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Depleted Uranium: A Case Study of Good and Evil

By

Bernard Rostker

No convincing evidence is available to indicate any health impacts on the Kosovo population associated with the use of depleted uranium. ... Unnecessary speculation and anxiety about the potential for risks from depleted uranium, ...are being fuelled by the different opinions expressed as a consequence of the normal process of scientific debate, as well as by the lack of a common communication strategy. The presence of high levels of lead require urgent attention. ... The unlikely effect of depleted uranium exposure, if any, are much smaller in comparison to these causes of death or incapacity....

— *Report of the World Health Organization, March 2001*
<http://www.who.it/docs/hia/DurptMar01.pdf>

Author's Note: The views expressed here are my own and do not represent those of RAND or the Department of Defense. Given the subject, hyperlinks are included in the paper so that the reader may have full access to all supporting documentation. An electronic version, with active hyperlinks, is available on my private web page at <http://home.cox.rr.com/rostker/>.

Prologue

This paper was written for the conference on *Unacceptable Weapons* sponsored by the National Security Seminar at the Massachusetts Institute of Technology on March 20, 2002. The title of this paper contains unusual and emotional words for an academic paper, *good and evil*. But then again, this conference contains an unusual and emotional word in its title, *unacceptable*. The term *unacceptable weapons* implies a difference of opinion between those who believe a weapon might be used under certain circumstances, and those that believe its use is not warranted under the same or any circumstances. It implies a set of criteria upon which to make this judgment. It

Figure 1: DEPLETED URANIUM FACT SHEET

What is depleted uranium?

Depleted uranium is what is left over when most of the highly radioactive types (isotopes) of uranium are removed for use as nuclear fuel or nuclear weapons. The depleted uranium used in armor-piercing munitions and in enhanced armor protection for some Abrams tanks is also used in civilian industry, primarily for stabilizers in airplanes and boats.

What makes depleted uranium a potential hazard?

Depleted uranium is a heavy metal that is also slightly radioactive. Heavy metals (uranium, lead, tungsten, etc.) have chemical toxicity properties that, in high doses, can cause adverse health effects. Depleted uranium that remains outside the body can not harm you.

A common misconception is that radiation is depleted uranium's primary hazard. This is not the case under most battlefield exposure scenarios. Depleted uranium is approximately 40 percent less radioactive than natural uranium. Depleted uranium emits alpha and beta particles, and gamma rays. Alpha particles, the primary radiation type produced by depleted uranium, are blocked by skin, while beta particles are blocked by the boots and battle dress utility uniform typically worn by service members. While gamma rays are a form of highly penetrating energy, the amount of gamma radiation emitted by depleted uranium is very low. Thus, depleted uranium does not significantly add to the background radiation that we encounter every day.

When fired, or after "cooking off" in fires or explosions, the exposed depleted uranium rod poses an extremely low radiological threat as long as it remains outside the body. Taken into the body via metal fragments or dust-like particles, depleted uranium may pose a long-term health hazard to personnel if the amount is large. However, the amount that remains in the body depends on a number of factors, including the amount inhaled or ingested, the particle size and the ability of the particles to dissolve in body fluids.

Were any studies on the health effects of depleted uranium ever conducted prior to the onset of the Gulf War? What were the findings of those studies?

The health effects of uranium have been studied extensively for over 50 years. In September 1999 the Agency for Toxic Substances and Disease Registry published a Toxicological Profile for Uranium, an update to the original profile published in May 1989. While natural and depleted uranium are considered chemically toxic, they are not considered a radiation hazard.

The environmental effects of depleted uranium have been studied comprehensively by a wide range of governmental and non-governmental bodies both before and after the Gulf War. Burn tests and other evaluations performed under simulated battlefield conditions indicated that the health risks associated with the battlefield use of depleted uranium were minimal and even those could be reduced even more by simple, field-expedient measures, especially, avoidance of depleted uranium-contaminated vehicles and sites. During and after the Gulf War, personnel awareness of the hazards posed by battlefield depleted uranium contamination was generally low. As a result, many personnel did not practice field-expedient measures that would have prevented or mitigated possible exposures.

The two main areas that were not adequately addressed before the Gulf War were:

- * The medical implications of embedded fragments and
- * Exposure estimates for friendly fire incidents, recovery activities, and incidental contact scenarios.

These are weaknesses that we have recognized and are addressing. The December 19, 2000 Environmental Exposure Report, *Depleted Uranium in the Gulf (II)* includes the Army's latest health risk exposure estimates for various Gulf War exposure scenarios. Health risk estimates for DU-contaminated vehicle recovery and incidental contact scenarios indicate that these exposures were well within safety standards. Because of gaps in data pertaining to uranium oxide dust levels inside DU-struck vehicles, exposure estimates for personnel inside DU-struck vehicles at the time of impact, or immediately afterwards, were based on conservative assumptions. These estimates for this highest exposed group indicated that medical follow-up was warranted. DOD is currently in the process of conducting additional live-fire testing in order to refine further the exposure estimates for those troops in or around vehicles when they were hit by DU munitions. It is important to note that over 60 friendly-fire victims have been evaluated by the voluntary VA DU Medical Follow-up Program. Aside from the problems associated with their traumatic injuries, to date, this follow-up program has attributed no illness or other harmful effects in the evaluated veterans to DU.

The voluntary Veterans Affairs DU Medical Follow-up Program was begun in 1993-1994 with the medical evaluations of 33 friendly-fire DU-exposed veterans, many with embedded DU fragments. An additional 29 of the friendly-fire victims were later added to the surveillance program in 1999. In 1998, the program was enlarged to assess the wider Gulf War veteran community's exposure to DU through close contact with DU munitions, inhalation of smoke containing DU particulate during a fire at the Doha depot or while entering or salvaging vehicles or bunkers that were hit with DU projectiles. The published results of these medical evaluations conclude that the presence of retained DU fragments is the only scenario predictive of a high urine uranium value, and those with retained DU fragments continue to have elevated urine uranium levels nine years after the incident. It is unlikely that an individual would have an elevated urine uranium result, and consequently any uranium-related health effects, in the absence of retained DU fragments. Those individuals with normal urine uranium levels now are unlikely to develop any uranium-related toxicity in the future, regardless of what their DU exposure may have been in the Gulf War. Those DU-exposed friendly fire individuals with elevated levels of urinary uranium nine years after the Gulf War have not developed kidney abnormalities, leukemia, bone or lung cancer, or any classical uranium-related adverse outcome. The DU Medical Follow-up Program will continue to evaluate these individuals with elevated urine uranium levels to enable early detection of potential untoward health effects in the future due to their continued chronic exposure to DU.

found on the web site of the National Gulf War Resources Center, specifically the view of Dan Fahey, <http://www.NGWRC.org/research/du%5Fdan%5Ffahey%5Fwedsep270000072000.asp>. The Center's web site is <http://www.NGWRC.org>,

Reports on DU

The current story of depleted uranium starts with the 1990-91 Gulf War. A full accounting of the use of depleted uranium is contained in a *case narrative/environmental exposure report* prepared by my old office, the Office of the Special Assistant Gulf War Illnesses (OSAGWI). It is available on the Internet at http://www.gulflink.osd.mil/du_ii/. Case narratives/environmental exposure reports were reports of our investigation concerning different topics of concern to Gulf War veterans. The Presidential Special Oversight Board (PSOB) and the General Accounting Office, the investigative arm of the Congress scrutinized these reports. While not perfect, they did provide a standard against which others will be tested. Probably the best example of this was how our biggest detractor, Dan Fahey from *Swords to Plowshares, the National Gulf War Resources Center* and the *Military Toxics Project* copied the style and format of our case narratives. Fahey's paper (<http://www.NGWRC.org/Dulink/ducasenarr3.pdf>) can be obtained from the *NGWRC*. What Fahey did not copy, however, and what the media did not insist upon, was the same standard of truth and openness OSAGWI was held to. This is what the General Accounting Office told former Senator Warren Rudman at the PSOB hearing on July 13, 1999:

MR. GEBICKE (of the General Accounting Office:)) I'll be honest with you, Senator Rudman, we held them to a very, very strict criteria. We looked not only at the case narrative, but we went behind the case narrative to the supporting documents to ensure that the supporting documents were consistent with the write-up. We then looked at other information in their case file which was not included in the write-up to determine whether or not it was relevant. Then finally, we contacted some individuals on our own to verify that what was in OSAGWI's records was consistent with what that individual said he told the OSAGWI investigator when they spoke. So we held them to a very high standard.

