

# PROGRESS OF RESEARCH ON UNDIAGNOSED ILLNESSES OF PERSIAN GULF WAR VETERANS

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## HEARING BEFORE THE SUBCOMMITTEE ON HOSPITALS AND HEALTH CARE OF THE COMMITTEE ON VETERANS' AFFAIRS HOUSE OF REPRESENTATIVES ONE HUNDRED FOURTH CONGRESS FIRST SESSION

MARCH 9, 1995

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# CONTENTS

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	Page
OPENING STATEMENTS	
Chairman Hutchinson .....	1
Hon. Chet Edwards .....	2
Hon. Joseph P. Kennedy II .....	16
Hon. Jack Quinn .....	23
Hon. Sanford Bishop .....	33
Hon. Bob Clement .....	53
Hon. Cliff Stearns .....	54
Hon. Luis V. Gutierrez .....	56
Hon. Mike Flanagan .....	60
Hon. Michael Bilirakis .....	63
WITNESSES	
Jackson, Dr. Richard, Director, National Center for Environmental Health, Centers for Disease Control and Prevention, U.S. Public Health Service .....	9
Prepared statement of Dr. Jackson .....	119
Joseph, Dr. Stephen, Assistant Secretary for Health Affairs, Department of Defense .....	6
Prepared statement of Dr. Joseph .....	111
Kizer, Dr. Kenneth W., Under Secretary for Health, Department of Veterans Affairs .....	4
Prepared statement of Dr. Kizer, with attachments, .....	66
Miller, Dr. Richard, Director, Medical Follow-up Agency, Institute of Medi- cine .....	12
Prepared statement of Dr. Miller .....	130
Robertson, Steve, Legislative Director, The American Legion .....	44
Prepared statement of The American Legion .....	134
MATERIAL SUBMITTED FOR THE RECORD	
Article:	
"Unexplained Illnesses Among Desert Storm Veterans," reprinted from the Archives of Internal Medicine, February 13, 1995, Vol. 155, submit- ted by Dr. Kizer .....	100
Fact Sheet:	
"VA Programs for Persian Gulf Veterans," February, 1995 .....	107
Statement:	
AMVETS .....	140
Written committee questions and their responses:	
Chairman Hutchinson to Department of Veterans Affairs .....	144
Congressman Edwards to Department of Veterans Affairs .....	146
Congressman Tejada to Department of Veterans Affairs .....	149
Congressman Quinn to Department of Veterans Affairs .....	150
Chairman Hutchinson to Department of Defense .....	153
Chairman Hutchinson to Centers for Disease Control and Prevention, U.S. Public Health Service .....	162



# PROGRESS OF RESEARCH ON UNDIAGNOSED ILLNESSES OF PERSIAN GULF WAR VETER- ANS

THURSDAY, MARCH 9, 1995

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON HOSPITALS AND HEALTH CARE,  
COMMITTEE ON VETERANS' AFFAIRS,  
*Washington, DC.*

The subcommittee met, pursuant to call, at 9 a.m., in room 334, Cannon House Office Building, Hon. Tim Hutchinson [chairman of the subcommittee], residing.

Present: Representatives Hutchinson, Smith, Quinn, Bachus, Stearns, Ney, Flanagan, Edwards, Kennedy, Clement, Tejada, Gutierrez, Baesler, Bishop and Doyle.

Also Present: Representatives Buyer and Evans.

## OPENING STATEMENT OF CHAIRMAN HUTCHINSON

Mr. HUTCHINSON. The subcommittee hearing on the progress of research related to undiagnosed illnesses of Persian Gulf War veterans will now come to order.

And I would like to take this opportunity to welcome our distinguished panel of witnesses, most of whom are here, some of whom are, we're hoping, going to make it with the inclement weather this morning. We thank you for taking time to testify before our subcommittee this morning. And I look forward very much to hearing your testimony so that we can determine the progress of the research with regards to the multitude of undiagnosed illnesses being experienced by our Persian Gulf veterans.

I would also like to welcome two members that we expect to be here for the subcommittee hearing this morning, Representative Steve Buyer and Lane Evans, both of whom are not members of the subcommittee but have been at the forefront on this issue since it was first made public 4 years ago.

Mr. Steve Buyer is a Persian Gulf veteran who came home to experience many of the symptoms being felt by many of his colleagues. Mr. Lane Evans was Chairman during the 103rd Congress of the Veterans' Affairs Oversight and Investigation Subcommittee. In that capacity he held a number of hearings on this issue. His assistance was vital in the passage of the three Persian Gulf illness-related pieces of legislation that were signed into law during the last 2 years. We warmly welcome their participation this morning.

I am pleased that our first subcommittee hearing deals with this very important matter. There are dozens of studies currently being conducted to determine the causes of these baffling ailments. I look forward to hearing this testimony so that we can learn the status of many of these research projects.

Persian Gulf veterans deserve, in expeditious fashion, to be told why they are experiencing these problems. And I am hopeful that the Federal Government is doing all in its power to find these answers and that money directed for Persian Gulf research will not be to the detriment of other VA research priorities.

This subcommittee also welcomes the President's recent commitment to get to the bottom of this puzzle. I trust that this subcommittee and the full committee will be working with the administration to ensure that money going to pay for research is spent in the most effective manner. The American taxpayer deserves no less, and our veterans deserve no less.

The Veterans' Affairs Committee has led the way in providing assistance to those veterans whose sicknesses are attributable to service in the Gulf. Three separate pieces of legislation were passed by our committee and signed into law during the 103rd Congress. Public Law 103-210 authorizes health care on a priority basis for Persian Gulf veterans. Persian Gulf 103-452 extends the eligibility for care for Persian Gulf veterans for covered conditions until December 31, 1995, and Public Law 103-446 permits the Secretary of Veterans' Affairs to compensate Persian Gulf veterans for undiagnosed illness, requires the development of a uniform medical evaluation protocol and case definition or diagnoses, and requires the Secretary to evaluate the health status of spouses and children of Persian Gulf veterans. Our job is not complete until the questions are answered, the mystery is solved, and the anxious minds of suffering veterans are eased.

I would like to give special recognition to Bob Stump and to Sonny Montgomery, who have worked together on a bipartisan basis and have really exemplified the kind of bipartisan spirit that has historically characterized and been the hallmark of the Veterans' Committee and whose diligence and hard work guaranteed that Persian Gulf veterans would be given priority attention as we try to find a reason or reasons for these illnesses.

Once again, I welcome each of our witnesses, and I look forward to your testimony this morning. I would now like to recognize the subcommittee's ranking member, Chet Edwards of Texas.

#### **OPENING STATEMENT OF HON. CHET EDWARDS**

Mr. EDWARDS. Thank you, Mr. Chairman. Let me first congratulate you on this being your first meeting as Chairman of this important subcommittee. It is a great responsibility, and I know you'll carry it out very well. I look forward to working with you.

I think it's a compliment to you, and I hope it sends a message to veterans across this country that the subject of your first committee meeting is on the Persian Gulf illness problem. There are dozens of issues that deserve hearings that we will have hearings on, but I think the fact that you chose this, put this at the top of the list, is a compliment to you, Mr. Chairman, and says, I think for members on both sides, how important this issue is to all of us.

Let me also congratulate Mr. Kennedy, Mr. Buyer, and Mr. Evans, who is not here, but members who on their own have made this a real cause and brought the problems of this situation to the attention of other members of this committee through their leadership. I know we don't always agree on every issue, but I think in this case these particular members have been real leaders in helping our veterans that served in the Gulf War.

Let me just finally say that to me the bottom line is that we simply cannot rest until we have done everything possible to understand and to successfully treat the illnesses of American men and women who answered the call of duty to fight for freedom in Desert Shield and Desert Storm. That's the purpose of our meeting.

Mr. Chairman, thank you for recognizing me. We look forward to hearing the witnesses.

[The prepared statement of Congressman Edwards follows:]

PREPARED STATEMENT OF HON. CHET EDWARDS

Thank you, Mr. Chairman, for scheduling this session, which represents the tenth hearing on issues relating to the health status of Persian Gulf veterans held by the full Veterans Affairs Committee or one of its subcommittees.

Today's hearing represents a particularly important step in our efforts to advance research on undiagnosed illnesses among Persian Gulf War veterans. Its *timing* signals the *priority* we give this issue. More important, I hope this session will provide a framework for achieving consensus on directions the Federal Government should be charting in our common search for answers.

For the sake of our new members, the first in this series of ten hearings was held in September 1992. As the chairman indicated, since that time Congress has enacted several pieces of legislation. Among these are measures providing for establishment of the Persian Gulf Registry (Public Law 102-585), priority treatment for Persian Gulf veterans (103-210), and most recently, compensation for those individuals who are seriously ill but are still undiagnosed (Public Law 103-446). In Public Law 102-585, we laid the foundation for the Institute of Medicine to provide recommendations on future directions for Federal research relating to the health of veterans of Persian Gulf service.

In focusing today on the IOM's assessment and on the status of Federal research efforts, I look forward to this morning's testimony.

Mr. HUTCHINSON. Thank you, Chet. I really am delighted to have you as the ranking member and look forward to working with you on a many projects in this Congress. I cannot think of anybody that I'd be more delighted to serve with. Thank you for those kind words as well.

I want to welcome the witnesses on Panel 1. We're glad to have you here this morning. It looks like, Dr. Jackson and Dr. Joseph, have arrived, and we're delighted. I would like to begin by having Dr. Kizer come up to the witness table. We would remind you that your full statement will be included in the record. If possible, please keep your comments under 10 minutes.

Thank you, Dr. Kizer.

Dr. KIZER. Thank you, Mr. Chairman, and members of the subcommittee. I certainly appreciate this opportunity to discuss with you this morning the various Department of Veterans Affairs activities relating to Persian Gulf veterans and the illnesses that have been experienced by some of those veterans.

**STATEMENTS OF DR. KENNETH W. KIZER, UNDER SECRETARY FOR HEALTH, DEPARTMENT OF VETERANS AFFAIRS, ACCOMPANIED BY DR. STEPHEN JOSEPH, ASSISTANT SECRETARY FOR HEALTH AFFAIRS, DEPARTMENT OF DEFENSE; DR. RICHARD JACKSON, DIRECTOR, NATIONAL CENTER FOR ENVIRONMENTAL HEALTH, CENTERS FOR DISEASE CONTROL AND PREVENTION, U.S. PUBLIC HEALTH SERVICE; DR. RICHARD MILLER, DIRECTOR, MEDICAL FOLLOW-UP AGENCY, INSTITUTE OF MEDICINE**

**STATEMENT OF DR. KENNETH KIZER**

Dr. KIZER. Let me first reaffirm the VA's commitment to provide high-quality compassionate medical care to our Persian Gulf veterans, our commitment to compensate those veterans who have become disabled as a result of their service to the nation in this conflict, and our commitment to pursue research that may lead ultimately to an understanding of the cause, or causes, of the illnesses experienced by those who have served in Desert Shield and Desert Storm.

Let me also take this opportunity to emphasize President Clinton's personal commitment to the Persian Gulf veterans and especially his concern for and commitment to finding answers to why some of the veterans have become ill. His commitment in this regard was again demonstrated earlier this week when he announced the formation of a Presidential advisory committee to broaden the involvement of independent scientists, physicians, and veterans in this complex issue.

In 1993, the President named the Secretary of the Department of Veterans Affairs to coordinate Government research efforts to find the cause of health problems being experienced by Persian Gulf veterans. To date, the coordination of research activities has been provided by the Interagency Research Coordinating Council, a working group of the Persian Gulf Veterans Coordinating Board. This Board coordinates the research, clinical, and compensation issues related to Persian Gulf veterans. It is composed of Secretaries Brown, Perry, and Shalala. The Research Coordinating Council is chaired by the VA. It monitors the activities and work products of various research efforts and recommends future research directions.

Mr. Chairman, as you know, I'm new to the VA, having been on the job now about 4 months. Much of the time that I've been here has been spent learning about the myriad of programs conducted by the VA as well as in drafting a plan to restructure the Veterans Health Care Service so as to fundamentally change how it conducts its business. This plan should be submitted to Congress within 2 weeks.

I've also spent a considerable amount of time learning about all that's been done to try to understand the problems experienced by our Persian Gulf veterans, especially with regards to the various investigative efforts that are underway or that are planned.

I've also focused attention on some gaps in our research program and our infrastructure in dealing with the problem. With regards to the latter, I might note that I've done a number of things, including elevating the Office of Public Health and Environmental

Hazards. This is the VA program office that is principally responsible for Persian Gulf issues. I've elevated it so that it reports directly to me, and I've also augmented its staff by four FTEs. Currently I am looking to see if additional staff is needed in that office as we expand our activities in this area.

I've also asked the Research Coordinating Council to develop a tactical plan for future research activities, and I have shared with them some of my thoughts about what I see as further research needs. If we have time, I'll be happy to discuss some of those with you this morning.

We have also intensified our educational and information dissemination efforts, as well as our efforts to reach out to nongovernment investigators so as to benefit from a broader input to our efforts.

One of the things that I found in coming into this is that the overall strategy or overall game plan, if you will, is not perhaps as well-articulated as it should be. And in the remaining few minutes that I have this morning, I thought it might be useful to walk through the strategy as I see it, or at least conceptually how I've organized and how I hope to pursue our efforts in this regard, focusing especially on the research issues since that is a subject of this morning's hearing.

In brief, we have a four-pronged effort or approach to the Persian Gulf veterans. The first prong involves providing medical care. This involves providing priority care, which you touched on in your opening comments as well as the Registry exam program for those veterans who are either ill or not ill but wish to have their condition documented for the record. We have also named several VA referral centers, and I do expect to increase the number of such centers in the days and weeks ahead.

The second prong of the overall strategy is one of outreach and education. We have targeted particularly three audiences: first, professional care-givers, *i.e.*, our physicians and others who need education, to standardize the exam and what it is they're being asked to look at. If you consider the problem you will see why this is so important. There is a fundamental difficulty in how a physician is going to approach the diagnosis of undiagnosable conditions. And so we've tried to take some steps to standardize the approaches and make sure that our physicians and other care-givers around the country are approaching things in a uniform manner.

We have also targeted the general public, as well as patients, and have recently increased the number of information vehicles that we have available to provide to patients or the public.

In addition to printed materials, we have turned to the media and have focused on not only professional literature contributions but also things that can go in newspapers and other public forums. We also have established the few hotline which I know you are familiar with. The hotline has been very well-received and has fielded literally tens of thousands of calls already.

The third prong of our overall approach is disability evaluation and compensation. These fall into two categories: those who are handled in the routine manner and those that fall into the underdiagnosed illness category.

And, finally, the fourth prong of the effort has to do with research. Here, again, I conceptualize our research activities into four areas. The first is the epidemiologic studies that are being pursued and some additional areas that need to be pursued in the future. This includes both descriptive epidemiologic studies as well as hypothesis-driven epidemiologic investigations.

We have a number of basic science projects underway, and we are looking at additional ones that may compliment what is already being done.

There is an array of clinical investigations underway; these investigations focus on pulmonary problems or other organ-specific problems, as well as behavioral, neuropsychiatric, and other clinical conditions.

And, finally, the last category of research has to do with the environmental concerns per se. There are various research activities in this arena.

Instead of taking the time to detail each and every project that the VA is undertaking or to usurp what others may say after me, I would just note for you that we have provided a listing of these projects for you. This includes an outline of our overall plan that we'll make available both for the record and for individual members. Attached to this plan is a synopsis of the various research activities being undertaken by the VA and Department of Defense, including a description of the individual research project being undertaken by our three environmental hazards research centers. The latter which ncludes time lines for when those projects will be completed so that you will have a better indication of when we can expect to have answers in the future to the different projects that are being pursued; finally, we are providing a one-page sheet that depicts the overall oversight structure and describes how the Coordinating Board and the Research Coordinating Council fit into the overall effort.

And with that, let me conclude these comments. I will be happy to answer questions either now or later.

[The prepared statement of Dr. Kizer, with attachments, appears on p. 66.]

Mr. HUTCHINSON. Thank you, Dr. Kizer. The documents to which you refer will be entered into the record without objection.

(See p. 74.)

Mr. HUTCHINSON. We will hold our questions until the entire panel has testified. We certainly look forward to working with you in your new job, and we welcome you.

The chair recognizes Dr. Joseph.

Dr. JOSEPH. Thank you, Mr. Chairman, distinguished members of the subcommittee, first let me apologize for getting here in just under the wire. It is an honor to be here before this subcommittee to talk about our medical and research efforts related to the Persian Gulf War.

#### STATEMENT OF DR. STEPHEN JOSEPH

Dr. JOSEPH. For the past 2 years, the Clinton administration has been heavily engaged in caring for our Persian Gulf troops and in trying to solve the difficult puzzle sometimes known as Persian Gulf illnesses.

Just this Monday the President, in a speech before the VFW, described the collaboration between the agencies on our very aggressive programs of research and care. But, as he said, we need to go further. And, the President announced that we will step up our treatment efforts and launch new research initiatives.

The departments, as Dr. Kizer has already begun to tell you, will be funding millions of dollars in new research initiatives. We will be opening specialized care centers to push forward our diagnostic and treatment efforts, particularly for those Gulf War veterans whose illnesses have proven most difficult to diagnose. And, as Dr. Kizer mentioned, the President announced that he will be forming a presidential advisory committee to look into medical research and other aspects of this problem.

I want to frame our efforts, both clinical and research, in an analogous way to what Dr. Kizer has done. And, I'll summarize my testimony, but will be happy to go back into the details as you wish.

As you know, we deployed almost 700,000 people to the Persian Gulf. And it's important to recognize that the vast majority of these people came back healthy. In fact, our DNBI, our disease non-battle injury rate, in the Persian Gulf was lower than with any conflict deployment in the military's history. But we all know that soon after the ending of the Gulf War, veterans began to complain of a variety of symptoms that were not readily explainable.

To try and sort through to the bottom of this, I established in DOD the Comprehensive Clinical Evaluation Program (CCEP) in June of 1994. We were attempting to seize the needle, rather than the whole haystack. We wanted to start with the patients, provide to them the care and caring that is our responsibility. At the same time, that we were diagnosing their individual symptoms and illnesses, we began to get some sense of direction, and leads, into what might be the overall causes of their problems.

We set up a national hotline. Since that time in June, we have had over 15,000 people registered through that hotline. About 12,000 of them wished to enter into the systematic tiered process of medical evaluation. We have between eight and nine thousand persons in that medical evaluation process now. We have completed a comprehensive evaluation on over 4,000. And we have scrubbed the data and entered into our clinical database data now on over 2,000.

When I made my first preliminary report in December, we had 1,000 people in the database. We now have 2,000. And our expectation is that we will have fully between eight and nine thousand comprehensive medical evaluations finished by late spring this year.

I need to enter a word of caution here. The CCEP was not designed as a sophisticated research or epidemiological program. It was designed primarily to provide care and diagnoses to our individual patients. This is the way to start with a needle: to work back from those individual diagnostic and treatment efforts, while providing care to our people, to develop leads, hypotheses and insights into what may be key questions to ask.

I can say that based on the findings now of over 2,000 patients, that over 84 percent have a clear diagnosis or diagnoses which ex-

plain their condition. And, that probably is the largest number of people ever subjected to this kind of comprehensive medical evaluation in this sort of setting with an ill-defined and mysterious set of symptoms.

The most important thing about that is that those diagnoses represent essentially the entire spectrum of medical diagnoses. And they range all the way across that medical spectrum.

Infectious disease accounts for relatively few of these diagnoses. Less than 3 percent of those first 2,000 patients have an infectious disease. About 20 percent of those patients have psychologically related medical conditions. Most of these conditions are relatively common in the general population. And indeed the distribution of all of these diagnostic categories is quite common and quite reflective of the general population. In this group they include such diagnoses as depression, anxiety, tension headache, and stress-related disorders.

These patients have been provided appropriate treatment, and many have responded well. I think it's very important to underscore that these people are hurting just as much from their symptoms as if they had diabetes or arthritic knees. The good news is, as with most of the patients whose diagnoses we're able to establish, that we are able to provide treatment. Most of these patients are finding significant relief.

Now, about 16 percent of those first 2,000 patients have less clearly defined symptoms. We are not yet able to establish a definitive diagnosis or diagnoses. That's the group that represents the mystery. That's the group that we need now to go further on through our specialized care centers, and see if we can whittle down those ill-defined conditions into firm diagnoses.

The diagnostic proportions as we said in December when we issued the first preliminary report on the first 1,000, haven't changed in the second 1,000. And there is no clinical evidence to date for a new or unique agent causing illnesses among Persian Gulf veterans.

That preliminary finding is entirely consistent with what the National Institutes of Health workshop found. I'll just quote from their report, "No single disease or syndrome is apparent but rather, multiple illnesses with overlapping symptoms and causes," end quote. That really has been the finding of every group that has looked at the issues and patient data, and our findings to date are consistent with that.

It's important to say right away that is not a statement that says we stop looking. That is not a statement that says we close the book or rule out any particular cause of symptoms or illnesses. We've got to keep working. We've got to keep investigating. And our principle is we look at all possibilities and we let the chips fall where they may as we find things to rule in or to rule out.

I won't repeat what Dr. Kizer has said about the coordinated research activities and the Persian Gulf coordinating boards. We are in a very intensive research program. And in 1995 we will be spending in DOD an additional \$10 million on a variety of research activities. These fall into three large areas: epidemiologic research looking at the distribution of symptoms in large populations, including reproductive health issues; affects of pyridostigmine, the

pretreatment preventative for chemical warfare attacks that some have thought might be related to these symptoms; and clinical research, research that will look at ways to better treat and identify symptoms in individual patients and groups of patients.

The first \$5 million of these \$10 million will be spent on peer-reviewed independent investigator activities. And the second \$5 million will be spent partly that way and partly in research conducted within the Federal Government.

All that research is worked through the coordinating board, as Dr. Kizer said.

There's one last area that I want to touch on in my introductory remarks: the issue of chemical and biological exposure, which has been the subject of intense media coverage and public interest. Let me summarize what we know of the exposure of our troops to chemical and biological weapons.

Hundreds of false chemical alarms that were activated due to dust, heat, smoke, and low batteries have led many to believe that chemical agents were used.

I'm sure you all saw the statement in *USA Today* in the last week where General Schwartzkopf is quoted as saying, quote, "There's absolutely no evidence that we ever ran into during the war or anything that's come up since the war that I know of that says they used them." And that really summarizes what our position is.

This has been looked at by a number of groups: Defense Science Board, our internal looks, the declassification efforts. And we have found no evidence that would lead to the conclusion that chemical or biological warfare agents were used in the Gulf.

But, again, this is not a statement that says we stop looking. We look everywhere. We pursue all leads. And we let the chips fall where they may.

So let me close by reiterating the President's personal commitment to the Persian Gulf vets and quote his words at the VFW meeting this week, "We must listen to what the veterans are telling us and respond to their concerns. We will leave no stone unturned. And we will not stop until we have done everything that we possibly can for the men and women who, like so many veterans in our history, have sacrificed so much for the United States and our freedom."

We're committed. I think we're on the right track. I think we do have to focus on the needles and not the haystack. And we fully intend to pursue this to the best possible conclusion

Thank you, Mr. Chairman.

[The prepared statement of Dr. Joseph appears on p. 111.]

Mr. HUTCHINSON. Thank you, Dr. Joseph.

The chair recognizes Dr. Jackson.

Dr. JACKSON. Good morning. Thank you, Mr. Chairman, members of the subcommittee.

#### STATEMENT OF DR. RICHARD JACKSON

Dr. JACKSON. I am Dr. Richard Jackson. I am the newly appointed Director of the National Center for Environmental Health at the Centers for Disease Control and Prevention, CDC.

We're pleased to have the opportunity to meet with the subcommittee on our efforts and those of the Department of Health and Human Services in evaluating the health status of Persian Gulf veterans. The health of our military personnel and veterans is an important issue with the administration, as evidenced by Monday's announcement of the formation of the presidential advisory committee.

As you know, CDC has a long history of involvement in veterans' issues, dating back to the formation of CDC as the Communicable Disease Center after World War II.

I'd like to go through a number of the activities CDC has pursued in relation to this. One was our first involvement. This was in response to concerns about the health effects of exposure to smoke from the burning oil wells.

Beginning in April 1991 researchers from several Federal agencies went to the Persian Gulf to assist the Kuwait government officials in developing a research project to determine if the air pollution created by the burning oil wells had potential to cause health problems.

We surveyed a cross-section of workers in Kuwait City in May of 1991 and of fire-fighters in the oil fields in October of 1991. Blood samples were tested for 31 volatile organic compounds. These are the fumes that you would smell, for example, when you put gasoline in your car. And we compared the blood levels for these chemicals with a reference group of Americans, people living in the United States. This is a reference group that we get from every 10 years' survey of the American people.

As would be expected, the fire-fighters had more of these chemicals in their blood than did the average American. But the chemicals remain in the blood only for a short period of time. And the long-term health effects on the fire-fighters are unknown.

We also examined blood levels of soldiers who were not fire-fighters. Blood levels of these volatile organic chemicals were about the same or lower than those found in the American reference group.

In addition, our laboratory collaborated with the Department of Defense in a study of 30 members of the 11th Army Cavalry Regiment. Only one compound, tetrachloroethylene, was found to be elevated. This compound is not associated with emissions from oil fires, but, rather, is a substance found in degreasing agents. In other words, it's used as a dry cleaning solvent. It's used to clean weapons.

Another question that has been raised is whether an infection called Leishmaniasis could explain some of these symptoms. Leishmaniasis is a disease somewhat like malaria. It's spread by sand fleas.

When personnel returned from Operation Desert Storm, CDC published an article in its February 1992 weekly report that described cases of Leishmaniasis identified in persons who had served in the region. The article identified federal organizations to contact for information regarding Leishmaniasis, and we worked with the staff at Walter Reed Army Medical Center and others to get information out to the medical, public health, and lay communities.

From December 1991 through February 1995, CDC received 1,632 specimens from persons who served in the Persian Gulf re-

gion. Most of them, 93.5 percent of the specimens, tested were negative. Six and a half percent showed low levels of reactivity.

The next question we were asked is: Is there some issue around reproductive outcomes, birth outcomes? In December 1993, CDC met with Congressman Sonny Montgomery regarding reports of a cluster of infant health problems among children born to Persian Gulf veterans in Mississippi. CDC and the Mississippi Department of Health assisted the VA Medical Center in Jackson, MS in the investigation of this reported cluster.

The investigation found no increase in expected rates in the total number of birth defects or the frequency of premature birth and low birth weight. The frequency of other health problems in the children, such as respiratory infections, gastroenteritis, and skin diseases, also did not appear to be elevated.

There's a caveat on this. This is a small group. And when you have small groups, it's very hard to get an accurate assessment as to whether this really reflects a much larger population. You're only looking at about 50 children.

I'd like to talk briefly about an investigation that's underway right now in Pennsylvania. We are conducting an investigation of a reported cluster of illnesses of about 60 members of the 193rd Pennsylvania Air National Guard. All those affected have been deployed to the Persian Gulf during Operation Desert Shield and Desert Storm.

The investigation is being conducted in three phases. The first phase will describe the clinical signs and symptoms and health concerns among a sample of the ill Persian Gulf veterans. This is being done at the Lebanon, PA VA Medical Center.

Phase II is a survey of the Air National Guard unit in comparison to other units to document the prevalence of health problems.

The third phase is what's called a case control study, where you interview people who are ill and you interview people who are well and you compare their histories and what they report to see if we can find risk factors for this unusual cluster of disease.

The last is an assessment of the health status of Persian Gulf veterans from Iowa. After a request from Congress, CDC is implementing a telephone survey of Persian Gulf veterans who listed Iowa as their home of record. This study is being conducted in collaboration with the Department of Public Health in Iowa and the University of Iowa. It includes a detailed assessment of Persian Gulf veterans' health concerns as well as questions about the health of family members.

This study will consist of a random sample of 2,000 military personnel who served in the Gulf theatre of operations and 2,000 Gulf era military personnel who served at other sites. We expect to begin data collection in July and to have a final report for you in the Summer of 1996.

In addition to these studies, CDC has been active as a participant in the Persian Gulf Veterans Coordinating Board. Health and Human Services has been involved in fostering coordination and communication among the Federal agencies involved in the research, and has detailed a staff member to the Persian Gulf Veterans Coordinating Board. The person will serve as a liaison to the

Coordinating Board and to the other agencies, including Department of Defense.

We also have staff participating in the Department of Veterans Affairs Persian Gulf Expert Scientific Committee and, of course, are looking forward to working with the new presidential advisory committee.

I'll briefly touch on future research needs. Studies should be conducted on representative samples of Persian Gulf veterans with complete assurance of confidentiality. Obtaining data on a comparable control group of veterans is essential. It's often easy to get information from people who have identified themselves as ill, but you need to ask those same questions of people who are not ill.

The VA is planning a mail and telephone survey of a nationally representative group of Persian Gulf War veterans. And our CDC Iowa study will complement the VA study and provide in-depth information on Persian Gulf War veterans' health status. These will tell us if the prevalence of illnesses among the veterans is higher than expected.

I'd like to close with a few recommendations. All of these studies will contribute to our understanding of the effects of military service in the Gulf theatre of operations. However, most of our studies are limited by their retrospective nature. We're going back and asking people to recollect their exposures from 3, 4, 5 years ago. This has been true of previous CDC studies of military personnel, be it Agent Orange or others.

Baseline data on the health of military personnel is often lacking. And it limits the ability to conduct definitive studies. One way to fix this problem is to take a more proactive approach in evaluating the veterans' concerns, health concerns. It would call for much closer consultation with the Departments of Defense and Veterans Affairs as to what baseline data would be useful in evaluating the health of military personnel further on down the line.

We'd like to have improved information on the number of troops deployed during a military conflict, information on potential exposures, surveillance systems to address health outcomes and identification of risk factors for stress-related reactions.

Health and Human Services believes that the health of our veterans should be a very high priority. And we will work energetically with the other Federal agencies who deal with these issues.

Thank you, Mr. Chairman.

[The prepared statement of Dr. Jackson appears on p. 119.]

Mr. HUTCHINSON. Thank you, Dr. Jackson.

Dr. Miller, you're recognized.

Dr. MILLER. Good morning, Mr. Chairman and members of the subcommittee.

#### STATEMENT OF DR. RICHARD MILLER

Dr. MILLER. My name is Dr. Richard Miller. I am the Director of the Medical Follow-Up Agency, a division of the Institute of Medicine in the National Academy of Sciences.

Public Law 102-585 directed the Secretaries of Veterans Affairs and Defense to seek to enter into an agreement with the National Academy of Sciences to establish an expert committee. That committee's task is to assess how the VA and DOD have collected and

maintained information potentially useful for evaluating the health consequences of service in the Persian Gulf War and to make recommendations concerning whether there is a sound scientific basis for epidemiologic studies of those health consequences.

The IOM committee released a first report on January 4th of this year. The intention of the report was to describe initial findings and make initial recommendations to the VA and DOD regarding potential Persian Gulf War health effects research and related issues.

There are many research projects that have been completed or are now underway within the VA and DOD related to health consequences of Persian Gulf War service. And the IOM committee reviewed approximately 50 of these as of September of last year, when the report was finalized.

The earliest research activities within the DOD were focused on the effects of the burning oil well fires, while the VA conducted early studies in response to Public Law 102-25 assessing the occurrence of post-traumatic stress disorders. Subsequent efforts were generally in response to local outbreaks or clusters of undiagnosed illness.

The IOM committee felt that while all of these activities have been appropriate and credible, efforts now need to be focused on answering carefully formulated and highly specific research questions.

The VA was also required by Public Law 102-585 to establish the Persian Gulf veterans health registry. Although the information in this registry is of little use for research purposes because of the self-selected nature of the participants, the IOM committee agreed that it was important that the data be reviewed on a regular basis for possible sentinel events.

The report made initial recommendations in three categories: data and databases; coordination and process; and, finally, consideration of study design needs. The data and database recommendations reflected the IOM committee's concern with the database resources that are necessary to conduct research, including the lack of a data system linking medical information on an individual during active duty and continuing into the era of VA-provided services.

Also the IOM committee recommended prompt completion of the DOD's geographical information system that will provide potentially useful information on troop locations to be used in future research. The location of troops can provide a surrogate for potential exposures received in the Persian Gulf theatre, essential information in evaluating health outcomes.

The initial recommendations involving coordination reflected the IOM committee's concern that new projects need to contribute substantively to the total Persian Gulf health research agenda, that they be actively and fully coordinated between the VA and DOD, that they be focused in design, peer-reviewed, and not duplicative of efforts of other agencies.

The IOM committee felt that specific research questions should be addressed with input from epidemiologists as well as subject matter experts. The research that the IOM committee recommended included: a VA-DOD collaborative population-based survey to obtain data on symptom prevalence and health status; eval-

uation of potential health effects from exposure to lead; a long-term study of the mortality of Persian Gulf War veterans; well-designed studies of potential adverse reproductive outcomes, laboratory studies of possible interactions of pyridostigmine bromide, DEET, and permethrin; and further work in the area of diagnosis of *Leishmania tropica* infections and the study of the epidemiology and ecology of those infections.

The IOM committee met in January of this year with representatives from the Persian Gulf Veterans Coordinating Board to discuss the IOM report recommendations and the VA/DOD response. The meeting was useful for all parties involved, and the IOM committee agreed that genuine efforts are being made to respond to their recommendations.

The IOM committee will continue to evaluate the research efforts for the coming year and a half and will review progress in the areas of concern in the final report. The committee is, in fact, meeting today for the seventh time. And their final report will be available in late Summer of 1996.

Thank you, Mr. Chairman.

[The prepared statement of Dr. Miller appears on p. 130.]

Mr. HUTCHINSON. Thank you, Dr. Miller. I want to thank the panel. For some of us, we may yearn for Dr. Rowland to be back. Much of the testimony is very technical but we appreciate it. I know the members will have a lot of questions.

I do want to for the benefit of the members, that members who were present before the gavel went down will be recognized by seniority, Republican, Democrat alternating. Those members who came in after the gavel went down, will be recognized in the order in which they appeared following the long tradition of the full committee. We will be operating under the 5-minute rule.

Dr. Kizer, both the Department of Defense and the Defense Science Board Task Force on the Gulf War Health Effects have concluded that no chemical or biological warfare agents were used in the Gulf War. We've heard that assertion here during the testimony this morning.

Dr. Kizer, you recently remarked in *USA Today* that you lack confidence in Pentagon assertions that troops were not exposed to chemical or biological agents. What is the basis for that assertion?

Dr. KIZER. Let me try to respond to that. That was a comment that was made when I was having a wide-ranging, free, and open discussion with our expert advisory panel a couple of weeks ago or thereabouts.

My comment was in no way intended to mean that I don't believe DOD officials or that the DOD has not been fully forthcoming. What it was intended to focus on was the fact that I have not yet reviewed that data personally. So I can only rely on what I have been told.

I also have some questions about what exactly were the exposures that occurred over there, not necessarily biological/chemical warfare, but the whole array of potential environmental exposures. It's not clear to me, at this point, that anyone has rigorously documented what exactly were the environmental conditions that were confronted by our troops.

And, as I said, being relatively new to this job, I have not yet had the benefit of hearing some of the DOD briefings and other things that Dr. Joseph and I have talked about. Hopefully I'll be hearing more about those in the weeks and months ahead.

Again, I think there are some questions about what actual exposures occurred and whether we had all the monitoring that would have been necessary to document that. I'm withholding judgment, I guess, until I've heard more.

Mr. HUTCHINSON. In your mind you were expressing, not prejudging that the jury was still out as far as you were concerned. You wanted to look at exactly what the evidence was?

Dr. KIZER. That's correct. Again, I was talking to what I viewed as peer scientists and investigations. I'm withholding judgment until I've had the opportunity to become more personally knowledgeable myself.

Mr. HUTCHINSON. Let me ask this question of the panel in general. Any of you can respond to this. The *Journal of the American Medical Association* August 3, 1994 states that "A collaborative Government-supported effort on Persian Gulf illnesses has not been established" and there is not a uniform protocol across the military, VA, and civilian physicians. Could you respond to that, comment on that?

Dr. JOSEPH. I'd be delighted to respond to that. I think that statement is inaccurate. It's inaccurate on both the research and the clinical sides.

I've said in my testimony, and I know we've said it many places before, the clinical protocols for DOD and the VA have been worked together, developed together. They're virtually identical. We have joint bodies that review all research proposals, plan the research studies, and that look at the clinical data as well.

I guess I'd have to say, Mr. Chairman, that it's an easy shot. An easy shot that one can always say about every Government activity. And, we can talk about whatever level of detail you want.

I've never known of an interagency activity in Government that has had as intensive and close coordination, particularly between VA and DOD, as this one has.

Does that mean that everything is perfect and that we never disagree on something? Of course not. But if you look at the number of actions working and the results, the way that the research is funded and conducted, and the way the clinical studies are funded and conducted, I think that statement in JAMA is just inaccurate.

Mr. HUTCHINSON. Would any of the rest of you want to comment on that? [No response.]

In Arkansas we had a lot of our reservists who were involved in the Gulf War. The 142nd in my district performed admirably. The fact is that 50 percent of those afflicted with Persian Gulf illnesses have been reservists. Are studies looking at factors such as age and physical conditioning as a possible difference in the levels of psychological preparedness as a basis for the current research?

Dr. JOSEPH. Yes, we are, sir. Certainly on the clinical side, in both the preliminary report we put out in December and the next version, which you'll see shortly, we do all the demographic cuts: Reserve, active duty, gender, age, branch of Service, et cetera.

I would like to drop back to something that—

Mr. HUTCHINSON. Before you leave that—

Dr. JOSEPH. Yes.

Mr. HUTCHINSON (continuing). Is there any correlation that has been found?

Dr. JOSEPH. No significant correlation. There really is nothing. If you look at the two groups, among veterans in the comprehensive clinical evaluation program, our CCEP, they are slightly older than the representation of age in Gulf service as a whole. There are small differences, but there's nothing that leaps out at you. And I would also say—again, this is preliminary data, but it is 2,000 people—we have found no clustering by unit of service in that initial 2,000.

Dr. Kizer mentioned, and I think Dr. Miller also mentioned something that is going to be one of the most important pieces of this puzzle. That's the study the Army is working on to give us a geographic location by small unit by every day, every place in the Gulf.

Army has been working on that about 18 months now. The study will not be completed until sometime next spring, not this spring. It's a very complicated job.

Once we have what is essentially a map by location and by time of all small units in the Gulf, we then can take any of these questions, whether it's Reserve, active duty, gender, particular symptoms in a group, particular histories of exposure, et cetera, and lay it over that map and come up with whatever leads there are. That's probably the key study and it takes that amount of time to get it done. When we have it, we can give you discrete answers for a lot of the questions you pose.

Dr. KIZER. If I might, your question also raises an issue, again as someone new coming in and looking at this, that points to whether there are differences between the reservists versus the regulars. But there's another group that, in my judgment, we should be looking at. That's our coalition forces.

