

THE GULF WAR SYNDROME: CAUSES AND THE COVER-UP

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By Gary Null Ph.D.

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"Then information about the exposures is not included in the soldiers' medical records, putting them at even greater risk. And when these soldiers leave the service and become veterans, the [Veterans Administration] lacks information about the exposures and about any resulting illnesses, making it more difficult to help them."

"Finally, when these veterans become ill, they are unable to get the medical records and other information they need in order to prove that their illnesses are related to military service."

"This situation is unacceptable."

These strong words about service-related illness in Gulf War veterans sound like they come from a radical veterans' rights group activist. But they don't. They were spoken by John D. Rockefeller IV, senator from West Virginia and the chair of the Senate's Committee on Veterans' Affairs. They were uttered May 6, 1994, when that committee held a hearing on the topic "Is Military Research Hazardous to Veterans' Health?" In the aftermath of America's Persian Gulf involvement, clearly the answer to that question was yes. Military research has been hazardous to veterans' health.

It's been common knowledge that the Gulf War -- whatever it did or did not accomplish politically -- definitely constituted a terrible environmental assault on the health of the Americans who participated. Fumes from burning oil wells and other toxins, as well as the unsanitary conditions the soldiers lived in, wreaked havoc on the immune system of many of our people there.

But now we're also learning that the health of most of the 700,000 service people in the Gulf may have been compromised even before the onset of their participation in the

conflict, when the Army gave them experimental drugs. What's more, our servicemen and women were given these drugs without their informed consent.

One hundred and fifty thousand of our military personnel were given anthrax vaccine, an approved but rarely used drug. Eight thousand people received an experimental vaccine against botulism. And, depending on whose figures are used, more than 400,000 military personnel ingested an experimental nerve agent pretreatment in the form of a series of pills called pyridostigmine bromide. There was nothing voluntary in our service-people's taking of any of these powerful drugs.

The news gets worse in that the giving of the pyridostigmine bromide was probably a total mistake. That's because while pyridostigmine is supposed to be effective against a particular chemical agent, soman, it may make individuals more vulnerable to other nerve agents, such as one called sarin. The only verified report of chemical weapons in the gulf concluded that it was this later agent, sarin, that was present. In other words, experimental pills were given for the wrong agent.

Well over 100,000 GIs have become sick since the war, with spouses catching some of these illnesses and babies being born with health problems. Compounding the horror is the fact that the Department of Veterans' Affairs has done a terrible job of following up on all this. They don't seem to want to know anything.

In a sense, this has the terrible appearance of history repeating itself. All Vietnam veterans know by now that Agent Orange, which contained a known toxin -- defoliant dioxin --was widely used in deforestation efforts in Vietnam. That poison became a deadly time-bomb ticking away in the bodies of up to a million GIs, who were later denied recognition of their problem, not to mention adequate treatment and benefits.

Paul Sullivan, a participant in this most recent tragedy served in the Persian Gulf war as a cavalry scout with the First Armored Division. After he became ill, he began to organize the Gulf War vets in the Atlanta area. Recently Sullivan spoke about what he went through:

"I first became ill right there in the gulf, with rashes and what we just considered runny noses. It never went away. I ended up with chronic sinusitis, chronic bronchitis, learned I had a tuberculosis infection. The rashes still haven't gone away. The VA completely blew me off for two years until I went public and talked on your radio station.... Before then, the VA was in the process of purging people's records, denying them service.... This denial of

the problem -- that it ever exists -- by the Department of Defense and the Department of Veterans' Affairs is absolutely shocking, immoral, and unconscionable -- absolutely outrageous...."

"When you finally get into the VA. system, what happens is, they'll lose your records. I went to appointments, ended up waiting four, five additional hours for the doctor simply to find my medical records or the X-rays that they took two or three days earlier. When you do get an exam, the doctor will say, 'I've got five minutes. Tell me your problem.' Then they won't record your symptoms. You hear stories about doctors where their stethoscopes were not even in their ears. You hear stories about soldiers going in there like me, with rashes and respiratory problems and the doctors not even writing it down. Then, even though we're sick, they don't do any tests. Lung function tests, sinus X-rays, chest X-rays -- they weren't doing any of that. Then for the few tests they did run, such as blood tests, in my case, they knew I had an immune deficiency -- nobody ever looked at the results...."

"Unfortunately for many veterans who get out of the service and don't have any health insurance, the VA is our only option. And our only option has crashed and burned under the stress of so many hundreds of thousands of vets coming in and looking for help."

Sullivan went on to talk about the GIs' exposure to chemical weapons in Iraq.

