS. Dr. Urnovitz.

Mr. URNOVITZ. You know, the absolute beauty in history, years from now when they look back, they're going to say the Gulf war syndrome took us to the 21st century for one reason, they couldn't find a germ that caused this disease. They had to look closer. So, you know, I don't normally wear ties, so since I got one on, I'm going to give you my philosophy of life in less than 30 seconds. You know what we're looking at here? I believe Gulf war syndrome, we learned that the body can repair itself and heal fantastically. It's a really amazing mechanism. You know how it does it? It does it in order of billions and billions of instructions that have to be followed. One gene gives one protein, goes to cells, this and that; it's a fantastic system, truly something worth studying. You throw a monkey wrench at any one of those billion pathways, and you can get any kind of syndrome you want.

Gulf war syndrome is an example of mean age young people 28-ish years old being exposed to one of the filthiest wars we've ever been, and then you throw in some things to throw off these mechanisms, whether they're vaccines, which are genes, or squalene, or anything of those other things. You've got now a double hit. What I just outlined in my testimony is—and the Brits are not free of guilt here because they also signed this petition.

Mr. SHAYS. Go for it.

Dr. URNOVITZ. And not only did Columbus not discover America, you taxed us without representation. I want to point that out, too.

Mr. SHAYS. Don't get carried away.

Dr. URNOVITZ. We're doing a very good job of taxing ourselves.

Mr. GEORGE. We didn't do very well, I might say.

Dr. URNOVITZ. What I'm showing you here is we have never had a better opportunity to nail cancer, nail AIDS and everything else, because throw the germ theory out. It's the genome. And now we got to get complicated, which means we can do it. We have the tools to do it. Where in the pathway did it get thrown out and how do you get the people back on track again. That's the deal.

Mr. SHAYS. I've got to ask this question, if I could. Dr. Haley, you were nodding your head when Dr. Jamal spoke, when Dr. Cherry spoke, Dr. Steele. When Mr. Tuite spoke, you started to squint, and you had no reaction with the good doctor here. So I'm curious.

Dr. HALEY. I simply ran out of nods.

Mr. SHAYS. Fair enough. Will the record please show that Dr. Haley nodded after all witnesses followed, and when he didn't nod, he meant to, but didn't have the energy.

Do you have a followup question?

Mr. GEORGE. Yes. Thank you. Perhaps you can see why politicians are a little bit confused; how politicians actually are generally people of goodwill, but the signals we're getting are very varied. And it's very difficult to make policy when the advice that is being proffered lacks consistency. It's not to attribute any blame to those who are proffering it, but it's an indication of the immense complexities that none of us can truly understand.

And I've seen so many of these people coming before the Defence Committee in their wheelchairs looking appallingly sick, and some have died. And it's very emotional seeing people who have suffered, people who have gone off to fight on your behalf. We're desperate to find the answers, and so far we have failed miserably. But we

have these misconceptions in the early days—Mr. Chairman, oh, please don't go. We'll be inquorate. No, I was told it was two for a quorum. It's three in the U.K.

I anticipated in the very early days that these men and women would be dying like flies. They looked seriously ill when they came to see us, but, again, another study, a British study, pointed out that amongst the Brits the mortality levels were statistically almost identical between a group selected that didn't go and the group that did go. Now, is it because our people are pretty hearty and resilient eating their different fatty foods? Is there any difference between the statistics in the United States? So does the Gulf war syndrome merely debilitate but not kill people off? Or is the research being done, in fact, done by another very, very distinguished university, and the Medical Research Council appears to endorse it—yes, Manchester University.

Dr. CHERRY. We did it.

Mr. GEORGE. I'm sorry to keep pointing the finger at you. The statistics presented to us by our Ministry of Defence were as of the 31st of December 2000, 477 military personnel died as opposed to 466 of a similar sample group of veterans who did not attend. How do we answer those questions? Perhaps Dr. Cherry, as you were involved in that research.

Dr. CHERRY. It is the case that up 'til now neither in the United States or the U.K. has there been an excess in the overall mortality.

Mr. GEORGE. But I think you said earlier it may happen in due course. It means that over a 10-year period there hasn't been——

Dr. CHERRY. If you looked how long it took for people to be exposed to asbestos. I'm taking a wider point here. Asbestos, it takes people 40 years to die after they have been exposed to asbestos. I'm not suggesting there is asbestos in the Gulf. But with chronic disease you may have a latency of up to 40 years before you see a very serious epidemic. I'm not saying we're going to see it, but the fact that you haven't seen it at 8 years, 9 years doesn't mean there's not something later on.

Mr. GEORGE. Right.

May I ask one final question again directed at Dr. Cherry—I'm sorry, but perhaps any others who would wish to join in, with your approval, chairman—the findings that you led at Manchester University that Gulf veterans suffer more ill health than service personnel who do not go to the Gulf, and your accumulated findings and research have been published.

Now, the question to you and others—our distinguished, our very eloquent witness is here with his checkbook at the ready—what kinds of research should now focus on what subjects? Given we've had 10 years' experience of research, much of which had use, much of which was of no consequence whatsoever, what now should the British Government, the DOD, the Veterans' Administration, private benefactors, in the light of what we have learned so far, where should now the focus be?

And second, and it is a difficult question, is it better—and I hope you will say no—is it better to say should the energies be put on if not researching the causes, at least delivering better services to those who have survived, or should there be the same balance as

there has been between research into causes, symptoms and indeed services provided to our military personnel?

Thank you, Mr. Chairman.

Mr. SHAYS. Let me say that I'm intending to have this panel end by about 7 of or basically about 10 of. I invite Mr. Perot and any other panelists to spend about 4 minutes with any comments they want. Then I intend to close this by 3. So just so we know—yes. So if we could have the question answered. Is there a response? I haven't given you a lot of time.

Dr. CHERRY. There are three or four reasons for doing research at this point. The most pressing is if you can find causes that would help us treat the people who are sick at the moment, if we can understand why they're sick, we're much closer to being able to treat it. So that's one good reason.

The second is a very obvious one. We don't want to expose people in the future to things that have made people sick now. And that really, again, is causal research.

The third—and again, we're looking for causal research—is where the Gulf war may help us understand basic disease mechanisms. For example, in ALS, if we can understand why people who went to the Gulf get ALS, we may, in fact, be able to prevent ALS in the much larger population.

And the fourth area of research is even if we don't know the cause, can we actually make people function less badly? And you may need research for that, too. That's not simply sitting down and making recommendations. You may need to do clinical trials and so on to see what works and what doesn't. But the first three are all causal research.

Mr. SHAYS. I'm going to go to you, Mr. George—I mean, excuse me, Mr. Lord Morris. Then I will ask a few questions. Then we will try to finish up here.

Mr. MORRIS. Congressman Shays, we meet under your chairmanship in a subcommittee of the House Government Reform Committee, and we heard this morning Ross Perot's refreshingly forthright views on government institutions and personnel. What changes in those institutions did Dr. Haley or perhaps Dr. Steele, Mr. Tuite or Dr. Urnovitz think would or might have made life better for veterans with Gulf war-related incidents? If the interactive effects of NAPS tablets and up to 14 inoculations could have had adverse effects on Gulf war veterans with undiagnosed illnesses, what about interactive effects of having so many government departments involved in addressing their problems?

In other words, do we have here not only medical issues to consider, but crucially also that of defects in government machinery?

Mr. TUITE. Can I address that early on? Because I was really—in the early days when we were actually trying to get something done about this issue, I was pretty heavily involved. And I can say that initially we didn't know what happened, and we spent a lot of time trying to find out what had happened. And the agencies that are now doing the research were the keepers of that information.

And so as we went forward and the layers of the onion started to peel away, we found out that they were exposed to this and they were exposed to that, and I think that the number of different ex-

posures now is up to more than 30 that we're looking at, including the time-compressed administration of multiple vaccines. Those agencies had become entrenched in the process, both in the process of Congress going to those agencies to try and get information, in the—I guess in the battle over what was right and what was wrong so that as we went forward, I think that we were maybe wrong in using those agencies to lead us out of the problem as well.

And perhaps we should have taken a more open-minded approach to how you solve a problem, because it was very clear at that point that we had agencies that had a vested interest in outcomes leading a process that was supposedly open and peer-reviewed. That was just not happening. That's one of the reasons why here we are 10 years later, and we're still asking what is wrong with these soldiers.

Ms. STEELE. I concur with Mr. Tuite. That's really the core issue. It's manifested itself in different ways to make problems and the research not turning out, but the core thing is what he said.

Dr. HALEY. Can I make a parallel?

Dr. URNOVITZ. Seniority, please.

Mr. SHAYS. No, I'm going to let you go first. You always get the last word. I'm curious what he'll say if he gets the last word.

Dr. URNOVITZ. Someday you're going to learn how to pronounce my name right.

Listen, it's really quite straightforward. I wrote this is a complete heresy. I'm telling you there was no polio virus epidemic. None of you guys flinched. Well, you know, nobody nodded either. I wrote this in Santa Maria Sopra Minerva in Rome in the room that Galileo was excommunicated in. The reason being is that's where we are today is many of our government doctors say that the Earth is in the middle and the sun goes around it, and we're not funding anything else, and we're not going to communicate, and that's the end of it.

If I could ask one thing from this committee, we have laws in place that you can't lie to Congress, but now we find out you can't fire them either. So we're in a really interesting position of some interesting jobs program here, and I might apply.

Back to Mr. George's question. You know, we've got it right now, and we can do it right now is the GAO came up with a report that tells you where to look. And I wouldn't do just a British study and I wouldn't do just an American study or French. I would do a French-British-American study. I would also do the Czechs and everybody else that was involved, and I would also do the Balkan War syndrome that went on, and I would also do the current guys so we can look at a current war right now.

Where's their blood? You've got the markers. Do I need to point them out to you? You've got brain scans, you've got OP tests, you've got antisqualene antibodies, you've got genetics tests. We've given you the markers to go out and do something with it. GAO told you what study needs to be done. This is not difficult. It would take about a year. I'm sorry Mr. Sanders left, but this is my comment to him is he is right. We gave you guys $300 million. Give us 30-, we'll blow the world away and cure diseases in the meantime. By the way, I said it under oath.

Mr. SHAYS. You know what's crazy? I believe you.

Dr. HALEY. I think it would be very instructive to answer this question to look at the parallel in the research programs that have virtually solved the AIDS problem, HIV/AIDS versus the Gulf war syndrome. 15 years ago the AIDS problem was in the same type of mess that we have been in for 10 years in the Gulf war issue. There was back-biting, there was denial, there was conflict of interest in the research. And then through the activism of the AIDS victims to the point of almost violence, the Congress gave NIH a very strong mandate: Solve this problem. So they started a classic NIH research program with peer review done by study sections where the names of the peer reviewers are published so it's fair and above board, and you get thorough scientific peer review.