They came with different backgrounds. In many cases they had different preparatory or prophylactic measures. It occurs to me that there were significant numbers of them and that we should be looking in a collaborative way with the governments of the countries involved: Britain, France, Canada, et cetera, for what has happened in their troops, whether they have the same experience as our troops, and whether their different preparatory and prophylactic measures in any way correlate with the symptomatology being found in those groups of soldiers.

Mr. HUTCHINSON. Thank you.

Let me yield to Mr. Edwards.

Mr. EDWARDS. Thank you, Mr. Chairman. Since Mr. Kennedy has been so active on this issue, I'd like to yield my 5 minutes of time to him for questions.

Mr. HUTCHINSON. Mr. Kennedy, you're recognized.

#### OPENING STATEMENT OF HON. JOSEPH P. KENNEDY II

Mr. KENNEDY. Thank you very much.

First of all, I want to thank Mr. Edwards for his consideration in yielding. I really appreciate it, Chet, very much. Thank you.

I also want to thank the chairman, Tim Hutchinson, for holding this important hearing this morning. I think it was really significant that you chose to make this one of your first hearings. And I think for many of who serve on the committee who felt that this issue has not gotten the attention that it needs in the past, it really is telling an important demonstration of your commitment, Tim. So I really appreciate the fact that you've chosen this morning to hold this hearing.

I want to thank our panelists as well for coming forward. I think that there are a number of questions that I have after listening to your testimony. First of all, Dr. Joseph, you talked with some emotion about the fact that this is the most coordinated and comprehensive effort that you've seen in your experience in terms of interagency coordination and the like. And, yet, I think Dr. Kizer just pointed out what from at least my perspective has been a disturbing pattern that has developed over the course of the last few years, which is that as each one of these issues develop, there's always resistance on behalf of the Department of Defense towards accepting the notion that there might be some kind of issue here.

Now, I don't suggest for a second that at the moment there hasn't been a growing awareness on the part of the Pentagon that there is a problem, but it has been like pulling teeth, I mean, just hearing Dr. Kizer mention the fact that there is a potential of the coalition forces.

I mean, I remember when I tried to bring up the fact that we were hearing testimony, we were hearing from people overseas, there was a great deal of resistance on behalf of the department to take that into account.

We've since heard, I've gotten letters, people have called my staff, of people in the news media that were serving in the Persian Gulf who themselves are now having many of the same kinds of physical complaints.

There was a great deal of scorn that was directed at the family members of individuals that served in the Persian Gulf and the kinds of transfers that at least wives that did not serve, of people that did serve, and husbands of women that served were beginning to complain of some of these illnesses. And that again was treated with a great deal of scorn.

The problem is, as I'm sure you're well-aware, that there has been a certain lag time in recognition and in acceptance of the fact that there might be a problem. And when you talk about your numbers of 8 or 9 thousand people in toto, of 1,000 people being processed—right? Well, I didn't quite get it because I thought you said 2,000 people went through but there are only 1,000 people—

Dr. JOSEPH. I'll be happy to repeat that. I don't want to interrupt you.

Mr. KENNEDY. Okay. Well, I guess my concern is that, as I understand it, there are over 15,000 people who have registered in the Department of Defense registry. There's something on the order of 43,000 people who have registered in the VA registry.

Now, that's not to say that every single one of those people has these direct complaints, but is an indication if somebody others to sign up with a registry that, maybe, in fact, they came in and reg-

istered because they do have something that they're concerned about.

And so it seems like there's a much larger universe out there. Okay. Well, you're shaking your head. So why is that not true?

Dr. JOSEPH. Let me focus on what's a wide-ranging question. I'll first talk about the universe, and then I'll talk about the lag time that you alleged.

What I said in my testimony is that on the DOD side we set up the hotline last summer and we've had 15,000 people register through that hotline. Of those 15,000 people, about 3,000 say they have no symptoms but they just want to be on the register. Of the 12,000 who have called in with symptoms, we already have in the medical examination process between 8 and 9 thousand. And we have completed that medical examination process for over 4,000.

We then take the completed exams and scrub the data: go back and quality check all the lab data and the rest. We have scrubbed the data on the 2,000. So it goes 15, 12, 9, 4, 2. The 1,000 number is where we were 3 months ago, in December. We were at that same final point, if you will, on only 1,000 people. We've doubled that number between December and now.

Mr. KENNEDY. I see. So let me just ask you: When you—

Dr. JOSEPH. So I think we're reacting to that universe, I think, quite effectively.

Mr. KENNEDY. Okay. When you talk about the 2,000, you say in your testimony 84 percent of those 2,000—

Dr. JOSEPH. That's correct.

Mr. KENNEDY (continuing). Have explicable illnesses.

Dr. JOSEPH. That's right.

Mr. KENNEDY. Do you attribute any of those explicable illnesses to chronic fatigue syndrome?

Dr. JOSEPH. No, we would not consider chronic fatigue syndrome in that grouping. What we have done—

Mr. KENNEDY. Can you break it down? Because when you broke it down, it didn't exactly add up to 200. You get 20 percent or something. I wrote it down. You said 3 percent have infectious illnesses. Twenty percent have psychological problems. But where did the rest of the 70 or whatever—

Dr. JOSEPH. Musculoskeletal problems, skin disorders, gastrointestinal disorders, whatever.

Mr. KENNEDY. Wouldn't musculoskeletal problems, skin disorders and things like that be the kinds of illnesses that people are complaining about?

Dr. JOSEPH. Yes, of course. Of course.

Mr. KENNEDY. So you're saying that you would have a skin disease and absolutely make assurances it has no relationship to this inexplicable illness—

Dr. JOSEPH. Well, the word "inexplicable"—

Mr. KENNEDY (continuing). Because of the symptom?

Dr. JOSEPH. That's right.

Mr. KENNEDY. It would have absolutely no relationship to service in the Gulf, you're saying?

Dr. JOSEPH. No, I'm not. I'm most clearly not saying that.

Mr. KENNEDY. Oh, okay. I'm getting confused.

Dr. JOSEPH. Let me try to "unconfuse" you, then.

Mr. HUTCHINSON. Your time has been extended.

Mr. KENNEDY. Thank you very much, Chairman.

Dr. JOSEPH. Let's try to take a diagnostic spectrum. Let's suppose you served in the Gulf and you fell off a "Humvee" and injured your right knee. Now you have chronic arthritis in that knee. You have an explicable, clear, garden variety medical diagnosis that is clearly related to your service in the Gulf. That's way over here.

Way over at the other end is this 15 percent of people that I'm saying we're most concerned about. They came back from service in the Gulf, have chronic fatigue, trouble sleeping, aches and pains, et cetera, and are symptomatically ill with these symptoms. And, we don't have yet an explanation or a diagnosis to fit them.

Mr. KENNEDY. And you have cleared having any psychological problem as well?

Dr. JOSEPH. In that group?

Mr. KENNEDY. In that group.

Dr. JOSEPH. At least at present we can't identify what the specific, clear diagnostic problem is. That's way over on the other end. And, there are numerous people in the middle.

Suppose you served in the Gulf and you're back now 4 years. You have diabetes and you noticed the onset of the symptoms of your diabetes while you were serving in the Gulf. There it might be a more open question whether that—

Mr. KENNEDY. I appreciate that.

Dr. JOSEPH. So what I'm trying to say is there is an entire spectrum in that group.

Mr. KENNEDY. I appreciate that. I'm just trying to understand. In terms of the overall numbers, you still leave a very large range. And I'm trying to understand. You're saying about 16 percent of the people have this illness that is inexplicable, 20 percent of the people have psychological, 3 percent of the people have the—

Dr. JOSEPH. Right.

Mr. KENNEDY (continuing). Infectious illness. And so the rest of the people have illnesses. The only question I really have is that the rest of those people, there are 60-70 percent of the people you talked about, do they fall off a truck and hurt their knees or is there some group—I mean, I just remember General Blanck testified last year that 25 percent of the people had chronic fatigue syndrome. So I'm trying to understand what that larger category is—

Dr. JOSEPH. Right.

Mr. KENNEDY (continuing). And whether or not there is any open discussion. You've got 15,000 people in your registry. The VA has 43,000 people. And I don't want to make any presumptions. You say it's all so well-coordinated. I'm just concerned that, in fact, there's a hell of a lot more people out there, Doctor, than, in fact, we have been able to take into account, which then leads me to another question that I want to ask Dr. Kizer.

But, in any event, I'm pointing out that there seems to be the potential for a gap in your numbers that leaves very much open to debate what has actually happened to that 60 or so percent that has yet to be specifically accounted for.

Dr. JOSEPH. I don't think so.

Mr. KENNEDY. Okay.

Dr. JOSEPH. I'll be happy to share, or send up later, the specific diagnostic categories and percentages.

Mr. KENNEDY. Right.

Dr. JOSEPH. There is one more thing I want to say. In referring to that 16 percent for which we still don't have a clear diagnosis, you used the words "this illness." What all our experience is showing us to date is that in that 16 percent, it is probably not a question of this illness, but rather these illnesses.

Mr. KENNEDY. I appreciate your—

Dr. JOSEPH. That's a very important differential.

Mr. KENNEDY. No. I understand. I think all of us understand the perspective that you're bringing, Dr. Joseph. And what you've got is Dr. Kizer sitting right next to you saying that he is still open to the notion that there might be a specific cause of these illnesses if you want to choose to describe it that way.

And so what you've got again is, instead of coming across as having an open mind to the notion that there might, in fact, be a specific event, a specific bug, a specific exposure, a specific kind of—whether chemical, biological, whether it's some bacteria that lives in the desert, hell, I don't know, but there might well be something that our troops and everybody in the theatre was exposed to that affects a certain number of people a certain kind of way and has a multiple myriad of different symptoms that can be brought upon a human being as a result of that exposure. That is something that Dr. Kizer I think is still open to and something that I think I'm concerned that we still haven't created a playing field that is actually going to allow us to make that ultimate determination.

So let me just ask Dr. Kizer while I've still got my yellow light whether or not there is in your opinion right now a study that will end up enabling us to draw that conclusion at some point? Whether it's 2, 3, 4 years from now, but at some point will we be able to draw that conclusion given what we have going on today?

Dr. KIZER. I don't think any of the individual studies by itself will be able to give you a definitive answer. I think in the composite, though, that we'll certainly be able to narrow the issues down. I also believe that out of the 40-plus studies that are currently being pursued, there will be some new hypotheses that will further open up avenues or potential areas that will need to be explored in the future.

I'm not sure whether we'll ultimately find an answer, or a series of answers, that will explain this. I think the studies have to be done, and we have to judge the results based on where they point us to in the future.

Mr. KENNEDY. I appreciate the chairman's indulgence. Thank you.

Mr. HUTCHINSON. Thank you, Joe.

We recognize Mr. Tejada. The order will be Jack Quinn then Steve Buyer. The gentleman from Texas, Mr. Tejada, is recognized.

Mr. TEJEDA. Mr. Chairman, what I'd like to do is submit some questions for the record and yield the balance of my time to Mr. Kennedy.

Mr. HUTCHINSON. Without objection.

(See p. 149.)

Mr. KENNEDY. Thank you very much, Frank. I didn't know I was going to get—

Dr. JOSEPH. Could I come back on that—

Mr. KENNEDY. Sure.

Dr. JOSEPH (continuing). Mr. Kennedy, if I might? I think we're talking a bit at cross-purposes because I agree with every part of the statement you just made with reference to leaving these issues open.

I said in my testimony three or four times that we've got to be very careful. We are very determined not to foreclose any possibilities and not to say that we have ruled out any particular cause or causes until that is absolutely scientifically clear.

I think where our cross-purposes discussion comes in is that I believe that all the data on the table tell us one very important thing—I think I hear you saying this—that whatever series of causes there are for whatever groups of illnesses in the people who served in the Gulf, there is no one unique, single overriding cause for all or most of that series of illnesses. That is the essential thing that we know fairly definitively so far.

Mr. KENNEDY. And all I'm saying is I don't know that. I don't know what I think that there are—in my district, Massachusetts Institute of Technology, I have spoken with multiple chemical sensitivity experts, some of the top people in the field in this country. And they will tell you that you can be exposed to a myriad of different chemicals and that those chemical exposures potentially can provide a wide range of different symptoms that the human body can then demonstrate.

So I just don't know, Doc. I don't know what happened out there. I know that the Department of Defense had a whole bunch of different instruments that kept going off. It scares the hell out of people that we're serving in the theatre because they don't know whether or not they were exposed.

I know and I couldn't agree with you more that I don't think there's any evidence to suggest that Saddam Hussein sent in a chemical warfare agent that exploded in one particular theatre because a hell of a lot more people would have been exposed in that particular area. But whether or not something exploded in the air, whether or not there were shelters that could have been hit by bombs that then created some—whether there were bugs in the sand, I don't know.

And I guess I would look to somebody like Dr. Jackson to just sort of come in at a certain point here and kind of set the record straight as to how you conduct an epidemiological study that ultimately would enable us to capture whatever knowledge the human race has been able to develop and bring that to bear on the range of exposures that these individuals had in this particular area for a particular period of time and enable us to draw some conclusions so that we're not feeling—and I don't think you're doing anything evil, Doc, Dr. Joseph. I just think you're taking 15,000. Kizer has got 43,000.

We can talk about Leishmaniasis. We can get bogged down on whether or not there were chemical or biological agents. Hell, I don't think any of us know. But it does seem to me that it should be possible to be able to conduct a universal study, look at all of

these guys we're serving, all the troops we're serving, everybody there was serving, the kinds of illnesses and exposures that they're having, and be able to draw some kind of conclusion.

The VA is now treating the people in terms of their illnesses, whether they be physical or psychological. That's great. They're getting some money from the Government for their disability. That's great. But all they really wanted to know was whether or not there was something that they were exposed to that could have drawn this conclusion. There's no sense in us pretending that they might not have been exposed to anything that could have happened out there.

Is it possible? Dr. Jackson, is this appropriate for you to answer, whether it's possible to create a universal study that will enable— Dr. Kizer said that even with what we've got to date we might be able to come to a conclusion. But we might not be able to. Is it possible to create a study that would enable us to make this determination once and for all?

Dr. JACKSON. Congressman, I don't know how one could do a survey of 700,000 individuals, look at all their exposures everywhere they had gone, compare those with 700,000 other individuals, that level of detail. What's really needed is a scientifically based sound sample of individuals, just the way a poll looks at the profile of the American people before an election.

If you do a random survey of the population, you interview those individuals. You find out where they were, what were your exposures, and you draw some conclusion from that sample. And that's what we're proposing to do with—

Mr. KENNEDY. Isn't that exactly the opposite of what Dr. Joseph—Dr. Joseph is saying you find the needle in the haystack, and you're saying you look at a haystack.

Dr. JOSEPH. You do both of these.

Mr. KENNEDY. Okay.

Dr. JOSEPH. You do both.

Mr. KENNEDY. I'm just repeating what you said. Isn't that true? He's saying you look at the guys who are sick, and you're saying you look at a comparison.

Dr. JOSEPH. No, sir. I'm saying you start with the people who are sick. You start with the needle so then you can know what questions to ask about the haystack. That's my comment.

Dr. JACKSON. May I just comment quickly on the questions you ask because it's very important how you word the questions? Number one, the population you interview is very important. People that call up and self-refer are different from people who don't call up. And you need to get that sample that's an actual profile of the population. That's what the Iowa study is doing.

Number two, the questions. We've got two advisory committees that will be working on that. One is a science advisory panel, which obviously you need, but the other is a veterans' panel, people who actually have real life experience with this that will help us formulate the questions, make sure that we're asking about exercise training or whatever questions are needed.

We've already had one meeting of one of those panels already. So we'll be including all of those as well.

Mr. KENNEDY. Well, is your conclusion that you're going to have the data, you'll be able to make the best presumption possible, the best answers possible or—

Dr. JACKSON. If I may, I don't want to raise false hopes. At the end of this, we will be able to say, one, are the rates higher than people who did not serve in that theatre?

Number two, if they are higher, how are the people that had higher rates of symptoms different, different age, different level of training, different areas that they worked in? We're going to refer that over to the geographic systems that would look at that. That's about as much as we'll get out of that.

Mr. KENNEDY. Thank you, Mr. Chairman.

Mr. HUTCHINSON. Thanks, Joe.

The gentleman from New York, Mr. Quinn, is recognized.

#### OPENING STATEMENT OF HON. JACK QUINN

Mr. QUINN. Thank you, Mr. Chairman. I, too, want to, Tim, say to you that I appreciate the effort that you've put in to make sure that this is one of our first hearings this year and want to suggest, Mr. Chairman, that we continue this line of questioning with some other panels, as I know you plan to do this year, and would ask unanimous consent to insert into the record some opening remarks.

Mr. HUTCHINSON. Without objection.

[The prepared statement of Congressman Quinn follows:]

#### PREPARED STATEMENT OF HON. JACK QUINN

Thank you, Mr. Chairman for calling this hearing.

I am pleased that one of our first hearings is focusing on the troubling experiences of some of our Persian Gulf War veterans. I think we need to continue to pay special attention to the servicemen and women who have returned and are experiencing unexplained illnesses.

Research efforts appear to be well underway. While I understand few projects have come up with definitive conclusions, I hope today will give this subcommittee more information on planning and investigations phases.

The witnesses who have come to testify before us this morning will help me respond the many questions and concerns of the veterans and their families in my district.

The unexplained illnesses—fatigue, rash, muscle pain, stomach ailments—and the particularly troubling reports of problems among vets' spouses and children. The biggest obstacle seems to be that there is no common or underlying problem that can be identified. We owe it to our vets to keep trying to find one.

I am pleased to note that a researcher at University of Buffalo is involved in one of the multi-project efforts. I look forward to hearing more about these efforts this morning.

President Clinton recently formed an advisory panel to advise him on the issue of Persian Gulf Syndrome and requested a \$13 million increase in research money. We can see we have a commitment from the Administration, VA, DOD and other agencies.

I am glad to be here this morning—so that our vets will know there is also a commitment by the Veterans' Affairs Committee and all of our colleagues in Congress.

Mr. QUINN. I at the same time want to mention a gentleman that I represent, upstate New York, Buffalo, NY—and I'm pleased to note that one of the researchers at the University of Buffalo is involved in one of the multifaceted projects. And we've been in touch with him as well as some people at the Buffalo VA and others in our end of the world up there in Buffalo and western New York.

I guess a couple of reactions and then maybe a general question to the entire panel for my benefit this morning. I guess I've sat here now for a little over 2 years on the committee and want to

make special note of the work that Joe Kennedy and Lane Evans and Steve Buyer have done in this regard.

Just to say as an observer a little bit until about now, when I plan to jump in a little bit more what the gentlemen have begun, we're not making this stuff up. I mean, we hear from constituents. We hear from people back home. We hear from people all over the country who are concerned.

I've sat this in this room around this table and have heard from vets and their families, men and women, who have explained to us absolute horror stories of their experiences and their fears, fears of the unknown. I see some young people joined us in the back of the room a few minutes ago. They're fearful for their children and other things.

So we're not going around trying to make this stuff up or to look for these kinds of concerns. They come to us. You gentlemen—and the other thing I want to mention before I make is an observation that I'm pleased to see after some prodding here some headway being made. I think the President's announcement of an advisory panel and some money to this effort is something we all should support. And I want to do that.

I think the fact that we have the four of you here this morning from four different areas shows that we're working on it from a couple of different directions. And I think that's very helpful.

But the four of you represent work for the American people, I think, remind us all that you work for the American people. In a sense so do we back in our districts. We have oversight over that. And our job in representing the American people is to make sure that those of you who do work for them are doing the best you possibly can.

Mr. Chairman, when we do some more of these hearings later on this year, one of the things we might suggest is since we're not the only ones hearing from all different sides, that we invite some of the panelists back to hear those mornings when we hear from the servicemen and servicewomen and their families firsthand what's going on. I'm sure you've heard it in your interviews over the course of the last couple of years.

I just would ask you for some advice, each of you this morning. When we go back home or we pick up the phone or we answer letters from people who say to us along the line of the questioning that Mr. Kennedy just hit, "What's taking so long? How many studies do you have to do for me to convince you that I'm sick, that things aren't going very well for me?"

I'm a school teacher. I understand that you can't rush into these things. I understand that overnight you can't decide what's wrong and what's right without some study, some science, some medical information to give you that.

What advice would you give me or anybody else around the table this morning on a response to these people? When the chairman calls them back again this year to testify on the Hill, they'll say "Here we go again. We'll go back to Washington, and we'll sit in front of the panel. We'll tell them again what we told them last year and the year before."

Dr. Kizer, I ask you to start and work your way across. What advice would you give me to give to my constituents?

Dr. KIZER. First I would encourage you to tell them to come into the VA, and we're going to take care of them. That is one of the things that's fundamentally different about how this problem is being approached than other problems in the past, such as problems with Agent Orange and others.

We have decided that it makes much more sense to take care of people, to treat their conditions, to give them the best care that we can, even though we may not know exactly what's causing it or even in some cases if it can't be clearly linked to what may have happened.

Having been involved very closely with the AIDS epidemic and with other problems in the past, we've heard these same questions there. We're 15 years into the AIDS epidemic. Why don't we have answers? We still don't have answers. The war on cancer was declared 35 years ago. We don't know what causes most types of cancer. And you can go down the list of other medical conditions that we don't have answers to.

The research that needs to be takes time. If you're going to do good research and get good results, you can't rush it. We need to explore all possibilities. I think we need to keep a very open mind. And anything that's reasonable needs to be pursued. And that is indeed the approach that hopefully we're taking.

But, again, I would go back to what I said at the outset. What's different here is that we're saying you don't have to wait until science has those answers because we don't know when that's going to be. It may be years. It may be never.

But in the meantime let's take care of the people. They served the country. Let's take care of them in the best way that we can. And so I think for your constituents, you need to encourage them to come in and get the care that they deserve.

Mr. QUINN. Thank you. The only difference when we talk about this kind of illness and AIDS or cancer, of course, is that we have heard from some people who said that the reason they're ill in the sickness is because they were in the service of their country.

A mother said that she sent away a 19-year-old son who was the star of the football team. And then 11 months later she told us he was dead. And there's some connection to the service to our country in there. And that's why we're interested. That's why we all should be interested.

Dr. KIZER. Sure. And I understand that. But from a science point of view, it's not that much of a difference.

Mr. QUINN. May I take just an additional minute to get a response from the other members, Mr. Chairman?

Dr. JOSEPH. Here's how I'd answer your constituent, "The number of studies we have to do before we're convinced that you're sick is zero." What Ken Kizer has just said, and what I've said about our clinical program is strong encouragement to them to come in so that we can take care of what ails them and try to figure out what is causing it.

I would not be quite as pessimistic as Dr. Jackson about how soon we will learn or how fully we will learn what this whole puzzle looks like. Although he's right that we are unlikely to get a complete perfect answer, I think a number of the studies now going on will help: the VA survey, the Naval studies that look at com-

parisons between hospitalization rates, mortality rates, other kinds of exposures and reproductive issues. The way imperfect science and medicine work is that you probe an issue from many different directions. You don't get a full or a perfect answer from any one of those probes, but you begin to get knowledge that enables you to move on and work with it.

So, I'm a little more optimistic. Although I think he's right in a perfectly scientific sense. I think that's the answer to the constituent. We don't know, but we're moving in the right direction. Each year we'll have more to say about how much we do know. That takes time.

Mr. QUINN. Dr. Jackson, can you add a brief comment?

Dr. JACKSON. People that are ill need to be taken care of. And science may give us some answers that may take a long time. You want to make sure people get the care that they need before they'll not wait for the science to come in.

Mr. QUINN. Dr. Miller.

Dr. MILLER. My only comment is that we have on our committee one Persian Gulf vet who reminds the full committee frequently of the urgency of these issues and pushes them very hard.

Mr. QUINN. I appreciate you. Dr. Kizer, for your line to explore all opportunities and to keep an open mind I think is key to all of us and all of our efforts in this area.

I appreciate the time, Mr. Chairman.

Mr. HUTCHINSON. Thanks, Jack.

The gentleman from Illinois, Mr. Flanagan, is recognized.

Mr. FLANAGAN. Mr. Chairman, I ask unanimous consent to place a statement in the record.

Mr. HUTCHINSON. Without objection.

[The prepared statement of Mr. Flanagan appears on p. 60.]

Mr. FLANAGAN. Good morning, gentlemen. I thank the chairman for having these meetings. And I thank Mr. Kennedy for his commentary and his questioning.

I have a couple of questions for Dr. Miller along the same vein that we have been pursuing with Mr. Kennedy, and that is the coordination of the efforts and the value and efficacy of what has gone before and our plans for the future to continue to deal with this in relation to your study with the Institute of Medicine.

Your statement before this committee and the report of the Institute of Medicine as issued indicate a somewhat critical review for the research efforts that the Department of Defense and the VA have recommended a better focus to coordinate their efforts. How can these departments better coordinate their information-gathering and research efforts?

Dr. MILLER. I think the committee in the report made highly specific recommendations for coordination, and realizing that those were made last September and that I think they feel somewhat better now than they felt at that time.

But their emphasis on coordination was not only information-sharing, but something beyond that to ensure integration and a lack of duplication across the research program. And I think their recommendations were very clear and they have been taken to heart by the VA and the DOD.

Mr. FLANAGAN. Well, I'm glad it's that because Dr. Kizer this morning was talking about the fact that he did not have a comprehensive research organization insofar as it applied to the entire spectrum of the number of people he has to look at for the Gulf coordinating boards and the difficulties and benefits that have been gleaned from that. I'm glad that we're moving in that direction.

Dr. Miller, you have also alluded to the fact that the Department of Defense and the Veterans Administration should focus their efforts on specific research questions. Could you elaborate on what those questions might be?

Dr. MILLER. I think the specific research questions were detailed in the testimony. And I will reiterate.

Mr. FLANAGAN. Could you extrapolate on those a little bit because we're learning a little bit today about not just what they're called, but what they're doing, too?

Dr. MILLER. All right. I will go more slowly over the collection of recommended studies, the first of which was a collaborative population-based survey to obtain data on symptom prevalence and health status and evaluation of potential health effects from lead; a long-term study of the mortality of Persian Gulf War veterans; well-designed studies of potential adverse reproductive outcomes; laboratory studies of potential interactions of pyridostigmine bromide, DEET, and permethrin, three substances that were widely used during the Gulf War; and further work in the area of diagnosis of *Leishmania tropica* infections and the study of the epidemiology and ecology of this tropical Leishmaniasis.

Dr. JOSEPH. If I might jump in here for a minute?

Mr. FLANAGAN. Yes, please, because I read the testimony and I heard you repeat it again now. Could you tell us something about what these specific research questions are going to do and how we're going to get a little closer to the answers we're looking for?

Dr. JOSEPH. I believe with the possible exception of lead, every one of those categories is either currently funded research or is in the 1995 plan. I'm not sure about lead. Somebody will remind me in a moment. But each of the others I believe we have moved to fund.

Mr. FLANAGAN. All right. Well, I have been listening through most of the morning and Mr. Kennedy's 15 minutes, Mr. Quinn particularly. I must say that the level of urgency to find the root cause of the problem does not seem to be there at the level that we have it.

I know that you're scientists and you operate on a much more elevated plane and there are methodologies by which you approach and where you're going, but you are responsible to the same American people that we are. And they need an answer.

I remain still uneasy as to the direction we're going, not just the speed by which we're getting there, but the efforts that are being expended to get there. I remain without a concrete warm fuzzy feeling inside saying "We're going to get there eventually." It might take 30 years or 40 years or longer. I remain very uncomfortable that we're moving in the right direction.

I think we're collecting a lot of information in a duplicative, difficult, cumbersome fashion without a lot of coordination. And I'm not sure that that's taking us where we want to go. We are just

doing something. Perhaps I'll give each of you a chance to throw a bomb back at me and make me feel better about that.

That's where I stand now. And I'm deeply uneasy about this.

Dr. KIZER. Well, I don't think that that is a fair characterization of the projects that are underway. Some of the things that were talked about earlier are indeed being done.

For example, you asked "Well, what are they going to show?" Well, the project underway is looking at 15,000 Persian Gulf veterans and 15,000 of a control group of veterans to determine whether there are differences in the symptoms in those two groups to determine whether there is a different array of illnesses occurring in those who served and who didn't. This is fundamental, threshold-type question that needs to be answered.

And you can go down the list of other projects. Some of them are much more narrowly focused. Others are more broadly focused. But they're all part of answering the big picture question of why and what it is we actually do or don't know.

Mr. FLANAGAN. Thank you, gentlemen.

Thank you, Mr. Chairman.

Dr. JOSEPH. If I might, I would invite you—

Mr. FLANAGAN. Yes, sir. I'm sorry.

Dr. JOSEPH. I would invite you to interview one of the 40 or 50 military physicians who are working full time going from ground zero to—

Mr. FLANAGAN. No one is demeaning anybody's efforts in getting this done by—

Dr. JOSEPH. It's 9,000 people against—

Mr. FLANAGAN. It's the coordination efforts involved in the information data collecting and actually congealing that into some sort of level of solutions. Without specific research questions or without a direction in which we're going that we've talked about, my concern is not misplaced. I really have a problem with whether we're flying to get to the answer or not and not the level upon which the work is being done or the information is being collected.

Dr. JOSEPH. I guess I'm responding to your comment about sense of urgency. I think if you talk to some of the people, you might get a sense of our sense of urgency.

Mr. FLANAGAN. Thank you, Doctor.

Mr. HUTCHINSON. Thank you, Mike.

The gentleman from Indiana, Mr. Buyer. Steve. Earlier we recognized your great commitment to this issue and your personal involvement in it. We are glad to have you join the subcommittee today. And you are recognized.

Mr. BUYER. Thank you, Mr. Chairman. And let me congratulate you and our ranking member—again, I think everyone is saying it—for making this the first hearing. It shows your commitment. I appreciate it from both of you. I give special recognition to Joe Kennedy and Lane Evans. Joe took on this issue early on.

When I came to the Congress, I learned very quickly about institutional barriers within the medical community, whether it was the private medical community, whether it was VA, whether it was the DOD. And I think even by what I've heard today, some of the downward pressures still exist. And I'll get into that, Dr. Joseph.

Let me make a couple of comments. One I'll be very careful and tactful in the comment, especially based on a conversation that Mr. Tejada and I had in making sure that we keep the Veterans' Committee in a bipartisan spirit.

I appreciate President Clinton getting involved. As a matter of fact, I'll welcome anyone in America to get involved in the issue of Gulf War veterans. If the President were here, I would say "Mr. President, what took you so long?"

So I know all four of you like to reach out and put your arms around the President's statement. Let's not forget who it was said, when it was said, and why it was said. So let's not forget about political theatre involved in a very sensitive issue of policy.

When you think about how far, in fact, we've had to go in the last 2½ years, any time when you're trying to pioneer a new issue, you're out there plowing up that ground, there's always somebody behind also putting the soil right back in the furrow.

I'm calmer today than what I was in December. And that's fine. You can take shots at us in December, when we're out of session. I understand that things like that happen and occur.

I have some specific questions. Let me get to them. One that puzzled me, Dr. Jackson, your comment puzzled me when you said that baseline data is difficult. When you say baseline data is difficult, the confusion to me is we're dealing with a pool of individuals here who are perhaps the most physically fit in the country because we only take the most physically fit. We have a drug-free environment. They're all HIV-tested. And you're saying that we have a difficult baseline data to begin with. Confuse me.

If you're having problem getting information, I'm sure that Dr. Joseph would be more than happy to cooperate with you. If not, call me. I'm sure that Jesse Brown would be more than happy. Jesse has been very cooperative in this effort. So please explain that to me.

Dr. JACKSON. Sir, what I meant to convey is to find out what the individuals who were not ill, what their exposures were, where they were, their background, demographics, other such information in this survey in Iowa, and compare those answers of the well individuals with individuals who became ill by the baseline in that. What is the background rate of how many times do they take pyridostigmine, other such things, the ill compared to the well? So I was looking for information from the well population.

Mr. BUYER. Are you having difficulty getting that information from DOD?

Dr. JACKSON. No. We're doing this through the interview survey. We're actually interviewing the veterans themselves, both the individuals in the theatre and veterans who did not serve in the theatre. This is the Iowa study.

Mr. BUYER. All right. To Dr. Joseph, here's part of the problem that I've had for a long time. And I had this conversation with Dr. Blanck in December. First you make the comment that the CCEP, the purpose is to go in in regard to the treatment. So I salute you. I mean, that's part of the struggle that we had.

How do we get those who are suffering from physical ailments for which they themselves don't know what happened to their bod-

ies? So we worked very hard. We got them access into the VA. And I congratulate you for setting up the program.

I shifted the focus when all of us were focusing on the veteran side. I jumped over to the active duty side. I remember when I talked about the downward pressure, I remember that at that time, even at the meeting we had over at the Pentagon and by the testimony of the Surgeons General, was that we only had like 167 on active duty.

Steve, that's it, 167. I didn't believe it. Joe didn't believe it. And now your testimony is we've got 15,000. That's less than a year since that last hearing.

So when you say that 84 percent have clear diagnosis of their conditions, let's only focus in on the other 16 percent. Here's where my difficulty with this whole issue, Dr. Joseph, has been. We've had this conversation. I'm not a doctor. You're a physician. You're trained for known diagnoses. Sometimes you need to take a step back and go "Time out."

What happened here? What happened to all of these soldiers? When they go to the Gulf and they're physically fit and then they come home and begin to have problems with their bodies, you can treat all the flu. You can treat their respiratory problems. You can treat pneumonia. I mean, you have specific diagnoses for those problems. But somehow you have to just take a step back and go "Well, what is all of this?"

What caused all of it?" So I agree with you when you can say 84 percent have clear diagnoses. My own physical problems have very clear diagnoses. And I'm one of the lucky ones because I have improved so much over the last 2 years. I mean, I can run up to 3 miles now. And I did a stationary bike for an hour last night. I was so thrilled and excited. And I can play basketball and do things. But I still have some of the respiratory problems. I still have asthma. And I'm allergic to everything green, very clear diagnosis. I'm just as puzzled as anyone else out there what happened.

I've also, you know, been an advocate—Mr. Chairman, may I—

Mr. EDWARDS. If I could ask unanimous consent, Mr. Chairman? You were very gracious in letting Mr. Kennedy on our side, who has been involved in this issue so personally, have extra time, let us yield to him. I'd like to ask unanimous consent to give Steve an extra 5 minutes so he also can continue.

Mr. HUTCHINSON. If there's no objection. Gentlemen?

Mr. BUYER. Help me here. When you say that you only want to focus on the 16 percent, tell me that's not true.

Dr. JOSEPH. No. That's not true. I didn't say "only." Let me let you finish.

Mr. BUYER. No, no. That's part of my question to you, that I want to be reassured here today that whatever research efforts we're doing, it's for a larger picture—

Dr. JOSEPH. Of course.

Mr. BUYER (continuing). And that part of this, in your questioning, hopefully you can tell me: How are you labeling these discharges from the active duty side? Okay. Tell me what you're labeling them. And for the disabilities now, what are you calling them? So are you calling them your known diagnosis?

And when you do that, you're giving up the big picture. I mean, there's a tendency right now, "Let's not call it the Gulf War syndrome. Let's get away from that." So help me out here.

Dr. JOSEPH. Somebody asked me last night a pointblank question, "Is there a Gulf War syndrome?" My answer was, "Of course there is. Because, any collection of illnesses and/or symptoms that relate to a particular focus you can call a syndrome."

If they had asked me the question "Is there a Gulf War illness?"; I would have said "Everything we know so far says there is not." What there is in this large group of people, in these 15,000 people—I agree with you entirely; I mean, we looked, and that's what we found—is a collection of illnesses and symptoms. Some of which are quite easily explainable, some of which are frustratingly unexplainable at the moment. Then there's a whole spectrum in between.

When I said we're now going to concentrate on the 16 percent that are way off on this end, didn't mean "only." I meant that that's where we've got to go to try and find whatever root causes, not root cause, root causes, are to be found in that 16 percent. That's certainly the way to hit pay dirt more quickly than to go back and look in the things that are more easily explained, that fit into our—if imperfect, at least kind of understandable—system of medicine.

Yes, there is a syndrome. No, I don't believe there is an illness. And yes, we have to keep pressing on. I think in one of the first conversations you and I had, I likened this to trying to peel away the layers of an onion: take the easiest ones first, the most explainable first, and keep working in towards the center.

Whether or not there's going to be a core at that center that we never explain, I don't know. I don't think anybody can.

Mr. BUYER. Does any of the research mirror that theory?

Dr. JOSEPH. I think that it does. I think it mirrors it in several ways. First, I've said several times that the clinical approach gives us an idea of what the needles might be and where to look in the haystack.

Then, second, there have been—and these have come in for some criticism from the IOM—a series of research probes to look at things that either people are very concerned might be root causes, like pyridostigmine, or that, for one reason or another, might be a root causes, like the oil fires.

The third mirror, the most important one, is these broad population-based studies that look at comparing hospitalization rates in people who went to the Gulf with people who didn't go to the Gulf, at reproductive outcomes and miscarriage rates, et cetera, et cetera.

As I said earlier, when we have that geographic map to lay all of this research over, then we will really see if things pop out. It's that combination of approaches; learn from the clinical program what you can in terms of which directions to go, pursue the specific leads, and then do the larger, broad-based epidemiology that Dr. Jackson is talking about to try to put it into perspective.

Mr. BUYER. To answer the question that I asked earlier, how are those on active duty—what do you call it when you're discharging?

Dr. JOSEPH. Well, you remember that Under Secretary Dorn issued a policy that no one was to be discharged against their will who did not have a diagnosis. That policy is still in effect. I will double check to be sure I'm right, but I believe if someone has a firm diagnosis coming through the CCEP—let's take an easy one, way over here, chronic arthritis of the right knee—and would be boarded out on that basis, that would be the discharge diagnosis.

Mr. BUYER. All right. See, there is a reason I wrote that right into law. I mean, I wrote that in the law because, to my colleagues, I was so incredibly frustrated.

And the whole idea of giving—I mean, this is an incredible radical idea to give compensation to undiagnosed illnesses. And I didn't mean doing that on the active duty side. That's where we forced the issue first.

And the frustration that I share in the challenge that I think we share at the moment is they say "Well, we're not going to discharge those who are the unknown diagnosis." In other words, we didn't want these guys kicked off of active duty. We want to extend our compassion and care to them, make sure they're taken care of and not just thrown out into Dr. Kizer's care. Okay?

The challenge here is, ladies and gentlemen, to make sure that when they say it's a known diagnosis, are we losing a bigger picture here? And that's why I want to make sure that we're not just sending them out the door on a catch-all diagnosis because that's what we've had from the very beginning. So I want to make sure to my colleagues there's a bigger picture out here, too.

It's a difficult challenge that you face, Doctors. It really is because of the efforts, actually from a lot of us, that want there to be the cause. What was the cause? What was the cause? Causation is very, very difficult, especially when illness is multifaceted.

If I could, can I have just one last, Mr. Chairman?

Mr. HUTCHINSON. Without objection.

Mr. BUYER. Dr. Kizer, before you arrived with the Veterans Affairs, I had had a conversation with Jesse Brown. And he contacted NIH in the research to look at the cocktail mix of the inoculations. So I'm curious as to where that particular study is going. And so, Doctor, if you know that or whomever can answer that one.

