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GULF WAR VETERANS' ILLNESSES: VA, DOD CONTINUE TO RESIST STRONG EVIDENCE LINKING TOXIC CAUSES TO CHRONIC HEALTH EFFECTS

SECOND REPORT

BY THE

COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT

together with

ADDITIONAL VIEWS

NOVEMBER 7, 1997.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

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LETTER OF TRANSMITTAL

HOUSE OF REPRESENTATIVES,
Washington, DC, November 7, 1997.

Hon. NEWT GINGRICH,
Speaker of the House of Representatives,
Washington, DC.

DEAR MR. SPEAKER: By direction of the Committee on Government Reform and Oversight, I submit herewith the committee's second report to the 105th Congress. The committee's report is based on a study conducted by its Subcommittee on Human Resources.

DAN BURTON,
Chairman.

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Union Calendar No. 228

105TH CONGRESS *1st Session* } HOUSE OF REPRESENTATIVES { REPORT 105–388

GULF WAR VETERANS' ILLNESSES: VA, DOD CONTINUE TO RESIST STRONG EVIDENCE LINKING TOXIC CAUSES TO CHRONIC HEALTH EFFECTS

NOVEMBER 7, 1997.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. BURTON of Indiana, from the Committee on Government Reform and Oversight, submitted the following

SECOND REPORT

On October 31, 1997, the Committee on Government Reform and Oversight approved and adopted a report entitled "Gulf War Veterans' Illnesses: VA, DOD Continue to Resist Strong Evidence Linking Toxic Causes to Chronic Health Effects." The chairman was directed to transmit a copy to the Speaker of the House.

I. SUMMARY

Responding to requests by veterans, the subcommittee in March 1996 initiated a far-reaching oversight investigation into the status of efforts to understand the clusters of symptoms and debilitating maladies known collectively as "Gulf War Syndrome." We sought to ensure sick Gulf War veterans were being diagnosed accurately, treated effectively and compensated fairly for service-connected disabilities, despite official denials and scientific uncertainty regarding the exact causes of their ailments. We also sought to determine whether the Gulf War research agenda was properly focused on the most likely, not just the most convenient, hypotheses to explain Gulf War veterans' illnesses.

After 19 months of investigation and hearings, the subcommittee finds the status of efforts on Gulf War issues by the Department of Veterans Affairs [VA], the Department of Defense [DOD], the Central Intelligence Agency [CIA] and the Food and Drug Administration [FDA] to be irreparably flawed. We find those efforts hobbled by institutional inertia that mistakes motion for progress. We find those efforts plagued by arrogant incuriosity and a pervasive

myopia that sees a lack of evidence as proof. As a result, we find current approaches to research, diagnosis and treatment unlikely to yield answers to veterans' life-or-death questions in the foreseeable, or even far distant, future.

We do not come to these conclusions lightly. Nor do we discount all that has been done to care for, cure and compensate Gulf War veterans. But lives have been lost, and many more lives are at stake.

Six years and hundreds of millions of dollars have been spent in the effort to determine the causes of the illnesses besetting Gulf War veterans. Yet, when asked what progress has been made healing sick Gulf War veterans, VA and DOD can't say where they've been and concede they may never get where they're supposed to be going. The CIA continues to resist broader declassification of Gulf War records. The FDA meekly chastises the Defense Department for the failure to observe agreed-upon rules for the humane use of experimental drugs.

Sadly, when it comes to diagnosis, treatment and research for Gulf War veterans, we find the Federal Government too often has a tin ear, a cold heart and a closed mind.

Our hearings convinced us the journey from cause to cure for Gulf War veterans runs through the pools, clouds and plumes of toxins in which they lived and fought. It is a journey VA and DOD might never have taken but for persistent pressure from this subcommittee, and other House and Senate panels, that forced the Pentagon to acknowledge a "watershed event"—the probable exposure of United States troops to chemical weapons fallout at Khamisiyah, Iraq.

With that first admission, the three pillars of Government denial—no credible detections, no exposures, no health effects—began to crumble. As the number of U.S. troops presumed exposed grew from 400 to almost 100,000, as the credibility of other chemical detections was sustained, and as private research probed the parallels between Gulf War illnesses and the known symptoms of chemical poisoning, some significant role for toxins in causing, triggering or amplifying neurological damage and chronic symptoms could no longer be denied.

Before Khamisiyah, voluminous and compelling, albeit circumstantial, evidence regarding neurotoxic exposures had been ignored, denied or discredited, while far less abundant evidence and far less plausible psychological theories of causation were pursued with vigor. As a result, diagnostic protocols were insensitive to exposure effects, treatments were limited and vital research was delayed.

Only recently were VA and DOD health registry questionnaires modified to consistently capture the best and only remaining evidence of toxic exposures: veterans' recollections. Only recently was research funded to measure the health effects of sustained, low-dose exposure to the combinations of chemicals, pharmaceuticals and environmental toxins to which Gulf War veterans were exposed.

Those denials and delays are symptomatic of a system content to presume the Gulf War produced no delayed casualties, and determined to shift the burden of proof onto sick veterans to overcome

that presumption. That task has been made difficult, if not impossible, because most of the medical records needed to prove toxic causation are missing or destroyed. Nevertheless, VA and DOD insist upon reaping the benefit of any doubts created by the absence of those records.

The subcommittee believes the current presumptions about neurotoxic causes and effects should be reversed and the benefit of any doubt should inure to the sick veteran.

Finally, we reluctantly conclude that responsibility for Gulf War illnesses, especially the research agenda, must be placed in a more responsive agency, independent of the DOD and the VA.

Fortunately for Gulf War veterans, excellent research into Gulf War illnesses has taken place outside Government sponsorship. This research has advanced a case definition for some illnesses, an important step toward improved diagnosis and treatment. Some experimental treatments have brought relief to afflicted veterans and their families. The subcommittee believes this work must be included within the scope of that agency made responsible for Federal efforts to solve the puzzle of Gulf War illnesses.

We note with approval efforts at the National Institute of Environmental Health Sciences [NIEHS] and other public health agencies to study exposure effects and genetic susceptibility to environmental toxins. Funding for this research would be an important first step in the effort to have an independent agency, with significant expertise in environmental hazards, involved in the solution to Gulf War veterans' health problems.

There is no "silver bullet" to explain or cure so-called Gulf War Syndrome, which is not a discrete syndrome at all, but a variable cluster of symptoms and disease states with different triggers and susceptibilities. The battle to cure Gulf War illnesses must be fought at the cellular, molecular and genetic levels if we hope to heal the delayed wounds of that war and protect future warriors. Absent precise exposure data which can never be recaptured, the best evidence linking toxic causes to chronic effects lies within the bodies and minds of Gulf War veterans. That evidence has been too long ignored.

A. FINDINGS IN BRIEF

Diagnosis

1. VA and DOD did not listen to sick Gulf War veterans as to possible causes of their illnesses.

2. The presence of a variety of toxic agents in the Gulf War theater strongly suggests exposures have a role in causing, triggering or amplifying subsequent service-connected illnesses.

3. Gulf War troops were not trained to protect themselves from the effects of exposure to depleted uranium dust and particles.

4. Pyridostigmine bromide [PB] can have serious side effects and interactions when taken in combination with other drugs, vaccines, chemical exposures, heat and/or physical exercise.

5. VA and DOD health registry diagnostic protocols relied on the unfounded conclusion there were no chemical, biological or other toxic exposures to U.S. troops in the Gulf War theater.

6. VA and DOD health registry diagnosis protocols continue to be based on the unwarranted conclusion that, unless there is an immediate and acute reaction, exposures to chemical weapons and other toxins do not cause delayed or chronic symptoms.

7. Prematurely ruling out toxic exposures as causative, VA and DOD doctors relied on diagnoses of somatoform disorder and Post Traumatic Stress Disorder [PTSD] to explain Gulf War veterans' illnesses.

8. There is no credible evidence that stress or PTSD causes the illnesses reported by many Gulf War veterans.

9. Accurate diagnosis of veterans' illnesses remains difficult due to inadequate or missing personal medical records, missing toxic detection logs, and unreleased classified documents.

10. Accurate diagnosis of veterans illnesses was also hampered by the VA's lack of medical expertise in toxicology and environmental medicine.

11. Exposures to low levels of chemical warfare agents and other toxins can cause delayed, chronic health effects.

Treatment

12. Neither the VA nor the DOD has systematically attempted to determine whether sick Gulf War veterans are any better or worse today than when they first reported symptoms.

13. Treatment of sick Gulf War veterans by VA and DOD to date has largely focused on stress and PTSD.

Compensation

14. Compensation ratings for sick veterans are minimized due to inadequate personal medical records, missing toxic detection logs, and unreleased classified documents which could help veterans establish service-connection of post-war disabilities.

15. Compensation ratings are also minimized by over-reliance on somatoform disorder and PTSD as the basis of disability claims.

Research

16. Federal research strategy has been blind to promising hypotheses due to reliance on unfounded DOD conclusions regarding chemical exposures.

17. Institutional and methodological constraints make it unlikely the current research structure will find the causes and effective treatments for Gulf War veterans' illnesses in the short term.

18. The FDA was passive in granting and failing to enforce the conditions of a waiver to permit use of PB by DOD.

B. RECOMMENDATIONS IN BRIEF

Diagnosis

1. Congress should enact a Gulf War toxic exposure act establishing the presumption, as a matter of law, that veterans were exposed to hazardous materials known to have been present in the war theater.

2. The VA should contract with an independent scientific body composed of non-Government scientific experts representing, at a minimum, the disciplines of toxicology, immunology, microbiology,

molecular biology, genetics, biochemistry, chemistry, epidemiology, medicine and public health for the purpose of identifying those diseases and illnesses associated in peer-reviewed literature with singular, sustained, or combined exposures to the hazardous materials to which Gulf War veterans are presumed to have been exposed.

3. The VA Gulf War Registry and the DOD Comprehensive Clinical Evaluation Program should be re-evaluated by an independent scientific body which shall make specific recommendations to change both programs from crude research tools into effective clinical diagnosis and outcomes monitoring efforts.

4. The VA should refer all Phase II Registry examinations to Gulf War Referral Centers.

5. The VA should add toxicological and environmental medicine expertise to the staff resources dedicated to Gulf War illnesses.

6. DOD and VA should make every effort to find, and where necessary re-create through veterans' testimony, individual Gulf War medical records to reflect vaccines administered, PB use, and exposure to DU, pesticides and other hazardous materials.

7. The President should order an intensified effort to declassify Gulf War documents in any way related to Gulf War veterans' illnesses and should personally certify to the appropriate committees of Congress when he deems declassification of such documents to be against the national interest.

8. DOD failure to adhere to recordkeeping requirements or clinical protocols under an informed consent waiver should result in the presumption of service-connection for any subsequent illness(es) suffered by service personnel to whom the drug or protocol was administered.

Treatment

9. VA and DOD should systematically and effectively monitor the clinical progress of Gulf War veterans to determine the most effective treatments.

10. VA and DOD clinicians should be encouraged to pursue, and be trained in, new treatment approaches to suspected neurotoxic exposure effects.

11. The diagnoses for somatoform disorders and Post Traumatic Stress Disorder [PTSD] should be refined to insure that physiological causes are not overlooked.

Compensation

12. Denials of Gulf War veterans' compensation claims attributable in any way to missing medical records should be reviewed and veterans given the benefit of any doubt regarding the presumptive role of toxic exposures in causing post-war illnesses and disability.

13. For purposes of compensation determinations, disabilities associated with presumed exposures should be deemed service-connected without any limitation as to time.

Research

14. Congress should create or designate an agency independent from the Departments of Defense and Veterans Affairs as the lead

Federal agency responsible for coordination of all research into Gulf War veterans' illnesses and allocation of all research funds.

15. The lead Federal agency on Gulf War veterans' illnesses should focus research on the evaluation and treatment of the common spectrum of neuroimmunological disorders known as Gulf War Syndrome, multiple chemical sensitivity, chronic fatigue syndrome and fibromyalgia.

16. DOD and VA medical systems should augment research and clinical capabilities with regard to women's health issues and the health effects of combat service on women's health.

17. VA, in collaboration with NIH, CDC, FDA and other public health agencies should establish an interdisciplinary research and clinical program on the identification, prevention and treatment of environmentally induced neuropathies.

18. FDA should grant a waiver of informed consent requirements for the use of experimental or investigational drugs by DOD only upon receipt of a Presidential finding of efficacy and need.

II. BACKGROUND

Since the Gulf War ended in 1991, there has been a growing number of reports of chronic illnesses among the nearly 700,000 United States troops who served in Saudi Arabia, Kuwait, and Iraq. Although the illnesses are most common among reservists and National Guardsmen who served in the Gulf, full-time active-duty soldiers have also complained about various maladies.[1]

Health complaints by Gulf veterans from Canada, Great Britain, Kuwait, Australia, Czech Republic, Hungary, New Zealand and Norway have also begun to surface. There has also been an increased incidence of similar illnesses in the civilian populations of Kuwait, Iraq, and Saudi Arabia, according to a report to the Human Resources Subcommittee by chemical/biological weapons expert Dr. Jonathan Tucker, director of the chemical and biological nonproliferation project, Monterey (CA) Institute for International Studies.[2]

Listed in the Persian Gulf health registries of the Departments of Defense [DOD] and Veterans Affairs [VA] are about 113,000 Gulf War veterans [DOD's Comprehensive Clinical Evaluation Program with 44,900 names as of August 1997, and VA's Gulf Health Registry with 67,989 names as of May 1997].[3] Most participants in the registries have been diagnosed, approximately 20 percent remained undiagnosed, and roughly 10 percent of those listed had no detectable symptoms.[4] Many veterans have reported flu-like symptoms, chronic fatigue, rashes, joint and muscular pain, headaches, mem-

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[1] *Status of Efforts to Identify Persian Gulf War Syndrome,* 104th Cong., 2d sess., p. 48 (1996) ("Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4") (statement of Major Thomas Cross, Gulf War veteran and member of the Presidential Advisory Committee on Gulf War Veterans' Illnesses).

[2] A report submitted to the subcommittee by Jonathan Tucker, "Chemical/Biological Weapons Exposure and Gulf War Illness," January 29, 1996, p. 1. [Hereinafter "Tucker Report"] (in subcommittee files).

[3] Memorandum to the subcommittee from the Department of Defense dated September 10, 1997 (in subcommittee files).

[4] Congressional Research Service Report, "Gulf War Veterans' Illnesses," 95–450 SPR, April 11, 1997, p. 2.

ory loss, reproductive problems, depression, loss of concentration, gastroin-testinal problems, and other maladies.[5]

According to American Legion: "One of the key questions that arises from evaluating [VA Health] Registry data is: What is happening to those veterans that complain of the most common symptoms? What is the outcome of their visit to the VA? Are they getting better, or are they slipping through the cracks? Our hypothesis is that these veterans who complain of the symptoms are not receiving the proper follow-up and treatment they deserve."[6]

Many Gulf War veterans are concerned that their medical problems are chronic and disabling, and are the result of exposures to one or more chemical, biological or nuclear agents present in the theater of operations. Health problems of Gulf veterans may stem not only from chemical and biological warfare agents but from other sources such as: pesticides and insect repellants; leaded diesel fuel; depleted uranium; oil well fires; infectious agents; and the anti-nerve agent drug, pyridostigmine bromide.[7]

In 11 hearings[8] since March 1996, the Human Resources Subcommittee has examined issues dealing with veterans' symptoms and complaints about the handling of their health problems by the VA, especially about inappropriate medical treatment or denial of treatment, missing or inadequate personal medical records, compensation issues, and lack of valid and timely Government research conclusions about the causes of their illnesses. The subcommittee also sought to ensure that any research programs conducted by the Departments of Defense [DOD], Health and Human Services [HHS], and the Environmental Protection Agency [EPA] were well-focused and coordinated.

The subcommittee has examined studies of effects of low level chemical exposures on humans and animals, and probable exposures of large numbers of troops to chemical warfare agents and other toxins during and after the war. Typical complaints of Gulf veterans are similar to known effects on humans who have been exposed to organophosphates, such as pesticides and other chemical agents.[9] Organophosphates are chemically related to Sarin and other warfare agents present in the Gulf War theater.

Not listening to veterans' health complaints, many military and VA doctors—often unable or unwilling to diagnose veterans' illnesses as the after-effects of possible neurotoxic exposures—have insisted veterans suffered instead from stress, or post-traumatic-stress-disorder [PTSD].[10] Many private physicians and researchers

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[5] Statement of Lennox E. Gilmer, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 95.

[6] Statement of Matt Puglisi, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 81.

[7] *Status of Efforts to Identify Persian Gulf War Syndrome: Recent GAO Findings,* 105th Cong., 1st sess., pp. 42–43 (1997) ("Human Resources Subcommittee hearings, No. 3") (statement of Donna Heivilin, GAO).

[8] Human Resources Subcommittee hearings on Gulf War illnesses in the 104th & 105th Congresses: March 11 and 28, June 25, September 19, December 10 and 11, 1996; January 21, April 24, June 24 and 26, 1997. A hearing on informed consent issues, including DOD's use of PB tabs under an informed consent waiver, was held on May 8, 1997.

[9] *Persian Gulf Veterans' Illnesses,* 104th Cong., 2d sess., p. 280 (1996) ("Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6") (statement of Charles Jackson).

[10] Statement of Kimo Hollingsworth, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 29; statement of Brian Martin, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 324; statement of Julia Dyckman,

Continued

believe DOD and VA doctors have relied too heavily on psychological theories of causation while discounting the possibility of neurotoxic exposures.[11]

The Human Resources Subcommittee has listened carefully to hundreds of Gulf War veterans who have written and called the subcommittee since hearings began in March 1996. The subcommittee has also listened to the testimony of 23 Gulf veterans who testified in the 11 hearings held.

A. LISTENING TO GULF WAR VETERANS

Among Gulf veterans testifying before the subcommittee were Steven Wood, Barry Kapplan, Chris Kornkven, Julia Dyckman, and Brian Martin, all of whom reported health complaints typical of the range of maladies often called the "Gulf War Syndrome."

Army S/Sgt. Steven Wood testified that during the first week of March 1991, he drove through ammunition storage sites destroyed by U.S. forces. Near a bombed out bunker, he inspected artillery rounds on the ground which he identified in an Army manual as chemical weapons. "Later that day," Sgt. Wood stated, "I started to get very sick with symptoms I suffer still today. I sought medical assistance that day . . . [and] . . . never once received any comprehensive, much less compassionate, treatment from the Army. I was told it was 'all in my head.'"

Transferred back to Germany following the war, his symptoms continued. In 1994, Sgt. Wood, unable to get treatment from Army doctors and unable to perform his duties, contacted a German physician. "This German doctor did more tests in 2 hours than the Army did in 5 years. When my wife and I left the [German] doctor's office, we were told that I 'had been poisoned.' These findings were immediately dismissed [by Army doctors] as being worthless since they did not come from a military doctor. Then it was stated to me by this military doctor that they did not like Gulf War veterans [complaining] with health problems."[12]

Major Barry Kapplan, a career Army pilot who had passed 15 flight physicals in the 11 years prior to deployment to the Gulf War, "began to feel increasingly ill" in April 1991 but dismissed the symptoms as related to the harsh desert environment. On May 8, he reported "violent nausea, vomiting, diarrhea attack." On May 28, now back in Germany, he was admitted to a military hospital with "cardiac arrhythmias . . . severely bleeding gums, cough with sputum production, shortness of breath, severe fatigue, diarrhea, hair loss, skin rashes/lesions, and abdominal discomfort." Military doctors diagnosed Major Kapplan with "just post traumatic stress." With severe brain, nerve, heart and gastrointestinal problems but

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Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 195; statement of Michael Donnelly, Human Resources Subcommittee hearing, No. 2, p. 40. Also correspondence from Gulf veterans (in subcommittee files).

[11] Statement of William Baumzweiger, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 500; statements attributed to Eula Bingham and Claudia Miller, NY Times, November, 21, 1996, p. B11. See also, Streich, et al., "Symptomatology of Gulf War Era Service," *Military Medicine,* Walter Reed Army Institute of Research, Bethesda, MD, March 1995.

[12] Statement of Steven Wood, Human Resources Subcommittee hearings, No. 2, pp. 49–50, 52.

still being diagnosed with "somatoform disorder," he was given a discharge by the Army "due to unemployability" in October 1995.[13]

Major Kapplan's wife Nancy, a registered nurse, testified about "the medical issues facing our family" since her husband's return from the Gulf. Her four children have suffered from continual chronic infections and one child has ". . . esophagitis, gastritis and gastroesophageal reflux disease . . . with little relief of her symptoms." Mrs. Kapplan reported that she has similar chronic symptoms since her husband came home from the war.[14]

S/Sgt. Chris Kornkven, an Army Reservist, reported, "While still in the Gulf I began experiencing symptoms that continue to this day. I had difficulty remembering significant events that happened days earlier . . . my knees and shoulders [were] especially painful . . . and fatigue stayed with me constantly." After the war, his symptoms worsened and included intestinal problems and headaches. He sought treatment in 1992 from VA doctors who—without any physical exam, testing or treatment—referred him to the mental health clinic where he was diagnosed "PTSD." [15]

"I reported blinding headaches with only offers of aspirin. I reported memory loss . . . dismissed as stress. I reported skin problems . . . and was told 'it's not cancer yet . . . come back as needed.' I reported breathing problems . . . no diagnosis. I reported intestinal problems . . . and rectal bleeding . . . dismissed [and] no follow-up. I reported joint pain . . . diagnosed as fibromyalgia . . . no treatment other than Motrin. I reported chest pains . . . and racing heart beats . . . [and] was told it was due to an abnormal heart valve . . . [which] was hereditary," a point which S/Sgt. Kornkven says "nicely avoids VA's rating guidelines." [16]

During the war, thousands of troops, including S/Sgt. Kornkven, climbed on Iraqi vehicles destroyed by depleted uranium [DU] rounds which leave a residue of dangerous radioactive dust particles when inhaled or ingested. He was tested by the VA and told he "had a higher DU count than those [troops] carrying around [DU] fragments in their bodies . . . [but] it was nothing for me to worry about." [17]

"My wife had a miscarriage in which the fetus had to be surgically removed. She has as much trouble with fatigue as I do. She was diagnosed by a private physician as having fibromyalgia. My son, who is 2 years old, has not slept a complete night since being born. He appears to have intestinal problems, his stools are very acidic, he is VERY light sensitive, and has the exact same rashes on his legs as I do." [18]

As far as the VA's emphasis on stress as a cause of Gulf veterans' illnesses is concerned, S/Sgt. Kornkven stated that while stress may play some part in his malady, he believes that ". . . veterans are subjected to much more stress by trying to navi-

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[13] Statement of Barry Kapplan, Human Resources Subcommittee hearings, Nos. 1–4, pp. 328–330, 332.

[14] Statement of Nancy Kapplan, Human Resources Subcommittee hearings, Nos. 1–4, pp. 337, 339.

[15] *Gulf War Syndrome: To Examine New Studies Suggesting Links Between Gulf Service and Higher Rates of Illnesses,* 105th Cong., 1st sess., pp. 268–269 (1997) ("Human Resources Subcommittee hearings, No. 1") (statement of Chris Kornkven).

[16] *Ibid.,* p. 271.

[17] *Ibid.,* p. 270.

[18] *Ibid.*

gate the bureaucracy of the VA, and with worrying how to cope with medical conditions that are ignored. All the while being unable to work, and wondering how to feed or house a family."[19]

Gulf War and Vietnam War veteran Reserve Navy Captain Julia Dyckman is a registered nurse who was in charge of the emergency room and the out-patient clinic of Combat Zone Fleet Hospital 15 near Al Jubayl, Saudi Arabia, an area often under SCUD missile attacks. Her unit took care of 8,211 out-patients, 697 in-patients, and 90 combat admissions. In her hearing statement, she identified the following medical conditions reported by troops in-theater and treated by her hospital personnel: respiratory problems; unexplained fevers; vomiting; diarrhea; various rashes; numerous reactions to immunizations; unexplained stomach and abdominal pains; and cardiac problems.[20]

On returning to the United States, Captain Dyckman was assigned to interview returning Gulf veterans. She stated: "Many personnel voiced concerns over long term health effects, current health conditions, and numerous pay and family situations. The Readiness Commander did not like the results of my interviews . . . interfered with my medical care . . . [and] . . . records of interviews I conducted were discarded. For most Gulf reservists, the only avenue available for medical care was civilian or possibly the VA. Some veterans were too ill to hold down a job and therefore had no medical insurance to cover civilian care."[21]

"During this time my health continued to deteriorate. I was released from active duty even though my medical problems were not resolved. I sought care at the VA [for the following]: hearing loss; bronchitis; chronic cough; hypertension; rashes; foot and joint pain; stomach ulcer; diarrhea; headaches; abdominal pain. I was diagnosed with gout (although the gout test was negative); offered Tylenol; and told, 'Nothing is wrong with you, get it through your head!'"[22]

"For over 2½ years I was shuffled from one VA clinic to another, each investigating a different body system. No coordinated treatment or diagnostic effort was ever experienced. It has been a problem with records [needed] for disability claims . . . [which were] . . . lost in the VA system. Disability and claims procedures are complicated and time consuming. In order to obtain VA treatment for Gulf illness, you have to first have a service connected illness or injury which is difficult to prove even when you were treated in-theater. Also, the VA only considers military and VA medical records for service connection, excluding expert civilian records. Additionally, they only use selected parts of records that agree with the VA and disregard any positive findings."[23]

"You might ask what it is like to be a Persian Gulf war veteran after 6 years. Each day starts with uncertainty. When you eat you are constantly sick and have intermittent diarrhea. Mobility is difficult due to swollen joints and muscle aches. Severe headaches are intermittent. Sometimes you forget what you are doing and what

[19] *Ibid.,* p. 272.
[20] Statement of Julia Dyckman, Human Resources Subcommittee hearings, Nos. 5–6, p. 192.
[21] *Ibid.,* p. 194.
[22] *Ibid.,* p. 195.
[23] *Ibid.,* pp. 196–197.

you were going to do. Pain and fatigue are constant companions. You are forced to deal with constant denials from the Pentagon that 'nothing happened' during the war. These statements confuse medical providers who then doubt your credibility. What is needed is recognition, though not coded by the CDC, that Gulf war illness is a combination of unique symptoms and outcomes. This is why specific protocols need to be run before the VA says that this illness 'doesn't exist' or is 'all in your head.'"[24]

Sgt. Brian Martin was a former member of the 37th Airborne Engineer Battalion, a unit which detonated and destroyed the Iraqi ammunition depot at Khamisiyah containing 100 bunkers and 43 warehouses. He videotaped the event and made it available to the subcommittee and television networks in the summer of 1996. Sgt. Martin testified: "On March 4th, 1991, we entered the depot area, placing explosives in and around 33 bunkers. We set time charges for detonation, then moved south 3 miles to what we considered a 'safe zone.' At no time whatsoever did we fear . . . chemical exposure. We were told . . . there were no chemicals in the area. Our commanders knew nothing about chemicals in the bunkers. Seven minutes later the destruction of Khamisiyah began."

"Witnessing these awesome explosions was a remarkable sight. The explosions blew straight into the air, then would spread at the top . . . [it was] . . . the closest thing to a nuclear mushroom we would ever see. Our excitement quickly turned to fear when 'cook offs' or fallout from the explosions began showering down on us. Several missiles landed underneath our trucks, spinning and taking off until blowing up. Men were running everywhere for cover. Giant clouds . . . were covering us. The 82d Airborne [12 miles away] asked us to stop the detonation because of 'cook-offs' penetrating their area. Our battalion moved into convoy formation and proceeded to vacate the area. Twenty miles later we found an area with no signs of 'cook-offs.'"

"For the next 3 days it rained harder than any of us had seen in the 6 months we were there. Our commanders joked about us 'putting something into the air to change the weather.' For the next 5 days it was unsafe for us to return to Khamisiyah to finish destroying the remaining 67 bunkers. The skies were dark, gray and cloudy for those 5 days."

"Since Khamisiyah, I suffer from . . . blood in vomit and stools, blurred vision, shaking and trembling . . . muscles weakening . . . chest pounding like my heart was going to explode. My symptoms were simply written off [by Army doctors] as a 'stomach viral infection of an unknown origin.' My medical conditions were ignored. In December 1991, I put in for an 'early out' from the military. I did not receive an exit exam nor did I know I was supposed to."

"I suffer from excruciatingly painful headaches, memory loss, and severe diarrhea . . . mood swings . . . I violently vomit if I smell perfumes, vapors or chemicals. I get lost and forget where I am sometimes. I am an ex-paratrooper who needs a cane and wheelchair to get around. My joints . . . swell, burn and hurt."

"Today . . . I have some clearly defined diagnoses from the VA of multiple chemical sensitivity, inflammatory bowel disease with

[24] *Ibid.,* p. 198.

scarring of the colon and stomach due to chemical exposure, temporal lobe brain damage also with scarring due to chemical exposure, Reiter's Syndrome, chronic fatigue syndrome, and tinnitus. I have abnormally high platelets around my blood cells, and recently I began testing for Lupus and Alzheimer's Disease. I am worn out all the time, yet I am an insomniac. For all of this, except [for] the chemical injuries . . . the VA rated me in 1994 at 100 percent compensation . . . then in 1996 added Permanent and Total [disability, following DOD's announcement about Khamisiyah]." [25]

Other Gulf veterans testified before the subcommittee about life-threatening illnesses such as cancers, heart and lung problems, and Amyotrophic Lateral Sclerosis [ALS].

Colonel Gilbert Roman, U.S. Army Reserve, volunteered for active duty in the Gulf War and was named Deputy Commander of the 311th Evacuation Hospital, Army Medical Service Corps. He stated [in spite of profuse nasal bleeding from pre-cancerous polyps during testimony]: "I arrived in Theater on January 6, 1991 . . . [and] . . . during official visits to strategic military cities there were frequent SCUD attacks during which I heard chemical alarms sound. When I asked if these alarms meant chemicals had been detected, I was told that the chemical alarms had malfunctioned. I [soon] became ill and was treated for nausea, headaches, vomiting, diarrhea and high temperature. Rashes I had over my body I thought were normal and expected since I spent most days in the sand, wind and sun with all the attendant fleas, flies and desert parasites. Headaches I attributed to fatigue and lack of sleep." [26]

"The symptoms . . . continued after I returned home and got progressively worse. In 1993, I registered at [a] veterans' hospital after receiving an invitation from the VA to come in for an examination if I was a Gulf veteran. They recorded all of the ailments I indicated . . . [but] . . . no treatment was offered. The VA hospital billed me for my supposed 'free examination' and they ended up attaching my next year's meager tax return." [27]

"To date, although I have now had three official examinations since 1993, I still continue to receive requests for more and more information from the VA claims office. Materials sent are never acknowledged as received, phone numbers given are not to any VA recognized exchange, and the name given for contact is not a true VA employee. Frustration . . . [I've been] in the VA 'system' 4 years with no real contact from a person; just requests for more information." [28]

"In 1996, I was hospitalized three times and treated by my private physician for a respiratory ailment. I could not walk more than 25 steps without having to stop, out of breath and fatigued. This ailment, which was life threatening, would not allow me to lie on my back to sleep as I would begin to drown . . . as my lungs

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[25] Statement of Brian Martin, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, pp. 320–322.

[26] *Status of Efforts to Identify Gulf War Syndrome: Multiple Toxic Exposures,* Human Resources Subcommittee hearing of June 26, 1997. (Statement of Gilbert Roman, p. 2) (in subcommittee files).

[27] *Ibid.,* pp. 3–4.

[28] *Ibid.,* pp. 4–5.

filled with fluid. I was forced to sit up for sleep and was constantly fatigued due to lack of sleep and no energy."[29]

"My [private] cardiologist, Dr. Peter Steele, diagnosed me as having 'cardiomyopathy with congestive heart failure.' Dr. Steele stated [in a letter]: 'What is clear is that he served in the Middle East and that he has a cardiomyopathy. I would submit that this may well be part of the Gulf War Syndrome.'"[30]

Major Michael Donnelly, USAF retired, who flew 44 combat missions during the Gulf War, often flying through plumes from bombed Iraqi munitions manufacturing and storage facilities, stated: "Upon return from the Gulf, I was reassigned to Florida . . . [where] . . . I first started to experience strange health problems. I didn't feel as strong as I once had or as coordinated . . . [and] . . . always fighting a cold or the flu. By the summer of 1995 . . . [and] . . . stationed in Texas . . . I was exposed to malathion fogging, an organophosphate pesticide used for mosquito control, while jogging in the evenings. I started to have serious health problems."

"Schetoma, or blind spots, in front of my eyes and my heart would beat irratically. Palpitations, night sweats, sleeplessness, trouble concentrating and remembering, and trouble taking a deep breath. Extremely tired much of the time. By December, I had trouble walking and experienced weakness in my right leg. In January 1996, I explained my symptoms, and mentioned I had been in the Gulf War, to a flight surgeon who immediately talked about the effects of stress. I was referred to a neurologist."

"During the first visit with the neurologist, I heard the line that I would hear throughout the whole Air Force medical system: 'There's no conclusive evidence that there's any link between service in the Gulf and any illness.'"[31]

Major Donnelly, in his 20's during the war, was diagnosed in January 1996 with ALS or "Lou Gehrig's Disease." ALS, a rare fatal disease which generally affects people between the ages of 40 to 70, is "a progressive wasting of muscles that have lost their nerve supply."[32]

DOD's Special Assistant for Gulf War Illnesses Dr. Bernard Rostker, an economist, has admitted that nine cases of ALS among Gulf veterans have been confirmed, and stated under oath that "for the population that served in the Gulf, we would expect to see roughly between 7 and 11 cases of ALS. And we're looking at nine cases of ALS."[33]

However, [in response to Dr. Rostker's claim] the director of the Cecil B. Day Laboratory for Neuromuscular Research at Massachusetts General Hospital and an ALS expert, Robert H. Brown, Jr., M.D. and Ph.D., stated in a letter to the Human Resources Subcommittee:

"The incidence of new cases of ALS is about 1/100,000 individuals in our [overall] population. Thus, it is true to say that a group of 700,000 individuals might, in the aggregate, be expected to show

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[29] *Ibid.,* p. 5.
[30] *Ibid.*
[31] Statement of Michael Donnelly, Human Resources Subcommittee hearings, No. 2, pp. 39–40.
[32] Report by the National Organization for Rare Disorders, ALS Report #57, April 1997 (in subcommittee files).
[33] Statement of Dr. Bernard Rostker, Human Resources Subcommittee hearing, No. 2, p. 100.

7 or so new cases of ALS over a year's time. However, these statements about aggregate populations must be interpreted carefully. In particular, they assume an age-spread that reflects **an entire population** [emphasis added]. If one looks at the age of onset of ALS, the mean onset age is 55 years. The number of cases showing onset **below the age of 40** [emphasis added] is probably no more than 20–25 percent or so of the total. Thus, one might expect 0.20–0.25 cases/100,000 individuals [or an estimated 1.4–1.7 cases of ALS in the 18–40 age range]. As I understand it, there are now 9 or 11 cases of ALS in the Gulf War veterans population. **This seems excessive to me** [emphasis added]."[34]

According to a study by Dr. Will Longstreth, professor of neurology at the University of Washington School of Medicine, people exposed to organophosphate compounds, such as pesticides and other chemicals, may be at twice the risk of developing ALS.[35]

Another Gulf veteran with ALS is Marine Major Randy Hebert, also a subcommittee witness, who testified that he may have been contaminated from a reported exploding chemical mine near his vehicle when the Kuwait invasion began February 24, 1991. Major Hebert stated: "I recall my right hand feeling cool and tingling"[36] as he struggled into his protective clothing and gear. After removing his mask when told it was a false alarm, he received another radio message: "Your lane is dirty, chemical mine has gone off, go to MOPP 4 [full protective equipment]." Major Hebert testified, "I now feel that [removing his mask] was a mistake." Shortly after, Major Hebert said, "he felt funny" and had trouble breathing.[37]

Returning home in May 1991, Major Hebert reported symptoms of memory loss, mood swings, vomiting, diarrhea, depression, and severe daily headaches. By the fall of 1994, he experienced uncontrollable coughing, throat muscle constriction, and atrophy in the right arm and hand. In October 1995, after more than 4 years of undiagnosed symptoms, he was finally diagnosed with ALS. "I believe the medical problems I have discussed are due to low level chemical exposure over an extended period,"[38] Major Hebert concluded.

Nick Roberts, a subcommittee witness, was a Seabee with Naval Mobile Construction Battalion 24 stationed near the Port of Al Jubayl, Saudi Arabia—an area reportedly hit by SCUDs. He stated: "On January 20, 1991, I was awakened by a loud explosion. Running to the bunker, I heard a second explosion and noticed a large fireball. I put my gas mask on. We sat there for approximately 20 minutes and then the all-clear was given. We went outside. I estimate that half of the unit returned to their tents and the other half remained outside talking."

"I was one of the men outside talking. Within just a few minutes, my arms, neck and face were stinging, my lips felt numb and I had a strange taste in my mouth, like a copper penny . . . a metallic

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[34] Letter from Robert Brown, director, Cecil B. Day Laboratory for Neuromuscular Research, Massachusetts General Hospital, to Mr. Robert Newman, subcommittee staff, September 15, 1997 (in subcommittee files).

[35] *Reuters* News Service, "Gehrig's Disease Tied to Chemicals," June 24, 1997.

[36] Statement of Randy Hebert, Human Resources and Intergovernmental Relations Subcommittee hearings, No. 5–6, p. 109.

[37] *Ibid.,* pp. 110–111.

[38] *Ibid.,* pp. 112–113.

taste. Some say a mist came over the camp . . . [it seemed] more of a fog. Chemical alarms began sounding. Alarms going off everywhere. Marines camped nearby began to yell, 'Go back to your bunkers. We have been gassed.' We were ordered to MOPP level 4. Radio transmissions were coming in, 'Confirmed gas attack. Repeat, confirmed gas attack.'"

"We were given the all-clear once again. Afterwards, many of us went to the water tank and washed ourselves down to stop the stinging. My first symptoms were redness of the skin and welts on my chest that afternoon."

Petty Officer Roberts reported that "in the days and weeks that followed my symptoms began to grow in number: rashes and small blisters, fever, night sweats, and flu-like symptoms, just to mention a few. After a month, my lymph glands were swollen and my joints hurt. Once home . . . we were turned over to the VA . . . the Navy said they were not set up to take care of our medical needs. I never got any medication from the VA, nor was I ever diagnosed by the VA."

Petty Officer Roberts reported that after 1½ years of no help from the Navy or VA, "I sought private medical help. Within 6 weeks of testing and a biopsy of my lymph gland, I was diagnosed with non-Hodgkin's lymphoma, a cancer, in stage three. I started on chemotherapy 2 days later."

"The cause of my symptoms is very obvious. I stand by my charge—as I have from the very beginning—of chemical [warfare] exposure, not to mention the overall exposure from fallout due to intensive [United States] bombing of [Iraqi] chemical and biological plants, radiation fallout from thousands of depleted uranium rounds used by the United States, exposure to vaccines and nerve gas pills, and months of breathing smoke from more than 300 oil well fires. I don't see how you can call it anything else. Gulf veterans are suffering [from] chemical poisoning."[39]

Petty Officer Roberts concluded: "By the end of 1993, [there were] 399 men out of 758 [in Battalion 24] who had been put out of the service because they were medically unfit."[40]

B. CHEMICAL DETECTIONS AND EXPOSURES

According to Gulf veterans who testified before the Human Resources Subcommittee, thousands of chemical alarms sounded and numerous chemical detections by trained U.S. chemical specialists with state-of-the-art equipment were made only to be ignored by American commanders. Czech chemical warfare experts recorded numerous detections, including detections along the Saudi border where hundreds of thousands of United States troops were massed for the invasion.

DOD has admitted that "the Czech detections were valid."[41]

In May 1994, DOD Secretary William Perry and Joint Chiefs Chairman John Shalikashvili signed a memorandum to Gulf veterans declaring: "There have been reports in the press of the possibil-

[39] Statement of Nick Roberts, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 345.

[40] *Ibid.,* p. 346.

[41] U.S. Department of Defense, Assistant Secretary of Defense (Public Affairs), News Briefing, *Czechoslovakian Chemical Report,* November 10, 1993, p. 2.

ity that some of you were exposed to chemical or biological weapons agents. There is no information, classified or unclassified, that indicates that chemical or biological weapons were used in the Persian Gulf." [42]

In October 1994, however, the Senate Banking Committee released a staff report which compiled official documents and eyewitness testimony suggesting that U.S. troops had been exposed to chemical warfare agents during the Gulf War.[43]

In March 1995, another event cast some doubt on DOD's insistence that there were no chemical or biological warfare agent exposures. In a television interview, John Deutch, then Deputy Secretary of DOD repeatedly qualified his statements regarding chemical weapons exposures in the Gulf War:

> Mr. DEUTCH. Our most thorough and careful efforts to determine whether chemical agents were used in the Gulf lead us to conclude that there was **no widespread** *use* of chemicals against U.S. troops.
>
> BRADLEY. Was there any use? Forget widespread.
>
> Mr. DEUTCH. I—I do not believe . . .
>
> BRADLEY. . . . was there any use?
>
> Mr. DEUTCH. I do not believe there was **any offensive use** of chemical agents by Iraqi military troops. There was not . . .
>
> BRADLEY. Was there any—any accidental use. Were our troops exposed in any way?
>
> Mr. DEUTCH. I do not believe that our troops were exposed **in any widespread way** to chemical . . .
>
> BRADLEY. In any narrow way? In any way?
>
> Mr. DEUTCH. The Defense Science Board did an independent study of this matter and found, in their judgment, that there was **not confirmation of chemical weapon widespread use** in the Gulf.[44] (emphasis added)

The Pentagon, after 5 years of denial that United States troops were exposed to chemical weapons, finally admitted in June 1996 that 300 to 400 soldiers were "presumed exposed" to chemical warfare agents from fallout following detonation of Iraqi munitions bunkers at Khamisiyah. The number of "presumed exposed" continued to rise rapidly and by July 1997 the Pentagon had raised the number of exposed to 98,900.[45]

In a January 1996 report to the Human Resources Subcommittee, Dr. Jonathan Tucker stated, "Considerable data [exists] suggestive of such exposures during the Gulf War. During 1993–94, the staff of the U.S. Senate Banking Committee issued three reports compiling extensive circumstantial evidence for both direct

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[42] U.S. Department of Defense, Assistant Secretary of Defense (Public Affairs), News Release No. 323–94, *Department of Defense Letter of Gulf War Veterans,* May 26, 1997.