"We actually went into these Iraqi bunker complexes and cataloged their chemical-tipped warheads. And they're denying that the Iraqis ever used them. We were over there counting the stupid things. And they're going to tell them that the Iraqis didn't use them or that some of them weren't blown up accidentally when our bombers bombed their positions or when our artillery bombed their positions or when our tanks shot all kinds of rounds into their bunker complexes? Of course some of that stuff had to leak out, but we weren't told to put on our masks. In fact, nobody did. No chemical-detection kits were brought in there with us to detect chemical warfare."

"As a result, a whole lot of guys in my platoon are sick. I started contacting them after I started running into problems with the VA and getting sicker and sicker and sicker. I found out that these guys in my platoon have the same kinds of rashes, the same kinds of respiratory problems, and a bunch of them also came home with infections. The VA says there's no pattern. There's no pattern because the VA isn't looking for one."

But there seems to be a pattern in the military's misuse of our fellow citizens. Neil Tetzlaff, who was a lieutenant colonel in the U.S. Air Force during the Gulf War, told the May 6 Senate hearing about his health problems, which began even before he arrived in Saudi Arabia:

"While being mobilized, I was issued a seven-day supply of pyridostigmine-boromide pills and was told to start taking them on an eight-hour schedule, which I did. The package contained no warnings. For me, this was a chronic overdose of pyridostigmine. Both my immediate physical and mental symptoms corroborate this fact."

"On the plane ride to Saudi and during my first day in-country, I was nauseated and vomited. I attributed the sickness to the plane ride and tenseness of the situation. On my second day there, I vomited again and felt different. I attributed the sickness to something I'd eaten. On the third day, I was extremely nauseated and vomited many times. I sought out the doctor and discussed my illness with him. We dismissed it as something I had eaten at the Saudi canteen. On my fourth day there, I vomited violently, the worst ever of my life, and was acting a bit off center and muddled.... On the morning of the seventh day, I vomited about a quart of blood."

"I knew then I was in deep trouble and I headed straight for the doctor. Shortly thereafter, I began to lose consciousness and the doctor started an IV. After examining me in the Taif clinic, the doctor commandeered a C-130 and air-evacuated me to the Royal Saudi Hospital in Riyadh...."

"Since taking pyridostigmine while deployed for Desert Shield, I have been suffering moderate to severe and intolerable pain, and fatigue, and lately have developed one heck of a palsy. I've lost my ability to speak because I can't recall words, have extreme problems with my short-term memory, and I had a dramatic change in my olfactory system. The last three and a half years have been extremely difficult on my family and me. This brief description by no means enumerates the mental and physical disabilities I've had to overcome."

"As the situation stands now, the disabling effects of pyridostigmine are not known and are not being investigated even though the drug was used during Desert Storm on an experimental basis. I am caught in the same dilemma as the victims of [Operation] Crossroads and Agent Orange. During the nuclear tests in the forties, radiation wasn't

considered hazardous, and during Vietnam, Agent Orange wasn't considered harmful. Pyridostigmine, taken at the dose of 30 milligrams every eight hours, is considered to be non-injurious to humans by the D.O.D."

Tetzlaff reported that "military medical doctors routinely returned soldiers taking pyridostigmine to duty, even though they were suffering overdose symptoms such as vomiting, increased urinary frequency, and headaches, without telling the soldiers to stop taking pyridostigmine."

He also said that in November 1990 some pharmacists deployed to the gulf refused to issue the experimental pills to soldiers without getting consent forms from them. "They also raised a number of moral, ethical, and legal issues," Tetzlaff said, "such as, was the United States guilty of doing exactly the same thing the Nazis did in World WarII? This forced D.O.D. to get F.D.A.'s approval to issue the experimental medicine to soldiers without individual consent. Even with F.D.A.'s approval, there is still a great deal of discussion in medical and pharmaceutical literature as to whether D.O.D. violated the Geneva accords."

The Senate hearing at which Tetzlaff spoke was the culmination of an intensive six-month investigation that, Senator Rockefeller said in his opening statement. "showed a reckless disregard that shocked me, and I think that will shock all Americans."

Rockefeller went on to say that:

"The use of investigational drugs in the Persian Gulf is especially troublesome. The Pentagon did studies of one of these drugs, pyridostigmine, in a cautious way before the war, excluding anyone who might be harmed by the drug. But after protecting a few hundred men who volunteered for these studies, they threw caution to the winds, ignoring all warnings of potential harm, and gave these drugs to hundreds of thousands of soldiers with virtually no warnings and no safeguards."

"If that wasn't bad enough, they administered these drugs and vaccines in such a way that there is a very good chance they wouldn't have even worked for the intended purpose. They would not have protected most soldiers from chemical or biological warfare. These are strong statements, and I don't make them lightly."