SENATOR RUDMAN: Did you find anything at all in your discussions, both initially and then after disclosure and then re-write. Did you find anything at all in the course of your inquiry that would indicate to you that people were trying to deliberately

conceal information, not produce information to put into the reports?

MR. GEBICKE: Quite to the contrary. From the very first day that we arrived I think we had what I would consider from an auditor's perspective a model relationship and rapport with OSAGWI in terms that they provided all files that we asked for in a very timely basis and provided all individuals that we needed to speak to. (http://www.oversight.ncr.gov/xcript_hearing_13jul99.html#gao)

Returning Gulf War Veterans and the Fear of Chemical Exposures

The story of unexplained illnesses reported among returning Gulf War soldiers is now well known and I will not recount it here, except to note that, building on the Agent Orange experience from the Viet Nam War, the Department of Veterans Affairs was quick to set up a health registry and to provide diagnostic tests to screen veterans. The Defense Department soon followed. Initial focus was on the possibility that our troops had been exposed to chemical weapons. DU did not enter the story until much later, but the tone of the later debate was shaped by how the issue of chemical weapons was handled.

Our failure was not that we ignored the complaints of our veterans, or that we did not open the VA and DOD doors to them—in fact over 100,000 veterans of the Gulf War have been screened and health examinations are still available—our failure was that we could not tell them what they had been exposed to during the war. The whole reason for establishing the Gulf War Office in 1996 and to prepare the series of *information papers, case narratives and environmental exposure reports* was to try to fill that void. While it took five years, from 1991 to 1996, for the DOD to fully understand the depth or importance of this void, it was not the first or only attempt by the Federal Government to answer the concerns of veterans about what they had been exposed to and any resulting risks to their health. First, the Congress under Senator Donald Riegle, Chairman of the Committee on Banking, Housing and Urban Affairs, moved forward with a series of hearings focusing on possible exposure to chemical weapons. Riegle and staff built what they believed was a logical and accurate account of how our troops were exposed to poison gas. They were wrong. Two Presidential panels, numerous case studies, inquires by a Special Investigation Unit of the US Senate and the General Accounting Office, say that Senator

Riegle was wrong. However, as recently as January of this year, Senator Riegle, now retired, went before a House Committee to press his theory of conspiracy. This time another former Senator, Warren Rudman, who had headed the PSOB, rebutted him.

One should not blame Senator Riegal for getting it wrong—although the blame for repeating the tales of intrigue and conspiracy is entirely his own. Despite a 1994 study by the Defense Science Board, the Department of Defense did not provide the Senator, his staff, or most importantly our veterans with a timely or complete account of what happened in the Gulf. In retrospect, the Department from the beginning should have understood that a detailed accounting of what happened during the Gulf War would be required. Prophetically, the Marine Corps officer charged with reporting on the possible use of chemical weapons during the Gulf War understood that a full and detailed report would be needed. In the official Marine Corps report on *Marine Corps NBC Defense in Southwest Asia*, then-Captain David Manley noted that:

Survey data indicates that a significant number of Marines believe they encountered threat chemical munitions or agents.... There are no indications that the Iraqis tactically employed agents against Marines. However, there are too many stated encounters to categorically dismiss the presence of agents and chemical agent munitions in the Marine Corps sector.

(http://www.gulflink.osd.mil/manley_report/970903_oct1_0001.html)

Whether it is chemical weapons or DU, the only way to overcome what the WHO called “unnecessary speculation and anxiety about the potential for risk” is with a full and objective presentation of the facts.

The Presidential Advisory Committee on Gulf War Veterans' Illnesses

President Clinton and the first lady were deeply troubled about the anguish many Gulf War veterans were going through and, as is the way of Washington, they established a blue ribbon commission, the Presidential Advisory Committee on Gulf War Veterans' Illnesses (PAC) to get to the bottom of it, to inform them, the American people, and most of all, our veterans. The PAC spent several years looking at the issues of chemical weapons and other potential health hazards. One of these “health hazards” was exposure to depleted uranium. For our story two things were

important about the PAC. First, they concluded that DU was not a likely cause of unexplained illnesses among Gulf War veterans. Here is what they said:

The Committee concludes it is unlikely that health effects reported by Gulf War veterans today are the result of exposure to DU during the Gulf War. Since uranium is a potential carcinogen, it is possible that exposure to DU during the Gulf War could lead to a slight increase in the risk for lung cancer after decades following the end of the war. (<http://www.gwvi.ncr.gov/ch4.html#4r>)

Second, for reasons I still do not understand, the PAC declared war on the Department of Defense, a war that could not help but undercut the Department's credibility later on the subject of DU. Their initial report and subsequent supplementary report could not have been more critical of Defense's handling of Gulf War illness, accusing the DOD of squandering the reservoir of good will between the Government and the American people. This was all the more troublesome since the PAC came to the same conclusion concerning chemical weapons as had the Department of Defense. The PAC's actions were not just unfathomable to me, but also to Jeff Wheelwright, the author of *The Irritable Heart: The Medical Mystery of the Gulf War* (2001). Recounting an interview with Dr. Joyce Lashof, former dean of the School of Public Health at the University of California and chair of the PAC, Wheelwright wrote that

By 1997 the committee (PAC) she headed had developed a split personality. Assigned in 1995 to investigate the illnesses, the committee took on the additional charge of investigating the allegations of chemical exposure. It issued reports critical of the Pentagon's handling of the exposure incidents, even as it played down the importance of exposures in causing the illnesses. ... I said (to her) that the two missions of the committee were incompatible and confusing and even harmful. "It disturbed me, (she reflected,) that this was going to be misunderstood. In meetings we asked ourselves. Why are...we pushing this? ... DoD was saying there wasn't any exposure and then after Khamisyah the press jumped on the bandwagon. So we felt we had to restore the credibility of government. The veterans had a right to know."

What in fact happened was the PAC jumped on the press bandwagon, and by the time they were finished bashing the Department of Defense they had lost all credibility themselves with Congress and the White House. Rather than replacing OSAGWI, as the PAC (and the *New York Times*) demanded, the Pentagon's efforts continued under the scrutiny of a new oversight board chaired by former Senator Warren Rudman.

Attacks on the Pentagon from the Press and Congress

The public discussion of DU took place against a number of attacks on the credibility of the Pentagon. Besides the PAC, the *New York Times* and then some members of Congress accused the Pentagon of the most heinous, callous and criminal behavior.

The New York Times

It was common knowledge in the Pentagon press room that the reporter from the *New York Times*, Phil Shenon, had set his sights on a Pulitzer Prize and his means was the exposure of the wrong doing of America's senior military commanders. Under the guise of "balanced reporting" he and his editors gave voice to every unsubstantiated report and every fringe idea being presented. In hindsight some of the examples are amusing. More importantly, they illustrate why one constantly has to "keep the media honest." A good point to remember, *be proactive and challenge your critics with the facts.*

During 1996 and 1997 Shenon wrote at least six articles concerning the so-called "missing chemical logs," including a front-page story to remind his readers that the logs were *still* missing. (See: Philip Shenon, **Pentagon Says Gulf War Data Seem to Be Lost**, *New York Times*, December 5, 1996, Section A, Page 1, Column 5.) Eventually an inquiry by the DOD Inspector General solved the mystery of the missing logs, and noted that "during the course of this investigation, we did not receive nor did we develop any evidence or credible information to support the theory that any individuals or organizations participated in a conspiracy to destroy or conceal the logs." (See: <http://www.gulflink.aosd.mil/dodig/>). However, when some pages were discovered—these pages had been extracted as exhibits for the 1994 Defense Science Board study as they contained all the relevant references to possible chemical exposures during the Gulf War (see: <http://www.gulflink.osd.mil/dodig/log.htm#link24>)—it was clear that Shenon was less

concerned with what they contained than he was with the “missing” pages, since the word “missing” implies a cover-up. In his December 11, 1997 article, **Soldiers Say They Detected Chemical Use In Kuwait**, Shenon reported on a February 28th incident covered in the Chemical Logs. The log entry, declassified in June 1996, can be found on OSAGWI’s web site at http://www.gulflink.osd.mil/asp_orch_ii/asp_orch_ii_refs/n65en051/100996_nbc_033.htm). The fifth entry on the page relates to the February 28th incident testified to before Congressman Shays’ committee. If Shenon had turned the page, however, he would have found that the person making the report called CENTCOM the next day to say, “the suspect bunker was checked out thoroughly—No Chemical Munitions Found.” When presented with both pages, Shenon said that he had deadlines and could not afford the time to fully examine the logs. In fact, the logs were posted on the Internet the previous June, seven months before he reported on the incident. (The record in the CENTCOM log that Shenon failed to note is the first entry on 1 March 1990 at http://www.gulflink.osd.mil/asp_orch_ii/asp_orch_ii_refs/n65en071/100996_nbc_034.htm.) The final account of this incident can be found at <http://www.gulflink.osd.mil/asporchard/>.