The word went out—with hundreds of millions of dollars available, the word went out to every university all over the world there's money, it's a fair process. If you make discoveries, you're going to be celebrated, and you'll get more grant money.

What we have here is 10 years, we have the word is out, it has been out for many years, that if you apply for a grant in the DOD through our peer review process in Gulf war syndrome, and if you don't find the findings that the policy wants, then you are going to be crucified. You will never get more money. You will be berated. You will be maligned. You will be lied about.

And so, I mean, when I—I was meeting with some Harvard doctors the other night. Just before I came they were giving a course down at our university. We are having dinner, and they said, what do you do? I said, well, I research the Gulf war syndrome. They said, are you kidding? What are you doing? You're going to ruin your career. This is dangerous. We would never do that.

And that's the word all over the major universities. The good researchers would never get into this. That's one of the problems our Veterans Research Advisory Committee that we're going to be on—that's one of the major things we're going to face, that no reputable researcher who doesn't already believe in the stress theory is going to get involved in this.

Mr. SHAYS. Let me tell you the other thing that concerns me. When I was at the press conference, those of you who are on the advisory panel are being now told you won't get the money because you are on the advisory panel, it's a conflict of interest, which could really make me suspect.

You all have been an extraordinary panel. The two bookends, though, are basically going more than just saying misinformed, but you're saying lying. And, you know, I've always viewed it this way: That when we look at the thousands of doctors who work for the Department of Veterans Affairs, they don't have any of the expertise you have. Their whole line of work is different. They didn't notice it. They didn't think about it. It didn't fit into any of their studies.

When we questioned them, how many people had any ability and background in, say, chemical exposure, in the course of thousands and thousands of thousands they could think of two doctors, and so then we thought it was unfair. We said, get back to us. They still came back two doctors. So I basically began to view it as kind of like at the universities, the scholars teach what they taught, not what the students need to learn. And I thought it was more like

that, that was more the problem. Now I get the sense if that was the problem, there's been more a defensive mechanism that now gets into discrediting everyone, which is a really deadly way for them to head.

So, in one sense I feel a little depressed because the opposition seems to have gotten hardened in some ways, but in another sense I feel that you all have not been intimidated. You all are out there. Your work is becoming known. It is becoming respected. And you know what? Galileo went through the same thing, didn't he? So I don't feel sorry for any of you. I am just grateful as hell that you're doing your work. The one thing I note was Copernicus the one who was threatened to be beheaded—or Galileo. But none of you have had those kind of threats. And anyway, you have Ross Perot to protect you.

I will allow our previous panel to use 2 or 3 minutes if they want any closing comments. Anybody in any of the previous panels who want to make a comment? Do you have any comments from the GAO?

Ross, if you have comments, I would like you to move yourself up while she's speaking.

Ms. KINGSBURY. I want to say I am thrilled with the outcome of this panel. We haven't solved the problems here yet, guys, but we've at least opened the door. I'm very proud we were able to be a part of it. I appreciate your support of us in that respect. I hope we can continue to help you in going forward.

Mr. SHAYS. It has to be fairly brief, Ross.

Mr. PEROT. Yes, sir. I just want to commend all of you on this last panel. I think you've done an outstanding job. Several things I intended to bring up they've explained. The one thing that's still on my mind is the gas mask and the chemical suits that our troops are using now. I think we should have somebody make sure they're the best of the best, because there's a whole range of gas masks. Some are pretty good, some are bad. Up at the upper end there are some that really give great protection. Our troops deserve the finest protection.

So someone should look into that quickly and make sure that because of procurement policy or what have you the quality of the equipment they have to wear when they're exposed to these things is the best that money can buy. It would be an easy thing to check. Thank you.

Mr. SHAYS. I thank you very much. I thank the panel. And I will draw this hearing to a conclusion. Thank you all so much. And I have a feeling, and certainly if I have anything to do with it, we will all be back.

[Whereupon, at 2:56 p.m., the subcommittee was adjourned.]

[Additional information submitted for the hearing record follows:]

Statement for the Record of

VIETNAM VETERANS OF AMERICA

presented by

Patrick G. Eddington
Associate Director of Government Relations

Before the

Subcommittee on National Security, Veterans Affairs, and International Relations

House Committee on Government Reform

Regarding

Lessons Learned from the Gulf War

January 24, 2002

Chairman Shays, Ranking Member Kucinich, and other distinguished members of the subcommittee, Vietnam Veterans of America (VVA) is pleased to have this opportunity to provide testimony on "lessons learned" from the Gulf War and their impact on our current force health protection policy. I wish I could report to you that we believe the Departments of Defense and Veterans Affairs have actually learned the key lessons from the Gulf War. In fact, they have not. Our testimony today will catalogue a lengthy list of continuing problem areas. I'll start with the issue of basic force protection.

Environmental Threat Detection and Defense

Prior to the Gulf War, administration officials assured the public and the troops that American forces would employ the best nuclear, biological, and chemical (NBC) defense technology in the world. Only years after the war did the public learn that the standard American gas mask in use at the time—the M17A1/A2-series mask—had failure rates of 26-44%.[1] Moreover, the Marine Corps logistics system actually ***ran out*** of replacement gas mask filters only ***three days*** into Desert Storm.[2] The harsh desert environment wreaked havoc on the masks, suits, and gloves used by the troops. Had Iraqi forces used large quantities of chemical or biological agents on the battlefield, American and Coalition forces would not have been able to handle the resulting casualties, and the war's outcome could have been far different. Even without massive NBC agent use by Iraq, questions about the health implications of those sub-lethal exposures linger today.

In the years immediately after the war, when reports of Gulf War-related illnesses began to mount, veterans and members of Congress began to question DoD's assertions that no chemical agents had been detected during the war. As documentary evidence grew that multiple chemical agent detections had indeed occurred, Pentagon officials shifted their stance: ***all*** NBC alarms had been false, we were told. That canard was refuted by the Pentagon's *own* internal assessment (classified for years) that the Czechoslovak chemical units' agent detection claims were valid, though Defense Department officials continued to maintain that all of the ***American*** alarms had been false. All of this raises an obvious question: if the NBC detection equipment used by American forces during the war was so unreliable, why did the Pentagon continue to buy ***exactly*** the same kinds of equipment for years after the Gulf War?

To VVA's knowledge, neither Armed Services committee has addressed this issue in detail, which has direct relevance for this subcommittee as well. For if we are continuing to buy defective or inadequate NBC detection equipment for our forces, how can we be sure our troops are properly protected from the full-range of NBC threats? Conversely, if the equipment ***has*** worked as advertised, then DoD's claims of "all alarms false" is itself untrue. Pentagon officials cannot have it both ways. And if DoD has lied about the capabilities of the NBC defense equipment it has purchased, how can we believe DoD's claims that low-level chemical exposures will not have long-term adverse health effects?

The General Accounting Office (GAO) addressed the issue of low-level chemical exposures in a September 1998 report, in which DoD officials admitted that their NBC detection doctrine

> does not address low-level exposures on the battlefield because there is no (1) validated threat, (2) definition of low-level exposures, (3) or consensus on the effects of such exposures. Moreover, if low-level exposures were to be addressed, DoD officials said that the cost implications could be significant.[3]

In other words, it would be ***too expensive*** to protect American troops from such exposures, even though, as GAO pointed out,

> Past research by DoD and others indicates that single and repeated low-level exposures to some chemical warfare agents can result in adverse psychological, physiological, behaviorial, and performance effects that may have military implications.[4]

During the 1990's, GAO repeatedly questioned the Pentagon's progress in addressing these and other major NBC equipment and training problems. While a November 2000 GAO report on individual unit NBC readiness found considerable improvement in the services' ability to properly equip forces for operating in an NBC environment[5], training and readiness reporting deficiencies remain. A more recent GAO report found that "In general, DoD has not successfully adapted its conventional medical planning to chemical/biological warfare."[6]

VVA has seen no evidence that the Pentagon is taking the potential health risks of low-level NBC exposures seriously, despite mounting scientific evidence that such exposures do indeed pose risks, as the 2000 Institute of Medicine (IOM) report *Gulf War and Health, Volume One* has suggested. Congress should carefully evaluate DoD's current NBC detection technology to determine if previous equipment acquisitions were made under false pretenses or whether DoD officials have engaged in a public relations disinformation campaign to discredit valid wartime chemical detections as a means of deligitimizing Gulf War illnesses. We believe any serious investigation will quite likely find the latter explanation to be the true one.

If the Defense Department's approach to NBC threat detection has been negligent, its approach to biomedical defense has been equally troubling.

Seeking a preemptive medical response to the Iraqi chemical warfare threat, in the fall of 1990 the Defense Department obtained an investigational new drug (IND) exemption from the Food and Drug Administration to use a drug, pyrodostigmine bromide (PB), as a chemical warfare prophylactic. Ostensibly, PB was intended to protect the troops from the effects of nerve gas exposure. During Desert Storm, at least 250,000 Army troops swallowed one or more of the little white pills. Taking PB was not optional; troops who refused faced punishment under the Uniform Code of Military Justice.

After years of denying there was a problem with PB, Bernard Rostker (the Pentagon's point man on Gulf War illnesses) told the Senate Veterans Affairs committee in 1998 that PB should never have been given to U.S. soldiers. Rostker admitted that DoD's "threat assessment" had been wrong, that Iraq had probably not in fact weaponzied the nerve agent soman, the effects of which PB was thought to be capable of countering. Given its potential effects on the brain's neurotransmission process, PB has long been suspected as a cause of the neurological problems reported by so many Gulf War veterans. Amazingly, PB is still in the Pentagon's NBC medical formulary, and Department officials have said they may still use PB in future conflicts, if the "threat assessment" so warrants.

In a similar vein, the Pentagon's infatuation with vaccine-based biological defense has already proved to be a costly military and public health failure.

Prior to Desert Storm the Pentagon sought to employ a 20-year old anthrax vaccine as a biological warfare prophylactic. Even though this vaccine had never been approved by the FDA for such a use, the Pentagon managed to secure FDA acquiescence and proceeded to inoculate an estimated 150,000 troops with one or more doses of the vaccine. Because use of the vaccine was classified at the time, medical record keeping in this area was compromised, and the true effects of the vaccine on the wartime recipients remains unknown.