[43] Staff Report No. 3, Senate Committee on Banking, "Chemical Warfare Agent Identification, Chemical Injuries, and Other Findings," October 7, 1994, pp. 1–24 and appendix materials (in subcommittee files).

[44] Statement made to CBS News, *60 Minutes,* March 12, 1995; also see *supra* note 2, Tucker Report, p. 5.

[45] Shenon, Philip, "Study Sharply Raises Estimate of Troops Exposed," New York Times, July 24, 1997, p. A18. See also, statement to the Presidential Advisory Committee on Gulf War Veterans' Illnesses by Bernard Rostker, Special Assistant for Gulf War Veterans's Illnesses, U.S. Department of Defense, July 29 and July 30, 1997.

and indirect exposures to U.S. troops to CBW [Chemical/Biological Warfare] agents during the war. In addition, a workshop sponsored by the National Institutes of Health [NIH] in April 1994 found that despite the lack of hard evidence, the possibility of CBW exposures should not be ruled out prematurely. The NIH report concluded, 'Until it can be unequivocally established that chemical and/or biological weapons were not used and that troops were not exposed to plumes of destroyed stockpiles, the possibility remains that some symptoms are chronic manifestations of such exposure.'"[46]

Dr. Tucker pointed out that in the last few years considerable information in the public domain—including press accounts, interviews, declassified Government documents under the Freedom of Information Act or posted on GulfLink[47] —presents a variety of evidence indicating Coalition troops were exposed to low levels of chemical warfare agents. He stated that while these exposures had no influence on the war's outcome, "they appear to have resulted in delayed health problems in many of the exposed troops." In addition to "affected United States troops, Gulf War illness has been reported among Australian, British, Canadian, Czech, Hungarian, Kuwaiti, New Zealander, and Norwegian veterans."

Chemical detections during the war were also reported by French and Czech forces, Dr. Tucker stated. Among detections by the French were nerve and mustard vapors near King Khalid Military City during the air bombing campaign. Among the Czech detections were some along the Saudi border where hundreds of thousands of United States ground troops were massed for the invasion of Iraq.

According to a General Accounting Office [GAO] report, "It is important to note that detections of the nerve agent Sarin occurred on January 19, 1991, and of mustard gas on January 24, 1991, by Coalition partners from Czechoslovakia in areas near Hafir al Batin. DOD has verified the reliability of the Czech equipment **but has never identified the source** [emphasis added] of these detections, although both DOD and CIA have deemed the detections credible. One cannot rule out the possibility that these detections were the result of fallout from Coalition bombing."[48]

A recent NY Times report, following an interview in Prague with Defense officials and Gulf War veterans, stated: "Czech detection teams patrolling the northern Saudi Arabian desert in January 1991 were convinced that nerve gas detected in the early days of the war had been released from Iraqi chemical plants bombed by the United States."

"Yet despite the reputation of Czech soldiers and their chemical equipment for reliability, combat logs compiled by officers working for Gen. Norman Schwarzkopf show that American commanders ignored Czech warnings that low levels of nerve and mustard gas had been detected in the vicinity of American troops," The Times reported. "Czech soldiers recalled that even as they hurriedly pulled on their gas masks and rubberized chemical warfare suits

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[46] See *supra* note 2, pp. 4–5, citing National Institutes of Health, Office of the Director, *Persian Gulf Experience and Health: Technology Assessment Workshop Statement, April 27–29, 1994* (Bethesda, MD, National Institutes of Health), p. 12.

[47] GulfLINK is the Internet website maintained by the Department of Defense containing information on Gulf War issues. It can be found at URL http://www.dtic.dla.mil.gulflink/.

[48] U.S. General Accounting Office, "Gulf War Illnesses," GAO/NSIAD–97–163, June 1997, p. 63.

after detecting chemical agents in the northern Saudi desert, the Americans who were stationed only several hundred feet away remained unprotected."[49]

According to the Tucker Report, "Although DOD officials insist that all chemical agent detections by United States forces in the Gulf were false, they have reluctantly admitted that detections by Czech chemical defense detachments operating under contract to the Saudi government appear to have been authentic."[50]

"In addition to chemical alarms not associated with any obvious military activity, which were presumably triggered by chemical fallout from the bombing campaign," Dr. Tucker stated, "many sick Gulf War veterans describe incidents in which they believe they were directly exposed to a chemical attack. Although most of these accounts are based exclusively on eyewitness testimony, in some cases the veterans' accounts have been corroborated by the available documentary record. A number of direct chemical exposures reported by veterans were associated with attacks by Iraqi SCUD or Frog ballistic missiles."[51]

One such exposure cited by Dr. Tucker included the statement: "Testifying in March 1994 before a subcommittee of the House Armed Services Committee, Sgt. George Vaughn . . . described a SCUD attack . . . in which he claimed he was exposed to some toxic chemical. During an alert, Vaughn experienced a problem with sealing his gas mask and the lens fogged up . . . but in the heat of the moment . . . [he] took the mask off his head. He immediately experienced a bitter almond taste and began choking. Within a day or two, Vaughn and three other members of his unit began to experience nausea, diarrhea, and severe fatigue. The gastrointestinal symptoms persisted after the four men returned from the Gulf. All four also developed fatty skin tumors called angiolipomas, which were surgically removed but have grown back repeatedly. Vaughn testified that the tumors have caused numbness in his arms and limited his motor skills."[52]

Among numerous detection devices and equipment used in the war by U.S. forces were M8A1 detector/alarms and the FOX detection vehicles. The Tucker report states that each of the nearly 14,000 M8A1 alarms deployed in the war went off an average of two or three times a day.[53]

"The alarms went off so frequently, day and night, that some commanders ordered their troops to disregard or even disable them because no obvious symptoms of nerve-agent poisoning had been observed. DOD officials contend that every one of the tens of thousands of chemical agent alerts during the Gulf War was a false alarm,"[54] Dr. Tucker reported.

The most sophisticated CW agent detection system deployed in the Gulf was the German-made FOX Nuclear/Biological/Chemical [NBC] Reconnaissance Vehicle, an air-tight detector vehicle de-

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[49] Shenon, Philip, "Czechs Say They Warned U.S. of Chemical Weapons in Gulf," New York Times, October 19, 1996, p. A1.
[50] See *supra* note 2, Tucker Report, p. 18.
[51] *Ibid.,* p. 23.
[52] *Ibid.,* p. 23–24.
[53] *Ibid.,* p. 16.
[54] *Ibid.*

signed to detect chemical contamination on the ground so that advancing troops can avoid those areas. It carries a crew of four.

Two detection experts in the Gulf War, Army Major Michael Johnson and Marine Gy/Sgt. George Grass, appeared before the Human Resources and Intergovernmental Relations Subcommittee on December 10, 1996. Though still on active duty, they agreed to testify despite concerns about their military careers.

Major Johnson was commander of a FOX troop of detection vehicles. In testimony before the Human Resources Subcommittee, he stated: "On 7 August 1991, the 54th Chemical Troop received the task of confirming the presence of a suspect liquid chemical agent at the Sabahiyah High School for Girls [Kuwait]. I led the mission . . . [with] two FOX vehicles. The mass spectrometer showed the presence of H-Agent (Mustard, a highly volatile blister agent) in the soil. Simultaneously, a dismounted collection team, in full chemical over garments, moved to the container (estimated to be 800–1,000 liter capacity) with chemical agent monitors [CAM] and chemical detection equipment. The dismounted collection team employed detection paper and the CAM . . . the detection paper [registered] H-Agent detection; the CAM registered H-Agent."[55]

Major Johnson indicated that additional tests by both FOX vehicles registered the same results—H-Mustard agent. He also reported that while withdrawing liquid from the container, a British soldier and member of team, had liquid drops make contact with his wrist. He was in extreme pain immediately and going into shock. He was decontaminated and taken to the hospital. The tapes and samples were turned over to personnel wearing camouflage with no rank or patches. It is unknown what happened to the tapes and samples [or the British soldier], according to Major Johnson.[56]

"I would like to emphasize that these are the facts and not speculation of what actions we took," stated Major Johnson. "I know that my unit . . . did in fact detect and confirm the presence of toxic chemical warfare agents in Kuwait."[57]

Gy/Sgt. Grass, a FOX vehicle commander, also reported confirmed detections to the Human Resources Subcommittee. One detection reported was near an ammunition storage area outside Kuwait City. He testified: "The alarm sounded on the mass spectrometer with a full and distinct spectrum across the monitor and a lethal vapor concentration of S-Mustard. We drove the FOX closer to the dug-in ammo bunkers and fully visible were the skull and crossbones on yellow tape with red lettering, and scull and crossbones on boxes [of ammo] and on signs. As we continued driving through the same ammo storage area the alarm sounded again . . . HT-Mustard in lethal dose came across the monitor . . . again with skull and cross bones. Another alarm sounded showing positive readings of Benzine Bromide."[58]

Gy/Sgt. Grass stated: "I gave my superior officers all the mass spectrometer tickets from the Al Jaber Airfield [detections in the oil fields] and the ammo storage area . . . I never saw the tickets

[55] Statement of Michael Johnson, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, pp. 79–81.
[56] *Ibid.,* pp. 82–83.
[57] *Ibid.,* p. 84.
[58] Statement of George Grass, Human Resources and Intergovernmental Relations Subcommittee hearing, Nos. 5–6, p. 103.

I had given them again. When the EOD [ordnance disposal team] arrived, I escorted them to where the chemical weapons were detected [in the ammo storage area] . . . they donned full protective equipment . . . [and later] . . . verbally acknowledged the presence of chemicals weapons in the storage area." [59]

"Since returning from the Gulf War, I have spoken to almost every FOX vehicle commander from both the 1st and 2d Marine Divisions," Gy/Sgt. Grass concluded, "and every one of them has verbally acknowledged the positive identification of chemical agents in their area of operations." [60]

A DOD report on the Gy/Sgt. Grass' detection stated: "Based on the information available thus far in this investigation, the presence of a chemical warfare agent in this area . . . is judged to be 'Unlikely.' Although two members of the FOX crew believe that their mass spectrometer detected something, the MM-1 did not sound an alarm. Senior NBC officers said that there was no report of chemical warfare agents at this time. Finally, there is no physical evidence—no spectrum, no sample, et cetera." [61]

When a subcommittee Member asked Major Johnson and Gy/Sgt. Grass if they were suffering any physical effects from their Gulf War service, both men answered yes. Major Johnson said he began to have problems after he returned home . . . "changes in my blood pressure, headaches, burning eyes, joint pain, a mysterious growth in my left knee, chest pains, and gastrointestinal bleeding." [62]

Gy/Sgt. Grass said, "I have rashes on my ankle and other parts of my body. My wife has been diagnosed with multiple sclerosis, and there are just numerous cases of illnesses that people have from something that went on over there, whether that was the exposure of chemical weapons or the biological weapons or both." [63]

Dr. Tucker, in testimony before the Human Resources Subcommittee, stated: "Low level exposures to chemical weapons appear to have resulted from three sources: Chemical fallout from the aerial bombardment of Iraqi field munitions depots containing chemical weapons; explosive demolition of munitions bunkers by United States combat engineers; and sporadic and uncoordinated Iraqi use of chemical weapons in the ground campaign. The Pentagon would have us believe that the Khamisiyah incident is the whole story, I will argue that it is just the tip of the iceberg." [64]

Dr. Tucker, in his statement, identified over 55 specific chemical weapons detection or exposure incidents, and their locations, from January 13 to March 26, 1991.[65] In addition, he cites a U.S. Marine Corps survey of 1,600 chemical-defense specialists from Marine units who served in the Gulf War. A declassified Marine report stated that 221 respondents (about 13 percent) reported some

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[59] *Ibid.,* p. 104.

[60] *Ibid.*

[61] Report by the U.S. Department of Defense, Office of the Special Assistant for Gulf War Illnesses, "Case Narrative: U.S. Marine Corps Minefield Breaching," CMAT Control #7/29/97, 1997191–0003–330, July 29, 1997, p. 13 (in subcommittee files).

[62] Testimony of Michael Johnson, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 90.

[63] Testimony of George Grass, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 97.

[64] Statement of Jonathan Tucker, Human Resources Subcommittee hearings, No. 2, p. 269.

[65] *Ibid.,* pp. 280, 286.

contact with or detection of Iraqi chemical weapons during the ground war.[66]

In addition, the possibility is raised by Dr. Tucker that the Iraqi saboteurs who ignited the Kuwaiti oil well fires may have deliberately contaminated some of them with chemical warfare agents. He cites a captured top-secret Iraqi military record which gives detailed instructions for sabotaging 31 oil wells with explosives. The record includes an attached letter from the commander of the 29th Infantry Battalion which states in part: "Please send an assigned person from your personnel to the Chemical Rank Command of Battalion 14 to receive the **chemical preparations** (Tucker emphasis) distributed to your units according to the directions of the command above." Part of the document also makes reference to the use of individual chemical protective gear and decontamination stations for equipment and vehicles.[67]

"This document raises the possibility that Iraqi troops deliberately contaminated the oil well fires with chemical warfare agents, generating clouds of poison-laced smoke with the intent of debilitating Coalition forces downwind,"[68] Dr. Tucker stated.

In that connection, FOX vehicle operator Gy/Sgt. Grass also testified about detections at Kuwait's Al Jaber Airfield during the oil well fires: "As the mass spectrometer was monitoring for chemical agent vapor contamination with the usual readings from the oil fires, the alarm went off and the monitor showed a lethal vapor concentration of the chemical agent S-Mustard." Gy/Sgt. Grass noted that when he reported the detection to the Division NBC officer, he was told the reading was false and had been produced by oil well vapors. "We explained to him [NBC officer] that we already know what the oil fire vapors looked like on the monitor and the readings were clearly distinct with the words S-Mustard printed across the screen and on the tape printed out as evidence of the contamination the Marines were exposed to. Division still insisted we had false readings and abruptly signed off the radio."[69]

Dr. Tucker's hypothesis about Iraqi disbursement of toxic agents in the updraft and high downwinds of the oil well fires is supported by the experience of ex-CIA agent Dr. David Morehouse. While in the Gulf theater, Dr. Morehouse and other CIA agents found multiple empty canisters or metal cylinders about 20 inches long and 4 inches in diameter placed upright in the sand [and] "leaned like the Tower of Pisa," downwind of numerous well-head fires. In his book "Psychic Warrior," he writes: "It's obvious that the Iraqis placed the canisters next to the fires to mask the plume from the canisters. So I think they released a slow-acting toxin to poison the Coalition forces, and they covered it up with oil well fires. Every soldier downwind of those fires must've inhaled the bug of whatever it was. The heroes had been poisoned."[70]

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[66] *Ibid.,* p. 270 citing Captain T.F. Manley, "Marine Corps NBC Defense in Southwest Asia," Research Paper No. 92–0009, Marine Corps Research Center, Quantico, VA, July 1991, p. 11.

[67] *Ibid.,* pp. 271–272 citing "Captured Iraqi Military Record," December 2, 1990, at GulfLink file #20tr2__6.j17.

[68] *Ibid.,* p. 272.

[69] Statement of George Grass, Human Resources and Intergovernmental Relations Subcommittee hearing, Nos. 5–6, p. 102.

[70] David Morehouse, *Psychic Warrior* (St. Martin's Press, 1996), pp. 168–171.

Dr. Tucker's subcommittee statement concluded: "Evidence in the public domain from a variety of sources indicates a far larger number of credible chemical weapons detection and exposure incidents than DOD or CIA have thus acknowledged. Eyewitness accounts, declassified intelligence records, and operational logs all suggest that Iraq deployed chemical weapons into the Kuwait Theater of Operations [KTO] prior to the Gulf War and may have employed them in a sporadic and uncoordinated manner against the Coalition forces during the ground war. U.S. troops also appear to have been exposed to low level chemical warfare agents from the air bombardment and ground detonations of chemical facilities." [71]

Dr. Tucker, a former senior policy analyst to the Presidential Advisory Committee on Gulf War Veterans' Illnesses [hereinafter "PAC"], was dismissed summarily from the PAC in December 1995, allegedly for his research on chemical exposures to U.S. troops and gathering the views of people inside and outside the Government who also believed that Gulf veterans were suffering from toxic exposures. His dismissal with only 1 hour's notice was in spite of high performance review ratings.[72]

C. TOXIC EXPOSURES IN GULF WAR THEATER

U.S. troops who served in the Gulf War were exposed to multiple toxins, any one of which—alone or a combination of toxins producing a synergistic interaction—may well be responsible for the illnesses reported by thousands of veterans.

According to a GAO report, "U.S. troops might have been exposed to a variety of potentially hazardous substances. These substances include compounds used to decontaminate equipment and protect it against chemical agents, fuel used as a sand suppressant in and around encampments, fuel oil used to burn human waste, fuel in shower water, leaded vehicle exhaust used to dry sleeping bags, depleted uranium, parasites, pesticides, drugs to protect against chemical warfare agents (such as pyridostigmine bromide), and smoke from oil-well fires. DOD acknowledged in June 1996 that some veterans may have been exposed to the nerve agent Sarin following post-war demolition of Iraqi ammunition facilities." [73]

Chemical Weapons

After 5 years of denial that United States troops were exposed to any chemical weapons, DOD disclosed on June 21, 1996 that some 400 soldiers were "presumed exposed" to Iraqi nerve agents. This event occurred when the 37th Army Combat Engineers detonated enemy munitions bunkers at Khamisiyah, Iraq in March 1991, sending plumes of nerve gas wafting into the atmosphere and dispersing over unprotected soldiers.[74]

The number of exposed troops began to rise in following months as the DOD and CIA reconsidered modeling results pertaining to wind direction and other factors. In September 1996, DOD raised

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[71] Statement of Jonathan Tucker, Human Resources Subcommittee hearings, No. 2, pp. 275–276.

[72] *Ibid.,* p. 275.

[73] See *supra* note 48, pp. 1–2.

[74] U.S. Department of Defense, Assistant Secretary of Defense (Public Affairs), News Briefing, June 21, 1996, p. 4.

the number to 5,000 exposed; in October, to nearly 21,000 exposed.[75]

On July 24, 1997, results of a new computer modeling study were revealed by the DOD and CIA suggesting that 98,900 United States troops must be "presumed exposed" to chemical weapons from the Khamisiyah bunker detonations. Original CIA computer modeling estimates released in June 1996 stated the plumes carried northerly for perhaps 25 miles. New modeling estimates stated the plumes carried southerly for perhaps 300 miles from the blast site, producing fallout over some 100,000 troops positioned in southern Iraq, Kuwait, and northern Saudi Arabia.[76]

In April 1997, the CIA released 41 declassified documents, 1 of which stated the CIA had warnings starting in 1984 that thousands of chemical weapons were stored in Khamisiyah bunkers.[77] According to news accounts, the CIA claims they notified the Pentagon before the war of the presence of these weapons at Khamisiyah. The DOD had denied it until February 25, 1997, when the Pentagon disclosed that the CIA had in fact warned the Army but it never reached commanders of the 37th Army Engineers Battalion that detonated the Khamisiyah depot.[78]

The United Nations Special Commission on Iraq [UNSCOM] testified on July 29, 1997 at the Presidential Advisory Committee [PAC] meeting in Buffalo, NY that the aerial bombardment during the war of the Ukhaydir, Iraq chemical weapons storage depot, and possibly the Mymona depot, sent toxins into the air that may have produced fallout over United States troops stationed in Saudi Arabia.[79] The CIA, also in testimony at the PAC meeting, stated: "CIA and DOD now assess that there may have been a release of chemical agent from the Ukhaydir Ammunition Depot as a result of aerial bombing . . ." The CIA is continuing exposure modeling of this event.[80]

In August 1997, it was reported that a 1990 study by the Lawrence Livermore National Laboratory informed the U.S. Air Force—3 months before the Gulf War began—that bombing of Iraqi chemical weapons manufacturing facilities would release deadly nerve agents over U.S. troops who were massing several hundred miles to the south. This report predicted a dispersion of chemical warfare agents over an area 10 times greater than subsequent DOD and CIA studies would show.[81]

According to testimony before the Human Resources Subcommittee by Gulf War expert James Tuite, director of the Gulf War Research Foundation, the Livermore Laboratory study proved to be prophetic. He stated: "Up to now, the missing element . . . has been the mystery of how the [chemical] agents were transported

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[75] U.S. Department of Defense, Assistant Secretary of Defense (Public Affairs), News DOD News Briefing, September 19, 1996, p. 1, and October 22, 1996, p. 2.

[76] See *supra* note 45.

[77] Document released by the U.S. Central Intelligence Agency to accompany the report, "Khamisiyah: A Historical Perspective on Related Intelligence," April 9, 1997, p. 3.

[78] Dana Priest, "CIA Warned of Chemical Arms in '91," Washington Post, February 26, 1997, p. A1.

[79] Report of the United Nations Special Commission [hereinafter "UNSCOM"], "Investigation of Deployment of Chemical Weapons," July 1997.

[80] Statement of Robert Walpole, Special Assistant for Gulf Illnesses, U.S. Central Intelligence Agency, to the Presidential Advisory Committee on Gulf War Veterans' Illnesses, "Probable Release of Mustard Agent From the Ukhaydir Ammunition Storage Depot," July 29, 1997.

[81] "Chemical Risk to Gulf Troops was Forecast," USA Today, August 14, 1997, p. 1.

from the research, production and storage sites in Iraq to [Coalition] troops." This has been an especially difficult issue given that it has been the long-held assertion of DOD, DIA, and the CIA that the winds were blowing in the wrong direction [northerly] during the detection events.

"The report I submit today [I believe] solves the mystery of the [chemical] detections that occurred after the initial wave of Coalition bombings of these chemical warfare agent storage facilities during the first 2 days of the air war. Using available visible and infrared meteorological satellite imagery from NOAA [National Oceanic and Atmospheric Administration], which was available to military planners [but not used] during the war—a war before which they expressed deep concern over the fallout effects from these bombings—I have been able to determine that a thermal plume rose into the atmosphere over the largest Iraqi chemical warfare agent research, production, and storage facility at Muthanna after Coalition aircraft and missile bombardment."

"Seventeen metric tons of Sarin were reportedly destroyed during these attacks, which began on January 17, 1991. These thermal and visual plumes extended [southerly] directly toward the areas where those same chemical warfare agents were detected and confirmed by Czechoslovak chemical specialists. Hundreds of thousands of U.S. servicemen and women were in the area where these detections occurred, assembling for the upcoming ground invasion of Iraq and the liberation of Kuwait."[82]

Biological Weapons

According to Dr. Jonathan Tucker's 1996 report to the subcommittee, Iraq had initially denied possession of biological weapons following the war. Over the next 5 years, however, persistent detective work by UNSCOM personnel gradually forced Iraqi authorities to admit the existence of an offensive biological warfare program, an extensive and sophisticated effort led by Ph.D. scientists trained in the West.

Dr. Tucker stated: "As the centerpiece of this effort, Iraq mass-produced and weaponized three [biological] agents on a large scale: the bacterial agent that causes the disease anthrax, which is nearly always fatal within 4 days; botulinum toxin, an exceedingly potent bacterial toxin; and aflatoxin, a fungal toxin that is a liver carcinogen but can also serve as an incapacitating agent. In addition . . . Iraq experimented with a range of other lethal and incapacitating agents."[83]

Dr. Tucker reported that Iraq conducted field trials of biological agents in bombs, rockets and aerosol generators from 1988 until Iraq invaded Kuwait in August 1990. At this point, their research and development [R&D] program shifted to a "crash" effort on large-scale production and weaponization.

"Even if Iraq was deterred from a large-scale or overt use of chemical and biological weapons [as a result of United States warnings of massive retaliation], it may still have engaged in covert or insidious (i.e., low-level) operations. Certainly, Iraq would

[82] Statement of James Tuite, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 439.
[83] See *supra* note 2, Tucker Report, p. 1.

have nothing to gain by admitting that it had employed chemical or biological weapons during the Gulf War, and much to lose politically and economically, since such as admission would make it even less likely that the UN sanctions would be lifted. Thus, Iraq's denials [of chemical and biological weapons use] should not be taken at face-value, especially in view of the evidence for Iraqi chemical weapons use."

Dr. Tucker cites Iraqi military manuals on the use of chemical and biological weapons. An Iraqi Air Force Academy manual on nerve agents notes that these poisons "have a cumulative effect; if small doses are used repeatedly on a target, the damage can be very severe."[84] An Iraqi Chemical Corps manual states: "It is possible to select anti-personnel biological agents in order to cause lethal or incapacitating casualties in the battle area or in the enemy's rear areas . . . [and] incapacitating agents are used to inflict casualties which require a large amount of medical supplies and treating facilities, and many people to treat them. Thus it is possible to hinder the opposing military operations."[85]

A report by the U.S. Navy's Biological Defense Research Program, which performed BW detection and analysis for U.S. forces during the Gulf War, concluded: "No agents (including anthrax and botulinum toxin) detected during Desert Shield/Storm despite fielding of state-of- the-art detection methods."[86]

A recent GAO report stated: "DOD has consistently denied that Gulf War veterans were intentionally or unintentionally exposed to biological warfare agents, and prior to June 1996, it denied any exposure to chemical warfare agents. If servicemembers were exposed, exposure would have occurred in one of three ways: 1) through intentional Iraqi use of chemical or biological warfare agents; 2) through theaterwide contamination resulting from air war bombings of Iraq, or 3) through site-specific events. DOD has taken the position that chemical and biological agent exposures can be confirmed only through evidence of mass [and immediate] incidents of morbidity and mortality. Since there were no such instances, DOD asserted that Gulf War veterans were not exposed."[87]

The GAO report observed: "According to the CIA . . . the Iraqis had weaponized several biological agents at the time of the Gulf War, including anthrax, botulism, and aflatoxin (a potent liver carcinogen). . . . [Aflatoxin's] effects may not be observed until decades after low-level exposure . . ."[88]

Infectious Diseases

According to the PAC December 1996 report, "Infectious diseases endemic to the Gulf region include shigellosis, malaria, sandfly fever, and cutaneous leishmaniasis. Along with these infectious diseases, DOD medical personnel also monitored troops for dengue,

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[84] U.S. Department of Defense, Defense Intelligence Agency, (translation of) Iraqi field manual, "A Course in Nuclear, Biological and Chemical Protection," August 23, 1991, p. 5.

[85] U.S. Department of Defense, Armed Forces Medical Intelligence Center, (translation of) Iraqi manual, "Chemical, Biological and Nuclear Operations," January 12, 1992, p. 6.

[86] Report of the Naval Medical Research Institute, U.S. Navy, "BW Detection Capabilities" Biological Defense Research Program, Naval Medical Research Institute, Bethesda, MD, September 3, 1997, Summary page (in subcommittee files).

[87] See *supra* note 48, p. 62.

[88] *Ibid.*

Sindbis, West Nile fever, Rift Valley fever, and Congo-Crimean hemorrhagic fever. The documented low rates of infection among U.S. troops suggest exposures were minimal and/or preventive measures were ineffective."[89]

Microbiologist and immunologist Dr. Howard Urnovitz, chairman of the Calptye Biomedical Corp., testified before the Human Resources Subcommittee on the Gulf War Syndrome. He stated: "One of my research efforts is focused on how chemical and infectious agents interact to initiate and maintain a chronic disorder. The symptoms [of Gulf War Syndrome] are similar to those of over a dozen unexplained epidemics over the last 60 years . . . including headache, muscle pain, slight paralysis, damage to the brain, spinal cord or peripheral nerves, mental disorders . . ."

"Recent studies have found that prolonged and aggressive antibiotic therapy appears to abate many of the symptoms associated with Gulf War Syndrome. Usually the therapy takes longer than ordinary treatments (i.e., 6 to 9 weeks instead of less than 3 weeks) and in many cases the symptoms return when the therapy is discontinued. It is not clear whether this response is directly due to the control of some antibiotic-sensitive microorganisms or a direct action on an inflammatory or neurologic process or some placebo effect."

"It is known that the Gulf War was one of the most toxic battlefields in the history of modern warfare. Syndromes associated with organophosphate-induced delayed neuropathy [OPIDN] could explain many of the observed and unexplained illnesses. However, it may not be mutually exclusive to have tissue damage resulting from toxic exposures, which leads to inflammatory responses in critical tissues with ensuing opportunistic bacteriological, viral, and fungal infections. The continued presence of these pathogens may greatly impair a possible healing process. All of these risk factors need to be considered in trying to understand the underlying pathology of Gulf War Syndrome."[90]

Dr. Garth Nicolson, chief scientific officer and research professor at the Institute for Molecular Medicine, states that some illnesses can be explained by exposure of veterans to various biological agents, called chronic pathogenic infections, in combination with chemicals and then transported home to family members. Dr. Nicolson, who has studied 650 Gulf veterans and their immediate family members, discounts stress as a major factor in causing Gulf veterans' illnesses.

In testimony before the Human Resources Subcommittee, Dr. Nicolson stated: "Gulf War illness [GWI] is not caused by stress, it is caused by multiple exposures to chemical, environmental, radiological and/or biological agents that cause chronic multisystem signs and symptoms that for the most part can be diagnosed as existing diseases. We have been particularly interested in veterans with GWI whose family members are now also sick with similar signs and symptoms, suggesting that many GWI patients suffer from biological, not chemical or radiological, origins for their ill-

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[89] *Final Report of the Presidential Advisory Committee on Gulf War Related Illnesses,* (U.S. Government Printing Office, Washington, DC, 1996) [hereinafter "PAC Report"], pp. 98–99.

[90] Statement of Howard Urnovitz, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, pp. 194–196.

nesses. Illnesses caused by chemical or radiological exposures should not be transmitted to family members. GWI in immediate family members is officially denied by DOD and VA."[91]

"After examining GWI patients" blood for the presence of chronic biological agents, the most common infection found was an unusual microorganism, *Mycoplasma fermentans* (incognitus strain), a slow-growing mycoplasma located deep inside blood leukocytes (white blood cells) of slightly under one-half of GWI patients studied. When they are in the blood, similar to other bacteria, they can cause a dangerous system-wide or systemic infection. In addition, cell-penetrating mycoplasmas, such as *Mycoplasma fermentans,* may produce unusual autoimmune-like signs and symptoms . . ."[92]

"In GWI patients that tested positive for mycoplasmal infections in their blood, we have found that this type of infection can be successfully treated with multiple courses of specific antibiotics, such as doxycycline. Multiple treatment cycles are required, and patients relapse often after the first few cycles, but subsequent relapses are milder and patients eventually recover."[93]

"Chemical exposures can cause toxicological effects and produce many but not all of the signs and symptoms of GWI. In addition, chemical exposures can result in immunosuppression and leave an individual susceptible to infections."[94]

Leishmaniasis is also an infectious disease and is caused by a microscopic parasite that invades certain types of white blood cells. The disease is transmitted by sandflies, and a number of different leishmania species are known to infect humans. Disease that involve low levels of parasite infection can be particularly difficult to diagnose. It is rarely seen in the United States; however, more than 30 cases have been diagnosed among Gulf veterans. Accurate diagnosis of leishmaniasis, which can have a long latency period, is important because effective treatment involves the use of potentially toxic drugs in clinical trials but not yet approved by the Food and Drug Administration [FDA].[95]

Depleted Uranium

Depleted uranium [DU] is a highly, toxic, radioactive by-product of the uranium enrichment process.[96] DU is used in munitions as armor-piercing rounds fired at enemy tanks, and as protective armor on U.S. tanks. When a DU penetrator impacts a hard target, most of the round burns up, scattering uranium dust and shrapnel in and around the target. In the Gulf War, DU is credited with destroying over 1,400 Iraqi tanks, as well as other equipment and weapons storage facilities.[97]

"Exposure to DU armor and/or penetrators is dangerous, but DU poses the greatest risk to those who: breathe smoke or dust from

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[91] Prepared statement of Garth Nicolson, Human Resources Subcommittee hearing of June 26, 1997, p. 1 (in subcommittee files).
[92] *Ibid.,* p. 3.
[93] *Ibid.,* pp. 4–5.
[94] *Ibid.,* p. 7.
[95] See *supra* note 48, p. 60.
[96] U.S. General Accounting Office, *Operation Desert Storm: Army Not Adequately Prepared to Deal With Depleted Uranium Contamination,* GAO/NSIAD–93–90, p. 1.
[97] Report by the National Gulf War Resource Center, Inc., Washington, DC. "Gulf War Syndrome," Fall 1996, p. 5 (in subcommittee files).

a burning vehicle hit by DU rounds; climb on or enter a vehicle hit by DU rounds; or were in a friendly fire incident involving DU rounds." [98]

One of the more severe DU exposure events occurred in July 1991 in Doha, Kuwait when a major U.S. Army ammunition depot and motor pool exploded and burned for 2 days. DU armor on vehicles and 9,000 pounds of DU rounds were oxidized to powder exposing 3,500 soldiers in the vicinity to radiation and DU aerosol particles that were widely distributed by high winds. Soldiers involved in the cleanup several days after the fire were not warned of DU contamination and, therefore, wore no protective gear.[99]

According to the booklet "DU: The Stone Unturned," published by Swords to Plowshares: "Even after the [Doha] fire, soldiers were never told about the presence of DU contamination. Soldiers swept the compound with brooms, picked up debris with their bare hands, and were never issued respiratory masks or other protective clothing." [100]

"Like most soldiers," the DU publication continues, "S/Sgt. Chris Kornkven was unaware of the use of DU munitions during the war. Due to his exposure to DU dust on destroyed Iraqi vehicles, he has since tested positive for internalized depleted uranium." [S/Sgt. Kornkven testified before the Human Resources Subcommittee on January 21, 1997.] [101]

Radiation exposure expert Dr. Asaf Durakovic, a medical unit commander in the Gulf War and most recently the chief of nuclear medicine at the VA Medical Center in Wilmington, DE was a witness at the Human Resources Subcommittee hearing on June 26, 1997. Dr. Durakovic reported that his expertise was never used because he and his staff were never informed of the intended use of DU before the war or during the war.[102]

In late 1991, following the war, 24 ill soldiers from the 144th Transportation & Supply Company in New Jersey were referred to Dr. Durakovic at the VA Medical Center in Wilmington for diagnosis and treatment. These soldiers had worked on battle damaged tanks and vehicles in the Gulf from January to March 1991 without protective equipment or clothing. In March, a Battle Damage Assessment Team arrived in full radioprotective clothing, inspected the vehicles, declared them "hot" and off-limits.[103]

Preliminary testing showed 14 of 24 veterans "contained decay products of radioactive uranium." According the Dr. Durakovic, urine samples sent to the Army Radiochemistry Lab in Aberdeen, MD, disappeared. Dr. Durakovic recommended additional, more comprehensive testing—including tests to determine if the 24 veterans had also inhaled DU particles—but further tests and treatments were denied by the VA. Of the 14 veterans, 2 have since

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[98] *Ibid.*

[99] International Action Center, *Metal of Dishonor* (Depleted Uranium Action Project, International Action Center, New York, NY, 1997), pp. 33–35. [Abstract 5, "How U.S. Troops Were Exposed to DU"]

[100] Report by Dan Fahey, "DU: The Stone Unturned," Swords to Plowshares, March 28, 1997, p. 10 (in subcommittee files).

[101] *Ibid.,* p. 11.

[102] Prepared statement of Asaf Durakovic, Human Resources Subcommittee hearing of June 26, 1997, p. 2 (in subcommittee files).

[103] *Ibid.*

died, and the remaining members of the 144th Company have scattered around the country making medical follow-up unlikely.[104]

"None of my recommendations was ever followed. Every conceivable road block was put in my line of management of those patients. I was ridiculed. There were obstacles throughout my attempt to properly analyze the problems of those patients. My plan failed because of total lack of interest on the part of the VA to do anything for those unfortunate patients. I [even] received phone calls from DOD suggesting that this work is not going to yield meaningful information and should be discontinued."[105]

Dr. Durakovic was later terminated by the Wilmington VA hospital, he alleges for his outspoken views of the VA concerning the diagnosis and treatment of sick Gulf War veterans.

Physicist and DU expert Leonard Dietz, who testified before the Human Resources Subcommittee, writes and speaks frequently on the dangers of depleted uranium. In a recent abstract he stated, "A large number of unprotected Gulf War veterans could easily have acquired dangerous quantities of DU in their bodies. We refer to scientific measurements that have been made of the atmospheric wind-borne transport of uranium aerosols up to 25 miles from their sources. Micrometer particles of DU can spread over a large region and poison many people both radiologically and chemically."[106]

"A comprehensive epidemiological study should be made of all Gulf War veterans and their families," Dietz said, "searching for evidence of residual DU in their bodies and for causes of genetic defects in their children. The health issues associated with DU munitions should be investigated and evaluated by independent medical and scientific experts separated completely from the DOD, VA, National Laboratories, U.S. military services and their contractors."[107]

Dr. Michio Kaku, nuclear physics professor at City University of New York, stated, "Ultimately, the Gulf War Syndrome will be traced to a variety of factors, simply because the Pentagon released so much firepower on the Iraqis during that war that large quantities of materials were sent into the atmosphere, including DU and chemicals stored in warehouses. Ultimately, when the final chapter is written, DU will have a large portion of the blame."[108]

"The Pentagon should release all its classified information concerning the Gulf War Syndrome and depleted uranium," Dr. Kaku said. "It is a national embarrassment that the Pentagon, even at this late date, is still withholding vital information about precisely what happened during the Gulf War."[109]

A 1993 report by the GAO concluded, "Although the Army's stated policy is to minimize personnel's exposure to radiation, it has not effectively educated its personnel in the hazards of DU contamination and in proper safety measures appropriate to the de-

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[104] *Ibid.,* pp. 2–3.

[105] Testimony of Asaf Durakovic, Human Resources Subcommittee hearing of June 26, 1997, original transcript, pp. 135–136 (in subcommittee files).

[106] See *supra* note 98, p. 135. [Abstract 20, "DU Spread & Contamination of GW Veterans."]

[107] *Ibid.,* p. 149.

[108] *Ibid.,* p. 114. [Abstract 17, "DU: Huge Quantities of Dangerous Waste."]

[109] *Ibid.,* p. 115.

grees of hazard. What little information is available is not widely disseminated and training on DU is basically limited . . ."[110]

The DOD did not properly train Gulf troops to the dangers of DU before and during the war, according to Dr. Bernard Rostker, DOD's Special Assistant for Gulf War Illness. He made this statement in a July 1997 meeting on depleted uranium with Human Resources Subcommittee staff. Dr. Rostker advised the Human Resources staff that steps were being taken to educate troops, who may fight future wars, on the toxic effects of DU exposure.

Oil Well Fires and Petroleum Contamination

Iraqi troops, in a deliberate act of sabotage and revenge, ignited hundreds of Kuwaiti oil wells during the Gulf War. According to a Defense Science Board Report, "On February 23, 1991, Iraqi forces began to destroy and set fire more than 700 oil wells throughout Kuwait."[111] The date is challenged by the University of Arizona's Environmental Research Laboratory, concluding that, "Solar radiation data indicate that the first oil well fires were most likely set on or around January 17, 1991"[112] [an important date because it suggests an additional month of troop contamination]. The last of the 749 oil well fires, including storage tanks and refineries, were extinguished 10 months later, in November 1991.[113]

Oil well fires and petroleum related exposures are another possible cause of the Gulf War Syndrome. In testimony submitted to the Presidential Advisory Committee [PAC], chemical engineer and expert on health effects of petroleum exposure, Craig Stead stated: "Petroleum was a major Gulf War environmental exposure. American troops were exposed to petroleum from oil well fires, oil contaminated drinking and shower water, oil soaked clothing, and use of petroleum for dust suppression, pesticide application, and fuel. Petroleum inhalation, ingestion and skin absorption causes illness. The symptoms of petroleum illness are consistent with symptoms reported by Gulf War veterans."

"Clinical techniques exist to diagnose petroleum illness," Mr. Stead said. "These techniques include broncho alveolar lavage [BAL], computed tomography, and magnetic resonance imaging. Known treatments for petroleum include the use of anti-inflammatory steroids, expectoration of oil in the lungs, and diet. Left untreated, petroleum illness is a progressive disease which can lead to emphysema and cancer as endpoints."[114]

Sick Gulf War veterans testified about their experiences before the Presidential Advisory Committee and a National Institutes of Health Gulf War workshop. Testimony included:

"When they blew the oil well fires, it was unlike anything I ever seen in my life. It was like being in a locked closet in the dark. We are in the middle of 500 oil well fires. And the only thing that they [U.S. military] gave us was a white T-shirt and [said] 'Put it

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[110] U.S. General Accounting Office, "Operation Desert Storm: Army Not Adequately Prepared to Deal With Depleted Uranium Contamination," GAO/NSIAD–93–90, January 1993, p. 2.

[111] *Final Report of the Defense Science Board,* U.S. Government Printing Office, 1994, p. 50.

[112] Riley, et al., "Effect of Kuwait Oil Field Fires on Human Comfort and Environment in Saudi Arabia," *International Journal of BioMeteorology*, 1992, pp. 36–38.

[113] Report prepared by Craig Stead, "Oil Fires, Petroleum and Gulf War Illnesses," June 1997, at tab J, citing testimony of Gary Friedman, Texas Lung Institute to the PAC (in subcommittee files).