What is so disappointing about Phil Shenon and the *New York Times* is, as the “newspaper of record,” they never cleared the record. They never wrote a retraction concerning the reported cash of chemical weapons, leaving the American people with the headline, **“Soldiers Say They Detected Chemical Use in Kuwait.”** They never reviewed or even acknowledged that the OSAGWI investigated and published a full accounting of the February 28th incident in a case narrative on September 1997. They never told the public that the GAO reviewed the report or that a *Presidential Special Oversight Board* approved it for final publication. While Shenon did report on the Inspector General’s investigation of the “missing log,” noting that the Inspector General did not find “any evidence or credible information to support the theory that any individuals or organizations participated in a conspiracy to destroy or conceal the logs,” he never told his readers what the IG found had happened to the log and ended the article with the accusation that the IG’s report was “a last-ditch effort by the Pentagon to save its credibility.” Of course, these words were not Phil Shenon’s words, but those of our critics. It is an example of how the media uses the “balanced reporting” argument to get their point across. (See: Phil Shenon, **Excerpts from Missing Logs of Gulf War Are Discovered**, *New York Times*, October 24, 1997)

Months later, when challenged on the veracity of statements he knew or should have known were not correct, Shenon again used the “balanced reporting” argument, saying as a reporter he was just repeating the position of others to give balance to a story. Figure 2 shows the parsing of a particularly vicious article he wrote based upon leaks from the PAC concerning their recommendation that the investigation of Gulf War illness be stripped from the Pentagon. The article titled, **Panel Says Pentagon Ignored Signs of Poison Gas** (*New York Times*, October 31, 1997) charges the Pentagon with withholding a report that was prepared for it by the Mitre Corporation. As shown in Figure 2, the report had been made public on September 3, 1997, more than a month before the article was written. Shenon goes on to repeat a charge, attributed to the White House panel, that “the Pentagon failed to pursue, acknowledge or even account for the chemical detection by the Marines.” In fact, we had published a case narrative on that very subject. He stated the Mitre report concluded that there was “compelling evidence ... (of) mines containing chemical agents.” If he had read the Mitre report, which had been public for almost two months, he would have known that they concluded that “the information available ... is not sufficiently reliable to be conclusive about either release or non release (of chemical agents).” Finally, he should have known since he was at the hearing when the UN inspectors (UNSCOM) reported to the PAC in July 1997, that there was no evidence of chemical mines being used during the Gulf War. “We’ve seen nothing, absolutely nothing,” was the way the UNSCOM inspectors put it, when asked about chemical mines. At our own Town Hall meetings this chart was prominently displayed. I often said that if what was written was true, I would have fired myself. This chart illustrates the principle, *be proactive and challenge your critics with the facts*. That is what this chart did and what we would do later with DU.

The Congress: A Tale of Two Committees

Relations with Congress are always a mixed bag. There are many in Congress who are hard, but fair. Senator Arlen Specter, then Chairman of the Senate Veterans Affairs Committee was one who was both hard and fair. Senator Specter asked the Senate to charter a Special Investigation Unit to investigate veteran's claims and identify possible causes for the unexplained illness they reported.. He selected a former District Attorney from Philadelphia to head the SIU. The SIU took up my invitation to join members of the OSAGWI staff and me on an extensive tour of

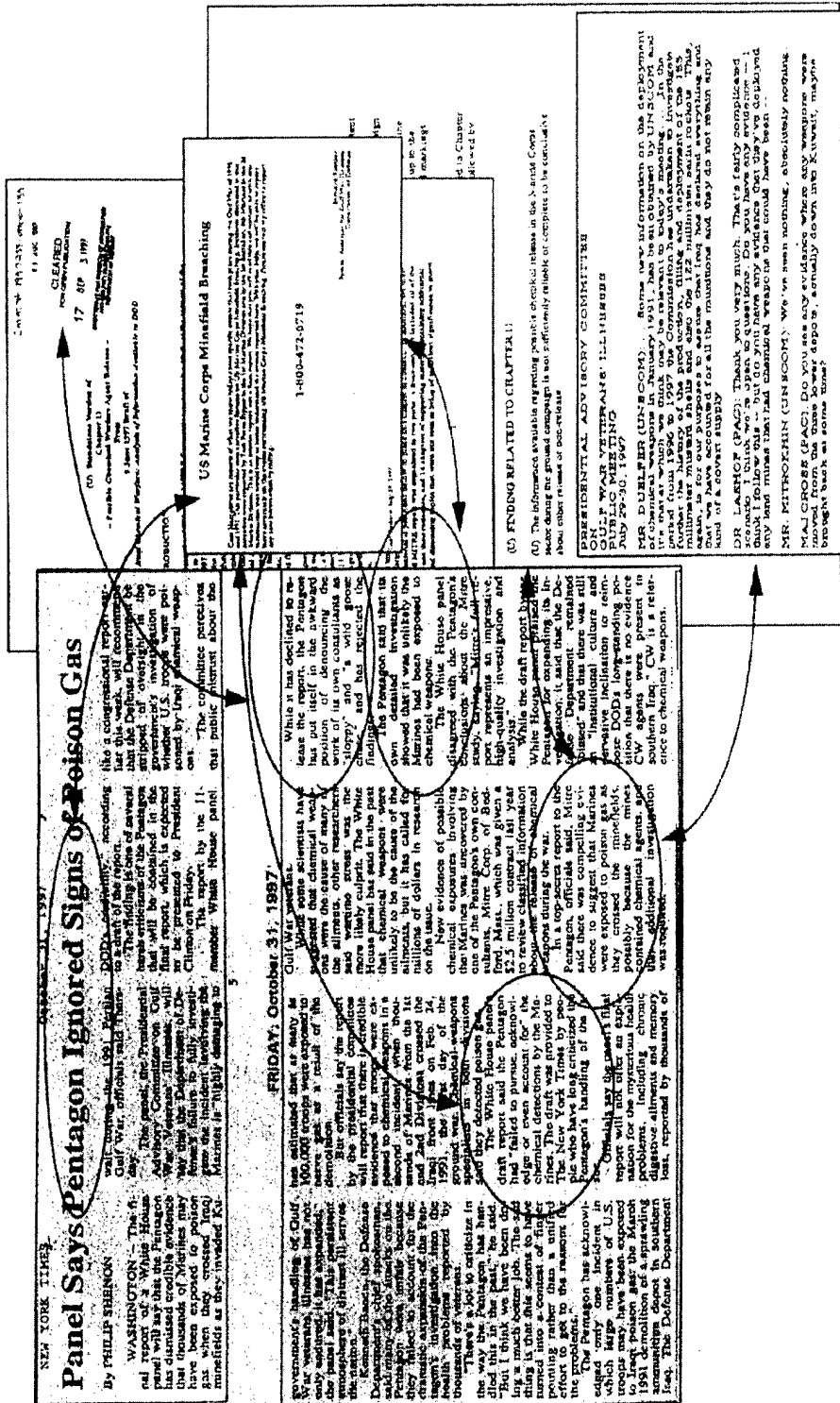


Figure 2: New York Times, October 31, 1997 — Exposed

Europe and the Gulf. I always believed openness was the best policy. The SIU published two volumes that took exception with conclusions drawn earlier by Senator Riegle, and with the ongoing work of Congressman Chris Shays, of the Human Resources Subcommittee of the House Government Oversight Committee. The subcommittee was later renamed the National Security, Veterans Affairs and International Relations Subcommittee to press Congressman Shays' claim of jurisdiction. The SIU's reports can be obtained at <http://veterans.senate.gov/Reports/siu.htm>. Supporting material can be found at http://www.gulflink.osd.mil/library/senate/siu_index.html.

The Senate's inquiry stood in sharp contrast with the work of the House Government Reform and Oversight Committee's Human Resources Subcommittee. Congressman Chris Shays of Connecticut was an outspoken critic of the Department of Defense and the Department of Veteran Affairs. Shenon, reporting on one of the subcommittee's hearings quoted Shays as saying, "valid chemical detections had been 'dismissed, discounted, discredited or denied' by commanders eager to ignore the possibility that troops had been exposed to chemical weapons." That conclusion was not shared by the Senate that found "there is insufficient evidence at this time to prove or disprove that there was an actual low level exposure of any troops to chemical weapons nerve agents or that any of the health effects some veterans are experiencing were caused by such exposure."