Seven years after the end of the war, the Pentagon resumed the inoculations under the rubric of the force-wide Anthrax Vaccine Inoculation Program (AVIP). Shortly after the AVIP began, reports of severe system adverse reactions to the vaccine began to emerge in the press. Over the next three years, a number of key facts about the vaccine would emerge, data that would once again highlight the Pentagon's wanton disregard for both the truth and the health of servicemembers. Consider these facts:

- At the beginning of the AVIP, DoD officials claimed the systemic adverse reaction rate for the vaccine was a mere .2%. During its investigation of the AVIP, GAO found data suggesting systemic adverse reaction rates in the range of 5-14%, dozens of times higher than Pentagon had claimed.[7]

- A calendar year 2000 GAO survey of National Guard and Reserve forces found systemic adverse reaction rates being reported by almost *one quarter* of respondents.[8]

- Only last week, the *Army Times* reported on the preliminary results of a Navy study that showed evidence of an increased incidence of birth defects in children born to mothers who had received the anthrax vaccine, compared to a control group of mothers who had not.[9]

- The FDA has yet to certify that Bioport Corporation, the vaccine's manufacturer, has successfully corrected major problems discovered at the production plant three years ago.

Given the AVIP's abysmal track record, all of us should be deeply concerned about the Joint Vaccine Acquisition Program (JVAP), the $322 million cost-plus biowarfare vaccine program initiated in 1998 by the Pentagon's Joint Program Office for Biological Defense.

The JVAP calls for the Dynport Corporation to develop at least three, and possibly as many 12, additional biological warfare vaccines over the next decade. What happens when you give a human being a dozen or more BW vaccines? Nobody knows. Not DoD, NIH, CDC, the World Health Organization or any other medical or scientific body.

Will these vaccines actually work against a real threat? Again, nobody knows; no challenge or efficacy studies have been conducted in animals, so far as VVA is aware. This means that the JVAP is a giant biowarfare defense gamble; it assumes that our enemies will field weapons that our vaccines will defeat. As with so many other things, the Gulf War experience is instructive here.

Prior to the Gulf War, American intelligence agencies believed that Iraq had weaponized both anthrax and botulinum toxoid. Post-war United Nations inspections verified the estimate. Only in 1995 did the world learn that Iraq also had weaponized aflatoxin, an obscure but potentially deadly plant fungus. Had Saddam's late son-in-law Hussein Kamal not defected to Jordan and revealed it, Iraq's aflatoxin program would have remained hidden from the international community…despite the most intrusive arms control inspection effort in history.

Contrary to Pentagon claims that the AVIP and JVAP are based on "threat assessments," the reality is that American intelligence agencies will almost never be able to provide a truly accurate picture of a potential opponent's BW capabilities. Thus, our NBC biomedical force protection approach should be based on an honest approach to the uncertainties in this arena. We would offer the following prescriptions for change.

First, the Defense Department must field chemical-biological detection systems and protective masks that work. The Pentagon has for years failed to procure workable, reliable, real-time BW detection equipment, functional protective masks, and reliable chemical-biological protective suits. Had Saddam's forces used aflatoxin during the Gulf War, the attack would have gone undetected until the onset of symptoms months, or perhaps years, later. Providing proper protection up front is key to helping preclude death or debilitating injury, both at the time and for the life of the veteran.

Second, the Pentagon should abandon its self-defeating reliance on vaccine-based defense. Given the dozens of microorganisms and toxins available to rogue states, it is scientifically and fiscally impossible for the United States government to engineer vaccines against all such threats. Even if money were no impediment, there is no evidence the human body could successfully absorb the number of biowarfare vaccines Pentagon bureaucrats plan on foisting on the troops. Military planners should emphasize rapid detection, decontamination, and post-exposure medical evaluation and treatment in the event of a confirmed attack.

Finally, the Congress must end the FDA's double standard approach to civilian and military medicine, which at present represents a violation of basic scientific standards. Lawmakers must ensure that the FDA applies the same testing, monitoring, and enforcement standards for drugs and biologics used by the military that it applies to the civilian market. Anything less reduces America's military volunteers to the status of involuntary guinea pigs.

Force Health Protection

One of the principal impediments to determining the roots of Gulf War illnesses has been the lack of reliable data from the wartime period: data on the precise numbers and types of vaccines and drugs given to the troops; data on the number, duration, and concentration of various chemical exposures; data on the kinds of medical tests and examinations performed on troops before, during, and after the conflict. For VVA, this is a core issue and a long-time complaint about the DoD-VA approach to veteran health care. Neither agency is truly committed to creating what we call a "cradle-to-grave" military medical history. Without such an instrument, determining how a veteran became ill becomes next to impossible, as does filing a claim for service-connected disability compensation.

The IOM stated so explicitly in its 2000 report *Protecting Those Who Serve: Strategies to Protect the Health of Deployed U.S. Forces*. In reviewing the recommendations of the multitude of commissions and panels that had previously assessed DoD force health protection efforts during the 1990's, the IOM noted that

> Many of the recommendations are restatements of recommendations that have been made before, recommendations that have not been implemented. Further delay could jeopardize the accomplishment of future missions. The committee recognizes the critical importance of integrated health risk assessment, improved medical surveillance, accurate troop location information, and exposure monitoring to force health protection. Failure to move briskly on these fronts will further erode the traditional trust between the service member and the leadership.[10]

In VVA's view, absolutely nothing has changed since the IOM issued this report more than a year ago. Perhaps the best way to illustrate this point is to peruse the medical examination forms currently in use by the Pentagon.

The pre- and post-deployment health assessment forms used by the Pentagon's Deployment Health Center at Walter Reed Army Medical Center contain no questions about the specific environmental hazards the servicemember may have encountered in theater. Moreover, even though the AVIP has been the most highly publicized DoD vaccination program in recent history, ***there is no space on this form specific to the anthrax vaccine***, despite the fact that the anthrax vaccine is considered a ***mandatory*** inoculation for those heading to designated "high threat" areas such as the Persian Gulf and Korea.

Neither the pre- or post-deployment health assessment forms contain detailed questions about other shots received or pills taken by the service member while in theater. No space on either form is dedicated to mandatory lab tests to detect evidence of infection from diseases endemic to the theater(s) where the service member was deployed. ***Indeed, the DoD medical form used during examinations of service dogs is more comprehensive in tracking vaccinations than the one used to track shots given to the troops.***

Section 765 of the 1998 National Defense Authorization Act (PL 105-85) requires the Defense Department to conduct both pre-and post-deployment health examinations (to include mental health screenings and the drawing of blood samples) to accurately record the medical condition of members before their deployment and any changes in their medical condition during the course of their deployment. VVA has seen no evidence whatsoever that any of these conditions are being met. On the basis of the IOM's report and DoD's failure to automatically collect and record environmental exposure and other data and record it in the service member's medical record, VVA would argue that DoD is in material breach of the law. As several member of the full House Veterans Affairs committee are also members of the Armed Services committee, VVA would respectfully suggest that those members call for immediate hearings to investigate DoD's failure to comply with the law and its potential long-term implications for American veterans.

In addition, any such investigation should examine why it is that we still do not have a single, easily transferable military medical record for servicemembers that moves seamlessly from the DoD health system to the VA once the servicemember leaves the force. Our understanding is that the DoD-VA interagency group responsible for managing this effort has yet to produce a working system, despite millions of dollars and years of development effort. Our view is that without stringent accountability mechanisms—in the form of fixed project milestones and severe financial penalties for failure to deliver a working product—no progress will be possible in this area. Congress should set these milestones and accountability mechanisms in place, then follow up to ensure the program achieves its goal of a single, seamless military medical record for life.

Gulf War Medical Research and Treatment Initiatives

Central to the pursuit of scientific truth is the assumption that bureaucratic political influences will not be allowed to shape—or quash—scientific inquiry. For years, Gulf War veterans and their supporters have had ample reason to believe that in the quest for the truth about Gulf War illnesses, bureaucratic protectionism and careerism—not scientific objectivity—has been the driving force behind the Pentagon's Office of the Special Assistant for Gulf War Illnesses (OSAGWI), now known as the Directorate for Deployment Health Services.

On August 28, 2000, Dr. Michael Kilpatrick, OSAGWI's "Medical Outreach and Issues" coordinator, dispatched a blistering letter to Rear Admiral Frederic G. Sandford, USN (ret.), Executive Director of the Association of Military Surgeons of the United States. Kilpatrick expressed his "disappointment in the peer review process and editorial oversight of *Military*

Medicine," the armed forces premiere medical journal published by Sanford. An article written by Desert Storm veteran Dr. Andras Koréyni-Both had been published in the May 2000 edition of the magazine. Koréyni-Both's central thesis—that the fine-grained sand of Saudi Arabia, Iraq, and Kuwait might have precipitated the veteran's illnesses by compromising their immune systems—had sent Kilpatrick into orbit.

Kilpatrick alleged that Koréyni-Both's "Al Eskan Disease" was based on "the author's repeated presentation of this theory rather than on medical data gathered on Gulf War veterans." In reality, Koréyni-Both cited autopsy results from 86 Desert Storm veterans presented in a National Institutes of Health report in 1994. The autopsies—performed at the Pentagon's Armed Forces Institute of Pathology—showed considerable sand contamination in the lungs of the deceased veterans.

In his letter to Rear Admiral Sanford, Kilpatrick also accused Koréyni-Both of using material "written by individuals convinced there is an efficient, effective government cover-up about 'dirty tricks' played on military members by sinister leadership in the Pentagon or 'the government." Kilpatrick alleged that "The authors appear to believe 'If I say this often enough, it becomes truth." That statement far more accurately describes the Pentagon's "There is no Gulf War illness" mantra.

For more than five years after the Gulf War ceasefire, Pentagon officials vehemently denied that American troops were exposed to chemical agents during or after Desert Storm…only to reverse themselves after declassified intelligence reports revealed American troops had inadvertently destroyed Iraqi chemical weapons at Khamisiyah, Iraq in March 1991. I note for the record that many of these documents were made public only as a result of lengthy and expensive FOIA litigation by veteran's advocates or intense media scrutiny of the Pentagon's response to the needs of sick Desert Storm veterans.

During the war, then-Secretary of Defense Richard Cheney and then-Joint Chiefs Chairman Colin Powell repeatedly assured the Congress, the public, and the troops that specialized biowarfare medications given to protect American troops were "safe and effective." All of these claims were ultimately proven false. The Pentagon's credibility has been destroyed not by alleged conspiracy theorists, but by the Pentagon itself.

Indeed, in his screed to Rear Admiral Sanford, Kilpatrick continued to repeat the falsehood that with regards to the Khamisiyah incident, "no reports of symptoms" were noted among American troops. In reality, American combat engineers had no idea they were destroying chemical weapons at the time; medical personnel were not poised to monitor the troops for *any level* of chemical exposure. Moreover, as the 2000 Institute of Medicine *Gulf War and Health, Volume One* report makes clear, there is a paucity of animal or other research on the effects of sustained low-level nerve agent exposure…and what data does exist supports the idea that even ***small*** exposures to these substances can be harmful. For Kilpatrick, this alleged lack of data represents a lack of evidence of adverse health effects for veterans…a scientifically bankrupt position at best.

OSAGWI's chief medical officer ended his diatribe by claiming Koréyni-Both's work was "more appropriate for an *X-Files* script, not a medical journal." Kilpatrick's derisive, paranoid tone speaks volumes about the mindset of Pentagon policymakers. Kilpatrick's attack on Koréyni-Both's research was clearly calculated to silence dissent within the Pentagon's medical establishment.