[114] Statement of Craig Stead to the PAC, March 26, 1996, p. 2 (excerpt in subcommittee files).

over your face.' When they brought in the civilian contractors to put out these oil well fires, they had self-contained breathing apparatus. They had chemical suits. They had everything. Members of my team did [get ill]." [115]

"[I] was in the center of the oil fires in Kuwait City with no capability of distinguishing the sun from the moon for the first 6 weeks after the liberation of Kuwait. [My] body was so oil and soot covered that a black watch band was camouflaged on [my] wrist. The scarf [I] wore around [my] face did not filter out the air borne debris. [My] spit looked like oil and when [I] sneezed [my] mucus looked like axle grease." [116]

"We were by the oil well fires for 2 weeks and we camped right next to them." [117]

"I developed severe nasal problems from the oil smoke. I got breathing problems." [118]

"I lived six city blocks from the fires for almost 2 weeks. I flew in the stuff every day." [119]

"For 7 months, my husband's ship chartered through burning oil derricks in the water. They were on the oil spill. They ingested oil-infested water. They cooked with it. They showered in it. He has chemical sensitivity. He has asthma. He got it in the service." [120]

"We suffered chemical ingestion when our drinking, cooking, washing, and bathing water became heavily contaminated with some sort of chemical that burned our mouth, throat, esophagus, and stomach. When we took our showers, we smelled of petrochemicals as well as the freshly washed clothes we put on. The food tasted of kerosene. We were in a 100 percent contaminated environment. I became very sick with digestive problems that same day that the contamination came aboard ship in our drinking water. The Navy ships' distilling plants . . . cannot filter out chemicals." [121]

Gulf War veteran Debbie Judd, an Air Force nurse, testified before the PAC on a survey completed in 1995 by the Operation Desert Storm Association on 10,051 sick Gulf veterans. She reported the following results: "Specific to the oil in the environment there, those breathing or enveloped in oil fire smoke was 96 percent; within clear visual area of the oil fires was 90 percent; worked in, lived in, or made travel through the burning oil fields was 72 percent; washed in water with an oily sheen was 68 percent. Those having oily taste to their food was 66 percent, and those with oily taste to the drinking water was 65 percent." [122]

A study, "Kuwait Oil Fire Health Risk Assessment," by the U.S. Army's Environmental Health Agency concluded: "Results of this [report] indicate the potential for significant long-term adverse

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[115] Statement of Scott Russell to the PAC, August 6, 1996 (excerpt in subcommittee files).

[116] Statement of Herb Smith to the National Institutes of Health Gulf War Workshop, April 27–29, 1994, (excerpt in subcommittee files).

[117] Statement of Kevin Jenson to the PAC, August 6, 1997 (excerpt in subcommittee files).

[118] Statement of Michael Lanning to the PAC, August 6, 1997 (excerpt in subcommittee files).

[119] Statement of Ronald Matthews to the PAC, February 27, 1996 (excerpt in subcommittee files).

[120] Statement of Betty Zuspan to the PAC, February 7, 1996 (excerpt in subcommittee files).

[121] Statement of Antonio Melchor to the PAC, February 7, 1996 (excerpt in subcommittee files).

[122] Statement of Debbie Judd to the PAC hearing, November 7, 1995, (excerpt in subcommittee files).

health effects for the exposed troop or civilian employee populations is minimal . . ."[123]

Craig Stead provided a statement to the Human Resources Subcommittee in which he said the Army study was flawed: "In 1994, the Army issued the final Kuwait Oil Fire Health Risk Assessment. The Assessment used Gulf air pollution data gathered in May through November 1991. Air pollution from the oil field fires during this time was much less than during the Gulf War for the following reasons: The months of May through November [when the study was done] have the Shamal winds blowing from the northwest causing the smoke plume from the oil field fires to disperse widely and ascend to great heights. During the Gulf War (February and March) low wind speeds and air inversions were common. Under these conditions the smoke plume was on the ground, creating high localized levels of air pollution to which the troops were exposed."[124]

An Institute of Medicine [IOM] document confirms Mr. Stead's statement: "The Army Health Risk Assessment could not launch a successful air-sampling effort until the beginning of May, after the more stagnant air conditions of the winter months had passed. Those who undertook the sampling efforts did so with this knowledge."[125] Principal author of the Army report, Dr. Jack Heller, also confirmed the Stead statement: "What we measured at the time we were there starting in May when the Shamal winds were strongly blowing and there was a lot of thermal lofting of the pollution. We didn't have those ground level impacts [present during the war]. In fact the whole time I was there I had [only] one ground level impact."[126]

Mr. Stead stated: "Dr. Heller did not factor into the Assessment study the high levels of wartime air pollution to which the troops were actually exposed. The Assessment is seriously flawed . . . [and] . . . is a primary document relied upon by DOD, PAC, VA and IOM in concluding the oil field fires presented no health hazard to the troops."[127] Mr. Stead also said the study was additionally flawed because it neglected to include troop exposures to contaminated rain during the fires, oil contamination in water for drinking, cooking and showering.[128]

Also, a January 1991 study by the U.S. Army Intelligence Agency, issued on the eve of the invasion, forewarns of the threat of the oil well fires and tends to refute the U.S. Army Environmental Health Agency's Risk Assessment. The Army Intelligence report stated: "Owing to Iraq's defensive 'scorched earth' plan for Kuwait, the overall Kuwaiti oil infrastructure presents a serious hazard to advancing ally ground forces. There is overwhelming evidence that once ordered, the Iraqi forces will initiate demolition of oil wells, oil-gathering centers, oil-storage depots, pumping stations, large

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[123] Final Report, Kuwait Oil Fire Health Assessment, Department of the Army, U.S. Environmental Hygiene Agency, Report No. 39–26–L192–91, February 1994, p. 1. [Executive Summary].

[124] Prepared statement of Craig Stead, Human Resources Subcommittee hearing of June 26, 1997, p. 3 (in subcommittee files).

[125] National Academy of Sciences, Institute of Medicine, *Health Consequences of Service During the Gulf War,* ["IOM Report"] (National Academy Press, 1996) p. 45.

[126] See *supra* note 113, statement of Jack Heller to the NIH Workshop: "Persian Gulf Experience and Health, April 27–29, 1994, tab I (in subcommittee files).

[127] See *supra* note 124, p. 4.

[128] *Ibid.*

tank farms, refineries, and oil/product loading terminals. Demolition of these facilities and complexes will result in massive fires—'Burning Kuwait.'"

"The danger of oil fires, toxic gas, and smoke in the Kuwaiti Theater of Operations [KTO] is **very serious** [emphasis added]. These dangers . . . are as follows: 1) Associated toxic and highly flammable gas from spilled raw sour crude oil from nonburning oil wells; 2) Intense heat of oil-well fires, possible natural-gas wells, and fire trenches; 3) Dense smoke and superheated gases from these fires. By far the greatest danger is from dissociated hydrogen sulfide gas and highly volatile light ends [gases] released from wellhead blowouts. **In the KTO, the prevailing winds generally blow from the north-northwest southward toward Saudi Arabia** [emphasis added]. Smoke and gases from Kuwaiti fires and blowouts most likely will be blown in the face of northerly advancing [United States] forces along the southern front of the KTO."[129]

Experimental Drugs and Vaccines

In December 1990, a month before the war, the Food and Drug Administration [FDA] agreed to issue a waiver to the DOD allowing the military to issue experimental drugs and vaccines to U.S. personnel in the Gulf without first obtaining informed consent. A factor possibly contributing to the illnesses of Gulf veterans was the ingestion of anti–nerve gas pills, pyridostigmine bromide tablets [PB tabs]. Troops were required to take the experimental drug to counter the effects of potential exposure to chemical warfare agents.

PB expert Dr. Thomas Tiedt, a neuroscientist and former pharmaceutical industry researcher, testified before the Human Resources Subcommittee that "evidence shows that Gulf War Syndrome was easily predicted. The symptoms largely match those of cholinergic syndrome, which results from inhibition of the life-critical and development-critical enzyme acetylcholinesterase [AchE]. Pyridostigmine bromide, Sarin, and organophosphate pesticides are examples of AchE inhibitors . . . [which] cause stunning nerve and muscle degeneration moments after a single dose, which worsens with multiple doses."[130]

"My team's research at the University of Maryland during the mid-1970's about physiological and microscopic AchE toxicity was comprehensive," Dr. Tiedt stated. "Our work was followed by an explosion of research by DOD during the 1980's, the most relevant of which was produced by my co-authors and colleagues at Maryland and the [Army's] chemical-warfare R&D center in Aberdeen [MD]. DOD [research] established by the early 1980's that: 1) PB would be harmful in healthy individuals; 2) PB was worthless, even counterproductive, as a protectant against chemical warfare; and 3) PB was more toxic than sub-lethal doses of chemical warfare agents. I understand PB was taken by about 500,000 soldiers . . . [and] it

[129] Report of the U.S. Army Intelligence Agency, U.S. Army Foreign Science Center, "Kuwait: Serious Oilfire, Gas and Smoke Dangers," AST–2660Z–148–90, January 9, 1991, pp. iii, 1 (in subcommittee files).

[130] Statement of Thomas Tiedt, Human Resources Subcommittee hearing, No. 2, p. 301.

has been reported that 50–60 percent of soldiers taking PB have acute side effects." [131]

Dr. Tiedt concluded: "More attention is needed on the long record by the military to conduct involuntary, meritless, and hazardous experiments on soldiers. The Nuremberg Code [signed following World War II] states, 'No experiments should be conducted where there is an *a priori* reason to believe that death or disabling injury will occur.' The use of PB was an experiment. It was the first time we used PB for such a purpose. There were no data supporting its use or the way it was used. Sadly, no records remain or were kept." [132]

Researcher and pharmacologist Mohamed Abou-Donia of Duke University has conducted research on animals using pyridostigmine bromide and other chemicals. Dr. Abou-Donia fed groups of hens with the anti-nerve agent PB, the insecticide permethrin, and the insect repellant DEET—all routinely used by the military in the Gulf War theater. Each chemical was administered alone and in various combinations.

According to Dr. Abou-Donia: "This study shows that relatively high doses of PB, DEET, and permethrin appear to cause minimal health risk when used individually. It demonstrates, however, the increased neurotoxicity associated with coexposure to the same doses of test compounds. Although this study was not intended to simulate actual exposure conditions that may have existed during the Persian Gulf War, nor was it designed as a dose-response study, from it one can hypothesize why co-exposure to test compounds may have contributed to Gulf War veterans' illnesses. The variety of symptoms reported by veterans make it unlikely that a single etiologic cause is responsible for producing the Gulf War illnesses." [133]

Dr. Satu Somani, PB expert and professor of pharmacology and toxicology at Southern Illinois University's School of Medicine, also testified before the Human Resources Subcommittee on the health effects of pyridostigmine bromide. Dr. Somani stated:

"Years after Desert Storm, many veterans continue to suffer from medical problems such as fatigue, headache, joint pain, gastrointestinal disorders, and other ailments. This testimony is based on the premise that Gulf veterans were taking pyridostigmine as a precautionary measure against potential exposure to nerve agents (e.g., Sarin) and they were exposed to insecticides and other harmful chemicals. They were also under physical stress that modified the effects of such exposure. The toxic, harmful or poisonous nature of nerve agents is exacerbated by the fact, even if an individual were provided pre- or post-treatment, there is still a strong potential for such effects to continue because of **delayed neurotoxicity** [Somani emphasis]. Further, while acute toxicity can be treated with atropine, oxime and diazepam, no treatment is available for delayed neurotoxicity." [134]

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[131] *Ibid.,* p. 303.

[132] *Ibid.,* p. 306.

[133] Mohamed Abou-Donia, et al., "Neurotoxicity Resulting from Co-Exposure to Pyridostigmine Bromide, DEET, and Premethrin: Implications of Gulf War Chemical Exposures," *Journal of Toxicology and Environmental Health,* 1996, 48:pp. 35–56.

[134] Statement of Satu Somani, Human Resources Subcommittee hearing, No. 2, p. 321.

"Delayed neurotoxicity, first reported in the 1950's, can occur 5 or 10 years after exposure to nerve agents. Studies have shown that organophosphate-induced delayed neurotoxicity [OPIDN] is due to inhibition of neurotoxic esterase enzyme in the nervous system, and histopathological axonal degeneration. This also produces muscular weakness and ataxia (difficulty in movement)." [135]

Dr. Somani concluded: "Based on recent experimental evidence and the similarities of symptoms of delayed neurotoxicity reported by workers in the organophosphate industry and also by Desert Storm veterans, the author concludes that GWS may be due to low-level exposure to Sarin [a chemical warfare agent] exposure, intake of pyridostigmine [bromide], and exposure to pesticides and other chemicals. The adverse effects of such exposures were amplified by physical stress conditions." [136]

Vaccines were also given to Gulf War troops. Anthrax was tested and approved by the FDA for limited use, and was administered to about 150,000 troops in the Gulf region. Botulinum toxoid vaccine was approved by the FDA for use with a waiver of informed consent, and about 8,000 troops were given this vaccine. It is also not known if side effects could occur with these vaccines when combined with PB or other chemicals.[137]

The PAC report was critical of the FDA and DOD handling of experimental drugs and vaccines. It stated: "The Committee also found that DOD and FDA deliberated carefully before enabling, through rulemaking, DOD to require troops to take pyridostigmine bromide [PB] and botulinum toxoid [BT] vaccine as pretreatments for possible CBW agents without FDA approval of the products for that purpose. We were concerned that FDA had failed, in the 5 years since the Gulf War, to devise better long-term methods governing military use of drugs and vaccines for CBW defense. We also found DOD's inability to produce records of who received PB or BT indicative of much need for wholesale improvement in the government's performance on medical recordkeeping during military engagements." [138]

Pesticides and Multiple Chemical Sensitivity [MCS]

Multiple chemical sensitivity is a disease that is being debated throughout the medical field. While a number of leading medical organizations have published papers that question the existence of multiple chemical sensitivity its diagnosis and its possible treatments,[139] a growing number of physicians and scientists have accepted the basic premise that exposure to a wide range of chemicals existing in the modern world can produce synergistic effects and cause a variety of health problems.

MCS expert Dr. Claudia Miller of the University of Texas Southwest Medical Center at San Antonio has focused her research, and co-authored several books over the past 9 years on patients who report developing chronic illnesses and chemical intolerances. These

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[135] *Ibid.*
[136] *Ibid.*
[137] See *supra* note 97, p. 5.
[138] PAC Report, p. 18.
[139] These organizations include the American Academy of Allergy and Immunology, the American College of Physicians, the American College of Occupations Medicine and the Council of Scientific Affairs of the American Medical Association. See also *supra* note 97, p. 7.

illnesses follow low level exposure to various chemicals, including pesticides, solvents, and combustion products. In subcommittee testimony, she stated: "In 1995, we published a study of 37 patients who had been exposed to pesticides . . . who subsequently reported developing multi-system symptoms and new-onset chemical, food and drug intolerances. Eighty percent of these individuals . . . were no longer able to work or could only work part-time because of their health problems." [140]

Dr. Miller testified that common symptoms reported by these patients at the time they were exposed were often flu-like illnesses, fatigue, concentration difficulties, headaches, shortness of breath, musculoskeletal pain, and gastrointestinal symptoms. The patients also reported, according to Dr. Miller, "new and unusual intolerances for common chemicals such as fragrances, traffic exhaust, gasoline, and household cleaning products. In addition, many found they could no longer tolerate alcoholic beverages, various foods, caffeine, and medications." [141]

Beginning in 1992, Dr. Miller was asked by the Houston VA Medical Center to consult on the first group of sick Gulf War veterans. Dr. Miller evaluated 75 veterans and testified that "These veterans' symptoms and their frequent reports of new-onset intolerances to chemicals, foods, and medications reminded me of the civilians we studied with histories of exposure to organophosphate or carbamate pesticides or to mixtures of solvents at low levels. Comparison of eight symptom scales derived by factor analysis revealed similar ordering of symptoms in the Gulf veterans and the pesticide-exposed civilians." [142]

Pesticides and insect repellants were heavily used before, during and after the Gulf War, according to Albert Donnay, executive director of the MCS Referral & Resources in Baltimore. Information he received from the DOD indicates that 21 different pesticides were used but no records were kept of amounts used, what they were used for, or who applied them.

In a memorandum to the Human Resources Subcommittee, Mr. Donnay stated: "Officials in DOD responsible for pesticide use have told me that they kept no records of pesticide use during the Persian Gulf deployment. We urge DOD to focus on the chronic effects of pesticide exposures, not just the two pesticides currently being studied (DEET and Permethrin), but all 21 pesticides that the DOD admits sending to and using in the Persian Gulf during Operation Desert Shield and Desert Storm." Mr. Donnay wrote that ". . . data from the EPA, DowElanco and others linking MCS to organophosphate pesticides [showed that] . . . of the top 10 pesticides associated with MCS reports from 1984–1990 by the EPA-funded National Pesticide Telecommunications Network, 7 are on the DOD list of those used in the Persian Gulf. Even if the veterans' exposures to nerve agent fallout were not enough to induce illness, the DOD failed to consider how these may have **interacted synergistically** [emphasis added] with the veterans' extensive exposure to chemically similar pesticides. None of the CCEP [DOD's

[140] Statement of Claudia Miller, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 511.
[141] *Ibid.*
[142] *Ibid.,* p. 512.

Gulf health registry] reports published to date discuss MCS data. We are concerned that MCS [data] was abandoned without any analysis . . . and data are now being withheld from qualified researchers." [143]

The PAC report states, "The Committee concludes it is unlikely that health effects and symptoms reported today by Gulf War veterans are the result of exposure to pesticides during the Gulf War. Lindane is an animal liver carcinogen, but it is too early to see an elevated liver cancer rate in Gulf War veterans." The PAC report draws no conclusion about MCS, but comments that "There is no consensus case definition for MCS, although two recent government-sponsored conferences have attempted to develop one." [144]

D. ACUTE V. CHRONIC EFFECTS OF LOW LEVEL CHEMICAL EXPOSURES

In testimony before the subcommittee, Dr. Stephen Joseph, formerly DOD's Assistant Secretary for Health Affairs, stated, "Current accepted medical knowledge is that chronic symptoms or physical manifestations do not later develop among persons exposed to low levels of chemical nerve agents who did not first exhibit acute symptoms of toxicity." [145] This unequivocal statement became the basic medical policy of DOD and VA in terms of diagnosis, treatment, compensation and research of the illnesses affecting thousands of Gulf War veterans.

Dr. Claudia Miller, an expert on low level chemical exposures, stated before the subcommittee that Dr. Joseph's statement was not necessarily true. "I think it is premature for anyone to say that low levels of organophosphates cannot cause chronic health problems," Dr. Miller said. "There is a lot of literature now suggesting that is quite a possibility and there are ways to approach that question scientifically." [146]

"Sarin was not the only organophosphate-type exposure soldiers may have encountered in the Gulf: pesticides in this chemical class and pyridostigmine bromide, a related carbamate drug, were also widely used," Dr. Miller stated. "There are now several studies, in addition to our own, linking chronic, multi-system symptoms to [low level] organophosphate/carbamate exposure." [147]

Dr. Stephanie Padilla, Environmental Protection Agency [EPA] neurotoxicology expert, agrees. In subcommittee testimony, Dr. Padilla said, "Exposure to organophosphates may produce residual adverse effects . . ." and cause ". . . organophosphate-induced-delayed-neuropathy [OPIDN]. Recent studies . . . indicate there may be long-term health effects associated with exposure . . ." and ". . . one [study] concluded that 'results clearly indicate that there

[143] Memo from Albert Donnay, executive director, MCS Referral & Resources Center to Robert Newman, subcommittee staff, September 18, 1996 (in subcommittee files).

[144] PAC Report, p. 81.

[145] Statement of Stephen Joseph, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 221.

[146] Testimony of Claudia Miller, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 271.

[147] Statement of Claudia Miller, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, pp. 511–512.

are chronic neurological sequelae to acute organophosphate poisoning. . . .'"[148]

In response to Dr. Joseph's statement that chronic symptoms from low level chemical exposure do not later develop unless acute symptoms first appeared, Dr. Padilla testified that pyridostigmine bromide, the anti-nerve gas tablets which the troops were required to take, would dampen or "mask the acute effects" of chemical exposure.[149]

The subcommittee also learned that a 1974 study of low level chemical exposures, conducted by Dr. Karlheinz Lohs, then director of the Institute of Chemical Toxicology of the East German Academy of Sciences, concluded that "mustard CW agents are capable of producing a wide range of mutagenic, carcinogenic, hepatotoxic [causing liver damage] and neurotoxic effects. It is important to note that even in the case of exposure to very slight amounts which do not necessarily bring on acute symptoms, toxic reactions may set in. How far this may lead to nerve-cell, hematopoietic or parenchymatous lesions depends largely on the state of health of the individual (for example, previous injury to any particular organ), duration of exposure or intervals between exposures and, last but not least, on individual 'detoxification capacity' (enzymatic polymorphism, genetic disposition, and so on.)"[150]

Dr. Joseph was not familiar with the Lohs study.[151]

Also in the 1970's, Dr. Frank Duffy, associate professor of neurology at Harvard University Medical School, and his research associates conducted a study for the U.S. Army's Rocky Mountain Arsenal [RMA], a facility where nerve gas containing munitions were stored and decommissioned. The Army post surgeon, Dr. Maurice Gaon, noted an unusual number of civilian employees with a symptom complex including fatigue, sleep difficulties, memory loss, trouble concentrating, irritability, loss of libido, among others. These symptoms were primarily noticed in employees much later following reported exposures to the nerve agent Sarin, an organophosphate. The Army called on Dr. Duffy and his associates to plan and implement a study of these exposures.[152]

This situation provided Dr. Duffy with an opportunity to study the effects of accidental low level Sarin exposures on humans after 1 year, comparing their symptoms with symptoms of rhesus monkeys after 1 year by injecting the primates with low doses of Sarin.

The results, according to Dr. Duffy, indicated that "low levels of exposure to the nerve agent Sarin can produce long-lasting effects. It was perfectly clear that not only were people, after [low level Sarin] exposure showing long-term effects, but it was widely accepted in the pesticide industry that exposure to related compounds like malathion and parrathion or the chlorinated hydrocarbon insecticides led to long-term consequence."[153]

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[148] Testimony of Stephanie Padilla, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, pp. 252–254.

[149] *Ibid.,* p. 268.

[150] Lohs, Karlheinz, *Delayed Toxic Effects of Chemical Warfare Agents* (New York: Almqvist & Wiksel International for the Stockholm International Peace Research Institute, 1995), pp. 14–15.

[151] Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 248.

[152] Statement of Frank Duffy, Human Resources Subcommittee hearings, No. 1, p. 228.

[153] Testimony of Frank Duffy, Human Resources Subcommittee hearing, No. 1, p. 226.

Dr. Duffy stated: "It has been suggested that since Army personnel did not appear to suffer acute symptoms which could be clearly recognized as resulting from acute Sarin exposure, that this explanation for Gulf War Syndrome must be irrelevant. This is not necessarily a valid assumption. First, the low level exposure to the monkey group demonstrated no symptoms . . . and second, most of the exposed Army personnel at RMA suffered relatively minor symptomatology." [154]

According to the NY Times, Dr. Frank Duffy and his research colleagues Dr. James Burchfiel of the University of Rochester and Dr. Peter Bartels of the University of Arizona, "said in interviews that the Pentagon seemed intent on ignoring or dismissing their evidence. Their research, which studied the effects of low doses of Sarin on humans and primates, showed the exposure resulted in long-term or chronic, perhaps permanent, changes in brain waves, which could be connected with . . . symptoms common among Gulf veterans." [155]

In a 1987 letter to Robert Hall of the Hawaii Institute for Biosocial Research, Dr. Duffy also noted the possible confusion between organophosphate-delayed-neuropathy and stress: "I applaud your effort in raising the level of consciousness about the serious potential for long-term effects due to exposures to these [organophosphate] compounds. It has been our experience that the side effects of minimal but continual exposures to the compounds **mimic the symptoms associated with a stressful life** [emphasis added]. Accordingly, most individuals are unable to determine whether their irritability is related to a stressful life or to a recent organophosphate exposure. This is a serious issue." [156]

Results of U.S. Air Force [USAF] studies on the health effects of sublethal, low dose exposure to nerve agents, published in 1992, bear on the question of acute v. chronic symptoms. The study was ordered because some AF personnel (e.g., bomb loaders and medical personnel) worked in potentially contaminated environments. USAF's Armstrong Laboratory conducted the studies of nerve agent behavioral toxicity in laboratory rhesus monkeys, and concluded that: "Behavioral deficits [in primates] can be reliably detected in the absence of any overt [acute] signs of toxicity. This is especially important when assessing the effects of low-level exposures to extremely toxic compounds such as OP [organophosphate] nerve agents." The Air Force studies suggest that ". . . repeated low-dose exposure to soman [a nerve agent] caused progressive and lasting inhibition of ChE [cholinesterase enzyme] . . ." [157]

Also disputing Dr. Joseph's statement was Dr. Seymour Antelman, University of Pittsburgh professor of psychiatry, who in a letter to the editor of the New York Times, stated: "[Dr. Joseph's] view . . . is almost certainly wrong. My research, published in leading scientific journals and the subject of a June 21, 1988, Science Times article, has shown that the effects of chemicals can develop and grow over time, and need not be present at the time

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[154] Statement of Frank Duffy, Human Resources Subcommittee hearings, No. 1, p. 230.

[155] Shenon, Phillip, "New Look Urged on Gulf Syndrome: Important Evidence Withheld by Pentagon, Scientist Says," New York Times, December 10, 1996, p. A1.

[156] Letter from Frank Duffy letter to Robert Hall, March 26, 1987 (in subcommittee files).

[157] Somani, Satu, *Chemical Warfare Agents,* (Academic Press, 1992), containing the study by Hargraves and Murphy, "Behavioral Effects of Low-Dose Nerve Agents," pp. 125–154.

of exposure. Such 'time dependent sensitization' is more likely after exposure to a low level stimulus." [158]

In May 1996, 7 weeks prior to DOD's first admission of chemical exposures, Major General Ronald Blanck, commander of the Walter Reed Army Medical Center and the Army's chief physician, said, "Clearly there is some evidence of low level exposure." [159]

Two VA physicians—Dr. Victor Gordan of the Manchester (NH) VA Medical Center and Dr. Charles Jackson of the Tuskegee (AL) VA Medical Center—began to suggest soon after the war that the sick Gulf veterans they had examined were exposed to chemicals. However, their views did not receive much attention from VA headquarters, DOD, or the news media.

In Human Resources Subcommittee testimony, Dr. Gordan, who has treated 544 Gulf veterans since 1991, stated, "What is strikingly consistent in these veterans' stories are: 1) a drastic change in their health status from very good to perfect, as it was before deployment to the Gulf War, to poor to fair after their return from the war; 2) the large variety and number of symptoms suggesting dysfunction of more than one organ system in their bodies; and 3) the very consistent history of being exposed to chemicals in the Gulf, including the strong belief [by veterans] of being exposed to chemical warfare. These consistent stories point very strongly toward the environmental hazards as the cause or causes of these unexplained illnesses. Unless the science addresses these environmental hazards, we will never be able to adequately explain and hopefully solve these medical problems." [160]

Dr. Gordan concluded, "Chemicals . . . are the greatest masquerader in the modern medicine . . . because they penetrate into all sorts of systems and organs, and those organs get dysfunctional, and those dysfunctions bypass symptoms, and symptoms can mimic so-called quantifiable disease, including arthritis, **even PTSD**." [emphasis added] [161]

In the same hearing, Dr. Jackson, an environmental physician covering Agent Orange and Gulf War illnesses, said, in reference to the chairman's earlier question to the VA, "Well, one of the questions that you asked to Dr. Mather was whether or not one person in the VA had made the clinical opinion that there was a veteran exposed to chemical and/or biological agents, and, yes, there was. We did this back 3 years ago." [162]

Attributing the illnesses he was seeing to the product of multiple chemical exposures, Dr. Jackson said, "Symptoms of the veterans are not inconsistent with those of the farm and veterinary workers with chronic low dose exposure to organophosphorus insecticides." [163]

Dr. Jackson added, "Recent DOD and CIA revelations concerning the destruction of tons of mustard and Sarin in Iraq have sup-

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[158] Letter to the editor, Seymour Antelman, New York Times, November 15, 1996 (in subcommittee files).

[159] Statement of Ronald Blanck to the PAC, May 2, 1996.

[160] Testimony of Victor Gordan, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 282.

[161] *Ibid.,* p. 291.

[162] Testimony of Charles Jackson, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 275.

[163] Statement of Charles Jackson, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 280.

ported the probability of exposure to the . . . agents."[164] "We have gone on record as saying that we believe this is a significant factor. . . . It was not a popular opinion, nor was it the official opinion of the VA."[165]

Dr. Frances Murphy, the VA's Director of Environmental Agents Service, offered the Department's official opinion, which supports Dr. Joseph, in testimony before the Human Resources Subcommittee: "Studies of low level chemical warfare agent exposure were not given high priority . . . because military and intelligence sources had stated that U.S. troops had not been exposed to chemical agents. **Current body of research proves that low level exposures cannot cause health effects** [emphasis added]."[166]

The results of a study conducted by Dr. David Schwartz and his University of Iowa Medical School research colleagues were recently published in the *Journal of the American Medical Association [JAMA].*[167] The Schwartz study, supported by the Centers for Disease Control and Prevention, found that Persian Gulf veterans are reporting more medical and psychiatric conditions than their military peers who were not deployed to the Gulf War. Gulf veterans reported an 11 percent higher prevalence of symptoms of cognitive dysfunction or problem thinking, but only a 1 percent increase in PTSD.[168]

Dr. Robert Haley and his research colleagues at the University of Texas Southwestern Medical Center also completed a study in early 1997 of Gulf veterans, the results of which were published in three articles in *JAMA*. According to the study, "Some Gulf War veterans may have delayed, chronic neurotoxic syndromes from wartime exposure to combinations of chemicals" and that "clusters of symptoms of many Gulf War veterans reflect a spectrum of neurologic injury involving the central, peripheral, and autonomic nervous systems."[169]

People have asked why most Gulf War veterans have not reported illnesses while only some veterans were affected. Dr. Kenneth Olden, director of the National Institute of Environmental Health Sciences, was recently quoted in the press: "We've known for a long time that when several hundred people are exposed to the same environmental toxicants, some people get sick and others don't. There are a number of enzyme systems that detoxify chemicals. If you have too little—that's a problem."[170]

The results of a second study by Dr. Haley on Gulf veterans was published in August 1997 by the National Academy of

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[164] *Ibid.*

[165] *Ibid.,* p. 295.

[166] Testimony of Frances Murphy, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, pp. 141, 109.

[167] Schwartz, et al., "Self-reported Illness and Health Status Among Gulf War Veterans." *Journal of the American Medical Association,* January 15, 1977, Vol. 277, No. 3, p. 238.

[168] Statement of David Schwartz at National Press Club, January 15, 1997 pp. 1, 3 (in subcommittee files).

[169] Haley, et al., "Is There a Gulf War Syndrome?" *Journal of the American Medical Association,* January 15, 1997, Vol. 277, No. 3, p. 215; "Evaluation of Neurologic Function in Gulf War Veterans," *Journal of the American Medical Association,* January 15, 1997, Vol. 277, No. 3, p. 223; and "Self-reported Exposure to Neurotoxic Chemical Combinations in the Gulf War," *Journal of the American Medical Association,* January 15, 1997, Vol. 277, No. 3, p. 231.

[170] Sternberg, Steve, "Study Seeks Genes That Make People Vulnerable to Toxins" USA Today, September 18, 1997, p. A3.

Neuropsychology.[171] The new study compared the brain-related and psychological functions of ill and well Gulf veterans, and found no evidence of psychological problems, including PTSD or other stress-related illnesses. Some Gulf veterans, the study says, suffer from a form of brain damage found in toxic poisoning victims.

A New York Times article reported, "Stephen C. Joseph, the Pentagon doctor overseeing the investigation of the Gulf War Syndrome, is under attack on the political battlefield. Senator John D. Rockefeller 4th (D–WV) has called him arrogant and demanded his resignation. "Dr. Joseph is at the heart of a culture that has never looked at this problem seriously enough," said one senior White House official involved in this issue. The uproar involves . . . questions over how the Pentagon responded to veterans' health complaints and its refusal to acknowledge that the veterans might have reason to worry about exposure to chemical or biological agents, anti-nerve gas pills, or other environmental factors in the Persian Gulf." [172]

As a result of increased congressional and news media attention on issues surrounding the Gulf War veterans' illnesses, then DOD Deputy Secretary John White assumed the role of DOD spokesman on Gulf issues in October 1996.

Dr. Joseph resigned in March 1997.

One of the most frequently asked questions by the veterans, public and press is why the DOD for 5 years continued to deny that troops were exposed to chemical warfare agents or that low level exposures caused illness. The *U.S. News & World Report* in an article "Gulf War Mysteries" stated: [173]

"If exposure to chemicals is ever tied to widespread illnesses among veterans, the government may face other dilemmas. A link could open the door to thousands of disability claims, plus legislation mandating greatly expanded health coverage for veterans. The repercussions could reach to future battlefields as well. An official determination that chemicals have seriously harmed U.S. soldiers would be an admission of vulnerability, likely to encourage Iraq and other potential foes such as North Korea to use chemical weapons if they ever face off against the United States in the future. The next time the alarms start going off, the all-clear may not be so quick to follow."

E. EXPOSURES AND VA MEDICAL PROTOCOLS FOR GULF VETERANS

In view of DOD's admission on June 21, 1996, after 5 years of denial, that Gulf War troops were presumed exposed to chemical warfare agents at the Khamisiyah bunker detonations, and in view of the missing or inadequate medical records of veterans and chemical detection logs, Human Resources Subcommittee Chairman Shays wrote to then VA Secretary Jesse Brown calling for an immediate re-evaluation of the diagnostic and treatment protocols, and compensation practices, for Gulf War veterans.

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[171] Horn, Haley, et al., "Neuropsychological Correlates of Gulf War Syndrome." *Archives of Clinical Neuropsychology,* August 1997, Vol. 12, No. 6, pp. 531–544.

[172] Shenon, Philip, "Pentagon Health Chief Fights Claims of Gulf Cover-Up," New York Times, November 3, 1996, p. 30.

[173] "Gulf War Mysteries: Why Americans May Never Know What's Making These Veterans Sick," *U.S. News & World Report,* November 25, 1996 [cover story].

The chairman's letter follows:

WILLIAM F. CLINGER, JR., PENNSYLVANIA
CHAIRMAN

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ROBERT L. EHRLICH, JR., MARYLAND

ONE HUNDRED FOURTH CONGRESS

Congress of the United States
House of Representatives

COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT
2157 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6143

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

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BERNARD SANDERS, VERMONT
INDEPENDENT

October 3, 1996

The Honorable Jesse Brown
Secretary
Department of Veterans Affairs
810 Vermont Avenue, N.W.
Washington, D.C. 20420

Dear Mr. Secretary:

The Subcommittee is deeply concerned that Department of Veterans Affairs (VA) diagnosis, treatment, research and compensation policies with regard to Persian Gulf War veterans continue to rely on discredited conclusions by the Department of Defense (DOD) concerning exposure of U.S. troops to chemical weapons and other toxins.

At our September 19, 1996 hearing on Gulf War Veterans' Illnesses, Dr. Frances Murphy, Director of the VA Environmental Health Service, conceded in testimony that the VA research agenda through 1995 placed a low priority on low-level chemical warfare agent exposure "because military and intelligence sources had stated that U.S. troops had not been exposed to chemical agents." We fear more than VA research has been distorted by reliance on premature, erroneous and misleading conclusions by DOD about the presence and effects of chemical weapons in the Gulf War theater.

As part of our continuing oversight of VA activities to address the serious illnesses suffered by Gulf War veterans, the Subcommittee requests your prompt response to the following inquiries:

1. Why did the VA diagnostic screening protocol for Gulf War veterans fail to identify even one veteran exposed to chemical weapons agent(s) or other toxins?

The DOD now estimates more than 15,000 troops were in the path of the toxic plume generated by the detonation of Iraqi chemical weapons in the pit area at Khamisiyah. We can only expect that number to increase. From an initial estimate of 400, Pentagon estimates of U.S. troops probably exposed to toxic nerve or blister agents have steadily increased, first to 1,100, then 5,000, now 15,000. A recent news report indicates the number could be as high as 130,000.

VA adherence to the DOD "no exposures" doctrine, often in the face of compelling clinical evidence to the contrary, could be viewed as Department-wide medical malpractice. Many of those exposed have been examined by the Gulf War Health Registry program. Others have sought treatment at VA facilities. How is it that VA doctors appear to have misdiagnosed all of them?

2. Please identify each specific element of the VA diagnostic screening protocol for Gulf War veterans designed to capture evidence of chemical exposure.

Recently, both Dr. Kenneth Kizer, Under Secretary for Health Affairs, and Dr. Murphy testified the "VA has always remained open to the possibility that [Persian Gulf War] PGW veterans were potentially exposed to a wide variety of hazardous agents while serving in the Southwest Asia theater of operations, including chemical warfare agents." Yet veterans consistently tell the Subcommittee that VA officials ignore or discount their recollections of battlefield exposures.

As a result, the variable range of veterans' illnesses, characterized by rashes, headaches, muscle and joint pain, gastrointestinal dysfunction and impaired cognition, are diagnosed as Post Traumatic Stress Disorder (PTSD), somatoform disorder or other psychological conditions. Could these same symptoms be associated with exposure to low levels of toxic agents?

Has the VA ignored logical, even obvious, theories of toxicological causation for Gulf War veterans illnesses for five years simply because DOD had already concluded, erroneously, that U.S. troops had not been exposed?

3. What immediate changes will VA make to diagnosis, treatment and compensation policies in light of recent disclosures by DOD regarding exposure of U.S. troops to chemical agents?

In testimony before a joint hearing of the Senate Select Intelligence and the Senate Veterans Affairs Committees, Dr. Kizer said, "The diagnosis of conditions related to nerve toxins, whether they be chemical warfare agents, pesticides or hazardous

industrial chemicals, is based on two things: first, known or **presumed** [emphasis added] exposure to the chemical agent, and second, symptoms or physical signs consistent with the known biological effects of the chemical. Absent definite exposure data and/or typical symptoms and signs, it is essentially impossible to make a definitive diagnosis of chemical-related neurotoxicity."

Do you believe you now have "definitive exposure data?" Prior to the recent revelations, the VA neither acknowledged nor presumed exposures in diagnosis, treatment or compensation of Gulf War veterans. Now that exposures may, indeed must, be presumed, will VA policies change? In what way?

4. On what data does the VA rely to conclude that low-level chemical exposures cause no chronic health effects in the absence of chronic symptoms at the time of exposure?

Both DOD and VA continue to insist that low-level exposures cause no long-term, chronic health effects unless acute symptoms appeared at the time of exposure. However, given the status of research in this area, that conclusion seems premature. Dr. Kizer told the joint Senate hearing "the research in this area is sparse and in VA's judgment it should not be construed to mean that clinically important adverse health effects cannot or definitely do not occur in the setting of low-level neurotoxin exposures." Shouldn't sick veterans be given the benefit of any doubts in this regard?

While VA research in this area is underway, what role will VA health screening and health care play in gathering data to support, rather than disprove, the hypothesis that low-level exposures can cause chronic health effects, even in the absence of evidence of acute symptoms at the time of exposure? The Subcommittee has been troubled by the VA's selective, even disingenuous, use of Gulf War Health Registry information to support epidemiological hypotheses favorable to the "no exposure" conclusion, while the VA aggressively disputes any contrary implications drawn from Registry data due to the self-selected nature of the cohort.

5. Why does the VA assume there were no acute symptoms of chemical exposure?

What does the VA consider an "acute" symptom? What evidence does VA require to support a veteran's claim that acute symptoms were the direct result of an exposure? Does the VA believe only incapacitating symptoms are acute?

Sick veterans consistently reported flu-like symptoms, rashes, headaches and other maladies during their service in the Gulf. Others simply went about their duties as

best they could, and did not report the ill-effects variably attributed to pills, vaccines, pesticides, engine fumes, rocket fuel, oil fires, indigenous infectious agents ... and chemical warfare agents.

Even when illnesses were reported, DOD medical records are not complete. Some were "lost" or destroyed. Unit chemical detection logs are also missing. DOD troop locator data is unreliable. Given this lack of consistent or reliable DOD information on chemical exposures and their effects, as opposed to consistent and persistent reports of illnesses by veterans, why does the VA choose to listen to DOD rather than the veterans? How can the VA conclude that Gulf War exposures caused no immediate health effects?

At our most recent hearing, medical witnesses discussed the possibility that pyridostigmine bromide (PB) could mute or mask the onset of acute symptoms resulting from chemical exposure. Could this account for any lack of acute symptoms noted by DOD?

Finally, I am personally skeptical of the Pentagon's call for another review of its handling of this matter by the Institute of Medicine (IOM) and the National Academy of Sciences (NAS). Those are both prestigious institutions, but the IOM has already made detailed recommendations about the quality and quantity of government research into Gulf War illnesses. Another review of the current investigation could involve the IOM in a critique of their own earlier work. If only to avoid the perception that DOD is seeking a friendly forum for its *a priori* conclusions, shouldn't another review of these issues be truly independent of all that went before?

Moreover, many of the disease conditions of which Gulf War veterans often complain - chronic fatigue syndrome, fibromyalgia, multiple chemical sensitivity - are poorly understood and only recently characterized by standardized diagnostic criteria. Shouldn't an independent review of the issues surrounding Gulf War veterans' illnesses be broad enough to include researchers and practitioners involved in the study and treatment of these disease states?

These inquiries are made pursuant to the Subcommittee's oversight authority under House Rule X, clause 2(b) and clause 4(c). Please provide a written response, accompanied by any source documents referenced in your reply, as soon as possible but in no event later than 5p.m., Monday, October 14, 1996. Should you anticipate difficulty providing a complete response by that date, please so advise Mr. Lawrence Halloran, Subcommittee Staff Director and Counsel, by phone and in writing no later than October 9. Please indicate at that time the nature of the problem and that exact date when your response will be provided. Absent that communication, we expect receipt of a complete response on October 14.

Hon. Jesse Brown
October 3, 1996
Page 5

Please feel free to provide responsive material as it becomes available, rather than waiting for all of it to be collected and forwarded at one time. Also, please note this request for information is continuing in nature, so that if additional events, information or materials responsive to our specific requests occurs or develops after your initial response, you are requested to provide that information to the Subcommittee in a timely manner.

Sincerely,

Christopher Shays
Chairman

cc: Rep. William F. Clinger, Jr.
Rep. Edolphus Towns
Rep. Bob Stump

THE SECRETARY OF VETERANS AFFAIRS
WASHINGTON

NOV 1 1996

The Honorable Christopher Shays
Chairman, Subcommittee on Human Resources
and Intergovernmental Relations
Committee on Government Reform and Oversight
U.S. House of Representatives
Washington, DC 20515-6143

Dear Mr. Chairman:

Enclosed are the Department's responses to post-hearing questions you posed in connection with the September 19, 1996, hearing on issues related to Persian Gulf veterans.