Shays unfortunately had been very selective in whom he brought before his committee and what he reported. In late 1996 he held a series of hearings concerning specific reports of troops being exposed to chemical weapons. Every one of these reports became a subject for the case narrative process. Every one of the reports was eventually refuted. The case narratives were thoroughly reviewed and reinvestigated by the Special Investigation Unit, by the General Accounting Office and by the Presidential Special Oversight Board. Each drew the same conclusion, there were more than plausible explanations for the incidents reported to Congressman Shays. What is most disturbing was when a veteran came forward and wrote to Congressman Shays to challenge the testimony of one of the witnesses before the committee, he was ignored. (See the letter http://www.gulflink.osd.mil/asp_orch_ii/asp_orch_ii_refs/n65en112/970901_aug42_0001.htm. to Congressman Shays from a member of the ordnance disposal unit who investigated the February 28th incident.) Given the opportunity to set the record straight in the House report

(<http://thomas.loc.gov/cgi-bin/cpquery/z?cp105:hr388.105>), he chose to press his case. Even by the title of the report, **VA, DOD Continue To Resist Strong Evidence Linking Toxic Causes To Chronic Health Effect** is in sharp contrast to the conclusions drawn by the Senate.

The apparent disagreement between the two committees extended to the views on DU. Shays' committee cited a professor from the City University of New York that, "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." The Senate report was more circumspect, noting only that "an unknown number of troops were exposed to low levels of DU." An appendix to the Senate report, written by Dr. Melissa McDiarmid, noted that "significant cancer risk from DU exposure is small. (She noted that), this is the opinion of both the IOM and the PAC."

OSAGWI and DU

At the time, late winter 1997, I thought that the conclusions of the PAC concerning DU had put the subject to rest. They reported no pathology that linked the unexplained symptoms reported by Gulf War veterans to exposure to DU. When I asked RAND to produce a series of literature reviews on what medical science knew about potential causes of Gulf War illnesses, DU was not even on the list. Soon that would change and DU would become a major preoccupation of OSAGWI. And, I give credit for that change to one person, Dan Fahey.

In early 1997, at the request of the representatives from the Veteran Service Organization (VSO) the issue of DU became the topic for our monthly round table meeting. Fahey was there representing the San Francisco based group, *Swords to Plowshares*. Frankly, that was the first time I really focused on the subject of DU. What troubled them—and troubled me as well—was that we could not tell them much about the use of DU, who had been exposed and what had happened to them. Moreover, I knew we were in trouble when the nuclear symbol flashed on the screen as we reviewed the Army's training film. There was also a striking inconsistency in our message, an inconsistency that the opposition would harp on as time went on. The DU training

films warned about DU contamination and showed the proper way to handle it in garrison and on the battlefield. It was clear that these procedures were not followed in the Gulf. How could we guarantee the health of Gulf War veterans who came in contact with DU, even a little, when we were not following our own procedures? Was the PAC right, that DU could not be the cause of the unexplained symptoms, or other DU related illnesses such as cancer or birth defects? Remember this is uranium, even if it is depleted, and everything and anything about radioactivity worries veterans. We had our work cut out for us! OSAGWI responded with four efforts; a case narrative/environmental exposure report on DU use and possible troop exposure in the Gulf (<http://www.gulflink.osd.mil/du/>), a review of the scientific literature prepared for us by RAND (<http://www.rand.org/publications/MR/MR1018.7/>), and a risk assessment by the US Army Center for Health Promotion and Preventive Medicine based on the case narrative and RAND's work (http://www.gulflink.osd.mil/chppm_du_rpt_index.html). Most importantly, we increased our support for the VA's program of monitoring those who were or may have been exposed to high level of DU during their time in the Gulf.

As we pressed forward to get our case narrative/environmental exposure report on DU out to the public and RAND prepared their review of the medical literature, we were scooped by Dan Fahey and the National Gulf War Resources Center when they published their Case Narrative on DU on March 2, 1998 (<http://www.NGWRC.org/Dulink/DUCN1.zip>). The third and last edition can be found at <http://www.NGWRC.org/Dulink/ducasenarr3.pdf>. A slick presentation of misinformation and half-truths, it demanded an immediate rebuttal. I responded several weeks later on March 23, 1998 with a speech (http://www.gulflink.osd.mil/DU_speech.html) at the winter meetings of the American Legion.

Dan Fahey and the National Gulf War Resource Center

As the debate moved forward, we found ourselves engaged with a dedicated group of antiwar and antinuclear activists who professed concern for the health of Gulf War veterans, but whose real agenda, in the words of Dan Fahey, was to change the "misguided ... policies of the US government and multinational corporations which require a permanent American presence throughout the world and hypocritically justify the use of nuclear and radioactive weapons to counter the existence of chemical and biological weapons." Fahey was a political activist from

San Francisco who took up the cause of DU as a means to “ban all weapons of mass and indiscriminant destruction.” In the first edition of his version of his “case narrative,” he not only distorted the facts concerning DU, but also tipped his hand by including an *Author’s Personal Statement*. In subsequent versions he did no better with the facts, but having been questioned if his personal views colored his judgment, the *Author’s Personal Statement* was nowhere to be found. Figure 3 is Dan Fahey’s personal statement from his original “case narrative.” It is worth reading. It gives some insight into the motivation of the single most important person to keep the issue of DU burning. In his statement, Fahey says, “Reality is what you make it to be.” His reality is a world that equates “radioactive weapons” and “weapons of mass destruction” with depleted uranium projectiles and armor.

For Fahey, science is ignored and raw emotion is enlisted in his cause. In 1999 he testified (http://www.oversight.ncr.gov/xcript_hearing_13jul99.html#fahey) before the PSOB and gave each board member a photo, explaining that,

This is from U.S. News and World Report last week. The caption says, "Kosovar Albanian children play on a Serbian tank destroyed by NATO." There are 11 children on this tank. I don't know if this tank is contaminated by depleted uranium, if it was hit, and I doubt these children know. Are there other tanks in Kosovo that are contaminated where there are children playing? I'd like to know. (He went on to note,) when you watch, the Army training videos from '95 with soldiers wearing MOPP IV climbing on the same type of vehicles, it's an outrage to see this—(children playing on the tank)—happening in 1999 with all that we've known, that this hasn't been prevented. Have we learned any lessons from 1991? It appears not.

Later that afternoon Senator Rudman asked Dr. Naomi Harley, a distinguished scientist from New York University and one of the authors of the RAND report, about Fahey’s statements and concerns:

Figure 3
Author's Personal Statement
By Dan Fahey

Our scientific power has outrun our spiritual power. We have guided missiles and misguided men. — Dr. Martin Luther King, Jr. In the course of writing this Case Narrative, these words of Martin Luther King, Jr. came to mind again and again. Dr. King's words came to mind when I tried to understand the mentality of Pentagon officials who vainly struggle to cover up their monumental failure to inform US troops and local populations in the Persian Gulf region about the use and dangers of uranium ammunition. These words also came to mind as I watched the combined intransigence of the misguided Iraqi and US governments bring us to the brink of war once again. 'Guided missiles and misguided men' accurately describes US foreign policy in the Persian Gulf region for the last 8 years. As Americans are once again asked to support the use of guided missiles and radioactive ammunition in a futile attempt to destroy the chemical and biological weapons that the United States and European nations helped Iraq develop, it is clear that Dr. King's observation is just as relevant today as when he made this statement thirty five years ago.

I first learned about depleted uranium while attending the Navy's Phalanx Close-In Weapons System school. I was told that depleted uranium is 'depleted,' and therefore harmless. At that time, I believed what I was told. My training in ROTC and as a Navy officer had taught me nothing if not to obediently accept the dictates of my commanders. Since I started to research the use of depleted uranium in weapons in 1995, I have become increasingly aware that I was misinformed about the dangers of depleted uranium. It has also become painfully clear to me that the Department of Defense has deliberately misled Gulf War veterans and their families, VA physicians, numerous federal investigations, and Congress about the health and environmental consequences of the use of depleted uranium weapons in Operation Desert Storm.

This Case Narrative incorporates the efforts of dozens of people who over the course of many years have sought to call attention to the dangers of shooting bullets made of uranium waste. In particular, I would like to acknowledge the Depleted Uranium Citizens' Network of the Military Toxics Project, the National Gulf War Resource Center, Damacio Lopez, Leonard Dietz, Chris Kornkven, Bill Mesler, the Veterans Speakers Alliance, Bill Motto Veterans of Foreign Wars Post 5888, and Veterans for Peace. I would like to offer special thanks to Doug Rokke, who had the courage to speak out about the Pentagon's cover-up of Gulf War depleted uranium exposures, and Swords to Plowshares, which has consistently been at the forefront of issues affecting veterans.