American troops continue to serve in the Gulf on a daily basis. Any medical data suggesting that long-term exposure to the tiny Arabian sand particles may be damaging to the immune system has clear implications for the health of active duty, Guard, and Reserve personnel deployed to the region…as well as for the nearly 200,000 Gulf War veterans who have sought compensation for service-connected ailments. Dismissing peer reviewed research that suggests further investigation is needed invites the charge of dereliction of duty.

VVA takes no position—pro or con—regarding Dr. Koreyni-Both's hypothesis. I have spent considerable time discussing this episode to help illustrate a key fact: efforts by Pentagon or VA officials to deny non-federal researchers the opportunity to have their theories on Gulf War illnesses put to the test through an open, unbiased peer-review process are real, not imaginary.

Indeed, through the use of the Freedom of Information Act, we have developed evidence that presents the definite appearance that senior OSAGWI officials were actively blocking the provision of information to VA clinicians regarding Project Shipboard Hazard and Defense (SHAD), the 1960's era Pentagon chemical and biological warfare testing program that involved the use of live chemical and biological warfare agents on American military personnel. My colleague from the National Gulf War Resource Center, Steve Robinson, can provide this committee with numerous, eyewitness examples of the efforts of senior OSAGWI officials to delay, deflect, or otherwise discredit efforts to link environmental exposures to Gulf War illnesses. Sergeant First Class (SFC) Robinson worked in OSAGWI for three years, and VVA would strongly suggest that the full House Veterans Affairs committee avail itself of SFC Robinson's experience and insight into the problems surrounding OSAGWI's handling of the Pentagon's Gulf War illness "investigations."

Because DoD and VA bureaucrats have politicized the medical research arena and monopolized control over research funding decisions, it is completely impossible for most non-federal researchers with unconventional or controversial theories about the origins of Gulf War illnesses to receive federal funding. Moreover, both DoD and VA have an inherent conflict of interest when it comes to investigating these kinds of issues.

Consider the following. When the Bridgestone/Firestone "exploding tire" scandal erupted, the Congress did not tell the manufacturer, "We trust you: go investigate yourself, make recommendations for change, then implement those changes…you have our blessing!" Congress held hearings and monitored the National Highway Transportation Safety Administration's investigation of Bridgestone/Firestone. The same model applies to airline crashes. Congress does

not rely on the aircraft manufacturers crash report; it listens to the National Transportation Safety Board's investigators, who are independent of both the manufacturer and the aviation industry as a whole. Congress set up this system to ensure that no conflict of interest would compromise safety investigations, a wise and sensible approach to transportation safety policy.

Yet for the last decade, the Congress has allowed the agency that most likely created the Gulf War illness problem (DoD), and the agency charged with paying for the problem (i.e., the VA, through health care and disability payments to sick veterans), to both investigate Gulf War illnesses and their own role in responding to sick Desert Storm veterans. This is an obvious conflict of interest, one that has prolonged the suffering of the veterans, destroyed their trust in the federal government, and resulted in the waste of at least $150 million over the past five years through OSAGWI, as the Defense Department has "investigated" its own response to Gulf War illnesses. It is also how the Pentagon and the Air Force have managed to squander over $180 million on Agent Orange-related Ranch Hand research that has produced less than half-a-dozen peer-reviewed scientific papers over the last 15 years.

To end this conflict of interest and restore integrity to the process of investigating and treating veteran's medical conditions, last year VVA called for the creation of a National Institute of Veterans Health (NIVH) within NIH. This notional NIVH would not only eliminate the conflict of interest problem outlined above, it would provide a vehicle for establishing a medical research corporate culture focused on ***veteran health care***, in contrast to the current VA medical corporate culture of "health care that happens to be for veterans."

VVA recognizes that the VA has established a reputation for providing advanced care for blinded veterans or those with severe ambulatory impairments. ***However, the VA has never truly developed a corporate culture focused on the diagnosis and treatment of the full range of environmental and occupational hazards that are unique to military service.*** This is especially true of the VA's Research and Development Office, where the overwhelming majority of VA-funded research programs are geared towards medical problems found in the general population, not those specific to the veteran patient population or those with military service.

By establishing a new NIVH with veteran advocates serving on the peer-review panels that make research funding decisions, the Congress would be creating a research institute that would be truly focused on the unique medical needs of veterans. Locating the NIVH within NIH would ensure that the full medical resources of the federal government and private sector could be marshaled in a rational, veteran-friendly environment, free of the politicizing and conflict-ridden influences that have for more than 20 years precluded effective research into the unique environmental and occupational hazards that have impacted the health of American veterans.

Additionally, this proposed NIVH must be supplemented by the creation of a Congressionally directed mandatory declassification review panel, whose purpose would be to screen (on both a historical ***and*** an ongoing basis) and declassify any operational or intelligence records for evidence of data that would have an impact on the health and welfare of American

veterans. The need for such an entity—completely independent from the Pentagon and the U.S. intelligence community—is obvious.

Even today, thousands of pages of Gulf War-related records remain classified. In January 1998, the CIA admitted that its own internal review had identified over ***1 million*** classified documents with potential relevance to Gulf War illnesses. Virtually no documents associated with the 1960's era SHAD program have been declassified, and DoD has thus far rebuffed VVA's FOIA requests that the documents be made public. Through the experience of the Kennedy Assassination Review Commission and the Nazi War Crimes Declassification Review panel, we have learned that such specialized declassification panels work well. If we are to be certain that ***all*** data that may effect the health of American veterans is to be available for the veterans and their physicians, the Congress must create such a standing declassification review panel immediately. Such a move would also help to restore trust and confidence among veterans in the federal government and its response to veteran's health issues.

VVA believes that the VA should remain in the veteran health care business, but only if there is a dramatic change in the corporate culture of the Veterans Health Administration (VHA).

During his tenure as Undersecretary for Health, Dr. Thomas Garthwaite put forward a proposal known as the Veterans Health Initiative (VHI). The purpose of the VHI was to put veteran patient care at the core the VHA's corporate culture. As Dr. Garthwaite testified before the House Veterans Affairs Health subcommittee last April,

> The Veterans Health Initiative was established in September 1999 to recognize the connection between certain health effects and military service, prepare health care providers to better serve veteran patients, and to provide a data base for further study…
>
> The components of the initiative will be a provider education program leading to certification in veterans' health; a comprehensive military history that will be coded in a registry and be available for education, outcomes analysis, and research; a database for any veteran to register his military history and to automatically receive updated and relevant information on issues of concern to him/her (only as requested); and a Web site where any veteran or health care provider can access the latest scientific evidence on the health effects of military service.[11]

VVA's experience has been that there is considerable resistance to this idea within VHA, particularly within the Office of Public Health and Environmental Hazards.

We note that to date, comprehensive clinical practice guidelines and continuing medical education courses in dealing with Gulf War illnesses have yet to be distributed throughout the VA medical system. Moreover, as the attached September 2000 email shows, senior officials in Public Health and Environmental Hazards resisted creating a registry for Vietnam era SHAD veterans. As many members of this committee may recall, there was tremendous resistance by VHA to the idea of creating a Gulf War registry in the early 1990's; it took an act of Congress to get that effort off the ground. Given this institutional resistance to identifying environmental

hazards and their impact on the health of veterans from multiple eras, how can we trust these same individuals to implement Dr. Garthwaite's well-conceived vision for veterans' health care?

We have communicated these concerns to Secretary Principi, urging him to recognize that changing the existing VHA corporate culture immediately is imperative, and we look forward to working with him towards that end. VVA believes that this subcommittee, and the full committee as a whole, can play a key role in this process by concurrently encouraging Secretary Principi to take whatever measures are necessary to accomplish this objective.

Mr. Chairman, this concludes my written statement. On behalf of our national president, Tom Corey, please accept my thanks for allowing VVA the opportunity to share our views on this very important topic.

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[1] *Marine Corps NBC Defense in Southwest Asia,* Marine Corps Research Center, Research Paper # 92-0009, July 1991, p. 11. Obtained by the author via the Freedom of Information act in 1995.
[2] Message from the commanding general, First Fleet Services Support Group to CDRAMCCOM, Critical Deficiency, Gas Mask Components, 201458Z January 1991. Obtained by the author via the Freedom of Information act in 1995.
[3] *Chemical Weapons: DoD Does Not Have a Strategy to Address Low-Level Exposures*. GAO/NSIAD-98-228. September 1998, p. 5.
[4] Ibid., p. 4.
[5] *Chemical and Biological Defense: Units Better Equipped, But Training and Readiness Reporting Problems Remain*. GAO-01-27, October 2000.
[6] *Chemical and Biological Defense: DoD Needs to Clarify Expectations for Medical Readiness*. GAO-02-38, October 2001, p. 2.
[7] *Medical Readiness: Safety and Efficacy of the Anthrax Vaccine*. Testimony before the Subcommittee on National Security, Veterans Affairs, and International Relations, Committee on Government Reform, U.S. House of Representatives. GAO/T-NSIAD-99-148, April 29, 1999, p. 4.
[8] *Anthrax Vaccine: Changes to the Manufacturing Process*. Testimony before the Subcommittee on National Security, Veterans Affairs, and International Relations, Committee on Government Reform, U.S. House of Representatives. GAO-02-181T, October 23, 2001, p. 6.
[9] "CDC warns civilians anthrax vaccine may be linked to birth defects," *Army Times*, January 21, 2002, p. 22.
[10] *Protecting Those Who Serve: Strategies to Protect the Health of Deployed U.S. Forces*. National Academy Press (Washington: 2000), p. 2.
[11] Statement of Thomas L. Garthwaite, MD, Under Secretary for Health, Department of Veterans Affairs, Before the Subcommittee on Health, Committee on Veterans' Affairs, U. S. House of Representatives, April 3, 2001

WRITTEN TESTIMONY OF

Dr. Garth L. Nicolson

COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT
Subcommittee on Human Resource and Intergovernmental Relations
UNITED STATES HOUSE OF REPRESENTATIVES

January 29, 2002

Dr. Garth Nicolson is currently the President, Chief Scientific Officer and Research Professor at the Institute for Molecular Medicine in Huntington Beach, California. He was formally the David Bruton Jr. Chair in Cancer Research, Professor and Chairman at the University of Texas M. D. Anderson Cancer Center in Houston, and Professor of Internal Medicine and Professor of Pathology and Laboratory Medicine at the University of Texas Medical School at Houston. He was also Adjunct Professor of Comparative Medicine at Texas A & M University. Among the most cited scientists in the world, having published over 520 medical and scientific papers, edited 14 books, served on the Editorial Boards of 20 medical and scientific journals, including the *Journal of Chronic Fatigue Syndrome*, and currently serving as Editor of two (*Clinical & Experimental Metastasis* and the *Journal of Cellular Biochemistry*), Professor Nicolson has held numerous peer-reviewed research grants. He is a recipient of the Burroughs Wellcome Medal of the Royal Society of Medicine, Stephen Paget Award of the Metastasis Research Society and the U. S. National Cancer Institute Outstanding Investigator Award.