And to Dr. Kizer: If you would tell me that of the \$250 million in the research and development budget of the VA, how much is devoted to this issue?

Thank you, Mr. Chairman.

Dr. KIZER. Let me try to answer your latter first. We will be spending at least \$5 million of the research budget for Persian Gulf issues next year, but I would hasten to add that I believe we will be spending more than that.

I am currently reviewing our whole research budget and what it's allocated for. I'll be looking at not only what we're spending on Gulf War issues and concerns, but what we're spending in a number of other areas. I may be making some adjustments in the future.

So while we are committed to spending at least \$5 million, that may increase in the future as we look at other studies that may need to be funded.

Mr. BUYER. And to the cocktail mix?

Dr. KIZER. I'm sorry?

Dr. JOSEPH. I think I can speak to that. The initial set of studies looking at the possible interactions between pyridostigmine, insecticides, et cetera, are underway and will be completed this year, I think towards the middle of the year.

The studies looking at the possible effects of vaccines and immunizations and other issues, pyridostigmine, are in the 1995—

Mr. BUYER. Dr. Dorn had testified to us, this particular committee, my colleagues, that the inoculations that were given were the five series of shots they took to Vietnam. They had no idea what the effect is on the human body. They give you all those shots.

On top of it, some of these guys take botulism. They take two shots of Anthrax. You take your nerve agent pills, change the dye, put you under stress. They have no idea what that does to the human physiology.

So I know you said you wanted to also look at the insecticides. I think that's a good idea. But I want to make sure that they are in the 1995—

Dr. JOSEPH. All of that is going to be done. Well, one, Mr. Buyer, those are in the 1995 research proposal as independent investigator peer-reviewed research.

Two, I wouldn't agree with Dr. Dorn that we have no idea what the effects of multiple immunizations are. We have a lot of information and knowledge about that.

Mr. BUYER. And when you say that "you" are going to do that, DOD has a—

Dr. JOSEPH. Everything runs through the coordinating research—

Mr. BUYER. So NIH out there isn't doing something on its own?

Dr. JOSEPH. I'm sorry. That I can't answer. I don't know what's in the NIH budget with regard to vaccine effect research.

Mr. BUYER. I'll check that out.

Dr. JOSEPH. I'm speaking about VA and DOD.

Mr. BUYER. Okay. I appreciate the indulgence of my colleagues. Thank you, Mr. Chairman.

Mr. HUTCHINSON. Thanks, Steve.

The gentleman from Georgia, Mr. Bishop, is recognized.

#### OEPPING STATEMENT OF HON. SANFORD BISHOP

Mr. BISHOP. Thank you. Let me just briefly again thank the chairman for this hearing. I think it's certainly appropriate for us to have a progress report. I'd like to thank Mr. Kennedy, Mr. Evans, Mr. Buyer for their leadership in seeing that this issue stays on the front burner.

My concerns I think have already been raised, but they really are underscored. And I think I can't underscore it enough. And the veterans that I have in my district and that I hear from across the country are asking "Why is it taking so long? Why is it that the process that we understand is being undertaken is taking so long and moving so slowly?"

Could you isolate for us those factors that have contributed to what some of our veterans and their families consider to be the snail's pace at which it is developing? I know that putting this in perspective certainly would suggest that we are much further along

than we were, for example, in dealing with Agent Orange following the Vietnam conflict.

But could you shed some more light on it? Because I just don't know what to say to my veterans when they continue to ask over and over again "Why is it taking so long? What is the problem? We know that we have been affected? Why are they stonewalling? Why are they stalling?"

That's, of course, unfair to you. And I'm not suggesting that you have not been moving with dispatch. But could you please give me some guidance there on how I can respond to those kinds of questions that I repeatedly get?

Dr. KIZER. Certainly. And I'll defer to my colleagues here to follow up on my comments. I would certainly tell you that you can tell your constituents that if they have some ideas on how the research can be done more quickly or better, we are very open to hearing those ideas.

We have a wide array of some of the best minds in the country, the best scientists in the country working on this. They are doing the best they can. Good science takes time. I think it's imperative that you and your constituents, understand that.

This condition is not unlike many other conditions where despite lots of money, and lots of research projects, we still don't have answers to basic questions. And we're certainly open to considering any ideas that you, your colleagues, or your constituents might have that could speed the process up, because we'd like to find the answers quicker, too.

Dr. JOSEPH. I don't think there's any snail's pace on the diagnostic and treatment side. We want anybody who is still out there. This goes both for the VA and DOD, I know. Anybody who is still out there who is ill, who is symptomatic, we want them in so we can help figure out what ails them and treat that.

I really have nothing to add to what Dr. Kizer said about the research side. Good science takes time. You don't necessarily get more good science with more money, although sometimes you do. It takes time to figure out what questions to ask, then to do the research—particularly when it's large population-based research, and then to interpret the answers. That's often frustrating, but that is the reality.

Dr. JACKSON. Sir, every doctor knows people who have suffered because a patient was given a wrong diagnosis, someone rushed to a judgment, gave them the wrong pills or sent them for the wrong surgery. I think it's very important that we get good medicine to these folks. That's what's being talked about, number one.

Number two, especially in the area of environmental health, there have been many arenas where science was half-baked and ended up making a decision that turned out not to be the right decision later on as further information came in, not saying that—I am suggesting that it is a slow and sometimes cumbersome process.

Could it be improved? Probably always.

Dr. MILLER. Sir, I have nothing helpful to add to what has already been said.

Dr. KIZER. I'd like to add just a couple of points that I think are relevant. And some of it goes back to what Mr. Buyer was saying,

that insofar as these studies can help try to answer the question of why individuals have a certain diagnosis. But there are many diagnoses, or conditions, that people have and for which they are treated quite effectively, but for which we still don't know what causes it. I'm referring to conditions like diabetes and arthritis.

Insofar as the studies that are being undertaken here can further the science in really understanding what is causing these conditions and whether there were things either in the environment or otherwise that caused our soldiers to come back with conditions that are diagnoseable that may be common in the population. That's a very important step forward.

Likewise, I would add that we need to view this as an opportunity to gain information about some very important questions about the role of environmental factors in causing illness. There are many concerns, whether they come from the industrial setting or environmental deterioration that's occurring. The Gulf War presents some particular opportunities to look at how the environment affects human well-being.

Mr. BISHOP. I yield back the balance.

Mr. HUTCHINSON. Thank you, Sanford.

The gentleman from Alabama, Mr. Bachus, is recognized.

Mr. BACHUS. Thank you.

Gentlemen, I just want to give you my impression so far on the Gulf War veterans and what we found. Tell me as I go along as to whether I'm straying from the path. Okay?

Now, we had 700,000 basically, 697,000, men, women that went to the Gulf War. Now, of those that came back, I think the largest study shows that the mortality rate is actually less than the general population.

Dr. JOSEPH. That's a preliminary study. That's correct, the comparable populations.

Mr. BACHUS. Comparable populations. So maybe even two-thirds of the mortality rate of the comparable population. So our men and women who served in the Gulf War are not dying at any more accelerated rate than men and women who stayed in this country and maybe even less so because there none were suffering from AIDS. That's correct?

Dr. JOSEPH. Our present level.

Mr. BACHUS. Now, at one time—and I think these figures are a little outdated, but we had 34,000 on the Persian Gulf registry. Now we've got maybe 44,000.

Dr. KIZER. The VA registry.

Mr. BACHUS. But at the point we had 34, about half of those had been diagnosed and you all felt like you had a pretty good handle on what their condition was. Is that right? You put them in a computer and you—

Dr. KIZER. That's correct, yes.

Mr. BACHUS. Okay. Let's just focus for a minute on those 17,000. Somebody I think with the VA—the lady in the blue dress, are you with the VA?

Dr. KIZER. Yes. Dr. Murphy.

Mr. BACHUS. Was that incorrect, though? I know you were shaking your head "No," and I don't want to get bad information.

Mr. HUTCHINSON. Could you identify yourself for the record?

Dr. MURPHY. Yes. I'm Dr. Frances Murphy, the Director of the Environmental Agent Service at VA.

Mr. BACHUS. Have we sort of looked at 17,000?

Dr. MURPHY. We've actually now have got computerized data on the first 27,000 individuals on the registry. And the undiagnosed illness rate is about 20 in that population.

Mr. BACHUS. Okay. So it's 16 to 20?

Dr. MURPHY. It has hovered between 15 and 20 percent.

Mr. BACHUS. Okay. But now what I want to do only because at the point where we had 34, I've got statistics that you all supplied me when we had 34,000 and 17,000 had been put in the computer. So that's why I want to talk about those 17,000.

Now that we have 20 we've got a lot of changes, 20 or 27. Have we basically go the same findings that we had when we had 17,000?

Dr. MURPHY. Yes. The symptoms, diagnostic categories, look the same in the computerized data on over 27,000 veterans as compared to the 17,000.

Mr. BACHUS. So let's just go with the 17 or the 27 if it hasn't changed much. When you run these people through the laboratory, you don't find anything distinct. Well, I'm sorry. Let's back up. We've got this population. Of that population when it was 17,000, you had about 3,000 that fell in the unexplained illness category. Is that right?

So this is what sometimes I guess the press talks about, maybe the Persian Gulf illness, because the others have asthma, they have sinus trouble, they have allergies, they have—I mean, they could have any number of conditions, even cancer. But let's talk about the 3,000 that we can't explain.

There's no laboratory abnormality with those people, is there?

Dr. MURPHY. In most cases, sir, the standard diagnostic tests do not show a characteristic abnormality, but you're correct.

Mr. BACHUS. Characteristic one. Now, with cancer or with AIDS or with Agent Orange, that wasn't true, was it? I mean, you did have a distinct laboratory with cancer, you go through—or do you? I mean, by "distinct," if it's a certain kind of cancer, don't you have—

Dr. KIZER. Well, not really. It depends on when in the condition that you're talking about, whether it's confined to a particular organ, or whether it's metastatic. There is a whole number of questions you would have to ask and answer before you could say yes or no to that.

Mr. BACHUS. Well, I'm just wondering. If you run someone through a laboratory and x rays and everything with cancer, you usually can find it, can't you? And you can say "This is a certain kind of cancer" or this is—with AIDS you certainly can, can't you? Don't you give a test and—

Dr. KIZER. Sure. And if you take the AIDS patient, for example, there are certain tests that are used. Depending on where they are in the course of HIV disease, you may or may not find the abnormality.

In other words, if you did not know that they were HIV-infected, you may or may not find any abnormality depending on where they

were in the course of their disease. And the same pretty much applies to other conditions you're talking about.

Mr. BACHUS. Is there any one organ system that these—I mean, they have symptoms, but is it sort of confined to any one organ system or with these 3,000?

Dr. KIZER. No, sir.

Mr. BACHUS. And there's no one physical symptom? There's no connecting physical symptom or physical sign of any illness, is there?

Dr. KIZER. There's a collection of symptoms that in the composite perhaps characterize these individuals, things such as—

Mr. BACHUS. Talking about the fatigue, 17?

Dr. KIZER. Fatigue and—

Mr. BACHUS. Headache?

Dr. KIZER. Headaches, muscle aches, loss of attention.

Mr. BACHUS. Joint pain?

Dr. KIZER. Things of that type, yes.

Mr. BACHUS. And then the psychosomatic, the forgetfulness, the lack of concentration and all of that.

Let me ask you this: If you went out and you got a general population and you ran them through the same test, wouldn't you get maybe 14 percent with headaches—

Dr. KIZER. Well, if you—

Mr. BACHUS. (continuing). Or 17 percent with fatigue or—

Dr. KIZER. The answer is yes, depending on the population. Perhaps another way of looking at it, which is what I think I may hear you asking, is that if you looked at, say, a university medical center where people come to be evaluated often with unusual or exotic conditions, how many of those people would be discharged without having a diagnosis. And you would find that about 15 to 20 percent, or so, of individuals who come to our most sophisticated tertiary medical centers leave without having a diagnosis.

Mr. BACHUS. That's what I'm asking. I mean, I'm searching for something here that you don't find in the general population. You know, the only thing that I can find that you don't find in the general population—and I could be wrong, but I just want to know: Where am I wrong?

The only thing that sticks out here is that 17 percent of these men and women were in the National Guard or the Reserves, but 50 percent of them with this undiagnosed illness are reservists or National Guard. I mean, that appears to be the only thing that sticks out.

Mr. HUTCHINSON. The time of the gentleman has expired. We'll let you answer that question, if you like, or comment on that and then move on.

Dr. MURPHY. I'm not sure that that statement is correct. We have not broken the veterans with symptoms but no diagnosis down to active duty and reservists for the undiagnosed illnesses and certainly—

Mr. BACHUS. Is that true? Okay.

Dr. MURPHY. There are a number of individuals still on active duty who have—

Mr. BACHUS. Oh, I know there are a number of them. I mean, obviously, even from what—you know, we were supplied this information at one time. Maybe I misinterpreted it, but apparently—

Dr. MURPHY. We will check those statistics for you.

Dr. JOSEPH. Everything you've said, Mr. Bachus, up to this point with reference to the VA is quite accurately duplicated in our system. The percentages are remarkably similar. Your line of reasoning I would agree with, everything you've said with respect to our system until that last statement. I don't believe that statement is as sharply defined as it—

Mr. BACHUS. Everyone else has been given an additional 5 minutes. I'd like—

Mr. HUTCHINSON. We're going to get real strict next time. Without objection.

Mr. BACHUS. Let me follow through. And I'm going to back up because I just want to sort of find out where I'm wrong, where I'm right. So I'm wrong on the National Guard part. Okay. Is there a difference? Is there a statistical difference?

Dr. JOSEPH. It's too early to be sure from our numbers in DOD whether there is a significant statistical difference between Reserve and active duty.

Mr. BACHUS. You know, let's suppose that there's one and a half times this number, the National Guard or reservists. Are they older?

Dr. JOSEPH. In our system the people with symptoms are older than the average age of people who went to the Gulf: 34 years, as opposed to about 28 years, average age. Right. So, that might be another indication that older populations, older groups, have a bit more incidence.

Dr. KIZER. Sir, I might just interject that the question you're asking is actually the major question in one of the studies that's currently underway. We're looking at 15,000 individuals who served in the Gulf and 15,000 veterans who did not serve in the Gulf, but were otherwise a comparable population, with the intent of actually comparing the symptomatology found in those two groups to see if there is a difference.

Mr. BACHUS. Okay. I guess my point from all I've seen and read is that there is at least the possibility that if we went out and got 700,000 people out of the general population, particularly a comparable population, that—you know, you look at these figures: 17 percent with chronic fatigue of the ones that are the undiagnosed illness.

To me that's just not a large number. I mean, it is. Now, somebody's going to come along and say "If you're the one that's sick, it is." And I'm not talking about that. I'm just talking about that if you've never gone to the Gulf War and you have an undiagnosed illness and you have chronic fatigue, it is a big problem, too. But your rash, 16.8 percent—

Dr. MURPHY. If I could clarify, these numbers are from people who have come into us voluntarily seeking a health examination. The epidemiologic studies that are about to start will randomly select individuals who are representative both from Gulf War service and those who served at the same time but were not deployed to the Gulf. And in that way we'll actually be able to determine what

the percentage in that whole population is and compare Gulf War veterans to non-Gulf War veterans.

Mr. BACHUS. I think that—

Dr. MURPHY. And that's a very important piece of information because until we do that, we will not be able to draw the conclusions that you are, in fact, drawing.

Mr. BACHUS. Let me say this. I'm not drawing any conclusions other than that everything I've been given—and let me say this. I served in the military and was diagnosed as having asthma while serving. I had it as a child and outgrew it. And I was in the Medical Corps. So I'm certainly not talking as—I mean, I don't have any more knowledge than that, but, I mean, I didn't know what I had.

Dr. JOSEPH. I think you're asking the \$64 question, Mr. Bachus, but there's still the question behind that one. And that's where I'd associate myself with the remarks of Mr. Buyer and Mr. Kennedy.

If we end up, by your logic train, with that small, if you wish, number of people who are not yet diagnosed or have nothing specified on a laboratory exam, let's suppose that's where we get as we peel the onion. That still does not answer the question: Are there any specific causes of illnesses within that group that we have not yet identified? That's why we have to keep going on. It is not answerable solely by a statistical or even—

Mr. BACHUS. Let me say this. I'm not—

Dr. JOSEPH. I don't know the answer either. There is no answer from the one approach.

Mr. BACHUS. I'm certainly not dismissing what these veterans are going through. And I hope no one takes my remarks as that. I'm simply trying to get a handle on this myself because the VA center at Birmingham I'm not sure doesn't have more of these veterans that have come in.

I went to Meridian, MS for the hearings that we suddenly heard we had two National Guard units in and around Meridian that their children were being born with higher rates of birth defects. We really don't know because of the small population, but when the Mississippi Public Health Department and everybody looked into that, they found that maybe that statically wasn't an abnormal occurrence there. But that doesn't say we're not concerned about them.

I'll ask one other quick question. The President just announced \$13 million more to research the cost of Persian Gulf illnesses or research into that. I look at the budget, and I see \$5 million in there for that. Is this \$13 million in addition to that \$5 million or where does that additional money come from?

Dr. JOSEPH. These are monies—and they do come up to between \$13 and \$15 million—that are programmed in the 1995 budget.

Mr. BACHUS. So they are already in the budget? So this isn't new money?

Dr. JOSEPH. No, sir.

Mr. BACHUS. Okay. I mean, he said that the VFW was committing \$13 million additional money. It's not any addition to what's already in this budget proposed. Is that correct?

Dr. JOSEPH. This is money in the 1995 budget.

Mr. BACHUS. Okay. Thank you.

Mr. HUTCHINSON. Okay. The time of the gentleman has expired.

The gentleman from New Jersey, Mr. Smith, is recognized with gratitude for your service on this committee as ranking member of the subcommittee in the last Congress and your contribution on this issue.

Mr. SMITH. Thank you very much, Mr. Chairman. And, again, I want to applaud you for holding this hearing and the ranking member. I think it's very important that we move as quickly as possible. And I know under your stewardship and leadership, it will be accomplished.

I do have a couple of questions. I apologize for coming late. We were in the middle of an International Relations Committee dealing with Croatia and NATO and the situation in the former Yugoslavia. So I do apologize for being late.

A couple of questions. I know most of the more salient questions have already been asked. Just let me ask Dr. Kizer: Of the approximately 17,250 veterans on the VA registry who are ill or who are being evaluated, what is the typical treatment regimen for those presenting symptoms of fatigue? And if you could describe the typical protocol of these men or women who are presenting themselves?

Dr. KIZER. I'm not sure I understand your question. Are you talking about the treatment for those who have undiagnosed fatigue or fatigue is their complaint but they don't have a diagnosis otherwise?

Mr. SMITH. Fatigue is their complaint. What is done with those individuals? And I think it would be helpful for the subcommittee just to hear what is done for those who present themselves and who walk through, how they are treated, who have problems that have manifest themselves.

Dr. KIZER. Again, I'm not sure that I fully understand your question.

Mr. SMITH. The first question is about the fatigue. Somebody comes forward, complains of this chronic fatigue, repeatedly says, you know, "This is something that I think is attributable to my service in the Persian Gulf." How are they treated? What happens then after that point? I don't think it's a very difficult question.

Dr. KIZER. The first thing is to rule out, or to rule in, a treatable cause of fatigue. Are they anemic? Do they have some other thing that is treatable? If you end up without a treatable condition, or the cause of their fatigue is not diagnosable, then there is no specific treatment available for those individuals.

That has been a source of concern, both in the private and government sector. And this whole question about what is causing fatigue in these individuals is a subject of scientific investigation and some controversy.

Mr. SMITH. What kinds of explanations are given to them in terms of what might be the source?

Dr. KIZER. Again, if you cannot rule in a cause, they are left without a diagnosis. And that's generally what they are told, *i.e.*, that it is unknown what is causing their condition.

Mr. SMITH. Are they apprised of any studies or when information might be available to them? I mean, is there any hope given that this mystery might be resolved in the near term?

Dr. KIZER. I think that in general they are. I mean, one of the reasons for having them in the registry is so that we can have ac-

cess to them and so that if information does become available at a future time that may be useful in treating them, then they would be able to be summoned back.

At present there is no study or data on the horizon that will answer that question—that is, there is no study that a treating physician could tell the patient that “We are going to know the answer in six months,” “in a year,” “in two years,” or “five years”. Generally, these patients are advised to keep in touch, and we’ll follow them along.

Mr. SMITH. Do they feel they’re being dealt with in a way that is sincere? I’ve been on this committee for 15 years, and I remember in the early goes when now Minority Leader Mr. Daschle and I raised the Agent Orange issue over and over again. The sense of being given the run-around was very, very deep and, as we have seen in retrospect, very well-justified. Do they have a sense that this isn’t just some charade or this is something of genuine meaning?

Dr. KIZER. I think many, if perhaps even most, of these individuals are very frustrated when they are not able to be told what is causing their illness.

And it is just as frustrating for their physicians as it is for the patient. Doctors are in the business of treating people and making them better. And when the physician can’t advise a patient “This is what you have, and this is what we’re going to do to make you better,” it’s very frustrating for both parties.

In these cases there are some individuals, I’m sure, who go away feeling like they’re getting the run-around or that they’re not being treated adequately, despite the fact that they may have had absolutely everything possible done for them. And they’re likely to seek care elsewhere.

Frankly, their unhappiness is understandable, but, by the same token, if you cannot find a cause, or if you cannot find something to treat, then it would be imprudent to do something that is not based on some medical reason.

Mr. SMITH. Have we been in contact with the Kuwaitis or are we knowledgeable of any studies that might have been done on Kuwaitis who have been showing similar signs of illness, perhaps due to the oil fires or—

Dr. JOSEPH. DOD has extensive contacts, discussion, and shared information with partners in the Gulf, not only those from that region, but also from Europe.

Mr. SMITH. What is the result of that? What have we learned?

Dr. JOSEPH. In great part, the other nations involved, particularly the Gulf nations themselves, shed absolutely no light on the issue and do not describe any similar significant groupings of illness. We’ve had the same answers from the oil companies who have been in that region for a long time.

There is, as you may know, in the U.K. and perhaps to a lesser extent some of the European nations, a group of Gulf War vets who are presenting with similar symptoms. I think the U.K. is somewhat behind us in how they’re responding.

We have had a number of missions from DOD to the Gulf, looking at environmental issues and talking with medical authorities,

both civilian and medical. And the short answer is, they've come up empty.

Mr. SMITH. With regards to this small group of soldiers from the U.K., how do they overlay with their deployment with U.S. military?

Dr. JOSEPH. You mean geographically?

Mr. SMITH. Geographically. Were they working side by side? Did they have a similar experience from those who have presented themselves with—

Dr. JOSEPH. In some instances, yes. But, that's a hard question. I'm not sure I can give you an accurate answer. I mean, there—

Mr. SMITH. That might help solve some of the mystery, particularly if there was a detonation of chemical weapons and they, too, were in proximity to where that may have happened.

I know the DOD discounts that, although they—

Dr. JOSEPH. Let me answer the question the way you asked it, trying to be helpful and responsive. There is no known circumstance of our own deployment with another nation's troops where anybody, that I'm aware of, has shown a similar set of symptoms, or a similar concern about illness.

In fact, the one specific circumstance that I know about is a group of British soldiers who went, in after the war, deep into Iraq—this is in the published literature; it's not classified—and whose job it was to seek out possible bunkers or collections of chemical munitions.

This group—I think it's about 60 individuals—over quite a long period of time took steady doses of pyridostigmine. And, they report no ill effects in that unit. But, again, that's a tiny sample vignette and not intended to prove anything.

I know of nothing in the other direction.

Mr. SMITH. Okay. I thank you and yield.

Mr. HUTCHINSON. Thanks, Chris.

I would recognize the ranking member, Mr. Edwards.

Mr. EDWARDS. Thank you, Mr. Chairman.

I would just conclude by first asking unanimous consent that several questions could be submitted for the record from Mr. Kennedy and from me and as well as any other members of the committee.

Mr. HUTCHINSON. I have a request from Mr. Bilirakis for his statement to be inserted in the record as well. Without objection.

[The prepared statement of Mr. Bilirakis appears on p. 63.]

Mr. EDWARDS. Let me just finally compliment you again for picking this subject as the first meeting under your chairmanship.

I think that again, Dr. Joseph, Dr. Kizer, along with the statements and questions you heard from both sides of the aisle underscore the level of concern about these issues. And I hope you will let us know how we can work with you to keep pushing ahead and stay committed until we find out everything we possibly can about the problems that we're facing. But I want to thank you all for coming. This is an important issue.

Mr. Chairman, I thought it was an excellent meeting where we got into depth on questions, and I want to congratulate you. Thank you.

Mr. HUTCHINSON. Thank you, Chet.

Dr. Joseph, before we dismiss this panel, we do have Mr. Robertson, who has been patiently waiting from The American Legion to testify. And we're grateful for that.

You mentioned way back in your early comments about the tracking or a road map—I think you used the term “road map”—study on where our troops were, what they were exposed to and so forth. Explain that to me. When is that scheduled to be completed?

Dr. JOSEPH. The geographic study is intended to put a time and place marker on every small unit every day during the Operation Desert Storm/Desert Shield. It's been running, I believe, for about 18 months. And it's expected to be completed in early 1996, in the Spring of 1996.

What I said is that once we have that map, that will give us a grid of that area and what units were in what locations, when. For example, once we have that grid, we can take all our patients from the CCEP, classify them by symptoms, classify them by whatever anybody wishes, and place them over that grid.

Mr. HUTCHINSON. I think I understand the value of it. I think I've heard this frustration expressed in a lot of ways during the questioning today—in the length of time that this kind of thing takes. It's been rejected that we're moving at a snail's pace, but that's the feeling of veterans.

When we hear about this study having gone for months and there is going to be another, I guess for a layman it's very difficult to understand why it should take that long in order to determine where our troops were on what day and what movements there were and what they were exposed to.

I know that it surely must be a frustration for the VA not to have that kind of vital information available. I don't know what could be done to expedite that, but I really share the frustration of my colleagues in the length of time that this whole process is taking.

Mr. BUYER. Mr. Chairman, would you yield?

Mr. HUTCHINSON. I would yield.

Mr. BUYER. To clear up, I want to clear something up here before you all leave here today. The President made his announcement at the VFW that there was going to be his pledge of the intensification of the efforts and a pledge of monies for new research. Now I hear today in answers to my colleagues' questions that this really isn't new money for new research.

We have ongoing research occurring right now. So I want to make sure that the record is very clear, Mr. Chairman, given the answers today that this is not a commitment to new research. There's ongoing research and projects that are presently at hand.

Mr. HUTCHINSON. Thank you. If there is anything inaccurate in what Mr. Buyer just said—I think he reflected your answers correctly, but we would certainly like for you to respond in writing to it.

Dr. JOSEPH. I'd be happy to respond in writing. I believe that I'm giving you the correct answer and it was in my testimony, that we have \$10 million newly programmed for research in the 1995 budget. I believe that's the correct answer to your question.

If I'm off-base—we'll respond to that in writing. I'm quite sure about—

Mr. HUTCHINSON. Let me thank the panel for your willingness to be here patiently and take questions for a couple of hours and your forthrightness as well. Thank you very much. You're dismissed.

Dr. JOSEPH. Thank you very much, Mr. Chairman.

Mr. HUTCHINSON. You're excused.

Mr. HUTCHINSON. If Mr. Robertson, The American Legion, would be seated, Mr. Robertson, the hour is late, thank you for your patience. You are Legislative Director with The American Legion. We appreciate your willingness to testify. We emphasize we'd like to keep your comments under 10 minutes, and all of your statement will be entered into the record.

You are recognized.

Mr. ROBERTSON. Thank you.

**STATEMENT OF STEVE ROBERTSON, LEGISLATIVE DIRECTOR,  
THE AMERICAN LEGION**

Mr. ROBERTSON. I'd like to start off by thanking the subcommittee. Thanks to you and your work and the leadership of members of this subcommittee, Persian Gulf veterans are better off than they were 4 years ago, when they first brought this problem to your attention.

The panel that we just heard remind me of the hearings that we heard on mustard gas, radiation exposure, Agent Orange exposure, and the first Persian Gulf hearing, where we were told that this was only a problem of stress of having to relocate to another part of the world.

I think it's kind of interesting to note that we have not heard from any of the Persian Gulf veterans from Persian Gulf to a redeployment back over there when Saddam Hussein relocated his troops along the border.

None of those soldiers have been coming to the VA registries or the active duty registry, to the best of our knowledge, complaining of similar medical problems that they predecessors have. And they weren't exposed to the bombing runs. They weren't exposed to the oil well fires. They weren't exposed to the pyridostigmine bromide. They weren't exposed to the Anthrax inoculations. So evidently we did accomplish one thing with some lessons learned, and some precautionary measures were taken as a result of that.

I'm glad to hear the mention of the Brits and the Canadian soldiers by some of the remarks because it is a problem. They are running into the same brick wall that we were running into initially before the committee got involved. And their government system over there is a little bit different than ours. I do understand that the House of Commons is beginning to take an interest and apply to these veterans.

When the Institute of Medicine released their report, we agreed with all of their recommendations with the exception of one, where it talked about disregarding the biological and chemical agents as a possible cause of the medical problems.

Senator Riegle went to a lot of effort to produce three reports in his Banking Committee. And I wish that people would read these three reports because if you can read the third and final in that series and walk away saying that biological and chemical agents should be disregarded from any research, I'd like to talk to you at

length in private because I think that you're missing the big picture here.

I've asked to submit the testimony of James J. Tuite, III before the State of Colorado joint session of their Committee on Veterans' Affairs on February 28, 1995 as an attachment to our testimony in support of this belief.

Mr. HUTCHINSON. Without objection, so ordered.

Mr. ROBERTSON. And the other issue that I really am quite surprised is the fact that the U.N. in their inspections of Saddam's nuclear chemical and biological delivery capabilities have ongoing questions about the biological capabilities of Saddam Hussein.

Obviously the Department of Defense has convinced a lot of people that biological and chemical agents do not have any factor in the medical problems experienced by Persian Gulf veterans. And I would encourage the U.N. to talk to the Department of Defense so that their concerns can be also put at ease.

The Leishmaniasis issue that The American Legion has continually talked about, we still believe a lot of questions have still not been answered. Even Dr. Jackson in his testimony today said that this disease was spread by sand fleas. It's spread by sand flies. There is a difference.

And we're not aware of any gold standard test that you can give somebody before they donate blood to tell you whether or not they are a carrier of Leishmaniasis. I would like the committee to consider having hearings with the experts on Leishmaniasis to find out how little we know about Leishmaniasis.

I might also point out that the DOD repeatedly says that there have been only 30 cases of Leishmaniasis identified. Well, if you check their records, about 20 of them came from one division in the initial year of the investigation. Yes, they have identified very few since that first year, but there's something that just doesn't work out right.

We would encourage the committee to have some hearings from nongovernment medical experts in fields like the chronic fatigue syndrome, multiple chemical sensitivity, the study of microplasmas, the possibility to support the theory of manmade viruses that we may be experiencing as part of our problem. I'd also encourage you to listen to the Persian Gulf veterans themselves, the ones that have gone to the VA health care program, and the famed CCEP. I've completed both of them, and I'll be more than happy to comment on those.

Also The American Legion is pushing to encourage a full epidemiological study. We have asked this repeatedly in every testimony that we've presented before this committee and committees in the other body.

And then, finally, The American Legion made a public statement that we encouraged all Persian Gulf veterans not to donate blood until we figure out what the problem is that's causing the rest of the veterans to be sick. We have also asked our membership, veterans, members of the Auxiliary, Sons of The American Legion, to increase their participation in blood donation programs to make up for the shortfall. There are 3.1 million veterans. And we figure that we can do our part, too.

The thing that we're very concerned about, until we have the answers we don't want to jeopardize the national blood supply. And I think that that's a very realistic request. You don't have to be a member of The American Legion to donate blood. We would encourage everyone to do that.

Again I would like to say that I appreciate the committee's work. There are some people who have obviously been in the limelight of carrying this issue. I know that Mr. Edwards was one of the first people that dealt with the Zuspenn family when they were having their tough times.

And just in closing, I would like to say that there's going to be a meeting March 10th through the 12th down in Dallas, Texas of various Persian Gulf support groups. I'll be attending that, and I'll be more than happy to report back to the committee the results of that meeting.

Thank you very much. And I'm prepared to answer any questions you may have.

[The prepared statement of The American Legion appears on p. 134.]

Mr. HUTCHINSON. Thank you for your testimony. We certainly appreciate, the subcommittee appreciates, your willingness to come today. I hope that you realize that the purpose of the hearing was primarily to hear a progress report from Defense as well as VA and that it is not in any sense an unwillingness to listen to the veterans' personal stories. And I, for one, thank you for your service in the Persian Gulf and the good work of your organization.

Certainly it is good to have cynics and skeptics on the kind of testimony we just heard, and I think you are one and have raised important questions. Now, would you reject the kind of strong testimony we heard earlier concerning chemical and biological agents? I think also you have made reference to possible mustard gas burns in the Persian Gulf theatre.

To your knowledge personally, or your organization's knowledge, have you been in direct contact with individuals who have experienced either the chemical, biological, or mustard gas?

Mr. ROBERTSON. Well, obviously if we knew what was causing the problems, we'd be standing up on the front steps on the Capitol saying "We've found the answer." What we're basing our statements on are eyewitness accounts, personal testimonies that are documented in the Riegle report; for an example, people being given medals for detecting chemical agents on the battlefield, being given Purple Hearts for the exposure to the mustard gas agents.

Now, you can't have it both ways. You can't award medals for these actions and then turn around and say that they weren't present on the battlefield. That's not correct. That's inaccurate. So either the fellows' Purple Hearts were awarded for the wrong reason or this guy's meritorious medal was awarded for not detecting chemical agents on the battlefield. You can't have it both ways.

Mr. HUTCHINSON. Mr. Edwards.

Mr. EDWARDS. Mr. Robertson, I'd just like to ask: Having heard the testimony, what is your level of satisfaction about the VA's and DOD's commitment to doing everything they can to get to the bottom of these problems?

Mr. ROBERTSON. I think that Secretary Jesse Brown is very, very sincere in what he's trying to do. I think Secretary Perry and General Shalikashvili are very, very committed to this. But I think there's a breakdown somewhere in the system on both sides.

The VA registry physical that I was exposed to—and I have not been—I'd recently received a letter inviting me to come back and file a claim with the VA and to come back and have them look at me again. But the initial physical I had was nothing much more than what I would have gotten for an insurance policy. I mean, it wasn't thorough at all. And I didn't even get a response back as to the results of the physical.

The comprehensive clinical evaluation that I'm still in the process, the last part of it, over in the Department of Defense is very, very thorough. But I think that the mindset that they're operating from has discouraged me personally, remarks like "These are medical problems that you would have had, whether you went to the Persian Gulf or not." Well, next time I promise you I won't go to the Persian Gulf. We'll make it easier.

That's like saying that you would have died, whether you went to the Persian Gulf or not. The Persian Gulf gave you the opportunity to speed that process up.

I think when you go in with that mindset of trying to discredit a person because he's complaining or she's complaining of medical problems, then it taints the way you're doing your research.

For an example, they spotted a spot on my lungs. And they said, "Well, we need an x ray from you before the Persian Gulf." Well, I was in the Air Force for 12½ years. You're going to tell me the DOD medical system doesn't have my x rays from when I was in the Service or if there had been a spot on my lungs it wasn't somewhere in my DOD medical records.

So he instructed me to go back to the last place I had a chest x ray, which was at Fort Meade when I was being outprocessed for my return to the Persian Gulf. So he compared a chest x ray from just 3 months ago to the one that I had immediately after return from the Persian Gulf. And he said, "The same spot is there."

Now, it would seem to me that you would want something before the Persian Gulf to compare that x ray with to see if there was a spot that had manifest while I was in the Persian Gulf or after my return. So those kinds of little things are somewhat confusing to me.

The statistics that they keep wanting to spout out about how these are similar to the general population, I would like to see the general population take the Army PT test. I would like to see them take the Marine Corps test, the general population, and see how they score on the PT test.

The soldiers who went to the Persian Gulf, as Mr. Buyer pointed out very clearly, were among the healthiest in the country. And to compare them against the general population I think is deluding statistical data.

Mr. EDWARDS. Do you have in your written testimony specific suggestions of other things you'd like to see done that are not being done?

Mr. ROBERTSON. As far as the CCEP?

Mr. EDWARDS. In general as far as the VA and DOD and—

Mr. ROBERTSON. Yes, sir. We specifically want them to continue looking. And if you look at the testimonies that we heard today—this is not admitted—we need to look at the biological and the chemical aspect. None of these testimonies that I saw today specifically addressed what they're doing in that area.

I think God has said that there weren't chemical and biological agents in the world and everybody is supposed to believe it. Now I need to find out who God is because somebody has stopped the debate in all of these research problems on the biological and chemical aspects. At least that's what I'm perceiving.

Mr. EDWARDS. Very good. Thank you.

Thank you, Mr. Chairman.

Mr. HUTCHINSON. Thank you, Chet.

Mr. Buyer?

Mr. BUYER. I'll pass for the moment.

Mr. HUTCHINSON. Mr. Bachus, you are recognized.

Mr. BACHUS. Mr. Hollingsworth—

Mr. ROBERTSON. Mr. Hollingsworth is a shorter guy. I'm Steve Robertson. Mr. Hollingsworth was snowed in this morning in West Virginia.

Mr. BACHUS. You're Mr. Robertson?

Mr. ROBERTSON. Yes, sir. Sir, you know, the general population was receiving Anthrax inoculations. They weren't receiving all the series of shots before we even went over.

People on active duty as a general rule go to the sick call whenever they're having the least medical problems. And they're identified at a very early stage, I mean preventive medicine-type stuff. A lot of the aviators are getting annual physicals as a requirement to meet the flight requirements.

So I think any medical problems that a soldier had before he went to the Persian Gulf was well-identified. The private sector I don't think is that health-conscious as far as going to the doctor whenever they come up with an earache or a toothache or some other kind of medical problem. They're not as quick to go as a military person is.

Mr. BACHUS. They have taken medicine and given it to the general population in other cases. And they found no different result.

Mr. ROBERTSON. And I doubt very seriously that population was sleeping near diesel stoves that were emitting fumes. I doubt very seriously that they were exposed to the other things that we were being exposed to in the Persian Gulf.

I guess the thing that I'm looking at, sir, is that you can't compare apples and oranges, and that's what they're trying to do. They're trying to take someone who just walks in off the street and treat them the same way that a Persian Gulf veteran was being treated.

That was one of the dirtiest environments that I've ever been in personally. And I was stationed in Turkey and Sicily when I was on active duty. Both of those countries health-wise weren't the greatest of conditions, but it was nothing compared to what we were in in Saudi.

Mr. BACHUS. Do you agree that here we are 2 or 3 years down the line and we've investigated this, we should have investigated

it, but we still have identified nothing to explain apparently this, the undiagnosed diseases, what they are?