The use of chemically toxic and radioactive waste in ammunition is truly a creation of misguided men who have no concern, vision, or accountability for the long-term consequences of their actions. The post-Vietnam pressure to have as few battlefield casualties as possible is partially responsible for the creation of depleted uranium weapons. Also to blame are US Department of Energy policies which seek to avoid the costs of waste disposal by permitting the uncontrolled release of depleted uranium in armed conflicts around the world. Ultimately, however, it is our nation's obsession with violence and war which is responsible for the creation and use of a growing number of weapons which cause mass and indiscriminate destruction.

My research and my interactions with representatives from the Department of Defense have clearly demonstrated to me that the policies governing the use of depleted uranium munitions are dangerously misguided. Just as misguided are the policies of the US government and multinational corporations which require a permanent American military presence throughout the world and hypocritically justify the use of nuclear and radioactive weapons to counter the existence of chemical and biological weapons. Events of the last few decades have demonstrated that United States government threats to use weapons of mass destruction only fuel the desire of other nations and organizations to obtain their own weapons of mass destruction. We are caught in a cycle of action and reaction which is unlikely to bring about any long-term solution to the complex problems facing our world. This cycle is characterized by a violence that could rapidly spin out of control and have unforeseen consequences.

Though I have looked into the dark side of our government and our military during my work on depleted uranium, I have also come to understand that we have control over the reality we live in. In the United States of America, we are fortunate to live in a society where each of us has the ability to non-violently effect change in our military and our government. By utilizing the Freedom of Information Act, the Internet, and our free press, I have been able to obtain and publicize information which contradicts the public statements of Pentagon and VA officials. The most serious threat to my work has not come from foreign forces who seek to take away our freedoms. The greatest impediment to my work and the work of others comes from officials at the Pentagon who try to prevent their cover-up of depleted uranium exposures from unraveling.

The freedoms we possess come with a great responsibility. Each of us is responsible for the actions of our government because we live in a democracy. In contrast, the peoples of Iraq, Kuwait, Saudi Arabia and many other Middle East countries have little or no control over the actions of their governments. We have a responsibility to look beyond the rhetoric we are fed about communists, terrorists, and national security interests, and to question United States policies -- foreign and domestic -- which too often support economic and military interests, and too seldom promote democracy, human rights and justice. Enforcement of laws which would ban the sale of weapons and dual use technology to undemocratic and human rights-abusing governments, such as Iraq, would be a big step forward. Such a common sense policy is unlikely to come about without considerable public pressure, however, because it would deprive the United States defense industry and its stockholders of short-term financial gain.

Reality is what we make it to be. It is possible to create a reality in which our government's policies do not sacrifice people for profits. It is possible to create a reality in which reconciliation, trust, and mutual aid with other nations eliminates the desire for weapons of mass destruction. In order to create this reality, though, we must take action. In a demonstration of true leadership and vision, the people of the United States of America should lead an international effort to ban all weapons of mass and indiscriminate destruction, including depleted uranium weapons. We owe nothing less to our descendants who will live on this planet in the next millennium and beyond.

SENATOR RUDMAN: I have a question for you, Doctor. This morning during testimony one of the veterans who has no scientific background but I'm sure is well intentioned held up a photograph. The photograph that's being presented to you is a photograph taken in Kosovo after the hostilities ended. It obviously showed a Russian-manufactured Serbian armored vehicle, probably pretty well riddled, probably with DU rounds, we'll assume. It was disabled by probably DU rounds fired from an A-10 aircraft in all likelihood. There it sits with those DU rounds having long since penetrated and probably inside there.

He made the point that he thought it was awful that those poor children were sitting on top of that armored vehicle and could possibly get radiation damage from it.

DR. HARLEY: ... Are they going to play in that tank for 20 days? That would be equivalent to their natural exposure from normal background each year.

SENATOR RUDMAN: Twenty days, 24 hours a day.

DR. HARLEY: Twenty days, 24 hours a day. That equals your natural background.

SENATOR RUDMAN: So your answer is, it seems to me, that what we're looking at does not present a health hazard to those children under normal circumstances.

DR. HARLEY: That's right. And they may be in a group that have a few percent more radiation from the tank than another group of children. But see, this all goes into the normal variability of background.

This area of Kosovo probably has 20 percent less than another area of Kosovo, just all naturally, due to what's in the soil in the first place.

SENATOR RUDMAN: But in any event that is not a health hazard.

DR. HARLEY: Right.
(http://www.oversight.ncr.gov/xcript_hearing_13jul99.html)

With exchanges like that and with subsequent reports from organizations like the WHO and the Institute of Medicine of the National Academy of Sciences concerning DU, one might think that

Fahey and the *National Gulf War Resource Center* would moderate their claims. In fact, they just get bolder and more brazen. The *NGWRC* Internet web site contains a page called *DuLink* (http://www.NGWRC.org/Dulink/du_link.htm) which highlights “Pictures and news articles of deformities in children in Iraq related to DU exposure.” They warn, “these are VERY graphic photos. Please use discretion!”

The American Legion Speeches

My forum for putting our case forward was the winter meeting of the *American Legion*, the largest veterans group in the country. On March 23, 1998 I joined the battle with a forceful speech (http://www.gulflink.osd.mil/DU_speech.html). I told the Legionnaires:

There are several pieces of information concerning DU you need to know to make an informed judgment about DU.

- * First, you need to know what DU is and what it is not. We all grew up in the nuclear age and we all have a deep-seated fear of anything associated with the word uranium, or the atomic warning symbol. That is why you need to know specifically about DU.
- Second, you need to know about the extensive testing done on both the effectiveness of DU shielding and rounds, and its safety.
- Third, you need to know about our efforts to fully report to you on the use of DU during the Gulf War. This includes developing exposure scenarios, identifying those exposed during friendly fire and other incidents, or those who handled equipment struck by DU rounds, and estimates of likely exposures for each scenario.
- Fourth and finally, you need to know about our existing and new programs to monitor those who might have been exposed to DU, to monitor the battlefield in Kuwait where DU rounds were used and where enemy vehicles were struck by DU rounds are stored, and to ensure that all American troops who might, in the future, come into contact with DU or vehicles struck by DU rounds are properly trained.

I was immediately attacked by Fahey and the *NGWRC*, claiming I had grossly misrepresented the research of Dr. Melissa McDiarmid—the researcher/physician who was monitoring the health status of veterans who had retained fragments of DU in their bodies that could not be surgically removed. In fact, I did not misrepresent her work, but from then on she cleared every reference to her works before it was included in any speech or report. McDiarmid would play a

critical role in the saga of DU. Her research was pivotal to establishing the ultimate truth about the health effects resulting from actual exposure to DU during the Gulf War.

In September, I gave a second speech at the American Legion meeting in New Orleans (http://www.gulflink.osd.mil/spch_amlegion_8sep98.html) to try to clear up confusion fostered by Fahey concerning McDiarmid's work, and his claim that any exposure to DU could cause cancer and birth defects, to say nothing of the host of symptoms reported by veterans. It served his purposes not to distinguish between exposure and dose. I told the American Legion,

Over the past several months it has become clear that there remains confusion about several issues concerning DU exposure and dose. There are two points that I want to make clear that may help to address this confusion:

- First, in assessing DU it is important to understand the distinction that medical toxicologists and environmental health experts make concerning the concepts of "exposure" and "dose." Or as medical science has long known, "the dose makes the poison."
- Second, I would like to share with you the overwhelming consensus concerning DU by the medical review groups that have looked into the issue. This includes the medical surveillance of those soldiers taking part in the Department of Veterans Affairs (DVA) medical screening program since 1993. ...

(In a statement coordinated with the Department of Veterans Affairs and Dr. McDiarmid I said,) Since 1993, the Department of Veterans Affairs has been monitoring 33 vets who were seriously injured in friendly fire incidents involving depleted uranium. These veterans are being monitored at the Baltimore VA Medical Center. Many of these veterans continue to have medical problems, especially problems relating to the physical injuries they received during friendly fire incidents. About half of this group still have depleted uranium metal fragments in their bodies. Those with higher than normal levels of uranium in their urine since monitoring began in 1993 have embedded DU fragments. These veterans are being followed very carefully and a number of different medical tests are being done to determine if the depleted uranium fragments are causing any health problems. The veterans being followed who were in friendly fire incidents but who do not have retained depleted uranium fragments, generally speaking,

have not shown higher than normal levels of uranium in their urine. For the 33 veterans in the program, tests for kidney function have all been normal. In addition, the reproductive health of this group appears to be normal in that all babies fathered by these veterans between 1991 and 1997 had no observable birth defects.