It is now over a decade since the Persian Gulf War, but over 100,000 U. S. veterans still suffer from various illnesses attributed to their service [1-4]. Although some Gulf War Illnesses (GWI) patients have unique signs and symptoms [5], most do not have some new syndrome (Gulf War Syndrome) [6]. These illnesses are more properly called GWI, and we believe that they are due to accumulated toxic insults that cause chronic illnesses with relatively nonspecific signs and symptoms [1-4,7].

Over the last few years researchers have published much higher prevalence rates of GWI in deployed than in non-deployed forces [8-10]. Case control studies of Gulf War veterans showed higher symptom prevalence in deployed than in non-deployed personnel from the same units [9,10]. For certain signs and symptoms, this difference was dramatic (for example, the rate of diarrhea in the deployed group was over 13-times greater than in the non-deployed group [9]). Steele [10] showed that in three studies, Gulf War-deployed forces had excess rates of GWI symptom patterns, indicating beyond a doubt that GWI is a major problem that needs to be adequately addressed.

TEN YEARS LATER -- OBTAINING AN ADEQUATE DIAGNOSIS OF GWI

For years the Departments of Defense (DoD) and Veterans' affairs (DVA) promoted the notion that Post-Traumatic Stress Disorder (PTSD) was a major factor in GWI [11]. Most researchers doubt that stress is a major cause of GWI [1-5,7], and it certainly does not explain how some immediate family members presented after the war with the same signs and symptoms [2,3,12]. Even psychiatrists who have studied GWI do not believe that GWI is explainable as PTSD [13]. Researchers find that GWI cases differ from PTSD, depression, somatoform disorder and malingering [7,14]. Although most GWI patients do not appear to have PTSD, they are often paced in this diagnosis category by DoD and DVA physicians. GWI can be diagnosed within ICD-10-coded diagnosis categories, such as fatiguing illness (G93.3), but they often receive a diagnosis of 'unknown illness.' This, unfortunately, results in their receiving reduced disability assessments and benefits and essentially little or no effective treatments. It's not that they are any less sick than their compatriots with ICD-10 diagnoses, they just don't fit within the military's or DVA's diagnosis systems. In addition, many active-duty members of the Armed Forces are hesitant to admit that they have GWI, because they feel strongly that it will hurt their careers or result in their being medically discharged. They have good reason to fear this, because many officers that we have assisted eventually retired or resigned their commissions because of imposed limits to their careers [15].

Psychiatrists often decide in the absence of contrary laboratory findings that GWI is a somatoform disorder caused by stress, instead of organic or medical problems that can be treated with medicines or treatments not used for PTSD or other somatoform disorders. The evidence that psychiatrists have offered as proof that stress or PTSD is the source of most GWI is the assumption that most veterans must have suffered from stress by virtue of the stressful environment in which they found themselves during the Gulf War [15]. However, most veterans do not feel that stress-related diagnoses are an accurate portrayal of their illnesses. Testimony to the House Committee on Government Reform and Oversight questions the notion that stress is the major cause of GWI [16], and the General Accounting Office (GAO) has concluded that while stress can induce some physical illness, it is not established as the major cause of GWI [17]. Stress can exacerbate chronic

illnesses and suppress immune systems, but most military personnel that we interviewed indicated that the Gulf War was not a particularly stressful war, and they strongly disagreed that stress was the origin of their illnesses [18]. However, in the absence of physical or laboratory tests that can identify possible origins of GWI, many DoD and VA physicians accept that stress is the cause. It has been argued that the arthralgias, fatigue, memory loss, rashes and diarrhea found in GWI patients are nonspecific and often lack a physical cause [19], but this conclusion may simply be the result of inadequate workup and lack of availability of routine tests that could define the underlying organic etiologies for these conditions [7].

It has also been claimed that there are no unique illnesses associated with deployment to the Gulf War--similar clusters of illness (albeit at lower rates) can be found in non-Gulf War veterans deployed to Bosnia [8]. Such epidemiological analyses have been criticized on the basis of self-reporting and self-selection [19], and the veterans under study may not be representative [8]. These criticisms notwithstanding, it remains important to characterize signs and symptoms and identify exposures, if possible, of Gulf War veterans in order to find effective treatments for specific subsets of GWI patients. We have been trying for years to get the DoD to acknowledge that different exposures can result in quite different illnesses, even though signs and symptoms profiles may overlap.

HOW DOES GWI DIFFER FROM OTHER CHRONIC FATIGUING ILLNESSES?

GWI patients can have 20-40 or more chronic signs and symptoms, including chronic fatigue, headaches, memory loss, muscle pain, nausea, gastrointestinal problems, joint pain, lymph node pain, memory loss, increased chemical sensitivities, among others [1-5]. Often included in this complex clinical picture are increased sensitivities to various environmental agents and enhanced allergic responses. Civilian patients with similar signs and symptoms are usually diagnosed with Chronic Fatigue Syndrome (CFS), Fibromyalgia Syndrome (FMS) or Multiple Chemical Sensitivity Syndrome (MCS) [2,3,7]. Although clear-cut laboratory tests on GWI, CFS and FMS are not yet available, some tests that have been used in recent years for GWI are not consistent with a psychiatric origin for GWI [20-25].

CHRONIC ILLNESSES AND CHEMICAL EXPOSURES

It has been documented that chemical and biological exposures occurred during the Gulf War, and many civilian patients may have been exposed to chemical and biological substances that could be the underlying causes of their illnesses [1-3,7]. The variable incubation times, ranging from months to years after presumed exposure, the cyclic nature of the relapsing fevers and other signs and symptoms, and the types of signs and symptoms of GWI are consistent with diseases caused by combinations of biological and/or chemical or radiological agents (Figure 1) [1,7].

Gulf War veterans were exposed to a variety of chemicals, including insecticides, such as the insect repellent N,N-dimethyl-m-toluamide, the insecticide permethrin and other organophosphates, fumes and smoke from burning oil wells, the anti-nerve agent pyridostigmine bromide, solvents used to clean equipment and a variety of other chemicals [1,2,7]. This also includes in some cases, possible exposures to low levels of Chemical Warfare (CW) agents. Some CW exposure may have occurred because of destruction of CW stores in factories and storage bunkers during and after the war as well as possible offensive use of CW agents [27]. Although some former DoD physicians feel that there was no credible evidence for CW exposure [19], many veterans have been notified by the DoD of possible CW exposures.

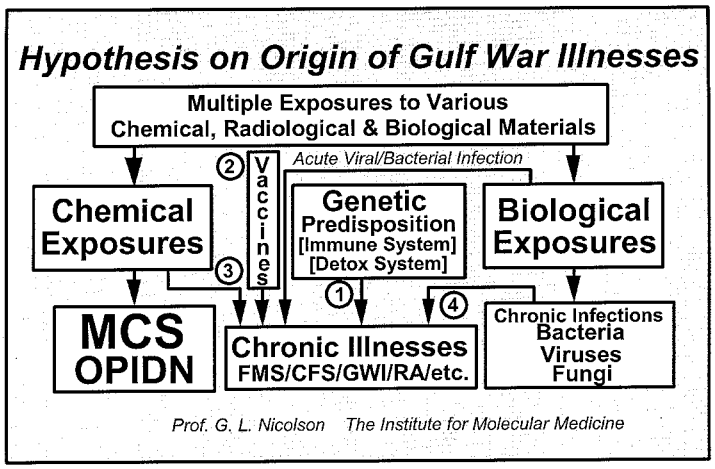

Figure 1. Hypothesis on how multiple toxic exposures, including multiple vaccines (2), chemical (3), radiological and biological (4) exposures, may have resulted in GWI in predisposed, susceptible individuals (1) [modified from Nicolson et al.(7)].

Exposures to mixtures of toxic chemicals can result in chronic illnesses, even if the exposures were at low-levels [20,21,28,29]. Such exposures can cause a wide variety of signs and symptoms, including chronic neurotoxicity and immune supression. Combinations of pyridostigmine bromide, N,N-dimethyl-m-toluamide and permethrin produce neurotoxicity, diarrhea, salivation, shortness of breath, locomotor dysfunctions, tremors, and other impairments in healthy adult hens [28]. Although low levels of individual organophosphate chemicals may not cause signs and symptoms in exposed, non-deployed civilian workers [30], this does not negate a causal role of multiple chemical exposures in causing chronic illnesses such as GWI. Organophosphate-Induced Delayed Neurotoxicity (OPIDN) [31] is an example of chronic illness that may be caused by multiple, low level chemical exposures (Figure 1). Multiple Chemical Sensitivity Syndrome (MCS) has also been proposed to result from multiple low level chemical exposures [32]. These syndromes can present with many of the signs and symptoms found in GWI patients, and many GWI cases may eventually be explained by complex chemical exposures.

In chemically exposed GWI patients, memory loss, headaches, cognitive problems, severe depression, loss of concentration, vision and balance problems and chemical sensitivities, among others, typify the types of signs and symptoms characteristic of organophosphate exposures. Arguments have been advanced by former military physicians that such exposures do not explain GWI, or that they may only be useful for a small subset of GWI patients [19]. These arguments for the most part are based on the effects of single agent exposures, not the multiple, complex exposures that were encountered by Gulf War veterans [33]. The onset of signs and symptoms of GWI for most patients was between six months and two years or more after the end of the war. Such slow onset of clinical signs and symptoms in chemically exposed individuals is not unusual for OPIDN [34]. Since low-level exposure to organophosphates was common in U.S. veterans, the appearance of delayed, chronic signs and symptoms similar to OPIDN could have been caused by multiple low-level exposures to pesticides, nerve agents, anti-nerve agents and/or other organophosphates, especially in certain subsets of GWI patients.

RADIOLOGICAL EXPOSURES AND GWI

Depleted uranium (DU) was used extensively in the Gulf War, and it remains an important battlefield contaminant. When a DU penetrator hits an armored target, it ignites, and between 10% and 70% of the shell aerosolizes, forming uranium oxide particles [35]. The particles that form are usually small (less than 5 μm in diameter) and due to their high density settle

quickly onto vehicles, bunkers and the surrounding sand, where they can be easily inhaled, ingested or re-aerosolized. Following contamination, DU can be found in the lungs and regional lymph nodes, kidney and bone. Additionally, the Armed Forces Radiological Research Institute (AFRRI) found DU in blood, liver, spleen and brain of rats injected with DU pellets [36]. Studies on DU carriage should be initiated as soon as possible to determine the prevalence of contamination, and extent of body stores of uranium and other radioactive heavy metals. Procedures have been developed for analysis of DU metal fragments [37] and DU in urine [38]. However, urine testing does not detect uranium in all body sites [36]. So far, analysis of DU-contaminated Gulf War veterans has not shown them to have severe signs and symptoms of GWI [38], but few Gulf War veterans have been studied for DU contamination.