We regret the delay in getting these questions answered and appreciate the opportunity to submit this information for the record.

Sincerely yours,

Jesse Brown

Enclosure
JB/rlh

cc: Hon. William F. Clinger, Jr.
Hon. Edolphus Towns
Hon. Bob Stump
Hon. G.V. (Sonny) Montgomery

POST-HEARING QUESTIONS
CONCERNING THE SEPTEMBER 19, 1996
HEARING ON ISSUES RELATED TO
PERSIAN GULF WAR VETERANS

FOR THE DEPARTMENT OF VETERANS AFFAIRS

FROM THE HONORABLE CHRISTOPHER SHAYS
CHAIRMAN, SUBCOMMITTEE ON HUMAN RESOURCES
AND INTERGOVERNMENTAL RELATIONS
HOUSE COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT

Question 1: Why did the VA diagnostic screening protocol for Gulf War veterans fail to identify even one veteran exposed to chemical weapons agent(s) or other toxins?

The DoD now estimates more than 15,000 troops were in the path of the toxic plume generated by the detonation of Iraqi chemical weapons in the pit area at Khamisiyah. We can only expect that number to increase. From an initial estimate of 400, Pentagon estimates of U.S. troops probably exposed to toxic nerve or blister agents have steadily increased, first to 1,100, then 5,000, now 15,000. A recent news report indicates the number could be as high as 130,000.

VA adherence to the DoD "no exposures" doctrine, often in the face of compelling clinical evidence to the contrary, could be viewed as Department-wide medical malpractice. Many of those exposed have been examined by the Gulf War Health Registry program. Others have sought treatment at VA facilities. How is it that VA doctors appear to have misdiagnosed all of them?

Answer: The question assumes that there is some diagnostic test to detect temporally remote neurotoxic exposure. Unfortunately, there is no such test. The challenge we face with neurotoxic chemical warfare agents is that there is no pathognomonic set of signs or symptoms, diagnostic test or biomarker for chronic toxicity. Likewise, there is no specific treatment for any chronic effects from these exposures once they occur in an individual. Causal inference in most cases is not scientifically possible, unless exposure has been quantified by specific measurement and accurately documented. There are many similar examples where medical science cannot link a specific outcome to a specific toxic exposure in an individual patient. Conversely, similar clinical effects can be the end result of a variety of different toxic or nontoxic causes.

Inability to assign a definitive cause for an individual veteran's diagnosis hardly equates to misdiagnosis. VA's Registry physicians are aware of the environmental exposures and toxins relevant to Persian Gulf War service and have been instructed to ask questions in the veteran's medical history concerning this wide range of exposures. These exposures include, but are not

limited to: chemical warfare agents; smoke from oil well fires, tent heaters, and burning trash; CARC paint; fuels and solvents; pyridostigmine bromide; vaccinations; and depleted uranium. Many veterans report exposure to one or more of these agents during their Gulf service. In some cases, a diagnosed medical condition has been causally linked to one of the reported exposures, e.g., CARC paint and asthma. However, in many cases medical science is simply unable to determine the cause for individual symptoms or diagnoses. This does not mean such individuals were "misdiagnosed."

We strongly disagree that VA has either adhered to a "no exposures" belief or ignored compelling clinical evidence. Our policy makers, researchers, and clinicians have been open to all possibilities, and we are deeply disappointed that you would intimate that the Department committed medical malpractice. VA has diligently pursued scientifically supportable medical diagnoses in Persian Gulf War veterans. Our care is consistent with medical community standards. There is simply no factual support for your statement that there was "compelling clinical evidence" for chemical warfare agent exposure.

Question 2: Please identify each specific element of the VA diagnostic screening protocol for Gulf War veterans designed to capture evidence of chemical exposure.

Recently, both Dr. Kenneth W. Kizer, Under Secretary for Health and Dr. Frances M. Murphy testified the "VA has always remained open to the possibility that [Persian Gulf War] PGW veterans were potentially exposed to a wide variety of hazardous agents while serving in the Southwest Asia theater of operations, including chemical warfare agents." Yet veterans consistently tell the Subcommittee that VA officials ignore or discount their recollections of battlefield exposures.

As a result, the variable range of veterans' illnesses, characterized by rashes, headaches, muscle and joint pain, gastrointestinal dysfunction and impaired cognition, are diagnosed as Post Traumatic Stress Disorder (PTSD), somatoform disorder or other psychological conditions. Could these same symptoms be associated with exposure to low levels of toxic agents?

Has VA ignored logical, even obvious, theories of toxicological causation for Gulf War veterans illnesses for five years simply because DoD had already concluded, erroneously, that U.S. troops had not been exposed?

Answer: The Registry examination requires a careful medical history including an exposure history. The exposure history asks the veteran to report whether he or she believes that they were exposed to a nerve agent or mustard gas. A complete physical examination is required, which includes mental status and neurologic examinations. The Phase II protocol, a set of clinical guidelines for Persian Gulf veterans with difficult-to-diagnose medical conditions, contains symptom-specific diagnostic guidelines for numbness, muscle complaints, and memory loss which could potentially result from a toxic exposure to chemical warfare nerve agents. A copy of the manual and code sheet are attached (Attachment 1), and the relevant sections are tagged and

highlighted. As outlined in our testimony, the issue of chemical warfare agents is given specific attention and focus in the protocol.

Many of the signs, symptoms, and medical diagnoses of individual Persian Gulf veterans who have undergone VA registry examinations are not conventionally considered to be causally linked to chemical warfare agent exposures. You have stated "Both DoD and VA continue to insist that low-level exposures cause no long-term, chronic health effects unless acute symptoms appeared at the time of exposure." In VA's view, the published literature, while limited, does not demonstrate the development of readily identifiable, long-term adverse health effects due to nerve agent exposures in human subjects who have not shown signs of acute toxicity or poisoning. There are no scientifically endorsed, published studies showing clinically important adverse health effects after low dose exposures. Several prestigious medical advisory groups, including The National Academy of Science's Institute of Medicine and the Armed Forces Epidemiology Board, have also concluded that the available published scientific literature does not contain clear evidence that long-term, chronic adverse health effects result from exposures that do not produce acute clinical signs and symptoms. However, as we stated in our testimony before a joint hearing of the Senate Veterans' Affairs Committee and the Senate Select Intelligence Committee, "[I]n VA's judgment this should not be construed to mean that clinically important adverse health effects cannot or definitely do not occur in the setting of low-level neurotoxin exposures, especially if combined with other components or environmental stressors." Because there are so few studies on this question, we believe that additional research is needed to determine whether exposure to low-levels (non-poisoning, subtoxic) of chemical warfare nerve agents cause long-term health effects, including chronic or delayed onset of a characteristic set of symptoms, signs or medical conditions.

VA is fully committed to pursuing answers to this question. VA will work with DoD on a call for proposals to fund research in this area. VA is also sponsoring an international symposium on low-level chemical warfare and nerve agent exposure to stimulate scientific thinking and benefit from the scientific experts published and unpublished knowledge of the topic.

Question 3. What immediate changes will VA make to diagnosis, treatment and compensation policies in light of recent disclosures by DoD regarding exposure of U. S. troops to chemical agents?

In testimony before a joint hearing of the Senate Select Intelligence and the Senate Veterans' Affairs Committees, Dr. Kizer said, "The diagnosis of conditions related to nerve toxins, whether they be chemical warfare agents, pesticides or hazardous industrial chemicals, is based on two things: first, known or presumed [emphasis added] exposure to the chemical agent, and second, symptoms or physical signs consistent with the known biological effects of the chemical. Absent definite exposure data and/or typical symptoms and signs, it is essentially impossible to make a definitive diagnosis of chemical-related neurotoxicity."

Do you believe you now have "definitive exposure data?" Prior to the recent revelations, the VA neither acknowledged nor presumed exposures in diagnosis, treatment or compensation of Gulf War veterans. Now that exposures may, indeed must, be presumed, will VA policies change? In what way?

Answer: In light of the recent DoD announcements concerning the destruction of the Khamisiyah Ammunition Storage Area in March 1991, we believe there is evidence of release of nerve agents to the atmosphere and exposure of U.S. troops in the vicinity to unknown levels of these agents. No verifiable determination of the amount of nerve agents released or measurements of sarin or cyclosarin concentrations in the air at the time of release is available to us. Therefore, despite use of modeling techniques, the identification of troops exposed and level of the exposure will never be exact or absolute.

VHA has also requested that our advisory groups review the protocols in light of this new information. We have begun a thorough review of the evidence utilizing internal, interagency, and external advisory groups.

We have reviewed our clinical protocols and compensation policies. Based on currently available scientific information and evidence and the fact that we have always accepted the possibility of exposures, no changes in diagnosis, treatment or compensation policies will be undertaken, until the review is completed. As discussed in Response 2, current clinical protocols were designed to identify the sequelae of neurotoxic exposures. In the absence of a definitive diagnostic test and lack of specific treatment, clinical care for Persian Gulf veterans will not immediately change. Treatment, appropriate to symptoms and/or diagnosis, will continue to be provided. We have initiated several continuing medical education activities to ensure that VA health care providers have the latest information regarding chemical warfare agent exposure of Persian Gulf veterans. These activities reinforce appropriate use of the Phase I and II protocols.

While we will continue to assess our compensation policies on an ongoing basis, no immediate changes appear to be indicated. Current VBA policies already allow compensation for conditions which began during or were exacerbated by military service, including exposure to chemical warfare agents resulting in medically recognized disabling sequelae. In addition, VA can compensate Persian Gulf veterans for chronic disabilities resulting from undiagnosed conditions which develop within two years of military service in the Persian Gulf.

Question 4. On what data does VA rely to conclude that low-level chemical exposures cause no chronic health effects in the absence of chronic symptoms at the time of exposure?

Both DoD and VA continue to insist that low-level exposures cause no long-term, chronic health effects unless acute symptoms appeared at the time of exposure. However, given the status of research in this area, that conclusion seems premature. Dr. Kizer told the joint Senate hearing "the research in this area is sparse and in VA's judgment it should not be construed to mean that clinically important adverse health effects cannot or definitely do

not occur in the setting of low-level neurotoxin exposures." Shouldn't sick veterans be given the benefit of any doubts in this regard?

While VA research in this area is underway, what role will VA health screening and health care play in gathering data to support, rather than disprove, the hypothesis that low-level exposures can cause chronic health effects, even in the absence of evidence of acute symptoms at the time of exposure? The Subcommittee has been troubled by the VA's selective, even disingenuous, use of Gulf War Health Registry information to support epidemiological hypotheses favorable to the "no exposure" conclusion, while the VA aggressively disputes any contrary implications drawn from Registry data due to the self-selected nature of the cohort.

Answer: VA's assessment, based on current published scientific literature, is that low-level asymptomatic exposures to chemical warfare nerve agents have not been shown to cause delayed or long-term health effects. However, VA also recognizes that the existing scientific data is incomplete and contains gaps which need to be addressed by further scientific investigations. We have based these conclusions regarding the potential health effects of exposure on our review of the available medical literature on the subject. Several bibliographies of relevant literature are attached (Attachment 2). In addition, VA has given due consideration to the expert opinions of external scientific advisory committees. The Armed Forces Epidemiology Board and the National Academy of Science's Institute of Medicine Committee on the Health Consequences of Persian Gulf War Service have recently released reports which support this conclusion (Attachment 3).

Despite the lack of scientific evidence that long-term adverse health outcomes result from subtoxic exposures to organophosphate nerve agents, VA has provided Registry examinations and ambulatory and inpatient medical care under special medical care eligibility. In 1993, legislation that we supported gave special eligibility for VA health care to any Persian Gulf veteran whose health concerns or problems cannot be attributed to a cause other than an environmental or toxic exposure which occurred during their Gulf War service. Thus, our health care policies resolve benefit of the doubt in favor of the Persian Gulf veteran.

We strongly disagree with your statement that VA has been "disingenuous" in its use of the Persian Gulf Registry data. We would also like to emphasize that the clinical information contained in the Persian Gulf Registry and patient treatment file (PTF) databases has not been used as a method to support a conclusion of "no exposure" on any Persian Gulf health issue. VA has repeatedly stated that all exposures are still under active consideration.

The VA Persian Gulf Registry Health Examination program was established in 1992 as a health surveillance program and a mechanism for Persian Gulf veterans to gain entry to the VA health care system. The Persian Gulf Health Registry and the VA patient treatment file databases are not epidemiologic tools and, therefore, cannot be used to determine that low-level chemical warfare nerve agent exposures *cause* chronic health effects in the absence of acute symptoms at the time of exposure, as you suggest in your letter. However, these clinical databases can be utilized as a health surveillance and hypothesis-generating tool for future research studies. To date, VA has not found evidence from the Registry to support a hypothesis that neurotoxic exposures are

responsible for the illnesses of the majority of Persian Gulf veterans. If there were a neurotoxic exposure that could cause serious neurologic disease in a high proportion of Persian Gulf veterans, it would probably have been identified in the 60,000 Registry exams completed to date. However, if the illness was mild or affected a very small number of veterans, it may not be recognized in the larger clinical case series. This negative data did not change VA's resolve to continue to look for evidence to support the hypothesis that Persian Gulf veterans' illnesses could be caused by low level chemical warfare exposure but did cause that particular hypothesis to be given a lower priority by both the internal and external scientific reviewers prior to DoD's June 1996 announcement. In contrast, if a high frequency of certain peripheral or central nervous system conditions had been identified which suggested the possibility that neurotoxic exposures occurred, research is this area would have been aggressively pursued at an earlier date. These conclusions were supported by numerous internal and external scientists who have reviewed the information contained in this database.

Our use of the Registry and other clinical databases has been appropriate and scientifically accurate. In the past, VA has resisted inappropriate use or interpretation of this clinical data. VA will continue to utilize these databases in a scientifically sound manner.

Question 5: Why does VA assume there were no acute symptoms of chemical warfare exposure?

What does VA consider an "acute" symptom? What evidence does VA require to support a veteran's claim that acute symptoms were the direct result of an exposure? Does VA believe only incapacitating symptoms are acute?

Sick veterans consistently reported flu-like symptoms, rashes, headaches and other maladies during their service in the Gulf. Others simply went about their duties as best they could, and did not report the ill-effects variably attributed to pills, vaccines, pesticides, engine fumes, rocket fuel, oil fires, indigenous infectious agents ... and chemical warfare agents.

Even when illnesses were reported, DOD medical records are not complete. Some were "lost" or destroyed. Unit chemical detection logs are also missing. DoD troop locator data is unreliable. Given this lack of consistent or reliable DoD information on chemical exposures and their effects, as opposed to consistent and persistent reports of illnesses by veterans, why does VA choose to listen to DoD rather than the veterans? How can VA conclude that Gulf War exposures caused no immediate health effects?

At our most recent hearing, medical witnesses discussed the possibility that pyridostigmine bromide (PB) could mute or mask the onset of acute symptoms resulting from chemical exposure. Could this account for any lack of acute symptoms noted by DoD?

Finally, I am personally skeptical of the Pentagon's call for another review of its handling of this matter by the Institute of Medicine (IOM) and the National Academy of Sciences

(NAS). Those are both prestigious institutions, but the IOM has already made detailed recommendations about the quality and quantity of government research into Gulf War illnesses. Another review of the current investigation could involve the IOM in a critique of their own earlier work. If only to avoid the perception that DoD is seeking a friendly forum for its *a priori* conclusions, shouldn't another review of these issues be truly independent of all that went before?

Moreover, many of the disease conditions of which Gulf War veterans often complain - chronic fatigue syndrome, fibromyalgia, multiple chemical sensitivity- are poorly understood and only recently characterized by standardized diagnostic criteria. Shouldn't an independent review of the issues surrounding Gulf War veteran's illnesses be broad enough to include researchers and practitioners involved in the study and treatment of these disease states?

Answer: In medical terminology, acute symptoms are not synonymous with incapacitating symptoms. Acute in this context is defined as occurring "immediately" or "in a short period of time" after exposure to the chemical warfare nerve agents.

Exposures to high concentrations of organophosphate nerve agents, such as sarin or cyclosarin, cause loss of muscle control, generalized twitching, paralysis, unconsciousness, convulsions, and coma or even death. The most common cause of death is acute respiratory failure due to diaphragmatic paresis/paralysis. Exposure to moderate or even small amounts of these agents may result in sudden onset of impaired vision, drooling, coryza, severe flu-like symptoms, chest discomfort, and hyperhidrosis. These symptoms would have occurred either immediately or a short time after exposure. Since both pyridostigmine bromide (PB) and organophosphate nerve agents increase the amount of synaptic acetylcholine of cholinergic nerves, even if PB pretreatment had been used, one would not expect PB to blunt these acute symptoms. Troops located in the same geographic area would be expected to experience and report this characteristic constellation of symptoms simultaneously. Such outcomes were very evident after the unexpected terrorist attacks in Matsumoto and Tokyo, Japan, in 1994 and 1995, respectively. The release of sarin during these incidents resulted in large numbers of emergency room visits and hospital admissions. Neither DoD nor veterans responding to their telephone survey have reported that this occurred at Khamisiyah. Furthermore, DoD reports that no such characteristic set of signs or symptoms were reported or identified by specially-trained military physicians in the vicinity of Khamisiyah. A characteristic pattern of toxicity was not identified on DoD's review of the medical information for units in the vicinity of Khamisiyah. Veterans likewise have not reported to VA that they noted sudden onset of this symptom complex in their units near Khamisiyah in Southern Iraq during early March 1991.

In order to confirm DoD's conclusions regarding the health of troops in the vicinity of Khamisiyah in early March 1991, VA has asked to review the data upon which their conclusions were based. The data would include data from medical logs, surveys, and questionnaires. We would also welcome the review and opinions of other external scientific advisory committees on these matters.

Finally, you asked whether VA supported an independent review of these issues. VA feels that the reviews of the National Academy of Sciences Institute of Medicine, the VA Persian Gulf Expert Scientific Advisory Committees and the Presidential Advisory Committee will provide such independent, objective reviews. You also ask whether these reviews shouldn't be broad enough to include researchers and practitioners from the multiple chemical sensitivity, chronic fatigue syndrome and fibromyalgia community. I can assure you that these groups have been represented on the previous and current external, independent advisory committees, and we would welcome continuing input from credible experts in these areas. We look forward to the recommendations of these advisory groups on this important issue.

If the VA claims it has "always accepted the possibility of exposures," it should be noted that: 1) the VA did not add specific questions on chemical warfare exposures to its VA Gulf Health Registry until late 1995, 4 years after veterans began reporting illnesses; and 2) there is no VA or DOD research on the health effects of low level exposure to neurotoxic agents yet available.

In a subcommittee hearing on December 11, 1996, Chairman Christopher Shays questioned Dr. Susan Mather, VA's Chief Public Health and Environmental Hazards Officer, and Dr. Frances Murphy, VA's Director of Environmental Agents Service, about when the VA first "accepted the possibility of chemical exposures." Their testimony follows:

> Mr. SHAYS. Do they [VA doctors] listen to that [sick] veteran or do they listen to DOD who says we have had no credible verification of chemicals being used? Who do they listen to?
>
> Dr. MATHER. The veterans.
>
> Mr. SHAYS. If you were listening to veterans, why are we still now only beginning to think that maybe exposure to chemicals might in fact be credible?
>
> Dr. MATHER. Our perspective and our emphasis has been on the illness that the veterans had, and we were looking at the illnesses that the veterans had and working back from that.
>
> Mr. SHAYS. To help you in this analysis . . . to truly understand the illnesses that are affecting your patients, you would want to know what kind of an environment they were in and what physical confrontation they had with that environment.
>
> Dr. MATHER. Exactly. That's the reason we revised the questions we asked the veteran.
>
> Mr. SHAYS. When did you make that revision?
>
> Dr. MATHER. Unfortunately, the revision did not get finished until this past year. It took a long time to get it approved and I apologize for that.
>
> Dr. MURPHY. We began educating our physicians early on about all the exposures that were known. We addressed the whole range of exposures and asked them to question veterans about those exposures.
>
> Mr. SHAYS. But the fact is, we have under oath documentation that soldiers weren't asked vital questions dealing with chemical exposures until after Khamisiyah [events were announced]. When did you really start to change your approach? When, if fact, did the form get changed?
>
> Dr. MURPHY. The form was published in September 1995.[174]

In the following Gulf War hearing on January 21, 1997, the same subject was raised again by Chairman Shays with the witness Dr. Kenneth Kizer, VA's Under Secretary for Health:

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[174] Testimony of Susan Mather and Frances Murphy, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 247.

Mr. SHAYS. Dr. Kizer, what mistakes has the VA made in the last 6 years with regard to the Gulf War issue?

Dr. KIZER. I don't know I would characterize them as mistakes . . . the research agenda . . . was delayed because of information that was provided.

Mr. SHAYS. Provided where?

Dr. KIZER. By the Department of Defense.

Mr. SHAYS. So in essence, the only thing you would describe as a mistake, and you wouldn't even describe it as a mistake, is that you relied on information from the DOD that our troops weren't exposed to chemicals . . . ?

Dr. KIZER. The issue of chemical warfare agents . . . and the investigation into that arena, was delayed, and that investigative focus was given a lower priority because of the information that had been provided by DOD.

Mr. SHAYS. So the bottom line is, because the DOD denied . . . any exposure . . . VA made a determination that therefore our troops were not exposed to . . . chemicals?

Dr. KIZER. No, I don't think that characterizes what I said, Mr. Chairman.

Mr. SHAYS. OK. Say it over again in a different way.

Dr. KIZER. The VA has been consistently . . . open to and have been concerned about the exposure of troops to chemical warfare agents. As far as specific research protocols that were funded, the potential exposure was given lower priority than others.

Mr. SHAYS. Because?

Dr. KIZER. Because of the information that was provided by DOD . . .

Mr. SHAYS. So you didn't ever begin to ask our troops until 1995 if they felt they were exposed to chemicals?

Dr. KIZER. I don't believe that is correct, sir, because our physicians were asking the question before that.

Mr. SHAYS. So I will ask the question again. Is it a fact that the Registry did not require these questions [to be asked by VA physicians] until 1995?

Dr. KIZER. Again, physicians performing the Registry examinations before that time [1995] asked those questions. Did everybody ask it? I can't say they did, no . . .[175]

In the December 11, 1997 hearing, Chairman Shays questioned VA's Dr. Mather and Dr. Murphy about research on low level chemical exposures. Their testimony follows:

Mr. SHAYS. The VA has expressed to us that there has not been a focus on low level exposure because the DOD, whose information you rely on, has said there has been no use of chemicals in the Gulf and no exposure.

Dr. MATHER. That is very true in the research arena. I think research into low level exposure has a low priority.

Dr. MURPHY. It was not viewed as high priority to take asymptomatic exposures to chemical warfare nerve agents and look for health effects, because there was no evidence

[175] Testimony of Kenneth Kizer, Human Resources Subcommittee hearing, No. 1, pp. 50–60.

> either from what we were being told from DOD . . . [or] that [exposure] was a likely possibility. What we did not address was low level exposures and the potential long-term health effects. Current body of research proves that **low level exposures cannot cause health effects** [emphasis added].[176]

Veterans and medical witnesses at Human Resources Subcommittee hearings maintain that the VA medical protocol does not sufficiently address exposure history. In fact, the VA Health Registry questionnaire relies on the ability of the veteran to recognize toxic exposures by asking such questions as: "Did you witness Chemical Alarms?"[177]

In addition, VA physicians who examine Gulf veterans for the first time are not trained to take toxic exposure histories.[178] This is critical in that many veterans may have been exposed in theater but would not have realized it. VA physicians trained to ask the right questions can identify potential exposures of which the veteran may not have been aware.

The issue of trained VA physicians to detect the health effects of chemical exposures was also raised in Human Resources Subcommittee hearings:

> Mr. SHAYS. I get the sense that you don't really have the background in chemical exposures. Is that correct?
>
> Dr. MATHER. I'm not a toxicologist. I'm a chest physician.
>
> Dr. MURPHY. I'm a neurologist, sir.
>
> Mr. SHAYS. How many doctors work for the VA?
>
> Dr. MURPHY. Over 1,800.
>
> Mr. SHAYS. How many toxicologists?
>
> Dr. MATHER. I don't know.
>
> Dr. MURPHY. Physicians are rarely toxicologists. That's a Ph.D. level kind of specialty. Dr. Kizer, for instance, is a medical toxicologist physician. I would have to go back and look specifically.
>
> Mr. SHAYS. It would be an estimate. One percent? Ten percent? A half percent?
>
> Dr. MURPHY. I cannot estimate.
>
> Dr. MATHER. I honestly don't know.
>
> Mr. SHAYS. Can you name me 10 toxicologists that you know are working for the VA?
>
> Dr. MATHER. No.
>
> Dr. MURPHY. I can't come up with 10 off the top of my head.
>
> Mr. SHAYS. Can you name me five?
>
> Dr. MURPHY. Dr. Peter Spencer is a neurotoxicoligist.
>
> Mr. SHAYS. That's one. Can you name another?
>
> Dr. MURPHY. No, sir.

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[176] See *supra* note 174, p. 52 (Mather testimony), pp. 80, 99, 109 (Murphy testimony).

[177] U.S. Department of Veterans Affairs, Persian Gulf Registry Questionnaire (in subcommittee files).

[178] Human Resources and Intergovernmental Relations Subcommittee staff conference call with Claudia Miller, September 20, 1996.

Mr. SHAYS. You can only name one expert in a field that deals with chemical exposure? What other specialities would there be besides the toxicologists?

Dr. MURPHY. Most of the subspecialities we have in investigating toxic exposures, include neurologists, pulmonologists, and occupational health physicians.

Mr. SHAYS. So it might not be their primary focus, but they might have some knowledge of chemical exposure and its effect?

Dr. MURPHY. Yes.

Mr. SHAYS. It is telling though that you cannot name more than one person in the entire [VA] department [who is a toxicologist.].

Dr. MURPHY. We can provide that for the record.

Mr. SHAYS. I would definitely like it for the record.[179]

On February 11, 1997, the VA provided the following information:

DEPARTMENT OF VETERANS AFFAIRS (VA)

VETERANS HEALTH ADMINISTRATION (VHA)

RESPONSES TO INFORMATION REQUEST FROM CHAIRMAN CHRISTOPHER SHAYS

1. The results of a survey of each VA medical center to gather specific information on specialized professional and research credentials of VIA medical personnel.

We were aware of your earlier requests for information related to the number of toxicologists and other specialists on VA medical staff and were in the process of assembling it. Based on our employment records, we have found four toxicologists on the research rolls. However, the toxicologists do not treat patients. Persian Gulf veterans are treated by licensed medical doctors who are internists or primary care providers supplemented by specialists. As of Dec. 31, 1996, the following number of specialists were on our rolls (note that occupational medicine is not a physician specialty category):

	Full-time	Part-time
Neurologists	181	299
Pulmonologists	175	134
Oncologists	46	54
Infectious Disease	94	109
Rheumatologists	33	92
Gastroenterologists	122	178
Dermatologists	31	160
Toxicologists (non-physician)	4	0

The lack of a specific case diagnostic criteria for Gulf illnesses also reflects a flawed approach to these illnesses on the part of the VA. Illnesses in Gulf veterans have been reported since 1991. A critical factor in identifying uncharacterized illnesses is the development of a case definition of the illness. Gulf War illnesses include a range of symptoms previously mentioned—rashes, headaches, muscle and joint pains, neurological and cognitive abnormalities, and more.

Dr. William C. Reeves of the Centers for Disease Control and Prevention [CDC], presented results of his epidemiological inves-

[179] See *supra* note 174, pp. 259–260. See also infra text to accompany note 391.

tigation into the Gulf War Syndrome to the PAC in both January and September 1996. CDC was able to develop a working case definition of Gulf illnesses. CDC defines a case as "at least one chronic (present for 6 months or longer) symptom from two or more of the following categories: fatigue; mood and cognition related symptoms (feeling depressed, difficulty remembering or concentrating, feeling moody, feeling anxious, trouble finding words or lack of interest in sex); and musculoskeletal related symptoms (joint pain, joint stiffness or muscle pain)."[180]

Using this definition, Dr. Reeves showed that Gulf-related illnesses are more frequent in Gulf War veterans than non-deployed troops. If CDC could conduct an epidemiological investigation, it would seem logical that the VA could also have conducted a similar epidemiological study and achieved the same results. Furthermore, CDC did not start its investigation until late 1994, whereas VA began receiving complaints from Gulf veterans as early as 1991 and could have initiated a study.

VA medical policy may have been biased against findings of chemical exposure by relying on DOD assertions and unproven theories of toxic causation. VA continues today to maintain that chronic symptoms in Gulf veterans cannot be attributed to toxic exposures unless acute symptoms first appear at the time of exposure.

There is no credible, scientific evidence to substantiate the VA and DOD position that chronic symptoms cannot later develop from low level chemical exposures unless acute symptoms are observed when the exposure occurred.

The question of whether delayed or chronic effects result from exposure to low level chemical agents without first having acute or immediate symptoms is critical to Gulf veterans. The answer determines whether or not Gulf veterans will be diagnosed and treated properly, as well as compensated appropriately for injuries suffered in the war zone. Many sick veterans did not report acute symptoms during the war but later developed chronic symptoms, thereby being denied appropriate compensation for their illnesses.

On the other hand, many veterans report that they may have had flu-like symptoms, rashes, or other reactions during the war which they ignored as part of serving in a harsh, desert environment or as a reaction to vaccines or drugs. The "low level" symptoms could be considered acute, but mild, reactions to low level chemical agents. The taking of anti-nerve gas pills [PB] may also have masked acute symptoms, as Dr. Padilla testified.

F. IMPACT ON VETERANS OF MISSING RECORDS

Personal medical records of veterans, including sick call records, are inadequate or missing. Documents which could help verify possible exposures and military unit locations remain in DOD files.[181] Most of the military nuclear-biological-chemical [NBC] logs, which are records of toxic warfare agent detections, are missing or destroyed. Readouts from chemical detection equipment have vanished. Many CIA intelligence logs concerning Iraqi chemical/biologi-

[180] Statement of William Reeves to the PAC, January and September 1996, slides 31–36 (in subcommittee files).

[181] PAC Report, p. 52. See also, *supra* note 125 [IOM Report], pp. 6, 7, 10.

cal weapons [CBW] storage depots and manufacturing facilities, and documents concerning enemy capabilities and intentions to use CBW against U.S. troops, have remained unreleased since the war.

All this critical information comprises the complete medical history of each Gulf War veteran. In the absence of full documentation needed to prove a service-connection, sick veterans have a difficult—if not impossible—task of receiving proper medical treatment and fair compensation.

Since no Government low level exposure research is available, proof of toxic exposure as a cause of medical disability is nearly impossible to obtain. Furthermore, the burden of proof that the disability or illness is service-connected falls on the veteran exclusively under current VA regulations. Since the scientific research on the medical effects of exposure to low level chemical and biological has not been conducted, a veteran cannot prove a service-connected disability related to chemical or biological toxic exposure.

"Current VBA policies allow compensation for conditions which began during or were exacerbated by military service, including exposure to chemical warfare agents resulting in medically recognized sequelae." [182]

If basic scientific research has not been conducted to identify medically recognized sequelae produced by toxic exposures, compensation for service connected disability cannot be proven by the veteran and the VA will not compensate the veteran without this proof.

Congress enacted legislation in 1994 allowing the VA to pay compensation benefits to veterans for disabilities related to the Gulf War caused by "undiagnosed" illnesses.[183] In the past, the VA had always required that compensation be based on clearly diagnosed diseases.

According to Congressional Research Service [CRS], "Under regulations issued in February 1995 (38 CFR 3.317), a veteran can be compensated only for undiagnosed illnesses that manifest themselves during Gulf War service or arise within 2 years of departing from the Gulf. Veterans must provide objective evidence of chronic illness and be at least 10 percent disabled. However, as of January 1997, the VA had denied 9,688 (93.5 percent) of the 10,357 undiagnosed illness claims that had been reviewed. Approximately 55 percent of the denied claims were rejected because the illness did not manifest itself until after the 2-year presumptive period. President Clinton [last March] extended the presumptive period by 8 years, until December 31, 2001. The VA plans to re-evaluate the claims that were denied on the basis of a 2-year presumptive period to determine if they now qualify for compensation under the extended period." [184]

G. STRESS-RELATED DIAGNOSES OF VETERANS' ILLNESSES

VA has consistently diagnosed veterans presenting these symptoms as stress-related, or PTSD, or other psychological conditions, as opposed to conducting the appropriate epidemiological investiga-

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[182] See *supra,* entire text of Secretary Brown's letter in text section entitled, "Exposures and VA Medical Protocols for Gulf Veterans," (original in subcommittee files).

[183] Public Law 103–446.

[184] See *supra* note 4, p. 6.

tions to differentiate psychological conditions from psycho-neuro-immunological conditions such as fibromyalgia, chronic fatigue syndrome and central nervous system disorders which may have resulted from toxic exposures.

Of the 21 sick Gulf veterans—all with symptoms of undiagnosed origin—who appeared before the Human Resources Subcommittee as witnesses, 13 were diagnosed by VA and/or DOD doctors as "Stress" or "PTSD," 3 cases as "Nothing wrong; all in the head," 3 cases as "Undiagnosed," and only 2 cases of "Chemical exposure."

One sick veteran who testified, Air Policeman James Green of the Air Force, with orders to ship out to the Gulf War from Germany, had taken the vaccines and PB tabs and become sick. His orders were canceled at the last moment. "I signed up for the VA Health Registry in 1994. They sent me to the VA hospital for an exam. The [VA] doctor asked me what was wrong and to describe the symptoms. I was . . . referred to the mental health clinic for stress-related problems. Seems awful funny to me that my illness is stress and I was not even in the theater." [185]

Dr. Matthew Friedman, a professor of psychiatry at Dartmouth Medical School and executive director of the National Center of Post Traumatic Stress Disorder, disputes emphasis on stress as the principal cause of the illnesses. The NY Times quoted Dr. Friedman: "They [the PAC, DOD and VA] have very nicely laid out why this is such an attractive hypothesis [stress], but the data are not there to support it." The Times article stated that Dr. Friedman's research on sick Gulf veterans "showed that only about 10 percent . . . were suffering from PTSD . . . an extreme form of stress caused by exposure to battle or other forms of trauma." [186]

Dr. Katherine Murray Leisure, an infectious disease specialist formerly at the VA Medical Center in Lebanon, PA, who treated more than 700 sick Gulf veterans, said in the same Times article it was clear to her that battlefield stress had little to do with the veterans' ailments. She said, "Out of the hundreds of people I've seen, there's been fewer than a half dozen who had PTSD. It's negligible." [187]

Neurologist and psychiatrist Dr. William Baumzweiger, a former fellow at the VA Outpatient Clinic in Los Angeles who has examined more than 100 sick Gulf veterans, stated in prepared testimony before the subcommittee, "I do not believe that the majority of symptomatic Gulf War participants experienced any stress which would be sufficient to precipitate PTSD. I concluded they had suffered from environmental intoxication . . . and that the disorders are neurological illnesses that involve the central nervous system and the immune system." [188]

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[185] Testimony of James Green, Human Resources Subcommittee hearing, No. 1, p. 220.

[186] Shenon, Philip, "Studies Seem to Back Veterans Who Trace Illnesses to Gulf War," New York Times, November 26, 1996, p. 1.

[187] *Ibid.*

[188] Statement of William Baumzweiger, Human Resources Subcommittee hearings, Nos. 1–4, p. 500.

According to Dr. Leisure and Dr. Baumzweiger, both doctors were recently released by the VA, allegedly for their outspoken views on the cause and treatment of Gulf veterans' illnesses.[189]

Dr. Eula Bingham, a toxicologist and environmental health professor who is chairman of the VA's Gulf War Expert Scientific Committee, in an earlier interview with the New York Times said, "It's pretty clear that the veterans who were in the gulf have a whole series of symptoms that other veterans don't." She added, "Certainly we know that there was widespread exposure to chemicals during the war. We really don't have good data on what health effects are caused by long-term, low-level exposure to those agents." Dr. Bingham was further quoted saying, "I'm very troubled when any committee says, 'Well, it's stress.' Have they analyzed it? Why are they saying it? I think it's a very poor word to use at this time."[190] Dr. Bingham is also the former Administrator of OSHA.

In the same Times article, Dr. Claudia Miller, a physician and environmental research professor who is also a member of the VA's Gulf War Expert Scientific Committee, said that "stress may be a contributor to these health problems but we should be looking at potential chemical causes, particularly given the kind of chemical environment that our soldiers faced in the Gulf."[191]

A 1993–1994 study of veterans from Pennsylvania and Hawaii, sponsored by the Walter Reed Army Institute of Research, stated: "The major conclusion concerning physical health of these veterans is that for those who deployed to the Gulf War and recently reported physical symptoms, neither stress nor exposure to combat or its aftermath bear much relationship to their distress; only the fact of deployment differentiates them from their less-burdensome counterparts."[192]

Dr. Daniel Clauw, Assistant Professor of Medicine at Georgetown University Medical Center, in testimony before the Human Resources Subcommittee, stated: "The problem with considering these [Gulf War] illnesses as psychiatric conditions: In clinical practice, telling an individual with this type of illness that it is 'all in their head,' or that there is no 'organic' basis for their symptoms, will always lead to frustration and a sense of abandonment by the individual. It is not difficult to see why many of the veterans with these illnesses, as well as their families and advocates, have become so frustrated with this vicious cycle of no diagnoses, no effective treatment, and psychiatric attribution of symptoms."[193]

"Take these veterans seriously. The physical and emotional toll of this type of illness is great, and these individuals developed these problems while serving our country. View with skepticism anyone who might assert that because there are no abnormalities on these individuals' blood tests, x rays, or other diagnostic studies, that there is nothing wrong, or that the individual is suffering from

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[189] Correspondence from William Baumzweiger and Katherine Murray Leisure (in subcommittee files). See also, Shenon, Philip, "VA Punishes Doctors for Speaking Out on Gulf Illnesses" New York Times, December 12, 1996, p. A12.

[190] Shenon, Philip, "Panel Disputes Studies on Gulf War Illness," New York Times, November 21, 1996, p. B11.

[191] *Ibid.*

[192] Streich, et al., "Symptomatology of Gulf War Era Service," *Military Medicine,* Walter Reed Army Institute of Research, Bethesda, MD, March 1995.

[193] Statement of Daniel Clauw, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 186.

a psychiatric condition. It is arrogant of us as scientists to feel that because we cannot precisely define a problem, it doesn't exist." [194]

H. TREATMENT AND RESEARCH

The GAO Report on "Gulf War Illnesses" responded to the mandate of the Fiscal Year 1997 Defense Authorization Act. GAO examined three issues and made findings and recommendations based on results of the study. The GAO conducted a 6-month study on the Government's clinical care and medical research programs relating to illnesses that members of the armed forces might have contracted as a result of their service in the Persian Gulf War.[195]

Issue 1: The efforts of DOD and VA to assess the quality of treatment and diagnostic services provided to Gulf War veterans and their provisions for follow-up of initial examinations.

Finding: Neither DOD nor VA has systematically attempted to determine whether ill Gulf War veterans are any better or worse today than when they were first examined.

Issue 2: The Government's research strategy to study the Gulf War veterans' illnesses and the methodological problems posed in its studies.

Finding: The majority of the research has focused on the epidemiological study of the prevalence and cause of the illnesses rather than diagnosis, treatment, and prevention of them.

Issue 3: The consistency of key official conclusions with available data on the causes of the veterans' illnesses.

Finding: Support for some official conclusions regarding stress, leishmaniasis (a parasitic infection), and exposure to chemical agents was weak or subject to alternative interpretations.

Dr. Donna Heivilin, Director of Planning and Reporting for GAO's National Security and International Affairs Division, appeared before the Human Resources Subcommittee on June 24, 1997, to review results of the GAO study. Concerning the quality of medical treatment and diagnostic services, Dr. Heivilin stated: "Over 100,000 of the approximately 700,000 Gulf War veterans have participated in DOD and VA health examination programs [DOD's Comprehensive Clinical Evaluation Program or CCEP, and VA's Persian Gulf Health Registry]. Of those veterans examined, nearly 90 percent have reported a wide array of health complaints and disabling conditions. Officials of both DOD and VA have claimed that regardless of the cause of veterans' illnesses, veterans are receiving appropriate and effective symptomatic treatment. Both agencies have tried to measure or ensure the quality of veterans' initial examinations through such mechanisms as training and standards for physician qualification. However, these mechanisms do not ensure a given level of effectiveness for the care provided or permit identification of the most effective treatments."

"We found that neither DOD nor VA has mechanisms for monitoring the quality, appropriateness, or effectiveness of these veterans care or clinical progress after their initial examination and has no plans to establish such mechanisms. VA officials involved in administering the Health Registry program told us they regarded

[194] *Ibid.,* p. 189.
[195] See *supra* note 48, p. 1.

monitoring the clinical progress of registry participants as a separate research project, and DOD's [CCEP] program made similar comments."

Dr. Heivilin said that such monitoring is important because: 1) undiagnosed conditions are not uncommon among ill veterans; 2) treatment for veterans with undiagnosed conditions is based on their symptoms; and 3) veterans with undiagnosed conditions or multiple diagnoses may see multiple providers.