Dr. Melissa McDiarmid and the VA Health Monitoring Program

Following the Gulf War, the Office of the Army Surgeon General requested the Armed Forces Radiobiology Research Institute (AFRRI) to “assess the health risks associated with implanted DU fragments.” The AFRRI recommended long-term follow-up for the affected soldiers. DoD and the VA drafted the protocol to be used in the follow-up effort. The protocol was implemented in late 1993 as the Depleted Uranium Follow-Up Program at the Baltimore VA Medical Center. Since late 1996, the program has been under the clinical leadership of Dr. Melissa McDiarmid.

Early phases of the program focused on soldiers involved in a group of “friendly fire” incidents. Thirty-three soldiers were known to have been seriously wounded, with half still retaining imbedded DU fragments resulting from such incidents. The original research protocols included very thorough questionnaires and a series of medical and laboratory tests. Among other issues, questionnaires were designed to gather medical, social, family, reproductive, and occupational exposure histories. Tests were conducted to study renal function. Other laboratory studies included blood chemistries, urinary uranium, and neuroendocrine measures. Among other tests and studies, patients also received detailed physical examinations, neuropsychological tests, and radiology tests.

While it was important to provide all needed health services to the 33 veterans, the claims from Fahey and the *NGWRC* made it critical to resolve the health status of the other soldiers who were also heavily exposed to DU during and after the Gulf War. Accordingly, between August 1998 and December 1999, the DOD and VA undertook an outreach program to notify those who, based on incident reporting, might have come in contact with DU on the battlefield or during clean up operations. Analysts and veteran contact managers telephoned 192 veterans to invite them to participate in the depleted uranium medical monitoring program. We mailed letters to those we could not reach by phone. Announcements were also placed in the publications of

major veteran's organizations, like the *American Legion*, to inform veterans that testing was available to everyone, regardless of whether or not we believe they were exposed, and to provide instructions for signing up. During the 17 months the program was in operation 169 veterans completed follow-up screening for DU exposure. After the screening was completed, McDiarmid and her colleagues concluded:

Nine years after potential DU exposure in the Gulf War, elevated urinary uranium results are unlikely to be observed, except for those veterans with retained DU metal fragments. There is little likelihood that the possible but transient exposure to DU during the Gulf War will result in significant health issues now or in the future. These assessments can, however, offer some peace of mind to concerned veterans, in that long term health consequences—primarily from heavy metal toxicity—are a function of body burden and duration of exposure. Those with normal urine uranium values now are unlikely to develop any uranium-related toxicity in the future regardless of what their DU exposure may have been during the Gulf War. We can offer this assurance based on the health outcomes of the uranium exposed ... miners and millers as well as the present health status of the DU-exposed friendly fire cohort who have elevated concentrations of urinary uranium, now nine years since first exposed and have not, as a group, developed kidney abnormalities, lung cancer, or any classical uranium-related adverse outcomes. ... These results indicating the lack of urine uranium elevations and thus any likely adverse health outcomes in Gulf War veterans without retained DU metal fragments also should help allay unnecessary fears of veterans uncertain about their environmental health risk associated with Gulf War Service. (McDiarmid, et al, Urinary Uranium Concentrations in an Enlarged Gulf War Veterans Cohort, *Health Physics*, 80/3/270-3, March 2001)

Semantics

The conclusion of the World Health Organization in 2001 that “unnecessary speculation and anxiety about the potential for risks from depleted uranium, ...are being fuelled by the different opinions expressed as a consequence of the normal process of scientific debate,” was certainly borne out by the fire storm of reaction caused by my American Legion speeches. Every word, written or spoken, was scrutinized. My first American Legion speech contained the following passages; “actual exposure to depleted uranium is not medically significant. Let me be precise, to date DU exposure has not produced any medically detectable effects.” Fahey and the *NGWRC*

created such a fuss among veterans organizations that the American Legion wrote me and asked that I clarify my position. Accordingly, I included the following in my September speech,

Another more temperate version interpretation of that statement was suggested in a recent letter from the American Legion's Persian Gulf Task Force which says, "The American Legion is awaiting the completion of the ongoing research agenda before it will concur with definitive statements regarding the causes of Gulf War Illnesses. We (the American Legion) acknowledge, however, that the available scientific evidence weighs against DU as a likely risk factor for GWI. I certainly, concur in the position of the American Legion, both that research should go on, and what the available scientific evidence is telling us.

In August (1998) we published our long awaited Environmental Exposure Report of DU, in which we said, "Exposures to DU's heavy metal (chemical) toxicity or low-level radiation are not a cause of the undiagnosed illness afflicting some Gulf War veterans." This time Fahey and the *NGWRC* complained to the Presidential Special Oversight Board. The PSOB directed us to "delete (the) 'bottom-line' conclusion, (and replace it with a) more accurate statement"

Based on data developed to date, the Office of the Special Assistant believes that while DU can pose a chemical toxicity and radiological hazard under specific conditions, the available evidence does not support that DU caused or is causing the undiagnosed illnesses some Gulf War veterans are experiencing.
http://www.oversight.ncr.gov/psob_intrep_27aug99.pdf

However, the PSOB, itself concluded, "available evidence does not support claims that DU caused or is causing the undiagnosed illnesses some Gulf War veterans are experiencing."

Assessing the Scientific Literature

As 1998 rolled on into 1999 and then 2000, the objective facts concerning DU mounted. In April 1998 RAND (<http://www.gulflink.osd.mil/library/randrep/du/cover.html>) produced a well-regarded report on DU. The same year, Congress charged the Institute of Medicine of the National Academy of Science (<http://www.nap.edu/books/030907178X/html/>), "To assess the scientific literature regarding potential health effects of chemical and biological agents present in

the Gulf War.” This was the same charge that I gave RAND two years earlier, and in all cases they came to the same findings as RAND. Their findings and conclusions concerning DU were noteworthy because DU was the only agent that even met the standard of “limited/suggestive evidence of no association.” In this case, the conservative IOM found “limited/suggestive evidence of no association between exposure to uranium and clinically significant renal dysfunction, and lung cancer at (low) cumulative internal dose levels.” They concluded “there is inadequate/insufficient evidence to determine whether an association does or does not exist between exposure to uranium and ...(a number of other) health outcomes.” This was the same conclusion they found for all the other agents they reviewed.

Sixty Minutes, The CBS News Hour

Late in 2000, we got the disturbing news that DU was to be the subject of a report by *60 Minutes*, the CBS News program. The Public Affairs office in the Department of Defense asked if I wanted to be interviewed for the show. "Of course," I told them. The worst thing we could do was to let them tell the American people that Department of Defense officials refused to be interviewed. We would work hard to give *60 Minutes* the facts. I spoke with their producer, Peter Klein, at length asking that he meet with Dr. McDiarmid. I told him, "We'll do whatever is necessary to bring the science forward. ... Bring me the science, we'll react to the science. I make that an open challenge to everybody, to *60 Minutes*."

Morley Safer interviewed me in the same hotel that Monica Lewinsky was detained by investigators for Kenneth Starr. The interview lasted over an hour, although my airtime was a little over two minutes. In fact, given the most outlandish claims by Fahey and the *NGWRC*, we came off fairly well. *60 Minutes*' biggest complaint was that soldiers were not properly trained. To this we readily agreed, and said we were addressing the problem. Nevertheless, I believed that they disserved our veterans by not putting the facts before them and the American people. After the show aired on December 26, 1999, I wrote the producer on January 3, 2000 to complain that the show had "failed our Gulf War Veterans by not providing them a balanced story based on expert information from the most reputable health professionals and scientists in the field."

The exchange of letters—Appendix A—speaks volumes about the mindset of the show and our differences. Just one example illustrates my concern. On January 11, 2000, Klein wrote back acknowledging that he "anticipated" my concern that "we did not get into the extensive research the government has done on depleted uranium." I was particularly put off by his admission that "countless soldiers who have little understanding of the science of DU exposure, and therefore conclude that completely unrelated symptoms stem from their exposure to depleted uranium. Their imaginations run wild (he explained), precisely because the army has been so circumspect about the level of exposure and the harm of this exposure, particularly inhaled particle exposure."