OTHER ENVIRONMENTAL EXPOSURES AND GWI

In addition to chemical exposures, soldiers were exposed to burning oil well fires and ruptured petroleum pipelines as well as fine, blowing sand. The small size of sand particles (much less than 0.1 mm) and the relatively constant winds in the region probably resulted in some sand inhalation. The presence of small sand particles deep in the lungs can produce a pulmonary inflammatory disorder that can progress to pneumonitis or Al-Eskan Disease [39]. Al-Eskan disease, characterized by reactive airways, usually presents as a pneumonitis that can eventually progress to pulmonary fibrosis, and possibly immunosuppression followed by opportunistic infections. Although it is doubtful that many GWI patients have Al-Eskan Disease, the presence of silica-induced immune suppression in some soldiers could have contributed to persisting opportunistic infections in these patients.

BIOLOGICAL EXPOSURES AND GWI

System-wide or systemic chemical insults and/or chronic infections that can penetrate various tissues and organs, including the Central and Peripheral Nervous Systems, are important in GWI [1-5,7]. When such infections occur, they can cause the complex signs and symptoms seen in CFS, FMS and GWI, including immune dysfunction. Changes in environmental responses as well as increased titers to various endogenous viruses that are commonly expressed in these patients have been seen in CFS, FMS and GWI. Few infections can produce the complex chronic signs and symptoms found in these patients; however, the types of infection caused by *Mycoplasma* and *Brucella* species that have been found in GWI patients, can cause complex problems found in GWI [reviews: 23,40,41]. These microorganisms are now considered important emerging pathogens in causing chronic diseases as well as being important cofactors in some illnesses, including AIDS and other immune dysfunctional conditions [23,40,41].

Evidence for infectious agents has been found in GWI patients' urine [4] and blood [12,26,42-44]. We [12,26,42,43] and others [44] have found that most of the signs and symptoms in a large subset of GWI patients can be explained by chronic pathogenic bacterial infections, such as *Mycoplasma* and *Brucella* infections. In studies of over 1,500 U. S. and British veterans with GWI, approximately 40-50% of GWI patients have PCR evidence of such infections, compared to 6-9% in the non-deployed, healthy population [review: 23]. This has been confirmed in a large study of 1,600 veterans at over 30 DVA and DoD medical centers (VA Cooperative Clinical Study Program #475, S. Donta and C. Engel, statements at the NIH Chronic Fatigue Syndrome Coordinating Board, 2/00). Historically, mycoplasmal infections were thought to produce relatively mild diseases limited to particular tissues or organs, such as urinary tract or respiratory system [23,40,41]. However, the mycoplasmas detected in GWI patients with molecular techniques are highly virulent, colonize a wide variety of organs and tissues, and are difficult to treat [23,45,46]. The mycoplasma most commonly detected in GWI, *Mycoplasma fermentans* (found in >80% of those GWI patients positive for any mycoplasma), is found intracellularly. It is unlikely that this type of infection will result in a strong antibody response, which may explain the DoD's lack of serologic evidence for these types of intracellular infections [47].

When civilian patients with CSF or FMS were similarly examined for systemic mycoplasmal infections 50-60% of these patients were positive, indicating another link between these disorders and GWI [23]. In contrast to GWI, however, several species of mycoplasmas other than *M. fermentans* were found in higher percentages of CSF/ME and FMS patients and most had multiple infections [48,49].

GWI CAN SPREAD TO IMMEDIATE FAMILY MEMBERS

During the last year we have documented the spread of GWI infections to immediate family members [12]. According to one U. S. Senate study [50], GWI has spread to family members, and it is likely that it has also spread in the workplace [18]. Although the official position of the DoD/DVA is that family members have not contracted GWI, these studies [12,50] indicate that at least a subset of GWI patients have a transmittable illness. Laboratory tests revealed that GWI family members have the same chronic infections [12] that have been found in ~40% of the ill veterans [42-44]. We examined military families (149 patients; 42 veterans, 40 spouses, 32 other relatives and 35 children) with at least one family complaint of illness) selected from a group of 110 veterans with GWI who tested positive (~41% overall) for mycoplasmal

infections. Consistent with previous results, over 80% of GWI patients who were positive for blood mycoplasmal infections had only one *Mycoplasma* species, *M. fermentans*. In healthy control subjects the incidence of mycoplasmal infection was 7%, several mycoplasma species were found, and none were found to have multiple mycoplasmal species ($P<0.001$). In 107 family members of GWI patients with a positive test for mycoplasma, there were 57 patients (53%) that had essentially the same signs and symptoms as the veterans and were diagnosed with CFS or FMS. Most of these patients also had mycoplasmal infections compared to non-symptomatic family members ($P<0.001$). The most common species found in CFS patients in the same families as GWI patients was *M. fermentans*, the same infection found in the GWI patients. The most likely conclusion is that certain subsets of GWI can transmit their illness and airborne infections to immediate family members [12].

As chronic illnesses like GWI (and in some cases CFS and FMS) progress, there are a number of accompanying clinical problems, particularly autoimmune signs/symptoms, such as those seen in Multiple Sclerosis (MS), Amyotrophic Lateral Sclerosis (ALS or Lew Gehrig's Disease, see below), Lupus, Graves' Disease, Arthritis and other complex autoimmune diseases. Mycoplasmal infections can penetrate into nerve cells, synovial cells and other cell types [40,41]. The autoimmune signs and symptoms can be caused when intracellular pathogens, such as mycoplasmas, escape from cellular compartments and stimulate the host's immune system. Microorganisms like mycoplasmas can incorporate into their own structures pieces of host cell membranes that contain important host membrane antigens that can trigger autoimmune responses or their surface antigens may be similar to normal cell surface antigens. Thus patients with such infections may have unusual autoimmune signs and symptoms.

INVOLVEMENT OF INFECTIONS IN GULF WAR VETERANS WITH ALS

Amyotrophic Lateral Sclerosis (ALS) is an adult-onset, idiopathic, progressive degenerative disease affecting both central and peripheral motor neurons. Patients with ALS show gradual progressive weakness and paralysis of muscles due to destruction of upper motor neurons in the motor cortex and lower motor neurons in the brain stem and spinal cord, ultimately resulting in death, usually by respiratory failure [51]. Gulf War veterans show at least twice the expected incidence of ALS.

We have recently investigated the presence of systemic mycoplasmal infections in the blood of Gulf War veterans and civilians with ALS [52]. Almost all ALS patients (~83%, including 100% of Gulf War veterans with ALS) showed evidence of *Mycoplasma* species in blood samples. All Gulf War veterans with ALS were positive for *M. fermentans*, except one that was positive for *M. genitalium*. In contrast, the 22/28 civilians with detectable mycoplasmal infections had *M. fermentans* (59%) as well as other *Mycoplasama* species in their blood, and two of the civilian ALS patients had multiple mycoplasma species. Of the few control patients that were positive, only two patients (2.8%) were positive for *M. fermentans* ($P<0.001$). The results support the suggestion that infectious agents may play a role in the pathogenesis and/or progression of ALS, or alternatively ALS patients are extremely susceptible to systemic mycoplasmal infections [52]. In the GWI patients mycoplasmal infections may have increased their susceptibility to ALS, which may explain the recent VA studies showing that there is an increased risk of ALS in Gulf War veterans.

SUCCESSFUL TREATMENT OF GWI MYCOPLASMAL INFECTIONS

We have found that mycoplasmal infections in GWI, CFS, FMS and RA can be successfully treated with multiple courses of specific antibiotics, such as doxycycline, ciprofloxacin, azithromycin, clarithromycin or minocycline [45,46,53-55], along with other nutritional recommendations. Multiple treatment cycles are required, and patients relapse often after the first few cycles, but subsequent relapses are milder and most patients eventually recover [42,43]. GWI patients who recovered from their illness after several (3-7) 6-week cycles of antibiotic therapy were retested for mycoplasmal infection and were found to have reverted to a mycoplasma-negative phenotype [42,43]. The therapy takes a long time because of the microorganisms involved are slow-growing and are localized deep inside cells in tissues, where it is more difficult to achieve proper antibiotic therapeutic concentrations. Although anti-inflammatory drugs can alleviate some of the signs and symptoms of GWI, they quickly return after discontinuing drug use. If the effect was due to an anti-inflammatory action of the antibiotics, then the antibiotics would have to be continuously applied and they would be expected to eliminate only some of the signs and symptoms of GWI. In addition, not all antibiotics, even those that have anti-inflammatory effects, appear to work. Only the types of antibiotics that are known to be effective against mycoplasmas are effective; most have no effect at all, and some antibiotics make the condition worse. Thus the antibiotic therapy does not appear to be a placebo effect, because only a few types of antibiotics are effective and some, like penicillin, make the condition worse. We also believe that this type of infection is immune-suppressing and can lead to other opportunistic infections by viruses and other microorganisms or increases in endogenous virus titers. We have also found *Brucella* infections in GWI patients but we have not examined enough patients to establish a prevalence rate among veterans with GWI.

The true percentage of mycoplasma-positive GWI patients overall is likely to be somewhat lower than found in our studies (41-45%) [12,42,43] and those published by others (~50%) [44]. This is reasonable, since GWI patients that have come to us for assistance are probably more advanced patients (with more progressed disease) than the average patient. Our diagnostic results have been confirmed in a large study DVA/DoD study (~40% positive for mycoplasmal infections, VA Cooperative Clinical Study Program #475). This DVA study is a controlled clinical trial that will test the usefulness of antibiotic treatment of mycoplasma-positive GWI patients. This clinical trial is based completely on our research and publications on the diagnosis and treatment of chronic infections in GWI patients [42,43,53-55]. This clinical trial is complete but the treatment results have not yet been analyzed. There is a major concern that the DoD/DVA will not be forthcoming about this trial.

VACCINES GIVEN DURING DEPLOYMENT AND GWI

A possible source for immune disturbances and chronic infections found in GWI patients is the multiple vaccines that were administered close together around the time of deployment to the Gulf War. Unwin et al. [8] and Cherry et al. [56] found a strong association between GWI and the multiple vaccines that were administered to British Gulf War veterans. Unwin et al. [8] and Goss Gilroy [57] also noted an association specifically with anthrax vaccine and GWI symptoms in British and Canadian veterans. Steele [10] found a three-fold increased incidence of GWI in *nondeployed* veterans from Kansas who had been vaccinated in preparation for deployment, compared to non-deployed, non-vaccinated veterans. Finally, Mahan et al. [58] found a two-fold increased incidence of GWI symptoms in U.S. veterans who recalled they had received anthrax vaccinations at the time of the Gulf War, versus those who thought they had not. These studies associate GWI with the multiple vaccines given during deployment, and they may explain the high prevalence rates of chronic infections in GWI patients [59,60].