Mr. ROBERTSON. That's where I go back to the biological and chemical warfare. The American Legion has never said we thought it was one specific thing. As a matter of fact, we've even said we thought it may be a synergistic thing that together these things may have caused the problems.

But the more I look at this and the more dead ends that people seem to be telling us, that "There's nothing to this. You would have all been sick had you stayed right in your own house" makes we wonder and compare this to the AIDS epidemic, where initially no one knew AIDS was. And it took 15 years for them to even identify what AIDS was. We still haven't come up with a cure for AIDS because we know so little about it.

So I propose to you the Saddam Hussein we know we sent him. We know the biological and chemical agents the U.S. Government allowed to go over there. We know that Germany provided him with biological agents. We know that the Soviet Union provided him with biological and chemical agents.

Now, what he did with those and what he wound up with we don't know. We know that he had the delivery systems. The U.N. has already told us that and has verified that, that he had the capability to deploy stuff.

No one in this room can tell me what was in the warhead of every Scud that was destroyed or allegedly destroyed in the Persian Gulf. No one can tell me what was in the warhead that hit the barracks that were a mile and a half from my location in Dahran.

And until they can give me a definitive answer saying "We know absolutely 100 percent that none of the Scuds had chemical agents or biological agents, that there was no fallout from any of the factories that we blew up that were supposed to be producing biological, chemical, or nuclear weapons," until somebody can tell me 100 percent that we weren't contaminated or exposed to these agents, then I think it's still a factor that has to be put on the table, especially when you look at the way that we're trained to look at biological agents in the battlefield.

There is no detection capability for biological agents on the battlefield, none whatsoever. They tell you to look for dead animals. They tell you to look for soldiers that have medical problems that are undiagnosable, and you can't treat them.

Now, I'm not a rocket scientist, but it seems to me what we're facing right here, we've got soldiers with a medical problem that they can't figure out what's wrong with. And nothing's working to treat it or make them feel better.

Mr. BACHUS. You know, I've read Senator Riegle's reports. There have been responses to it. And they have identified what some of the biological warfare has been in the past, what agents are used and what the symptoms were from those agents.

These are my comments and we were prepared to deal with the Anthrax and botulism. That's why we got the inoculations for anthrax and botulism. As a matter of fact, there was only a limited number of troops that could get inoculated for botulism because

there wasn't enough to go around for everybody. So they basically concentrated on the guys in the very front.

Mr. BACHUS. Let me ask you this. I'm just trying to search for something that gives us a clue. You know, they have studied those soldiers who were given the Anthrax and they've studied those that didn't. It's my understanding you found no statistical difference. Is that true?

Dr. MURPHY. The VA has not studied vaccinations for Anthrax.

Mr. BACHUS. The VA has not?

Mr. ROBERTSON. Sir, I think you're going to find trouble finding a study that's concentrated or focused on biological or chemical agents, on either one of them or both of them together.

Mr. BACHUS. Last night—I may be wrong—I thought I read a report that I was supplied that said they studied immunization populations against non-immunization populations and did not—

Dr. MATHER. DOD.

Mr. BACHUS. DOD

Mr. HUTCHINSON. The time of the gentleman has expired. Mr. Buyer?

Mr. BACHUS. Can I ask: Did they find a difference?

Dr. MATHER. I don't believe so.

Mr. ROBERTSON. And I don't know.

Mr. HUTCHINSON. Could you identify yourself so we'll have that in the record?

Dr. MATHER. Dr. Susan Mather, VA.

Mr. HUTCHINSON. Okay. Thank you, Dr. Mather.

Mr. Buyer?

Mr. BUYER. Thank you, Mr. Chairman.

Steve, I appreciate your efforts on this cause and have for a lot of years on The American Legion.

I don't thoroughly embrace the Riegler report as strong as you do perhaps. And I perhaps look at it with a little more jaundiced eye. Something that we have not covered, though—actually, I like to jump into bigger pictures here today.

A bigger picture deals with the United States as a principal signatory to the chemical weapons convention. Immediately after the election Glenn Browder and I went to Moscow, went to St. Petersburg and to Moscow. And, of course, our efforts are to focus on the destruction of biological and chemical weapons. It's a good thing to do.

I was bothered when I learned, though, that here Russia, believe me, they want our money to help in that process because most of their weapons in regard to the chemical, most of them are weaponized. We have weaponized, too, in Alabama. We've got to destroy that stuff. A lot of it also is in bulk. Their problems are intensified.

I was bothered when here we want to destroy the chemicals and biological stockpiles. Yet, their scientists are still continuing with the discoveries of new types of biological warfare agents, whether it was in the use of E. coli or DNA. Docs, am I saying the right thing? Isn't that what they call it, rDNA?

Dr. MURPHY. Recombinant DNA.

Mr. BUYER. Say it again.

Dr. MURPHY. Recombinant DNA.

Mr. BUYER. Oh, you say it nicer than I could. It's funky altering stuff. It's funky stuff, right? I mean, it's really wild. It's what?

Dr. MURPHY. It's bad organisms.

Mr. BUYER. It's great stuff. All right. I won't call it funky stuff. It's great stuff, Mr. Chairman, I guess, if you're talking about altering microorganisms. No? Oh, I'm back to funky.

Let me just tell you when I say "funky," this is some weird stuff. To me it is. I mean, to have that kind of research. And then the questions go with regard to Iraq.

Now, I am bothered somewhat when they say an absolute not because when you also then look at what the United Nations special commission came up with—I mean, believe me, I'm not a conspiracy theorist, Steve. I'm not. I don't buy into those kinds of things. But I like to look at this big picture here.

I'm not going to draw immediate conclusions from it, but when you look at that, what do U.N. inspectors reveal in their inspections with regard to biological warfare in that stimulant research in Iraq suggested that they were looking at the genetically altered microorganisms, that funky stuff, Doc, that you think is all so great.

How much cooperation was there with Russia and Iraq? I don't know. This chemical, Novachok?

Mr. ROBERTSON. Novachok.

Mr. BUYER. Novachok. Is that? You know, I don't know a lot about this one and whether or not even if that Soviet binary agent was even in Iraq. Are you familiar with that or am I beyond what your—

Mr. ROBERTSON. No, sir. I was just like you. I put on a uniform and went where they told me to go and do what they told me to do.

Mr. BUYER. Well, when you look at what they found at the Muthana facility, 13,155 mm artillery shells loaded with mustard gas, 6,200 rockets loaded with nerve agent, 800 nerve agent aerial bombs, 28 Scud warheads loaded with the nerve agent Sarin, 75 tons of nerve agent Sarin—

Mr. ROBERTSON. That's what was detected by—

Mr. BUYER (continuing). 60 to 70 tons of—pardon?

Mr. ROBERTSON. Sarin was what was detected by the Czechs on the battlefield, sir.

Mr. BUYER. Right, just above KKMC.

Mr. ROBERTSON. Yes, sir.

Mr. BUYER. And it's 250 tons of mustard gas. I mean, I'm uncomfortable with DOD just saying a blanket no. I mean, you know one thing I've never asked, Steve and Mr. Chairman—maybe it came out—was whether we ever took chemical weapons to the Gulf. I don't even know.

Mr. ROBERTSON. Sir, you're in a much better position to ask that question than The American Legion.

Mr. BUYER. Maybe I will submit that question, Mr. Chairman. It would be interesting to see what the answer is because whether that got us in trouble with our own chemical weapons convention would be rather kind of interesting.

But I kind of threw that out there today, Mr. Chairman, because—I know we've got a vote—I threw that out there because

there's a lot of evidence out there that suggests that Iraq in its relationship with Russia was close and that they had a lot of biological/chemical weapons capabilities, even with what we, the United States, were doing with some dual-use things at the time that we don't like to talk about. But to say a blanket no from the DOD is rather alarming because we should keep all the options open.

Thank you, Mr. Chairman.

Mr. HUTCHINSON. Thank you, Steve. And you're right. We do have a vote. Mr. Robertson, I want to thank you for your testimony.

Mr. BACHUS. Can I ask one question to the VA about what he raised? I understand that the—

Mr. HUTCHINSON. Without objection.

Mr. BACHUS. Is the VA hospital in Birmingham conducting some studies on chemical warfare agents or nerve gas or—

Dr. MATHER. They are looking for clinical effects, effects you would expect where there has been exposure. We have no—

Mr. BACHUS. Neuro-cognitive? Is that the—

Dr. MATHER. Neurotoxic or nuerocognitive effects. We have no way of telling whether or not the exposures actually occurred. The studies in Birmingham are looking at whether the veterans have the kinds of signs that you would expect in the case of exposure to neurotoxic agents.

Mr. BACHUS. Wouldn't that be a start to—

Mr. HUTCHINSON. Spencer, we're really going to have to wind it up. Why don't we submit the question?

Mr. BACHUS. Can you give us the results of that?

Mr. HUTCHINSON. If we'll submit the question in writing, we could ask for a written response on that and make certain that you get that.

Mr. Robertson, thank you very much. And I want to thank all the witnesses today.

In particular, thanks to Mr. Edwards for his cooperation in the hearing. And I want to assure you I think you've raised important issues, and they will be monitored and pushed.

And with that, the subcommittee hearing is adjourned.

[Whereupon, the foregoing matter was concluded at 11:49 a.m.]

## APPENDIX

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### PREPARED STATEMENT OF HON. BOB CLEMENT

Mr. Chairman, as you know, this issue is of special interest to me and I sincerely appreciate you convening this very important hearing.

More than 3 years ago veterans of the Persian Gulf War began reporting unusual ailments. And although the cause of these ailments still evades us we have come a long way in the last 3 years.

Three years ago, then-chairman Lane Evans and Joe Kennedy held a field hearing in Massachusetts with a group of sick vets. Following this hearing a group of us who had also visited with other sick vets from our home states got together and determined that we had been down this road before and that we were going to make every effort to ensure that the mistakes of the past were not repeated. Working with Chairman Montgomery, Mr. Evans held several hearings on this issues. Congressman Evans and I introduced legislation which presumed service connection and authorized the VA to treat these ill vets. Joe Kennedy and Lane both introduced research initiatives. But perhaps the highlight of the fight thus far was the passage of Mr. Montgomery's bill to provide compensation to these sick veterans.

We've come a long way indeed and this Committee can be very proud of it's efforts. It all began here. To paraphrase a song made famous by my friend and fellow Nashvillian, Barbara Mandrell, We believed in these veterans when it wasn't cool to believe in them. At the outset these veterans claims were met with skepticism and denial. Now, thankfully we have moved beyond all that. This is seen as a problem which is very real and one which must be given the serious attention it merits.

I applaud the efforts of Secretary Brown and the others at the VA which have been so instrumental in raising awareness and turning the tide. I also want to acknowledge the efforts of General Ronald Blanck and others within the armed services which have been so helpful.

We have operated on one basic principle since we began working on this issue and that is that this great Nation relied on these men and women in its time of need. Now, these men and women should be able to rely on this Nation in their time of need. It may be some time before we know the cause of their ailments but in the interim they should be given the benefit of the doubt.

Lastly, our challenge now is simply that we put our legislation and our dollars where our rhetoric is. We must not let this get away from us. We must stay the course. This is certain to be a long process and there will be many, many issues which will demand our attention in the intervening days but we must always remember that there are soldiers out there with real pains, aches, and ills who need our help. Every effort must be made to ensure that to the actual implementation of the research and actions of the agencies carrying out this research reflect our intent.

Again, thank you Mr. Chairman for holding this hearing. I look forward to hearing from our witnesses. This is certainly a battle—but I am confident that it is a battle worth fighting and a battle which can be won.

**Statement of the Honorable Cliff Stearns  
House Veterans' Affairs Committee  
Subcommittee on Hospitals and Health Care  
March 9, 1995**

Thank you, Mr. Chairman, for holding this important hearing.

First, I would like to thank our witnesses for being here and I want commend you all for presenting us with such insightful testimony. I think we all know how terribly urgent it is that we continue with our research efforts until we find the answers to the causes for this syndrome which is so ubiquitous to veterans of Desert Storm.

In light of the controversy surrounding unexplained illnesses being experienced by Desert Storm veterans, the VA, DoD, NIH, and HHS have been conducting extensive research into possible causes of the unexplained illnesses associated with this military campaign.

I noted, Dr. Kizer, that the VA is initiating a national survey of Persian Gulf veterans and this study will involve selecting a random sample of 15,000 Persian Gulf Veterans and 15,000 contemporaneous non-Persian Gulf era veterans. The survey will include a mail-in health questionnaire as well as physical examinations for a subgroup of those veterans included in a broader survey. Hopefully, the data collected will shed further light and provide us with additional clues surrounding the various illnesses being experienced by the men and women who served in Desert Storm.

I believe the results of the VA Mortality Follow-up Study of Persian Gulf Veterans comparing Persian Gulf veterans with a control group of Persian Gulf era veterans could produce some answers to several troubling questions.

I, for one, am optimistic that through such efforts we might find the missing link that will explain this rash of perplexing illnesses which seem to be indigenous to these particular veterans. We all know how invaluable the research you are conducting is and the need is so pressing to find

answers as to what is causing thousands of veterans who served in the Gulf War to be plagued by a rash of unexplained symptoms.

I hope from the testimony today this committee can be given assurances by DoD and the VA that they will continue to both aggressively treat symptoms associated with Desert Storm Syndrome and investigate its cause or causes.

My reason for sounding skeptical is that the Medical Follow Up Agency of Medicine (IOM) made an independent study of the collective efforts to date. The IOM was rather harsh in its evaluation of the piecemeal study and the duplication of efforts between DoD, VA, and HHS. The IOM made several suggestions regarding the data and databases, the coordination process, and the consideration of study design needs. Hopefully, implementation of these suggestions will prove beneficial.

I also noted that the IOM concluded that it could not find any reliable intelligence of medical or biological justification for allegations that U.S. troops were exposed to chemical warfare agencies. Unfortunately, this seems to be a odds with statements from our troops both then and now.

Again, thank you, Mr. Chairman and I look forward to the testimony of our witnesses.

Statement by Rep. Gutierrez  
Subcommittee on Hospitals and Health Care  
March 9, 1995

Mr. Chairman, I know that most of us have taken part in these kinds of hearings in the past.

And, during the last Congress, it seemed like we turned a corner.

The VA and the Pentagon agreed that, yes, something did happen to some of our troops.

And, to their credit, the VA has done an admirable job in certain respects. I have begun to hear from constituents who have started receiving compensation for their injuries that are related to exposures in the Gulf War.

Having worked with many of my colleagues on this committee on this issue, it is very gratifying to hear of that progress.

But, we all know that the goal of the Persian Gulf veteran is not compensation, but a cure.

And, as time-consuming as it may be, we know that a cure can only come about as the result of accurate and active research.

Mr. Chairman, this research must be entered into with an open mind.

And, I believe it is too early in the process to discount and dismiss some explanations, some diagnosis, simply because there is not yet a unanimous opinion on them.

I am concerned-- and I hope that I can leave here today with some resolution to this today-- that there are some doors that people would prefer to leave closed.

For example, doors that lead to a discussion of chemical agents, or biological agents. From listening to a variety of source-- including the most reliable source we have, namely the veterans themselves who served in the Gulf-- I do not feel confident that we can discount these as at least potential sources of illness.

Mr. Chairman, only by opening these doors can we ever hope to close the chapter on Persian Gulf syndrome.

I certainly don't pretend to have the answer.

I am not sure that anyone has the answer.

But that's my point. Just because we don't have the definitive answer today, doesn't mean that we should stop asking the question.

# # #

Questions:

(Panel I:)

**For Dr. Stephen Joseph (Dept. of Defense):**

I remember the Gulf War being hailed as this achievement of great technological achievements. Every day, every hour, there was this new piece of high-tech equipment to praise.

Remember the Patriot missiles? We were all amazed to see them knock down a scud missile ~~flying into Iraq~~ in the middle of the night.

Or the Cruise missiles that could destroy a weapons plant in downtown Baghdad with pin-point accuracy?

Or even those nighttime goggles that the troops wore so they could see the enemy move around in pitch-black?

After a while, the hardware got more credit than most of the heroic men and women who were operating them.

Now, here's the reason why I bring these up:

Because it makes me very skeptical to hear you say that we had plenty of detectors to pick up chemical agents, but all of these detectors happened to suffer from countless malfunctions.

In your testimony (on pp. 8-9 of your prepared testimony), you say that hundreds of "false chemical alarms...were activated due to dust, heat, smoke, and low batteries" and that is why many people believe that chemical agents were used.

Dust, heat, smoke-- I don't recall hearing about these things affecting any of our missiles or aircraft.

You're telling me that the same army that could send a bomb hundreds of miles, guided by an on-board computer, that same army would allow something as serious as chemical warfare alarms to be rendered useless by "low batteries?"

You go on to say that each of these instances was "immediately investigated." So what kind of faultless, mistake-free equipment did they use to perform these follow-up investigations? What makes you trust these subsequent findings more than the original alarms? Why wasn't this equipment subject to the dust, heat, and smoke?

What follow-up tests have been performed on the detectors?

=====

For Dr. Kenneth Kizer (VA):

In your testimony, you list some of the different projects that are getting started or are underway.

You say that one study-- I believe it is one of the projects being done at the center in New Jersey-- is "an animal study (to) evaluate psychosomatic interactions."

Now, I need you to clarify that.

Because, sometimes, when I hear "psychosomatic", it suggests to me someone who is faking an illness. Someone who is a malingerer.

And I hope that that the VA isn't suggesting that there are plenty of veterans who are making-up these problems. I thought we had gotten beyond the notion that this some kind of a make-believe problem.

Now, I know that there is another, less demeaning definition of "psychosomatic"-- and that's when the human body is affected by what the mind is thinking. And, we know that there is some truth to that theory in pateints with any kind of illness.

Even so, I have to wonder about the idea of using animals to analyze the psychological make-up of veterans. It's one thing to use animals to test new drugs or physical problems. But, there is a much bigger difference between animals and humans in our psychological make-up.

Unlike an animal, a veteran knows he has a little girl half a world away that he might never see again. A veteran knows that there's an enemy that could be firing a missile at him when he goes to sleep.

Finally, I want to say that if we do indeed find that some veterans were affected by the stress of battle, by the horrors of war, that we still give ample attention to their needs. Because post-traumatic stress, we have learned, is a wound that cuts as deeply as any bullet.

So, please give me a little clarification of this project-- both its method and its goals.

=====

(Panel II:)

*Steve Robertson*

For ~~Kimo Hollingsworth~~ (American Legion):

1. Earlier, Dr. Joseph from the Pentagon testified that the detectors cannot be trusted because of the hundreds of malfunctions and false alarms.

If that is true-- if they have decided to not give any credence to the results of the detection equipment-- I would hope that they are at least relying on the anecdotal evidence from the troops themselves.

Unfortunately, I get the impression from your testimony that they aren't listening to your stories-- like soldiers being ordered to put on protective gear, and soldiers feeling a burning or stinging sensation.

Are they listening to these accounts?

2. Recently the VA forwarded to my office, and to others on Capitol Hill, an article published in the Archives of Internal Medicine written by staff of the DoD, VA, and HHS.

In the article, the writers say that no US troops were exposed to chemical or biological agents.

However, they say that the Czech defense team picked up some detections of "extremely low, nonincapacitating levels" of chemical agents.

Now, in your testimony, you refer to material safety data sheets that say that "unhealthy" nerve agent exposure occurs at levels as low as one-one thousandth (1/1000th) of the amount needed to set off one of the alarms that was used in the Gulf.

Doesn't that suggest to you that the VA and the Pentagon should not disregard so casually the data that the Czechs came up with?

CONGRESSMAN MICHAEL P. FLANAGAN  
SUBCOMMITTEE ON HOSPITALS AND HEALTH CARE  
HEARING ON RESEARCH OF PERSIAN GULF WAR  
VETERANS ILLNESSES  
THURSDAY, MARCH 9, 1995

OPENING REMARKS

Thank you, Mr. Chairman. I would like to thank the panelists, Dr. Kizer, Dr. Joseph, Dr. Jackson, Dr. Miller and Mr. Hollingsworth for taking the time to present us with an update on progress of research on undiagnosed illnesses of Persian Gulf War veterans. I would also like to thank you, Mr. Chairman, for your leadership in addressing this issue by calling for these hearings today.

Mr. Chairman, I am troubled by the Institute of Medicine's recent report criticizing the Department of Defense, Department of Veterans' Affairs, and Department of Health and Human Services for their poor management of the research efforts pertaining to Persian Gulf Illness. This year, these agencies will spend \$15.75 million on researching this problem.

President Clinton has recently announced plans to increase spending by \$13 million for FY 96. The several thousand Persian Gulf veterans affected by the yet unexplained symptoms of Persian Gulf Illness deserve better service considering the significant amount of money being spent by DoD, VA, and HHS.

Some questions come to mind . . . Why, after significant funding has been allocated to researching Persian Gulf Illness, have no answers yet surfaced? Why have efforts to effectively coordinate the research efforts resulted in unfocused studies and duplication of efforts between the Department of Defense, Department of Veterans' Affairs and Department of Health and Human Services?

I look forward to hearing some answers from the panelists and to working on a bipartisan basis as a member of this committee with the Department of Veterans' Affairs, Department of Defense, National Institute of Health and the Department of

Human Services as we move forward to address this pressing issue before us.

It is my sincere hope that the research which you are currently engaged in will provide the public with answers, and the thousands of affected Gulf War veterans with treatment, so that we may fulfill our commitment to serving our veterans in return for their service to us during the Gulf War.

Thank you, Mr. Chairman.

**THE HONORABLE MICHAEL BILIRAKIS  
SUBCOMMITTEE ON HOSPITALS AND HEALTH CARE**

**MARCH 9, 1995**

**THANK YOU, MR. CHAIRMAN.**

**I WANT TO COMMEND YOU FOR SCHEDULING THIS HEARING ON THE PROGRESS OF RESEARCH ON THE UNDIAGNOSED ILLNESSES OF PERSIAN GULF WAR VETERANS. I WOULD ALSO LIKE TO TAKE THIS OPPORTUNITY TO WELCOME TODAY'S WITNESSES TO THE SUBCOMMITTEE.**

**APPROXIMATELY 700,000 SERVICE MEMBERS SERVED IN THE PERSIAN GULF DURING OPERATION DESERT SHIELD/DESERT STORM. MANY OF THEM ARE NOW EXPERIENCING UNEXPLAINED ILLNESSES. THE MOST COMMONLY REPORTED COMPLAINTS HAVE BEEN CHRONIC FATIGUE, RASH, HEADACHE, DIFFICULTY CONCENTRATING, FORGETFULNESS AND IRRITABILITY.**

**THERE HAVE BEEN REPORTS OF SIMILAR, UNEXPLAINED ILLNESSES AMONG SOME SPOUSES OF VETERANS. CONCERNS HAVE ALSO BEEN RAISED REGARDING HEALTH PROBLEMS AND BIRTH DEFECTS AMONG THE CHILDREN OF PERSIAN GULF VETERANS.**

**IT IS INCUMBENT UPON US TO DO ALL THAT WE CAN DO TO FIND A SOLUTION TO THE HEALTH PROBLEMS NOW BEING EXPERIENCED BY SOME PERSIAN GULF VETERANS, ACTIVE DUTY PERSONNEL AND THEIR FAMILIES. CONGRESS HAS ALREADY TAKEN MANY STEPS IN THIS DIRECTION.**

IN THE 102ND CONGRESS, WE DIRECTED THE DEPARTMENTS OF DEFENSE AND THE DEPARTMENT OF VETERANS AFFAIRS TO ESTABLISH PERSIAN GULF REGISTRIES. AS OF JUNE 1994, APPROXIMATELY 34,000 VETERANS HAD ENROLLED IN THE VA REGISTRY AND OVER 15,000 ACTIVE-DUTY SERVICE MEMBERS WERE ENROLLED IN THE DOD REGISTRY.

IN THE 103RD CONGRESS, WE ALSO AUTHORIZED THE VA TO PROVIDE HEALTH CARE ON A PRIORITY BASIS FOR PERSIAN GULF VETERANS. IN ADDITION, WE APPROVED LEGISLATION WHICH PERMITS THE SECRETARY OF VETERANS AFFAIRS TO COMPENSATE PERSIAN GULF VETERANS FOR UNDIAGNOSED ILLNESSES.

THE DEPARTMENTS OF VETERANS AFFAIRS, DEFENSE AND HEALTH AND HUMANS SERVICES ARE CURRENTLY CONDUCTING VARIOUS RESEARCH ACTIVITIES TO ADDRESS HEALTH PROBLEMS CURRENTLY AFFECTING PERSIAN GULF VETERANS. THE TOTAL RESEARCH BUDGET FOR THE STUDY OF PERSIAN GULF ILLNESS IS ROUGHLY \$16 MILLION. I UNDERSTAND THE ADMINISTRATION HAS PROPOSED INCREASING SPENDING ON PERSIAN GULF RESEARCH BY \$13 MILLION IN FISCAL YEAR 1996.

I LOOK FORWARD TO HEARING THE TESTIMONY OF OUR WITNESSES ON THE RESULTS OF THEIR INITIAL RESEARCH. I AM ALSO ANXIOUS TO LEARN OF ANY RECOMMENDATIONS THEY MAY HAVE ON WAYS OUR CURRENT EFFORTS CAN BE IMPROVED.

**AS ALWAYS, I LOOK FORWARD TO WORKING WITH YOU AND THE OTHER MEMBERS OF THE SUBCOMMITTEE ON ANY SUGGESTIONS THE WITNESSES MAY HAVE ON THE ISSUES BEFORE THE SUBCOMMITTEE TODAY.**

**THANK YOU, MR. CHAIRMAN.**

STATEMENT OF  
KENNETH W. KIZER, M.D., M.P.H.  
UNDER SECRETARY FOR HEALTH  
DEPARTMENT OF VETERANS AFFAIRS  
BEFORE THE  
HOUSE VETERANS' AFFAIRS COMMITTEE  
SUBCOMMITTEE ON HOSPITALS AND HEALTH CARE

March 9, 1995

Mr. Chairman and Members of the Subcommittee,

Thank you for this opportunity to discuss with the Committee the various research activities relating to illnesses experienced by Persian Gulf veterans.

I am pleased to be here today to reaffirm the Department of Veterans Affairs commitment to provide high quality compassionate care to Persian Gulf veterans and to augment that clinical care with appropriate research.

Since the focus of this hearing is research, I would like to first describe the efforts to coordinate federal research and then describe the specific investigative activities being conducted by the VA.

In 1993, President Clinton named the Department of Veterans Affairs as the lead federal agency to coordinate government research efforts to find the causes of health problems being experienced by Persian Gulf War veterans. Since at least three federal agencies are conducting research in this regard -- the VA, Defense, and Health and Human Services (HHS), there is a need to make sure that such efforts are not duplicative or redundant. To date, coordination has been provided by the Interagency Research Coordinating Council -- a working subcouncil of the Persian Gulf Veterans Coordinating Board. The Research Coordinating Council is chaired by VA with members from DoD, HHS, and the Environmental Protection Agency (EPA). The Council monitors the activities and work products of various research efforts and recommends future research directions.

Before going further, it may be worthwhile to refresh your memory about what the VA has done to further understand the health complaints of Gulf War veterans. In early 1992, only a few months after the end of the open conflict in the Persian Gulf, reports of health complaints surfaced among the veterans who served during the Gulf War. There were several immediate responses by VA and DoD to these complaints. These included (1) disease outbreak investigations; (2) population surveillance; (3) exposure inventory and assessment; (4) demographic analyses; and (5) clinical evaluations.

It became evident early in the initial disease outbreak investigations that many of the reported illnesses could be diagnosed and appropriately treated. However, there were some veterans who reported symptoms of illness for which a medically accepted diagnosis could not be provided. When the number of these cases began to multiply VA and DoD initiated numerous surveillance activities and called in outside experts to evaluate the situation.

#### VA Research Efforts

The goals of research conducted by VA and other federal agencies are to:

1. Establish the prevalence of unexplained illnesses (i.e., illnesses for which an accepted diagnosis does not exist) in Persian Gulf veterans and their families, and compare the results to appropriate control populations.
2. Establish the prevalence of standard, diagnosable diseases (including adverse birth outcomes) in Persian Gulf veterans and their families, and compare the results to appropriate control populations.
3. Identify clinically and scientifically appropriate diagnoses for currently unexplained illnesses.

4. Identify potentially new presentations of recognized diseases.
5. Identify causative factors for unexplained illnesses.
6. Identify effective treatment modalities for unexplained illnesses.
7. Develop better understanding of previously unrecognized disease.

Reaching these goals requires a balanced combination of epidemiological, clinical, and basic research. As the lead agency for federal-wide effort to achieve these goals, the Department of Veterans Affairs is currently engaged in over 30 research projects. The size and scope of these projects range from small, pilot projects conducted by individual investigators to large epidemiologic studies, and multidisciplinary research centers. Comprehensive information about all research projects related to Persian Gulf veterans being conducted by VA, and other federal departments, is contained in Secretary Brown's annual report to the Veterans' Affairs Committees. The most recent report was provided to the Committee last week.

Sound epidemiological investigations are the foundation of the VA's overall research program. VA is sponsoring several epidemiologic studies, as are DoD and HHS through the Centers for Disease Control and Prevention. Illustrative of these projects, the VA is initiating a major national survey of Persian Gulf veterans. This survey was highly recommended by the NIH Technology Assessment Workshop panel. It will involve selecting a random sample of 15,000 Persian Gulf veterans and 15,000 contemporaneous non-Persian Gulf veterans (referred to as Persian Gulf era veterans). The survey will utilize a mail-in health questionnaire to determine the prevalence of symptoms and certain health outcomes in veterans and their family members (including birth outcomes), as well as risk factors associated with these symptoms and illnesses. Investigators plan to include a physical

examination component for a subgroup of those veterans, and their family members, included in the broader survey.

The survey will help us determine whether the illnesses of these veterans are unique and/or more prevalent among Persian Gulf veterans, or are no different than those experienced by all veterans, or even by the general population of the United States.

VA is also commencing a study of mortality among Persian Gulf veterans. A preliminary analysis of the reported deaths of Persian Gulf veterans has revealed that the number of deaths is consistent with what would be expected in an appropriately matched population of Americans. However, we are not satisfied with that preliminary finding because it does not compare the Persian Gulf veteran population with a good control group, nor does it address the question of whether Persian Gulf veterans may have died from different causes than members of a well-matched control group. The VA Mortality Follow-up Study of Persian Gulf Veterans will review the death certificates of Persian Gulf veterans and compare these with a control group of Persian Gulf era veterans. Overall mortality rates among the two groups will be compared, along with case-specific death rates. The results of this study will tell us whether Persian Gulf veterans have been, or currently are, at a higher risk of contracting fatal diseases than veterans who didn't serve in the Gulf. This study can be extended to detect death from diseases which have a longer latency period, including most cancers.

Over the past year, there have been concerns expressed about the offspring of Persian Gulf veterans. Reports in the media of health problems and birth defects in these children have generated considerable anxiety among veterans who want to have families. To date there is no scientific evidence to suggest that the children of Persian Gulf veterans have higher rates of health problems than the children in the normal population. However, to better answer concerns in this regard, VA is planning

to undertake a major epidemiologic study of the offspring of Persian Gulf veterans. This study will be in addition to the reproductive data that are being collected by the National Survey, and by epidemiologic investigations undertaken by DoD and HHS.

In addition to conducting epidemiologic investigations, VA scientists are engaged in research addressing possible causes of unexplained illnesses. A Request for Proposals was sent to VA medical centers in January 1994 to establish three Environmental Hazards Research Centers. Nineteen applications were submitted. These applications were peer-reviewed for merit by a panel of outside experts, and three centers were selected in July 1994.

The Environmental Hazards Research Centers are located at VA medical centers in Boston, MA, East Orange, NJ, and Portland, OR. Each of these centers have been established in partnership with affiliated universities. The Environmental Hazards Research Centers will be addressing the health issues of Persian Gulf veterans by taking a number of approaches.

The Boston Environmental Hazards Research Center, in collaboration with Boston University, will conduct six Persian Gulf-related research projects aimed at determining health effects of environmental exposure to hazardous situations, with a particular emphasis on behavioral toxicology, immunotoxicology, cancer epidemiology, and behavioral psychopathology. The interdisciplinary work will extend current research at the Boston VA Medical Center that includes assessment of health, psychological well-being and neuropsychological function. Data shared among projects will allow investigators to examine such hypotheses as whether performance on psychological tests can be related to immune function, and whether there is a relation between pulmonary function test results and health symptom complaints. One project will examine the possible relationship between the experience of multiple symptom-based health complaints and such clinical phenomena as sensitivity to

chemicals, Chronic Fatigue Syndrome, organic brain syndromes resulting from toxic exposures, Post-Traumatic Stress Disorder, and somatization disorders. Other studies will investigate central and peripheral nervous system function in a group of veterans with potential environmentally related disorders while another will assess pulmonary and immune system function in the same study cohort. Other approaches at the Boston Environmental Hazards Research Center will seek validation of neurobehavioral tests, a rodent study of immunologic changes thought to be related to petroleum products, a registry of cancer incidence in Persian Gulf veterans, and a study of a cellular receptor as a susceptibility biomarker for polycyclic aromatic hydrocarbon exposure.

The New Jersey Environmental Hazards Research Center at the East Orange VA Medical Center, along with scientists from the Robert Wood Johnson School of Medicine, plans four projects to gather information about illnesses and environmental stress factors in Persian Gulf veterans for development of the most characteristic symptom profiles. Under the planned projects, an epidemiological study will compare two groups of Gulf veterans to describe symptoms and define illness and, through the case-control method, identify risk factors. It will compare veterans listed on VA's Persian Gulf Registry with Persian Gulf veterans who have not previously participated in VA's special health examination program. Study subjects will be divided into three groups -- chronic fatigue, chemical sensitivity and asymptomatic -- and participate in a series of studies in such areas as viral, immunological, neuropsychological and autonomic neural function. One project will examine chemical sensitivities through physiologic and cognitive reactivity to chemical challenges delivered nasally and through the skin. Those fulfilling Chronic Fatigue Syndrome criteria will be tested to determine physiological and cognitive reactivity to exercise. An animal study will evaluate psychosomatic interactions.

The Portland VA Medical Center, in conjunction with University of Oregon, is planning four projects to examine health effects of exposure to selected environmental chemical and biological hazards related to military service. The center will identify exposures through intensive interviews and will study risk factors for unexplained illnesses through a case-control epidemiological study. The center will also screen veterans for medical, chemical, and biological markers of exposure and disease and act as a repository for data collection and analysis. Scientists from the VA medical center and university research center will work together to explore -- at the whole organ and at the molecular level -- key scientific issues involving epidemiology, neurobehavior, neuroendocrinology, dermatology, neurotoxicology, and parasitology. They hope to more accurately define relationships between illnesses in Persian Gulf veterans and post-traumatic stress disorder, or specific environmental, infectious or warfare chemical exposures. They plan to estimate future risks of developing symptoms in the population of exposed veterans and to begin devising appropriate treatments and intervention strategies.

#### Review Activities

Pursuant to Public Law 102-585, VA and DoD engaged the Medical Follow-Up Agency (MFUA) of the Institute of Medicine (IOM), National Academy of Sciences (NAS), in a multiyear contract to review the health consequences of service in the Persian Gulf and make recommendations regarding epidemiological study.

Another review activity was coordinated and co-sponsored by VA, DoD, HHS, and the EPA. The NIH Technology Assessment Workshop on Persian Gulf Health and Experience was held in April 1994. A panel of expert scientists and clinicians assembled by the Workshop was asked if a case definition for unexplained illnesses could be developed and whether any specific causes of illnesses could be identified.

Lastly, VA has established the VA Persian Gulf Expert Scientific Committee, composed of scientists, clinicians, and veteran representatives. The primary purpose of this committee is to review clinical and scientific findings related to Persian Gulf veterans and make recommendations to the Secretary.

In all of these review activities, we have sought to answer two important questions: (1) is there a disease process, previously unrecognized, that could account for the undiagnosed illnesses, and (2) could both the diagnosed and undiagnosed illnesses reported by Persian Gulf veterans, and their family members, be accounted for by exposure to some agent or agents during the Persian Gulf conflict?

To date, all of the review panels have come to a similar conclusion. This is best summarized by a quotation from the NIH Technology Assessment Workshop Report: "...no single or multiple etiology or biological explanation for the reported symptoms {of Persian Gulf veterans} was identified from the data available to the panel," and "...no single disease or syndrome was apparent, but rather multiple illnesses with overlapping symptoms and causes."

Where do these findings leave us? Well, it is clear that the answers to many questions about unexplained illnesses in Persian Gulf veterans require continuing investigation with possibly additional studies being undertaken as new leads surface as a result of current investigative efforts.

Secretary Brown and I are committed to pursuing all reasonable steps to find the cause, or causes, of the illnesses experienced by Persian Gulf veterans. While our research efforts are underway, however, we are equally committed to providing the highest quality health care for veterans with these illnesses and to compensate them for their disabilities.