Dr. Thomas Callender, a physician who specializes in internal medicine in addition to environmental and occupational toxicology and who has worked with many Desert Storm vets, also spoke at the hearing:

"First, as a result of their activities in Iraq–Kuwait–Saudi Arabia, the physical health of many of the Desert Storm veterans has been seriously impaired, and many more are having significant problems. My second observation is that the military has abandoned the soldiers and behave as if it does not want to know what happened. Many of the soldiers I talked to are heroes in the classic American sense of the word, and this country should be proud of them.... They are not disposable objects to do a job and then be discarded when they are no longer needed...."

"The military has erroneously superficially, and often deliberately chosen to conclude that Desert Storm veterans are either over–stressed, neurotic or simply seeking secondary gain. In cases where physical impairment is undeniable, the military has simply turned its back on the soldiers and denies that the soldiers' problems could be related to Desert Storm."

"Many of the military health professionals do not have the proper training to deal with complex toxicological subjects. Those that do have the basic knowledge take an antagonistic posture before they have seen the facts. The military health professionals that do need information are reluctant to seek information outside their fields. It has been my experience that military health professionals who do ask for assistance of knowledgeable physicians outside the military avoid doing so officially, as if they are afraid of their superiors' awareness of such a contact. In fact, civilian physicians are frequently ignored or verbally attacked by the military personnel who have not even researched the subjects at issue. Whenever asked to explain their behavior, I have been told that they state that they are following orders."

Dr. Callender explained that while pyridostigmine bromide (P.Y.B.) helps counter nerve poison, it's also one of a class of agents that are essentially pesticides or nerve poisons themselves. He said that while preliminary research done on P.Y.B. by the Department of Defense excluded people with a susceptibility to the substance, once combat personnel were getting the drug, no such screenings for susceptibility were done. Also, women were never included in the studies, despite the fact that they would be in combat areas. "So," said Callender, "these facts make the entire concept of the safety of P.Y.B. as being

promoted by the military untenable. If only a few percent of the soldiers are susceptible, then many tens of thousands of individuals are at risk for serious side effects."

Other problems with the preliminary research on P.Y.B., Callender added, included the fact that the tremendous variability between individuals of different genetic makeup was never taken into account. This led to problems for many of the soldiers who had to take the drug. "Some of the patients that I interviewed that had the worst side effects from P.Y.B. also had personal histories and familial histories of an intolerance to many medications, therefore suggesting a genetic, biochemical susceptibility," Callender stated. "This history was ignored, as well as complaints of adverse reactions following each time the P.Y.B. was taken."

Concerning the safety of the drugs given to gulf soldiers, Ph.D.'s Diana Zuckerman and Patricia Olson conducted an investigation for Senator Rockefeller in conjunction with the May hearing, and what they discovered was disturbing. They explained in their report to the senator that

"when the Department of Defense began preparations for Desert Shield and Desert Storm in 1990, officials were extremely concerned about the need to protect U.S. troops against chemical and biological weapons that were believed to have been developed by Iraq. Under current law, all vaccines and medical products must be proven safe and effective by F.D.A. in order to be sold and distributed in the United States. However, D.O.D. officials wanted to use abotulinum toxoid -- a vaccine against botulism -- that was not approved by F.D.A. They also wanted to use pyridostigmine bromide -- a medication -- to protect U.S. troops against certain chemical weapons, such as soman. Although approved by the F.D.A. for treating patients with a neurological disorder (myasthenia gravis), pyridostigmine is not proven safe or effective for repeated use by healthy persons under any circumstances."

"D.O.D. told F.D.A. that these investigational products had well-established uses and were safe. However, these claims are not supported by the research that the D.O.D. has provided to the F.D.A."

Here's some of what Zuckerman and Olson had to say about pyridostigmine:

"Pyridostigmine bromide is a chemical which is believed to enhance the effectiveness of established drugs for the treatment of nerve-agent poisoning. Pyridostigmine is also a nerve agent itself.... In recent studies, animals given pyridostigmine followed by two

antidotes (atropine and 2-PAM) were more likely to survive exposure to a nerve agent called soman. However, pyridostigmine pretreatment may make individuals more vulnerable to other nerve agents, such as sarin. The D.O.D. scientists concluded that pyridostigmine should only be used when the chemical-warfare threat is soman. Iraq was believed to have both soman and sarin, and the only verified report of chemical weapons in the Gulf War concluded that sarin was present."

"In addition, D.O.D. documents indicate that the treatment regimen for U.S. troops during the Persian Gulf War may have included an inadequate dose of atropine. Therefore, even if Persian Gulf soldiers had been exposed to soman, it is questionable if the pyridostigmine pretreatment would have provided any protection, since the dose of atropine was apparently inadequate...."