"Without follow-up of their treatment, DOD and VA cannot say whether these ill veterans are any better or worse today than when they were first examined." [196]

Concerning the Government's research strategy, Dr. Heivilin stated: "Federal research on Gulf War veterans' illnesses and factors that might have caused their problems has not been pursued proactively. Although these veterans' health problems began surfacing in the early 1990's, the vast majority of research was not initiated until 1994 or later. This 3-year delay has complicated the task facing researchers and has limited the amount of completed research currently available. Although at least 91 studies have received Federal funding, over 70 or four-fifths of the studies are not yet complete, and the results of some studies will not be available until after the year 2000." [197]

"We found that some hypotheses [about causes of the illnesses] received early emphasis, while some hypotheses were not initially pursued. While research of exposure to stress received early emphasis, research on low level chemical exposure was not pursued until legislated in 1996. The failure to fund such research cannot be traced to an absence of investigator-initiated submissions. According to DOD officials, three recently funded proposals on low level chemical exposure had previously been denied funds. We found that additional hypotheses were pursued in the private sector. A substantial body of research suggests that low level exposure to chemical warfare agents or chemically related compounds, such as certain pesticides, is associated with delayed or long-term health effects." [198]

Dr. Heivilin said there is evidence from animal experiments, studies of accidental human exposures, and epidemiological studies of humans that low level exposures to certain organophosphorus compounds, including Sarin nerve agents to which some of our troops may have been exposed, can cause delayed, chronic neurotoxic effects. The ill-defined symptoms may be associated with objective brain and nerve damage, and due in part to organophosphate-induced delayed neurotoxicity [OPIDN], according to Dr. Heivilin.[199]

Studies "further linked the veterans' illnesses to exposure to **combinations of chemicals** [emphasis added]," Dr. Heivilin stated, "including nerve agents, pesticides, insect repellants, and pyridostigmine bromide tablets. Exposure to combinations of organophosphates and related chemicals . . . has been shown in

[196] Statement of Donna Heivilin, Human Resources Subcommittee hearing, No. 3, pp. 47–48.
[197] *Ibid.,* pp. 48–49.
[198] *Ibid.,* p. 49.
[199] *Ibid.,* p. 50.

animal studies to be far more likely to cause morbidity and mortality than any of the chemicals acting alone."[200]

The GAO study found the ongoing epidemiological Federal research suffered from two methodological problems: a lack of case definition, and absence of accurate exposure data. Without valid and reliable data on exposures and the multiplicity of [chemical] agents to which the veterans were exposed, researchers will likely continue to find it difficult to detect relatively subtle effects and to eliminate alternative explanations for Gulf War veterans' illnesses. The study found that while multiple federally funded studies of the role of stress in the illnesses have been done, basic toxicological questions regarding the substance to which they were exposed remain unanswered.[201]

Dr. Heivilin stated: "We found that Federal researchers have faced several methodological challenges and encountered significant problems in linking exposures or potential causes to observed illnesses or symptoms. For example:

- Researchers have found it extremely difficult to gather information about exposures to such things as oil well fire smoke and insects carrying infection.
- DOD has acknowledged that records of the use of pyridostigmine bromide and vaccinations to protect against chemical/biological warfare exposures were inadequate.
- Gulf veterans were typically exposed to a wide array of agents, making it difficult to isolate and characterize the effects of individual agents or to study their combined effects.
- Most epidemiological studies on Gulf illnesses have relied only on self-reports for measuring most of the agents to which veterans may have been exposed.
- Information gathered from Gulf veterans gathered years after the war may be inaccurate or biased. There is often no straightforward way to test the validity of self-reported exposure information. As a result, findings from these studies may be spurious or equivocal.
- Classifying the symptoms and identifying illnesses of Gulf veterans have been difficult. From the outset, symptoms reported by veterans have been varied and difficult to classify into one or more distinct illnesses. It has thus been difficult to develop a case definition (that is, a reliable way to identify individuals with a specific disease), which is a criterion for doing effective epidemiological research."

"In summary," Dr. Heivilin stated, "the ongoing [Federal] epidemiological research will not be able to provide precise, accurate, and conclusive answers regarding the causes of veterans' illnesses because of these formidable methodological problems."[202]

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[200] *Ibid.,* p. 51.
[201] Ibid., pp. 52–53.
[202] *Ibid.,* pp. 53–54.

I. OTHER EXECUTIVE AGENCY ACTIONS ON GULF VETERANS' ILLNESSES

DOD and CIA Gulf War Illnesses Investigation Teams

In November 1996, Deputy Secretary John White appointed Bernard Rostker, Ph.D. economist and Assistant Secretary of Navy Manpower, to the position of Special Assistant for Gulf War Illnesses. Under Dr. Rostker, DOD expanded its Gulf illness investigative team from 10 to more than 100 people. It was up to an estimated 150 people as of October 1997. To date, the DOD team has focused its investigation mainly on troop chemical exposures from fallout resulting from the Iraqi bunker detonations at Khamisiyah, and on case narratives to disprove specific chemical detection incidents reported by military specialists such as Human Resources Subcommittee witnesses Major Johnson and Gy/Sgt. Grass.

On March 3, 1997, Deputy Secretary John White directed the DOD Inspector General to take over the investigation of what happened to the missing nuclear, biological, chemical [NBC] logs maintained at U.S. Central Command during the Gulf War. As mentioned, in March 1997 Dr. Stephen Joseph resigned. In April 1997, Secretary Cohen named former Senator Warren Rudman as his special advisor on Gulf War illnesses. In July 1997, Deputy Secretary White resigned. DOD's former Deputy Assistant Secretary for Health Affairs, Dr. Sue Bailey, is expected to be nominated by the President to replace Dr. Joseph.

In March 1997, CIA Director George Tenet formed a Task Force on Gulf War Illnesses headed by Robert Walpole. The team's assignment is to declassify and make public as many CIA documents as possible concerning the controversy about events at Khamisiyah. To date, 41 documents have been released,[203] 1 of which indicates the CIA had received warnings in the 1980's that chemical weapons were stored in Khamisiyah munitions bunkers.

According to the Congressional Research Service [CRS], "On April 9 [1997], amid growing tension and charges of a cover-up, the CIA released a report showing that the agency had solid intelligence in 1986 that thousands of chemical weapons had been stored at Khamisiyah. However, the CIA failed to include the depot on a list of suspected CW sites provided to the Pentagon before the war. The CIA warned the Army of the possible presence of chemical weapons at Khamisiyah just days before the depot was blown up, but the information was not relayed to the engineers who carried out the detonations."[204]

Presidential Advisory Committee on Gulf War Veterans' Illnesses

President Clinton established the Presidential Advisory Committee on Gulf War Veterans' Illnesses [PAC] in May 1995 to examine the health concerns related to Gulf War service. The Committee, a 12-member panel made up of veterans, scientists, health care professionals, and policy experts, held 18 meetings between August 1995 and November 1996 to hear witness testimony and take public comment. A Final Report of findings and recommendations was issued December 31, 1996. However, the President extended the

[203] See *supra* note 77.
[204] See *supra* note 4.

panel's investigation until September 30, 1997. The PAC held additional meetings this year, with plans to present its updated Special Report to the President by late October 1997.

While the PAC's December 1996 report found that "many veterans have illnesses likely to be connected to their service in the Gulf," it did not support a causal link between the illnesses and exposures to environmental risk factors.[205] In the face of overwhelming evidence that Gulf War veterans were exposed to multiple toxic agents, the PAC instead placed emphasis on stress as a cause of these health problems. The PAC report stated: "Stress is likely to be an important contributing factor to the broad range of illnesses currently being reported by Gulf War veterans."[206]

The PAC also discounted most environmental risk factors as causes of veterans illnesses. The December report stated: "Current scientific evidence does not support a causal link between the symptoms and illnesses reported by Gulf War veterans and exposures while in the Gulf region to the following environmental risk factors assessed by the Committee: pesticides, chemical warfare agents, biological warfare agents, vaccines, pyridostigmine bromide, infectious agents, depleted uranium, oil well fires and smoke, and petroleum products."[207]

The PAC report did identify DOD and VA "problems related to missing medical records, the absence of baseline health data, inaccurate records of troop locations, and incomplete data on the health effects of what should have been viewed as reasonably anticipated risks."[208]

As numbers of troops presumed exposed to chemical weapons continued to rise following the events at Khamisiyah, DOD's handling of the investigation into the Gulf veterans' illnesses came under criticism from PAC members and staff. In September 1996, the PAC's chief investigator, James Turner, stated in a committee hearing that since the Gulf War, DOD's position has remained essentially unchanged "and inflexible . . . in the face of growing evidence that there were possible low level exposures." Turner said DOD's position "can be summarized in three no's . . . there was no use, no exposures, and no presence of chemical warfare agents in-theater."

Turner stated, "The slow, reluctant on-again, off-again release of information to the public by the . . . [DOD's] senior level oversight panel, has also served to undermine credibility and confidence in the DOD's efforts. To fulfill the government's obligation to tell the truth about chemical warfare agent exposures to veterans and the American public, DOD's investigations must be timely, thorough, independent, credible and public. On each of these counts . . . DOD's efforts have fallen short of the mark."

Turner's statement found the evidence of chemical agent release at Khamisiyah overwhelming, other site-specific exposures must be presumed, and DOD has conducted a superficial investigation of

[205] PAC Final Report, Executive Summary, p. 2.
[206] *Ibid.,* p. 125.
[207] *Ibid.*
[208] *Ibid.,* p. 4.

possible chemical and biological exposures "which is unlikely to provide credible answers to veterans' questions."[209]

In the PAC's final public hearing September 5, 1997, monitored by Human Resources Subcommittee staff and covered by national news media, the PAC did not amend its conclusions about the importance of stress as a cause of Gulf War illnesses, nor its rejection of most environmental risk factors as possible causes. Some panel members suggested that the updated Final Report include a statement acknowledging the possibility of low level chemical warfare exposures, but no vote on the proposal was taken.

Members did agree in the final meeting, however, to recommend that the Pentagon's investigation of Gulf War illnesses be transferred to another agency in view of DOD's loss of credibility in the handling of chemical weapons exposures.

"The Pentagon is failing in a multimillion dollar effort to salvage its credibility among ailing Persian Gulf War veterans for its investigations into the possible sources of their illnesses, according to the draft of a final report by a White House advisory committee," the Washington Post reported.

"The report," according to the Post, "scheduled to be presented to President Clinton next month, concludes, 'Public mistrust about the government's handling of Gulf War illnesses not only has endured, but has expanded' in the 10 months since the Defense Department, at the panel's urging, agreed to intensify its research efforts. It blames the office of the Pentagon's special assistant for Gulf War illnesses [Dr. Bernard Rostker] for failing to examine reported incidents thoroughly and suggests the DOD may be institutionally incapable of acknowledging that chemical exposures could have occurred."[210]

In a the New York Times article, Defense Secretary William Cohen took issue with the PAC's recommendation. "I think that the Pentagon is fully capable of conducting an investigation. So I would disagree with that recommendation."[211]

Others also disagree with the PAC. In a letter to PAC Chairman Dr. Joyce Lashof, Congressman Bernard Sanders (I–VT), a subcommittee member, called for a reassessment of the PAC's conclusions relating to stress and environmental factors in its Final Report to the President in view of the growing numbers of troops that were exposed to chemical weapons and other toxic agents. The letter, signed by more than 80 Members of Congress including Subcommittee Chairman Christopher Shays, stated:

"We are writing to ask you to reassess your conclusion that current scientific evidence does not support a causal link between the symptoms and illnesses reported by Gulf War veterans and their exposure to a variety of chemicals during their service in the Persian Gulf War. In fact, it is our belief that more and more scientific evidence suggests that a major cause of Persian Gulf illness is the synergistic effect of a wide variety of chemicals to which our soldiers were exposed. Our hope is that by reassessing your conclu-

[209] Statement of James Turner, Chief Investigator, Presidential Advisory Committee on Gulf War Veterans' Illnesses [PAC], September 4–5, 1996, p. 5.

[210] McAllister, Bill, "Mistrust of Pentagon on Illness in Gulf Grows, Report Concludes," Washington Post, September 24, 1997, p. 2.

[211] Krauss, Clifford, "Pentagon Should Retain Role In Illness Inquiry, Cohen Says," New York Times, September 26, 1997, p. A24.

sion, you will recommend increasing research into and treatment for the health effects of chemical exposures experienced in the Persian Gulf."[212]

In response, Dr. Lashof informed Congressman Sanders that ". . . peer-reviewed literature published since the Final Report does not, to date, indicate a causal link between the commonly cited risk factors and the broad range of illnesses currently being reported by Gulf War veterans."[213]

Concerning the PAC's official conclusions about the causes of Gulf veterans' illnesses, GAO's Dr. Heivilin in her June 24, 1997 statement to the Human Resources Subcommittee hearing said: "Six years after the war, little is known about the causes of Gulf War veterans' illnesses. In the absence of official conclusions from DOD and VA, we examined conclusions drawn in December 1996 by the Presidential Advisory Committee on Gulf War Veterans' Illnesses [PAC]."

"First, the Committee [PAC] concluded that 'stress is likely to be an important contributing factor to the broad range of illnesses currently being reported by Gulf veterans.' While stress can induce physical illness, the link between stress and these veterans' physical symptoms has not been firmly established. For example, a large-scale federally funded study [by Walter Reed Army Institute of Military Medicine, see footnote 8] concluded that for those veterans deployed to the Gulf War 'neither stress nor exposure to combat or its aftermath bear much relationship to their distress.' The Committee stated that 'epidemiological studies to assess the effects of stress have found higher rates of PTSD than among individuals in nondeployed units.' Our review indicated that the prevalence of PTSD among Gulf veterans may be overestimated due to problems in the methods used to identify it. Specifically, the studies on PTSD to which the Committee refers have not excluded other conditions, such as **neurological disorders that produce symptoms similar to PTSD** [emphasis added] and can also elevate scores on key measures of PTSD."

"Second, the Committee concluded that 'it is unlikely that infectious diseases endemic to the Gulf region are responsible for long term health effects in Gulf veterans, except in a small known number of individuals.' Similarly, the Persian Gulf Veterans Coordinating Board [comprised of representatives of DOD, VA, and HHS] concluded that because of the small number of reported cases 'the likelihood of leishmania tropica as an important risk factor for widely reported illness has diminished.' While this is true for observed symptomatic infection with the parasite, the prevalence of asymptomatic infection is unknown, and such infection may reemerge in cases in which the patient's immune system becomes deficient."

"As the Committee noted, the infection may remain dormant up to 20 years. Because of this long latency, the infected population is hidden, and because even classic forms of leishmaniasis are difficult to recognize, we believe that leishmania should be retained

[212] Letter from Representative Bernard Sanders (I–VT) to Joyce Lashof, June 20, 1997 (copy in subcommittee files).

[213] Letter of response from Dr. Joyce Lashof to Representative Sanders, July 25, 1997 (copy in subcommittee files).

as a potential risk factor for individuals who suffer from immune deficiency."

"Third, the Committee also concluded that it is unlikely that the health effects reported by many Gulf veterans were the result of: 1) biological or chemical warfare agents; 2) depleted uranium; 3) oil well fire smoke; 4) pesticides; 5) petroleum products; and 6) pyridostigmine bromide or vaccines. However, our review of the Committee's conclusions indicated:

- While the Government found no evidence that biological weapons were deployed during the war, the United States lacked the capability to promptly detect biological agents, and the effects on one agent, aflatoxin, would not be observed for many years.
- Evidence from various sources indicates that chemical agents were present at Khamisiyah, Iraq and elsewhere on the battlefield. The magnitude of the exposure to chemical agents has not been fully resolved. As we recently reported, 16 of 21 sites categorized by Gulf War planners as nuclear, biological and chemical [NBC] facilities were destroyed. However, the United Nations Special Commission found after the war that not all of the possible NBC targets had been identified by U.S. planners. The Commission has investigated a large number of the facilities suspected by U.S. authorities as being NBC related. Regarding those the Commission has not yet inspected, we determined that each was attacked by Coalition aircraft during the Gulf War. One site is located close to the border, where Coalition ground forces were located.
- Exposure to certain pesticides can induce a delayed neurological condition without causing immediate symptoms.
- Available research indicates that exposure to pyridostigmine bromide can alter the metabolism of organophosphates (the chemical family of some pesticides used in the war, as well as certain chemical warfare agents) in ways that enhance chronic effects on the brain.[214]

Dr. Heivilin concluded her statement with the following: "In our report, we recommended that the Secretary of Defense, with the Secretary of Veterans Affairs:

> 1) set up a plan for monitoring the clinical progress of Gulf War veterans to help promote effective treatment and better direct the research agenda;
>
> 2) give greater priority to research on effective treatment for ill veterans and on low level exposures to chemicals and their interactive effects, and less priority to further epidemiological studies; and,
>
> 3) refine the current approaches for diagnosing post-traumatic-stress-disorder consistent with suggestions recently made by the Institute of Medicine. The Institute noted the need for improved documentation of screening procedures and patient histories, and the importance of ruling out alternative causes of impairment.[215]

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[214] See *supra* note 196, pp. 55–58.
[215] *Ibid.,* pp. 58–59.

III. FINDINGS

DIAGNOSIS

Finding 1: VA and DOD did not listen to sick Gulf War veterans as to possible causes of their illnesses.

The subcommittee hearing record is replete with examples of veterans who raised legitimate concerns and backed them with real information, yet had no effect on VA research, diagnosis, treatment or compensation policies.

Randy Wheeler is one such veteran. He served in the Gulf War with the U.S. Marine Corps from August 1990 to March 1991, and according to his testimony before the subcommittee, he has experienced a rash of health problems since returning from the Gulf—including joint and chest pains, shortness of breath, headaches, severe blepharitis in both eyes, rashes and diarrhea. A private ophthalmologist has diagnosed the burning redness and pain in his eyes as chronic blepharitis and a cataract. VA doctors have refused to acknowledge and search for a real, physiological cause of his ailments.

> The doctor at Eisenhower (Army Medical Center in Ft. Gordon, GA) told me that my eyes were fine . . . The VA and the DOD has not helped my family nor I in any way. I continue to follow up with the VA, and I have completed the CCEP but still haven't been tested for anything that might have caused my health problems or I have not been properly diagnosed.[216]

Kimo Hollingsworth, who served in the Persian Gulf as a Marine Artillery Platoon Commander, has gone to the VA to seek a diagnosis and treatment for his chronic headache and fatigue, severe chest, muscle and joint pain, blurred vision, memory loss, fever, bladder problems and oral discharge of what he calls "hardened chunks of dark green sputum." After a physical examination at the Veterans Affairs Medical Center [VAMC] in Washington, DC failed to turn up the cause, doctors refused to acknowledge there may be a physical source of his stress that requires further inquiry and attention. Again, VA doctors did not listen.

> Despite my symptoms, the VA hospital in Washington, DC . . . concluded that I was in excellent health . . . I was then directed to a social worker who discussed the issue of Post Traumatic Stress Disorder. The VA also provided me a brochure outlining psychological counseling services available to Persian Gulf veterans.[217]

Still other veterans, such as Brian Martin, were told by VA Medical Center [VAMC] personnel that they were not sick, even after they had already been diagnosed with illnesses.[218] Mr. Martin has been rated at 100 percent compensation, yet he told the sub-

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[216] Testimony of Randy Wheeler, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, pp. 18–19.

[217] Testimony of Kimo Hollingsworth, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, pp. 28–29.

[218] Statement of Brian Martin, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 11.

committee that upon arriving at the VAMC in Battle Creek, MI with breathing problems and severe abdominal pain, his attending physician concluded,

> You're not sick. You don't need to be laying around stagnant with all the really sick people.[219]

Veterans are not the only ones who believe they were ignored. Army Staff Sergeant Steven Wood felt his health complaints were being dismissed while he was still on active duty, under DOD.

> I never found anyone in the Army who was serious about helping me—or anyone else, for that matter. I was told to suck it up and drive on . . . While still on active duty, I never received any real health care. I was told to quit faking, it's all in my head, and my all-time favorite: "We do not know what's wrong with you, but you will be better in 2 weeks."[220]

Sgt. Wood grew so unnerved by the military's lack of concern that he sought treatment outside the military establishment while he was stationed overseas in April 1996. According to Sgt. Wood, the German civilian doctor "did more testing in 2 hours than the Army did in 5 years," but because the doctor was not a U.S. Army physician, his diagnosis went unheeded without so much as a cursory glance. Instead, the Army neurologist responded:

> 'I do not like you Gulf vets that say you're sick. I was there, and I'm not sick.' This doctor then proceeded to tell me she felt I had no neurological problems before even examining me and she flatly refused to even read the German doctor's findings.[221]

Other veterans, including Major Barry Kapplan, Staff Sergeant Chris Kornkven, Reserve Navy Captain Julia Dyckman, Major Michael Donnelly, Marine Major Randy Hebert, and Petty Officer Nick Roberts, have relayed similar stories of having their symptoms and concerns either ignored or dismissed as irrational and therefore insignificant.[222]

The Central Intelligence Agency [CIA], the most highly trained information-gathering arm of the U.S. Government, displayed a similar unwillingness to listen to veterans who suspected a physiological cause of their health problems. When asked why no one expressed any interest in information volunteered by Persian Gulf War veterans, Sylvia Copeland of the CIA's Persian Gulf War Veterans Illnesses Task Force responded that the pursuit of that information lies outside of the Task Force's job description.

> We are not in the business of interviewing U.S. soldiers. That is DOD's job. Going over troop logs, interviewing soldiers is not one of our responsibilities.[223]

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[219] *Ibid.*
[220] Testimony of Steven Wood, Human Resources Subcommittee hearings, No. 2, pp. 45–46.
[221] *Ibid.*
[222] See *supra* notes 12–31, 36–39.
[223] Testimony of Sylvia Copeland, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 416.

Patrick Eddington, a former CIA analyst, paints a darker picture. He suggests the CIA went out of its way to deliberately ignore and exclude the opinions of U.S. veterans from its official investigation.

> There is absolutely no question that the CIA made a concerted effort to exclude entire classes of information from its inquiry . . . The CIA has had, throughout its entire existence, a specific component that is designed to do nothing but contact American citizens about their experiences overseas and their travels overseas. So for the CIA to refuse to talk to American veterans about this issue is a complete departure from standard operating procedure.[224]

Either way, Ms. Copeland acknowledged the CIA was aware of DOD's research.

> DIA [the Defense Intelligence Agency] did the research, looked at all the intelligence information and we had meetings together on chemical issues and they would brief us on their findings . . . Then we synthesize that with all of our intelligence information.[225]

These combined statements demonstrate a systematic failure to incorporate evidence of toxic exposures into so-called "Gulf War Illness" research, diagnosis, and treatment.

VA Under Secretary for Health Dr. Kenneth Kizer offered only circumstantial proof the Department listened to sick Gulf War veterans regarding possible causes of their illnesses. When asked if VA physicians made a predetermination that there was no scientific basis for many veterans' health complaints and consequently refused to pursue their suggestions, Dr. Kizer avoided the question—saying only that the investigation into chemical warfare agents was:

> delayed and [its] . . . focus given a lower priority because of information that had been provided by DOD.[226]

The dismissal of veterans' concerns also occurred at the diagnosis stage. A followup report by the VA's Office of the Medical Inspector [OMI] supports this conclusion.

First, data from the OMI's analysis of the Persian Gulf Registry Health Examination Program show VA physicians had good reason to pursue contamination hypotheses, given the extremely high rates of veterans reporting such exposures. According to the final report:

> In 1992 Physician Registry staff documented that 93 percent of the Persian Gulf War veterans reported that they had been exposed to 1 or more of the 12 contami-

[224] Testimony of Patrick Eddington, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 147.

[225] Testimony of Sylvia Copeland, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, pp. 423–424.

[226] Testimony of Kenneth Kizer, Human Resources Subcommittee hearings, No. 1, p. 174.

> nants. This percentage declined to a low of 87 percent in 1993, and increased to a high of 98 percent by 1996.[227] [228]

Second, there is reason to believe the percentage of veterans reporting exposures might have been even higher. The study states that while Registry physicians had been instructed by program officials to ask veterans about possible exposure to these contaminants, the list of contaminants was left off the Persian Gulf Registry Code Sheet from 1992 to 1995, making it easy, if not likely, for physicians to omit this task.[229]

Third, the implementation of the Registry protocol was sloppy and inconsistent.

> Registry physicians had been instructed . . . to record their findings in the Progress Notes of the CHRs [Consolidated Health Records]. The responses were to include negative as well as positive responses . . . The OMI data collectors found large variations in compliance with the assigned task, that is, recording positive and negative responses to queries about possible exposure to specific contaminants in the Progress Notes. The variations in compliance existed among physicians at a single VA medical center and among different VAMCs.[230]

The inability to implement this aspect of the diagnostic protocol properly and uniformly is especially significant because it renders the resulting data virtually useless and indicates an extremely casual attitude toward the pursuit of this knowledge.

The notion that VA employees sometimes disregard or fail to implement protocols has been documented elsewhere as well. Congress commissioned the U.S. General Accounting Office [GAO] to determine the extent to which VA followed its guidelines for evaluation and treatment, with damning results. After conducting a lengthy investigation that included interviews with officials at VA headquarters, VA's Atlanta Veterans Integrated Services Network office, medical centers in Washington, Atlanta and Birmingham, referral centers in Washington and Birmingham, veterans' service organizations, and dozens of Persian Gulf veterans, and a review of a sample of medical records, GAO noted various discrepancies between VA protocols and action. Among the problems cited were: failure to give undiagnosed veterans additional baseline laboratory tests and consultations; failure to evaluate veterans suffering from undiagnosed illnesses at VA's referral centers;[231] and failure to provide personal counseling between veterans and their physicians to evaluate the registry exam process.[232] The results led Stephen Backhus, Director of Veterans' Affairs and Military Health Care Issues, to conclude:

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[227] *Final Report: Persian Gulf Registry Health Examination Program: Assessment of Exposure History,* Office of the Medical Inspector, Veterans Health Administration, VA (May 5, 1997) p. 5.

[228] A veteran was counted only once regardless of the number of contaminants to which he or she had been exposed.

[229] See *supra* note 227, p. 7.

[230] *Ibid.*

[231] Only 390 out of 15,000 referrals were evaluated.

[232] Statement of Stephen Backhus before the VA Subcommittee on Health, 105th Cong., 1st sess., GAO/T–HEHS–97–158, p. 4–5 (1997).

> On the basis of our review of medical records and discussions with program officials, including physicians, it does not appear that VA's guidance is being consistently implemented in the field.[233]

Finally, a former VA health official said many physicians displayed an unwillingness to consider veteran's accounts of possible toxic exposure when prescribing treatment. Dr. William Baumzweiger worked at the VA in west Los Angeles where he witnessed a pervasive lack of interest in accounts of potential toxicity.

> With the constant denial that there was any agent in the Gulf and with the feeling that you have to have acute toxic symptoms to have problems, no one really pursued it as the leading hypothesis . . . I do not think there was an agency-wide policy against there being Gulf War syndrome or an agency-wide conviction that organophosphates did not matter. I think this is something that just crept into parts of the structure of the organization.[234]

As many people have attested, warnings were sounded. The problem stems from the refusal to listen to them. Taken as a whole, the body of evidence suggests what veterans have feared all along—the existence of a systematic and chronic disregard on the part of physicians and other personnel at the VA, DOD, and the CIA for their concerns regarding the severity and possible sources of their maladies. What makes this blatant disregard even more abhorrent is the fact that it seems to have permeated the system despite its potential to worsen the already deteriorating health of U.S. veterans and their families.

Finding 2: The presence of a variety of toxic agents in the Gulf War theater strongly suggests exposures have a role in causing, triggering or amplifying subsequent service-connected illnesses.

For the past 6 years, many veterans have been saying they believe their illnesses are the result of direct exposure to toxic agents in the Gulf War theater. Over those years, investigators have amassed a mountain of evidence, primarily inferential or circumstantial, that this is, in fact, the case. The presence of chemical weapons and other toxins is no longer in question, thanks in part to a belated admission by the Pentagon. It is also supported by eyewitness accounts of veterans who heard, saw, tasted, and felt what they believe to be various incidents of toxic exposure. Finally, veterans experienced symptoms consistent with current scientific conclusions regarding the role various toxins play in causing, triggering, or accelerating chronic problems.

Veterans, scientists, and researchers have long suspected the existence of a variety of toxic agents in the Persian Gulf during the war. The suspected toxins include: chemical and biological warfare agents, organophosphates found in pesticides and insect repellents, leaded diesel fuel, depleted uranium, oil well fire smoke, leaded vehicle exhaust, contaminated drinking water, shower water, and

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[233] *Ibid.*

[234] Testimony of William Baumzweiger, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, pp. 530, 536.

clothing, parasites, and pyridostigmine bromide and other drugs to protect against chemical warfare agents.[235]

Dr. Theodore M. Prociv, former Deputy Assistant to the Secretary of Defense for Chemical and Biological Weapons told the U.S. Senate Committee on Banking, Housing and Urban Affairs that each of the nearly 14,000 M8A1 detector alarms deployed in the theater went off an average of two or three times a day.[236] Given the noise the alarms must have made, most veterans had at least some reason to believe they were in a toxic environment.

For others, the clues were more numerous and specific.

Major Randy Lee Hebert of the Marine Corps believes he was exposed to chemical agents on February 24, 1991, or Ground Attack Day, based on what he heard, was told, and felt. Shortly after directing his vehicle to Lane Red One following a chemical alarm, Major Hebert, who was not wearing protective gear, was told a chemical mine had soiled the lane.

> I learned after the war that the chemical mine detonated in Lane Red One was confirmed for the nerve agent Sarin and also for the agent Lewisite Must Gas by FOX vehicle in the lane. I also learned that two Marines in an AMTRAC received chemical burns, and that the chemical mine confirmation was reported by the regimental commander of the Sixth Marines.[237]

Major Hebert recalls he "felt funny" at the time. His health problems started less than 3 weeks later, and by the fall of 1994, he had experienced an array of symptoms, including throat muscle constriction, lumps, rashes, and atrophy in his right arm and hand. As noted in the Background section of report, he has since been diagnosed with amyotrophic lateral sclerosis [ALS], or Lou Gehrig's disease, which he attributes to long-term chemical exposure.[238]

For veterans such as Sgt. Steven Wood, the awareness of a toxic presence was triggered by a visual clue.

> While part of a convoy leaving Kuwait and heading back into Iraq, my driver and I stumbled across . . . an artillery round that was roped off with yellow engineer tape . . . Upon closer examination I saw it was a sort of greenish-blue in color, with green and yellow painted bands . . . Later that same day . . . I now had time to look in my manuals for the markings I had seen earlier on the shell. I was shocked to see it was a perfect match for a Soviet nerve agent.[239]

Still others have noted signs that were more overt. Many veterans sensed the approximately 700 oil well fires the Iraqis set throughout Kuwait[240] had contaminated the air and water, as well as veterans' bodies. Subcommittee witnesses commented that the

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[235] See *supra* note 73.
[236] See *supra* note 2, p. 16.
[237] Testimony of Randy Hebert, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 107.
[238] *Ibid.*
[239] Testimony of Steven Wood, Human Resources Subcommittee hearings, No. 2, p. 45.
[240] See *supra* note 111.

oil seemed to get into their lungs and skin, making them smell of, discharge, and taste kerosene at every turn.[241]

However, the most compelling testimony comes from chemical detection experts Army Major Michael Johnson and Marine Gy/Sgt. George Grass. Johnson said his unit confirmed the presence of H-Agent Mustard using the sophisticated FOX Reconnaissance Vehicles, and that their results were supported by additional CAM tests. At the same hearing, Gy/Sgt. Grass reported registering positive readings for not one but three chemical agents: S-Mustard, HT-Mustard, and Benzine Bromide. Grass added any doubt he may have had as to the accuracy of the readings was eradicated when he noticed the international symbol for poison—the skull and crossbones—emblazoned on yellow tape, boxes of ammunition, and posted signs.[242]

Dr. Jonathan Tucker, director of the chemical and biological weapons nonproliferation project at the Monterey Institute of International Studies, concluded based on his research:

> The sheer number and detail of [declassified military intelligence] reports suggests that Iraqi chemical weapons were indeed present in Kuwait before the Gulf War. The CIA, for its part, claims that Iraq . . . withdrew them before the start of the air war in January 1991. Yet it is not logical that Iraq would renounce a potent weapon in the face of a major ground invasion, and then tie up its logistics moving thousands of chemical munitions out of Kuwait. No evidence in the public domain indicates that such a withdrawal took place. On the contrary, according to Charles Duelfer, Deputy Chairman of the UN Special Commission, Iraq transported more than 2,000 rockets filled with nerve gas from the production plant at Al Muthanna in central Iraq to the bunker complex at Khamisiyah during the second week of January 1991.[243]

Dr. Tucker's conclusion that toxic agents—and specifically chemical warfare agents—were indeed present in the Gulf War theater echoes those of French and Czech detection experts and James Tuite, director of the Gulf War Research Foundation and a former Senate staffer in charge of investigating Gulf War illnesses. However, the detection teams and Tuite take the debate even further.

According to the foreign specialists, chemical warfare agents were not just present in the Gulf, but were released into the atmosphere where Coalition forces could have been exposed to them. The New York Times reported that French and Czech detection specialists, who are considered the best in the world, have been saying since 1991:

> . . . that nerve gas detected in the early days of the war had been released from Iraqi chemical plants bombed by United States forces.[244]

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[241] See *supra* notes 115–121.

[242] Testimony of George Grass, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, pp. 2–4, 6–9.

[243] Testimony of Jonathan Tucker, Human Resources Subcommittee hearings, No. 2, p. 262.

[244] See *supra* note 49.

Meanwhile, Tuite uses satellite images to show chemical warfare agents were not simply emitted into the air, but were emitted in the direction of Coalition troops. Tuite presented the subcommittee with pictures taken by the National Oceanic and Atmospheric Administration [NOAA] before and after the January 19, 1991 bombing. The images were recorded on AVHRR channels 1 and 2, which measure visible activity, and channel 4, which measures thermal and infrared activity, and show both the direction and nature of a thermal and visible plume. According to his analysis:

> The images directly contradict several DOD and CIA positions about the direction the fallout moved and the stated position that U.S. forces were not exposed to chemical warfare agents 'in any widespread way.'[245]

After years of denial, the Pentagon finally acknowledged there were some exposures in the wake of the war. On July 24, 1997, DOD, in conjunction with the CIA, confirmed 98,900 United States servicemen and women were "presumed exposed" to some level of chemical warfare agents as a result of the detonation and destruction of Iraqi ammunition bunkers at Khamisiyah.[246]

In its *Report on Intelligence Related to Gulf War Illnesses,* the CIA's Office of Weapons, Technology and Proliferation confirmed:

> Nerve agent was released as a result of inadvertent United States postwar demolition of chemical rockets at a bunker and probably at a pit area at the Khamisiyah Ammunition Storage Area in Iraq.[247]

The CIA based this conclusion on a comprehensive review of intelligence documents that suggested Khamisiyah had been used as a chemical weapons depot, as well as evidence collected by the United Nations Special Commission [UNSCOM] during a May 1996 inspection. The retrieved items included: remnants of 122-mm rockets believed to have contained a combination of Sarin and GF at Bunker 73; several hundred mostly intact 122-mm rockets containing nerve agent detected with "Chemical Agent Monitor [CAM] at a pit area about 1 km south of the main storage area; and over 6,000 intact 155-mm rounds containing mustard agent in an open area several kilometers west of Khamisiyah.[248]

The Pentagon had initially estimated only 400 soldiers would be affected, but it revisited that estimate after the release of computer models showing the nerve gas cloud traveled southward, covering parts of southern Iraq, Kuwait, and northern Saudi Arabia where approximately 98,900 United States troops were stationed.[249] Officer Kapplan was one of those troops and remembers the change in the air:

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[245] *Report on the Fallout From the Destruction of Iraqi Chemical Warfare Agent Research, Production, and Storage Facilities into Areas Occupied by U.S. Military Personnel During the 1991 Persian Gulf War,* James J. Tuite III, Gulf War Research Foundation (September 19, 1996) Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 63.

[246] *Modeling the Chemical Weapons Agent Release,* U.S. Central Intelligence Agency [CIA], Persian Gulf War Illness Taskforce (July 24, 1997).

[247] *Report on Intelligence Related to Gulf War Illnesses,* CIA, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 390.

[248] *Ibid.,* p. 391.

[249] See *supra* note 45.

> We had the smoke coming from the left, smoke coming from the right from the oil fires and we were downwind of the chemical munitions being blown up, approximately 30 to 40 kilometers downwind of this operation.[250]

While the Pentagon has only officially admitted the existence of presumed exposures during the detonation at Khamisiyah, Dr. Bernard Rostker, Special Assistant for Persian Gulf War Illnesses at DOD, concedes additional incidents involving chemical agents and other toxins cannot be ruled out.

> There is a whole range of potential chemical exposures, plus some cross-cutting papers that we're producing on FOX vehicles and other things that cut across.[251]

For instance, Dr. Tucker believes chemical agents were not released solely as a result of United States bombing of Iraqi ammunitions bunkers, but may also have been actively deployed on occasion.

> The declassified operations logs corroborate numerous veteran reports of detecting low levels of chemical warfare agents during the ground war, including Sarin, lewisite and Mustard Gas. Many of these detections were made with analytical methods that are highly reliable and have a low false alarm rate. Thus, while adverse weather conditions and the speed of the coalition advance precluded the large scale use of Iraqi chemical weapons, there is strong evidence for sporadic, uncoordinated use.[252]

As for positive confirmation for the presence of other toxins, there is no shortage of evidence:

- According to GAO, the CIA has determined Iraq possessed several biological weapons agents at the time of the war, including anthrax, botulism, and aflatoxin.[253]
- Dr. Garth Nicolson stated undiagnosed veterans have tested positive for the presence of the microorganism *Mycoplasma fermentans* which can cause dangerous infection.[254]
- Depleted uranium [DU] was heavily used by DOD as both a means of destroying enemy tanks and protecting our own.
- The Defense Science Board confirmed Iraqis set more than 700 oil well fires in Kuwait, which may cause illness through petroleum inhalation, ingestion, and skin absorption.[255]
- Fear of poisoning from the chemical agent soman drove the military to obtain a waiver from FDA allowing them to order immunizations using experimental drugs and vaccines[256] which may become toxic when used under certain conditions.

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[250] Testimony of Barry Kapplan, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 327.
[251] Testimony of Bernard Rostker, Human Resources Subcommittee hearings, No. 2, p. 252.
[252] See *supra* note 244.
[253] See *supra* note 88.
[254] Testimony of Garth Nicolson, Human Resources Subcommittee hearing of June 26, 1997 (original transcript, p. 149, in subcommittee files).
[255] See *supra* note 111.
[256] See *supra* note 130 and accompanying Background text.

- Finally, the insect-ridden environment in the Gulf caused veterans to become dependent on pesticides and Government-issued insect repellents of dangerous concentrations.[257]

By all accounts—official, scientific, and first-hand—the Gulf War theater was not just a warzone; it was a cesspool of toxic substances. While the direct scientific proof linking toxic exposures in the Gulf to the onset and exacerbation of what has collectively come to be known as "Gulf War Illness" has yet to be indisputably established, all of the pieces are there. What makes the presence of toxins in the Gulf relevant and a causal link most likely is the timing, nature, and scope of the undiagnosed illnesses that ensued are consistent with the known effects of similar exposures in other settings.

Veterans complaining of so-called "Gulf War Illness" noticed their symptoms following incidents of presumed exposure, which is consistent with a causal relationship to their experiences in the Gulf. The onset of the symptoms was immediate in some cases, and delayed in others, but they were always subsequent to their Gulf War service. Had any of the servicemen and women been ill before the war, it is highly unlikely that he or she would have been deployed to the region. In fact, Dr. Gordan, who has treated more than 500 veterans, says nearly all of them reported "very good to perfect" health before deployment, versus "poor to fair" health afterward.[258]

To the extent to which they are able to ascertain, scientists have confirmed that the nature of the symptoms associated with "Gulf War Illness" is also consistent with presumed exposures during the war. Put conversely, neither the VA nor DOD has found evidence that these undiagnosed symptoms were not caused by one or several of the toxins that were present in the theater. The only argument against a causal link is the fact that while many veterans are sick with undiagnosed illnesses, most are not. However, as Dr. Kenneth Olden, director of the National Institute of Environmental Health Sciences, explained:

> We've known for a long time that when several hundred people are exposed to the same environmental toxicants, some people get sick and others don't.[259]

Olden and other Federal researchers are now pursuing research that would suggest the answer lies in the genes that control human susceptibility to toxic chemicals and other poisons.

Finally, the scope of so-called "Gulf War Illness" is also consistent with a causal relationship. Some veterans have seen members of their immediate and extended families become ill, either upon coming into contact with them or articles they sent back from the Gulf War theater. As previously noted in the Background section, Major Barry Kapplan's wife Nancy told the subcommittee she and her four children handled her husband's wet and stained clothing,

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[257] Testimony of Robert Haley, Human Resources Subcommittee hearings, No. 1, pp. 238–239.
[258] See *supra* note 160.
[259] See *supra* note 170.

army gear and war souvenirs, only to experience continual chronic infections, with one child becoming very ill.[260]

According to Dr. Claudia Miller, Assistant Professor of Environmental and Occupational Medicine at the University of Texas Health Science Center, the experience of the Kapplan family is consistent with those of many agricultural workers who come into contact with clothing that has been saturated with organophosphates—the same kind of compounds which were present in many pesticides and insect repellents used in the Gulf. So far, the clothing and equipment have tested negative for organophosphates, but as Dr. Miller notes:

> They may degrade after a period of time and it has been 5 years since the war, so I think there are so many uncertainties.[261]

A second example may be seen in the unusually high number of cases of ALS among Gulf War veterans. While DOD's Dr. Rostker says the nine confirmed cases of ALS are what scientists would expect to find given the population of Gulf War veterans,[262] Dr. Robert Brown notes that analysis does not take account the relatively young age of veterans. Given the fact that the average age for ALS onset is 55, Dr. Brown says the number of ALS cases among Gulf War veterans, who are typically between 18 and 40 years old, would appear "excessive."[263]

A new study by Dr. Will Longstreth at the University of Washington School of Medicine in Seattle once again suggests a causal link between ALS and the presence of toxic agents. According to the study, exposure to agricultural chemicals—including pesticides—may increase men's chances of developing the degenerative disease. Researchers say men whose histories showed high exposures to these chemicals are at 2.8 times more risk than those who were never exposed.[264]

The existence of a variety of toxic agents in the Gulf is well-established, and confirmed by a host of witnesses, documents, and facts. While the research has yet to cement the link between toxic exposures and delayed, chronic illnesses, the timing, nature, and frequency of undiagnosed illnesses among Gulf War veterans strongly suggest such a link does exist and will, given the appropriate interest, funding and support, be confirmed.

Finding 3: Gulf War troops were not trained to protect themselves from the effects of exposure to depleted uranium dust and particles.

Depleted uranium [DU] maintained a pervasive presence in the Gulf War theater. In the form of armor-piercing penetrator rounds, DU, upon reaching enemy targets, ignites and becomes a toxic agent that could poison anyone who came into contact with it, including U.S. troops. The threat might have been minimized had

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[260] Testimony of Nancy Kapplan, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, pp. 335–337, 343.