GWI signs and symptoms have developed in Armed Forces personnel who recently received the anthrax vaccine. On some military bases this has resulted in chronic illnesses in as many as 7-10% of personnel receiving the vaccine [60]. The chronic signs and symptoms associated with anthrax vaccination are similar, if not identical, to those found in GWI patients, suggesting that at least some of the chronic illnesses suffered by veterans of the Gulf War were caused by military vaccines [59,60]. Undetectable microorganism contaminants in vaccines could have resulted in illness, and may have been more likely to do so in those with compromised immune systems. This could include individuals with DU or chemical exposures, or personnel who received multiple vaccines in a short period of time. Since contamination with mycoplasmas has been found in commercial vaccines [61], the vaccines used in the Gulf War should be considered as a possible source of the chronic infections found in GWI. Some of these vaccines, such as the filtered, cold-stored anthrax vaccine are prime suspects in GWI, because they could be easily contaminated with mycoplasmal infections and other microorganisms [62].

INADEQUATE RESPONSES OF THE DOD AND DVA TO GWI

In general, the response of the DoD and DVA to the GWI problem has been inadequate, and it continues to be inadequate. The response started with denial that there were illnesses associated with service in the Gulf War; it has continued with denial that what we (biological exposures) and others (chemical exposures) have found in GWI patients are important in the diagnosis and treatment of GWI, and it continues today with the denial that military vaccines could be a major source of GWI. For example, in response to our publications and formal lectures at the DoD (1994 and 1996) and DVA (1995), the DoD stated in letters to various members of Congress and to the press that *M. fermentans* infections are commonly found, not dangerous and not even a human pathogen, and our results have not been duplicated by other laboratories. These statements were completely false. The Uniformed Services University of the Health Sciences taught its medical students for years that this type of infection is very dangerous and can progress to system-wide organ failure and death [63]. In addition, the Armed Forces Institute of Pathology (AFIP) has been publishing for years that this type of infection can result in death in nonhuman primates [64] and in man [65]. The AFIP has also suggested treating patients with this type of infection with doxycycline [66], which is one of the antibiotics that we have recommended [53-55]. Interestingly, DoD pathologist Dr. Shih-Ching Lo holds the U. S. Patent on *M. fermentans* ("Pathogenic Mycoplasma"[67]), and this may be the real reason that in their original response to our work on *M. fermentans* infections in GWI, the DoD/DVA issued guidelines stating that GWI patients should *not* be treated with antibiotics like doxycycline, even though in a significant number of patients it had been shown to be beneficial. The DoD and DVA have also stated that we have not cooperated with them or the CDC in studying this problem. This is also not true. We have done everything possible to cooperate with the DoD, DVA and CDC on this problem, and we even published a letter in the Washington Post on 25 January 1997 indicating that we have done everything possible to cooperate with government agencies on GWI issues, including inviting DoD and DVA scientists and physicians to the Institute for Molecular Medicine to learn our diagnostic procedures on 23 December 1996 at a meeting convened at Walter Reed AMC. We have been and are fully prepared to share our data and procedures with government scientists and physicians. The DVA has responded with the establishment of VA Cooperative Clinical Study Program #475, but many Gulf War Referral Centers at VA Medical Centers continue to be hostile to non-psychiatric treatment of GWI.

The DoD and DVA continue to deny that family members of Gulf War veterans could contract the illness or that there could be an infectious basis to GWI.

DOD/DVA SCORECARD ON GWI FROM PREVIOUS TESTIMONY

In my previous testimony to the U. S. Congress in 1998 [15,18], some suggestions were made to correct for the apparent lack of appropriate response to GWI and the chronic infections found in GWI patients. It seems appropriate to go back and revisit these suggestions to see if any of these were taken seriously or corrected independently (*Updates in italics*).

1. We must stop the denial that immediate family members do not have GWI or illnesses from the Gulf War. Denial that this has occurred has only angered veterans and their families and created a serious public health problem, including spread of the illness to the civilian population and contamination of our blood supply. *This item has still not been taken seriously by the DoD. The DVA has initiated a study to see if veterans' family members have increased illnesses; however, they have decided to group GWI patients together independent of the possible origins of their illness. Since veterans who have their illness primarily due to chemical or environmental exposures that are not transmittable will be grouped with veterans who have transmittable chronic infections, it is unlikely that studying family members of both groups together will yield significant data. Whether intentional or not, this DVA study has apparently been designed to fail. Potential problems with the nation's blood and organ tissue supply due to contamination by chronic infections in GWI and CFS patients are considered significant [68,69], but no U.S. government agency has apparently taken this seriously.*

2. The ICD-9-coded diagnosis system used by the DoD and DVA to determine illness diagnosis must be overhauled. The categories in this system have not kept pace with new medical discoveries in the diagnosis and treatment of chronic illnesses. This has resulted in large numbers of patients from the Gulf War with 'undiagnosed' illnesses who cannot obtain treatment or benefits for their medical conditions. *The DoD and DVA should be using the ICD-10 diagnosis system where a category exists for chronic fatiguing illnesses. Apparently little progress in this area has been made by the DoD or DVA.*

3. Denying claims and benefits by assigning partial disabilities due to PTSD should not be continued in patients that have organic (medical) causes for their illnesses. For example, patients with chronic infections that can take up to or over a year to successfully treat should be allowed benefits. *The DVA has recently shown some flexibility in this area. For example, Gulf War veterans with ALS will receive disability without having to prove that their disease was deployment-related. Similarly, GWI patients with M. fermentans infections (and also their symptomatic family members with the same infection) should receive disabilities. Thus far there has been no attempt to extend disability to GWI-associated infectious diseases. Instead of waiting for years or decades for the research to catch up to the problem, the DoD and DVA should simply accept that many of the chronic illnesses found in Gulf War veterans are deployment related and deserving of treatment and compensation.*

4. Research efforts must be increased in the area of chronic illnesses. Unfortunately, federal funding for such illnesses is often rebudgeted or funds removed. For example, Dr. William Reeves of the CDC in Atlanta sought protection under the 'Federal Whistle Blower's Act' after he exposed misappropriation of funds allocated for CFS at the CDC. It is estimated that over 3% of the adult U.S. population suffers from chronic fatiguing illnesses similar to GWI, yet there are few federal dollars available for research on the diagnosis and treatment of these chronic illnesses, even though each year Congress allocates such funds. *There has been some progress at NIH on this issue, but in general little has changed. The DoD and DVA have spent most of the hundreds of millions of dollars allocated for GWI research on psychiatric research. Most of these funds have been spent on studies that have had negligible effect on veterans' health.*

5. Past and present senior DoD and DVA administrative personnel must be held accountable for the utter mismanagement of the entire GWI problem. This has been especially apparent in the continuing denial that chronic infections could play a role in GWI and the denial that immediate family members could have contracted their illnesses from veterans with GWI. This has resulted in sick spouses and children being turned away from DoD and DVA facilities without diagnoses or treatments. The responsibility for these civilians must ultimately be borne by the DoD and DVA. I believe that it is now accountability time. The files must be opened so the American public has a better idea as to how many veterans and civilians have died from illness associated with service in the Gulf War and how many have become sick because of an inadequate response to this health crisis. *Unfortunately, little or no progress has been made on these items for the last decade or more, and the situation has not changed significantly since my last testimony in 1998.*

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Under penalty of perjury, I swear that the statements above are true and correct to the best of my knowledge, information and belief.

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STATEMENT FOR HEARING RECORD

The House Subcommittee on National Security, Veterans Affairs, and International Relations

Hearing date: January 24, 2002

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SUMMARY

This Statement concerns our research with anti-squalene antibodies, including the discovery of these antibodies in the blood of patients with Gulf War illness. Our published data and additional data which has been accepted for publication strongly suggests that Gulf War illness is closely associated with an abnormal immune response to squalene indicated by the presence of these antibodies. Our research also links specific lots of anthrax vaccine known to contain squalene to the production of anti-squalene antibodies. In addition, our research demonstrates that the blood test for detecting these antibodies, the anti-squalene antibody assay, may be an excellent tool to aid in the diagnosis of Gulf War illness.

U.S. Army researchers have verified our discovery of the antibodies and, in May of this year, submitted a patent application covering their anti-squalene antibody work. Our patent, U.S. Patent No. 6,214,566, "Method for Detecting Anti-Squalene Antibodies," which we believe covers the same technology, had already issued in April of this year. The Army researchers have made a disingenuous attempt to discredit our work, and they have not yet published any studies designed to confirm our discovery of a link between the antibodies and Gulf War illness, though they state that such studies may be feasible.

We believe that such confirmatory studies and additional studies should be undertaken without delay. We also believe that the anti-squalene antibody assay should immediately be made available under government sponsorship to all physicians interested in using it to investigate the condition of their Gulf War illness patients.

DATA AND OBSERVATIONS

Research data which we published in February 2000 strongly suggests that anti-squalene antibodies are closely associated with Gulf War illness. Specifically, we found in our study

participants that 95% of the Gulf War veterans with Gulf War illness and 100% of the non-deployed veterans with Gulf War illness were positive for the presence of anti-squalene antibodies, while 0% of the healthy deployed veterans were positive. Additional research data which has now been accepted for publication shows, in a limited number of samples tested, that an increased prevalence of anti-squalene antibodies in Anthrax Vaccine Immunization Program (AVIP) personnel correlated with administration of lots of anthrax vaccine subsequently shown by the FDA to contain trace amounts of squalene. Our results strongly suggest that the production of anti-squalene antibodies is linked to symptoms of Gulf War illness and to the presence of squalene found in certain lots of anthrax vaccine.

Though the source of the squalene in the vaccine lots has not, to my knowledge, been identified, squalene is used as an adjuvant in animal vaccines. The use of squalene as an adjuvant in human vaccines has not been approved, and human exposure to squalene in vaccines has been shown by others to cause immunological symptoms similar to those found in Gulf War illness patients.

Gulf War illness is present both in Gulf War veterans who were deployed to the Persian Gulf War theater of operations and in personnel who were not deployed, including personnel who never left the United States. The absence of an association between the presence of Gulf War illness and deployment indicates that the causative agent or factor is not associated with the Persian Gulf. Consistent with this observation are the results of a recent epidemiological study finding that vaccinations that were given to both deployed and non-deployed personnel are associated with ill health.

U.S. Army researchers have confirmed our discovery that anti-squalene antibodies do exist and can reliably be detected, and the Army researchers published this work in November 2000. Army representatives filed a U.S. patent application covering anti-squalene antibody technology on May 18, 2001, and we believe that the technology for which the patent was filed is the same technology that was described in the November 2000 article.