THE OVERALL 4-PRONGED APPROACH TO PERSIAN GULF WAR VETERANS

- I. Medical Care
  - A. Priority care
  - B. Registry exams
  - C. Referral centers
- II. Outreach & Education
  - A. Audiences
    - 1. Professional/Caregivers
    - 2. Public
    - 3. Patients
  - B. Information Vehicles
    - 1. Printed materials
    - 2. Media
    - 3. Hotlines
- III. Disability Evaluation & Compensation
  - A. "Routine"
  - B. Undiagnosed illnesses
- IV. Research
  - A. Epidemiologic
    - 1. Descriptive
    - 2. Hypothesis-driven
  - B. Basic science
  - C. Clinical
    - 1. Physiologic/"organ system"
    - 2. Neuropsychiatric/behavioral
  - D. Environmental

**SYNOPSIS OF PERSIAN GULF VETERANS RESEARCH ACTIVITY REPORT,  
MARCH 1995**

**INTERAGENCY ACTIVITIES**

1. Persian Gulf Veterans Coordinating Board
2. Persian Gulf Interagency Research Coordinating Council--  
Research Working Group of Persian Gulf Veterans Coordinating  
Board
3. NIH Persian Gulf Experience and Health Workshop, April  
1994
4. NAS/IOM review of government efforts to collect and assess  
information related to the health of Persian Gulf War  
veterans (VA and DoD funded)

**DEPARTMENT OF VETERANS AFFAIRS RESEARCH AND REVIEW ACTIVITIES**

**A. RESEARCH**

Epidemiologic Studies

1. Mortality follow-up study of all Persian Gulf veterans
2. Random (mail/telephone/physical examination) survey of  
15,000 Persian Gulf veterans and 15,000 era controls
3. Use of roster of veterans who served in the Persian Gulf  
area

Environmental Hazards Research Centers

4. Boston VAMC: Emphasis on cognitive and neurological  
function (CFS, PTSD, chemical sensitivities); cancer  
surveillance; respiratory function; and, immunologic  
markers of PAH
5. East Orange, NJ, VAMC: Study areas include case-control  
study (registry vs. non-registry); physiological,  
psychological, and immunological factors (CFS, chemical  
sensitivities); dose-response studies; and, animal model  
of stress and toxicant interactions.
6. Portland OR, VAMC: Study areas include case-control  
studies; neurobehavioral/psychological, psychosocial  
assessments; fibromyalgia; AH's and PB on neural

explants; and, markers of nitrogen mustard exposure

Psychological and Neurological studies

7. Desert Storm Reunion Survey, VAMC Boston, MA
8. Evaluation of Cognitive Functioning of Persian Gulf veterans, VAMC Boston, MA
9. Study of psychological adjustment, VAMC Gainesville, FL
10. Early intervention with Appalachian Marine reservists, VAMC, Mountain Home, TN
11. Evaluation of cognitive functions in Persian Gulf veterans, VAMC New Orleans, LA
12. Memory and attention in post traumatic stress disorder, VAMC New Orleans, LA
13. Neuropsychological functioning in veterans, VAMC New Orleans, LA
14. Psychological assessment of Operation Desert Storm returnees, VAMC New Orleans, LA
15. Evaluation of PTSD symptomatology, VAMC Phoenix, AZ
16. Pilot Study of neurobehavioral aspects of Persian Gulf experience, VAMC Pittsburgh, PA

Depleted Uranium

17. Monitoring of veterans with imbedded DU fragments (with DoD)

Leishmaniasis

18. Study of vaccine mediated immunity
19. Identification of vaccine candidate antigens in visceral leishmaniasis

Other Research

20. Pilot study at East Orange, NJ, VA of chronic fatigue syndrome among Gulf war veterans
21. Study of chronic gastrointestinal illness among Gulf war veterans, VAMC Boston, MA

**B. REVIEW**

22. VA Persian Gulf Expert Scientific Committee

## DEPARTMENT OF DEFENSE RESEARCH AND REVIEW ACTIVITIES

## A. RESEARCH

Epidemiologic StudiesNavy NHRC Coordinated Epidemiologic Studies with VA

1. Cohort study of active-duty seabee veterans and controls
2. Hospitalization records studies of 600,000 Gulf veterans and 700,000 controls for war-related morbidity
3. Two birth outcomes studies: 1) hospitalization records based, and 2) mail survey to evaluate delayed conception and early pregnancy loss

Mortality

4. Comparative Mortality study of active duty personnel

Environmental Research

5. Wright-Paterson AFB: evaluation of physiologic and behavioral effects of environmental exposures in rodent model
6. Pending approval, study of low-level chemical agent exposure
7. Evaluation of health consequences of exposure to smoke from oil fires (initial study complete)
8. Evaluation of pathology resulting from smoke inhalation using rodent model

Psychological and Neurological studies

9. Studies of Veterans in Hawaii and Pennsylvania with VA
  - a. Completed survey started during Operation Desert Shield
  - b. Case-control study using CCEP and VA registry data
  - c. Further studies using wider military population
10. Development of diagnostic algorithms and countermeasures for field combat stress

Depleted Uranium

11. Two studies of physiologic effects of DU using rodent models

Leishmaniasis

12. Development of screening skin test for large populations
13. Development of PCR test for active infection

Pyridostigmine

14. Three surveys completed and reports submitted to FDA
15. Study using rodent model of synergism with other chemical agents: insecticides, DEET, permethrine
16. Male/female differential tolerance study

Botulinum Vaccine

17. Completed survey for FDA of 121 Persian Gulf veterans

Other Research

18. Working dog study of environmental exposures and infectious diseases
19. Development of rapid diagnostic assays for forward deployed laboratories

**B. REVIEW**

20. Defense Science Board

**HHS RESEARCH ACTIVITIES**

1. CDC epidemiologic (telephone) survey of veterans from Iowa
2. CDC epidemiologic investigation of National Guard personnel in Pennsylvania to include directly administered questionnaire, physical examination and laboratory tests
3. NIH study of gastroenteritis viruses among Persian Gulf veterans
4. Biopsy evaluation of disease pathogenesis caused by visceral leishmaniasis
5. Study of possible DNA change due to oil well fire smoke exposure

**DEPARTMENT OF  
VETERANS AFFAIRS**

**ENVIRONMENTAL HAZARDS  
RESEARCH CENTERS**

*Boston, MA*

*East Orange, NJ*

*Portland, OR*

# **BOSTON**

## **Project 1**

### **Evaluation of Cognitive Function in Persian Gulf War Veterans**

- Test for cognitive performance deficits
- Determine relationship to exposure
- Characterize cognitive patterns among exposure classes
- Determine cognitive risk factors among combat exposure, combat stress, PTSD
- Examine relationship between environmental exposure, stressors, and health symptoms

# **BOSTON**

## **Project 2**

### **Evaluation of Neurological Functioning in Persian Gulf War Veterans**

- Describe neurological function of PG veterans - questionnaire, nerve conduction velocity (NCV), EEG, evoked potentials (EP), and MRI.
- Compare four designated diagnostic groups with controls
  - Neurotoxicant encephalopathy
  - Chemical Sensitivities
  - Chronic Fatigue Syndrome
  - PTSD
- Test for exposure characteristics within and between groups

# **BOSTON**

## **Project 3**

### **Gulf War and Vietnam Veterans Cancer Incidence Surveillance**

- Assemble roster of PG veterans in New England States - link with exposure data
- Extend cancer incidence surveillance of Mass. Vietnam veterans

## **BOSTON**

### **Project 4**

#### **An Evaluation of Respiratory Dysfunction among Gulf War Veterans**

- Assess exposure
- Administer respiratory questionnaire
- Perform pulmonary function tests
- Assess pre-existing asthma risk
- Assess nonspecific bronchial responsiveness
- Determine predictors of respiratory dysfunction
- Plan preventive interventions

# **BOSTON**

## **Project 5**

### **The Aromatic Hydrocarbon Receptor (AhR) as a Biomarker of Susceptibility**

- a. Confirm in mice relationship between AhR and PAH bioactivity
- b. Test for genetic differences leading to susceptibility in mice
- c. Apply results in PG veterans

# **BOSTON**

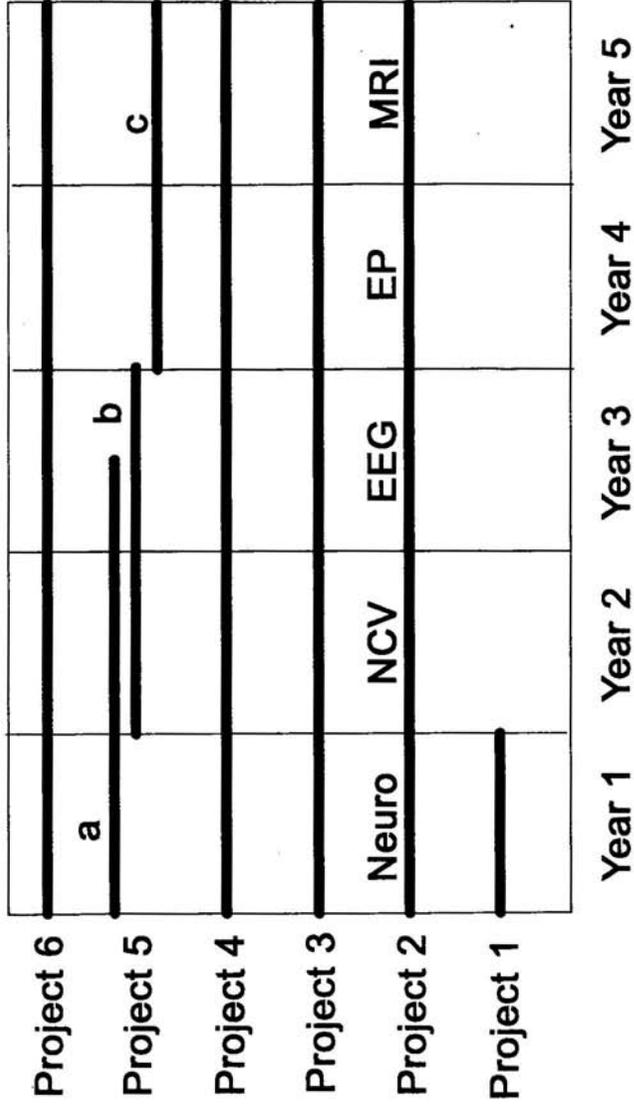
## **Project 6**

### **Validity of Computerized Tests**

- Assess validity of computerized tests in Parkinson's disease (PD), multiple sclerosis (MS), and focal lesions (non-PG veterans)
- Expand to Alzheimer's disease, Huntington's disease, PTSD, and chemical sensitivities
- Correlate computerized tests with standard tests

**Boston Environmental Hazards  
Research Center**

*Timelines*



# **NEW JERSEY**

## **Project 1**

### **Health and Exposure Survey of Persian Gulf Veterans**

- Develop health and exposure questionnaire
- Distribute, collect, and analyze resulting data
- Characterize the demographic, social, psychological, and medical data (pre- and post- service in Gulf)
- Characterize environmental, medical and combat experiences
- Characterize conditions common to veterans with health problems
- Identify 400 - 500 veterans with CFS and/or chemical sensitivities

# **NEW JERSEY**

## **Project 2**

### **Physiological and Psychological Assessment of Persian Gulf Veterans**

- Current medical evaluation
- Examine viral factors: EBV, CMV, HHV 6 and 7
- Examine immunological factors: INF - alpha, IL-6, IL-7 in peripheral blood lymphocytes
- Psychiatric, psychosocial, behavioral, and neuropsychological consequences of service
- Autonomic Factors
- Caffeine Breath Test for polyhalogenated hydrocarbon exposure

# NEW JERSEY

## Project 3

### Effects of Exertion and Chemical Stress on Persian Gulf Veterans

- Controlled double-blind chemical challenges
  - Assess psychological and physical symptoms
  - Physiological hyperresponsiveness
- Exertional stress and fatigue
  - Circadian hormone and temperature rhythms
  - Treadmill exercise test
  - Hormonal and cytokine hyperresponsiveness to exercise
  - Prolonged fatigue and cognitive impairment after exercise

# **NEW JERSEY**

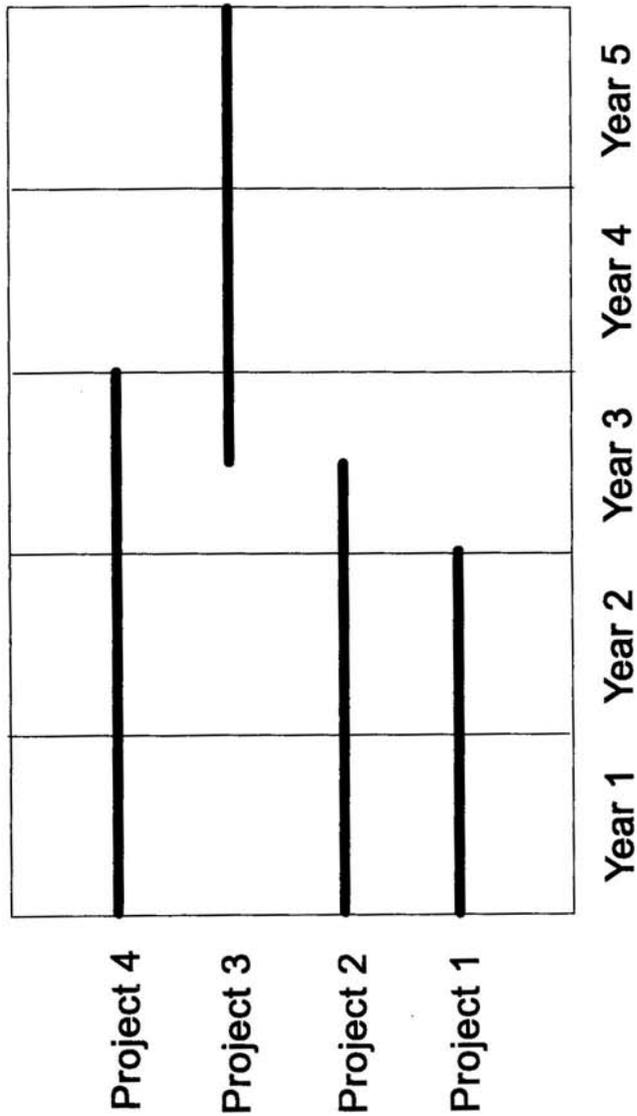
## **Project 4**

### **Effects of Genetics and Stress on Responses to Toxins**

- Chronic stress in normal and stress-hyperresponsive rats
  - Sensitization to effects of PB and 3 - methylcholanthrene
  - Cardiovascular, neuroendocrine, core temperature and behavioral responses to acute and chronic exposures
  - c-FOS in brain after acute exposures and neuropathology produced by prolonged exposures

**New Jersey Center for Environmental  
Health Research**

*Timelines*



# PORTLAND

## Project 1

### Environment and Persian Gulf Veterans Health

- a. Develop computerized questionnaires
- b. Pilot test battery of neurobehavioral and psychosocial tests to symptomatic and asymptomatic veterans, and controls
- c. Administer test battery to larger cohort of symptomatic, asymptomatic, and controls with intensive clinical neuropsychological testing in subset

# **PORTLAND**

## **Project 2**

### **Clinical and Neuroendocrine Aspects of Fibromyalgia**

- a. Establish and validate screening questionnaire
- b. Screen veterans for fibromyalgia
- c. Screen unselected veterans (deployed and non-deployed) for fibromyalgia
- d. Perform neuroendocrine tests in veterans with fibromyalgia - compare with matched veteran controls
- e. Follow-up on neuroendocrine tests

# PORTLAND

## Project 3

### Neurotoxicity of Environmental Pollutants and Warfare Agents

#### *Studies Using Animal Neuronal Explants to Study In Vitro Effects of Hydrocarbons*

- a. Study monocyclic aromatic hydrocarbons
- b. Study polycyclic aromatic hydrocarbons
- c. Study effects of pyridostigmine bromide

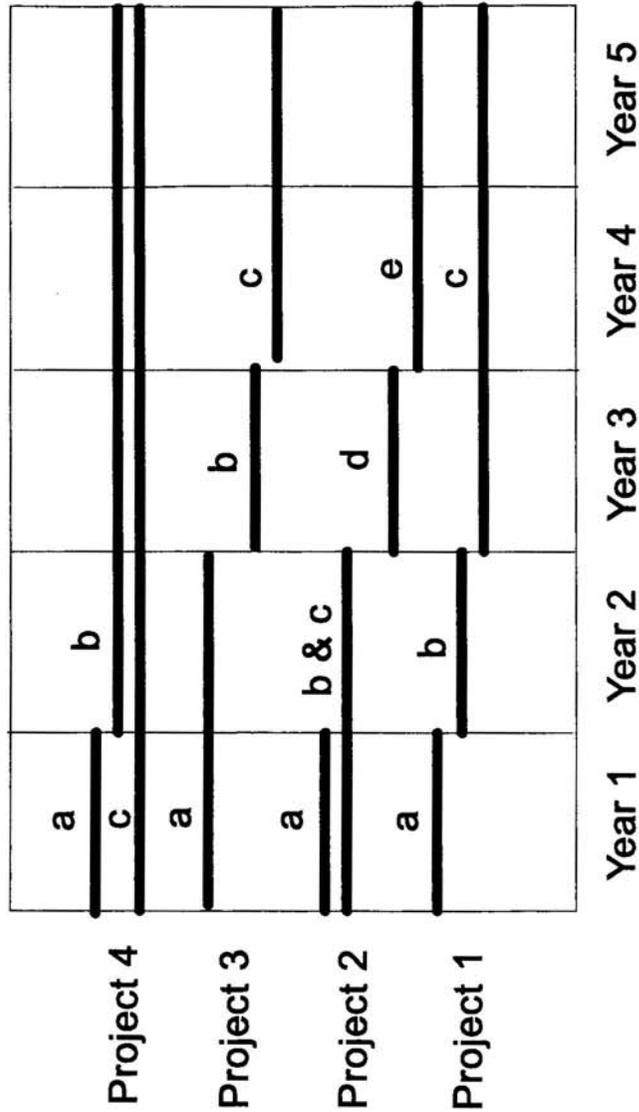
# **PORTLAND**

## **Project 4**

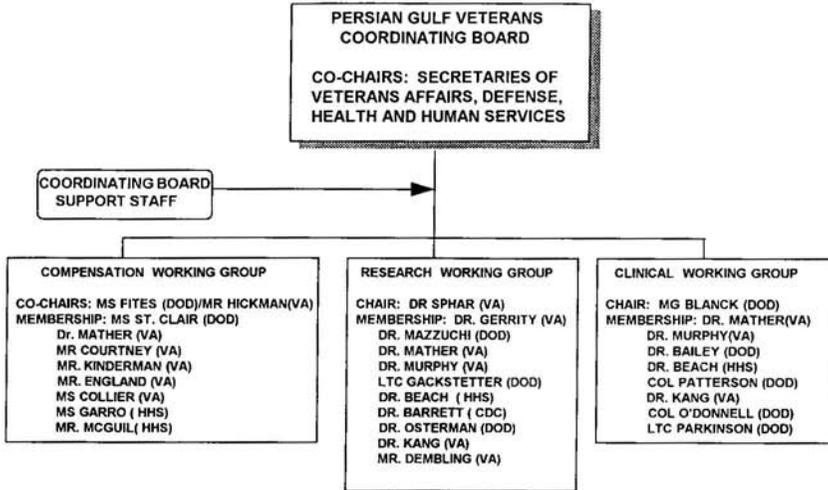
### **DNA Damage from Chemical Agents and Its Repair**

- a. Pilot study of DNA adducts in skin biopsies
- b. Application of DNA adduct study to cases and controls
- c. Study of DNA damage from nitrogen mustard in animal neuronal cells

**Portland Environmental Hazards  
Research Center  
Timelines**



**PERSIAN GULF VETERANS  
INTERAGENCY ACTIVITIES**



**SUPPORTING ACTIVITIES**

**Presidential Advisory Committee on Persian Gulf War Veterans' Illnesses**

JOINT CONTRACT VA/ DOD NATIONAL ACADEMY OF SCIENCE  
COMMITTEE TO REVIEW THE HEALTH CONSEQUENCES  
OF SERVICE DURING THE PERSIAN GULF WAR

DOD CONTRACT  
NATIONAL ACADEMY OF SCIENCES  
CCEP

VA PERSIAN GULF EXPERT  
SCIENTIFIC PANEL  
17 MEMBERS

NIH TECHNOLOGY  
ASSESSMENT WORKSHOP PANEL

DEFENSE SCIENCE BOARD  
TASK FORCE ON PERSIAN  
GULF WAR HEALTH EFFECTS

# THE HEALTH OF PERSIAN GULF VETERANS



## THE ROLE OF VA MEDICAL RESEARCH

- VA has established three new, state-of-the-art Environmental Hazards Research Centers
- The Research Centers will focus on the investigation of unexplained illnesses suffered by Persian Gulf veterans
- The Centers are a top VA priority, together receiving \$1.5 million per year for five years, starting October 1994

### BOSTON CENTER

#### Boston VA researchers will:

- examine and keep track of a large group of Persian Gulf veterans, testing their lung function, immune system, neurological and psychological well-being;
- determine the relationship between wartime exposure to environmental hazards and health conditions such as chemical sensitivities, Chronic Fatigue Syndrome, and Post-traumatic Stress Disorder;
- study the neurological effects of environmental hazards on psychological performance ("behavioral toxicology");
- investigate the effects of petroleum products on the immune system in an animal model;
- keep track of the incidence of cancer among Persian Gulf veterans.

### NEW JERSEY CENTER

#### New Jersey VA researchers will:

- determine if variable reactions among veterans to wartime stress and exposures could explain differences in symptoms;
- determine how symptoms associated with the unexplained illnesses develop, and under what conditions these symptoms are exacerbated;
- test immune function, psychological well-being and neurological well-being of Persian Gulf veterans;
- evaluate Persian Gulf veterans for Chronic Fatigue Syndrome and chemical sensitivities;
- recruit more women than men for the study, because the unexplained illnesses appear to be more prevalent among women.

### PORTLAND CENTER

#### Portland, Oregon VA researchers will:

- conduct intensive interviews to evaluate the specific biological and chemical exposures that Persian Gulf veterans experienced;
- investigate the connection between the unexplained illnesses and possible exposures to environmental hazards;
- examine the impact of chemical agents on the nervous systems of humans and animals;
- determine the risk factors for symptom manifestation, and what risks exist for healthy veterans who may have been exposed to environmental hazards;
- investigate the relationship between the unexplained illnesses and Post-traumatic Stress Disorder;
- begin to devise appropriate treatments and interventions for the unexplained illnesses.

## Unexplained Illnesses Among Desert Storm Veterans

### *A Search for Causes, Treatment, and Cooperation*

*Persian Gulf Veterans Coordinating Board*

**B**etween August 1990 and March 1991, the United States deployed 697 000 troops to the Persian Gulf to liberate Kuwait from Iraqi occupation. Since the Gulf War, most veterans seeking medical care at Departments of Veterans Affairs and Defense medical facilities have had diagnosable conditions, but the symptoms of several thousand veterans have not been readily explained. The most commonly reported, unexplained complaints have been chronic fatigue, rash, headache, arthralgias/myalgias, difficulty concentrating, forgetfulness, and irritability. These symptoms have not been localized to any one organ system, and there has been no consistent physical sign or laboratory abnormality that indicates a single specific disease. Because of the unexplained illnesses being experienced by some Gulf War troops, a comprehensive clinical and research effort has been organized by the Departments of Veterans Affairs, Defense, and Health and Human Services to provide care for veterans and to evaluate their medical problems. To determine the causes and most effective treatments of illnesses among Gulf War veterans, a thorough understanding of all potential health risks associated with service in the Persian Gulf is necessary. These risks are reviewed in this article and include possible reactions to prophylactic drugs and vaccines, infectious diseases, and exposures to chemicals, radiation, and smoke from oil fires.

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Iraq invaded Kuwait on August 2, 1990. In support of United Nations Resolution 660, the United States immediately responded by sending troops to the Persian Gulf in Operation Desert Shield. More than 5 months later, on January 16, 1991, Operation Desert Storm began with an air war against Iraq that was followed by a 4-day ground war 39 days later. By the time hostilities ended, the United States had 697 000 troops in the Persian Gulf. In contrast to previous US conflicts, a larger proportion of participants were women (7% of the force) and Reserve/National Guard personnel (17% of the force).

Medical preparations during Opera-

tion Desert Shield were extensive,<sup>1</sup> but fortunately combat casualties were far fewer than anticipated. Furthermore, the incidence of nonbattle injuries and diseases was very low in comparison with other military campaigns because of preventive medicine efforts, minimal contact with local populations, and almost no access to alcohol.<sup>2</sup>

Since the war, most Gulf War veterans seeking medical care from the Departments of Veterans Affairs (VA) and Defense (DOD) medical facilities have had diagnosable illnesses expected in such a large cohort of adults. Also, as of September 1993, there has been no evident increase in the number of reported deaths among Gulf War veterans: approximately 2000 veterans have died since the war, whereas more than 3000 deaths would be expected in an age- and gender-matched US civilian population not medically screened for military service (Envi-

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**Table 1. The 10 Most Frequent Complaints Among 17 248 Ill or Concerned Veterans in the Veterans Affairs Persian Gulf Health Registry, June 1994**

Complaint	Percent With Complaint*
Fatigue	17.4
Rash	16.8
Headache	14.1
Muscle and/or joint pain	13.9
Neuropsychologic complaints†	10.5
Shortness of breath	7.5
Sleep disturbances	4.9
Diarrhea and other gastrointestinal complaints	4.1
Cough	3.8
Choking sensation, sneezing, mouth breathing	3.3

\*Because the current Veterans Affairs registry database records and analyzes the three most debilitating complaints of each veteran, a veteran with two or three of the most common complaints was counted in more than one complaint category in this table. For veterans with more than three complaints, additional complaints are not analyzed at present. Also, 16% of registry veterans have no current medical complaints.

†Difficulty concentrating, forgetfulness, irritability, and depression.

ronmental Epidemiology Service, Department of Veterans Affairs, Washington, DC).

#### UNEXPLAINED ILLNESSES

Despite the apparent overall good health of Desert Storm troops, the symptoms of some veterans from diverse military units have not been readily explained. Of 17 248 ill or concerned veterans who have enrolled and been evaluated in the VA Persian Gulf Health Registry, approximately 3000 patients have had unexplained illnesses as of June 1994. In addition, several hundred Gulf War veterans still on active duty currently have been found to have unexplained illnesses in the DOD Persian Gulf Health Surveillance System.

Predominantly, these veterans have complained of the new onset of persistent fatigue and a wide variety of generalized physical and neuropsychologic complaints. Among 17 248 evaluated veterans in the VA registry, the most common complaints have been fatigue, rash, headache, and arthralgias/myalgias

**Table 2. Components of the Uniform Case-Assessment Protocol Developed by the Departments of Veterans Affairs and Defense for the Clinical Evaluation of Veterans With Illnesses Possibly Related to Persian Gulf Service**

Initial screening registry examination
Medical history, including completion of Gulf War risk factor questionnaire
Physical examination
Laboratory tests, including: complete blood cell count with differential cell count; serum glucose, electrolytes, and creatinine; serum urea nitrogen; liver enzymes; urinalysis; and chest roentgenogram
Referral center evaluation of patients with unexplained illnesses after initial screening examination
Laboratory tests, including: sedimentation rate; C-reactive protein; rheumatoid factor; antinuclear antibody; serum protein electrophoresis; creatine kinase; thyroid function tests; vitamin B <sub>12</sub> and folate level; serologic testing for hepatitis B, brucellosis, Q fever, Lyme disease, syphilis, and human immunodeficiency virus infection (with patient's consent); stool examination for ova and parasites; and tuberculosis skin test
Specialty consultations from a neurologist, infectious diseases subspecialist, dentist, and psychiatrist and/or psychologist
Additional consultations, tests, and procedures as clinically indicated

(Table 1). Among 79 Indiana reservists evaluated by the US Army in April 1992, the most common complaints were fatigue, sleep disturbance, and forgetfulness<sup>3</sup>; and, in another group of 166 veterans, the most common complaints were joint pain, rash, and shortness of breath or chest pain.<sup>4</sup> These symptoms, which result in varying degrees of incapacitation, have not been localized to any one organ system, and there has been no consistent physical sign or laboratory abnormality that would indicate a single specific disease. Although complaints of rash and feverishness are common, a characteristic rash or unexplained fever has not been documented among VA registry patients or other populations of veterans.<sup>3</sup>

Among veterans with unexplained illnesses seeking care in the VA and DOD medical facilities, no distinctive demographic, exposure, or geographic risk factor currently has been identified, except that nearly half of these veterans have been reservists/National Guard personnel, a population that represented 17% of troops deployed to the Persian Gulf.

Similar unexplained medical problems have not been reported to date among local inhabitants of Saudi Arabia and Kuwait or among more than 100 000 non-US coalition forces (Saudi, French, Egyptian, Syrian, and Moroccan troops).<sup>5</sup> The British Ministry of Defense is evaluating 33 veterans predominantly complaining of fatigue, weakness, muscle and/or joint pain, head-

ache, and other nonspecific complaints but have found no increase in the incidence of these diverse symptoms among British Gulf War veterans.<sup>6</sup>

Only preliminary investigations of veterans with unexplained illnesses have been conducted. Clinical evaluation at three VA referral centers of 100 veterans with symptoms not readily explained after initial screening and registry examination has resulted in a diagnosis in a majority of patients (Table 2). The diagnoses were diverse and included asthma, inflammatory bowel diseases, and various rheumatologic, neurologic, and psychiatric conditions, including posttraumatic stress disorder. In another evaluation of 42 symptomatic veterans, impairments in memory and fine motor skills were found in 24% and 48% of patients, respectively.<sup>4</sup>

Recently, there have been reports of similar unexplained symptoms among some spouses of veterans and isolated reports of increased health problems among infants born to Gulf War veterans. In response to reports of excessive rates of birth defects among children of veterans belonging to two units of the Mississippi National Guard, the VA medical center in Jackson, Miss, conducted a collaborative investigation with the Mississippi State Department of Health and the Centers for Disease Control and Prevention, Atlanta, Ga. Contact was made with 90% of service personnel from the two units, and medical records

from 54 of 55 children conceived and born after the war to 52 predominantly male Persian Gulf veterans were evaluated. Three cases of major birth defects and two cases of minor birth defects were identified. The total number of birth defects in this group was not greater than expected based on general population estimates<sup>7</sup>; however, too few subjects were involved to evaluate individual types of birth defects (Alan D. Penman, MD, Mississippi State Department of Health, personal communication, 1994).

#### UNIQUE HEALTH RISKS

There are numerous possible explanations that could account for the unexplained illnesses that US Desert Storm veterans are experiencing. A thorough understanding of the living and working environment of the US troops and the unique health threats they faced is necessary to determine the causes of these illnesses. The following factors need to be considered when evaluating the health problems of Gulf War veterans.

#### Living Conditions

The US troops entered an extremely hot and bleak desert environment where they initially were not superior to those of the Iraqi army. No one knew at the beginning of Operation Desert Shield that coalition forces eventually would win a quick and decisive war. Consequently, a large proportion of our troops did not fight a "4-day war" but spent months isolated in the desert, under constant stress and uncertain when they would return home.

Because of the massive logistic problems involved in deploying and supporting troops more than 7000 miles from the United States, our troops had few amenities and lived under arduous and austere conditions. The weather, which initially was extremely hot and humid, changed to cold and damp conditions by the time the war began. Troops were crowded into warehouses, makeshift buildings, and tents where they had little personal privacy. The diet most often con-

sisted of prepackaged meals. Sanitary needs were provided by wooden latrines and communal washing facilities. Desert filth flies were a constant annoyance.

Despite these hardships, when hostilities finally began, US troops were fully prepared and anxious to win the war and return home. Levels of apprehension and stress, which were high during Operation Desert Shield, actually decreased after the war started.<sup>8</sup>

#### Chemical and Biological Warfare Threat

The possibility that Iraq would use chemical warfare (CW) and biological warfare (BW) was a major concern for all coalition forces. Although extensive preparations were made for this threat, including thorough training of medical personnel, both the DOD and a Defense Science Board Task Force on Gulf War Health Effects have concluded that the Iraqis did not use chemical or biological weapons against coalition forces and that there was no exposure of US troops to CW/BW agents in Kuwait and Saudi Arabia.<sup>9</sup> This conclusion is based on several factors: an extensive US CW detection capability failed to verify the presence of chemical warfare agents during Operation Desert Storm; no casualties characteristic of chemical or biological exposure were reported by military medical facilities during the war; no chemical or biological weapons were found on the battlefield; and, no intention to use CW/BW agents was uncovered from interrogation of Iraqi prisoners of war.

There were, though, several credible CW agent detections by Czechoslovakian chemical defense teams attached to the Saudi Arabian military that could not be verified by US forces during the war.<sup>9</sup> Czech detections reportedly were of extremely low, nonincapacitating levels of CW agents that did not persist for more than a few hours. These detections occurred in areas where there was no known military action or incoming Scud missiles and where few US troops were located.

The possibility has been raised that Czech detections resulted from

CW agents released from Iraqi production and storage facilities bombed by coalition forces.<sup>10</sup> The DOD has discounted this possibility because if CW or BW agents, which are highly lethal in low concentrations, had been dispersed from hundreds of miles inside Iraq where storage facilities were located, massive fatalities would have resulted among the Iraqis residing near these facilities where levels of CW/BW agents would have been extremely high. However, there is no indication such an event occurred from aerial photographs and intelligence reports.<sup>9</sup>

No study directly evaluating possible exposure of the Iraqi population and troops to CW/BW agents during the Gulf War has been reported, although health surveys of Iraqi children since the war found increased mortality from diarrhea and injuries, particularly in Northern Iraq.<sup>11</sup> A pilot clinical program to evaluate the US Gulf War veterans for possible chronic neurocognitive toxicity secondary to nerve agent exposure has been initiated by the Birmingham VA Medical Center; however, definitive scientific investigation of possible CW exposure will be difficult because there is no specific marker of remote contact with CW agents.

Some of the confusion over the possibility that Iraq used CW agents arises from the nature of the detection equipment. Tens of thousands of automatic chemical agent sensors were arrayed across the battlefield and in operation during the Gulf War. These sensors are designed to be extremely sensitive to provide early warning; as a result, specificity suffers and a high rate of false-positive alarms occurs. Numerous substances, other than CW agents, can activate automatic detectors, including some organic solvents, vehicle exhaust fumes, and insecticides. Consequently, CW alarms frequently sounded during the air and ground war, which necessitated the precautionary donning of masks and other protective equipment.

Standard operating procedure calls for each sensor alarm event to be evaluated using more specific test equipment to verify the presence or

absence of harmful levels of chemical agents. Follow-up analysis by the DOD of thousands of alarm events failed to confirm that CW agents were used against coalition troops.<sup>9</sup> Nevertheless, because of the frequent alarms, use of confining protective gear, and rumors of other units being hit by CW agents, troops were understandably concerned that they had been exposed to CW agents.

Adding to the impression of a CW/BW attack was the presence of dead sheep, goats, and camels on the battlefield. The US troops are taught that unexplained events, like dead animals, may be an indication of chemical or biological attack. Dead animals, which were in various stages of decay and desiccation, were found throughout the desert from the beginning of Operation Desert Shield, more than 5 months before the war began.<sup>12</sup> According to Saudi Arabian officials, leaving dead animals in piles is a common practice by nomadic herders, and investigations by the US Veterinarian Corps Officers failed to detect unusual diseases (R.R.B.).

#### Nerve Agent Prophylaxis and Immunizations

At the beginning of the war, all US and British troops were provided with an individual package containing 21 30-mg tablets of pyridostigmine bromide, a cholinesterase inhibitor, to help prevent the lethal effects of CW nerve agents.<sup>13</sup> On direction by commanders when the risk of chemical attack was judged to be significant, troops were instructed to self-administer one pyridostigmine tablet every 8 hours.

Pyridostigmine is a drug approved by the Food and Drug Administration (Washington, DC), which has been used since the 1950s in anesthesia and for the treatment of myasthenia gravis without any known long-term effects. Because much higher doses are employed to treat patients with myasthenia than are used for CW prophylaxis, no chronic sequelae were anticipated among Gulf War troops. In addition, numerous studies of this drug in low doses have not revealed any serious side effects.<sup>14,15</sup> Despite these

indications of safety, pyridostigmine has been considered a potential cause of unexplained illnesses because it often produced mild acute gastrointestinal and urinary disturbances among Desert Storm troops<sup>16</sup> and because the effects of pyridostigmine, which is classified by the Food and Drug Administration as investigational for CW prophylaxis,<sup>17</sup> have not been evaluated previously in such large numbers of deployed military troops.<sup>10</sup>

Two nonlive vaccines, botulinum toxoid and anthrax, also have been postulated to be causes of unexplained illnesses. The botulinum vaccine is an unlikely factor because it was given to only 8000 troops, and these troops, which are being closely followed up, have not reported problems with unexplained illnesses. The Food and Drug Administration-approved anthrax vaccine was given to a much larger number of troops, approximately 150 000, but to date no association has been found between this vaccine and unexplained illnesses. Anthrax vaccines have been used for several decades in high-risk populations without any major adverse effects.<sup>18,19</sup>

The possibility that chronic fatigue and debility could result from the combination of vaccinations that Gulf troops were given over a short period of time, rather than any single vaccine, has been suggested. However, long-term effects have not been observed among multiply immunized foreign travelers, US military recruits who routinely receive eight or more vaccinations during induction, and laboratory workers who have received multiple vaccinations, including botulinum toxoid and anthrax vaccines.<sup>19</sup>

#### Infectious Diseases

The US troops were exposed to a number of infectious diseases, including respiratory and diarrheal infections commonly found among deployed troops and some tropical diseases rarely seen in the United States.<sup>20,21</sup> The most notable of these infectious diseases is leishmaniasis because it is a cause of chronic disease and because leishmania parasites potentially can be transmitted

by blood transfusion. A total of 12 cases of viscerotropic and 19 cases of cutaneous leishmaniasis have been diagnosed among US troops. When leishmania infection was first detected among Gulf War troops, a temporary ban on donating blood by these veterans was instituted. Because of the small number of diagnosed leishmaniasis cases and the low parasite burden of viscerotropic disease, this ban was lifted on January 1, 1993, and there have been no reports of leishmania transmission from blood subsequently donated by Desert Storm veterans.

Unlike Gulf War veterans with unexplained illnesses, most troops with documented leishmaniasis have had characteristic, objective signs of disease, including elevated temperature, lymphadenopathy, and hepatosplenomegaly.<sup>22</sup> Because leishmania infection has been found in only one veteran without these readily apparent signs of infection, leishmaniasis is not believed to be a major cause of unexplained illnesses. Nevertheless, it has not been possible to determine the exact risk of infection because a sensitive and specific serologic or skin test has not been developed that can screen exposed populations. Each individual case currently has to be diagnosed by identifying the leishmania parasite in a bone marrow or lymph node biopsy specimen, and drug therapy is reserved for seriously ill patients due to the high toxicity of treatment.

Q fever and brucellosis are two other infectious diseases found in the Middle East that can cause chronic disease. *Coxiella burnetii* was diagnosed as the cause of meningoencephalitis in one Gulf War veteran,<sup>23</sup> but brucella infection has not been found by clinical and serologic evaluation of veterans with chronic illnesses.<sup>3</sup> Although these two infectious agents can cause chronic disease, Gulf War veterans with unexplained illnesses have not had recurrent fever or the serious complications associated with these infections, including pneumonia, hepatitis, osteomyelitis, and meningitis.

Arthropod-borne viral diseases found in the Persian Gulf—sandfly fever, West Nile fever,

**Table 3. Major Pesticides Used by US Forces During Operations Desert Shield and Storm\***

Alliethrin/resmethrin
Amidinohydrazone
Azamephosphos
Bendiocarb
Brodifacoum
Bromadiolone
Chlorphacinone
Chlorpyrifos
Cypermethrin
N, N-diethyl-m-toluamide (DEET)
Diazinon
Dichlorvos
Malathion
Methomyl
Permethrin
p-Phenothrin
Propoxur
Pyrethrin

\*Information obtained from the Armed Forces Pest Management Board, Walter Reed Army Medical Center, Washington, DC.

Crimean-Congo hemorrhagic fever, and dengue—are not known to cause chronic infection and disease. There has been one report of increased antibody titers to Epstein-Barr virus among Gulf troops,<sup>8</sup> but titers to cytomegalovirus and other viral infections also were elevated, similar to the polyclonal increase in antibody titers found in patients with chronic fatigue syndrome.<sup>24</sup> The possibility that a previously unrecognized, emerging infectious disease could be responsible for illness among some Gulf War veterans is a consideration, but Gulf War veterans evaluated to date have had no consistent physical or laboratory abnormality that would indicate a unique infectious process.