"Because of the D.O.D. researchers' concerns about serious adverse reactions, virtually all of the studies screened the male subjects to determine whether they were hypersensitive to pyridostigmine before allowing them to participate in the experiment. In addition, individuals with many medical conditions, those on medications, and those who smoked were excluded from the studies. Study participants were told not to drink any alcoholic beverages. Despite these precautions, serious adverse reactions were reported for several of the studies, including respiratory arrest, abnormal liver tests, unusual electrocardiograms, gastrointestinal disturbances, memory loss, and anemia...."

"None of the Persian Gulf War troops were adequately warned about the risks associated with the drug, and few if any were given a choice of whether or not to take it."

Zuckerman and Olson also brought up the possibility of synergistic effects in relation to P.Y.B.:

"Last year, Dr. James Fox, a scientist at the U.S. Department of Agriculture, conducted research on cockroaches that could have important implications for Persian Gulf War veterans. He found that when used in combination with pyridostigmine, a common pesticide called deet became ten times as toxic as when used alone. Deet and many other pesticides were widely used in the Gulf War. If individuals who took pyridostigmine pills became more vulnerable to pesticides ... this could explain the serious neurological symptoms experienced by so many Gulf War veterans."

According to Zuckerman and Olson, initially the Department of Defense assured the F.D.A. that investigational drugs would be administered to soldiers on a voluntary basis, information on the products would be provided, and soldiers would be monitored for ill effects. As it turned out, though, none of these conditions were met. The Defense Department got the F D.A. to grant them waivers from informed-consent regulations for the use of pyridostigmine and botulinum-toxoid vaccine. As a result, many gulf veterans were not told what vaccine they were being given or what the risks were. Zuckerman and Olson informed Rockefeller that "many [veterans] report that they were told not to tell medical personnel that they had received a vaccination, even if the vaccination caused pain or swelling. No record of the vaccine was available in medical records. As a result, physicians who were concerned about any local or, systemic reactions often had no information about the possible causes of those symptoms. Veterans who claim they were harmed by the vaccines or pyridostigmine, frequently have no proof that they were vaccinated or took the pills, or that they had an adverse reaction."

One of the veterans who knows about this situation first-hand is the Reverend Dr. Barry Walker, who served as a chaplain in Saudi Arabia and ultimately in Iraq and Kuwait. Here's some of what he told the Senate committee hearing:

"On January 16, 1991 I received the first of two shots of a vaccine, but we were not told exactly what it was. We were later told that the purpose of the vaccine was to protect us; rumor was that it was for protection against anthrax. Also in January, after the first Scud was launched, we were ordered to start taking some pills, although we were not told exactly what they were, either. All we were told was that the pills would protect us against chemical and biological weapons. We were told to take the pills and not given a choice, though some soldiers did not take them. I was expected to be an example to others, so I took them at first. I later learned that these pills were pyridostigmine."

"To my knowledge, none of the 4,700 troops [in my ministry], except maybe the command headquarters, was given any real information about the risks of these drugs or vaccines. We were not shown anything in writing or told anything other than that these would protect us. My chemical officer was asked to find out more about the pills, and she shared some of that information with the group commander and a few staff officers. She said there were no problems with the pills."

"The fact that we were given the vaccine or drugs was not recorded in our medical records, although I insisted that the vaccine be recorded in my personal record. Many soldiers did not carry a vaccine record, and most wouldn't have thought to ask that it be recorded. I don't recall any list being made of who was given the vaccine."

Chaplain Walker started having back problems after a February 1991 Scud attack and attributed them to his work lifting bodies and debris after the attack. When he returned to the United States a few months later, he was so happy to be home that he ignored his continuing back pain. But by the summer, he knew that something was seriously wrong; tests showed that the nerves in his lower body were impaired. Now, he reported to the committee, his symptoms include headaches, rashes, fatigue, memory loss, sweating, blood in his urine, inability to concentrate, and difficulty sleeping.

"For the past three years, I have been spending much of my time helping other Gulf War veterans and their families," Walker said. "I have taken over 150 veterans to the hospitals for treatment or helped them in other ways. Many of them have symptoms similar to mine. Some are much more serious. Some just plain get lost for periods of time and do not know how they got where they are; some have blood in their urine. Some have trouble walking; some will pass out and not remember it."

What are the ethical ramifications of giving experimental drugs to soldiers in time of war? Arthur L. Caplan was another voice heard at the hearing; he has a Ph.D. and is the director of the Center for Bioethics at the University of Pennsylvania.

"Some would argue that the entire category of ethically suspect research makes no sense in the context of war. Hot or cold, when the threat to the nation's security is immediate, real, and serious, then the prevailing rules of human experimentation requiring the informed consent of subjects and prior review by research review committees must, of necessity, go out the window. The niceties of ethics regarding how to conduct human experimentation are for times of peace, not for the exigencies imposed by the threat or reality of war. But this argument is wrong."