A U.S. patent covering our anti-squalene antibody technology issued as of April 10, 2001. The patent is assigned to Tulane University and is licensed to a New Orleans biomedical company. We believe that the claims awarded in the Tulane patent cover the work that was published by the Army researchers. On May 23, 2001, Tulane's licensee wrote a letter to the Department of Defense offering to sublicense this patented technology to the Army so that the Army researchers could perform a study designed to confirm whether the antibodies are linked to Gulf War illness. An Army representative declined this offer on June 6, 2001.

The journal that published the November 2000 article by the Army researchers received the submitted article on April 18, 2000. The material submitted to the journal on that date demonstrated that the Army researchers had confirmed our discovery of anti-squalene antibodies. In June 2000, one of these same researchers, an Army colonel, published a letter to the editor of the journal which had published our original article in February 2000. In the June 2000 letter, the colonel stated that our published results constituted a "new, unproven assay that claims to detect a novel antibody." The colonel made this statement despite the fact that he had already confirmed our discovery and had already submitted his findings for publication. Further, when

the colonel's article appeared in November 2000, it cited his own letter of June 2000 to call our original findings into question. The colonel's letter expressing an opinion which he himself had already proven to be baseless was thus used twice in efforts to discredit our work.

The last paragraph of the November 2000 article published by the Army researchers reads as follows:

> "With the development of the ELISA using PVDF membranes, as described in this paper, it may now be possible to undertake studies with serum from sick and healthy individuals to determine whether naturally-occurring antibodies to SQE [squalene] exist, and whether the appearance or amounts of such antibodies have any relationship to normal physiologic functions or whether they are associated with any illness."

With the serum samples available to the Army researchers, such studies would in our opinion be very straightforward and would take a short amount of time to complete. The Army has had its own version of the necessary test available for more than two years but has published no such studies.

Based on the Army's actions with respect to our work, we suspect that the Army has in fact conducted these studies and elected not to publish them. Our published research makes a compelling case that, first, anti-squalene antibodies exist, and second, that there is a link between the antibodies and Gulf War illness. Before the publication date of our research, some of our research data was discussed in a GAO report to the Honorable Jack Metcalf entitled *Gulf War Illnesses: Questions about the Presence of Anti-Squalene Antibodies Can Be Resolved* (GAO/NSIAD-99-5, March 1999). The GAO report specifically recommended that the DoD conduct its own research designed to replicate or dispute our results. The colonel's research group subsequently published a confirmatory study that looked only at our first finding and ignored the second. A confirmatory study of our second finding would be very easy for the Army to do in a short time, and we find it difficult to believe that the colonel's group has not already done such a study, since any good and inquisitive scientist with ready access to test samples would want to do it. Instead of following the GAO's recommendation, however, the colonel chose to publicly ignore our second finding and to make misleading public statements that denigrated our work. Later, when the Army and the colonel were offered the opportunity to license our technology and finish the confirmatory work, they declined the offer.

The presence of anti-squalene antibodies in ill people and the absence of the antibodies in healthy people is the first hard laboratory evidence that Gulf War illness is what some might refer to as a "real disease." It is also the first evidence that an abnormal immunological response is under way in Gulf War illness patients. The anti-squalene antibody assay thus represents the first laboratory test for Gulf War illness. As such we believe that it has great clinical value as a diagnostic aid, and it suggests that therapies designed to modulate the immune response to antigens should be investigated in patients with Gulf War illness.

Recent unpublished observations from the Veterans Administration indicate that there is a significant increase in the prevalence of the neuro-degenerative disease amyotrophic lateral sclerosis (ALS) in Gulf War veterans. The data that we published in February 2000 shows that

some of the patients who were ill with Gulf War illness and who tested positive on the anti-squalene antibody assay exhibited neurological symptoms. These results suggest that a possible relationship between anti-squalene antibodies and ALS in Gulf War veterans may exist and should be investigated.

Further research with the anti-squalene antibody assay continues on a limited scale using private funds, but the test is not currently available to individual physicians for investigation into the conditions of their patients. More than two years have now elapsed since DoD researchers have had access to a version of this test. While the DoD has proceeded with an attempt to win its own patent on the test, in our opinion it has done nothing with the test to help any Gulf War illness patient. It is therefore our very strong recommendation that an agency of the U.S. government immediately commission a large study of anti-squalene antibodies and Gulf War era veterans and other personnel, including appropriate ALS patients. Such an investigation should be conducted in the context of, or coordinated with, a population-based study of Gulf War era veterans similar to the ongoing and successful Ranch Hand study of Agent Orange. It is our further very strong recommendation that an agency of the U.S. government immediately begin to provide the anti-squalene antibody assay to all physicians treating patients with Gulf War illness.

REFERENCE INFORMATION

(1) Our initial study concerning anti-squalene antibodies was published in the February 2000 issue of *Experimental and Molecular Pathology*. The results of this study strongly suggest two things: (1) that humans can indeed raise serum antibodies against squalene, and (2) that, in the people studied, the presence of the antibodies correlated very closely with the presence of the symptoms of Gulf War illness both in personnel who had been deployed to the Persian Gulf theater and in personnel who had not been deployed there. A copy of this article, entitled "Antibodies to Squalene in Gulf War Syndrome," is attached hereto ("the Asa/Garry article").

(2) The anthrax bacillus is incapable of producing squalene, and squalene is not present as a constituent of the growth medium used to produce the organism for the anthrax vaccine. Squalene is widely used as a vaccine adjuvant in animals, but it is clearly harmful to many humans when used in that manner and is not approved for use in human vaccines.

(3) A letter to the editor published in the June 2000 issue of *Experimental and Molecular Pathology* addresses the work presented in the Asa/Garry article. The letter attempts to find fault with our testing technique, calling our test a "... new, unproven assay that claims to detect a novel antibody ...." The letter further states the following:

> "The conclusions of Asa and colleagues, purporting to correlate anti-squalene [*sic*] with Gulf War illnesses, in our opinion, rely on circular logic. Positive results with an assay not previously validated cannot be used as scientific proof that antibodies to the antigen exist in samples of unknowns. It is premature to proceed directly to testing serum samples from healthy people and sick people before conducting the fundamental validation steps."

This letter was written by Col. Carl Alving of the Walter Reed Army Institute of Research and John Grabenstein of the U.S. Army Medical Command. A copy of this letter ("the Alving/Grabenstein letter"), together with our published response and an editorial note, is attached hereto.

(4) In the November 2000 issue of the *Journal of Immunological Methods*, four researchers from the Walter Reed Army Institute of Research, including Col. Alving, published an article confirming that anti-squalene antibodies do exist and can reliably be detected. The study described in this article reproduces and expands upon our work and validates our anti-squalene antibody assay. A copy of this article, entitled "Induction and Detection of Antibodies to Squalene," is attached hereto ("the Alving article").

(5) A notation by the *Journal of Immunological Methods* which appears under the title line at the top of the Alving article states that the manuscript for the article was received by the journal from Col. Alving and his colleagues on 18 April 2000. The Alving/Grabenstein letter was published six weeks later, in June 2000. This means that when Col. Alving and his colleague Grabenstein were publicly characterizing our test as a "... new, unproven assay that claims to detect a novel antibody ...," Col. Alving and his other colleagues had already written the Alving article confirming that the new antibodies did in fact exist.

(6) The note from the journal's editors which accompanies the Alving/Grabenstein letter points out that this letter

> "... relates to methodology. Drs. Alving and Grabenstein offer no data against the conclusions of Asa *et al.*"

Since the Alving article confirms that the novel antibody was indeed discovered by our detection method, the Alving/Grabenstein letter is therefore rendered entirely meaningless by the Alving article. Despite this, the Alving article includes the following paragraph:

> "What, if any are the potential consequences of induction of antibodies to SQE [squalene]? A recent publication claims to have detected antibodies to SQE in sick but not in healthy individuals (Asa et al., 2000) [the Asa/Garry article]. However, we believe that such a conclusion may be premature, based on a technical critique of the reported Western blot-type assay that was used (Alving and Grabenstein, 2000) [the Alving/Grabenstein letter]."

The Alving article thus cites the Alving/Grabenstein letter, which the Alving article itself refutes, to call into question our second discovery, that the anti-squalene antibodies we discovered are found in sick but not healthy individuals.

(7) After the Asa/Garry article was published, we learned that in June 1999, investigators at the U.S. Food and Drug Administration (FDA) had assayed the Department of Defense's anthrax vaccine for the presence of squalene. Using a sensitive gas-liquid chromatography procedure, the FDA had identified squalene in certain lot numbers (FAV 020, 030, 038, 043 and 047) of the vaccine. Although the amounts of squalene found in these lots of the vaccine by the FDA were small (parts per billion), in principle even these small amounts may have been sufficient to induce in some vaccine recipients the immune response that is now being manifested by the

presence of anti-squalene antibodies. The published work of other researchers has strongly linked exposure to the anthrax vaccine and other vaccines to the development of Gulf War illnesses. Moreover, many pathological effects of exposure to squalene-containing vaccine adjuvants are well known to rheumatologists, and a number of these pathologies bear striking similarity to the signs and symptoms displayed by some ill Gulf War era veterans.

(8) On April 10, 2001, U.S. Patent No. 6,214,566, "Method for Detecting Anti-Squalene Antibodies," was awarded and assigned to Tulane University. A copy of this patent is attached. Tulane has licensed the anti-squalene antibody technology to Autoimmune Technologies, LLC of New Orleans. On May 23, 2001, the LLC Manager of that firm wrote a letter to The Secretary of Defense with a copy to Col. Alving offering to sublicense the patented technology to Department of Defense researchers. On June 6, 2001, an intellectual property counsel of the Army wrote back to decline the offer. Copies of both the May 23rd and the June 6th letters are attached.

(9) On October 22, 2001, in accordance with 37 CFR 404.6, the Department of the Army filed a notice of the "Availability for Non-Exclusive, Exclusive, or Partially Exclusive Licensing of U.S. Patent Application No. 09/859,389 entitled 'Detection of Antibodies to Squalene in Serum' filed May 18, 2001." On November 8, 2001, the LLC Manager of Autoimmune Technologies spoke on the telephone with the patent attorney and the licensing officer at Fort Detrick who were administering this license. Neither the attorney nor the licensing officer was aware of the existence of U.S. Patent No. 6,214,566, and neither person knew whether U.S. Patent Application No. 09/859,389 was based upon the work done by Col. Alving and his colleagues. The LLC Manager pointed out to both of them that, in our opinion, the work done and published by Col. Alving's group is covered by the claims awarded in U.S. Patent No. 6,214,566. The LLC Manager also asked for further information about the technology which the Army was proposing to license. As of December 18, 2001, the LLC Manager had not received this additional information, and he wrote a letter on that date to both the attorney and the licensing officer. A copy of that letter is attached.