[261] Testimony of Claudia Miller, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 532.

[262] See *supra* note 33.

[263] See *supra* note 34.

[264] *Reuters,* "Gehrig's Disease Tied to Chemicals" (June 24, 1997).

Gulf War servicemen and women been trained to protect themselves against such exposure, but as numerous veterans, Defense and GAO employees have attested, the military establishment did not prepare troops for the dangers they would encounter or the risks they would incur.

DU penetrator rounds are credited with destroying more than 1,400 Iraqi tanks, in addition to other equipment and weapons storage facilities during the Persian Gulf War.[265]

Veteran Michael Stacy's eyewitness testimony confirms the military depended on DU as a preferred weapon of war, and used it to destroy everything from tanks to light-armored vehicles to bunkers.

> We wanted to shoot the good stuff and as much as possible. We were at war, with the best equipment out of all the Coalition Forces—no law, no rules, engage at will . . . As you can well expect, we were constantly in contact with this ammo.[266]

When a DU round hits a hard target such as a tank, most of it burns up, spraying uranium shrapnel and pulverized uranium dust into the air, where it may be transported up to 25 miles by high winds.[267]

According to Leonard Dietz, a retired General Electric physicist and DU expert, at least 300 tons of DU munitions were fired over a period of 4 days of ground fighting. He says that if only 2 percent of the uranium became aerosolized upon impacting the tanks, it would generate at least 6 tons of depleted uranium aerosol particles.

> This is a huge amount, much of which would have become airborne over the battlefields. This amount in 4 days is more than 10,000 times greater than the maximum airborne emissions of depleted uranium allowed in the air over Albany in 1 month.[268]

Another large emission of DU resulted when a United States Army ammunition depot and motor pool exploded in Doha, Kuwait in July 1991, oxidizing some 9,000 pounds of DU rounds and vehicle armor to powder.[269]

When oxidized particles are ingested or absorbed through the skin via contact with burned out tankers or the uniforms of wounded soldiers, DU can present a serious health hazard. To explain its high toxicity, Dietz referred the subcommittee to the Handbook of Chemistry and Physics:

> Chronic exposure to small concentrations of uranium is known to cause kidney failure. Depleted uranium is more than 99 percent Uranium-238, just a single isotope, which

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[265] See *supra* note 97.

[266] Testimony of Michael Stacy, Human Resources Subcommittee hearing of June 26, 1997, original transcript, p. 53–54 (in subcommittee files).

[267] See *supra* note 106.

[268] Testimony of Leonard Dietz, Human Resources Subcommittee hearing of June 26, 1997, original transcript, p. 125 (in subcommittee files).

[269] See *supra* note 99.

> is always accompanied by two decay daughters that emit penetrating particles and gamma rays.[270]

Mounting scientific and circumstantial evidence suggests veterans were not just surrounded by DU, but were in fact exposed to it. This has long been the contention of veterans such as Michael Stacy, who found himself in "more than one friendly fire incident" involving tanks with DU armor.[271] On June 26, 1997 Bernard Rostker of DOD confirmed 29 combat vehicles were contaminated in this manner, with possible additional exposures resulting from the Doha ammunition dump explosion.[272] Out of the 33 veterans who were in Army vehicles struck by DU rounds and are now being evaluated, 16 have DU shrapnel in their bodies.

> The Health Surveillance Program has shown that those who have retained shrapnel identified radioactively are excreting increased amounts of uranium, indicating that the metal particles are not entirely inert.[273]

Unaware of the toxic dangers they faced from DU exposure, U.S. troops did not know that they needed to take special precautions to protect themselves, nor what those precautions might entail.[274] As a result, many veterans such as Paul Canterbury did not bother putting on MOPP gear when they were in and around burned-out tanks and other contaminated areas,[275] while some even slept on the tanks' blowout panels, exposing themselves to DU toxins over extended periods of time.[276]

After the ammunition fire in Doha where approximately 3,500 troops were based, some servicemen reported cleaning up the site using nothing but brooms and their bare hands. According to Dietz:

> This is something that would make a qualified, radiological worker shudder.[277]

Considering all the information Pentagon had available at the time, there is no reason U.S. servicemen should have been allowed to engage in such high-risk behavior. Veteran Michael Stacy says the Army had documented the hazards more than a year before the war.

> In a report from the U.S. Army Ballistics Research Lab, dated December 1989, test results showed that soldiers who came into contact with contaminated vehicles could inhale resuspended, depleted uranium dust or ingest depleted uranium via food intake, cigarette smoking, et cetera prior to not washing hands and face.[278]

In a July 1997 conversation with subcommittee staff, Rostker stated DOD had not properly prepared Gulf troops for the DU dan-

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[270] See *supra* note 268, pp. 125–126.
[271] See *supra* 266, p. 46.
[272] Testimony of Bernard Rostker, Human Resources Subcommittee hearing of June 26, 1997, original transcript, p. 184–185, (in subcommittee files).
[273] *Ibid.,* p. 85.
[274] See *supra* note 266, p. 46.
[275] Testimony of Paul Canterbury, Human Resources Subcommittee hearing of June 26, 1997, original transcript, p. 29 (in subcommittee files).
[276] See *supra* note 266, p. 46.
[277] See *supra* note 268, p. 128.
[278] See *supra* note 266, pp. 45–46.

gers they would encounter—the same conclusion GAO reached in 1993.[279] Rostker said the Pentagon was working on producing newer, universal masks as well as taking other steps to prevent future troops from facing a similar fate.[280]

As noted in the "Background" section of this report, Dr. Michio Kaku believes history will show Gulf War illnesses to be the result of a variety of factors, but DU will bear "a large portion of the blame."[281] The post-war experiences of veterans who were among the most at-risk of DU exposure suggest the same conclusion. Canterbury has been diagnosed with hypertropia, large vertical muscle imbalance, and esophoria, while Stacy suffers from multiple undiagnosed illnesses including respiratory problems, sinus problems, and severe memory loss.[282]

Finding 4: Pyridostigmine bromide [PB] can have serious side effects and interactions when taken in combination with other drugs, vaccines, chemical exposures, heat and/or physical exercise.

Pyridostigmine bromide [PB] pills were distributed to and ingested by U.S. personnel under the threat of court-martial,[283] as a means of protecting them against the nerve agent soman.

According to Dr. Stephanie Padilla, who works at the Neurotoxicology Division of the U.S. Environmental Protection Agency [EPA], PB produces some of the same reactions as the very nerve agent it is intended to protect against, making it difficult to determine its effectiveness:

> It is my understanding that pyridostigmine, the idea is to mask the effects of the nerve agent, but also they would produce some of the same effects that the nerve agent would produce and so you either have an extremely high baseline or it would mask the effect of the nerve agent.[284]

Dr. Robert Haley of the University of Texas Southwestern Medical Center points out another danger. When introduced to the human body after exposure to a neurotoxin such as soman has taken place, PB can trigger a side effect from an otherwise safe agent:

> Research published since the war has shown that giving a protective drug after the exposure can paradoxically promote brain damage from even a low dose of a neurotoxic chemical that might not have caused a problem otherwise.[285]

According to Dr. Thomas Tiedt, PB inhibits a critical enzyme, acetylcholinesterase [AchE] which can result in nerve and muscle

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[279] See *supra* note 110.

[280] Bernard Rostker also told the subcommittee that DU has been the target of an Iranian-run disinformation campaign because of its high effectiveness. He says United States intelligence agencies have intercepted diplomatic traffic in and from Iraq. Iraqi embassies were reportedly told to downplay the health hazards associated with low-level chemical exposure and play up the notion of DU as the more severe toxin. See *supra* note 272, pp. 189, 226.

[281] See *supra* note 108.

[282] See *supra* note 266, p. 47.

[283] Testimony of Steven Wood, Human Resources Subcommittee hearings, No. 2, p. 55.

[284] Testimony of Stephanie Padilla, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 528.

[285] Statement of Robert Haley, Human Resources Subcommittee hearings, No. 1, p. 252.

degeneration within moments of a single dose, which may intensify with further doses.[286] What's more, Tiedt says the onset of stress makes the blood/brain barrier susceptible to PB leakage, increasing its ability to cause damage to the central nervous system. Tiedt cites two examples to support his assertion: the advent of behavioral changes in veterans within weeks of ending PB treatment, and the objective signs of nerve damage in veterans who took the drug.

Dr. Satu Somani expands Tiedt's conclusion about the mental or psychological rigors of war to incorporate the physical aspects of the Gulf, such as heat and exercise, saying:

> The adverse effects [of PB] were amplified by physical stress.[287]

Perhaps most disturbing is the revelation that the risks were well-known before the drug was issued. Dr. Tiedt says the DOD was aware that the pills were dangerous because the Department's own research had documented the risks at the time of the war.

> The scientific evidence shows that Gulf War Syndrome was easily predictable . . . DOD established by the early 1980's that PB causes persisting 'counterproductive consequences . . .' DOD research also found that at sub-lethal dosage PB is more dangerous and more toxic than Sarin nerve gas.[288]

Dr. Myra Shayevitz, an environmental physician at the Veterans Administration Medical Center [VAMC] in Northhampton, MA, agrees that risks had already been established, and points to one of the DOD's own documents as proof. According to her testimony,

> The Army Institute of Chemical Defense in their Doctrine of Use recognized the potential toxicity of this compound, stating that 'If a dose is missed, under no circumstances should one take two tablets as a make-up dose.'[289]

Nevertheless, U.S. troops were still ordered to take the pills, and many experts say DOD should have expected a number of servicemen and women to fall ill. Some scientists have tried to attribute the sickness to a reaction to the stresses of war, ignoring the intake of PB, but Dr. Miller says some veterans started feeling ill in August—before the advent of the war, but after taking PB.[290]

Furthermore, veterans didn't even have to make it into the Gulf region to feel the effects. As noted in the Background section, James B. Green became sick without ever setting foot in the theater. Green was given shots and a series of PB pills while he was stationed in Germany, in preparation for going to the Gulf, but another group was assigned to that post instead and he was sent home. Before going into the service, Mr. Green was in excellent

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[286] See *supra* note 130.
[287] See *supra* note 136.
[288] Testimony of Thomas Tiedt, Human Resources Subcommittee hearings, No. 2, p. 298.
[289] Report submitted for the record, "A Biopsychosocial Therapeutic Approach for the Treatment of Multiple Chemical Sensitivity Syndrome in Veterans of Desert Storm: Treatment Protocol," Dr. Myra Shayevitz, May 5, 1995, Human Resources Subcommittee hearings, No. 1, p. 16.
[290] Testimony of Stephanie Miller, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 531.

health—but that changed when he started taking PB pills and his life has never been the same.

> After receiving the shots and the PB pills, I suffered many symptoms . . . I am scared to go to the VA hospital for treatment. The government thought it was okay to give us poison once. Why wouldn't they do it again? I am referring to the shots and the PB pills. That is what I believe is making me sick with this illness . . . This disease is obviously not stress related, as they would like us to believe. I am a perfect example. My jobs weren't stress related, and I am experiencing the same symptoms as others. My theory rests on the inoculations and the PB pills. As everybody knows, the French troops were not given the experimental pills, and not many of them are sick.[291]

Unfortunately the uncontrolled manner in which the drug was distributed, and poor records thereof, make it extremely difficult to draw any conclusions about PB and undiagnosed illnesses. Veterans have testified DOD did nothing to protect against over-medication. Rather, they were simply ordered to take the pills with little or no supervision other than to make sure the pills were swallowed. Dr. Myra Shayevitz says some veterans ingested more than 30 tablets.[292] This reported lack of oversight is consistent with Staff Sgt. Wood's experience.

> The full dosage was given—enough for 2 weeks, I do believe. Each soldier had their own in a blister pack . . . It's highly possible that someone that was scared could have taken more . . . They did not check on it.[293]

Testimony from scientists indicated the military had funded and conducted research which concluded that PB, combined with other similar compounds and/or physical stress, could produce long term health consequences, including nerve damage. The idea that DOD would proceed to administer PB in light of this research is disturbing, made more so by the fact that DOD administered the drug without providing the written information on PB the FDA required be provided to the troops. In light of these facts, the subcommittee believes DOD and VA should consider potential health effects of PB far more seriously.

Finding 5: VA and DOD health registry diagnosis protocols rely on the unfounded conclusion there were no chemical, biological or other toxic exposures to U.S. troops in the Gulf War theater.

For years, the DOD and CIA falsely or mistakenly maintained U.S. troops were not subject to any chemical, biological or other toxic exposures during their tour in the Gulf War theater. Rather than starting with a blank slate and an open mind, health officials at VA and DOD then used this misinformation to shape health registry diagnosis protocols, perpetuating the myth.

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[291] Testimony of James Green, Human Resources Subcommittee hearings, No. 1, p. 303–304.
[292] See *supra* note 289.
[293] See *supra* note 283, p. 76.

While military and intelligence officials would eventually concede there was a potential for toxic exposures from the detonations at Khamisiyah, they spent several years denying the existence of such a possibility. According to DOD's Bernard Rostker, the CIA made that argument as late as September 1996.

> The CIA reports said that the analysis and computer models indicate chemical agents released by aerial bombing of chemical warfare facilities did not reach United States troops in Saudi Arabia.[294]

Trained to look for irrefutable proof as opposed to the mere possibility of exposures, field commanders had apparently not given any credence to the sounding of 14,000 M8A1 alarms. According to the December 3, 1996 edition of the New York Times:

> General Powell, the Chairman of the Joint Chiefs of Staff at the time in 1991, said in an interview that while chemical detection alarms had sounded repeatedly during the war, American commanders in the Gulf had been unable to confirm the detections and had believed them to be false alarms.[295]

Despite mounting testimonials and other evidence suggesting the alarms were not false but indicative of actual toxic exposures, VA and DOD health registry officials did not include specific questions about chemical warfare and toxic exposures in its Persian Gulf Registry Code Sheet until late 1995.[296] Even after DOD and the CIA conceded exposures were likely during the detonation at Khamisiyah, VA Secretary Jesse Brown saw no reason to change protocols, saying the VA had "always accepted the possibility" of exposures and therefore had no need to change its diagnosis, treatment or compensation policies in the absence of a definitive diagnostic test and specific treatments.[297]

However, passively accepting a possibility is not the same as actively pursuing it. Nowhere is this distinction more evident than in the testimony of Dr. Susan Mather. As noted in the Background section, in December 1996, Dr. Mather testified that questions about veterans' interaction with the physical environment of the Gulf were not revised until "this past year,"[298] 5 years after the war had ended.

Faced with conflicting evidence, VA and DOD health registry officials chose to put more faith and stock in military and intelligence officials, who assured them there was no toxic exposure, than in numerous veterans who expressed concerns that they had been poisoned as a result of their service. Had VA and DOD health registry officials listened to the 93 percent of veterans who reported exposure to toxic contaminants[299] and aggressively pursued it as

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[294] See *supra* note 272, p. 182.

[295] Statement of Representative Bernard Sanders (I–VT) quoting the New York Times of December 3, 1996, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 135.

[296] *Supra* note 227.

[297] See *supra* text of Secretary Brown's letter in Background section entitled, "Exposures and VA Medical Protocols for Gulf Veterans."

[298] See *supra* note 170, p. 246.

[299] See *supra* note 227.

a legitimate hypothesis back in 1992, science—and many veterans—would be 5 years ahead of where they are now.

Finding 6: VA and DOD health registry diagnosis protocols rely on the unwarranted conclusion that, unless there is an immediate and acute reaction, exposures to chemical weapons and other toxins do not cause delayed or chronic symptoms.

VA and DOD health registry diagnosis protocols wrongly assumed that in the absence of an immediate and acute reaction to a toxic exposure, such an exposure will not cause delayed or chronic symptoms. Given the notable lack of data on the subject, there is no way to know that this is true. Nevertheless, officials in charge of the diagnosis protocols refused to give veterans the benefit of the doubt, saying they required incontrovertible proof that toxins can cause delayed or chronic symptoms without an immediate and acute reaction, while lifting the burden of proof on researchers who were unable to demonstrate the opposite.

VA Secretary Jesse Brown planted his feet squarely in the camp of officials who made this choice. While conventional wisdom says absence of proof is not proof of absence, Secretary Brown would not yield to subcommittee requests to consider the opposing position. In fact, in a December 10 letter to the subcommittee, Brown displayed an active reluctance to open the subject up for discussion again:

> In VA's view, the published literature, while limited, does not demonstrate the development of readily identifiable, long-term adverse health effects due to nerve agent exposures in human subjects who have not shown signs of acute toxicity or poisoning . . . Because there are so few studies on this question, we believe that additional research is needed to determine whether exposure to low-levels of chemical warfare nerve agents can cause long-term health effects, including chronic or delayed onset of a characteristic set of symptoms, signs or medical conditions.[300]

Secretary Brown and others who share his opinion have asked veterans and veterans' advocates to establish something which, by virtue of its terms, is inherently vague and therefore difficult to prove. Scientists do not seem to have agreed upon what comprises an "immediate and acute" reaction. Many veterans have reported a variety of symptoms that, under normal conditions, would probably qualify as immediate and acute but were dismissed as a circumstantial by-product of the harsh Gulf environment. These include but are not limited to: chest and joint pains, chronic coughing, memory loss, rashes, the appearance of pustules, muscle atrophy, nausea, diarrhea, vomiting and bloody stools, among others.

As has already been noted, PB is capable of masking the symptoms of chemical nerve agent intoxication.[301] As a result, veterans

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[300] Attachment to chairman's opening statement, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 11.

[301] See *supra* note 284.

may have experienced immediate and acute reactions and not known it.

Another reason military officials may have been blind to the possibility that toxic exposures, which do not produce an immediate and acute reaction, may still engender delayed or chronic illness is that it makes their work easier. According to the former senior policy analyst on the staff of the Presidential Advisory Commission, Dr. Jonathan Tucker, the pressures of war and the need for maximum mobility encourage military personnel to underestimate the threat of toxicity as a way of avoiding having to wear the constricting and bulky MOPP 4 protective gear.

> The goal of chemical defense doctrine has been to minimize the impact of an enemy's use of chemical weapons on the tempo and effectiveness of U.S. military operations, and they have done this by setting up the so-called MOPP scale—mission oriented protective posture . . . The idea is to calibrate the level of protection to the assessed chemical threat, because when people are in MOPP–4, the full ensemble, they are almost incapacitated . . . To deal with this problem, the Army has sought to minimize the level of protection that troops wear in combat and calibrate it to the assessed level of threat. As a result of this, there has been a kind of all-or-nothing mindset that has viewed chemical weapons exposures as either severe, if they produce acute effects if they're sub-acute, they're just discounted, they're viewed as harmless . . . I believe that, later on, after the war, when large numbers of troops began getting sick, the same commanders who wished to avoid accountability for serious errors of judgment, such as blowing up many bunkers that may have contained chemical weapons, just refused to acknowledge the problem, hoping it would simply go away.[302]

Health registry diagnosis protocols wrongly assumed that toxic exposures which did not produce immediate and acute reactions would not generate delayed and chronic symptoms. However, there is no logical reason to believe this should be the case, only explanations for why registry officials believed it to be true. While scientists have yet to prove that these exposures could incite delayed and chronic effects, no one has proved they could not. Moreover, that assumption is refuted by the experiences of many people with common environmental toxins such as asbestos and lead. Consistent exposure in small quantities may not be enough to spark a sharp reaction in the average person, but exposure over time may damage internal organs. Had health registry diagnosis protocols been more prone to explore new theories and hypotheses, the medical community might not have accepted the Pentagon's unfounded assurances quite so easily. Nonetheless Secretary Brown and others chose to give the military and medical establishments the benefit of the doubt over the numerous veterans who complained of delayed and chronic effects, again perpetuating a myth with growing implications for future research and treatment procedures.

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[302] Testimony of Jonathan Tucker, Human Resources Subcommittee hearings, No. 2, p. 349.

Finding 7: Prematurely ruling out toxic exposures as causative, VA and DOD doctors relied on diagnoses of somatoform disorder and Post Traumatic Stress Disorder [PTSD] to explain Gulf War veterans' illnesses.

DOD assumed, in the absence of definitive medical evidence in support of this position or to the contrary, that many PGW illnesses were attributable to PTSD and stress, and they did not consider toxic exposures. The predominant diagnosis of patients in the DOD Comprehensive Clinical Evaluation Program [CCEP] was psychological disorders, 18 percent, followed by: signs, symptoms, ill-defined conditions, 18 percent; musculoskeletal disorders, 18 percent; healthy, 10 percent; respiratory, 7 percent; GI, 6 percent; skin, 6 percent; nervous system, 6 percent; and other, 11 percent.[303]

Veterans have described their painful experiences with the VA medical system, which has disregarded their symptoms and labeled their ailments as "stress." Kimo Hollingsworth described experiences many Persian Gulf War veterans have had with the VA medical system. "The VA Hospital in Washington, DC performed a complete physical and concluded that I was in excellent health. The VA doctor informed me that the dark green chunks of sputum and pain in the center chest were normal in some people. I was then directed to a social worker who discussed the issue of Post Traumatic Stress Disorder. The VA also provided me a brochure outlining psychological counseling services to Persian Gulf veterans."[304]

Private Stacy testified about VA arbitrarily denying his claim for Persian Gulf illnesses. "I have a claim pending for chronic fatigue. It has been pending for 2 years. My records are being shuffled back and forth from Nashville, TN to Muskogie. They believe that all of my complaints are due to stress . . . The doctor says in my records, 'I believe the patient is exaggerating symptoms, I believe the patient has been coached, and I believe he is here to try to get increased disability.'"[305]

Mr. Stacy told the subcommittee, "I am 40 percent disabled. I receive $467 a month. I left the Post Office after 3 years. My house payment is $500 a month. I do not even have money to drive or put gas in my car. We are literally starving to death. We receive no help from nobody."[306]

Finding 8: There is no credible evidence that stress or PTSD causes the illnesses reported by many Gulf War veterans.

Although physicians at VA and DOD are more likely to diagnose veterans as having PTSD, the medical community has been unable to establish a causal link between stress or PTSD and most veterans' illnesses. There is simply no irrefutable evidence that such a link exists. As a result, any conclusion that so-called "Gulf War Illnesses" are rooted in stress or PTSD involves an unwarranted leap of faith.

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[303] Statement of Stephen Joseph, Human Resources and Intergovernmental Relations Subcommittee hearings, No. 1–4, p. 223.

[304] Statement of Kimo Hollingsworth, Human Resources and Intergovernmental Relations Subcommittee hearing, No. 1–4, p. 29.

[305] See *supra* 266, p. 93.

[306] *Ibid.,* p. 50.

After reviewing the Government's research strategy, the GAO did not concur with DOD's and VA's attribution of PGW illnesses to somatoform disorders and PTSD. In its June 1997 report, "Gulf War Illnesses: Improved Monitoring of Clinical Progress and Reexamination of Research Emphasis are Needed," the GAO concluded that:

> While stress can induce physical illness, the link between stress and these veterans' physical symptoms has not been firmly established.[307]

Dr. Daniel Clauw, a rheumatologist, testified:

> My personal experience is that in some cases the VA Medical Centers are not well-versed in the treatment of these conditions,[308] perhaps in part because these illnesses occur more frequently in females (and so few women are seen within the VA system), and perhaps because there is a cultural bias within the VA system to quickly refer these patients to psychiatrists. If a physician or other health care provider does not believe that these individuals are suffering from a real disease, they will likely be ineffective in treating this group of patients.[309]

He added:

> Most of the experts on these types of illnesses in this country are not in the VA or military systems.[310]

The sole evidence physicians have offered as proof that stress or PTSD is the source of most Gulf War sicknesses is the assumption that most veterans must have suffered from stress by virtue of the stressful environment in which they found themselves during the war. According to an article from the *Annals of Internal Medicine*:

> Poorly understood war syndromes have been associated with armed conflicts at least since the U.S. Civil War. Although these syndromes have been characterized by similar symptoms . . . no single recurring illness that is unrelated to psychological stress is apparent . . . but one unifying factor stands out: A unique population was intensely scrutinized after experiencing an exceptional, life-threatening set of exposures. As a result, research efforts to date have been unable to conclusively show causality.[311]

As the article notes, while it is difficult if not impossible to say sick veterans do not suffer from any stress or PTSD at all, it is also unwarranted to say stress or PTSD is the driving force that actually triggered the onset of so-called "Gulf War Illnesses." All of the evidence that has been presented up until now suggests while they may have contributed to veterans' being sick, stress and PTSD

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[307] U.S. General Accounting Office, *Gulf War Illnesses: Improved Monitoring of Clinical Progress and Reexamination of Research Emphasis Are Needed,* GAO/SNIAD–97–163, June 1997, p. 8.

[308] Neuro-immunological disorders such as fibromyalgia, chronic fatigue syndrome, and multiple chemical sensitivity.

[309] Statement of Daniel Clauw, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, pp. 188–189.

[310] *Ibid.,* p. 189.

[311] Hyams, et al., "War Syndromes and Their Evaluation: From the U.S. Civil War to the Persian Gulf War," *Annals of Internal Medicine,* September 1, 1996, Vol. 125, No. 5, p. 398.

alone are an insufficient explanation. According to VA Under Secretary for Health Dr. Kenneth Kizer:

> VA and DOD studies demonstrate that although PTSD rates among Persian Gulf veterans who were exposed to violence and carnage are elevated, post-traumatic stress disorder does not explain the majority of health problems in Persian Gulf veterans.[312]

Dr. Haley agrees and uses his own research to support his point.

> We found no evidence that the veterans had post-traumatic stress disorder, none, zero. We found no evidence that combat stress, the ones that had high levels of combat stress had the same risk of the syndrome as those with low levels of stress.[313]

Dr. Garth Nicolson, Chief Scientific Officer with the Institute for Molecular Medicine, concurs. He believes the symptoms are indicative of something else—not stress or PTSD, but exposure to a combination of chemical or biological agents.

> We do not feel that Post-Traumatic Stress Disorder is a major cause of the Gulf War illnesses. We think, again, that it is combinations of chemical and biological agents that produce these very complex signs and symptoms. We do not see how it could be produced any other way.[314]

Unfortunately, too few tests and studies have been completed to establish Dr. Nicolson's or anyone else's theory as fact. It is a similar problem Dr. Murphy acknowledges with regard to low-level exposures to nerve agents.

> We recognize there is a gap in the scientific knowledge. It is very hard to prove a negative. The evidence does not exist in the scientific literature at this time that clearly says asymptomatic exposures to low-level nerve agents cause this recognized group of signs and symptoms, physical findings."[315]

And yet despite any scientific proof that stress or PTSD has caused, triggered, or amplified veterans' undiagnosed illnesses, many VA and DOD physicians continue to diagnose veterans as having PTSD—by default. While the VA and DOD have opted to accept a lapse of evidence in this regard, they refuse to give veterans' contentions that toxic exposures are to blame the same courtesy. This attitude places the burden of proof squarely on the shoulders of the veterans, a grossly unfair and impossible task, especially given the magnitude of the job, their ailing health, and the little power they exert over the scope and focus of scientific research.

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[312] Statement of Kenneth Kizer, Human Resources Subcommittee hearings, No. 1, p. 138.
[313] Testimony of Robert Haley, Human Resources Subcommittee hearings, No. 1, pp. 241–242.
[314] Testimony of Garth Nicolson, Human Resources Subcommittee hearing of June 26, 1997, original transcript, pp. 117–119, in subcommittee files.
[315] Testimony of Frances Murphy, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 255.

Finding 9: Accurate diagnosis of veterans' illnesses remains difficult due to inadequate or missing personal medical records, missing toxic detection logs, and unreleased classified documents.

While our military may be the most powerful, efficient, and best equipped armed forces in the world, its management and bookkeeping in the Gulf War were deplorable. Just a few years after the war, personal medical records and scientific toxic detection logs are missing, and many documents are still classified as secret. Unfortunately, many of these records, logs, and documents may be critical in diagnosing veterans' illnesses.

For example, with regard to the role of PB in illnesses, Dr. Heivilin of GAO says the records were so poorly maintained that the government does not even know who took the pills—an oversight DOD readily admits.

> DOD has acknowledged that the records of the use of PB and vaccinations to protect against chemical and biological warfare exposures were inadequate. There is research going on right now to try to find the majority of the records, which seem to be missing.[316]

Furthermore, even if DOD could determine which veterans took the pills, the distribution of the drug was so poorly planned that there is no guarantee the doses and frequency of doses would be comparable and of any scientific value. According to Dr. Rostker:

> There was poor quality control in terms of the regimen of PB. In some units it was careful. In other units it was not careful. We don't have records that would definitively establish who had PB. It was not done the way any of us would have liked to have seen it done. There's no question about that.[317]

According to Major Randy Hebert, the poor management did not stop at the border, or with the end of the Persian Gulf conflict. He says he knows of hospitals that have lost records of veterans' tests, even records documenting the fact of their visits.

> I have spoken to a Marine who was evaluated with several other Marines from his squad upon their return from the war. They were told they were being studied for adverse effects from the desert sun. They were told this by someone whom he believes was a civilian doctor. They all were observed for 1 week. The following week the Marines went back to the hospital to find the results. They were told that they were never there. Also, there is not an indication in their records they were ever there.[318]

Mr. Tuite says health reports are not the only kinds of records that were lost. Chemical and biological warfare logs also seem to have been misplaced or else never maintained. Mr. Tuite told the subcommittee that Senate Banking Committee Chairman Donald

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[316] Testimony of Donna Heivilin, Human Resources Subcommittee hearings, No. 3, p. 38.
[317] Testimony of Bernard Rostker, Human Resources Subcommittee hearings, No. 2, p. 249.
[318] Testimony of Randy Hebert, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 107.

Riegle (D–Michigan) had requested logs of chemical and biological warfare activity from the Secretary of Defense, only to be notified by the General Counsel's office that the command element during the Gulf War (CENTCOM) could not locate any such document.[319]

Still more disturbing is the alleged falsification of toxic detection logs and the secret classification of medical records for the entire 330th Ordinance Company. According to former CIA analyst Patrick Eddington, they were allegedly made secret to conceal the fact that DOD sent troops to the Gulf knowing there were risks associated with low-level chemical exposure and did so without alerting the soldiers to the dangers. Eddington says Sergeant First Class Michael Morrissey's unit was charged with removing more than 170,000 chemical weapons and nerve agent munitions from an American depot in Germany. Sgt. Morrissey apparently saved the relevant unit logs, despite orders to destroy them. When he noticed that reports that went up the chain of command noted an absence of chemical incidents, he concluded they had been deliberately altered.

> In my presence, Morrissey pulled out a log entry for July 10, 1990 showing that an M-8 alarm had gone off at one of the chemical storage bunkers. There were no other contaminants in the area and the device was fully functional and working normally. Additional detection equipment was dispatched to the bunker and, according to the log extract, the air sample readings appeared to indicate a slight trace of nerve agent in the air. 'I was told to overlook' such incidents, Morrissey noted. The 10 weeks of logs that Morrissey retained appear to have several such incidents to include some personnel who displayed pin-point pupils and other telltale signs of nerve agent exposure. . . . What upset Morrissey the most was that his chain of command clearly understood the potential risks.[320]

Eddington then noted a startling declassified document entitled General Information: Nerve Agent Intoxication and Treatment. The document is basically a disclaimer. It explicitly states serious cognitive problems may result from low-dose exposure even though there is no scientific proof that this may be so, alludes to the possibility of birth defects from organophosphate pesticides, and includes an acknowledgment that the reader (soldier) understands the risks. It is then signed by the soldier (in this case, Sgt. Morrissey) and a medic.

> Signs and symptoms of chronic, low dose exposure: memory loss, decreased alertness, decreased problem solving ability, and language problems are suspected but have not been proven by scientific study . . . Teratogenicity (ability to cause birth defects): although some organophosphate pesticides have been shown to be teratogenic in animals, these effects have not been shown in carefully controlled experiments using nerve agents . . . I have read and un-

[319] Testimony of James Tuite, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 438.

[320] Testimony of Patrick Eddington, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 143–144.

> derstood the above information. All questions have been explained to my understanding and satisfaction. Soldier/Employee (Michael Morrissey's signature), Medical Personnel (Richard W. Kramp, M.D.-initials), Date January 19, 1990.[321]

Eddington concluded DOD had reason to suspect chronic low level nerve agent exposure could produce serious chronic health problems in exposed personnel a full year before the detonation at Khamisiyah. Every member of Sgt. Morrissey's unit was reportedly required to sign an identical document. Eddington concludes that DOD's classifying this information sheet and the entire Company's medical records as secret is "irrefutable evidence" that DOD knowingly placed U.S. troops at risk and did not want to be found out.

> In my opinion they lied. I spent 11 years in the Army Reserve and National Guard. I have never seen a document like this. You classify something like this and you classify medical records secret, when clearly you are telling people that they could suffer long-term effects, serious long-term effects, from chronic low-level exposures? . . . This document makes it very clear that they understood the risks these people were facing.[322]

While Mr. Eddington's suspicions may or may not be accurate, DOD's tendency to classify information that scientists and other investigators believe ought to be released is not new, as Dr. Tucker, director of the chemical and biological weapons nonproliferation project the Monterey Institute of International Studies, pointed out to the subcommittee.

> A crucial untapped source of information about possible toxic exposures during the Gulf War is the large volume of environmental and biomedical samples that U.S. technical intelligence teams collected throughout the war zone during and after Desert Storm . . . It was coordinated by a unit called—a rather shadowy unit—called the JCMEC, based in Dhahran. Despite requests under the Freedom of Information Act, the results of these analyses have never been made public.[323]

Finding 10: Accurate diagnosis of veterans illnesses was also hampered by the VA's lack of medical expertise in toxicology and environmental medicine.

One of the reasons the VA has been unable to determine potential role of toxins in causing veterans' ailments is the lack of toxicological and environmental medicine expertise among the staff. While the VA initially refuted the argument, it has since acknowledged its deficiencies and has taken steps to buttress its expertise in areas where it was lacking.

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[321] Document submitted for the record, "General Information, Nerve Agent Intoxication and Treatment," Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, pp. 163–164.

[322] Testimony of Patrick Eddington, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 177.

[323] Testimony of Jonathan Tucker, Human Resources Subcommittee hearings, No. 2, p. 350.

Asked point-blank how many toxicologists work for the Department full-time, Dr. Murphy was only able to come up with the name of one physician out of a total full-time staff of 8,000. When asked why that was, Dr. Murphy simply said:

> In general, toxicologists don't work in health care organizations. They're often in research laboratories or in organizations like the EPA.[324]

Dr. Haley believes regular physicians are poor substitutes for toxicologists because they may not explore diagnoses like organophosphate-induced delayed polyneuropathy [OPIDP] that would come naturally to an expert focused on toxicology:

> Since these cases are usually treated by toxicologists, few regular physicians are familiar with OPIDP. This probably explains why no one explored this diagnosis earlier.[325]

Dr. Haley says the medical toxicologist on staff in his department, Dr. Tom Kurt, is such a leader on the issue that he proposed the OPIDP mechanism for the Gulf War syndrome as early as 1994.

Following the hearing on December 11, 1996, Dr. Kizer wrote to Subcommittee Chairman Shays, saying the discussion prompted him to find out how the VA's personnel office obtains and tracks information about the specialty certifications of VA physicians. Dr. Kizer concluded the VA's database needed improvement, and efforts are reportedly being made to ensure this comes to pass.

In addition, Dr. Kizer directed the Office of Academic Affiliations to improve the VA's toxicology and occupational medicine expertise by initiating efforts to support 12 new medical toxicology fellowships and 25 residency positions for occupational medicine. While Dr. Kizer noted the response was somewhat disappointing, the VA will fund three additional medical toxicology fellowships and five new occupational medicine residency positions in the 1997–1998 school year, with more expected in the years ahead.

Finally, Dr. Kizer said he plans to establish occupational and environmental health as a VHA strategic healthcare group [SHG]. According to Kizer:

> The SHG is a multidisciplinary group organized to support the delivery of a continuum of care to a defined population or care in a particular setting. The SHG functions by integrating data, skills and best practices into a systemwide policy, planning and service delivery through the development of clinical care strategies . . . and decision support mechanisms.[326]

Accurate diagnosis of veterans' illnesses was hindered by the lack of relevant expertise at the VA. Rather than challenge either the lack of expertise or the impact it has on diagnosis, as well as research and treatment, the VA decided to firm up its toxicological

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[324] Testimony of Frances Murphy, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, pp. 259–260.

[325] Statement of Robert Haley, Human Resources Subcommittee hearings, No. 1, p. 251.

[326] Letter from Kenneth Kizer to Chairman Shays, June 6, 1997, p. 2 (in subcommittee files).

and environmental medicine resources by expanding its fellowship and residency staff.

Finding 11: Exposures to low levels of chemical warfare agents and other toxins can cause delayed, chronic health effects.

Dr. Claudia Miller, a University of Texas Southwest Health Sciences Center at San Antonio scientist, whose research focuses on low-level chemical exposures, told the subcommittee at a September 19, 1996 hearing, "There are now several studies, in addition to our own, linking chronic, multi-system symptoms to [low level] organophosphate/carbamate exposure." [327]

It is apparent that DOD and FDA did not evaluate and recognize the importance of the existing body of scientific literature on chronic health effects resulting from chemical warfare exposure and resulting delayed neurotoxicity. Dr. Satu Somani told the subcommittee that, "The literature suggests that Sarin can be responsible for delayed neurotoxic effects which may not appear until years after a low level of exposure. Although pyridostigmine is not normally taken up by the brain, it crosses blood brain barrier under conditions of physical stress and causes central nervous system effects. Insecticides, inspect repellants and other chemicals can also contribute to neurotoxic effects of nerve agents as Sarin, soman, tabun and Vx and they are important weapons of chemical warfare. . . . Although we have a treatment for a single dose toxicity, there is no treatment, however, for the delayed neurotoxicity. Delayed neurotoxicity was first reported in the 1950's." [328]

Dr. Myra Shayevitz, an environmental physician, in material inserted in the hearing record by Representative Bernard Sanders, described the relationship between chemical warfare agents and toxic health effects. "One clinically useful theoretical model of MCS holds that each individual has a total tolerable load of chemical, physical and emotional stress, which, when exceeded, may lead to MCS in susceptible individuals." [329]

Multiple low-level chemical exposures could result in a synergistic effect. The symptoms of low level exposure may not appear for several years. Dr. Thomas Tiedt described the genetic basis of variations in response to chemical exposure in testimony before the subcommittee's April 24, 1997 hearing. "Due to the principle of biological variation, different cells and different individuals will experience different degrees of acute and chronic effects." [330]

Dr. Satu Somani testified "based on the recent experimental evidence and the similarities of the symptoms of the delayed neurotoxicity reported by workers in the organophosphate industry and also by Desert Storm veterans, I'm inclined to suggest that the Gulf War syndrome may be due to low-level exposure to Sarin. . . . The symptoms are due to low-level exposure to Sarin. Pyridostigmine in combination with physical exercise can contribute to neurotoxic effects. Finally, the simultaneous exposure to in-

[327] Statement of Claudia Miller, Human Resources and Intergovernmental Relations Subcommittee hearings, No. 1–4, p. 271.
[328] Statement of Satu Somani, Human Resources Subcommittee hearings, No. 2, p. 317.
[329] See *supra* note 289, p. 15.
[330] Statement of Thomas Tiedt, Human Resources Subcommittee hearings, No. 2, p. 303.

secticides and other chemicals under physical stress may have initiated the neurotoxicity."[331]

The effects of low level chemical warfare agent exposure is a legitimate line of inquiry for DOD and VA to have pursued. The Federal agencies possessed a research bias against the possibility of chemical warfare exposure and did not initiate any research into this area until 1997. Results will not be available until the year 2000 or beyond, fully 9 years after the Gulf War.

TREATMENT

Finding 12: Neither the VA nor the DOD has systematically attempted to determine whether sick Gulf War veterans are any better or worse today than when they first reported symptoms.

Scientific analysis requires the ability to draw conclusions based on objective and accurate scientific data, but without a systematic means of comparison, the data is useless. Unfortunately, neither the VA nor the DOD has made any effort to track veterans' progress and treatment on a methodical, uniform basis. As a result, doctors have no way to gauge which is the best treatment for veterans' different symptoms.

While the VA has developed a means of collecting an initial assessment of veterans' conditions, problems have surfaced regarding its implementation. The 65,000 veterans who signed up for a Persian Gulf Registry Exam were provided a review of their medical history, physical examination, and laboratory tests. The results were then entered into a database containing information on all Persian Gulf veterans who received the examination.[332] However, the objective value of these assessments is weakened by various factors. Stephen Backhus of GAO has noted medical centers have experienced scheduling backlogs of up to 6 months,[333] which can have two effects. One, a late Registry Exam risks missing the more subtle symptoms common in the early stages of illness, preventing doctors from treating them before they become worse. Two, awareness of long scheduling delays may discourage veterans from registering for the exams, preventing veterans from receiving the diagnosis and treatment they deserve, as well as making the tests less representative of veterans at large and therefore less worthwhile. Finally, veterans have complained of poor feedback and communication with health care personnel following completion of the exam, as well as "a lack of postexamination treatment."[334]

According to Army Reservist Chris Kornkven, even when veterans were given feedback, no effort was made to pursue the VA's own recommendations for further diagnosis and treatment.

> Eventually I was told I may have post traumatic stress disorder and I would be tested and possibly be followed with counseling. Several weeks passed with no other medical testing or treatment. I began asking questions in the mental health clinic when any appointment would take

[331] See *supra* note 328, pp. 318–319.
[332] See *supra* note 227, p. 1.
[333] *Ibid.,* p. 2.
[334] *Ibid.*

> place and was told they were too booked up to get me in any time soon.[335]

GAO's research and analysis confirms Kornkven's experience is not an isolated case. As Dr. Heivilin concludes:

> DOD and VA have made no provisions to follow up on the condition of the Gulf War veterans. We found neither DOD nor VA have any means of knowing whether the Gulf War veterans who are ill are better or worse off than when they were first examined.[336]

More importantly, this inability to determine if the conditions of sick veterans are improving prevents the DOD and VA from assessing the value of its diagnoses and treatments.