"The prevailing standards for human experimentation were set down as a direct response to experiments conducted under conditions of war. The Nuremberg trials at the end of the Second World War promulgated a code of research ethics that has been absorbed into both professional ethics and law by many bodies and governments in the years since that war.

The Nuremberg Code makes no exception for research conducted in the context of war. The enormously important goal of protecting the nation's security is not held to be a value that is so overriding as to obliterate the individual subjects' rights. The code states clearly and unambiguously that everyone involved in research is to be so informed and that they are to have the right to give or withhold their consent to that research."

Senators Don Riegle, Jr., of Michigan and Alfonse D'Amato of New York echoed these concerns in a report they issued at the end of May. "Our afflicted veterans are sick and suffering, and some have died," wrote the senators. "Others are now destitute, having spent tens of thousands of dollars, depleting their life savings, in an unsuccessful search for an explanation for their ailments.... The veterans of the Gulf War have asked us for nothing more than the assistance they have earned. Our refusal to come to their immediate assistance can only lead others to question the integrity of the nation they serve."

Riegle and D'Amato discussed Iraq's biological -- and chemical -- warfare stockpiles -- built up with materials that, in some cases, the United States provided Iraq! -- and they say that the symptomatology of the Gulf War vets is consistent with a "chemical/biological exposure explanation, illustrated by a large body of common symptoms; and distribution of illness that appears related to source of exposures, whether by proximity to an explosion, fallout, reaction to pills." One of Riegle's and D'Amato's recommendations was that the impact of pyridostigmine be looked at, particularly with regard to its potential for creating synergistic or even potentiation effects when soldiers are exposed to other hazardous substances, i.e., chemical weapons and other toxins.

The senators also recommended that the Department of Veterans' Affairs claims and appeals process be streamlined, and they called for presumption of a military-service connection when assessing veterans' illnesses for the purposes of determining eligibility for benefits and treatment until a diagnostic protocol can be established. They called, too, for government-financed healthcare -- when no other medical insurance is available -- for spouses and children determined to have contracted a service-connected illness from a Gulf War veteran.

R. J. Vogel, under secretary for benefits of the Department of Veterans' Affairs, pointed out that "the long-term effects of exposure to chemicals or environmental agents are as much a consequence of their military duty as a gunshot wound." This is certainly true, but the problem is, while a gunshot wound is immediately obvious as a service-connected injury

and thus receives immediate medical care, long-term systemic damage caused by chemical or drug agents is by nature not immediately obvious, and even when symptoms show up early, they can worsen over time or when another agent is introduced into the body. Thus, proving a service connection becomes frustratingly difficult for many veterans.

Paul Sullivan, the afflicted ex-cavalry scout who is now a veterans' organizer, understands this frustration firsthand: "I get bent out of shape when I see another obituary come across my fax machine from another gulf veteran that the government let die."

And as he concluded his testimony, Dr. Thomas Callender summed up this terrible episode with eloquence:

"In the Desert Storm troops of which I have personal knowledge, I cannot emphasize enough their sincerity and honesty, nor can I adequately describe the seriousness of their condition, the amount of suffering caused by their medical problems, and the humiliation of being abandoned by the government that they fought for. Once again we are witnessing a historical tragedy where many dedicated Americans put their lives on the line in the service of their country, and their country is letting them down. We should put the same energy and resources into protecting and helping our American soldiers as we put into protecting our strategic interests and in helping other countries and their citizens. We should not let politics, saving face, or hidden agendas deter us from our sacred duty to oursoldiers."

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"Then information about the exposures is not included in the soldiers' medical records, putting them at even greater risk. And when these soldiers leave the service and become veterans, the [Veterans Administration] lacks information about the exposures and about any resulting illnesses, making it more difficult to help them."

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"As the situation stands now, the disabling effects of pyridostigmine are not known and are not being investigated even though the drug was used during Desert Storm on an experimental basis. I am caught in the same dilemma as the victims of [Operation] Crossroads and Agent Orange. During the nuclear tests in the forties, radiation wasn't

considered hazardous, and during Vietnam, Agent Orange wasn't considered harmful. Pyridostigmine, taken at the dose of 30 milligrams every eight hours, is considered to be non-injurious to humans by the D.O.D."Tetzlaff reported that "military medical doctors routinely returned soldiers taking pyridostigmine to duty, even though they were suffering overdose symptoms such as vomiting, increased urinary frequency, and headaches, without telling the soldiers to stop taking pyridostigmine."

He also said that in November 1990 some pharmacists deployed to the gulf refused to issue the experimental pills to soldiers without getting consent forms from them. "They also raised a number of moral, ethical, and legal issues," Tetzlaff said, "such as, was the United States guilty of doing exactly the same thing the Nazis did in World WarII? This forced D.O.D. to get F.D.A.'s approval to issue the experimental medicine to soldiers without individual consent. Even with F.D.A.'s approval, there is still a great deal of discussion in medical and pharmaceutical literature as to whether D.O.D. violated the Genevaaccords."