On February 14, 2002 I responded, pointing out that I agreed that imaginations were running wild, and asked, "What did you (*60 Minutes*) do to give them a better understanding of the science of DU? You had an opportunity to help educate our veterans. ... Instead, you reinforce this lack of understanding by using veterans to speculate about what may be making them ill. Our veterans deserve better than being put on display before the TV cameras to speculate that their completely unrelated symptoms stem from exposure to DU." These are your words (I reminded him), not mine. (I went on), if you believe that "countless veterans have little understanding of the science of DU, why did you put them before your audience? Why didn't you help them and other concerned veterans get a better understanding of what science tells us about DU?" I never received a replay from Producer Klein. I can only imagine that the truthful answer to my question is that, talking about science rather than government misdeeds is not how *60 Minutes* gets its ratings.

For me, the ultimate disservice to our veterans came when I read Klein's letter to Dan Fahey, posted on the Internet by the *NGWRC* (http://www.NGWRC.org/Dulink/60_minutes.htm). Klein praised Dan Fahey as "the single most knowledgeable person on this topic," although they did not put him before the camera. He characterized the author of the "Personal Statement" that appears as Figure 3 for his "sober approach." He told Fahey that "the matter of harm from depleted uranium exposure can lead to polarized viewpoints, but you (Fahey) seem to have risen above the rhetoric. The response to our story has been excellent, with people from both sides of

the issue acknowledged we did a balanced story. This is undoubtedly due, at least in part, to you." Well, all I can say is Klein must have forgotten our exchange of letters.

The Final Irony

During the *60 Minutes* broadcast Morley Safer raised the issue of trust by highlighting a memorandum (Figure 4) that carried the letterhead of Los Alamos National Laboratory. Repeating the often used line put forward by Fahey and the NGWRC, Safer said, "the military ...advised officers to word their reports in such a way as not to jeopardize its (DU's) future use." A memorandum was flashed on the screen and Safer's comments made it sound like he had the smoking gun. This view was reinforced by Major Doug Rokke, who said he got a copy of the memorandum, and it had a chilling effect. On their web site, the NGWRC charged that, "This memo ... appears to have set the tone for DOD's actions concerning depleted uranium since we came home from the Gulf War." In fact, this memo was written by Lieutenant Colonel Michael Zeihmn, the Marine Corps Liaison Officer at Los Alamos. When interviewed by OSAGWI he explained that one day he got a call from a Major Larson—he thinks Larson was stationed at Picatinny Arsenal—who wanted to know if they knew anything about DU. Zeihmn talked with "a few guys" at Los Alamos and then put his ideas and opinions in an informal memo and faxed it to Major Larson. Years later, he says he met Doug Rokke and told him that he did not intend to indicate he didn't care about potential health effects. He only wanted to point out that "the stuff really worked."

It should be clear to anyone who takes the time to read the memorandum that the statement about keeping sensitive issues in mind when writing after action reports is Zeihmn's personal view as set off with the words, "I believe we should." It is not and never has been an official

pronouncement by the Department of Defense. To suggest so, one would have to believe that correspondence between a Lieutenant Colonel and a Major is the way policy is set in the Department of Defense and sending copies of correspondence between two officers to other officers in the field is the way the Department of Defense is managed. Clearly Admiral Elmo (Bud) R. Zumwalt, Jr., a member of the PSOB did not believe so, and in an endorsement of OSAGWI he said, "I have not been able to find a single instance that I believe in any sense represents the kind of cover-up effort that was a deliberate policy in the early '80s with regard to Agent Orange." Fahey, citing the Los Alamos memorandum, immediately challenged him.

Possibly the ultimate irony is that, while the Los Alamos memorandum was simply an observation by a lone officer, it was prophetic concerning the actions of Fahey and the NGWRC. Ziehm correctly notes that, "There has been and continues to be a concern regarding the impact of DU on the environment. (He also correctly concluded that,) ... if no one makes the case for the effectiveness of DU on the battlefield, DU rounds may become politically unacceptable and thus, be deleted from the arsenal." In fact, the case has been made by doing the science and bringing the facts forward, and DU remains in our arsenal.

The Balkans, A New Round of Concern

Morley Safer also brought up the issue of DU in the Balkans and Kosovo during the *60 Minutes* broadcast. (For background see the *Information Paper*, prepared by the follow-on office to OSAGWI, the Office of Medical Readiness and Military Deployments. The paper can be obtained from the new *Deploymentlink* web site, <http://www.deploymentlink.osd.mil/>.) Given what happened next, I believe *60 Minutes* has a moral obligation to follow-up as new

03/01/91 13:59

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Los AlamosLos Alamos National Laboratory
Los Alamos, New Mexico 87546**memorandum**TO: Studies & Analysis Branch (WF 13)
Attn: Maj Larson
FROM: LtCol M.V. Ziehm

DATE: 1 Mar 1991

MAIL STOP/TELEPHONE: F668/(505)665-1913

SYMBOL: MCLnO

SUBJECT: THE EFFECTIVENESS OF DEPLETED URANIUM PENETRATORS

There is a relatively small amount of lethality data for uranium penetrators, either the tank fired long version or the GAU-8 round fired from the A-10 close air support aircraft. The recent war has likely multiplied the number of dU rounds fired at targets by orders of magnitude. It is believed that dU penetrators were very effective against Iraqi armor; however, assessments of such will have to be made.

There has been and continues to be a concern regarding the impact of dU on the environment. Therefore, if no one makes a case for the effectiveness of dU on the battlefield, dU rounds may become politically unacceptable and thus, be deleted from the arsenal.

If dU penetrators proved their worth during our recent combat activities, then we should assure their future existence (until something better is developed) through Service/DoD proponentcy. If proponentcy is not garnered, it is possible that we stand to lose a valuable combat capability.

I believe we should keep this sensitive issue at mind when after action reports are written.

Respectfully,

LtCol Z

Figure 4: Los Alamos Memorandum

information became available. Checking the CBS web site, it does not appear that *60 Minutes* has reported on any of the studies that have been completed since they aired their program at the end of 1999. In my judgment, this is what they should report:

Shortly after the beginning of 2001 six Italian peacekeepers died from leukemia after serving in Bosnia. Some in the European press charged that their deaths were caused by exposure to DU. Concerns of those in Europe were fed by activists in this country. Dr. Doug Rokke, the expert presented by *60 Minutes* added to the concerns when he told *The Times of London* that 20 members of his team had died from lung diseases and many more are seriously ill. "There is only one individual out of the whole team who I know of that is not ill. The rest have respiratory problems, rashes, kidney disease and cancer, (he told the *Times*). (He went on to claim to have) 5,000 times the permissible level of uranium in my body and have reactive airway disease due to uranium poisoning. Members of the team have had children with birth defects." To the best of my knowledge, and OSAGWI had a lot of dealings with Dr. Rokke, none of these claims are true. Finally, according to the *Times*, he charged that the use of DU was "a crime against God, a crime against humanity, a war crime." As a result of charges like these the President of the European Union called for a moratorium on the use of depleted uranium.

As it turned out, my Gulf War office was in the best position to respond to these claims. I offered the services of my office to the Under Secretary of Defense for Policy, Walt Slocumb. He requested that we send a team to Brussels to meet with NATO officials. Dr. Michael Kilpatrick, my senior physician and new Chief of Staff, and Colonel (Dr.) Eric G. Daxon, the Army's expert on DU, packed their overnight bags and headed for Europe. Their meeting with the North American Counsel went well, and they were asked to stay to meet with others. They did not come home for two weeks. They met with groups from the European Union (EU), from NATO, from the Italian parliament, and the Belgian Ministry of Defense. They met with members of the majority, Social Democratic Party in Germany and their counterparts from the Christian Democratic Party. They gave interviews to the press at NATO headquarters and in Germany. When they returned, Under Secretary Slocumb had only praise for their work, and the

work of my office. If we had not been on top of the issue we could not have responded as we did—we were able to be *proactive and challenged our critics with the facts*.

In the United States and in Europe our position was sustained because we had the facts on our side, Doug Rokke, Dan Fahey, the NGWRC and *60 Minutes* notwithstanding. Not only had we done our homework in the face of constant attacks, the Europeans did their homework. In March 2001 (<http://europa.eu.int/comm/environment/radprot/opinion.pdf>) the European Commission issued a report on DU. Citing concerns about the "cancer in soldiers who had served in the Balkans ..." and the "link with DU, which has ... been claimed," and its "responsibilities under the Euratom Treaty, ... the Commission ... convened a Working Party of the group of independent scientific experts." They reported:

On the basis of available information, it is concluded that exposure to DU could not produce any detectable health effects under realistic assumptions of the doses that would be received. Moreover, ... in view of the minimum latency period of cancer induction, such effects could not occur during the first few years after incorporation as a result of radiological exposure. This conclusion applies particularly to leukemia.