Because of reports that family members have contracted unexplained illnesses from Gulf War veterans, it is important to note that potential infectious disease threats and likely infectious BW agents (*Bacillus anthracis*, *Yersinia pestis*) are rarely, if ever, transmitted by casual personal contact or sexual contact.<sup>25,26</sup>

#### Environmental Hazards

Desert Storm troops were exposed to several potentially harmful environmental hazards in the Persian Gulf, the most spectacular of which

was smoke from 605 oil well fires started by the retreating Iraqi army. A concerted effort was made by the DOD, US Environmental Protection Agency, the Department of Health and Human Services, and the National Oceanic and Atmospheric Administration to evaluate the health effects from these fires. Based on data collected from May through December 1991, the carcinogenic and non-carcinogenic health risks from exposure to oil fire smoke were determined to be minimal due to lofting of the smoke above ground level and nearly complete combustion of most chemical substances.<sup>27,28</sup> In addition, assays of metals and volatile organic compounds (including benzene) among troops indicated extremely low-level exposure to harmful substances.<sup>27</sup> It also is notable that there has been no indication of unexplained illnesses among the US civilian firefighters who were highly exposed to combusted and noncombusted products of damaged oil wells.<sup>29</sup>

In addition to smoke, US troops were exposed to low levels of several pesticides, and possible health effects from such exposure are being investigated. The vast majority of pesticides employed in the Gulf were products that have been registered by the Environmental Protection Agency and have been used without ill effects on numerous prior exercises of US troops in areas like Egypt and Southeast Asia (Table 3). Also, these pesticides are routinely used in the commercial market and by the DOD in the United States. Pet flea collars, which contain organophosphates and carbamates, were used inappropriately by a small number of troops before being prohibited but have not been associated with unexplained illnesses. Herbicides were not used by US forces in this desert environment.

No cases of acute pesticide poisoning are known to have occurred during Operations Desert Shield/Storm. The possibility that pesticides could have increased the acute toxic effects of pyridostigmine is being investigated, but chronic effects are considered unlikely.<sup>30</sup> To further assess the possibility of synergistic effects among various substances that the Gulf War troops may

have been exposed to, the VA and US Army are conducting studies of potential interactions between pyridostigmine, N,N-diethyl-m-toluamide, and permethrin.

Numerous petrochemical plants are located on the northeastern coast of Saudi Arabia where many of our troops entered the theater of operations. Most combat troops passed through these port areas rapidly, but large numbers of support personnel were permanently stationed on the coast, a large percentage of whom were reservists. It is possible that exposure to various chemicals in these areas could explain a higher risk of reported illnesses among reservists compared with active duty personnel. However, there have been no accounts of increased health problems among local workers or inhabitants of the cities around these petrochemical plants.<sup>5,31</sup>

Several other factors could explain why, at least initially, reservists frequently have been identified with unexplained illnesses: reporting bias is possible because of career concerns among active duty personnel during a period of downsizing; reservists tended to be older and possibly less physically resilient compared with active duty troops; and, reserve personnel may have suffered increased stress because they had to leave civilian jobs and experienced greater disruption of their personal lives.<sup>9,32</sup>

Another unique environmental hazard of this war was exposure to depleted uranium (DU) munitions that are used for their enhanced armor penetrating ability. Depleted uranium is a heavy metal that is less radioactive than natural uranium and poses a minimal health hazard when external to the body, although the impact of DU on armored targets or the involvement of DU munitions in fires can result in localized aerosolization and increased exposure. There were 35 soldiers in vehicles struck by DU during friendly fire incidents (22 who may retain DU fragments). Approximately 32 other soldiers potentially were exposed to DU while fighting a fire in a munitions storage area and from servicing vehicles hit by DU munitions; but

these troops when tested have not had elevated urine uranium levels.<sup>9</sup> Troops directly exposed to DU munitions are being closely followed up by the VA and DOD and have not had problems with unexplained illnesses. Other ground-based troops are not considered by the DOD to have been exposed to excess risk because of the low levels of radiation involved with DU munitions.

Some troops may have been exposed to a number of other potential environmental hazards, including microwaves; chemical agent-resistant coating paint fumes containing isocyanate; various petroleum products like JP4 fuel used in tent heaters and on the ground to keep the sand from blowing; decontamination solution 2 that contains

*numerous research studies have been initiated to evaluate physiologic and psychologic risk factors among Gulf War veterans*

propylene glycol, monomethyl ether, and ethylene glycol; and, airborne allergens and irritants.<sup>10</sup> None of these exposures has been identified as a primary cause of unexplained illnesses, either because they involved small numbers of infrequently affected troops or because they are not known to cause the constellation of chronic multisystem complaints reported by Gulf War veterans.<sup>9,27,30</sup> Nevertheless, all potential environmental exposures are being evaluated extensively to determine their effects on the health of Persian Gulf troops.

#### GOVERNMENTAL RESPONSE, RESEARCH, AND COOPERATION

Gulf War veterans are being afforded medical care, either at VA hospitals, where priority care is provided for health problems possibly related to exposures during Gulf War service (Public Law 103-210), or at the DOD medical care facilities. Therefore, all veterans with

health concerns or illnesses possibly related to service in the Persian Gulf should make an appointment for a medical evaluation at their nearest VA medical facility or at any DOD medical care center for Desert Storm veterans still on active duty.

In addition to medical care, VA, DOD, and the Department of Health and Human Services have mobilized a comprehensive clinical and research effort to determine the causes and most effective treatments of illnesses among US troops. In 1992, the VA established a health registry, modeled after the Agent Orange registry, of ill and concerned Gulf War veterans. This registry, which currently includes more than 34 000 veterans (17 248 available for computer analysis), has been used

extensively to assess patterns of illness and to generate hypotheses of disease causation that are being tested in directed research studies. The DOD has implemented a comparable clinical registry and is developing a complete database

of troops and their movements during Operations Desert Shield and Storm to determine any patterns of adverse environmental exposure.

The VA has established three regional referral centers at its medical centers in Houston, Tex, Los Angeles, Calif, and Washington, DC, to evaluate Persian Gulf veterans who are found to have undiagnosed or complex medical problems after initial screening registry evaluation. The DOD also has established a Comprehensive Clinical Evaluation Program, which is comparable with the VA referral center evaluation, to provide uniform and comprehensive clinical evaluation of all veterans with illnesses that may be related to Persian Gulf service (Table 2).

In conjunction with these clinical efforts, numerous research studies have been initiated to evaluate physiologic and psychologic risk factors among Gulf War veterans, and the VA has established three environmental hazard research centers. Planned studies

include the following: a random survey by the VA of 15 000 Gulf War veterans and 15 000 era veterans who did not deploy to the Persian Gulf, a cohort study by the DOD and VA of active duty military personnel, and a random survey of veterans from Iowa by the Centers for Disease Control and Prevention. Research efforts are focused on three goals: a determination of patterns of illness among Gulf troops to better define their complex of symptoms; a determination of risk factors and likely causes of disease; and, a comparison of the incidence of all diseases, including birth outcomes, between Gulf War veterans and military personnel who did not deploy to the Middle East.

Besides clinical and research efforts, Congress has held numerous hearings on this matter, and several boards and committees have been formed to evaluate this problem and to coordinate governmental response. The VA created a Persian Gulf Expert Scientific Panel to advise on clinical and research strategies; the DOD established a Defense Science Board Task Force on Gulf War Health Effects, headed by Dr Joshua Lederberg; the National Academy of Sciences' Medical Follow-up Agency is responsible for evaluating government efforts to collect and assess information related to the health of Persian Gulf War veterans; and, in January 1994, the Persian Gulf Veterans Coordinating Board, headed by the secretaries of the VA, DOD, and Department of Health and Human Services, was established to coordinate clinical care, research, and compensation issues.

More recently, from April 27 through 29, 1994, a "National Institutes of Health Technology Assessment Workshop on the Persian Gulf Experience and Health" was held at the National Institutes of Health, Bethesda, Md. The workshop panel concluded that "no single or multiple etiology or biological explanation for the reported symptoms [of Gulf War veterans] was identified from the data available to the panel," and that "no single disease or syndrome is apparent, but

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- rather multiple illnesses with overlapping symptoms and causes."<sup>10</sup> The Defense Science Board Task Force also concluded in June 1994 that "there is insufficient epidemiologic evidence at this time to support the concept of any coherent syndrome."<sup>9</sup>
- Because no single cause has been found to explain the health problems of Persian Gulf veterans, all potential causes that have been identified are being investigated. Progress has been made in our understanding of the health consequences of military service in the Persian Gulf, but quick answers should not be expected because public health issues of this complexity often require prolonged investigation. Ultimately, answers for our veterans' medical problems can be provided only by cooperation between all branches of the government, veterans' organizations, and clinicians and medical researchers.
- Accepted for publication September 13, 1994.
- Committee members of the Persian Gulf Veterans Coordinating Board are as follows: MG Ronald R. Blanck, MC, USA; COL Joel Hiatt, MSC, USA; CAPT Kenneth C. Hyams, MC, USN; Han Kang, DrPH; Susan Mather, MD, MPH; Frances Murphy, MD, MPH; Robert Roswell, MD; and Stephen B. Thacker, MD, MSc.
- This article reviews the clinical presentation and potential causes of unexplained illnesses among Persian Gulf War veterans and should serve as a basis for formulating further lines of investigation. No potential causes of illness are being excluded in this review. The Coordinating Board would very much appreciate any new information concerning the health of Persian Gulf War veterans.
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## VA Fact Sheet

### VA PROGRAMS FOR PERSIAN GULF VETERANS

Feb. 1995

The Department of Veterans Affairs (VA) offers concerned Persian Gulf veterans special examinations and priority follow-on care and it has initiated a toll-free hotline at 800-PGW-VETS (800-749-8387) to inform these veterans of the program and their benefits. VA also has published unprecedented compensation regulations to assist certain veterans with undiagnosed conditions and has begun processing such payments. Through special research centers and additional medical investigations, VA is searching for answers to aid seriously ill patients whose underlying disease is unexplained. Most Gulf veterans *are* diagnosed and treated; but for some, such symptoms as joint pain or fatigue have been chronic. Some have responded to treatment of symptoms even though their doctors never identified an underlying illness or pathogenic agent.

**UNEXPLAINED ILLNESS:** The prevalence of unexplained illnesses among Persian Gulf veterans is uncertain. Data from special VA examinations show that 5,400 veterans had current symptoms and did not receive a diagnosis. This may be an overestimate or underestimate of the problem of "undiagnosed illnesses" as the diagnoses recorded may not explain all the symptoms. Further, VA does not have information on the chronology, severity or current existence of the symptoms. These questions are being addressed through research. The VA exam data reflect a self-selected population and exclude troops cared for in the military.

**PERSIAN GULF "SYNDROME" UNDEFINED:** Several panels of government physicians and private-sector scientific experts have been unable to discern any new illness or unique symptom complex such as that popularly called "Persian Gulf Syndrome." "No single disease or syndrome is apparent, but rather multiple illnesses with overlapping symptoms and causes," wrote an outside panel led by professors from Harvard and Johns Hopkins University that convened for an April 1994 National Institutes of Health (NIH) workshop. VA has neither confirmed nor ruled out the possibility of a singular Gulf syndrome.

**RESEARCH AND RISK FACTORS:** With variation in exposures and veterans' concerns ranging from depleted uranium in armaments to possible contamination from Iraqi chemical/biological agents, VA has initiated wide-ranging research projects searching for any patterns of illness that might arise from these or other elements of the Gulf environment. The activation of three research centers conducting 14 protocols has enabled VA to broaden its activity from largely descriptive studies to greater emphasis on hypothesis-driven research.

### Statistics

Some 697,000 servicemembers served in the Gulf in the first year of deployment. About 364,700 have become eligible for VA care as veterans, having either left the military or having become deactivated reservists or Guard members. More than 39,000 veterans with environmental or health concerns have responded to VA's outreach encouraging any Gulf veteran to get a free physical exam under VA's Persian Gulf Program. Not all are ill:

- 15 percent of the veterans who had the registry health exam had no health complaint (among the first 27,000 computerized records).
- 23 percent of the same group rated their health as poor or very poor, while three-fourths reported their health as all right to very good.

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## VA Health Programs for Gulf Veterans

- **SPECIAL HEALTH EXAMINATION:** A free, complete physical examination with basic lab studies is offered to every Persian Gulf veteran who has health concerns, whether or not the veteran is ill. A centralized registry of participants, begun in August 1992, is maintained to enable VA to update veterans on research findings or new compensation policies through periodic newsletters. This clinical database also provides information about possible health trends and may suggest areas to be explored in future scientific research. The 39,000 Persian Gulf veterans who have taken advantage of the physical examination program become part of a larger Persian Gulf Registry. As defined by P.L.102-585, this includes 110,800 more Gulf veterans (in addition to the 39,000 counted in the special examination program) who have been seen for routine VA hospital or clinic care, as well as additional Gulf veterans using VA services ranging from home loans to education benefits.

- **PERSIAN GULF INFORMATION CENTER:** VA initiated a toll-free information line (800-749-8387) Feb. 2 with operators trained to help veterans with general questions about medical care and other benefits as well as recorded messages that enables callers to obtain information 24 hours a day. Information also is being disseminated 24 hours a day through a national electronic bulletin board, VA-ONLINE, at 800-US1-VETS (800-871-8387), another toll-free service. VA-ONLINE requires a computer, modem, and communications software.

- **PRIORITY ACCESS TO FOLLOW-ON CARE:** VA has designated a physician at every VA medical center to coordinate the special examination program and to receive updated educational materials and information as experience is gained nationally. Where an illness possibly related to exposure to an environmental hazard or toxic substance is detected during the examination, followup care is provided on a priority basis. As with the health examination registry, VA requested and received special statutory authority to bypass eligibility rules governing access to the VA health system.

- **PERSIAN GULF REFERRAL CENTERS:** If the veteran's illness defies diagnosis, the veteran may be referred to one of three Persian Gulf Referral Centers. Created in 1992, the centers are located at VA medical centers in Washington, D.C.; Houston; and Los Angeles, and provide assessment by specialists in such areas as pulmonary and infectious disease, immunology, neuropsychology, and additional expertise as indicated in such areas as toxicology or multiple chemical sensitivity. There have been approximately 177 veterans assessed at the centers; most ultimately are being diagnosed with known/definable conditions.

- **STANDARDIZED EXAM PROTOCOLS:** VA has expanded its special examination protocol as more experience has been gained with the health of Gulf veterans. The protocol elicits information about symptoms and exposures, calls the clinician's attention to diseases endemic to the Gulf region, and directs baseline laboratory studies including chest X-ray (if one has not been done recently), blood count, urinalysis, and a set of blood chemistry and enzyme analyses that detect the "biochemical fingerprints" of certain diseases. In addition to this core laboratory work for every veteran undergoing the Persian Gulf program exam, physicians order additional tests and specialty consults as they would normally in following a diagnostic trail -- as symptoms dictate. If a diagnosis is not apparent, facilities follow the "comprehensive clinical evaluation protocol" originally developed for VA's referral centers and now used in VA and military medical centers nationwide. The protocol suggests 22 additional baseline tests and additional specialty consultations, outlining dozens of further diagnostic procedures to be considered, depending on symptoms.

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### **Risk Factors of Concern to Veterans**

Veterans have reported a wide range of factors observed in the Gulf environment or speculative risks about which they have voiced concerns. Some are the subject of research investigations and none have been ruled out. There appears to be no unifying exposure that would account for all unexplained illnesses. Individual veterans' exposures and experiences range from ships to desert encampments, and differences in military occupational specialty frequently dictate the kinds of elements to which servicemembers are exposed.

Veteran concerns include exposure to the rubble and dust from exploded shells made from depleted uranium (or handling of the shells); the possibility of a yet-unconfirmed Iraqi chemical-biological agent; and a nerve agent pre-treatment drug, pyridostigmine bromide. Numerous other risk factors also have been raised. In 1991, VA initially began to develop tracking mechanisms that matured into the Persian Gulf Registry as a direct consequence of early concerns about the obvious environmental influence of oil well fires and their smoke and particulate.

### **Interagency Coordination**

The federal response to the health consequences of Persian Gulf service is being led by the Persian Gulf Veterans Coordinating Board composed of the Departments of VA, Defense and Health and Human Services. Working groups are collaborating in the areas of research, clinical issues and disability compensation. The Board and its subgroups are a valuable vehicle for communication between top managers and scientists, including a staff office for the Board that follows up on critical issues and promotes continuity in agency activities. President Clinton designated VA as the Coordinating Board's lead agency.

### **Medical Research**

- Environmental Hazards Research Centers: Through a vigorous scientific competition, VA developed major focal points for Gulf veteran health studies at three medical centers: Boston; East Orange, N.J.; and Portland, Ore. With 14 protocols among them, the centers are conducting a variety of interdisciplinary projects, including some aimed at developing a case definition for an unexplained illness and clarification of risk factors. Some protocols involve areas of emerging scientific understanding, such as chronic fatigue syndrome or multiple chemical sensitivity, while others are evaluating or comparing factors in immunity, psychiatry, pulmonary response, neuroendocrinology and other body systems, some at the molecular level.

- Health Survey and Mortality Study. VA's Environmental Epidemiology Service will survey 15,000 randomly selected Gulf veterans and an equal size control group of veterans of the same time period (but who were not deployed) to compare symptoms in veterans and their family members, examining risk factors and providing physical examinations for a representative sample to help validate the self-reported health data. That office also is engaged in a mortality study, analyzing death certificates to determine any patterns of difference in causes of deaths between 2,147 deceased Gulf veterans and matched controls. (Since the cutoff point for tracking under that study, VA has learned of additional deaths for a total of 2,665.)

- Exposure-Oriented Studies: Some current VA investigations are examining hypotheses of specific potential risks and comparing study subjects with controls who did not serve in the Gulf to determine differences in health patterns. A Baltimore project is following the health status of individuals who retained tiny embedded fragments of depleted uranium while a Birmingham, Ala., pilot program includes an extensive battery of neurological tests aimed at detecting the kind of dysfunction that would be expected after exposure to certain chemical weapons.

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Persian Gulf -- Page 4

### Medical Research (con't)

- Other Federal and Collaborative Studies: In its first annual report to Congress, the Persian Gulf Veterans Coordinating Board detailed nearly two dozen Persian Gulf research initiatives and clinical investigations, many involving VA. For example, VA investigators are collaborating with the Naval Medical Research Center in San Diego in general epidemiological studies comparing Gulf veterans and control-group veterans (who served elsewhere) to detect differences in symptoms, hospitalizations, and birth outcomes in large cohorts of active duty servicemembers.

- Outside Reviews: With the Department of Defense (DOD), VA has contracted with the National Academy of Sciences (NAS) to review existing scientific and other information on the health consequences of Gulf operations. Congress has authorized VA and DOD to provide up to \$500,000 annually to fund the review. In its first report issued Jan. 4, a committee of the NAS Institute of Medicine called for systematic scientific research, including large epidemiological studies. Its recommendations, provided in response to a VA and DOD contract, urged greater coordination between federal agencies to prevent unnecessary duplication and assure that high-priority studies be conducted. It made a number of recommendations for improvements to federal programs assisting Persian Gulf veterans.

Another nongovernment expert panel brought together at an NIH technology assessment workshop in April 1994 examined data and heard from both veterans and scientists, concluding that no single or multiple etiology or biological explanation for the reported symptoms could be identified and indicating it is impossible at this time to establish a single case definition for the health problems of Gulf veterans.

VA also has a standing scientific panel that includes both agency and nongovernment experts to evaluate its activities and provide advice in open meetings. The Office of Technology Assessment and General Accounting Office also have provided oversight.

### VA Disability Compensation

On Feb. 3, VA published a final regulation on compensation payments to chronically disabled Persian Gulf veterans with undiagnosed illnesses. The undiagnosed illnesses, which must have become manifest either during service in the Southwest Asia theater during the war or within two years thereafter, may fall into 13 categories: fatigue; signs or symptoms involving skin; headache; muscle pain; joint pain; neurologic signs or symptoms; neuropsychological signs or symptoms; signs or symptoms involving the respiratory system (upper or lower); sleep disturbances; gastrointestinal signs or symptoms; cardiovascular signs or symptoms; abnormal weight loss; and menstrual disorders. While these categories represent the signs and symptoms frequently noted in VA's experience to date, other signs and symptoms also could qualify for compensation. A disability is considered chronic if it has existed for at least six months.

Outside of the new regulation, VA has long based monthly compensation for veterans on finding evidence a condition arose during or was aggravated by service. Many Persian Gulf veterans are receiving such benefits. VA has approved 16,390 compensation claims of Gulf veterans for service injuries or illnesses of all kinds, including 472 claims in which the veteran alleged the cause was an environmental hazard. VA has also begun to consider claims under the new regulation, granting 16 claims in the two weeks after the rule was published.

The processing of Persian Gulf claims based on exposure to environmental agents has been centralized to one regional office in each of four areas of the country to develop expertise in the rating and award process.

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STATEMENT BY

STEPHEN C. JOSEPH, M.D., M.P.H.  
ASSISTANT SECRETARY OF DEFENSE FOR HEALTH AFFAIRS

BEFORE THE  
SUBCOMMITTEE ON HOSPITALS & HEALTH CARE  
COMMITTEE ON VETERANS' AFFAIRS  
U.S. HOUSE OF REPRESENTATIVES  
FIRST SESSION, 104TH CONGRESS

PERSIAN GULF VETERANS' MEDICAL RESEARCH ISSUES

March 9, 1995

NOT FOR PUBLICATION  
UNTIL RELEASED BY  
COMMITTEE ON VETERANS' AFFAIRS  
U.S. HOUSE OF REPRESENTATIVES

Mr. Chairman and Distinguished Members of the Committee, it is an honor for me to come before you today as the Assistant Secretary of Defense for Health Affairs to discuss the Department's Medical and Research Programs concerning illnesses related to the Persian Gulf War.

Mr. Chairman, let me first provide some assurances to you, the American public, and our troops and their families. For the past two years, the Clinton Administration has been heavily engaged in caring for our Persian Gulf troops and in solving the difficult puzzle known as Persian Gulf Illness. Just this Monday, the President, in a speech before the Veterans of Foreign Wars, described the very aggressive program of research and care already under way. But we need to go further. For the future, the President announced that we will "step up our treatment efforts and launch new research initiatives." The Departments of Defense, Veterans Affairs and Health and Human Services will be funding millions of dollars in new research initiatives. New specialized care centers are being opened for those troops whose illnesses are difficult to diagnose or treat. But the President went even further. In stressing his personal commitment on the issue, the President announced the creation of a Presidential Advisory Committee, a committee that will report to President and the American public and focus on government efforts to find the causes of these illnesses and improve care available to Gulf War Veterans.

With a firm Clinton Administration commitment to research and care firmly in place, I believe it is important to frame our efforts by providing some background information. Approximately 697,000 service members were deployed to the Persian Gulf in 1990/1991 in support of Operation Desert Shield/Desert Storm.

Very importantly, the vast majority of soldiers, sailors and airmen returned from this large deployment healthy and remain fit for duty today. Since the war with Iraq, most Gulf War veterans seeking medical care have had readily diagnosable illnesses, the same types of illnesses that would be expected in such a large population of adults. However, there are service members who have suffered illnesses that are not easily explained. It is this group on which we are focusing our medical research efforts.

To better understand why some veterans were reporting diverse symptoms that were not readily explained, I established the Comprehensive Clinical Evaluation Program (CCEP) on June 7, 1994. The CCEP was launched to provide a systematic, in-depth, medical evaluation for all military health care beneficiaries who are experiencing illnesses that may be related to the Persian Gulf deployment. Since June 7, 1994, the Department of Defense (DoD) has enrolled approximately 15,000 participants in the CCEP. Of the 4,674 people with completed evaluations, 2,074 patients' records have been reviewed and validated and have been entered into the CCEP database. The CCEP is a systematic program, that allows us to accomplish several objectives. As I have said from the beginning, first and foremost, the CCEP is really all about taking care of our people. It makes the medical care of Persian Gulf Veterans and their family members a high priority. It allows us to identify patterns of health problems across this group of patients. Finally, the CCEP is the first and necessary step to understanding the illnesses related to the Persian Gulf deployment.

I should issue a word of caution, here. The CCEP was designed to provide medical care and was not designed as a formal research project. Further, because the CCEP results are derived from a self-selected population of patients, the distribution of illnesses cannot, of course, be directly related to the overall population of 697,000 Gulf War Veterans nor can the specific distribution of diagnoses be compared directly to the VA registry because of differences in demographic characteristics between the two registries. Although qualified by these factors, the CCEP nevertheless provides very accurate and specific information about the types of symptoms and illnesses that are affecting Gulf War veterans presenting for medical evaluation because it provides a systematic, comprehensive, medical evaluation.

Preliminary findings, based on the review of 2,074 CCEP patients with validated evaluations, include the following:

1. 84 percent of the first 2,074 CCEP patients have a clear diagnosis or diagnoses which explains their condition. These diagnoses represent a very broad range of known clinical entities for which these patients are receiving treatment and are responding favorably.

2. Infectious diseases account for relatively few diagnoses, about 4 percent, and do not represent a major cause of illness among CCEP patients. Based on information from the CCEP and other sources, we are aware of about 30 patients who were diagnosed with Leishmaniasis as a result of the Persian Gulf deployment.

3. 21 percent of these patients have psychologically related medical conditions. Most of these conditions are relatively common in the general population and include such diagnoses as depression, anxiety, tension headache, and stress related disorders. These patients have been provided appropriate treatment and many have responded well. I think it is important to understand that these people are hurting as much from their symptoms as if they had diabetes or arthritic knees. The good news is, as with most of all the CCEP patients, we are able to provide treatment and offer these patients relief.

4. About 16 percent of patients with completed CCEP evaluations have ill-defined symptoms, also commonly seen in civilian medical practice, such as fatigue, headache and sleep disturbances. These patients will receive further evaluation by DoD.

5. Based on the CCEP experience to date, there is no clinical evidence for a new or unique agent causing illnesses among Persian Gulf veterans. Although the specific distribution of illnesses in this nonrandomly selected sample cannot be generalized to the entire Gulf War veteran population, the preliminary results of the CCEP are consistent with conclusions of a National Institutes of Health Technology Assessment Workshop that "no single disease or syndrome is apparent, but rather multiple illnesses with overlapping symptoms and causes". Likewise, the Defense Science Board determined that there was insufficient evidence that supported a coherent 'syndrome'.

To better understand the nature of these difficult diagnoses, DoD has established two national Specialized Care Centers for those individuals who require further evaluation and, especially, care for conditions possibly related to environmental, psychosocial, biological or medical factors associated with

deployments. The Specialized Care Centers are located in Washington DC, and San Antonio, Texas. The Centers offer the full array of specialty evaluations and coordinated, patient-centered care for referred Persian Gulf veterans and their family members.

For as long as is needed, the CCEP will continue to provide Gulf War Veterans and their families with the diagnostic tools and medical care they deserve. In addition to medical care, the CCEP will undoubtedly identify scientific hypotheses for future medical research. I want to emphasize that the cornerstone of our medical approach is to keep an open mind, to foreclose no possibilities prematurely, and to "let the chips fall where they may."

In conjunction with the CCEP, the Department continues to work closely with the Departments of Veterans Affairs and Health & Human Services in a coordinated and intensive scientific research effort to assess the health consequences of military service members deployed to the Persian Gulf. In FY94, DoD alone dedicated more than \$4 million to medical research focused on Persian Gulf health issues.

Along with providing high quality medical care, the Departments of Defense, Veterans Affairs, and Health & Human Services have initiated numerous scientific research studies to evaluate the health consequences of serving in the Persian Gulf. Further, DoD is engaged in a number of collaborative research projects with the VA and HHS. Each project assesses the health consequences of military service as a result of the Persian Gulf War. Although the research activities span a broad range of areas, I'd like to mention some of the critical studies.

- The Navy is conducting several large epidemiologic studies which will compare morbidity and mortality among Persian Gulf veterans with military personnel who were not deployed to the Persian Gulf. Results are expected late this year. The goal is to determine whether the incidence of diagnosable illnesses and non-specific complaints, like fatigue, are different from what would be expected.
- Studies will assess reproductive health and birth outcomes using hospitalization records of Gulf War veterans compared to a non-deployed control group. The analyses should be complete by this Fall.

- Additionally, DoD is collaborating with the VA to conduct a large, randomized epidemiologic study of 30,000 veterans. Again, Gulf War veterans will be compared to a non-deployed military population. Data collection is expected to begin late this summer.
- Studies in progress include infectious disease projects (especially tropical disease research).
- Research is also underway to identify the health effects of exposure to depleted uranium. Early results are encouraging, although long-term follow-up is necessary to fully evaluate such as exposure.
- Research is currently progressing to identify possible interactive effects of certain chemical compounds used during the Gulf War with pyridostigmine. For those who may not be familiar with pyridostigmine bromide, it is a pill that, when used as a pretreatment, provides meaningful, therapeutic enhancement to injectable treatment of nerve agent exposed patients.

These studies will evaluate the health consequences of the Persian Gulf War and will contribute to the development of programs to protect the health of military personnel during future deployments.

There are two sets of funds that we are using to fund Persian Gulf related research. In both cases, we are working with the Persian Gulf Veterans Coordinating Board. The Board, headed by the Secretaries of DoD, VA, Department of Health and Human Services, was established to coordinate clinical care, research and compensation issues.

With respect to the first set of funds, the Department is working with the Persian Gulf Veterans Coordinating Board to help identify DoD funded medical research proposals totaling approximately \$5 million in FY95. DoD will disperse this money to agencies and institutions external to the Federal Government. Research proposals will be selected after the projects have been independently peer reviewed for scientific merit; the proposals will also be competitively bid. We will work closely with the Departments of Veterans Affairs and Health & Human Services, through the Coordinating Board to select the best scientific research

studies in three specific areas: epidemiologic studies, studies involving pyridostigmine bromine, and other clinically related research projects. The broad agency announcements and the request for proposals is currently in the coordination process. We expect the call for research proposals to be published and on the street by the end of this month.

With respect to the second set of funds totaling about \$5 million in FY95, DoD will supplement the research mentioned above. To help DoD determine what research to fund, the Persian Gulf Coordinating Board will identify research gaps with respect to the Persian Gulf and prioritize protocols based on scientific merit and value. Projects supported by these funds could potentially come from agencies both external to and within the Federal Government and will be directly funded by DoD based upon the recommendations of the Coordinating Board.

Now there is one area, chemical and biological exposure, which has been the subject of intense media coverage and public interest. Let me summarize what we know of the exposure of our troops to chemical and biological weapons. Hundreds of false chemical alarms that were activated due to dust, heat, smoke and low batteries have led many to believe that chemical agents were used.

General Schwartzkopf's experience was that these alarms were taken seriously and immediately investigated and that never was there confirmation of actual chemical presence. Just last week, he was quoted in USA Today in reference to Iraq's using of chemical or biological weapons. What General Schwartzkopf said was, "There's absolutely no evidence that we ever ran into during the war, or anything that's come up since the war, that I know of, that says they used them."

Two independent agencies with distinguished scientists, environmental health experts, and physicians from the leading universities in this country, have addressed the chemical and biological weapons/warfare issue. These groups were the Defense Science Board and the Institute of Medicine (a body of the National Academy of Sciences). Both of these groups arrived at essentially similar conclusions about the lack of evidence on chemical and biological weapons as being causative factors in the symptoms seen in Persian Gulf Veterans.

Now we all know how difficult it is to prove the negative, to prove that there was no exposure to chemical or biological weapons. On the other hand, there is no persuasive evidence of such exposure, even after much scrutiny. But we are not done. It is our intention to find the answer whatever it may be. The Department has declassified a substantial number of military documents which might offer some insights. The Department is engaged in an ongoing effort of research, clinical work and investigation of anecdotes and theories. It is our sincere hope that all of this together can provide us the answers being sought by our troops and their families.

### **IN CLOSING**

In closing, let me again turn to the President's personal commitment to our Persian Gulf Veterans and quote his words to the Veterans of Foreign Wars,

" We must listen to what the veterans are telling us, and respond to their concerns. .... We will leave no stone unturned. And we will not stop until we have done everything that we possibly can for the men and women who -- like so many veterans in our history -- have sacrificed so much for the United States and our freedom."

Mr. Chairman, the Department of Defense is fully committed to providing high quality, compassionate medical care to Gulf War veterans and their families no matter what the cause. This remains our number one priority. But that is not enough. Parallel to providing outstanding medical care, we will continue to seek answers for our troops and their families from the research community. The aim of our research program is to evaluate and understand the health consequences for our people serving in the Persian Gulf. But beyond that, we are determined to enhance our current programs to protect the health of our troops and their families during future deployments.

Let me express my deep appreciation for your interest and concern for the health of the Veterans of the Persian Gulf War and your active support of military medicine as we continue to use science to provide the answers to a very complex set of health questions.



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

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TESTIMONY OF

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BEFORE THE

COMMITTEE ON VETERANS' AFFAIRS  
SUBCOMMITTEE ON HOSPITALS AND HEALTH CARE  
U.S. HOUSE OF REPRESENTATIVES

MARCH 9, 1995

I am Dr. Richard Jackson, Director of the National Center for Environmental Health at the Centers for Disease Control and Prevention (CDC). CDC is pleased to have this opportunity to meet with the Subcommittee on Hospitals and Health Care to review our efforts and those of the Department of Health and Human Services in evaluating the health status of Persian Gulf War veterans. The health of our military personnel and veterans is an important issue with this administration, as demonstrated by Monday's announcement of the formation of a Presidential Advisory Committee to review and make recommendations regarding the health of Persian Gulf War veterans. As you may know, CDC has a long history of involvement in veterans issues, dating back to the formation of CDC as a public health agency. In fact, CDC evolved from an agency established during World War II to help control malaria among soldiers training in the southern United States.

#### **Background**

Shortly after returning from the Persian Gulf, some U.S. military personnel began to complain of a variety of symptoms, such as fatigue, muscle and joint pain, and headaches, for which no single medical diagnosis could be found. Veterans are concerned about the potential impact of a variety of exposures that occurred while in the Persian Gulf, including environmental and occupational pollutants such as sand, petroleum products, pesticides, and smoke from oil-well fires. Not only are these veterans concerned about their own health, but they are also concerned that their military service may have affected the health of their children and spouses. This fear has been heightened by extensive media coverage of stories of reported birth defects among some children born to Persian Gulf War veterans.

The preponderance of current knowledge on the prevalence of illnesses among Persian Gulf War veterans has come from registries established by the Departments of Veterans' Affairs (VA) and Defense (DOD). However, these registries were designed to provide clinical evaluation and treatment for veterans with health concerns, not to provide epidemiologic data.

**Role of the Department of Health and Human Services (HHS):****Assessment of Oil Well Fires**

The Department of Health and Human Services (HHS) has taken a very active role in evaluating the health of veterans who participated in the Persian Gulf War. Our initial involvement began in response to concerns about the health impact of exposure to smoke from burning oil wells. More than 600 oil wells were set on fire or damaged throughout Kuwait in February 1991. In response to a request from the Department of State regarding concerns about the health impact of burning oil fields, the Public Health Service (PHS) issued a preliminary health advisory in March 1991 stating that the emissions from oil fires were a varied mixture of unburned materials and combustion products, many of which were toxic. The combustion by-products of burning crude oil are similar in nature to what is found in the exhaust of a poorly functioning automobile. The smoke produced by the burning of crude oil is a mixture of heated, potentially noxious gases and coated carbon particles representing by-products of combustion. The most obvious constituents of the smoke are carbonized particles of unburned material. The hazards posed by these particles depend on both their size and composition.

Beginning in April 1991, researchers from CDC, the Agency for Toxic Substances Disease Registry, the Environmental Protection Agency, the National Oceanic and Atmospheric Administration, and the Department of Defense went to the Persian Gulf to assist officials from the Government of Kuwait to design and undertake monitoring and research projects to assess the health effects of the air pollution created by the burning oil fields. These projects included the initiation of a health alert system for public health authorities, physicians, and the public, and the initiation of emergency room surveillance at two local hospitals and five clinics.

Air monitoring data from the Kuwait Environmental Protection Department demonstrated that the quality of air during April 1991 in Kuwait City was comparable to many American cities. In other

words, the pollutants were not elevated to levels that would be associated with acute adverse health effects.

Data analysis of emergency room admissions at two hospitals in Kuwait City showed a small increase in the proportion of visits for gastrointestinal illnesses and psychiatric illnesses during the period after the oil well fires. However, we saw no increase in the proportion of visits for such expected conditions as acute upper and lower respiratory infections or asthma during the period when the oil fires were burning.

Following a review of air monitoring activities from April through July 1991, the PHS issued a revised health advisory for Kuwait and Saudi Arabia on October 9, 1991. The health advisory provided the following information: 1) two major pollutants, sulfur dioxide and nitrogen dioxide, never reached harmful levels; 2) levels of carbon monoxide exceeded the U.S. alert level on rare occasions, possibly due to increased vehicular traffic; and 3) levels of particulate matter on a number of occasions exceeded U.S. alert levels, but this occurs regularly in Kuwait even in the absence of oil well fires due to sand and dust storms. In the revised health advisory, PHS recommended precautions for populations at risk, including asthmatics, individuals with chronic respiratory conditions, children, the elderly, and pregnant women. These recommendations were similar to those given in U.S. cities on days when air pollution levels are high.

We conducted cross-sectional surveys of workers in Kuwait City in May 1991 and of firefighters in the oil fields in October 1991. Blood samples were tested for 31 volatile organic compounds (VOCs) and compared to a referent group of persons living in the United States collected as part of CDC's third National Health and Nutrition Examination Survey III. As would be expected, the median concentration of VOCs among the firefighters was quite elevated. These chemicals remain in the blood for only a short period of time before being excreted. We do not know the long-term health effects of very short term

exposures such as these. Among the non-firefighting personnel, VOC concentrations were equal to or lower than the levels found among the reference group. This suggests that smoke from the oil well fires did not pose a significant health threat to individuals working in the Kuwait area.

In addition, our laboratory collaborated with the Department of Defense in a study of 30 members of the 11th Armored Cavalry regiment. Blood from these military personnel was tested for VOCs at three points in time, while the troops were in Germany prior to leaving for Kuwait, after two months in Kuwait, and upon returning to Germany. Only one compound, tetrachloroethylene, was found to be elevated. This compound is not associated with emissions from oil fires, but rather is a substance found in degreasing agents and may have been used to clean equipment or personal weapons.

#### **Laboratory Testing for *Leishmania***

Another area in which CDC has been involved in evaluating the health of Persian Gulf War veterans is in our testing for evidence of *Leishmania* infection. Leishmaniasis is a disease caused by intracellular parasites that are transmitted by sand flies. The cutaneous form of leishmaniasis typically is manifested by characteristic skin sores. Leishmaniasis also causes a chronic systemic disease characterized by fever, swollen glands, enlargement of the spleen, weight loss, and weakness. Leishmaniasis occurs primarily in rural areas of developing countries. In the United States, it occurs in immigrants and persons who have lived in or traveled to areas of the world where the disease is endemic.

After military personnel returned from Operation Desert Storm, CDC published an article in the February 1992 issue of the *Morbidity and Mortality Weekly Report* (MMWR 1992;41:131-4) that described cases of leishmaniasis identified in persons who had served in the Persian Gulf region. The article provided information identifying Federal organizations to contact for information regarding leishmaniasis. CDC worked with staff of

the Walter Reed Army Medical Center and others to distribute information to medical, public health, and lay communities about the risk of leishmaniasis in persons who had been in the Middle East.