The Senate hearing at which Tetzlaff Spoke was the culmination of an intensive six-month investigation that, Senator Rockefeller said in his opening statement. "showed a reckless disregard that shocked me, and I think that will shock all Americans."

Rockefeller went on to say that:"The use of investigational drugs in the Persian Gulf is especially troublesome. The Pentagon did studies of one of these drugs, pyridostigmine, in a cautious way before the war, excluding anyone who might be harmed by the drug. But after protecting a few hundred men who volunteered for these studies, they threw caution to the winds, ignoring all warnings of potential harm, and gave these drugs to hundreds of thousands of soldiers with virtually no warnings and no safeguards."

"If that wasn't bad enough, they administered these drugs and vaccines in such a way that there is a very good chance they wouldn't have even worked for the intended purpose.

They would not have protected most soldiers from chemical or biological warfare. These are strong statements, and I don't make them lightly."Dr. Thomas Callender, a physician who specializes in internal medicine in addition to environmental and occupational toxicology and who has worked with many Desert Storm vets, also spoke at the hearing:"First, as a result of their activities in Iraq-Kuwait-Saudi Arabia, the physical health of many of the Desert Storm veterans has been seriously impaired, and many more are having significant problems. My second observation is that the military has abandoned the soldiers and behave as if it does not want to know what happened. Many of the soldiers I talked to are heroes in the classic American sense of the word, and this country should be

proud of them.... They are not disposable objects to do a job and then be discarded when they are no longer needed...."

"The military has erroneously superficially, and often deliberately chosen to conclude that Desert Storm veterans are either over-stressed, neurotic or simply seeking secondary gain. In cases where physical impairment is undeniable, the military has simply turned its back on the soldiers and denies that the soldiers' problems could be related to Desert Storm."

"Many of the military health professionals do not have the proper training to deal with complex toxicological subjects. Those that do have the basic knowledge take an antagonistic posture before they have seen the facts. The military health professionals that do need information are reluctant to seek information outside their fields. It has been my experience that military health professionals who do ask for assistance of knowledgeable physicians outside the military avoid doing so officially, as if they are afraid of their superiors' awareness of such a contact. In fact, civilian physicians are frequently ignored or verbally attacked by the military personnel who have not even researched the subjects at issue. Whenever asked to explain their behavior, I have been told that they state that they are following orders." Dr. Callender explained that while pyridostigmine bromide (P.Y.B.) helps counter nerve poison, it's also one of a class of agents that are essentially pesticides or nerve poisons themselves. He said that while preliminary research done on P.Y.B. by the Department of Defense excluded people with a susceptibility to the substance, once combat personnel were getting the drug, no such screenings for susceptibility were done. Also, women were never included in the studies, despite the fact that they would be in combat areas. "So," said Callender, "these facts make the entire concept of the safety of P.Y.B. as being promoted by the military untenable. If only a few percent of the soldiers are susceptible, then many tens of thousands of individuals are at risk for serious side effects." Other problems with the preliminary research on P.Y.B., Callender added, included the fact that the tremendous variability between individuals of different genetic makeup was never taken into account. This led to problems for many of the soldiers who had to take the drug. "Some of the patients that I interviewed that had the worst side effects from P.Y.B. also had personal histories and familial histories of an intolerance to many medications, therefore suggesting a genetic, biochemical susceptibility," Callender stated. "This history was ignored, as well as complaints of adverse reactions following each time the P.Y.B. was taken."

Concerning the safety of the drugs given to gulf soldiers, Ph.D.'s Diana Zuckerman and Patricia Olson conducted an investigation for Senator Rockefeller in conjunction with the

May hearing, and what they discovered was disturbing. They explained in their report to the senator that "when the Department of Defense began preparations for Desert Shield and Desert Storm in 1990, officials were extremely concerned about the need to protect U.S. troops against chemical and biological weapons that were believed to have been developed by Iraq. Under current law, all vaccines and medical products must be proven safe and effective by F.D.A. in order to be sold and distributed in the United States. However, D.O.D. officials wanted to use abotulinum toxoid -- a vaccine against botulism -- that was not approved by F.D.A. They also wanted to use pyridostigmine bromide -- a medication -- to protect U.S. troops against certain chemical weapons, such as soman. Although approved by the F.D.A. for treating patients with a neurological disorder (myasthenia gravis), pyridostigmine is not proven safe or effective for repeated use by healthy persons under any circumstances."