> We found [DOD and VA] had no monitoring mechanisms for determining the quality, the appropriateness or the effectiveness of the care that [veterans] are getting after the initial examinations.[337]

Dr. Murphy claims the absence of a particular follow-up protocol is not indicative of a lack of interest in how veterans are doing. Rather, Dr. Murphy says the VA's policy is designed to ensure veterans receive the appropriate amount and quality of care by catering to the needs of each veteran individually.

> We do not have a protocol, and the reason we do not have a protocol is that the therapy and the follow up needs to be tailored to the individual veteran. Clearly, there are some people who need to be seen every couple of weeks or every month. Some might be seen every 3 months, some every 6 months, depending on the severity of their illness and how well they are responding to the treatments they are being given.[338]

However, this response is problematic for two reasons. As noted in Finding 1, the GAO has pointed out several failings at the VA regarding followup testing, diagnosis and treatment, including: failure to give veterans without a clearly defined diagnosis additional baseline laboratory tests and consultations; failure to evaluate veterans suffering from undiagnosed illnesses at VA's referral centers (only 390 out of 15,000 referrals were evaluated); and failure to provide personal counseling between veterans and their physicians.[339]

Second, if doctors are assessing the progress of veterans on an individual basis, researchers will be unable to draw general conclusions about which treatments may have appeal for other sick veterans with similar symptoms. As a result, even if certain treatments are found to work, they will have little impact on medical research as a whole and thus limited significance for future veterans.

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[335] Testimony of Chris Kornkven, Human Resources Subcommittee hearings, No. 1, pp. 269–271.

[336] Testimony of Donna Heivilin, Human Resources Subcommittee hearings, No. 3, p. 34.

[337] *Ibid.,* p. 37.

[338] Testimony of Frances Murphy, Human Resources Subcommittee hearing of June 26, 1997, original transcript, p. 232 (in subcommittee files).

[339] See *supra* note 232, pp. 4–5.

VA's argument that its performance of a Registry Exam for any veteran who requests one followed by an appropriate diagnosis, treatment, and follow-up is sufficient to assess veterans' progress over time still fails to address the need for a systemwide and systematic comparison which is crucial for any kind of major advance in medical science and treatment.

Finding 13: Treatment of sick Gulf War veterans by VA and DOD to date has largely focused on stress and PTSD.

Through counseling and other forms of therapy, the medical community has established an accepted treatment for stress and PTSD that has been available for some time. Over a number of years, physicians have been able to determine that counseling can help veterans overcome these syndromes and resume their normal life. VA and DOD doctors, under pressure to come up with a diagnosis and treatment for Gulf War veterans suffering from mysterious illnesses, have prematurely prescribed treatment for stress and PTSD, even when evidence strongly suggests their illnesses are more likely to stem from exposure to toxic agents.

Examples of Gulf veterans who were urged to undergo treatment for stress are plentiful.

Private Stacy testified that he has tried counseling and other forms of treatment for stress, but has found that they do not work.[340] Nevertheless:

> For the past year I have been pushed and pushed towards mental health.[341]

Veteran Julia Dyckman remembers smelling and hearing evidence of SCUD attacks during the war.[342] Soon afterward, she experienced a rash of unusual health problems,[343] yet according to Dyckman:

> Self reporting is ignored and a psychiatric diagnosis is often given.[344]

As noted in the Background section, Army Reservist Chris Kornkven suffered from a variety of physiological symptoms, including intestinal problems and headaches. However, when he sought treatment from the VA, he was not given anything for his stomach or head.

> I was referred to the mental health clinic, although I was not told why . . . It was suggested I go to the Vet Center for any counseling. At this point, much of the medical testing or treatment had stopped, with emphasis placed on PTSD and possible treatment in the mental health clinic.[345]

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[340] See *supra* note 266, p. 90.
[341] *Ibid.,* p. 108.
[342] Testimony of Julia Dyckman, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 189.
[343] *Ibid.*
[344] *Ibid.,* p. 190.
[345] Testimony of Chris Kornkven, Human Resources Subcommittee hearings, No. 1, pp. 269–271.

Doctors have since discovered a nasal mass after doing an MRI, as well as other symptoms such as skin problems and rectal bleeding, neither of which has been treated to date.[346]

In order to justify treatment for stress and PTSD, VA and DOD health care personnel have pushed those diagnoses, often without any support from tests or logic.

Major Michael Donnelly was exposed to a known toxin, malathion, and experienced serious health problems immediately afterward, suggesting his exposure may be the source of his ailments, yet an Air Force physician did not hesitate to diagnose, or at least strongly suggest, stress upon hearing that he had served during war.

> I went in to the flight surgeon at Sheppard Air Force Base. When I finished explaining my symptoms to him I mentioned that I had been in the Gulf War. He immediately started to talk to me about the effects of stress and delayed stress.[347]

Private Green, who was never in the Gulf region let alone the Gulf War theater during combat, was also diagnosed and treated for stress.

> The doctor asked what was wrong and asked me to describe the symptoms. I was then sent for a series of blood work and referred to the mental health clinic for stress-related problems. Seems awful funny to me that my illness is stress related and I was not even in the theater.[348]

Sgt. Sumpter-Loebig had a similar experience. She spent a large amount of time in and around a "noxious fuming gas that burned" with no protective clothing. She later discovered it was a combination of DS, CS, and super-topical bleach. Soon afterward, she experienced a series of health problems ranging from dry mouth and hair loss to heart palpitations. Despite her exposure to known toxins, the VA says she has PTSD and the problem is in her head.[349]

If war were not considered a stressful environment, VA and DOD doctors would have been hard-pressed to match veterans' physiological symptoms with physiological treatments. However, because stress is difficult if not impossible to eliminate as a cause of their ailments, VA and DOD doctors can diagnose and treat health problems as symptoms of stress without fear of being glaringly wrong or being perceived as incapable of coming up with any answer at all.

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[346] *Ibid.*

[347] Testimony of Michael Donnelly, Human Resources Subcommittee hearings, No. 2, p. 35.

[348] See *supra* note 182.

[349] Testimony of Susan Sumpter-Loebig, Human Resources Subcommittee hearings, No. 2, p. 44.

COMPENSATION

Finding 14: Compensation ratings for sick veterans are minimized due to inadequate personal medical records, missing toxic detection logs, and unreleased classified documents which could help veterans establish service-connection of post-war disabilities.

The absence of medical records and detection logs, as well as the classification of certain documents, have increased the burden on veterans who need to establish a causal link between service in the Gulf and their post-war ailments. Unable to prove the war responsible for their pains, many sick veterans are thereby rendered incapable of holding the United States fully accountable for their illnesses, leading their compensation ratings to be unfairly diminished.

Still, some Gulf War veterans seeking compensation face an easier task than veterans of previous wars. In the past, the VA had required compensation to be based on clearly diagnosed diseases. In 1994, Congress enacted unprecedented legislation changing this requirement. The Persian Gulf War Veterans' Benefits Act (Public Law 103–446) allows the VA to pay compensation benefits to Gulf War veterans suffering undiagnosed illnesses.[350]

However, although this legislation relieves some of the burden on veterans, they still must prove they are disabled and trace their disabilities directly to their service in the Gulf. It is in making the latter argument that the classification, disappearance, or inadequacy of medical and toxic detection records come into play.[351]

Sadly, when veterans try to bring these shortcomings to the attention of the evaluating board, they are summarily dismissed and the evidence, discounted. In the words of Sgt. Sumpter-Loebig:

> This so-called board is a sham, disgrace, and basically a sold-out jury of three officers who have found an excellent loophole for the military to escape responsibility to their soldiers. This physical evaluation board says that I am not fit for duty or my civilian job title. But they aren't going to admit that there is a problem caused by our Southwest Asia service, because we are no longer of any use to them. From the moment an ill soldier walks into one of these military facilities and mentions they were in the Gulf, the decision and diagnosis are already decided upon. To cover themselves, they tell us to bring in other evidence to dispute their doctor. And when we do it is dismissed as irrelevant and non-admissible. These boards . . . bring down their judgment swiftly and without any thought to our well-being.[352]

Confronted with the impossible task of proving a causal connection between their sickness and service without the documents, data, and scientific explanation that may be necessary to back up their claims, many veterans find themselves at a loss. They know

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[350] Congressional Research Service Report, "Gulf War Veterans' Illnesses," 97–450 SPR, April 11, 1997, p. 5.
[351] See finding 9.
[352] See *supra* note 349, p. 62.

they are sick, and while all signs point to their service in the Gulf as the reason, without some of the key clues to the puzzle—the missing or poorly maintained medical and toxic detection records and classified material—many veterans are unable to successfully make their case to the Veterans' Benefits Administration [VBA].

Julia Dyckman says the burden of proof is made even more difficult by the VA's refusal to bend its time-limit for proving disability. Under regulations issued in 1995, a veteran can only be compensated for undiagnosed illnesses that make themselves apparent during Gulf War service or within 2 years of a veteran's departure from the Gulf.[353] Veterans must also prove chronic illness and be at least 10 percent disabled. For the past 2 years, this constraint has proved especially onerous for undiagnosed Gulf War veterans who do not recognize the significance of symptoms which may appear mild by themselves but together are indicative of more serious health problems.

> When later symptoms are present, it's almost impossible to have them recognized by the VA. There's the—you need to change the 2-year limit of at least 10 percent disability. Reporting was difficult, but symptoms are also sometimes very benign at the beginning, and even getting them into any kind of civilian treatment is very difficult. This limit is unrealistic due to the specific nature of Persian Gulf illness.[354]

President Clinton responded by extending the presumptive period by 8 years, until December 31, 2001. Veterans who were denied compensation between 1995 and 1997 solely on account of the old 2-year presumptive period will have their claims re-evaluated.

However, only 55 percent of the total 93.5 percent of veterans who were denied compensation for undiagnosed illnesses fall into this category. The remaining 38.5 percent were simply denied.

Faced with a dearth of useable data thanks to lost, destroyed or classified medical, toxic detection, and other records, veterans are shouldered with a gargantuan task, proving a causal link between their illnesses and their service with only limited resources at their disposal. What's more, veterans are being asked to prove what science and doctors cannot disprove; an unfair and impossible task for anyone, let alone disabled and suffering veterans who simply want what they are due. The Government has eliminated some of the burden, including the diagnosis and 2-year presumptive period restrictions, but the other requirements still fall like an anvil atop the shoulders' of suffering veterans. Sadly, as VBA records show, those who fail to make what the VBA considers an incontrovertible argument pay the price in smaller compensation benefits.

Finding 15: Compensation ratings are also minimized by over-reliance on somatoform disorder and PTSD as the basis of disability claims.

Veterans suffering from so-called "Gulf War Syndrome" face yet another hurdle in acquiring the benefits they are owed—an over-

[353] See *supra* note 352.

[354] Testimony of Julia Dyckman, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 190.

reliance by VA and DOD on a diagnosis of somatoform disorder and PTSD as a means of calculating and processing their claims.[355]

For Julia Dyckman, the VA and DOD's unwillingness to accept alternative causes of her sickness prevent her from receiving the full amount she should have coming to her.

> After 4 years and the VA's own diagnosis of Persian Gulf Syndrome, which I got at the VA Center in Washington, I received 30 percent disability for PTSD. In 1996, it was finally increased to 80 percent for chronic fatigue. Persian Gulf Syndrome is not a recognized illness. According to VA, I am tired and have a mental problem.[356]

Staff Sgt. Steven Wood faced the same problem. His solution: stay in Germany and receive free health care. Although the VA has rated him at 100 percent disabled, it owes him more than $20,000 in back benefits.[357] A processing problem in Philadelphia is reportedly causing further delays in payment.

The VA's and DOD's reliance on somatoform and PTSD can make for added difficulties such as those faced by Michael Stacy. His experience with VA and DOD is one of disbelief. According to his medical records, his doctor is convinced he is lying or otherwise exaggerating his symptoms in order to get more compensation.

> They believe that all of my complaints are due to stress. I have a copy of my medical records, which I do not have on me now. But the doctor does say in my records, "I believe the patient is exaggerating symptoms, I believe the patient has been coached, and I believe he is here to try to get increased disability."[358]

As a result, many veterans find themselves in the unenviable situation of Sgt. Sumpter-Loebig, who was told in no uncertain terms that she could receive a portion of the benefits she is due, if she accepts a more "established" diagnosis of stress or PTSD. For veterans who are at their wits" end, the pressure is great. As Sgt. Sumpter-Loebig recalls, she was presented with the following choice:

> Send in my results to a board now and be awarded 10 to 20 percent of base pay for 1 year as a settlement or go through a 4 week physical training program designed to help me learn to cope with my symptoms—which they are describing as sympathetic and mind-induced—be taught how to be socially active with the rest of the world, how to use P.T. to forget my mind-induced sympathetic symptoms, and be sent back to duty. This is regardless if the symptoms are gone or not.[359]

Private Stacy is rated at 30 percent disabled for service-connected PTSD, but has been strongly advised to push for 100 percent. He has refused because he does not believe his sickness stems from stress and does not want to accept a fraction of what he is

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[355] See finding 7.
[356] See *supra* note 354.
[357] Testimony of Steven Wood, Human Resources Subcommittee hearings, No. 2, p. 46.
[358] See *supra* note 266, p. 93.
[359] See *supra* note 349, p. 59.

owed—which is all he would receive with a stress or PTSD diagnosis. What's more, Stacy told the subcommittee he would not have accepted a 30 percent rating if it were not for his family's financial situation. He says they have been starving for 1 year now, and that it is only by the grace of his relatives, friends, and God, they would not have survived.[360] According to his testimony, his disability compensation of $467 a month does not leave enough money for his monthly house payment of $500, let alone the cost of gas or food.[361]

The experiences of these and other veterans support the view that compensation ratings are being reduced based on inaccurate or at least premature diagnoses of somatoform disorder and PTSD. Evidence that VA and DOD doctors have over used diagnoses of somatoform disorder and PTSD have already been laid out.[362] Since these psychologically-based disabilities carry a lower compensation rating other physiological ailments, it seems only logical that veterans see their compensation ratings minimized as a result. The pressure to accept a diagnosis of somatoform disorder or PTSD before other alternatives have been ruled out shows how this reduction can sometimes come to pass, and when it does, it is a tragedy. U.S. troops risked their lives and health for the military. It is a gross understatement to say they deserve the full amount of what they are justly owed upon their return.

RESEARCH

Finding 16: Federal research strategy has been blind to promising hypotheses due to reliance on unfounded DOD conclusions regarding chemical exposures.

In 1996, the DOD admitted for the first time that 300 to 400 PGW troops had likely been exposed to chemical weapons. The number of affected troops continued to be raised upward until July 1997, when DOD estimated that the number of exposed troops was estimated at 98,900.[363]

VA's Dr. Kenneth Kizer testified on January 21, 1997 that "the issue of chemical warfare agents . . . and the investigation into that arena, was delayed, and that investigative focus was given a lower priority because of the information that had been provided by DOD."[364] As a result, the PGW registry didn't require VA physicians to ask sick veterans detailed questions about potential chemical and biological weapons exposure until 1995.[365] In fact, the VA diagnostic screening protocol failed to identify even one veteran exposed to chemical weapons agents or other toxins.

VA continues to assert that acute symptoms following exposure to chemical weapons must be present in veterans exposed to these agents. In the absence of acute symptoms, the veteran is presumed by the VA not to be exposed.

Many scientific and medical witnesses have testified that chemical exposures result in injury to the limbic system at the brain

[360] See *supra* note 266, p. 108.
[361] *Ibid.,* p. 50.
[362] See finding 7.
[363] Statement of Bernard Rostker to the PAC meeting, Buffalo, NY, July 29 and 30, 1997 (in subcommittee files).
[364] Testimony of Kenneth Kizer, Human Resources Subcommittee hearings, No. 1, pp. 50–60.
[365] *Ibid.*

stem. This injury, in turn, causes neuro-immunological disorders which are often characterized as chronic fatigue syndrome, fibromyalgia or multiple chemical sensitivity. These disorders are thought by many experts to be a spectrum of neuro-immunological illnesses with a variety of causes and symptoms.

Dr. William Baumzweiger, a neurologist and psychiatrist, who was at the time a VA physician in Los Angeles, testified that organophosphate chemical exposure resulted in "a syndrome which has been known since the late 1800's, was very clearly documented by 1930, and which there have been a number of accidental exposures, tragedies in the 1930's, 1970's, 1980's. . . . The signs and symptoms of acute neurotoxicity do not have to be so dramatic as seizures and death. They can be very mild and they can consist of headaches, nausea, vomiting, episodes of psychosis, personality change . . ."[366]

However, the January 15, 1997 issue of the *Journal of the American Medical Association* was devoted to PGW research. A study conducted by Dr. Robert Haley and colleagues at the University of Texas Southwestern Medical Center at Dallas concluded that PGW veterans illnesses were attributable to "subtle brain, spinal cord and nerve damage-but not stress. The damage was caused by exposure to combinations of low-level chemical nerve agents and other chemicals, including pyridostigmine bromide in anti-nerve-gas tablets, DEET in a highly concentrated insect repellant, and pesticides in flea collars that some troops wore. Different combinations of the chemicals appear to have caused the 3 different syndromes." To arrive at this conclusion, Dr. Haley and his colleagues conducted three studies in a group of 249 members of a U.S. Navy reserve unit. This study could have been just as easily conducted by DOD or VA.

The Departments also failed to consider historical research which supported consideration of possible toxic exposures with delayed onset as the cause of PGW syndrome. Furthermore, DOD and VA did not consider the possibility that PB could mask the effects of chemical exposure. If this were the case, delayed neurotoxicity would not appear for perhaps several years.[367]

Finding 17: Institutional and methodological constraints make it unlikely the current research structure will find the causes and effective treatments for Gulf War veterans' illnesses in the short term.

Military institutional biases are adversely affecting the identification of causes and treatments for PGW illnesses. Exposure to genotoxic materials was not quantatively monitored and records of chemical exposures were not maintained. As a result, data on these subjects will never be available and a direct proof of a causative relationship between chemical exposures and PGW illnesses may be unattainable. However, the circumstantial evidence is overwhelming.

There is also strong existing medical bias against the spectrum of illnesses described as neuro-immunological central nervous sys-

[366] Testimony of William Baumzweiger, Human Resources Subcommittee hearings, No. 1–4, p. 480.

[367] See *supra* note 148 and accompanying text.

tem disorders. Dr. Clauw said "it appears that there is a group of closely related systemic conditions, such as fibromyalgia and chronic fatigue syndrome, as well as a group of closely related organ-specific conditions, such as migraine headaches and irritable bowel syndrome, that form one large spectrum of illness with common demographics, inciting factors and treatment."[368]

Many of the disease conditions of which Gulf War veterans complain, such as chronic fatigue syndrome, fibromyalgia, multiple chemical sensitivity are poorly understood and only recently characterized by standardized diagnostic criteria. Dr. Clauw testified, "The countless individuals who were previously healthy, who returned from the war with severe symptoms, are compelling evidence that these individuals developed these illnesses as a result of their military service."[369]

He added:

> much more funding is needed for research into this whole spectrum of conditions. The problems regarding the diagnosis and treatment of Persian Gulf veterans are a symptom of a much bigger problem that we have in this country. Amazingly enough, despite the very high prevalence of these illnesses in the population, the aggregate amount of yearly funding for these conditions, through all of the institutes at the NIH, and through other sources such as the DOD, may perhaps reach $20 million. This spectrum of illnesses cost the government alone billions of dollars in lost productivity disability and health care costs. The costs to the private sector are much larger.[370]

GAO testified, "We found that the bulk of ongoing Federal research on Gulf War veterans' illnesses focuses on the epidemiological study of the prevalence and the cause of the illnesses."[371]

GAO concluded, "the ongoing epidemiological research will not be able to provide precise, accurate, and conclusive answers regarding the causes of veterans' illnesses because of these formidable methodological problems."[372] GAO recommended that "the Secretaries of Defense and Veterans Affairs (1) set up a plan for monitoring the clinical progress of Gulf War veterans to help promote effective treatment and better direct the research agenda and (2) give greater priority to research on effective treatment for ill veterans and on low-level exposures to chemicals and their interactive effects and less priority to further epidemiological studies."[373]

VA has not sought a case definition for PGW illness and this has hampered development of a set of diagnostic criteria which would enable treating physicians to identify and correctly diagnose sick veterans.

In 1994, the Center for Disease Control and Prevention's [CDC] Dr. William C. Reeves, began developing a working case definition of PGW symptoms. CDC utilized this case definition to determine epidemiologically that Gulf-related illnesses are more frequent in

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[368] Testimony of Daniel Clauw, Human Resources Subcommittee hearings, Nos. 1–4, p. 178.
[369] *Ibid.,* p. 179.
[370] *Ibid.,* p. 180.
[371] See *supra* note 196, p. 51.
[372] *Ibid.,* p. 54.
[373] *Ibid.,* p. 59.

PGW veterans than non-deployed troops. VA did not initiate action to determine a case definition when it began receiving reports of PGW illnesses in 1991. As a result, 3 valuable years were lost.

Finding 18: The FDA was passive in granting and failing to enforce the conditions of a waiver to permit use of PB by DOD.

Immediately prior to Operation Desert Shield, the Assistant Secretary of Defense for Health Affairs requested that HHS waive the requirement to obtain informed consent from military personnel for use of non-approved drugs and biologics because under military combat exigencies it was not feasible. The Pentagon argued that the policy of individual informed consent is not feasible in battlefield conditions and runs counter to the needs of the unit as a whole. If the military gave soldiers the choice of accepting or refusing to take an Investigational New Drug [IND], those who chose not to take the drugs would violate their overriding obligation both to their unit and to the military, and the military would violate its obligation to protect the soldiers. Soldiers who refused to take an Investigational New Drug would place themselves at risk and expose others in their unit to harm as well.

On December 21, 1990, FDA issued an interim regulation to amend its current informed consent regulations to permit the Commissioner of Food and Drugs to make the determination that obtaining informed consent from military personnel for the use of an investigational drug or biologic is not feasible in certain battlefield or combat-related situations.

The regulation had an immediate effective date because of the urgency created by Operation Desert Shield.

DOD requested waivers from FDA to administer three drugs to protect troops from biological or chemical attack. FDA denied one of the requests, but granted waivers for an unlicensed polyvalent vaccine against botulism and for pyridostigmine bromide [PB] as a wartime contingency pretreatment for nerve gas exposure. PB was approved by FDA for the treatment of myasthenia gravis, a neuromuscular disorder, but not as a prophylactic against nerve gas.

In such situations where informed consent was not feasible, FDA's interim regulation required that, "DOD collect data on any use of these products without informed consent. FDA will review these data and will revoke or modify the determination if the review indicates that the determination is no longer appropriate."

However, HHS staff members have informed subcommittee staff that DOD did not collect the required data and FDA has not aggressively pursued DOD's violation of the FDA–DOD agreement.

DOD has admitted that the information sheets which FDA required as a condition of the waiver, were never provided to military personnel ordered to take the vaccines and PB. As a result, Gulf War veterans did not know to include this information in their medical records or to mention the exposures when seeking medical care for PGW illnesses.

FDA's Interim Final Rule permitting waiver of informed consent for use of unapproved products in a military exigency is still in effect. The Presidential Advisory Committee on Gulf War Veterans' Illnesses' [PAC] expressed concern in its December 1996 report

"about the amount of time FDA is taking to move forward with opening up the Interim Final Rule—which was issued almost 6 years ago for public comment."[374]

The PAC recommended, "If FDA decides to reissue the Interim Final Rule as final, it should first issue a Notice of Proposed Rulemaking. Among the areas that specifically should be revisited are: Adequacy of disclosure to service personnel; adequacy of recordkeeping; long-term follow up of individuals who receive investigational products; review by an institutional review board outside of DOD; and additional procedures to enhance understanding, oversight, and accountability."[375]

On July 29, 1997, more than 7 years after FDA issued the waiver, the agency published a request for comments in the Federal Register, soliciting public comments on the following issues: whether FDA should revoke or maned the interim rule of December 1990 and if the latter, whether and how it should be amended; when is it ethical to expose volunteers to toxic chemical and biological agents to test the effectiveness of products that may be used to provide potential protection against those agents; and if the products that may be used for protection against toxic substances cannot be ethically tested in humans, what evidence would be needed to adequately demonstrate their safety and effectiveness.

The comment period closed October 30, 1997. After evaluating the responses, FDA will publish a proposal for action.

IV. Recommendations

DIAGNOSIS

Recommendation 1: Congress should enact a Gulf War toxic exposure act establishing the presumption, as a matter of law, that veterans were exposed to hazardous materials known to have been present in the war theater.

The premise of both VA and DOD approaches to Gulf War veterans illnesses has been that toxic exposures played no role in causing the mysterious range of maladies known as "Gulf War Syndrome." That presumption is no longer warranted.

The widespread presence of a host of hazardous substances throughout the war theater, including low levels of chemical warfare agents in some areas, has been well established.[376] In sufficient doses, each of those substances has been cited as a public health threat.[377] That U.S. troops were widely and frequently exposed to one or more of these substances, i.e., smoke from oil well fires, PB tablets or "tabs," organophosphate pesticides, has never been denied.

What has been so long denied is that the admitted exposures were of any long term clinical significance. Yet it is only in the long term that a causal link between exposures and subsequent health effects in those exposed will be demonstrable using standard epidemiological analysis.

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[374] PAC Report, p. 27.
[375] PAC Report, p. 52.
[376] See *supra* text accompanying note 7.
[377] *Report to Congress 1993, 1994, 1995,* p. 55, U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry, Atlanta, GA (1997).

In the meantime, sick veterans and their families bear the burden of trying to prove not only that exposures took place, but in what quantity and in what combination(s). But in attempting to reconstruct their medical histories for this purpose, veterans find key records missing or unavailable. Inoculation records were not maintained for many. Information on the use of PB tabs was not recorded. Troop location data is not available below the unit level, making it impossible to place individuals in areas known to have been contaminated. NBC logs are missing.

Establishing a presumption of exposure to the hazardous substances known to have permeated the war area would lift that impossible burden. It would place the onus properly on Federal officials to rebut the presumption with peer reviewed research and clinical findings. Such a presumption would free the VA and DOD of the unworthy task of defending an improbable version of what did not happen in the Gulf War, and allow them to support veterans in proving what did happen there. It would also serve U.S. military doctrine by assuring future combatants that the wounds of war, however delayed or difficult to diagnose, will be acknowledged and treated.

In the absence of definitive scientific information, reasonable presumptions must be made. Citing just such an absence of scientific consensus, the Pentagon and the VA continue to presume toxic exposures play no significant role in the etiology of Gulf War illnesses. However, given the weight of evidence regarding toxic exposures and probable health effects, that presumption may never have been, but is certainly no longer, reasonable.

Recommendation 2: The VA should contract with an independent scientific body composed of non-Government scientific experts representing, at a minimum, the disciplines of toxicology, immunology, microbiology, molecular biology, genetics, biochemistry, chemistry, epidemiology, medicine and public health for the purpose of identifying those diseases and illnesses associated in peer-reviewed literature with singular, sustained, or combined exposures to the hazardous materials to which Gulf War veterans are presumed to have been exposed.

Despite subsequent recommendations in this report to divest VA and DOD of control over the Gulf War research agenda, this proposal is made so the departments have access to the objective expertise necessary to implement Recommendation 1. While it may have been enough in the past to say the Department, "has always remained open to the possibility that PGW veterans were potentially exposed to a wide variety of hazardous agents while serving in the Southwest Asia theater of operations, including chemical warfare agents,"[378] this recommendation would transform that passive posture into a more active pursuit of information on exposures and health effects.

Particularly in view of the many variables and innumerable combinations of likely Gulf War exposures, the VA must be in a posi-

[378] Statement of Frances Murphy, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 1–4, p. 414.

tion to pursue complex, interdisciplinary hypotheses regarding toxic stressors.[379] The list of presumed exposures will need to be updated and refined. This recommendation seeks to ensure VA maintains adequate scientific breadth in that process, and does not fall prey to a static view of exposure health effects.

Recommendation 3: The VA Gulf War Registry and the DOD Comprehensive Clinical Evaluation Program should be re-evaluated by an independent scientific body which shall make specific recommendations to change both programs from crude research tools into effective clinical diagnosis and outcomes monitoring efforts.

The subcommittee found serious weaknesses in the structure and implementation of the Gulf War health registry programs.[380] VA officials characterized their Registry as "a very crude health surveillance tool,"[381] and a primary source of promising hypotheses for subsequent research. However, in practice, promising but inconvenient hypotheses about the role of chemical exposures were not pursued. Instead, they were dismissed as biased by the self-selected nature of the Registry cohort. Dr. Murphy told the subcommittee, "It should be remembered that the Registry and other examination program data are provided through medical records of self-selected health care-seeking individuals and is not likely to be reflective of the entire population of Persian Gulf War veterans."[382]

Not even near unanimity could overcome VA's resistance to drawing conclusions from their own Registry data. "In 1992 Physician Registry staff documented that 93 percent of Persian Gulf War veterans reported they had been exposed to 1 or more of the 12 contaminants. This percentage declined to a low of 87 percent in 1993, and increased to a high of 98 percent by 1996."[383] Yet the effects of low level chemical exposures did not become a research priority for the VA until after the announcement of probable exposures at Khamisiyah.[384]

VA was far less constrained about drawing favorable inferences, however subtly, from Registry data. After appropriate disclaimers about the limitations of Registry data as epidemiological tools, Former VA Secretary Jesse Brown nevertheless concluded, "If there were a neurotoxic exposure that could cause serious neurologic disease in a high proportion of Persian Gulf veterans, it would probably have been identified in the 60,000 Registry exams completed to date."[385]

The VA can't continue to have it both ways in the use of Registry information—disclaiming unwelcome propositions while embracing favorable conclusions grounded in the same data. To be of value to veterans, participation in the Registry should demonstrably im-

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[379] See also Recommendations 5, 16 and 17, *infra.*
[380] See findings 5, 6, 7, 10 and 12, *supra.*
[381] Testimony of Frances Murphy, Human Resources and Intergovernmental Relations Subcommittee hearings No. 1–4, p. 435.
[382] *Ibid.,* p. 412.
[383] See *supra* note 227, p. 5.
[384] See *supra* note 381, p. 414.
[385] See *supra* text of letter from Jesse Brown to Chairman Shays in Background section. See also, attachments to chairman's opening statement, Human Resources and Intergovernmental Relations Subcommittee hearings, Nos. 5–6, p. 14.

prove his or her health as well as advance what can be known about the health of all Gulf War veterans. That will require greater use of the VA Referral Centers and the addition of outcomes monitoring as an integral part of the Registry program.[386]

The Institute of Medicine [IOM] is about to complete studies of the VA and DOD Registry programs. Perhaps that work could be continued to arrive at recommendations for more fundamental changes in the design and implementation of the programs to address the serious weaknesses noted by the subcommittee, GAO and others, and to suggest safeguards against the selective use of health registry data.

Recommendation 4: The VA should refer all Phase II Registry examinations to Gulf War Referral Centers.

Only 2.6 percent of veterans' cases VA reported as having undiagnosable illnesses were evaluated at Gulf War Referral Centers.[387] It appears the Uniform Case Assessment Protocol used by both the VA and DOD is not being consistently followed, and often permits a description of symptoms to serve as a diagnosis.[388]

This lack of aggressive inquiry leaves the VA without the body of detailed test results and clinical assessments needed to discern the subtle manifestations of delayed neuropathies. Absent more effective use of the Referral Centers, the Registry will remain a mere inventory of inconsistently gathered case histories.

Recommendation 5: The VA should add toxicological and environmental medicine expertise to the staff resources dedicated to Gulf War illnesses.

In the December 11, 1996 subcommittee hearing, Chairman Shays asked Dr. Frances Murphy of the VA how many toxicologists and environmental medicine specialists were among the estimated 14,000 VA physicians (approximately 8,000 full-time and 6,000 part-time).

Dr. Murphy could not answer the question, other than to name two physicians, but did say such experts usually work in health care organizations, research laboratories, or agencies like the EPA. Dr. Murphy promised to provide an answer for the record.[389]

One of the reasons VA doctors have been unable to diagnose and treat the illnesses of some Gulf veterans is the lack of expertise in the specialties of toxicology and environmental medicine. Dr. Robert Haley, University of Texas Medical Center researcher, stated in testimony before the subcommittee in January 1997, that "few regular physicians are familiar with OPIDPN [organophosphate-induced-delayed-polyneuropathy] . . . this probably explains why no one [in the VA] explored this diagnosis earlier."[390]

In response to Representative Shays' question, the following letter was received from Dr. Kenneth Kizer[391] on June 6, 1997:

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[386] See *infra* Recommendations 4 and 9.
[387] See *supra* note 227, p. 5 [390 of 15,000 cases].
[388] *Ibid.,* p. 4.
[389] See *supra* note 174.
[390] See *supra* note 325.
[391] Letter in subcommittee files.

DEPARTMENT OF VETERANS AFFAIRS
UNDER SECRETARY FOR HEALTH
WASHINGTON DC 20420

The Honorable Christopher Shays
Chairman
Subcommittee on Human Resources
Committee on Government Reform and Oversight
House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

I want to briefly follow-up on our meeting of January 29, 1997, as well as the preceding hearing you held on January 21, 1997, regarding Persian Gulf War Veterans. I specifically want to apprise you about four things.

First, one of the areas that seemingly has been in dispute between your Subcommittee and VA has been the extent to which VA examiners listened to Persian Gulf War (PGW) veterans about their possible exposure to chemical warfare agents, especially in the years immediately after the Gulf conflict. Not being a part of the Department of Veterans Affairs during this time, I have no independent knowledge of what actually transpired. Given the different perspectives, and in an effort to better inform myself, on January 24, 1997, I asked the Office of Medical Inspector (OMI) to conduct an independent review of PGW veteran medical records at a number of facilities to see what was actually recorded in the charts regarding environmental exposures. In asking for this review, I recognized that what is recorded in a patient's medical record often understates the extent of history taking, especially with regard to negative responses. Nonetheless, I felt that this would provide an independent, verifiable assessment of at least the minimum level of information obtained in this regard. In brief, the OMI concluded that VA Registry Staffs have been listening to PGW veterans about possible exposure to environmental contaminants, although that seems to be better in the last two years. A copy of the OMI's final report on this matter is enclosed (enclosure 1).

Second, your exchange with Dr. Frances Murphy during the January 21, 1997, hearing prompted me to query our personnel office regarding the information they obtain and track about the specialty certifications of VA physicians. My conclusion from this discussion was that VA has not maintained a complete data base regarding the areas of expertise of VA physicians. This is being corrected. In March 1997, we began efforts to detail the complete specialty and subspecialty status of all VA physicians. We do not yet have all this information for VA's approximately 15,000 physicians, but I expect we will within a few months, if not sooner.

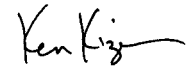
The Honorable Christopher Shays
Chairman
Subcommittee on Human Resources

Third, as you may recall from our discussion on January 29, 1997, I agree with you that VA has not historically had a sufficient reservoir of medical toxicology and occupational medicine expertise. In an effort to improve our toxicology and occupational medicine assets, I directed the Office of Academic Affiliations to initiate efforts to fund 12 medical toxicology fellowship positions and 25 occupational medicine residency positions for the 1997-1998 academic year. All relevant postgraduate training programs were contacted (enclosures 2-4). The response from medical toxicology programs so far has been disappointing, but not altogether unexpected given the short time between the solicitation and the beginning of the 1997-98 academic year. We have identified and consummated arrangements for 3 additional medical toxicology fellowships beginning in July 1997. Efforts to increase this number continue. A total of 5 new occupational medicine residency positions have been identified so far, and more are expected. This brings to 9.25 the number of occupational medicine residents VA will support in the 1997-98 academic year. Both efforts will continue in the future. Based on feedback from several medical toxicology programs, I expect we will have a substantially greater response next year when the training programs have had more time to gear up for additional trainees. Of note, a major reservation expressed by the toxicology programs has been whether there will be a market for their trainees after fellowship.

Finally, I also want to let you know that I am establishing occupational and environmental health as a VHA strategic healthcare group (SHG). This will be VHA's fifteenth SHG. (Enclosure 5 lists all 15 SHGs.) As you probably know, the strategic healthcare group is a new concept being implemented in VA as part of our larger transformation. The SHG is a multidisciplinary group organized to support the delivery of a continuum of care to a defined population or care in a particular setting. The SHG functions by integrating data, skills and best practices into systemwide policy, planning and service delivery through the development of clinical care strategies (e.g., practice guidelines or critical pathways) and decision support mechanisms. I expect the Occupational and Environmental Health SHG to encompass the many occupational health issues attendant to the military worksite (including such things as pre and post deployment surveillance), as well as the healthcare worksite.

I hope you are supportive of these efforts, and I would welcome any comments that you might have in this regard.

Sincerely,



Kenneth W. Kizer, M.D., M.P.H.

Enclosures

The subcommittee supports the VA's belated effort on this matter and encourages an aggressive program to bring such expertise into the Department as quickly as possible. Such an effort, accompanied by a sincere communications effort on the part of VA headquarters to physicians in the field, would help restore confidence in the VA's medical protocols among Gulf veterans and the Congress.

Recommendation 6: DOD and VA should make every effort to find, and where necessary re-create through veterans' testimony, individual Gulf War medical records to reflect vaccines administered, PB use, and exposure to DU, pesticides and other hazardous materials.

According to the GAO, ongoing epidemiological research sponsored by the VA and DOD is being hampered by the inability of researchers "to gather information about toxic exposures. DOD has acknowledged that the records of the use of PB and vaccinations to protect against chemical and biological warfare exposures were inadequate. There is research going on right now to try to find the majority of the records, which seem to be missing. Classifying the symptoms and identifying illnesses of Gulf War veterans has been difficult. As a result, the findings from these studies may be spurious or equivocal. In summary, the ongoing epidemiological research will not be able to provide precise, accurate, and conclusive answers regarding the causes of the illnesses because of these formidable methological problems." [392]

An IOM report stated: "The committee has concluded that the information on veterans' health that exists in the [DOD and VA health] registries cannot serve alone as a basis for scientific study of the health effects of the Persian Gulf War. Lack of uniform and retrievable medical information concerning reserve, National Guard, active, and separated forces has greatly inhibited systematic analysis of the health effects of mobilization. Neither the DOD nor VA has automated outpatient recordkeeping. Current systems are fragmented, disorganized, incomplete, and therefore poorly suited to support epidemiologic and health outcome studies." [393]

According to the PAC Final Report, "We found DOD's inability to produce records of who received PB or BT [botulinum toxoid] indicative of much need for wholesale improvement in the government's performance on medical recordkeeping during military engagements. DOD should assign a high priority to dealing with the problem of lost or missing medical records. A computerized data base is important. Attention should be directed toward developing a mechanism for computerizing medical data in the field. DOD and VA should adopt standardized recordkeeping to ensure continuity." [394]

Missing or inadequate personal medical records, along with missing or destroyed NBC logs, and unreleased CIA intelligence logs, comprise the complete medical history of each Gulf War veteran. In the absence of this critical information, sick veterans have a difficult—if not impossible—task of receiving proper medical treatment and fair compensation. DOD and VA should make every ef-

[392] Statement of Donna Hevilin, Human Resources Subcommittee hearings, No. 3, p. 38.
[393] See *supra* note 125, pp. 6–7.
[394] See *supra* note 138, pp. 18–19.

fort to find these records,[395] and where necessary recreate them through listening carefully to veterans' testimony. Under these present conditions, the burden of proving a service-connected disability should not fall on the sick veteran but upon the government. In other words, the sick Gulf War veteran should be given benefit of the doubt.

Recommendation 7: The President should order an intensified effort to declassify Gulf War documents in any way related to Gulf War veterans' illnesses and should personally certify to the appropriate committees of Congress when he deems declassification of such documents to be against the national interest.

After 6 years, it should be clear by now that ordinary processes of Government inquiry and disclosure will not yield solutions to the mysteries of Gulf War veterans illnesses. Extraordinary steps must now be taken to declassify and disseminate all information in any way pertinent to the health of those who served.

The disclosure of Central Intelligence Agency [CIA] reports regarding chemical weapons at the Khamisiyah munitions depot, and the apparent loss or destruction of more than three quarters of the chemical weapons logs produced during the Gulf War, appear to confirm what many have long suspected about a systematic, and to date largely successful, effort to minimize, discredit or suppress intelligence data on alleged chemical exposures.

To a sick veteran, the missing unit logs, chemical detection reports and intelligence analyses are not just military records. They are medical records essential to the proper diagnosis and treatment of Gulf War-related illnesses. The current DOD system of random, unannounced posting of newly discovered documents on the Internet simply does not meet demands by veterans and Congress for timely, full disclosure.

The so-called "firewall" erected to protect intelligence sources and methods must yield in this instance to the president's own promise that "no stone remain unturned" in the search for answers to Gulf War veterans' illnesses. Moreover, if the intelligence sources and methods sought to be protected also formed the basis of the long-held, but now discredited, Pentagon and CIA conclusion that stories of chemical weapons at Khamisiyah were an Iraqi ruse, then those sources and methods were unreliable, unworthy of continued protection, and far less valuable to the national interest than the health of United States veterans.

Therefore, the President should direct an immediate and expanded declassification review of all CIA and Defense Department intelligence dealing in any way with chemical or biological expo-

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[395] See text to accompany note 181. See also, Background section entitled "Other Executive Agency Actions on Gulf Veterans' Illnesses." [On October 21, 1997, the Department of Defense Inspector General informed the subcommittee that the investigation into missing nuclear, biological and chemical logs had been completed. Only 37 of an estimated 200 pages of log entries are retrievable, all in hard copy form. Print-outs of the complete logs, and the computer disks and drives on which they were stored, cannot be found. The investigation discovered a 20-page document containing 165 missing entries, or approximately 15 new log pages. The IG found that regulations and guidelines on the preservation and archiving of Gulf War documents were not followed by CENTCOM. Although the officer found in possession of the mission log extracts is under criminal investigation, the IG did not receive any evidence that individuals or organizations conducted a concerted effort or conspiracy to destroy or conceal the logs.]

sures in the Gulf War, and that all such information be made available to Congress unless the President personally determines disclosure would be harmful to the national security.

Recommendation 8: DOD failure to adhere to recordkeeping requirements or clinical protocols under an informed consent waiver should result in the presumption of service-connection for any subsequent illness(es) suffered by service personnel to whom the drug or protocol was administered.