From December 1991 through February 1995, 1,632 serum specimens from persons who served in the Persian Gulf region were referred to CDC from State health departments and other sources for testing for evidence of antibody to the parasite that causes leishmaniasis. Most (93.5%) of the serum specimens tested were negative; 6.5% demonstrated low levels of reactivity. In addition, during this same period, CDC cultured 9 bone marrow, 3 liver/spleen, and at least 15 skin specimens. Two of the skin cultures grew *Leishmania* parasites, thus confirming the diagnosis of cutaneous leishmaniasis in these two persons.

#### **Assessment of Birth Outcomes**

Another area in which CDC has been involved is in assessing birth outcomes among Persian Gulf War veterans. In December 1993, CDC met with Congressman Sonny Montgomery regarding reports of a cluster of infant health problems among children born to Persian Gulf War veterans from two National guard units in Mississippi. CDC and the Mississippi Department of Health assisted the VA Medical Center in Jackson, Mississippi, in an investigation of this reported cluster. This investigation found no increase in expected rates in the total number of birth defects, or the frequency of premature birth and low birth weight. The frequency of other health problems such as respiratory infections, gastroenteritis, and skin diseases among children born to these veterans also did not appear to be elevated. Due to the small number of births investigated, this study was not able to examine individual categories of birth defects. In addition, this study was not able to account for confounding by all the well-known factors that can increase the risk for conceiving and giving birth to a baby with a congenital malformation. Such factors include family history, maternal age and health, alcohol use and smoking during pregnancy, medications taken during pregnancy, and hazardous exposures.

**Pennsylvania Epidemiologic Investigation**

On November 15, 1994, a physician from the Lebanon Pennsylvania VA Medical Center reported to the VA Persian Gulf Expert Scientific Committee that at least 60 members of the 193rd Pennsylvania Air National Guard were ill. All of the ill persons had deployed to the Persian Gulf during Operations Desert Shield/Desert Storm. The illness was characterized as consisting of irritable bowel syndrome, large joint polyarthralgia (joint pain), skin rash, and several other symptoms and was thought to be associated with exposure to sand and sand flies.

Subsequent to this report, Drs. James T. Rankin, Jr., State Epidemiologist, Pennsylvania Department of Health; Kenneth Kizer, Under Secretary for Health, Department of Veterans' Affairs; and, Stephen Joseph, Assistant Secretary of Defense for Health Affairs, Department of Defense, requested CDC conduct an investigation of the reported cluster. Primary responsibility for the investigation was assigned to CDC's National Center for Infectious Diseases (NCID). Within the NCID the Division of Viral and Rickettsial Diseases (DVRD), the Chronic Fatigue Syndrome Research Group was assigned responsibility for developing overall study strategy and supervising field work. The Chronic Fatigue Syndrome Research Group will also coordinate collaborations with other groups within CDC (for example the Division of Parasitology, the National Center for Environmental Health, and the Epidemiology Program Office). The investigation is being conducted in three logical phases. Phase-1 will describe the clinical manifestations and health concerns among a sample of ill Persian Gulf War veterans served by the Lebanon Veterans Administration Medical Center (VAMC). The objective is to evaluate and characterize the existence of illness and search for possible risk factors. Phase-2 is a survey of the index Air National Guard unit and comparison military units to document the prevalence of health problems. The objective is to determine if illness rates are unusually high in the 193rd Air National Guard Unit, and if this is related to Persian Gulf War service, identify possible risk factors. Phase-3 is a case-control study;

the objective is to define risk factors if an unusual cluster of disease is identified through the first two phases.

Field work for Phase-1 was conducted in December by a CDC field team in Lebanon, PA. They interviewed and examined 59 patients and reviewed medical records, interviewed VAMC staff, and surveyed local and regional health care providers. Analysis of these data is ongoing. Field work for Phase-2 was conducted in January and February by CDC field teams who surveyed approximately 4,000 members of the 193rd and 171st Pennsylvania Air National Guard units, the 919th Florida Air Force Reserve and the 16th Air Force Special Operations Wing in Florida. Data processing and analysis is in process. Phase-3 field work will begin in April.

**Assessment of Health Status of Persian Gulf War Veterans  
From Iowa**

At the request of Congress, CDC is implementing a telephone survey of Persian Gulf War veterans who listed Iowa as their home of record. This study, being conducted in collaboration with the Iowa Department of Public Health and the University of Iowa, includes a detailed assessment of Persian Gulf War veterans' health concerns, as well as questions about the health of the veterans' family members. The study will consist of a random sample of 2,000 military personnel who served in the Persian Gulf theater of operations and 2,000 Persian Gulf-era military personnel who served at sites other than the Persian Gulf. We expect to begin data collection in July and to have a final report prepared by Summer 1996.

**Interagency Coordination**

In addition to these studies, CDC has been an active participant in the Persian Gulf Veterans Coordinating Board. As you know, this Board is co-chaired by the secretaries of the Departments of Veterans Affairs, Defense, and Health and Human Services and is tasked with overseeing health issues related to Persian Gulf War veterans. The Coordinating Board co-sponsored a scientific panel convened by the National Institutes of Health (NIH). The NIH Technology Assessment Workshop on the Persian

Gulf Experience and Health was held in Washington, D.C., on April 27-29, 1994.

The purpose of the NIH Technology Assessment Workshop was to bring together an independent, non-governmental panel to review the scientific evidence regarding the health effects of the Gulf War experience and to make recommendations as to what future research is necessary to determine the types and magnitude of the health problems that are associated with military service in the Persian Gulf War. After 1½ days of medical and scientific presentations and testimony by Gulf War veterans, the expert panel concluded that an accurate estimate of health problems among Gulf War veterans was not available. To address this lack of data, the panel recommended that a health survey of Gulf War veterans be conducted. The panel also recommended that the health survey should query for illnesses in veterans' family members as well. Such a national survey is being planned by the Department of Veterans Affairs. The panel recommended that once a better understanding of the types and extent of illnesses among Persian Gulf War veterans was obtained, then more rigorous diagnostic, medical, and epidemiologic studies could be conducted.

In addition to participating in the NIH Technology Assessment Workshop, HHS has been very involved in fostering coordination and communication among the Federal agencies involved in Persian Gulf research. One of our staff has been detailed to the Persian Gulf Veterans Coordinating Board. This person will serve as a liaison from the Coordinating Board to the Department of Health and Human Services and will be responsible for working with the Departments of Veterans Affairs and Defense to assure that there is adequate coordination of Federal research efforts and that there are no significant gaps in this research. Additionally, CDC staff participate in the Department of Veterans Affairs Persian Gulf Expert Scientific Committee and we are looking forward to working with the new Presidential Advisory Committee.

**Issue of a Single Persian Gulf War Syndrome**

Considerable effort has been directed towards establishing a single case definition for illnesses among Persian Gulf War veterans. However, to date, no physical signs or laboratory findings have indicated that a single condition is responsible for the unexplained symptoms reported by some Persian Gulf War veterans. In addition, data from the VA and DOD registries has been unable to identify any demographic, exposure, or geographic risk factors for the unexplained illnesses. Several governmental and nongovernmental oversight committees have also reviewed research and clinical activities relating to Persian Gulf War veterans, including the Defense Science Board Task Force on the Persian Gulf War Health Effects, the National Institutes of Health Technology Assessment Workshop Panel, and the Institute of Medicine Committee on the Health Consequences of Service During the Persian Gulf War. These committees have also been unable to find evidence for the existence of a single "Persian Gulf Syndrome" that can explain the variety of symptoms Persian Gulf War veterans are experiencing.

**Future Research Needs**

The DOD and VA Persian Gulf registries have added useful information on the spectrum of health concerns among Persian Gulf War veterans; however, these registries are of limited value as a data base for determining the actual prevalence and risk factors of illness among the population of Persian Gulf War veterans. It is essential that studies be conducted on representative samples of Persian Gulf War veterans with complete assurance of confidentiality to alleviate any potential veterans' concerns. Obtaining data on a comparable control group of veterans who were not deployed to the Persian Gulf also is essential as the symptoms cited most frequently by Persian Gulf War veterans are symptoms that are common in the general population. For example, data from the National Institute of Mental Health's Epidemiologic Catchment Area study, a multi-site, collaborative study of the prevalence and incidence of psychiatric disorders and the associated use of health services, found a high lifetime

prevalence of joint pains (37%), headache (25%) and fatigue (25%) among civilian community samples.

Hearings by the Senate Committee on Veterans' Affairs in August 1994 and recent reports from the General Accounting Office and the Institute of Medicine (IOM) have highlighted the need to examine adverse reproductive outcomes among Persian Gulf War Veterans. The IOM report also emphasizes the need for population-based surveys of Persian Gulf War veterans.

Studies utilizing representative samples of Persian Gulf War veterans with adequate comparison groups are currently underway. The VA is planning a mail and telephone survey of a nationally representative sample of Persian Gulf War veterans. CDC's Iowa study will complement the VA study and will provide in-depth information on Persian Gulf War veterans health status. The determination of whether Persian Gulf War veterans are experiencing a higher than expected prevalence of illnesses awaits the results of these studies.

#### **Recommendations**

All of these studies will contribute to our understanding of the effects of military service in the Persian Gulf theater of operations. However, most of these studies are limited by their retrospective nature. This was also true of previous CDC studies of military personnel. Baseline data on the health of military personnel is often lacking which limits the ability to conduct definitive studies.

One way to rectify this problem is to take a more proactive approach to evaluating veterans' health concerns. Such an approach could include our consulting with the Departments of Defense and Veterans' Affairs as to what baseline data would be useful in evaluating the health of military personnel, e.g., improved information on the number of troops deployed during a military conflict; information on potential exposures; surveillance systems for adverse health outcomes; and identification of risk factors for stress-related reactions. We believe the health of our veterans should be a very high priority and we are taking steps towards increasing our collaboration with other Federal agencies who deal with veterans issues.

Testimony of

Richard N. Miller, M.D.

Director,

Medical Follow-up Agency

Institute of Medicine

Before the Subcommittee on Hospitals and Health Care

of the

House Committee on Veterans' Affairs

March 9, 1995

Good morning, Mr. Chairman and members of the Committee. My name is Dr. Richard Miller. I am the Director of the Medical Follow-up Agency, a division of the Institute of Medicine in the National Academy of Sciences.

Public Law 102-585 directed the Secretaries of Veterans Affairs and Defense to enter into an agreement with the National Academy of Sciences for the Medical Follow-up Agency to establish an expert committee to: 1.) assess the effectiveness of the collection and maintenance by the VA and DoD of information potentially useful for evaluating the health consequences of service in the Persian Gulf War, 2.) make recommendations for the improvement of the collection and maintenance of that information, and 3.) make recommendations concerning whether there is a sound scientific basis for epidemiological studies of the health consequences of service in the Persian Gulf War and the nature of those studies.

The IOM committee released an interim report on January 4, 1995 (Health Consequences of Service During the Persian Gulf War: Initial Findings and Recommendations for Immediate Action. National Academy Press, Washington, DC, 1995). The intention of the report was to describe initial findings and make initial recommendations to the VA and DoD regarding potential Persian Gulf War health effects research and related issues.

There are many research projects that have been completed or are underway within the VA and DoD related to potential health consequences of service during the Persian Gulf War. The IOM committee reviewed approximately 50 of these projects as of the time the report was finalized in September. The earliest research activities within the DoD were focused on the effects of the burning oil well fires, while the VA conducted early studies in response to PL102-25, assessing the occurrence of post traumatic stress

disorder. Subsequent efforts were generally in response to local outbreaks or clusters of undiagnosed illnesses. The IOM committee felt that, while all of these activities have been appropriate and credible, efforts now need to focus on answering carefully formulated and highly specific research questions.

The VA was also required by Public Law 102-585 to establish the Persian Gulf Veterans Health Registry. Although the information in this registry should not be used for research purposes because of the self-selected nature of the participants, the IOM committee agreed that it was important that the data be reviewed on a regular basis for possible sentinel events.

The report made initial recommendations in three categories: data and databases, coordination and process, and finally, considerations of study design needs. The data and database recommendations reflected the IOM committee's concern with the database resources that are necessary to conduct research, including the lack of a data system linking medical information on an individual during active duty and continuing into the period of VA-provided services. Also, the IOM committee recommended prompt completion of the DoD's Geographical Information System that will provide potentially useful information on troop locations to be used in future research. The location of troops can provide a surrogate for potential exposures received in the Persian Gulf theater, essential information in evaluating health outcomes.

The initial recommendations involving coordination reflected the IOM committee's concern that new projects need to contribute substantively to the total Persian Gulf health research agenda, be fully and actively coordinated between the VA and DoD, focused in design, peer-reviewed, and not duplicative of efforts by other agencies.

The IOM committee felt that specific research questions should be addressed, with input from epidemiologists as well as subject matter experts. The research that the IOM committee recommended includes: a VA/DoD collaborative population-based survey to obtain data on symptom prevalence and health status; evaluation of potential health effects from exposure to lead; a long-term study of the mortality of Persian Gulf War veterans; well designed studies of potential adverse reproductive outcomes; laboratory studies of potential interactions of pyridostigmine bromide, DEET (N,N-diethyl-m-toluamide) and permethrin; and further work in the area of diagnosis of Leishmania tropica infections and the study of the epidemiology and ecology of these infections.

The IOM committee met in January of this year with representatives from the Persian Gulf Veterans Coordinating Board, which is under the direction of the Secretaries of Defense, Veterans' Affairs, and Health and Human Services, to discuss the IOM report recommendations and the VA/DoD response. The meeting was useful for both the IOM committee members and Persian Gulf Veterans Coordinating Board representatives. The IOM committee agreed that genuine efforts are being made to respond to their recommendations.

The committee will continue to evaluate the research efforts for the coming year and a half and will review progress in the areas of concern in the final report. The committee is in fact meeting today, for the seventh time. Their final report will be available in late summer of 1996.

I will be pleased to answer questions.

Statement of  
Kimo S. Hollingsworth, Assistant Director  
National Legislative Commission  
The American Legion  
before the  
Subcommittee on Hospitals and Health Care  
Committee on Veterans' Affairs  
United States House of Representatives .

March 9, 1995

Mr. Chairman, The American Legion appreciates this opportunity to express its concerns regarding the progress of research being conducted for Persian Gulf veterans who suffer from undiagnosed illnesses. The American Legion, Persian Gulf veterans and their families appreciate the Subcommittee's continued leadership on this sensitive, complex and critical issue.

This Subcommittee was the first to hold a hearing on this issue and supported The American Legion's recommendation for the establishment of the Department of Veterans Affairs' (VA) Persian Gulf War Registry which has now registered over 43,000 veterans. Because of this Subcommittee's strong and persistent leadership, VA and the Department of Defense (DoD) are now providing veterans and their families with much needed assistance. The change in Committee leadership does not change the ongoing problems still faced by Persian Gulf veterans and their families.

Last year, DoD finally started their registry for active duty personnel. Contrary to DoD's initial position that only a couple hundred active duty personnel were experiencing health problems, over 15,600 names now appear on DoD's registry. In fact, active duty personnel have responded faster to DoD's registry than did participants of VA's Persian Gulf Registry. Unfortunately, there are still many service members on active duty who will not come forward for a variety of reasons. The American Legion will continue to encourage both veterans and active duty personnel to participate in either VA's or DoD's Registries.

Recently, The American Legion has been in contact with numerous veterans from Great Britain and Canada. Like the past experiences of Persian Gulf veterans here in America, veterans from Canada and Great Britain are having difficulty getting recognition from their respective governments. The American Legion would like to recommend the possibility of including some of our allied veterans on DoD's Registry at medical facilities overseas. The American Legion would encourage DoD or the State Department to nudge the Coalition Forces into accepting the responsibility of caring for their ill Persian Gulf veterans.

Mr. Chairman, The American Legion is encouraged by the overall progress on this issue. However, much more needs to be accomplished to find a

solution to the growing number of Persian Gulf veterans who are experiencing health problems. In January, the National Academy of Sciences, Institute of Medicine (IOM) released the first of several reports concerning their findings in regards to health concerns of Persian Gulf veterans. Although the report credited VA and DoD with addressing health issues concerning Persian Gulf veterans, the report heavily criticized those departments for their fragmented reporting, tracking and research efforts.

The American Legion agrees with much of IOM's report. However, the IOM also stated that there is little medical or intelligence evidence to suggest that the illnesses are a result of chemical or biological warfare agent exposure. The Legion believes there is strong evidence available to indicate that many illnesses may be a result of chemical or biological warfare agent exposures.

Although DoD maintains that the symptoms experienced by sick veterans are commonly represented in the civilian population, VA's Birmingham, Alabama study finds that the symptoms of forgetfulness and memory loss are symptoms not readily found in the civilian population as a whole. Memory loss or forgetfulness can sometimes be caused by stress, but it is also a common and distinct symptom found in persons exposed to nerve agents.

Last year, the Senate Banking Committee under the direction of Senator Riegle (D-MI) investigated the possibility that personnel were exposed to chemical and/or biological warfare agents. As a result, the Committee released three separate reports. The information contained in these reports reveals that some personnel were indeed exposed to chemical warfare agents and that these agents were stockpiled in the theatre of operations. The American Legion would strongly suggest that this Subcommittee read those reports. The American Legion would like to submit for the record a copy of Mr. Jim Tuite's testimony before the Colorado State Assembly concerning Persian Gulf illnesses. Mr. Tuite was the former chief investigator for the Senate Banking Committee.

Since the intelligence community maintains that there is no evidence of these types of exposures, IOM has made a decision not to explore this issue further. Ironically, intelligence is the result of a process that begins with the collection of information on the battlefield. Testimony before this Committee and other Committees, as well as the IOM, indicated that chemical alarms and sensors were sounding constantly. Many of the alarms sounded directly after overhead explosions. In conjunction with the explosions, soldiers were ordered into full protective clothing and many experienced sensations that directly parallel chemical exposures. The Joint Chiefs of Staff intelligence section authorized for publication "The History of the 2nd Marine Division During Operation Desert Shield/Storm." Interestingly enough, the publication discusses the explosion of an Iraqi chemical

mine during breaching operations that resulted in Marines receiving mustard gas burns. We are also confused why DoD would authorize awards for individual soldiers who detected chemicals and for chemical injuries, then adamantly deny the presence of chemical agents in the theatre of operations.

The American Legion is also concerned because material safety data sheets (MSDS) prepared by the U.S. Army Chemical Research, Development and Engineering Center, at Aberdeen Proving Grounds, Maryland indicate that unhealthy nerve agent exposure occurs at levels as low as 1/1000 of the amount required to set off the M8A1 alarm which was widely employed during the Persian Gulf War. Mr. Chairman, this is significant; according to the safety data sheets, prolonged exposures to these undetectable low levels of nerve agent can cause delayed toxic effects.

Iraq was also well versed in the toxicity of low level nerve agent exposure. The American Legion has obtained a copy of an Iraqi field manual classified "Iraqi Restricted" which was translated by the Defense Intelligence Agency (DIA) as an unclassified document entitled "A Course in Nuclear, Biological and Chemical Protection." The document specifically states that "these agents have a cumulative effect; if small dosages are used repeatedly on a target, the damage can be very severe."

This information coupled with the confirmed and valid Czech detection; the DIA statement made in GAO report number GAO/PEMD-94-30 about the Czech detection "resulting from live agent testing or a possible accident involving chemical agents among coalition forces;" veterans' sworn eyewitness testimonies; log entries recently released by CENTCOM; available medical literature on low level exposures to chemical warfare agents (A Comparative Study of Warfare Gases: Their History, Description and Medical Aspects, A U.S. Army Medical Bulletin published in 1923 by H.L. Gilchrest; Delayed Toxic Effects of Chemical Agents, written in 1975 by Dr. Karlheinz Lohs, former Director of Toxicology of the German Democratic Republic's Academy of Sciences; as well as studies performed by W. Hellman; W.C. Hueber; A. Weiss and others) and the Riegler Reports should make a sound argument to include chemical warfare agent exposure in current studies.

In regards to biological exposures, DoD does not have the technical capabilities, on the battlefield, to confirm or deny whether biological exposures occurred. According to DoD training manuals and GAO reports, there are currently no battlefield detectors for biological agents. Military personnel are taught to look for an abundance of dead animals, absence of insects on the dead animal carcasses and symptoms of illnesses that defy diagnosis and treatments. Every one of these signals was present during and after the Persian Gulf War. DoD maintains that the animals died of diseases endemic to the Persian

Gulf. Mr. Chairman, the microorganism's used in biological warfare are also endemic to the Persian Gulf.

To exclude chemical and biological exposures from the government's research efforts would be a serious mistake and should be aggressively pursued. This is extremely important, because UN weapons inspection teams are reporting daily about how extensive Iraq's chemical and biological warfare program really was and how little the intelligence community knows about the complexity of Saddam's weapons of mass destruction.

The American Legion is also disappointed that only one member of the IOM panel received a classified briefing from DoD and the intelligence community regarding chemical and biological warfare issues. In order for the IOM to reach a meaningful conclusion, The American Legion believes that all of the panel members should be briefed by DoD and the intelligence community. The Legion is also confused why a panel member received a classified briefing, when the Department of Defense maintains there is no classified information surrounding this issue.

The report further recommended that the government should implement a full epidemiological study, a recommendation that The American Legion requested before this Subcommittee when returning Persian Gulf veterans first displayed health problems. To assist VA and DoD in representing the interest of veterans, The American Legion is currently negotiating an agreement with the Association of Occupational and Environmental Clinics (AOEC). The AOEC is a network of fifty-four clinics, all of which regularly encounter the effects of exposure to substances such as those experienced by Persian Gulf veterans. AOEC clinics are bound by commitment to joint research and virtually all have a strong academic affiliation.

As a member of the Blue Ribbon Panel on Persian Gulf Health Issues, The American Legion is called upon to comment on the nature, design and adequacy of scientific studies and literature reviews relating to the health effects on those who served in the Persian Gulf and other wars and conflicts. Evaluation of such studies and reviews often requires a knowledge and expertise exceeding that of existing staff. AOEC has proposed and the Legion has agreed that AOEC will provide assistance and expertise as follows:

- review protocols for epidemiological studies and others proposed by VA.
- review the bidding and contract process VA will undertake, to assure that VA contracts with a group or groups capable of undertaking the studies as designed.
- continually assist in overseeing the process and provide critiques of the reports that result from studies.
- review medical protocols currently used for veterans and suggest changes if necessary.

- review protocols and results of other studies performed by VA and others.

Mr. Chairman, The American Legion is still very much concerned about leishmaniasis. A carrier can be asymptomatic and the parasite can remain dormant for many years. The disease can be transmitted through a blood transfusion and can survive in a blood bank. Presently, The American Legion knows of no known "gold standard test" for leishmaniasis and questions whether the decision to lift the blood ban on Persian Gulf veterans was safe and responsible. Current medical testing for the parasite remains difficult and elusive and therefore needs to be re-examined in the government's study. This Subcommittee should hear testimony from Dr. A.J. Magill, Major, United States Army about this disease. He is a leading expert on leishmaniasis and is stationed at Walter Reed Army Medical Center.

Recently DoD released preliminary results of 1000 soldiers who have enrolled in DoD's Comprehensive Clinical Evaluation Program (CCEP). Dr. Stephen Joseph recently stated that "only 15 percent of the soldiers cannot be diagnosed" and General Blanck, the Commanding Officer of Walter Reed Army Medical Center stated that "another 25 percent of these soldiers appear to have Chronic Fatigue Syndrome (CFS) or similar ailments." Mr. Chairman, The American Legion believes that since no one knows what causes CFS, this is not a suitable diagnosis and the percentage of unknown diagnosis should be 40 percent.

Because a large percentage of veterans and soldiers are given a diagnosis of CFS, an epidemiological study should fully investigate Mycoplasma Incognitus and recombinants of these mycoplasmas. Dr. Shyh-Ching Lo of the Armed Forces Institute of Pathology has done extensive research on mycoplasmas and has reported that patients with AIDS, as well as CFS demonstrate a high incidence of this elusive mycoplasma. Dr. Garth Nicholson at the University of Texas has reported similar findings in both CFS patients and Persian Gulf veterans. The American Legion recommends that this Subcommittee receive testimony from Dr. Lo and Dr. Nicholson on their findings and how the mycoplasma relates to CFS. An epidemiological study should also include research on Human Herpes Virus Type 6 (HHV6). Neenyah Ostrom has done extensive research in this area and we recommend that the Subcommittee hear testimony from her as well.

Mr. Chairman, in May of 1993, Dr. Edward Hyman of New Orleans testified before this Committee concerning his findings of bacteria and yeast cultures found in urine samples of returning veterans. Dr. Hyman stated his belief that the bacteria and yeast are the proximate cause of the veterans' health problems and that more research is needed to determine how and why these cultures enter the urinary tract. In September of 1993, Congress agreed to fund Dr. Hyman's research and appropriated \$1.2 million towards Dr. Hyman's efforts. The bill was passed by Congress and signed by the President of the United States.

The American Legion is concerned because the Department of the Army at the request of the U.S. Army's biological warfare research center in Ft. Detrick, Maryland has not yet released these funds.

To ensure Dr. Hyman would not lose his funding, Congress re-appropriated the original \$1.2 million plus another \$2.2 million in 1994. That legislation was also passed by Congress and signed by the President of the United States. The American Legion recommends that this Subcommittee receive a briefing from DoD on their decision not to provide these research dollars. The American Legion believes Dr. Hyman's research may be an important factor in uncovering answers to health problems experienced by Persian Gulf veterans.

Mr. Chairman, The American Legion would also like to address the issue of the "independent researchers" involved in performing research. The American Legion is becoming increasingly concerned because the "independent researchers" serve on more than one research project funded by the federal government and are "hand-picked" by VA and DoD.

The American Legion commends President Clinton's plans for an Independent Advisory Committee. This is truly a proactive measure by the Administration. Such a Committee has the potential to address issues that may be overlooked or ignored by government agencies.

Mr. Chairman, when veterans and their families first began to report their health problems, VA and DoD tried to deny that Persian Gulf veterans were ill. Then veterans were told their medical problems were all due to stress. Recently, veterans were told "we know you are sick, we don't know what you have, but you did not get it in the Persian Gulf." Now the explanation is "we know you are sick, here is what you have and you would have gotten this whether or not you went to the Persian Gulf." The facts still remain that healthy men and women deployed to the Persian Gulf War and since their return, their health has deteriorated. Whether veterans incurred injury or aggravated an existing condition, this nation has an obligation to make them "whole." The American Legion would like to ask the Subcommittee to consider future hearings that focus on veterans' testimonies in regards to the medical care and treatment they receive through DoD's CCEP, VA's Persian Gulf Registry and civilian health care providers.

Mr. Chairman and members of the Subcommittee, this concludes my testimony. Thank you.



SERVING  
WITH  
PRIDE



Statement of  
Robert P. Carbonneau  
AMVETS National Legislative Director

before the  
Subcommittee on Hospitals and Health Care  
of the  
Committee on Veterans Affairs

U.S. House of Representatives

on the

Treatment of Undiagnosed Health Conditions of  
Persian Gulf War Veterans

Thursday, March 9, 1995  
Cannon House Office Building  
Room 334

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Mr. Chairman, AMVETS is grateful for this opportunity to express our concerns about the mysteries surrounding illnesses being suffered by Persian Gulf War veterans.

Let me begin by saying that AMVETS is encouraged by the positive actions by both the Department of Defense (DoD) and the Department of Veterans Affairs (VA). This cooperative effort is aimed at reaching Persian Gulf War veterans, providing information about VA's health care evaluation services, and maintaining the Persian Gulf War Veterans' Registry. These tools will aid in the research and further treatment of undiagnosed illnesses that plague many men and women who served in Southwest Asia.

A major concern of AMVETS is the rush to find answers to the questions. Short-term, narrowly-focused medical review efforts will not provide conclusive evidence aimed at diagnosis and treatment.

We tend to agree that there may be no single etiological root to the many symptoms. We fully support treatment of and, where warranted, VA disability compensation for these ailments while research continues. Recent reports of veterans that their spouses and children are showing signs of further transmission of their own illnesses also has us concerned. AMVETS would ask the committee to consider VA treatment of such family members in the same spirit in which Persian Gulf War veterans themselves are afforded VA treatment.

Another obstacle to reaching consensus on ongoing research efforts is that numerous government studies are being carried out unilaterally. We do not fault these efforts for their enthusiasm, but there needs to be a strategy employed by all concerned that will ensure that information is shared and that duplication of effort is kept to a minimum.

AMVETS is hopeful that the President's Advisory Committee on Persian Gulf War Veterans Illnesses will provide a focal point for information flowing in and out of the various avenues of research. It is noted that no additional monies were appropriated for the committee or VA for this effort. We look forward to a more comprehensive analysis in this committee's final report targeted for December 1996.

We are encouraged by Administration plans to release information pertaining to reports of the detection of chemical and biological warfare agents employed during the war and information about serious illnesses affecting Persian Gulf veterans. We are also confident that many veterans will benefit from the two new DoD specialized health care centers in San Antonio, TX and Washington, DC. These will provide additional testing and treatment. The infusion of funds this year to provide new research on anti-nerve gas drugs and pesticides will break new ground. We hope this will shed new light on the doubts and concerns of medical professionals and Gulf War veterans. Epidemiological studies, coupled with broadened research projects, will enhance the knowledge base of DoD, VA, and the many other government and private agencies engaged in solving this health care mystery.

We acknowledge the Secretary of Veterans Affairs for his initiative in seeking answers to reproductive problems being experienced by many Persian Gulf War veterans. Guidelines being developed through consultation with nationally recognized medical experts will enable VA to determine to what extent future generations may be affected.

To get to the bottom of the Persian Gulf War veterans health issue, DoD, VA and other government and private sector agencies involved must conduct their research without prejudice. Data collected should be reevaluated frequently to ensure that possibilities are not overlooked. AMVETS is interested in the evaluations

involving cluster groups, such as those in Pennsylvania and Iowa, and we look forward to the analysis of environmental and biological hazard investigations.

An important benefit of the empirical study of veterans' health problems will be the implementation by DoD of lessons learned. New insights will enable military commanders to reorient personnel training and better understand risk factors. The Persian Gulf War presented circumstances uncommon to historical military encounters, particularly those involving potential exposure to petrochemicals, lead, depleted uranium and other toxic chemicals. Furthermore, medical equipment blamed for false reports of chemical/biological warfare agents detection should be thoroughly tested and improved.

AMVETS is encouraged by the Administration's determination to resolve this growing national concern. We urge Congress to follow through by doing its part to provide sufficient funding to allow those agencies involved to complete their research. VA and DoD need to continue to treat veterans and their families suffering from unexplained illnesses. Certain Persian Gulf War veterans are being awarded disability compensation while research continues. Fairness dictates that VA funding in this area not be compromised.

AMVETS strongly feels that the questions borne out of our Persian Gulf War experience deserve answers, and the promise made to America's Persian Gulf War veterans must be kept.

Thank you, Mr. Chairman. This completes my statement.

Hearing on March 9, 1995

"Progress Of Research On Undiagnosed  
Illnesses Of Persian Gulf War Veterans"

Follow-Up Questions for  
Dr. Kenneth W. Kizer  
Under Secretary for Health, VA

from Honorable Tim Hutchinson  
House Subcommittee on Hospitals  
and Health Care, Committee on Veterans Affairs

1. What has been done for veterans suffering from viscerotropic leishmaniasis? How prevalent is the problem? Are there any long-term effects associated with this condition?

**Answer:** To date viscerotropic leishmaniasis has been identified in 12 Persian Gulf veterans. Clinically, viscerotropic leishmaniasis presents with enlarged lymph nodes, liver, and spleen; lowered blood counts, and elevated liver enzymes. In addition to the viscerotropic leishmania cases, 19 cases of cutaneous leishmaniasis have been identified. These conditions differ in severity but long-term treatment is recommended in both, even though the cutaneous form (confined to the skin, usually a single lesion) may resolve spontaneously. Each individual with leishmaniasis has been fully evaluated and received appropriate treatment for their disease.

Cutaneous leishmania is described fairly frequently in people living in the Persian Gulf region, but the viscerotropic form due to *Leishmania tropica* has rarely been seen. Prevalence of the infection has not been determined by a large epidemiological study since a non-invasive diagnostic test is not available. At present, diagnosis must be made by bone marrow biopsy -- a painful procedure, not useful for screening purposes.

2. The VA has established 3 hospital based research centers at East Orange, Portland and Boston. How many veterans and civilians have registered at each of the centers? What is the actual weekly sign-in rate for the 3 centers? Has it fallen off or increased?

**Answer:** The Environmental Hazards Research Centers at East Orange, Portland, and Boston are engaged in research on Persian Gulf veterans. The research that is being conducted at each of these centers covers a wide range of scientific subject matter. The research projects that utilize Persian Gulf veterans as research subjects must rely on standard population sampling techniques so as to obtain relatively unbiased samples. These sampling strategies require that subjects be randomly selected (or as close to randomly selected as possible). This type of selection process is required to avoid problems of self-selection bias that is encountered when subjects are self-referred. Thus, veterans or civilians are not "registered" at each of the centers. All of the centers have begun to recruit subjects for their studies. At the Boston Environmental Hazards Center, researchers will actually compare the results of batteries of neurobehavioral and neuropsychological tests between subjects who are recruited and subjects who are self-referred.

3. The Birmingham VA has initiated a clinical program to evaluate possible chronic neurocognitive toxicity secondary to nerve agent exposure. Please describe the study, how large is

it, are there any preliminary findings, and when is it scheduled for completion?

**Answer:** Birmingham VAMC has established a pilot program to evaluate the possible chronic neurocognitive effects of any environmental agent exposures, including low-level chemical warfare and nerve agent exposure. The program provides comprehensive neurologic and neuropsychologic assessments for Persian Gulf veterans suffering from cognitive problems which they attribute to environmental exposures including chemical warfare exposure. The program was set up to evaluate the Persian Gulf veterans in the Birmingham referral area. It has screened more than 500 veterans and provided comprehensive evaluations to approximately 80 veterans with cognitive symptoms so far. No preliminary findings are available at this time. There is no planned closing date for this medical care program.

4. The computer registry established by VA includes 34,000 veterans. Please describe how researchers may access it.

**Answer:** The Persian Gulf Registry Health examination program has provided evaluations to more than 43,000 individuals to date. A computerized database was established from the medical data obtained during these evaluations. Strict confidentiality is maintained since this database contains medical information and personal identifiers of participating veterans. Medical researchers needing access to this computerized database must have a peer-reviewed protocol which has been judged scientifically meritorious and approved by a Human Subjects Research Committee. Requests for information about the Registry can be sent to the Department of Veterans Affairs, Office of Public Health and Environmental Hazards (103).

Hearing on March 9, 1995

"Progress Of Research On Undiagnosed  
Illnesses Of Persian Gulf War Veterans"

Follow-Up Questions for  
Dr. Kenneth W. Kizer  
Under Secretary for Health, VA

from Honorable Chet Edwards  
House Subcommittee on Hospitals  
and Health Care, Committee on Veterans Affairs

1. Is there consensus among you and other members of the panel on how precisely peer-review should occur in decision making on Persian Gulf research? Who should conduct or manage that peer review? What should be the precise role of the Coordinating Board with respect to determining the scientific merit of proposed research initiatives?

**Answer:** I support the need for all research projects on Persian Gulf veterans' illnesses to undergo external peer-review prior to funding decisions. The Research Working Group of the Persian Gulf Veterans Coordinating Board establishes areas of research focus. Based on these areas, each department, from which the research funds will come, will develop and issue a request(s) for proposals to the scientific community. Each responsible department will assemble an external peer-review panel(s) to review proposals from the scientific community responding to the solicitations. The peer-review panel(s) will score and rank proposals based on scientific merit. The Research Working Group will not be involved in reviewing the scientific merit of specific proposals but will provide comment and recommendation to individual departments about the relevancy of proposed research. This is to ensure that there is minimal unnecessary duplication of research, as well as to ensure that appropriate research gaps are filled. Final funding decisions will be made by each individual department.

2. While you have discussed many fruitful avenues for research relating to Gulf War service, is there agreement among you and other panel members on what are the two or three most important research projects underway or under development? What is your view on which are most important? What are the timelines on those projects?

**Answer:** It is always difficult to identify individual research projects that are most important when there are so many questions. However, the population-based studies to establish the prevalence of symptoms and illnesses among Persian Gulf War veterans and appropriate control groups are very important. Without an accurate determination of the prevalence of symptoms and illnesses compared to a "non-exposed" population, the development of reasonable, testable hypotheses cannot proceed. Of course, population-based investigations must be supported by exposure data. Therefore, I highly endorse high quality research that will determine what possible exposures to causative agents may have occurred. I also think it is important for the U.S. data to be compared to the experience of our allies, although little is being done in this regard.

The National Health Survey of Persian Gulf Veterans and their Family Members will be conducted in three phases. In Phase I of the study, a questionnaire will be mailed to each of the 30,000 veterans (15,000 Persian Gulf Veterans; 15,000 non-Persian Gulf Veterans).

In Phase II, a sample of 2,000 non-respondents from each group will be randomly selected and a telephone interview will be attempted using an abbreviated questionnaire which includes a question on reasons for refusal. Telephone interviews with the non-respondents will assist in assessing potential non-respondent bias and will supplement the postal survey data. In addition, during Phase II, selected self-reported data collected by the postal questionnaire will be validated through records review for 1,000 veterans from each group. In Phase III, the same 2,000 veteran respondents and their family members will be invited to participate in a comprehensive physical examination under a uniform comprehensive clinical examination protocol at a VA, DoD or private medical facility.

The workscope of the survey spans 3 years: Phase I will be completed at the end of the first year (June 1996), Phase II at the end of second year (June 1997) and Phase III at the end of third year (June 1998).

The proposed study protocol and questionnaire were peer-reviewed and approved by an external scientific oversight committee in April. The study will begin in June 1995.

3. The IOM report cites the need for research across a spectrum of subjects ranging from lead to leishmaniasis, without any differentiation as to the relative priority to be assigned such research areas. Could the IOM report have been more helpful in this areas?

**Answer:** According to P.L. 102-585 the IOM panel was charged to "...review existing scientific, medical, and other information on the health consequences of military service in the Persian Gulf theater of operations during the Persian Gulf War." We appreciate IOM's effort to identify areas of research that need to be examined further. However, prioritization of research is a function of the VA, as lead agency for research on Persian Gulf veterans' illnesses, in concert with DoD and HHS through the Research Working Group. A subcommittee of the Research Working Group is now preparing a research strategy that will provide a prioritization of research areas. When this research strategy is complete it will be transmitted to both Congress and the IOM.

4. In its testimony, the American Legion suggested that until recently veterans with medical problems were being told, "we know you are sick, we don't know what you have, but you did not get it in the Persian Gulf," and that now the explanation they're getting is, "we know you are sick, here is what you have, and you would have gotten this whether or not you went to the Persian Gulf." Are those the messages coming from VA or DoD?