"D.O.D. told F.D.A. that these investigational products had well-established uses and were safe. However, these claims are not supported by the research that the D.O.D. has provided to the F.D.A." Here's some of what Zuckerman and Olson had to say about pyridostigmine: "Pyridostigmine bromide is a chemical which is believed to enhance the effectiveness of established drugs for the treatment of nerve-agent poisoning. Pyridostigmine is also a nerve agent itself.... In recent studies, animals given pyridostigmine followed by two antidotes (atropine and 2-PAM) were more likely to survive exposure to a nerve agent called soman. However, pyridostigmine pretreatment may make individuals more vulnerable to other nerve agents, such as sarin. The D.O.D. scientists concluded that pyridostigmine should only be used when the chemical-warfare threat is soman. Iraq was believed to have both soman and sarin, and the only verified report of chemical weapons in the Gulf War concluded that sarin was present."

"In addition, D.O.D. documents indicate that the treatment regimen for U.S. troops during the Persian Gulf War may have included an inadequate dose of atropine. Therefore, even if Persian Gulf soldiers had been exposed to soman, it is questionable if the pyridostigmine pretreatment would have provided any protection, since the dose of atropine was apparently inadequate...."

"Because of the D.O.D. researchers' concerns about serious adverse reactions, virtually all of the studies screened the male subjects to determine whether they were hypersensitive to pyridostigmine before allowing them to participate in the experiment. In addition, individuals with many medical conditions, those on medications, and those who smoked were excluded from the studies. Study participants were told not to drink any alcoholic

beverages. Despite these precautions, serious adverse reactions were reported for several of the studies, including respiratory arrest, abnormal liver tests, unusual electrocardiograms, gastrointestinal disturbances, memory loss, and anemia...."

"None of the Persian Gulf War troops were adequately warned about the risks associated with the drug, and few if any were given a choice of whether or not to take it." Zuckerman and Olson also brought up the possibility of synergistic effects in relation to P.Y.B.: "Last year, Dr. James Fox, a scientist at the U.S. Department of Agriculture, conducted research on cockroaches that could have important implications for Persian Gulf War veterans. He found that when used in combination with pyridostigmine, a common pesticide called deet became ten times as toxic as when used alone. Deet and many other pesticides were widely used in the Gulf War. If individuals who took pyridostigmine pills became more vulnerable to pesticides ... this could explain the serious neurological symptoms experienced by so many Gulf War veterans." According to Zuckerman and Olson, initially the Department of Defense assured the F.D.A. that investigational drugs would be administered to soldiers on a voluntary basis, information on the products would be provided, and soldiers would be monitored for ill effects. As it turned out, though, none of these conditions were met. The Defense Department got the F.D.A. to grant them waivers from informed-consent regulations for the use of pyridostigmine and botulinum-toxoid vaccine. As a result, many Gulf War veterans were not told what vaccine they were being given or what the risks were. Zuckerman and Olson informed Rockefeller that "many [veterans] report that they were told not to tell medical personnel that they had received a vaccination, even if the vaccination caused pain or swelling. No record of the vaccine was available in medical records. As a result, physicians who were concerned about any local or, systemic reactions often had no information about the possible causes of those symptoms. Veterans who claim they were harmed by the vaccines or pyridostigmine, frequently have no proof that they were vaccinated or took the pills, or that they had an adverse reaction."

One of the veterans who knows about this situation first-hand is the Reverend Dr. Barry Walker, who served as a chaplain in Saudi Arabia and ultimately in Iraq and Kuwait. Here's some of what he told the Senate committee hearing: "On January 16, 1991 I received the first of two shots of a vaccine, but we were not told exactly what it was. We were later told that the purpose of the vaccine was to protect us; rumor was that it was for protection against anthrax. Also in January, after the first Scud was launched, we were ordered to start taking some pills, although we were not told exactly what they were, either. All we were told was that the pills would protect us against chemical and biological weapons. We were

told to take the pills and not given a choice, though some soldiers did not take them. I was expected to be an example to others, so I took them at first. I later learned that these pills were pyridostigmine."

"To my knowledge, none of the 4,700 troops [in my ministry], except maybe the command headquarters, was given any real information about the risks of these drugs or vaccines. We were not shown anything in writing or told anything other than that these would protect us. My chemical officer was asked to find out more about the pills, and she shared some of that information with the group commander and a few staff officers. She said there were no problems with the pills."

"The fact that we were given the vaccine or drugs was not recorded in our medical records, although I insisted that the vaccine be recorded in my personal record. Many soldiers did not carry a vaccine record, and most wouldn't have thought to ask that it be recorded. I don't recall any list being made of who was given the vaccine." Chaplain Walker started having back problems after a February 1991 Scud attack and attributed them to his work lifting bodies and debris after the attack. When he returned to the United States a few months later, he was so happy to be home that he ignored his continuing back pain. But by the summer, he knew that something was seriously wrong; tests showed that the nerves in his lower body were impaired. Now, he reported to the committee, his symptoms include headaches, rashes, fatigue, memory loss, sweating, blood in his urine, inability to concentrate, and difficulty sleeping.