FDA's Deputy Commissioner Mary Pendergast told the subcommittee at a May 8, 1997 hearing on informed consent that "Under this regulation, waivers were granted for two products during Operation Desert Storm/Shield—pyridostigmine bromide and botulinum toxoid vaccine. Although FDA had concluded that informed consent was not feasible, FDA did obtain DOD's agreement to provide accurate, fair and balanced information to those who would receive the investigational products. To do this, DOD developed information leaflets on both products with FDA's input and these leaflets received final FDA approval." [396]

FDA has acknowledged that the information sheets were not provided to many Gulf personnel who were ordered to take the unapproved drug and vaccine. In testimony before the subcommittee, Deputy Commissioner Pendergast testified "were we [FDA] even to consider another waiver request, the specific standards would have to be much higher and more rigorous because of the [DOD] failures." [397]

It is unfair to require the veteran to prove he or she was exposed to either the PB or the vaccine in light of DOD's blatant failure to adhere to the notification requirements of the FDA waiver.

TREATMENT

Recommendation 9: VA and DOD should systematically and effectively monitor the clinical progress of Gulf War veterans to determine the most effective treatments.

The June 24, 1997 GAO report found that the VA has no program, plans or systematic way of following the clinical progress of sick Gulf War veterans. As a result, VA physicians treating these veterans have no way of knowing whether the veterans who continue to be ill are better off today than when they were first examined and treated. Scientific analysis requires the ability to draw conclusions based on objective and accurate scientific data. The GAO study found that the VA and DOD have made no effort to track veterans' progress and treatment on a methodical, data-based system.[398]

Dr. Murphy responded there is no protocol because therapy and the follow-up need to be tailored to the individual veteran. However, evidence shows that veterans are not receiving consistent fol-

[396] *Hearing on Oversight of NIH and FDA: Bio-Ethics and the Adequacy of Informed Consent,* [hereinafter "Human Resources Subcommittee hearing of May 8, 1997"] (Statement of Mary Pendergast, FDA Deputy Commissioner) (prepared statement p. 37, in subcommittee files).

[397] Testimony of Mary Pendergast, Human Resources Subcommittee hearing of May 8, 1997, original transcript, p. 59 (in subcommittee files).

[398] See *supra* text to accompanying note 196.

low-up care. If progress is only recorded individually, then those treatments deemed successful will have little or no impact on medical research efforts and have limited significance for other veterans.[399]

The subcommittee recommends that the VA and DOD immediately develop and implement a plan to systematically monitor the diagnosis and treatment of all Gulf veterans with reported symptoms as well as those who may become ill in the future. This action on the part of the VA and DOD would provide a much-needed medical benchmark against which treatment progress, or lack of progress, can be measured for sick Gulf War veterans.

Recommendation 10: VA and DOD clinicians should be encouraged to pursue, and should be trained in, new treatment approaches to suspected neurotoxic exposure effects.

Private physicians have reported some success in treating Gulf veterans—treatment approaches which have been ignored or rejected by the VA and DOD medical hierarchies since the illnesses were first reported more than 5 years ago. Dr. Howard Urnovitz testified: "Recent studies have found that prolonged and aggressive antibiotic therapy appears to abate many of the symptoms associated with Gulf War Syndrome."[400]

Dr. Garth Nicolson testified that among the Gulf veterans he has examined, he found ". . . a slow-growing mycoplasma located deep inside blood leukocytes of slightly under one-half of Gulf War patients studied. Mycoplasmal infections, such as *Mycoplasma fermentans,* can be successfully treated with multiple courses of specific antibiotics, such as doxycycline."[401]

Dr. William Baumzweiger has reported successful treatments of Gulf veterans with calcium channel blockers. Dr. Katherine Leisure-Murray also reported improvement in some of her Gulf patients with alternative treatments. Both physicians were formerly with the VA but terminated, they allege, because of their professional opinions as to the cause and treatment of Gulf veterans' illnesses, opinions in opposition to VA headquarters policy.[402]

The subcommittee has received reports from VA doctors in addition to Drs. Baumzweiger and Leisure of harassment, threats, and denial of certain tests and treatments by their supervisors. Such restrictions could be considered a violation of medical ethics, if not medical malpractice.

The subcommittee recommends that the VA and DOD encourage their physicians to train in, and actively pursue, new treatment approaches to suspected neurotoxic exposure effects. This encouragement would also include allowing Government doctors to consult with private physicians who have reported some successful treatments with Gulf War patients. Such an effort by the departments, accompanied by a sincere and ongoing communications effort to VA supervisors in the field, would help alter a perception by veterans and the subcommittee that the VA, in complicity with field super-

[399] See *supra* text to accompanying note 336.
[400] See *supra* text to accompanying note 90.
[401] See *supra* text accompanying note 92.
[402] See *supra* text accompanying note 189.

visors, has conspired to stifle VA physicians from fully and freely practicing medicine on behalf of their Gulf patients.

Recommendation 11: The diagnoses for somatoform disorders and Post Traumatic Stress Disorder [PTSD] should be refined to insure that physiological causes are not overlooked.

In the absence of definitive medical evidence to explain the mysterious illnesses of Gulf veterans, DOD and VA physicians assumed the causes of many of these illnesses were stress-related or PTSD. Through subcommittee testimony, letters and phone calls, sick veterans have universally rejected psychiatric problems as an accurate diagnosis of their physical illnesses.[403] Many private physicians and research experts have also rejected stress as an important factor in these illnesses.[404]

The GAO report recommended: "The Secretaries of Defense and Veterans Affairs refine the current approaches of the clinical and research programs for diagnosing PTSD consistent with suggestions recently made by the Institute of Medicine."[405] The DOD partially concurs with this recommendation;[406] the VA does not concur.[407] The Persian Gulf Veterans Coordinating Board, which includes DOD and VA representatives, stated: "Published findings suggest an increased prevalence of PTSD and other psychiatric diagnoses, such as depression . . . [and that] stressors during the Persian Gulf conflict were sufficient to cause significant psychiatric morbidity."[408] The PAC Final Report also states that "stress is an important contributing factor" in the veterans' illnesses.[409]

The GAO report stated: "The link between stress and those veterans' physical symptoms has not been firmly established [by DOD, VA and the PAC]."[410]

The subcommittee, in view of the fact that there is no credible evidence that stress or PTSD is the principal cause of the veterans' illnesses, recommends that the DOD and VA re-evaluate and refine the definition of stress as it applies to Gulf veterans' diagnoses. Such a re-definition would create a new and much-needed diagnostic and treatment attitude among VA field physicians which could translate into improved medical care for sick Gulf veterans.

COMPENSATION

Recommendation 12: Denials of Gulf War veterans' compensation claims attributable in any way to missing medical records should be reviewed and veterans' given the benefit of any doubt regarding the presumptive role of toxic exposures in causing post-war illnesses and disability.

Personal medical records of Gulf veterans are missing or inadequate. Documents which could help verify possible exposures and

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[403] See *supra* text accompanying notes 11–39.
[404] See *supra* text accompanying notes 185–194.
[405] See *supra* note 48, p. 70.
[406] *Ibid.*
[407] *Ibid.,* p. 85.
[408] *Ibid.,* p. 57.
[409] *Ibid.,* p. 56.
[410] *Ibid.,* p. 8.

military unit locations remain in DOD files. Most of the military nuclear-biological-chemical [NBC] logs, which are records of toxic warfare agent detections, are missing or destroyed. Readouts from chemical detection equipment have vanished. Many CIA intelligence logs concerning Iraqi chemical/biological weapons [CBW] storage depots and manufacturing facilities, and document regarding enemy capabilities and intentions to use CBW against United States troops, have remained unreleased since the war.[411]

All this critical information represents the complete medical history of each Gulf War veteran. In the absence of full documentation needed to prove a service-connection, sick veterans have a difficult—if not impossible—task of receiving proper medical treatment and fair compensation.

This situation, combined with the fact that overwhelming evidence exists of multiple toxic exposures to Gulf War troops, has led the subcommittee to strongly recommend that sick veterans be given the benefit of the doubt regarding their post-war illness and disability. Those sick veterans should be considered "presumed exposed" and, therefore, entitled to full medical treatment and fair financial compensation.

Recommendation 13: For purposes of compensation determinations, disabilities associated with presumed exposures should be deemed service-connected without any limitation as to time.

Under regulations issued in 1995, a veterans can be compensated only for undiagnosed illnesses that manifest themselves during Gulf War service or arise within 2 years of departing from the Gulf. Veterans must provide objective evidence of chronic illness and be at least 10 percent disabled. As of January 1997, the VA had denied 93.5 percent of the more than 10,000 undiagnosed illness claims that had been reviewed. Approximately 55 percent of the denied claims were rejected because the illness did not manifest itself until after the 2-year presumptive period. In March 1997, President Clinton extended the presumptive period by 8 years, until December 31, 2001. The VA plans to reconsider those claims denied because they were filed after the 2-year presumptive limitation.[412]

However, veterans and veterans organizations are concerned that symptoms from toxic exposures may develop beyond the year 2001 from diseases with long latency periods, such as some forms of cancer, leishmaniasis or other infectious diseases that may develop from a weakened immune system. The possibility of late-developing illnesses are also feared by some physicians and researchers.

James Tuite, director of the Gulf War Resource Foundation, stated to subcommittee staff that veterans of no previous wars faced a presumptive period for filing service-connected medical claims by veterans.[413]

The subcommittee, mindful of the Agent Orange toxic exposure problem which took Congress 20 years to resolve, is also concerned about late developing symptoms among Gulf veterans. The subcommittee strongly recommends that the President lift entirely the

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[411] See *supra* text accompanying note 181.
[412] See *supra* text accompanying note 183.
[413] Staff notes in subcommittee files.

presumptive period on filing medical claims by Gulf War veterans for specified illnesses associated with presumed exposure to certain toxins known to have been present in the Gulf theater. This Presidential action will assure all veterans that a grateful Nation will not abandon its soldiers who suffer long-term health effects following its wars.

RESEARCH

Recommendation 14: Congress should create or designate an agency independent from the Departments of Defense and Veterans Affairs as the lead Federal agency responsible for coordination of all research into Gulf War veterans' illnesses and allocation of all research funds.

Regrettably for sick veterans, VA research has been distorted by reliance on premature, erroneous, and misleading conclusions by DOD about the presence and effects of chemical weapons in the Gulf War theater. It was not until DOD admission of probable exposures at Khamisiyah that the Persian Gulf Veterans' Coordinating Board even considered the possibility of low level chemical exposures as the cause of PGW illnesses. Dr. Frances Murphy, the VA's Director of Environmental Agents Service, described the Department's official position on low level chemical exposures as the causative agent for PGW illnesses, "studies of low level chemical warfare agent exposure were not given high priority . . . because military and intelligence sources had stated that U.S. troops had not been exposed to chemical agents. Current body of research proves that low level exposures cannot cause health effects."[414]

Testimony presented to the subcommittee strongly suggests that VA relied heavily on somatoform and stress-related diagnoses in sick PGW veterans. Twenty one Gulf veterans, sick with undiagnosed illnesses, testified before the subcommittee. Of those 21 veterans, 13 received stress or PTSD diagnoses, 3 received a diagnosis of no illness or psychosomatic, 3 cases were undiagnosed and only 2 were diagnosed with chemical exposure.[415]

The VA also failed to heed the advice of its advisory committee, the Gulf War Expert Scientific Committee, on the possibility of toxic exposures. Both the chairman, Dr. Eula Bingham (a toxicologist and former chairman of OSHA) and committee member Dr. Claudia Miller (a physician and environmental research professor), stated in interviews with the New York Times that the VA was relying inappropriately on stress diagnoses despite knowledge of toxic exposures during the war.[416]

At the same time the Coordinating Board was denying the relationship between chemical exposures and PGW illnesses, it also denied funding to Dr. Robert Haley and his colleagues at the University of Texas Southwestern Medical Center to study chemical exposures in PGW veterans. Dr. Haley found private, non-Government funding and published several studies in the January 15, 1997 issue of the Journal of the American Medical Association, confirm-

[414] See *supra* note 166.
[415] See *supra* note 190.
[416] *Ibid.*

ing evidence of immunological damage to PGW troops produced by combinations of chemical exposures.

DOD and VA's Persian Gulf Veterans' Coordinating Board has performed reactively and to the detriment of the veterans. Having demonstrated unwillingness and inability to overcome institutional biases and constraints, the DOD and VA should no longer control the PGW illness research agenda. Lead responsibility for both the research program and research funds should go to another agency outside of DOD and VA that can more objectively develop a research agenda and treatment protocols for sick veterans.

Recommendation 15: The lead Federal agency on Gulf War veterans' illnesses should focus research on the evaluation and treatment of the common spectrum of neuroimmunological disorders known as Gulf War Syndrome, multiple chemical sensitivity, chronic fatigue syndrome and fibromyalgia.

The Federal Government has numerous agencies conducting uncoordinated research on neuroimmunological disorders. HHS has established an interagency Chronic Fatigue Syndrome Working Group, which is chaired by the Assistant Secretary for Health.

Many of the National Institutes of Health, including the National Institute of Environmental Health Sciences [NIEHS], National Institute of Allergy and Infectious Diseases [NIAID], National Institute of Arthritis and Musculoskeletal and Skin Diseases [NIAMS], National Institute of Child Health and Human Development [NICHD], and National Institute of Dental Research [NIDR], are conducting research on multiple chemical sensitivity, fibromyalgia and chronic fatigue syndrome.

CDC has an ongoing epidemiological study of Persian Gulf War veterans which has resulted in a case definition. CDC's National Institute of Occupational Safety and Health [NIOSH] is conducting research on exposures to organophosphates. VA and DOD are pursuing their own independent research agendas.

However the neuroimmunological injuries occurred to PGW veterans and others affected by similar disorders, the fact remains that evaluation criteria are lacking, definitive diagnostic tests are not yet accepted, and treatment of these disorders remains symptomatic and is often unavailable to patients in need.

Recommendation 16: DOD and VA medical systems should augment research and clinical capabilities with regard to women's health issues and the health effects of combat service on women's health.

The Persian Gulf War was the first military action in which women were deployed in large numbers in combat situations. Dr. Penny Pierce, a PGW veteran and scientist who has conducted comparative studies on the health of female PGW veterans before and after deployment, found "the incidence of gender-specific health problems, in particular, warrants further attention and points directly to the unique health care needs of military women. Specifically there is a need for rigorous follow-up on the significant findings concerning changes in breast lumps and cervical alterations that are reflected in the two-fold increase among women

serving in the Persian Gulf. We need to know now if there are gynecologic and reproductive problems that pose a risk to future generations that are beneficiaries of military health care."

Dr. Pierce concluded, "the opportunity to study the health consequences of Persian Gulf women in a timely fashion meets a critical and long-standing need. The priorities for a national agenda of military women's health research should include the following: First, we should commit the needed resources to establish the prevalence of health problems of Gulf War veteran women in well-designed epidemiological studies. Second, we need to document and monitor the health effects of occupational and environmental extremes found in combat, to better understand the effects of gender, menstrual cycle, reproductive capability, and the interaction of these factors on the health and well-being of American women who serve their country in uniform. In this regard we must all recognize that environmental and occupational exposures may affect women differently than men and we need to have scientific information upon which we can reliably determine if they are preventable risks that are associated with specific military duties, certain deployment locations, or a combination of factors. The third priority acknowledges that women play a key role in the military readiness of this country and keeping them healthy is as vital to our Nation's defense as any other member of the armed forces."[417]

Recommendation 17: VA, in collaboration with NIH, CDC, FDA and other public health agencies should establish an interdisciplinary research and clinical program on the identification, prevention and treatment of environmentally induced neuropathies.

VA and DOD will have to address environmentally induced neuropathies in future deployments.[418] A research and clinical program which addresses treatment issues and exposure prevention is long overdue.

The expertise of VA and DOD could be considerably expanded through coordination and collaboration with HHS. HHS has expertise in toxicology through the Agency for Toxic Substances and Disease Registry [ATSDR] and the National Institute for Environmental Health Sciences at the National Institutes of Health, the National Center for Toxicological Research at the Food and Drug Administration [FDA], and in epidemiology through the Centers for Disease Control and Prevention [CDC].

This type of interdisciplinary research has also been conducted internationally, particularly in Israel and the Netherlands. In March 1997, the VA sponsored a 2-day symposium on "The Health

[417] Statement of Penny Pierce, Human Resources Subcommittee hearings, No. 1–4, p. 193–194.

[418] Representative Sanders, joined by Representative Shays, pursued an amendment to the 1998 Department of Defense Authorization bill for 1998, H.R. 1119. The proposal would direct the Department of Defense, in cooperation with the Environmental health laboratory of the Centers for Disease Control, to develop a system capable of rapidly responding in cases of suspected exposure of members of the Armed Forces to toxic substances, in order to conduct laboratory tests to quickly and accurately test for the presence of toxic substances. The CDC reports it has the technology, like no other laboratory in the Government, to test for at least 100 chemicals in blood and urine, including heavy metals, PCBs, volatile organic compounds, pesticides and others. This is a pro-active, comprehensive approach to address and respond to potential chemical exposures during future military operations. The amendment was not made in order by the Rules Committee and therefore was not permitted to be offered on the floor of the House.

Effects of Low-Level Chemical Warfare Nerve Agent Exposure" featuring presentations from researchers studying various aspects of this complex issue. Presenters discussed ongoing studies of Organophosphate Induced Delayed Polyneuropathies and clinical outcomes from exposures to anticholinesterases. Dr. Hermona Soreq, professor and chairman, Department of Biological Chemistry, Hebrew University, Jerusalem, Israel, described the role of genetic polymorphisms in effectuating certain toxic reactions. The preliminary results of recent animal studies, conducted in the United States and the Netherlands on the effects of low-level exposures, were also discussed. According to VA officials, the purpose of the conference was to generate research hypotheses and study proposals. This is the type of work the subcommittee recommends, and encourages continued strengthening of interdisciplinary research capacity.[419]

Recommendation 18: FDA should grant a waiver of informed consent requirements for the use of experimental or investigational drugs by DOD only upon receipt of a Presidential finding of efficacy and need.

FDA has the authority under the Federal Food, Drug and Cosmetic Act [FFDCA] to determine a drug's safety and efficacy for its intended use. In the case of a future DOD request to waive informed consent requirements for an experimental or investigational drug, biologic or device, FDA can evaluate the clinical evidence to determine safety and effectiveness, but should not be in a position to evaluate combat conditions.

FDA Deputy Commissioner Mary Pendergast acknowledged this in testimony before the subcommittee on May 8, 1997. "FDA gave considerable deference to DOD's judgement and expertise regarding the feasibility of obtaining informed consent under battlefield conditions."[420]

She added, "I also think that the FDA, which is an agency staffed with doctors and scientists and not soldiers, has a very limited ability to second-guess what was going on in the Persian Gulf during the time of the war . . ."[421] However, she acknowledged, "Each participant in a research effort . . . is obliged to protect the interests of the people who are taking part in the experiments. The FDA's responsibility is to see that the safeguards are met."[422]

FDA did not safeguard the interests of the PGW veterans by ensuring that the waiver was warranted by the protective effects of PB and that the conditions of the waiver were adhered to by DOD. DOD violated the conditions of the waiver by not providing the information sheets so that affected veterans would know of their exposures.

Clearly, FDA should not be in the position of making national security determinations or weighing safety and efficacy requirements

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[419] U.S. Department of Veterans Affairs, *The Health Effects of Low-Level Chemical Warfare Nerve Agent Exposure,* a satellite symposium of the 36th Annual Society of Toxicology Annual Meeting, March 7–8, 1997, Cincinnati, OH (agenda, program notes, speaker index) in subcommittee files.

[420] Prepared statement of Mary Pendergast, Human Resources Subcommittee hearing of May 8, 1997, p. 35 (in subcommittee files).

[421] Testimony of Mary Pendergast, Human Resources Subcommittee hearing of May 8, 1997, original transcript, p. 60 (in subcommittee files).

[422] See *supra* note 417, p. 2.

against national security interests. This is not the agency's focus and the FDA has admitted it has no expertise in these areas.

The President, as Commander and Chief, should execute a Presidential finding of need if a determination is made that national security interests outweigh the informed consent rights of troops in combat in the future.

V. APPENDIX

PGW HEARING WITNESSES

1. "The Status of Efforts to Identify Persian Gulf War Syndrome" March 11, 1996. Brian Martin, Gulf veteran, Niles, MI; William Gleason, Gulf veteran, Syracuse, NY; Randy Wheeler, Gulf veteran, Hoover, AL; Kimo Hollingsworth, Gulf veteran, Washington, DC; Dr. John Bailar, chair, Committee to Review Health Consequences of Service During the Gulf War, Institute of Medicine; Thomas Cross, Gulf veteran, member, Presidential Advisory Committee on GW Veterans Illnesses; Charles Sheehan-Miles, executive director, National Gulf War Resources Center; Dr. Robyn Nishimi, executive director, Presidential Advisory Committee; Matthew Puglisi, assistant director, National Veterans Affairs and Rehabilitation Commission, American Legion; Kelli Willard-West, director of government relations, Vietnam Veterans of America; Dennis Cullinan, deputy director, National Legislative Service, Veterans of Foreign Wars; Lennox Gilmer, associate national legislative director, Disabled American Veterans; and, Scott Vanderhayden, Gulf War Service Coordinator, Vietnam Veterans Agent Orange Victims.

2. "Status of Efforts to Identify Gulf War Syndrome, Part II" March 28, 1996. Dr. Thomas Garthwaite, Deputy Under Secretary of Health, Department of Veterans Affairs; Dr. Daniel Clauw, assistant professor, Georgetown University School of Medicine; Dr. Penny Pierce, Gulf veteran, University of Michigan School of Nursing; and, Dr. Howard Urnovitz, chief scientific officer, Calptye Biomedical Corp.

3. "Status of Efforts to Identify Gulf War Syndrome, Part III" June 25, 1996. Dr. Stephen Joseph, Assistant Secretary for Health Affairs, Department of Defense; Gary Hickman, Director of Atlanta Regional Office, Department of Veterans Affairs; Diane Dulka, widow of Gulf veteran Joseph Dulka, Windsor Locks, CT; and, Dr. William Marcus, toxicologist, Washington, DC.

4. "Status of Efforts to Identify Gulf War Syndrome, Part IV" September 19, 1996. Brian Martin, Gulf veteran, Niles, MI; Barry Kapplan, Gulf veteran, Southington, CT; Nancy Kapplan, registered nurse, Southington, CT; Nick Roberts, Gulf veteran, Port St. Joe Beach, FL; Denise Nichols, Gulf veteran, Wheat Ridge, CO; Sylvia Copeland, Chief, PGW Veterans Task Force, Central Intelligence Agency; Dr. Frances Murphy, Director, Environmental Agents Service, Department of Veterans Affairs; James Tuite, director, Gulf War Research Foundation; Dr. William Baumzweiger, neurologist and psychiatrist, Los Angeles, CA; Dr. Claudia Miller, assistant professor, Environmental & Occupational Medicine, University of Texas Health Science Center; and, Dr. Stephanie Padilla, research neurotoxicologist, Environmental Protection Agency.

5. "Persian Gulf Veterans' Illnesses" December 10, 1996. Major Michael Johnson, U.S. Army, Gulf veteran; Gy/Sgt. George Grass, U.S. Marine Corps, Gulf veteran; Major Randy Hebert, U.S. Marine Corps (retired), Gulf veteran; Patrick Eddington, former Analyst, Central Intelligence Agency; Julia Dyckman, Gulf veteran, Harrisburg, PA; and, Robert Larrisey, Gulf veteran, Chalphont, PA.

6. "Persian Gulf War Veterans' Illnesses" December 11, 1997. Dr. Susan Mather, Chief, Public Health & Environmental Hazards Officer, Department of Veterans Affairs; Dr. Charles Jackson, physician, Tuskegee (AL) VA Medical Center; and, Dr. Victor Gordan, physician, Manchester (NH) VA Medical Center.

7. "Gulf War Syndrome: To Examine New Studies Suggesting Links Between Gulf Service and Higher Rates of Illnesses" January 21, 1997. Dr. Kenneth Kizer, Under Secretary for Health, Department of Veterans Affairs; Dr. Bernard Rostker, Special Assistant for GW Illnesses, Department of Defense; Admiral Donald Custis, M.D. (retired), member, Presidential Advisory Committee on GW Veterans' Illnesses; Dr. Robert Haley, director of epidemiology, University of Texas Southwestern Medical Center; Dr. David Schwartz, professor of internal and preventive medicine, University of Iowa School of Medicine; Dr. Frank Duffy, associate professor of neurology, Harvard Medical School; Chris Kornkven, Gulf veteran, Watertown, WI; James Brown, Gulf veteran, Hannibal, MO; and, James Green, Gulf veteran, Fishertown, PA.

8. "Status of the Department of Veteran's Affairs to Identify Gulf War Syndrome" April 24, 1997. Michael Donnelly, Gulf veteran, South Windsor, CT; Susan Sumpter-Loebig, Gulf veteran, Hagerstown, MD; Steven Wood, Gulf veteran, Grossostheim, Germany; Dr. Bernard Rostker, Special Assistant for GW Illnesses, Department of Defense; Robert Walpole, Special Assistant for GW Illnesses, Central Intelligence Agency; Donald Mancuso, Deputy Inspector General, Department of Defense; Dr. Jonathan Tucker, Center for Non-Proliferation Studies, Monterey (CA) Institute of International Studies; Dr. Satu Somani, professor of pharmacology and toxicology, University of Southern Illinois School of Medicine; and, Dr. Thomas Tiedt, researcher and neuroscientist, Longboat Key, FL.

9. "The Status of Efforts to Identify Persian Gulf War Syndrome: Recent GAO Findings" June 24, 1997. Dr. Donna Heivilin, Director, Planning and Reporting, General Accounting Office.

10. "Status of Efforts to Identify Gulf War Syndrome: Multiple Toxic Exposures" June 26, 1997. Gilbert Roman, Gulf veteran, Denver, CO; Paul Canterbury, Gulf veteran, Ashley, OH; Michael Stacy, Gulf veteran, Inola, OK; S/Sgt. Mark Zeller, U.S. Army, Ft. Rucker, AL; Dr. Thomas Garthwaite, Deputy Under Secretary for Health, Department of Veterans Affairs; Dr. Bernard Rostker, Special Assistant for GW Illnesses, Department of Defense; Dr. Garth Nicolson, chief scientist, Institute for Molecular Medicine; Dr. Asaf Durakovic, researcher and radiation expert, Silver Spring, MD; and, Leonard Dietz, General Electric scientist (retired), Niskayuna, NY.

11. "The Oversight of NIH and FDA: Bio-Ethics & the Adequacy of Informed Consent" May 8, 1997. Dr. William Raub, Deputy Assistant Secretary, Department of Health and Human Services; Dr. David Satcher, Director, Center for Disease Control and Preven-

tion; Dr. Harold Varmus, Director, National Institutes of Health; Mary Pendergast, J.D., Deputy Commissioner, Food and Drug Administration; Dr. Arthur Caplan, professor of Bio-Ethics, University of Pennsylvania; Dr. Benjamin Wilfond, professor of pediatrics, University of Arizona; Dr. Peter Lurie, professor of medicine, University of California—San Francisco; and, Laurie Flynn, executive director, National Alliance for the Mentally Ill.

ADDITIONAL VIEWS OF HON. HENRY A. WAXMAN, HON. EDOLPHUS TOWNS, HON. PAUL E. KANJORSKI, HON. THOMAS M. BARRETT, HON. ELEANOR HOLMES NORTON, HON. CHAKA FATTAH, HON. ELIJAH E. CUMMINGS, HON. DANNY K. DAVIS, HON. JOHN F. TIERNEY, AND HON. HAROLD E. FORD, JR.

The text of the majority report entitled "Gulf War Veterans' Illnesses: VA, DOD Continue to Resist Strong Evidence Linking Toxic Causes to Chronic Health Effects" is based on 11 hearings held by the Committee on Government Reform and Oversight's Subcommittee on Human Resources. During those hearings, the committee heard testimony and reviewed voluminous documents provided by private citizens and the Federal Departments.

Throughout those hearings, the minority repeatedly insisted that the Department of Defense was uniquely situated to assist in our investigation of chemical weapons exposure. The majority report proves that basic point. Therefore, the purpose of these additional views is to underscore the role of the DOD and make additional suggestions that we believe would assist in the ultimate goal of helping the veterans receive the care and compensation they deserve.

Iraq invaded Kuwait on August 2, 1990. In support of United Nations Resolution 660, the United States sent troops to the Persian Gulf in Operation Desert Shield. About 5 months later, Operation Desert Storm began with an air war against Iraq. Forty days later, a four day ground war ensued. By the conclusion of hostilities, the United States had committed approximately 697,000 troops in the Gulf.

Troops who served in the Gulf were demographically different from previous contingents of U.S. Forces, with 7 percent female troops and 17 percent of the force gathered from Reserve and National Guard Personnel. ("Unexplained Illnesses Among Desert Storm Veterans", Archives of Internal Medicine, February 13, 1995, volume 155). For reasons that are unknown, it appears the Gulf War Syndrome is most common among Reservist and National Guardsman, although a small percentage of active duty soldiers have complained of similar illnesses.

The symptoms and ailments associated with Persian Gulf service, span the spectrum of illnesses and diseases. Some veterans described very specific symptoms, while others report more general and non-specific ailments including, chronic fatigue, memory and weight loss, joint pain, sleep disturbance, rashes, chest pain, and shortness of breath, diarrhea and other gastro-intestinal and other unexplained maladies. These illnesses have occurred in varying degrees of seriousness and do not appear to be fatal, but symptoms may be sufficiently debilitating and chronic as to cause long-term suffering and disability.

In response to congressional pressure concerning the symptoms experienced by veterans, the Department of Veterans Affairs began collecting data and compiling a Persian Gulf Registry. The VA published the original Persian Gulf Registry program manual (M–10, Part III) in December 1992. The uniform case assessment protocol was implemented at VA medical centers nationwide in June 1994 and introduced by an Under Secretary's Health Information letter on June 22, 1994. VA published a revised program manual on September 14, 1995.

All veterans who identify themselves through the Persian Gulf Registry, as having served in the Persian Gulf War theater of operations, are given a standard medical examination. Seventy-seven percent of veterans who undergo this exam receive a diagnosis and are treated at local VA medical centers. If a diagnosis is not possible following the preliminary examination, a referral for a follow-up exam is given at one of the four Persian Gulf Referral Centers. These centers have developed expertise in addressing symptoms arising out of undiagnosed illnesses. Additional examinations are possible if a diagnosis is not found following the second exam. Treatment is provided based on the results of the exams.

To date there are no clear indications of what may cause the disparate collection of symptoms appearing in veterans who served in the Persian Gulf. However, it is known that while in the Gulf states, the troops were exposed to a variety of natural and artificial substances which could be hazardous alone or in combination with other non-toxic substances. Those substances include, but may not be limited to multiple pre-deployment vaccinations; medical treatments designed to lessen effects of potential chemical exposure;[1] insect and rodent repellents; tropical parasites; environmental hazards (such as oil fires); and shrapnel from armor and ammunition made of depleted uranium.

The VA has embarked upon several studies which consider the possible use of biological or chemical agents. However, the primary responsibility for potential chemical exposures or the possible role of biological contaminants during the pendency of the conflict would have belonged to the Department of Defense. The DOD was uniquely situated to conduct or commission studies to gage the likely interaction of medications or immunizations provided soldiers and reservists in combination with air, soil or water contaminants encountered by the troops. However, the Department of Defense steadfastly maintained that chemical and/or biological weapons were not used in the Gulf. Because of this refusal to acknowledge these exposures, multiple government agencies with research funding dedicated to the resolution of the illnesses experienced by troops, wasted countless dollars and valuable time in focusing on unlikely sources of illnesses given the official account of battlefield activities rendered by the Pentagon. While there may be a need to maintain secrecy for troop protection during times of war, that necessity must quickly vanish in the aftermath of a conflict. The rationale of troop preservation and protection used by the military in times of war to maintain secrecy must produce candor in the after-

[1] Some of these medicines had not been approved by the Federal Food and Drug Administration. They were considered "investigational".

math of a conflict. Here, that need to preserve and protect the health and well-being of troops would have mandated a full and complete disclosure of chemical and/or biological weapons used in the Gulf. These disclosures may have reduced or eliminated needless suffering. Unfortunately, that disclosure was not forthcoming. It was not until June 21, 1996 that the Department of Defense acknowledged that American troops were exposed to fall-out from chemical agents. Therefore, we must concur with the findings of the final report of the Presidential Advisory Commission (issued January 7, 1997) which found that the Department of Defense had been "patronizing and dismissive of veterans" concerns and failed to act in good faith regarding knowledge of the existence of documents which suggested chemical weapons exposures.

However, we must note that since the publication of that report, the DOD seems to have been chastened by the criticism and has endeavored to engage in disclosure concerning chemical and biological exposure. However, it appears that those efforts may be hampered by internal and bureaucratic turf battles between military and civilian Defense employees about the necessity and level of disclosure. We trust that the actions of this committee communicate a strong message. Those who favor disclosure must be victorious in those internal battles. Their defeat will mean that those who are charged with the responsibility of defending freedom will be engaged in denying and stifling the most precious rights of American citizens—the right to be informed about governmental activities and to demand accountability of public officials. In a democracy, accountability cannot be suspended even during times of war.

The need for candor and openness in the military should be self-evident. As a Nation, we cannot expect young people to answer the call to war if they cannot expect to be treated fairly and with compassion if they are injured in service to their country. We commend the veterans who participated in these hearings. By testifying before this committee and sharing their stories, they have shown their continued belief and faith in the democracy that they risked their lives defending. We trust that the Department of Defense will follow their example. We believe that the candor of the department will assist in the diagnosis and treatment of these injured former and current armed service personnel.

In addition to their health concerns, we believe greater emphasis should be placed on the claims process. Approximately 76,000 veterans claims have been processed by the VA for service-connected disability and compensation as a result of their Persian Gulf experience.[2] Of that number, approximately 22,300 have been approved for service-connected disability and compensation. Therefore we were pleased that on January 7, 1996, when President Clinton endorsed a change in disability rules for Persian Gulf War veterans that would allow more to receive disability payments for "undiagnosed illnesses". We trust that those veterans whose claims were denied previously will be reassessed quickly.

[2] The VA cannot provide the total number for claims filed only by Persian Gulf Veterans, because claims currently in the process are not categorized by time or area of service. Unfortunately, they can only provide figures on the number of claims by Persian Gulf veterans after those claims have gone through the review process.

Finally, we believe that future medical mysteries can and should be avoided. In our investigation, we were shocked to learn that the Pentagon would spend thousands of dollars training and equipping each soldier, but fail to spend any money in developing a system that would track their health status. Therefore, we would recommend the implementation of a baseline health evaluation prior to deployment; the development of a computerized central database for medical records during a military deployment and the use of a standardized system of recordkeeping among the military branches.

HON. HENRY A. WAXMAN.
HON. EDOLPHUS TOWNS.
HON. PAUL E. KANJORSKI.
HON. THOMAS M. BARRETT.
HON. ELEANOR HOLMES NORTON.
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HON. DANNY K. DAVIS.
HON. JOHN F. TIERNEY.
HON. HAROLD E. FORD, JR.

ADDITIONAL VIEWS OF HON. BERNARD SANDERS

I would like to express my appreciation for the time and energy which Congressman Shays, Ranking Member Towns and the committee staff have put into this investigation and this Report. I would also like to express my concurrence with the conclusions and recommendations in this report. As it happens, it is my opinion that this report represents the most comprehensive and accurate assessment of the complexities surrounding Gulf War illnesses. I am delighted that the Government Reform and Oversight Committee approved this report and I believe we should promptly begin working on implementing its recommendations in a timely manner. After 6 years of virtually no progress in this area, we have no time to lose. The U.S. Congress, along with the scientific and medical community, the Veterans organizations and other concerned bodies, must begin focussing on this issue in a way that has not yet occurred. Our goal must be, as soon as possible, to discover the causes of Gulf War illnesses and the most effective treatments available.

Chairman Shays and his subcommittee have lead the effort during the last 19 months to unravel the complexities surrounding Gulf War illnesses. We have heard compelling testimony from dozens of sick veterans—at times this testimony was not only difficult for them to give, but was also painful for the Members and the public to hear. The subcommittee heard testimony from high level representatives from the Department of Defense, the Veterans Administration, doctors and scientists from around the world, the General Accounting Office and many others. I would like to stress that the conclusions contained in this report were not made lightly. They were drawn by gathering of information from 11 subcommittee hearings and thousands of pages of documents. Many many people testified at these hearings and I would like to thank all of them for the tremendous help they gave this committee.

The bottom line is this. After an exhaustive gathering of the evidence, and careful analysis of the information which was put before this subcommittee, it is my own conclusion that the Department of Defense and the VA have failed miserably in solving the problems of Gulf War illnesses and in developing effective treatments for the tens of thousands of veterans who are hurting—including hundreds in my own State of Vermont.

It is clear to almost everyone that, from the very beginning of this situation, the DOD and the VA have downplayed the whole issue of Gulf War illness. In the very beginning they actually denied that there was any problem whatsoever. And then, after finally acknowledging that there was a problem, they concluded that the problem was in the heads of our soldiers—of psychological origin. For 5 years, the Pentagon denied that our soldiers had been exposed to any chemical warfare agents. Finally, after being forced

to admit that there were exposures, they suggested that the exposures were "limited". The DOD's first estimates were 400 troops exposed, then 20,000 troops. In July of this year, the DOD and CIA gave us their best estimate—that as many as 98,910 American troops could have been exposed to chemical warfare agents due to destruction of "the Pit" in Khamisiyah, an Iraqi munitions facility. I would not be surprised if this estimate is revised upward in the not too distant future, as more information is gathered regarding other incidents of chemical warfare exposure. And on and on it goes. Getting information has been like pulling teeth.

If I were in pain and for 6 years I went to a doctor who was unable to effectively diagnose my problem or treat me, I would say to that doctor, "Thank you very much for your efforts, but I am going elsewhere." And that is the situation facing some 70,000 veterans of Gulf War illness. The evidence is overwhelming that, for whatever reason, the DOD and the VA have not been able to come up with a cause for Gulf War illnesses or an effective treatment. It may simply be nothing more complicated than the fact that the VA and the DOD simply lack the expertise in environmental toxicology that is at the root of the problem. I am not casting aspersions on the sincerity of the leadership of the VA and the DOD and their desire to do the right thing and help our veterans. I am simply saying that they have failed, that we must acknowledge their failure, and for the sake of the 70,000 veterans who continue to hurt, we must go outside of the DOD and VA if we are to come up with the cause of this problem and find effective treatments.

As part of this effort, I am happy to report that the Labor-HHS appropriations bill, which is currently in conference, contains language, that I introduced, which asks the National Institute of Environmental Health Sciences to study how chemical exposures in the Persian Gulf relate to Gulf War illnesses. Additionally through this program, the NIEHS is to investigate treatment protocols which are being developed in the private sector around the country. Whether or not the NIEHS should be the agency given full responsibility for heading up the broader independent investigation which this report calls for, I can't answer right now. But that is an issue that needs to be pursued vigorously and in the very near future.

As we learned through our subcommittee hearings, the military theater in the Persian Gulf was a chemical cesspool. Our troops were exposed to chemical warfare agents, leaded petroleum, widespread use of pesticides, depleted uranium and burning oil wells. In addition, they were given a myriad of pharmaceuticals as vaccines. Further, and perhaps most importantly, as a result of waiver from the FDA, hundreds of thousands of troops were given pyridostigmine bromide. Pyridostigmine bromide, which was being used as an anti-nerve gas agent, had never been used in this capacity before. In the midst of all of this, our troops were living in a hot and unpleasant climate and were under very great stress.

Through our subcommittee hearings we have also learned that an increasing number of scientists now believe that the synergistic effect of chemical exposures, plus the experimental vaccine pyridostigmine bromide, may well be a major cause of the health problems affecting our soldiers. Additionally, we learned of scientific studies which suggest that stressful conditions in combina-

tion with taking pyridostigmine bromide can lead to neurological problems. Moreover, this subcommittee heard from scientists who conclude that exposures to low levels of chemical weapons, such as those experienced near Khamisiyah, can lead to long-term health problems—contrary to what the DOD and VA continue to maintain.

One of the most important, yet disturbing facets of this problem is that health effects from chemical exposures may surface years after the initial exposure—and these health effects can be very serious, including kidney damage, liver damage, neurological damage, reproductive problems, respitory problems and cancer. Our government needs to own up to the fact that many of the chemical exposures in the Gulf can very well lead to long-term and serious health problems for our veterans. And because of this we have a responsibility to provide health care, treatment and compensation for the health problems which stem from service in the Gulf.

I very much agree with the recommendation in this report that Congress enact a law which sets up the presumption that Gulf War veterans were exposed to hazardous materials known to have been present in the Gulf War theater. As we have learned in our hearings, to this point the burden has been on the veteran to prove that they were exposed to harmful chemicals and that their illnesses stem from that exposure. Because of the lack of military records as to administration of pyridostigmine bromide, missing logs on chemical and biological weapons alarms, and missing data as to which individuals were exposed to chemical weapons, it has been impossible for thousands of veterans to prove that chemical exposure has caused their illnesses. This has resulted in unending frustration for thousands of sick veterans—causing many to seek medical attention from the private sector and devote significant financial resources to treating their illnesses. This is simply unacceptable.

In having passed this committee report, we should not think that our work is done. On the contrary, we have really just begun. It is my belief that serious and focused scientific work can give us an understanding of why tens of thousands of our soldiers are suffering a myriad of illnesses, and some excellent scientific work—already completed—is paving the way for us. It is also my belief that we can come up with effective treatments. And it very likely that there are physicians throughout the country who have already developed treatments that are helpful.

It seems to me that our committee must remain involved in this issue, must, along with our colleagues in both bodies, help find the appropriate agency to direct the research, must make certain that adequate money is made available, and must exercise oversight over that agency to ensure that its mandate is carried out. I thank Chairman Shays and Ranking Member Towns for their hard work on this issue, and I look forward to working with my committee colleagues in the near future, to implement its recommendations.

HON. BERNARD SANDERS.

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