**Answer:** The American Legion states that Persian Gulf veterans are being told that, "we know you are sick, here is what you have, and you would have gotten this whether or not you went to the Persian Gulf." This is not an accurate portrayal of the message VA conveys to Persian Gulf veterans. It is true that the majority of Persian Gulf veterans who have been evaluated at VA medical facilities have conventional, diagnosable medical problems. Only a small number appear to have unexplained or undiagnosed illnesses after their service in the Persian Gulf. Three independent panels of scientific and medical experts have reviewed the health problems of Persian Gulf veterans and determined that there is no identifiable unique, or single, disease responsible for the diverse health complaints of this group of veterans. In summary, no "Persian Gulf Syndrome" has been defined. However, this should not be misconstrued to say that VA has determined that the illnesses of Persian Gulf veterans would have occurred whether or not they went to the

Gulf. In fact, VA scientists are actively investigating whether the types and rates of illnesses are different in Persian Gulf veterans compared to other military service members not deployed to the Gulf War.

The basis of provision of priority care to Persian Gulf veterans is the presumption that an environmental exposure during Persian Gulf service could be responsible for their health problems. VA continues to provide priority care for ill Persian Gulf veterans.

5. You are still relatively new to the VA but, as I understand it, you are a physician with a background in public health. In light of that background, do you agree without reservation with all the findings and recommendations of the IOM Committee?

**Answer:** Yes, I have a background in public health, and I also am a board certified specialist in medical toxicology and in occupational and environmental medicine, in addition to other specialties. I generally concur with the IOM findings and recommendations. Of note, the Persian Gulf Veterans Coordinating Board has responded in detail to each recommendation made by the IOM committee. I have attached a copy of that report for your review.

Hearing on March 9, 1995

**"Progress Of Research On Undiagnosed  
Illnesses Of Persian Gulf War Veterans"**

**Follow-Up Questions for  
Dr. Kenneth W. Kizer  
Under Secretary for Health, VA**

**from Honorable Frank Tejada  
House Subcommittee on Hospitals  
and Health Care, Committee on Veterans Affairs**

1. On Monday, the President announced the creation of a Presidential Advisory Committee to report on research and medical care issues related to undiagnosed illnesses affecting Persian Gulf War veterans. Can you explain how this committee will be different from the VA's Persian Gulf Expert Scientific Committee and other advisory commissions?

**Answer:** The advisory committee recently announced by President Clinton will be an independent, non-federal employee Presidential Advisory Committee, reporting through the Secretaries of VA, Defense and HHS to the President on the full range of U.S. government activities related to the illnesses of Gulf War veterans. Previous expert panels have been more short term, have included federal employees as members, or had a more narrow focus.

2. I have heard from several Persian Gulf War (PGW) veterans in San Antonio regarding birth defects of children born since returning from the Gulf. In your testimony, you mentioned a VA/DoD epidemiological study of the offspring of PGW veterans. Does the VA or the DoD intend to conduct additional research?

**Answer:** VA and DoD are incorporating questions about birth outcomes in their large-scale epidemiologic investigations. In addition, I am exploring additional ways in which the VA can pursue studies in this regard.

3. In January, the Institutes of Medicine (IOM) recommended several areas on which the VA and the DoD should conduct research. Have the DoD and the VA addressed the IOM's recommendations?

**Answer:** VA and DoD, through the Persian Gulf Veterans Coordinating Board, have responded to the IOM panel's findings and recommendations. Attached you will find the recommendations and our responses.

Hearing on March 9, 1995

"Progress Of Research On Undiagnosed  
Illnesses Of Persian Gulf War Veterans"

Follow-Up Questions for  
Dr. Kenneth W. Kizer  
Under Secretary for Health, VA

from Honorable Jack Quinn  
House Subcommittee on Hospitals  
and Health Care, Committee on Veterans Affairs

1. Your testimony lists seven goals of research conducted by VA and other federal agencies. Have we made reasonable progress towards these goals? Have any possible causes been identified, accepted or discounted? Have any treatments been identified, accepted or discounted?

**Answer:** The VA National Survey of Persian Gulf Veterans, the DoD *Epidemiological Studies of Morbidity among Gulf War Veterans: A Search for Etiologic Agents and Risk Factors*, and the HHS *Survey of Veterans from Iowa* are designed to address the goals of establishing the prevalence of unexplained illnesses and diagnosable illnesses. All three of these studies have been undergoing peer-review and revision prior to initiation. When these studies are complete we should have data that will inform us of disease prevalence. These epidemiological investigations in conjunction with laboratory-based studies such as the research at the three VA Environmental Hazards Centers should move us significantly forward to identification of: appropriate diagnoses; potentially new disease presentations; and etiological factors. Effective treatment modalities will come through interaction of clinical programs with the output of research. Lastly, all of the research conducted on Persian Gulf veterans' illnesses will lead to a better understanding of certain disease pathologies, particularly those that might be unique to war-time conditions. It is important to stress that good research arising from well designed studies takes time. We have only recently entered into the research phase of this problem. I look forward, though, to the time, hopefully in the near future, when many of the current questions will be answerable.

2. Who are the members of the Research Coordinating Council? Are they researchers with experience in epidemiological investigations? Are outside experts consulted? Were outside experts called in to evaluate the proposed research models?

**Answer:** The Research Working Group of the Persian Gulf Veterans Coordinating Board was formed in November of 1993. The Research Working Group is chaired by Dr. Raymond Sphar, Acting Associate Chief Medical Director for Research and Development for VA. The membership of the Working Group is made up of representatives from VA, the Department of Defense (DoD), Health and Human Services (HHS), and the Environmental Protection Agency (EPA). Representing VA are members from the Medical Research Service, the Environmental Agents Service, and Environmental Epidemiology, Service. Representing DoD are members of the Office of the Assistant Secretary of Defense for Health Affairs and the ODDR&E. Representing HHS are staff from the Immediate Office of the Secretary/Office of VA-Military Liaison, National Institute of Environmental Health Sciences, and the Centers for Disease Control and Prevention. Representing EPA is a member of the Office of Health and Exposure Assessment.

The members of the Research Working Group are equipped with a wide range of scientific expertise including epidemiology, toxicology, and public health. Virtually all of the members are leaders of major research and public policy programs within their respective agencies.

Because of the critical scientific issues that the Research Working Group deal with on a routine basis, the Research Working Group relies significantly upon the work of the VA Persian Gulf Expert Scientific Committee and the Institute of Medicine panel formed to study the health consequences of service in the Persian Gulf.

3. In your testimony, you discuss planned research and experimentation through the three Environmental Hazards Research Centers. Has research begun? Are efforts being adequately funded?

**Answer:** The three Environmental Hazards Research Centers were initially funded beginning October 1, 1994. Funding for each Center is adequate and will be continued at the rate of \$500,000 per year for up to 5 years. In addition, each Center has received \$100,000 in new equipment funds. The Centers are located at the VA Medical Centers in Boston, East Orange, NJ, and Portland, OR. Each center is conducting between four and six studies into the risks associated with military and civilian exposure to various environmental and occupational hazards. Each of the Centers has its projects, and it is anticipated that initial results from the first studies should be available some time in the fall of this year.

4. I understand that each center has a director to coordinate research efforts which in some cases involve affiliated institutions. I believe one such effort is being undertaken by a researcher at the University of Buffalo School of Medicine. How do researchers with projects throughout the country share their findings?

**Answer:** It is essential that investigators across the country have access to information about all ongoing studies and the results of those studies. Only by sharing research information can the overall knowledge about Persian Gulf veterans' illnesses grow. The Department of Veterans Affairs reported to Congress on March 1 the status of all federally funded research projects on Persian Gulf veterans. This information is being published as a part of a VA publication that will include the status of clinical activities as well. This publication will be widely disseminated throughout the federal government including to all current researchers. In addition, an extensive computerized data base of all federally funded research activities is being developed and should be ready shortly.

5. What kind of response have you received from the national survey recommended by the NIH Technology Assessment Workshop panel? Do you worry that responses will be skewed because they are self-selective? Will veterans with problems be more likely to respond?

**Answer:** The Persian Gulf Veterans National Survey has not yet been initiated. The survey questionnaire is still under review by non-federal experts. I have insisted that extensive review of the survey instrument be conducted because we cannot afford to have a faulty survey instrument on such an important assessment. Because the survey will select both Persian Gulf veterans and Persian Gulf-era veterans at random from the relevant veteran population, we will avoid problems of self-selection bias which are encountered in, for example, the Persian Gulf Registry.

Reporting bias cannot be eliminated entirely because Persian Gulf veterans are probably aware of the reported health problems of other veterans and there will be a tendency for ill veterans to respond at a higher rate.

6. Besides efforts in environmental exposures, have any significant efforts been placed on neurological problems that may be the result of the use of chemical weapons?

**Answer:** VA has devoted significant clinical efforts to the evaluation of neurological and neuropsychological problems that may be the result of the use of chemical weapons. The uniform case assessment protocol gives clear guidance that a neurologic evaluation and neuropsychologic (cognitive) testing be routinely performed as part of the comprehensive evaluation of Persian Gulf veterans with unexplained illnesses. These consultations should identify chronic health effects potentially related to nerve agent exposure. In addition, VA established a pilot program at the Birmingham VAMC for the clinical evaluation of neurocognitive problems possibly resulting from exposure to chemical warfare agents.

7. Does VA plan to accept new research proposals or is it limited to those currently underway?

**Answer:** The VA solicited research proposals last year that resulted in the selection of 3 Environmental Hazards Centers from 19 submissions. Besides the research conducted by these Centers, VA investigators may submit unsolicited research proposals as a part of the Medical Research Service Merit Review Program. Funding decisions for this program are based on peer review of research proposals by panels both within and outside VA. Thus, the standard peer-reviewed funding mechanisms can be used to fund scientifically meritorious research projects provided they achieve competitive peer review priority scores.

In addition to these opportunities, VA and DoD are planning on embarking on additional research utilizing \$5 million from the 1995 funds appropriated to DoD for collaborative VA/DoD research. The broad areas of research will be established by the Research Working Group of the Persian Gulf Veterans Coordinating Board. Proposals to address these areas will be solicited and reviewed by appropriate peer review panels composed of experts outside of VA and DoD.

8. Are researchers using the information available through the Persian Gulf Registry in their efforts? Do you think the registry will provide VA and others with valuable indications?

**Answer:** The data collected on the Persian Gulf Registry cannot be used to directly form conclusions about the illnesses experienced by Persian Gulf veterans. These data are, however, very valuable in helping researchers formulate hypotheses that can be tested using properly controlled study designs. The symptoms that are reported on the Persian Gulf Registry have led investigators to pursue several specific investigative avenues. For example, the nature of the symptoms have led many investigators to focus on the nervous system as an organ system of particular concern.



HEALTH AFFAIRS

## THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D. C. 20301-1200

APR 14 1995

Honorable Tim Hutchinson  
Chairman  
Committee on Veterans Affairs  
Subcommittee on Hospitals and Health Care  
U.S. House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

During my testimony before your subcommittee on March 9th, a question was raised regarding FY95 medical research funding related to the Persian Gulf. Congressman Stephen Buyer asked if the research monies for Persian Gulf Illnesses (PGI) which President Clinton referred to in his speech before the Veterans of Foreign Wars on Monday, March 6th were "new monies" or "existing monies". I would like to take the opportunity to fully answer this question and would appreciate it if you would make this correspondence part of the official record.

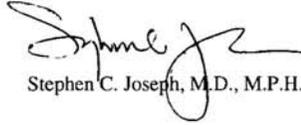
President Clinton during his VFW speech said, "In the year ahead, we will also step up our treatment efforts and launch new research initiatives. The Departments of Veterans Affairs, Defense and Health and Human Services will spend up to \$13 million on new research." The President did not state that this entailed new funding, but rather that there would be new research initiatives in FY95.

My response at your hearing addressed the Department of Defense's portion of the total funding. Within DoD, approximately \$2M is dedicated to the Army core program for PGI research and \$5M is specifically earmarked in the DoD/DVA General Research Account for the same. Due to the President's interest, we will almost double that amount by designating an additional \$5M that would have otherwise gone to different research initiatives.

The approximately \$12M dedicated by DoD will be coordinated - as all of our research efforts - through the Departments of Defense, Veterans Affairs and Health and Human Services' Persian Gulf Veterans Coordinating Board Medical Research Working Group.

Thank you again for the opportunity to appear before your Subcommittee. I look forward to working with you in the months ahead.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen C. Joseph". The signature is fluid and cursive, with a large initial "S" and a long horizontal stroke extending to the right.

Stephen C. Joseph, M.D., M.P.H.

cc: Congressman Stephen E. Buyer

QUESTIONS FOR THE RECORD  
HOUSE VETERANS' AFFAIRS COMMITTEE  
PROGRESS OF RESEARCH ON UNDIAGNOSED ILLNESSES OF PERSIAN GULF WAR VETERANS  
9 MARCH 1995

QUESTIONS 2-17

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Mr. Hutchinson: Please describe the data collection efforts by DoD since the recognition of Persian Gulf illnesses. Are there efforts underway to access the pre-deployment health status of troops, the environmental characteristics of their surroundings, possible exposures during deployment, and post-deployment evaluations? Has this been done for such places as Somalia and Haiti?

Dr. Joseph: The Services conducted in-theater medical surveillance, environmental assessments and post-deployment screening for deployments to Haiti and Somalia. The Department has begun development of a comprehensive medical surveillance plan which expands our capabilities to collect, analyze and interpret systematically data needed to monitor and protect the health of service members who participate in deployments. The plan emphasizes identifying and documenting deployed populations, assessing environmental health hazards, determining preventive medicine countermeasures to protect the force, conducting pre and post deployment health education and medical screening, and assessing any health consequences which may result from deployments. Phased implementation of the surveillance plan should begin in early FY 96.

Mr. Hutchinson: Understanding that a combination of vaccines could potentially result in Persian Gulf illnesses, what is the status of studies looking at a combination of vaccines such as botulinum toxoid and anthrax. How large is this study and when can results be expected?

Dr. Joseph: The Department is not conducting research on the health effects of botulinum toxoid and anthrax vaccines. The National Institutes of Health (NIH) Technical Assessment Workshop on the Persian Gulf Experience, the Defense Science Board's Task Force on the Persian Gulf War Health Effects, and the Institute of Medicine have reviewed the issue of vaccine interaction. All three review panels stated that no long-term adverse effects have been documented or would be expected. The three independent panels reached similar conclusions, in that, there appears to be no single disease or apparent syndrome, but rather, veterans are experiencing multiple illnesses with overlapping symptoms and causes.

Mr. Hutchinson: Understanding that arthropod borne diseases such as Sand Fly Fever, West Nile Fever, and others of this family are known to cause chronic diseases and infections, has there been research on chronic diseases and infections, has there been research to document a previously unrecognized, emerging infectious disease from this part of the world?

Dr. Joseph: Arthropod-borne, viral diseases known to be present in the Persian Gulf Theater of Operations included sandfly fever, West Nile fever, Crimean-Congo hemorrhagic fever, and dengue. These viral illnesses are not known to cause chronic infection and disease. Although we have not eliminated the possibility that a new infectious disease is responsible for the wide range of illnesses among Gulf War veterans, to date there has not been any consistent physical, clinical, or laboratory abnormalities that would indicate a unique infectious process. Federal research efforts will

prevention methods, better diagnostic tools for infectious diseases (including field screening tests), and enhanced treatment procedures for diseases (e.g. *Leishmania tropica*) found in Southwest Asia. We expect to award medical research grants, for studies involving infectious disease, by October 1995.

Mr. Hutchinson: The spectacular oil fires in the Gulf have led some veterans to believe that they may have been exposed to carcinogenic risk factors. Although to date there have been no unexplained illnesses in US civilian fire fighters, is there research underway to include such factors?

Dr. Joseph: Yes. The US Army Medical Research and Materiel Command has mounted a massive research effort aimed at establishing the health risk(s) from exposure to smoke from oil well fires. Although final results are expected in early 1996, early findings do not indicate a substantial health risk. The Office of Technology Assessment (OTA) was directed by Congress to evaluate DoD's Kuwait Oil Fire Risk Assessment Study. OTA concluded, that as a result of exposure to the products from the Kuwait oil well fires, "using state-of-the-art risk assessment methods, the risks to health are likely to be extremely small." Early study results indicate a lifetime cancer risk of 2 in a million and a low probability of non-cancer health risks. These risks are equivalent to living the same amount of time in an urban/city environment. Specifically, "the lifetime cancer risk of spending 8 months in the San Francisco Bay area, calculated in the same way as the risks for the Persian Gulf, is in the vicinity of 5 in a million--about twice the calculated risk in the Persian Gulf."

Mr. Hutchinson: Please discuss the study underway to evaluate the possibility that pesticides used in the Gulf could have increased the acute toxic effects of pyridostigmine. The study referred to also includes the pesticides n,n-diethyl-m-toluamide and permethrin.

Dr. Joseph: An Army sponsored research project is near completion which will assess the potential for toxic interactions among pyridostigmine bromide (a pretreatment which greatly enhances antidote effectiveness against certain nerve gases) and oral administration of permethrin (an insecticide used to treat military uniforms) and DEET (a manually applied insect repellent). This work, which dealt with the lethal effects of very high doses of these substances, is a preliminary evaluation of possible toxic interactions among them. The study determined the lethal doses to rats of these three substances alone, in pairs, and all three administered simultaneously. Although there are some preliminary indication of adverse effects to rats when pyridostigmine bromide is combined with permethrin or DEET, these results are preliminary. Because the dosage levels are far in excess of any credible human exposures and because permethrin and DEET were administered orally in the study, it is impossible at this time to say if they have implications in humans. There is no evidence of significant human exposure to these three compounds in combination during Operation Desert Shield/Storm (ODS/S). The results of this study will be submitted for peer review by the end of April 1995.

Mr. Hutchinson: Understanding that Pyridostigmine tablets were given to troops and they were instructed to self administer them every 8 hours when risk of chemical attack was thought to be significant, please describe the condition of the tablets. Were they from DoD stockpiles or had they been recently manufactured by chemical companies? Are studies underway to evaluate what role, if any, administration of these tablets could have played in the development of a Gulf Illnesses?

Dr. Joseph: War stocks of pyridostigmine bromide existed prior to the start of ODS/S but the levels of stockpiles are not known. The drug was within its approved shelf-life. During the ODS/S years of 1990 and 1991 approximately 539 thousand units of pyridostigmine bromide was purchased from Hoffmann-La Roche Inc. and 305 thousand units from Duphar, Amsterdam, Holland (Note: One unit contains 10 blister packs with 21 tablets per blister pack). The exact quantity of pyridostigmine bromide that was shipped to the Gulf, issued to soldiers, taken by soldiers, or returned to the United States from the Gulf is not known.

Extensive assessments of pyridostigmine bromide were made by the Defense Science Board Task Force on Persian Gulf War Health Effects<sup>1</sup>, the National Institutes of Health (NIH) Technical Assessment Workshop on the Persian Gulf Experience<sup>2</sup>, and the Medical Follow-Up Agency of the Institute of Medicine<sup>3</sup>, all of which state that pyridostigmine bromide was not the likely cause of the unexplained illnesses of Persian Gulf veterans.

Questions on pyridostigmine are contained in a questionnaire designed for an epidemiological study of Gulf War Veterans. Additionally, there is a clinical study initiated to evaluate the safety, tolerance, and pharmacokinetics of pyridostigmine bromide (PB) in males and females in different weight groups. The objectives of the study are:

1. To determine whether there is any difference in tolerance to the doctrinal dose of PB (30 mg every eighty hours) between males and females.
2. To determine whether weight may be a factor in tolerance to PB irrespective of gender.

Mr. Edwards: Is there consensus among you and other members of the panel on how precisely peer-review should occur, in decision making on Persian Gulf research? Who should conduct or manage that peer review? What should be the precise role of the Coordinating Board with respect to determining the scientific merit of proposed research initiatives?

Dr. Joseph: Within each of the three Departments there is a well-established, stringent, peer-review process for medical research proposals. This process ensures that the highest standards of medical care and scientific research are maintained. There are no exceptions for Persian Gulf medical research. The Research Working Group of the Persian Gulf Veterans Coordinating Board identifies areas of research focus. The review process for research involving Persian Gulf illnesses is as follows: Submitted proposals are reviewed for scientific merit by an external scientific agency [for example, the American Institute of Biological Science (AIBS)]. A DoD committee forwards acceptable proposals to the Persian Gulf Veterans Research Working Group (PGRWG), where representatives of the Departments of Veterans Affairs (VA) and Health and Human Services (HHS) have an opportunity to comment on the relevancy of the research proposals. The Persian Gulf Veterans Research Working Group forwards the proposals to the Persian Gulf Veterans Coordinating Board. The Persian Gulf Veterans Coordinating Board forwards the recommended selection list to

<sup>1</sup> Report of the Defense Science Board Task Force on Persian Gulf War Health Effects, June 1994.

<sup>2</sup> National Institutes of Health Technology Assessment Workshop Statement, The Persian Gulf Experience and Health, Final Statement 06/22/94.

<sup>3</sup> Health Consequence of Service During the Persian Gulf War: Initial Findings and Recommendations for Immediate Action, Committee to Review the Health Consequences of Service During the Persian Gulf War, Medical Follow-Up Agency, Institute of Medicine.

the Armed Services Biomedical Research, Evaluation and Management (ASBREM) Executive Steering Committee for approval. Additionally, funded studies will be available for review by the Medical Follow-Up Committee of the Institute of Medicine.

Mr. Edwards: While you have discussed many fruitful avenues for research relating to Gulf War service, is there agreement among you and other panel members on what are the two or three most important research projects underway or under development? What is your view on which are most important? What are the timelines on those projects?

Dr. Joseph: The research efforts of the Departments of Defense, Veterans Affairs and Health and Human Services related to the health of Persian Gulf veterans are closely coordinated to avoid duplication and ensure the most efficient and effective approach is taken to address the various research questions. The Persian Gulf Research Working Group was established pursuant to the Persian Gulf War Veterans' Health Status Act (Title VII, Public Law 102-585) and coordinates all research activities undertaken or funded by the Executive Branch on health consequences of military service in the Persian Gulf theater of operations. Prioritization of research questions is done by the Research Working Group. Initially, the most important studies are the large epidemiologic surveys which will help establish whether Persian Gulf veterans are at higher risk for illnesses than non-Gulf war veterans. The status of individual research activities, as well as their purpose, responsible agency, and results to date, is submitted annually by the VA to Congress in the Research Activity Report. The most recent report was submitted in March 1995.

Mr. Edwards: The IOM report cites the need for research across a spectrum of subjects ranging from lead to leishmaniasis, without any differentiation as to the relative priority to be assigned such research areas. Could the IOM report have been more helpful in this area?

Dr. Joseph: We are satisfied with the professional relationship we have established with the Committee to Review the Health Consequences of Service During the Persian Gulf War, Medical Follow-Up Agency, Institute of Medicine. DoD will continue to work with the Departments of Veterans Affairs and Health & Human Services, through the Persian Gulf Veterans Coordinating Board, to prioritize medical research needs.

Mr. Edwards: In its testimony, the American Legion suggested that until recently veterans with medical problems were being told, "we know you are sick, we don't know what you have, but you did not get it in the Persian Gulf," and that now the explanation they're getting is, "we know you are sick, here is what you have, and you would have gotten this whether or not you went to the Persian Gulf." Are those messages coming from the VA or DoD?

Dr. Joseph: This statement is not consistent with DoD's communications to Persian Gulf Veterans. While many Persian Gulf veterans who have been evaluated as part of DoD's Comprehensive Clinical Evaluation Program (CCEP) have conventional, diagnosable medical problems, preliminary findings indicate that "the results of the CCEP remain consistent with the conclusions of the National Institute of Health Technology Assessment Workshop Panel that illnesses reported by Persian Gulf veterans are not a single disease or apparent syndrome, but rather multiple illnesses with overlapping symptoms and causes." This should not be interpreted to mean that DoD has determined that all the illnesses of Persian Gulf veterans would have occurred whether or not they served in the Gulf.

Mr. Tejeda: I have heard from several Persian Gulf War (PGW) veterans in San Antonio regarding birth defects of children born since returning from the Gulf. In your testimony, you mentioned a VA/DoD epidemiological study of the offspring of PGW veterans. Does the VA or the DoD intend to conduct additional research? What is the DoD doing to assist these children with their numerous medical problems and associated medical bills.

Dr. Joseph: To date, there is no scientific evidence to support the assertion that service in the Persian Gulf War is responsible for birth defects. Several small studies have investigated the association between adverse birth outcomes and the Persian Gulf deployment, none of the studies, thus far, has found an increased risk resulting from the deployment. However, the Department is acutely aware of how important it is to protect our troops from potential reproductive hazards. As a result, we are sponsoring several large epidemiological studies designed to evaluate a number of possible health consequences, including birth outcomes. Results from some of these studies are expected by the end of 1995. Concerning the last question, DoD provides high quality medical care to all its beneficiaries.

Mr. Tejeda: In your testimony you mentioned the Department of Defense's Comprehensive Clinical Evaluation Program (CCEP) which has evaluated more than 4,600 military personnel that served in the Gulf and their dependents. You stated that the program makes medical care of Persian Gulf veterans and their family members a high priority. Do the services follow up with appropriate medical care if undiagnosed problems are found during the CCEP evaluations? I have heard of conflicting reports regarding follow-up medical care after the CCEP evaluations. Are you planning to expand the number evaluated beyond the 4,674 mentioned in your testimony? How are individuals chosen from the 15,000 that have enrolled in the CCEP?

Dr. Joseph: DoD beneficiaries receive treatment for their diagnoses following the CCEP evaluation. The lack of a well-defined diagnosis often does not prevent the patient from being treated symptomatically. Additionally, Specialized Care Centers (SCCs) were especially created for individuals who may require further evaluation and treatment following completion of the CCEP. The 4,674 CCEP participants mentioned in the testimony were those individuals who had completed the evaluation as of the hearing date. The CCEP currently has over 16,000 enrolled in the Program and anticipates completing over 10,000 evaluations by the end of the summer. We will not discontinue conducting comprehensive evaluations until we reach 100%. Military health care beneficiaries who are experiencing health problems possibly related to the Persian Gulf War are encouraged to participate in the CCEP (either by contacting their local military treatment facility or calling the "Hotline"). Participants are totally self-selected.

Mr. Tejeda: In your testimony, you mentioned Specialized Care Centers located in Washington, DC, and San Antonio, TX. You stated the Centers offer the full array of specialty evaluations and coordinated, patient centered-care for referred Persian Gulf Veterans and their family members.

I understand that the Roles and Missions Commission is considering three options with regard to DoD hospitals and that a Joint Service Group on hospitals has made recommendations to each of the Services regarding its hospitals. What is the Department of Defense planning to do about reducing

the number of hospitals it operates, particularly in cities with a very large active duty and retired population such as San Antonio?

Dr. Joseph: The consolidation of services for the treatment of our Persian Gulf patients is very different from the issue of consolidating services to avoid duplication of efforts among our military treatment facilities (MTF). In regard to Specialized Care Centers for the treatment of Persian Gulf veterans and their family members: we are planning to refer those identified in our CCEP program as needing further evaluation. Many of our MTFs do not have the level of expertise nor the availability of services to conduct the intense process required by this small group of patients. It is both pragmatic and scientifically sound to develop these centers of expertise.

On the other subject, we have actively been working to reduce our infrastructure and consolidate duplicative services. Assuming all 1995 base realignment and closure (BRAC) and other Defense Health Program programming actions are implemented, since 1988, the Department will have reduced our infrastructure by 59 hospitals and 12,000 beds throughout the world. This represents a 35 percent reduction in hospitals and a 42 percent reduction in bed capacity. We have closed 17 overseas facilities, and closed or realigned 42 inpatient facilities within CONUS. Twenty-five of the inpatient facilities occurred because of BRAC 88, 91, and 93.

My staff, the Surgeons General, and the Lead Agents are actively evaluating whether there is excess capacity still in our system, and the outcome will be reflected in our programming process. In addition, we have implemented a number of management incentives such as capitation budgeting and MTF transfer payments for referral care that I believe will lead to more effective and efficient use of scarce medical resources, and more opportunities for rightsizing our medical infrastructure.

During BRAC 1995, the Medical Joint Cross Service Group incorporated overlapping catchment areas in the overall analysis of the MHSS infrastructure. The group aggressively sought out opportunities for consolidation of inpatient services. 38% of the alternatives were generated based on the evaluation of potential mergers across the Services. This included the San Antonio, Texas area.

In San Antonio we are currently developing a plan for consolidating health services throughout DoD Health Services Region VI. One aspect of this is the integration of Wilford Hall USAF Medical Center and Brooke Army Medical Center. Elimination of duplication of graduate medical education programs between these two facilities is already underway.

Mr. Tejada: How many persons have been referred to the Specialized Care Centers in Washington DC, and San Antonio? How does a service member or dependent get transferred to the centers?

Dr. Joseph: As of April 15, 1995, a total of twenty-one individuals have been referred to or are in the process of being referred to Specialized Care Centers (SCCs) for further evaluation. Factors which influence the physician's decision to refer a patient to the SCC includes the severity of the patient's medical condition, degree of disability, prognosis for functional rehabilitation, and the patient's willingness to participate in the program.

Mr. Tejada: This Committee heard considerable testimony during the last Congress in support of construction of an environmental medical unit to research low level chemical sensitivity. This issue was first brought

to the Committee's attention by Dr. Claudia Miller, a highly respected scientist from the University of Texas Health Science Center. Congress authorized and appropriated DoD funding including one from Dr. Miller.

Despite the project's importance to Persian Gulf research, the DoD has yet to fund the grant -- Dr. Miller's proposal was apparently rejected because it called for construction funds, which was Congress's intent. Would you please look for a way to fund this project (as opposed to reasons not to fund it) as part of the new initiatives you will be pursuing in FY-95.

Dr. Joseph: In FY95, a DoD solicitation for research, involving the study of Persian Gulf War veterans' illnesses, will include a call for research proposals on chemical sensitivity. Dr. Miller may submit her proposal(s) in response to that solicitation. All proposals will be peer-reviewed by independent panels of scientific experts with awards competitively based on scientific merit and program relevance.

Mr. Tejada: In January, the Institutes of Medicine (IOM) recommended several areas on which the VA and DoD should conduct research. Have the DoD and the VA addressed the IOM's recommendations?

Dr. Joseph: Yes. Attached is a copy of the Persian Gulf Veterans Coordinating Board's responses to each of the Institute of Medicine recommendations as a result of their January report.

Chairman Hutchinson to Centers for Disease Control and Prevention

Question 1

Is there consensus among you and other members of the panel on how precisely peer-review should occur in decision making on Persian Gulf research? Who should conduct or manage that peer review? What should be the precise role of the Coordinating Board with respect to determining the scientific merit of proposed research initiatives?

Answer

Although there are slight differences in the manner in which peer review is accomplished within the Departments of Veterans Affairs (VA), Defense (DOD), and Health and Human Services (HHS), all three agencies take peer review of research proposals very seriously. The essential element is the use of non-government scientific peers who have no conflict of interest to provide guidance in indicating relative value of research proposals.

Pursuant to Public Law 102-585, the President designated the Secretary of Veterans' Affairs to coordinate federally funded research into the health effects of the Persian Gulf War. In further response to this law, the Persian Gulf Interagency Research Coordinating Council, chaired by VA, was established to coordinate all research activities undertaken or funded by the Executive Branch on the health consequences of military service in the Persian Gulf theater of operations. In January 1994, the Persian Gulf Veterans Coordinating Board, chaired by the secretaries of the VA, DOD, and HHS, was established to ensure interagency coordination of all efforts related to research, clinical care, and disability/compensation for illnesses associated with military service during the Persian Gulf War. The Persian Gulf Interagency Research Coordinating Council now serves as the Research Working Group of the Persian Gulf Veterans Coordinating Board.

The Research Working Group is developing an overall research strategy, the Strategic Plan for Research on Persian Gulf Veterans' Illnesses, which will guide funding of approved research proposals. This research plan will identify gaps in knowledge that may exist now as well as gaps in knowledge expected after completion of research currently underway. Research priorities have been identified based on the findings of several review panels investigating illnesses among Persian Gulf War veterans. These review panels include the Defense Science Board Task Force on Gulf War Health Effects, the National Institutes of Health Technology Assessment Workshop on Persian Gulf Experience and Health, and the National Academy of Sciences/Institute of Medicine/Medical Follow-up Agency review of the Health Consequences of Service During the Persian Gulf War. It is planned that research proposals found to be acceptable through peer review will be prioritized for funding based on criteria specified in the Strategic Research Plan.

Peer review or oversight of ongoing investigations is also important. For example, in the study being conducted on Persian Gulf War veterans from Iowa, an external scientific committee composed of distinguished scientists in the areas of epidemiology, biostatistics, reproductive health, infectious disease, occupational medicine, psychiatry, and survey design have been asked to provide scientific oversight of study methods and survey instruments. In addition, a Public Advisory Committee has been formed consisting of Persian Gulf War veterans, representatives from Persian Gulf War veterans' support groups, and representatives of veterans service organizations (i.e., American Legion, Disabled American Veterans, Veterans of

Foreign Wars, AMVETS) to ensure that community members who have expressed a strong interest in the health concerns of Persian Gulf War veterans are represented.

#### Question 2

While you have discussed many fruitful avenues for research relating to Gulf War service, is there agreement among you and other panel members on what are the two or three most important research projects underway or under development? What is your view on which are most important? What are the time lines on those projects?

#### Answer

There are many important components to the research strategy being mapped out by VA, DOD, HHS, and EPA through the Persian Gulf Veterans Coordinating Board. The absence of any piece will leave a gap in knowledge about the puzzle as a whole. The most important research goal at this point is to establish the prevalence of adverse health outcomes among a representative sample of Persian Gulf War veterans and their families compared to an appropriate comparison population.

A number of epidemiologic studies are underway, some dealing with random samples of the entire Persian Gulf veteran population and others looking at either geographic or organizational subsets of that population. Because of the complexity of the issues and the large number of questions that have to be pursued, it will be the collection of results from all of these studies that will be most helpful. Most of these studies are approximately one and one-half years from completion.

#### Question 3

The IOM report appears rather negative regarding the value, in connection with Persian Gulf issues, of further "cluster" or "hot pursuit" studies of the kind CDC conducts. Would you comment? Don't such studies have important public health benefits -- alleviating fears, for example?

#### Answer

The public is increasingly demanding answers regarding possible associations between disease and environmental exposures. One method used by the public health community to address these concerns is the "outbreak" or "disease cluster" investigation. These are methods designed to detect excess disease events that occur near one another geographically (space), temporally (time), or simultaneously in space in time. Apparent clusters of health events are often reported to State and local health agencies by concerned citizens or groups. The Centers for Disease Control and Prevention (CDC) has taken a very active role in assisting health agencies in dealing with apparent clusters of disease, typically in the form of acute infectious disease outbreaks, but increasingly in the evaluation of apparent clusters of noncommunicable diseases and injuries.

Cluster investigations are often controversial due to their inherent scientific limitations. They typically yield negative results or are unable to establish a definitive cause-and-effect relationship between a health event and an exposure. In some investigations, it may be difficult to clearly define a "case" or further investigation may reveal that a "cluster" actually represents a mixture of different

syndromes. Frequently, no exposure or potential cause is obvious, or there may be many possible causes identified. Finally, identification of a cluster may require the availability of preexisting data on the expected incidence and prevalence of health outcomes. However, wide-spread surveillance of "background rates" of disease is often unavailable.

Despite these limitations, cluster investigations are often useful for generating hypotheses and have been associated with a number of scientific breakthroughs in disease control. Well-known examples include the investigation of cases of pneumonia at the Bellevue-Stratford Hotel in Philadelphia in 1977 leading to the identification of Legionnaires' disease, and the investigation of cases of Pneumocystis carinii pneumonia among young, homosexual men in Los Angeles in 1981 leading to the identification of Acquired Immune Deficiency Syndrome (AIDS).

In addition, cluster investigations often have important public health benefits and it has been suggested that they may be best viewed as a form of public health surveillance (i.e., the ongoing collection, analysis, and dissemination of information important to public health practice) that responds to community needs. Cluster investigations should not be viewed as the primary mechanism for investigating relationships between exposures and outcomes, but rather as a method for identifying patterns of data. Thus, a cluster investigation can be an important tool for screening reported health problems from small groups of individuals to identify those requiring further follow-up. In many instances, when cluster reports become frequent, a more extensive study is the preferred scientific methodology.

It is essential that health officials be responsive to the perception of exposure-disease relationships held by the community. Despite their limitations, cluster investigations are one method for the health community to respond to public concern in a timely fashion, a goal which is not as easily attained with more rigorous scientific investigations, such as long-term follow-up studies. In addition, by being responsive to the community, cluster investigations create the opportunity to educate the public about disease risk.

The Institute of Medicine (IOM) report on the Health Consequences of Service During the Persian Gulf War cited the limitations of cluster investigations and discouraged further use of this methodology. However, due to the lack of information on the prevalence of illnesses among a representative sample of Persian Gulf War veterans and the immense amount of community concern and media attention focused on adverse health outcomes among Persian Gulf War veterans, it would be unwise to rule out use of particular epidemiologic methods at this point. We agree with the IOM report that proposals for future studies (regardless of the methodology) should be scrutinized carefully. If cluster investigations are pursued in the future, they should be conducted in as scientifically rigorous a method as possible with emphasis placed on the collection of control data with sample sizes that allow for adequate statistical power.

Responses from Dr. Richard Miller  
Director, Medical Follow-up Agency

To Congressman Chet Edwards, Ranking Member  
Subcommittee on Hospitals and Health Care,  
House Committee on Veterans' Affairs

1. Is there consensus among you and other members of the panel on how precisely peer-review should occur in decisionmaking on Persian Gulf research? Who should conduct or manage that peer review? What should be the precise role of the Coordinating Board with respect to determining the scientific merit of proposed research initiatives?

This has not been formally discussed among panel members. The IOM committee has recommended peer review, but the federal agencies, if they accept the recommendations, decide on the plan. The IOM committee has suggested that independent review of research activities should be conducted. There are established mechanisms for reviewing scientific protocols, and these methods should be used. The Persian Gulf Veterans Coordinating Board should seek outside, non-government scientific peer review of research initiatives, as is done with other scientific protocols submitted for funding.

2. While you have discussed many fruitful avenues for research relating to Gulf War service, is there agreement among you and other panel members on what are the two or three most important research projects underway or under development? What is your view on which are most important? What are the timelines on those projects?

The IOM committee has not prioritized research projects and because of the independent nature of the National Academy of Sciences, they have not discussed priorities with federal agencies, but rather, made overall research recommendations. I am not in the position to comment on the most important projects or the project timelines, because I am not fully informed on the status of all of them.

3. The IOM Committee's initial report, published in January, reflects its findings and recommendations as of last September, as I understand it. Have there been developments over the months since its publication that, in your view, merit mention or would alter the positions expressed in the Committee's report?

Yes. As mentioned in my written testimony, the IOM committee met with members of the Persian Gulf Veterans Coordinating Board Research Working Group in January to discuss the individual recommendations in the report. The committee is optimistic that coordination efforts have been somewhat improved and that individual recommendations are being addressed. The committee will revisit these issues as they continue deliberations.