"For the past three years, I have been spending much of my time helping other Gulf War veterans and their families," Walker said. "I have taken over 150 veterans to the hospitals for treatment or helped them in other ways. Many of them have symptoms similar to mine. Some are much more serious. Some just plain get lost for periods of time and do not know how they got where they are; some have blood in their urine. Some have trouble walking; some will pass out and not remember it."

What are the ethical ramifications of giving experimental drugs to soldiers in time of war? Arthur L. Caplan was another voice heard at the hearing; he has a Ph.D. and is the director of the Center for Bioethics at the University of Pennsylvania. "Some would argue that the entire category of ethically suspect research makes no sense in the context of war. Hot or cold, when the threat to the nation's security is immediate, real, and serious, then the prevailing rules of human experimentation requiring the informed consent of subjects and prior review by research review committees must, of necessity, go out the window. The niceties of ethics regarding how to conduct human experimentation are for times of peace,

not for the exigencies imposed by the threat or reality of war. But this argument is wrong." "The prevailing standards for human experimentation were set down as a direct response to experiments conducted under conditions of war. The Nuremberg trials at the end of the Second World War promulgated a code of research ethics that has been absorbed into both professional ethics and law by many bodies and governments in the years since that war. The Nuremberg Code makes no exception for research conducted in the context of war. The enormously important goal of protecting the nation's security is not held to be a value that is so overriding as to obliterate the individual subjects' rights. The code states clearly and unambiguously that everyone involved in research is to be so informed and that they are to have the right to give or withhold their consent to that research." Senators Don Riegle, Jr., of Michigan and Alfonse D'Amato of New York echoed these concerns in a report they issued at the end of May. "Our afflicted veterans are sick and suffering, and some have died," wrote the senators. "Others are now destitute, having spent tens of thousands of dollars, depleting their life savings, in an unsuccessful search for an explanation for their ailments.... The veterans of the Gulf War have asked us for nothing more than the assistance they have earned. Our refusal to come to their immediate assistance can only lead others to question the integrity of the nation they serve."

Riegle and D'Amato discussed Iraq's biological -- and chemical -- warfare stockpiles -- built up with materials that, in some cases, the United States provided Iraq! -- and they say that the symptomatology of the Gulf War vets is consistent with a "chemical/biological exposure explanation, illustrated by a large body of common symptoms; and distribution of illness that appears related to source of exposures, whether by proximity to an explosion, fallout, reaction to pills." One of Riegle's and D'Amato's recommendations was that the impact of pyridostigmine be looked at, particularly with regard to its potential for creating synergistic or even potentiation effects when soldiers are exposed to other hazardous substances, i.e., chemical weapons and other toxins.

The senators also recommended that the Department of Veterans' Affairs claims and appeals process be streamlined, and they called for presumption of a military-service connection when assessing veterans' illnesses for the purposes of determining eligibility for benefits and treatment until a diagnostic protocol can be established. They called, too, for government-financed healthcare -- when no other medical insurance is available -- for spouses and children determined to have contracted a service-connected illness from a Gulf War veteran.

R. J. Vogel, under secretary for benefits of the Department of Veterans' Affairs, pointed out

that "the long-term effects of exposure to chemicals or environmental agents are as much a consequence of their military duty as a gunshot wound." This is certainly true, but the problem is, while a gunshot wound is immediately obvious as a service-connected injury and thus receives immediate medical care, long-term systemic damage caused by chemical or drug agents is by nature not immediately obvious, and even when symptoms show up early, they can worsen over time or when another agent is introduced into the body. Thus, proving a service connection becomes frustratingly difficult for many veterans.

Paul Sullivan, the afflicted ex-cavalry scout who is now a veterans' organizer, understands this frustration firsthand: "I get bent out of shape when I see another obituary come across my fax machine from another gulf veteran that the government let die."

And as he concluded his testimony, Dr. Thomas Callender summed up this terrible episode with eloquence: "In the Desert Storm troops of which I have personal knowledge, I cannot emphasize enough their sincerity and honesty, nor can I adequately describe the seriousness of their condition, the amount of suffering caused by their medical problems, and the humiliation of being abandoned by the government that they fought for. Once again we are witnessing a historical tragedy where many dedicated Americans put their lives on the line in the service of their country, and their country is letting them down. We should put the same energy and resources into protecting and helping our American soldiers as we put into protecting our strategic interests and in helping other countries and their citizens. We should not let politics, saving face, or hidden agendas deter us from our sacred duty to oursoldiers."