In April 2001, the World Health Organization issued a comprehensive report on DU (http://www.who.int/environmental_information/radiation/depleted_uranium.htm) providing a great deal of background information. The United Nations issued its own report, (<http://balkans.unep.ch/du/reports/uranium.pdf>), **Depleted Uranium in Kosovo: Post-Conflict Environmental Assessment in 2001**. In their report they argued that:

There is no detectable, widespread contamination of the ground surface by depleted uranium. This means that any widespread contamination is present in such low levels that it cannot be detected or differentiated from the natural uranium concentration found in rocks and soil. The corresponding radiological and toxicological risks are insignificant and even non-existent.

Unknowingly, they addressed the issues Fahey raised with the PSOB when he handed them those pictures of children playing on destroyed tanks in Kosovo during the hearings in July 1999. The UN's investigators found:

There are probably still penetrators (DU bullets) lying on the ground surface. If picked up they could contaminate hands. However, the probable intake into the body is small and both the radiological and toxicological risks are likely to be insignificant.

If a penetrator is put into the pocket or elsewhere close to the human body, there will be internal beta radiation of the skin. This can lead to local radiation doses above safety standards after some weeks of continuous exposure. Even so, it is unlikely that there will be any adverse health effects from such an exposure.

Finally, the World Health Organization reported during March 2001, as noted at the beginning of this paper, (<http://www.who.it/docs/hia/DurptMar01.pdf>) "no convincing evidence is available to indicate any health impacts on the Kosovo population associated with the use of depleted uranium." Importantly, the WHO noted "the presence of high levels of lead in (the) people in the ... region ... requires urgent attention. ... The unlikely health effects of depleted uranium exposure, if any, are much smaller in comparison to ... (other), causes— including lead— of death or incapacity."


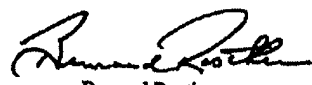

Implications for this Conference

The WHO also got it right when they said, "Unnecessary speculation and anxiety about the potential for risks from depleted uranium ... are being fuelled by the different opinions expressed as a consequence of the normal process of scientific debate." Let me wonder out loud if including depleted uranium in this conference on *Unacceptable Weapons* is not adding to the "unnecessary speculation and anxiety about the potential for risks from depleted uranium?" Is it possible that we are fuelling anxieties through the "normal process of scientific debate?" If we want to minimize the lingering health consequences of a military conflict based on the best scientific information available we should focus on lead bullets, rather than DU as an *Unacceptable Weapons*. In fact, the United States Army is experimenting with "green" bullets to try to get lead out of our arsenal. Moreover, if those opposing DU were really concerned about

the health of our veterans or the contamination of the environment, they would want us to focus on lead. But then again, if we focused on lead, they would lose the word *uranium*, and it would be harder for them to be taken seriously when they claim America is using "weapons of mass destruction."

Science notwithstanding, including DU in this conference is obviously legitimate. Recently, the Chief Research and Development Officer of the VA's Gulf War Illnesses Program observed that (<http://www.va.gov/pubaff/speeches/apr01ss.pdf>) "DU has been an inflammatory topic in the media." He noted the "great disparity in the risk assessments made by some scientists and some politicians." During my tenure in the Department of Defense we followed a policy of "*be proactive and challenge your critics with the facts.*" Based on the science we were able to bring forward, DOD is still using DU. Based on the science our European allies were able to bring forward, they are still using DU. But, some would still say, "DU is an *Unacceptable Weapon.*"

APPENDIX A:
Correspondence with *60 Minutes*

 SPECIAL ASSISTANT FOR GULF WAR VETERANS	OFFICE OF THE SECRETARY OF DEFENSE 1000 DEFENSE PENTAGON WASHINGTON, DC 20301-1000
JAN 03 2000	
Mr. Peter Klein 60 Minutes 555 West 57 th Street New York, New York 10019	
Dear Mr. Klein:	
I was very disappointed with your depleted uranium story. It was a disservice to the veterans who deserved the most accurate and scientific information available. It was especially disheartening that you downplayed the extensive efforts by the Department of Veterans Affairs and Department of Defense to monitor the health and medical effects of DU on Gulf War Veterans. You have failed our Gulf War Veterans by not providing them a balanced story based on expert information from the most reputable health professionals and scientist in the field.	
Sincerely,	
 Bernard Rostker	
cc: Mr. Don Hewitt, Executive Producer	
FEDERAL RECYCLING PROGRAM  PRINTED ON RECYCLED PAPER	

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MINUTES

574 West 57th Street New York, N.Y. 10019

Office of the Secretary of Defense
Hon. Bernard Rostker
1000 Defense Pentagon
Washington, DC 20301-1000

January 11, 2000

Dear Dr. Rostker:

I received your letter dated January 3, 2000, expressing your dismay about our story on depleted uranium. I anticipated that you and Col. Daxon would be concerned that we did not get into the extensive research the government has done on depleted uranium. Between my associate producer and myself, we read every single study about depleted uranium dating back to 1966. We spoke with more than 50 scientists in the course of our research. Steve Fetter and Frank von Hippel – two scientists whose research the army has used to bolster the government claim that D.U. is a safe weapon – admitted that clean-up crews could have had a high enough dose to be sick.

So little appears to be known about the level of exposure to D.U. in the Gulf that it seems disingenuous to write reports and commissions studies based on theoretical -- and according to many Gulf veterans, inaccurate -- exposure levels.

Furthermore, I take issue with your suggestion that we did a disservice to Gulf War veterans. These vets are the ones who deserved to have the benefit of the doubt when it came to exposure and illness. I've spoken with countless soldiers who have little understanding of the science of D.U. exposure, and therefore conclude that completely unrelated symptoms stem from their exposure to depleted uranium. Their imaginations run wild, precisely because the army has been so circumspect about the level of exposure and the harms of this exposure, particularly inhaled particle exposure.

I watched a number of television reports on D.U. and read hundreds of articles in the European press. Many of these reports, admittedly, do not provide a balanced story. We spent six months doing nothing but researching this story, specifically so we could stand out of the crowd with a level-headed report on depleted uranium. I am disappointed that you failed to find our report balanced.

Sincerely,



Peter Klein



SPECIAL ASSISTANT
FOR
GULF WAR ILLNESSES

OFFICE OF THE SECRETARY OF DEFENSE
1000 DEFENSE PENTAGON
WASHINGTON, DC 20301-1000

Mr. Peter Klein
60 Minutes
555 West 57th Street, 9th Floor
New York, New York 10019-2985

FEB 14 2000

Dear Mr. Klein:

Thank you very much for your letter of January 11, 2000. I appreciate that you took the time respond to my comments. I found your letter very helpful for me to understand your viewpoint concerning depleted uranium (DU). Your arguments seems to be that:

- The veterans are the ones who deserve to have the benefit of the doubt when it comes to exposure and illness;
- Clean-up crews could have had a high enough dose to be sick;
- Little appears to be known about the level of exposure to DU in the Gulf;
- We should not rely on theoretical and possibly inaccurate exposure levels.
- Countless veterans have little understanding of the science of DU and some have concluded that their "completely unrelated symptoms stem from their exposure to DU;" and
- Imaginations run wild, precisely because the Army is so circumspect about the level of exposure and the harm of this exposure, particularly inhaled particle exposure.

It might surprise you that I generally agree with these points. I believe, however, that they make my point that your story was a disservice to veterans. Here is why:

- Our veterans deserve to have more than the benefit of the doubt when it comes to exposure and illness. That is why we have undertaken an extensive examination of hundreds of veterans who we believe were exposed to DU during friendly fire incidents and during the clean-up. We have been very proactive by tracking down and offering medical examinations to these veterans. We are not relying on theoretical calculations, but we are looking to the health outcomes from veterans we believe were exposed. You should have reported on our offer to provide medical examinations and testing for DU to any veteran of the Gulf War regardless of theoretical exposure. Reporting on that would have been a real service to veterans who might be wondering if they have DU in their bodies.
- Certainly, we did not record dose data during or immediately after the Gulf War, and we cannot be certain what dose the clean-up crews received. However, there were no reports of radiation sickness or kidney failure at the time. But, since we don't have good control of medical records from the Gulf, we should not stop there. As noted above, we are being proactive and asking all clean-up crew members to come to a military treatment facility or a VA hospital to be examined. In my judgement, that is what you should have reported.

FEDERAL RECYCLING PROGRAM

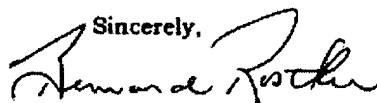


PRINTED ON RECYCLED PAPER

- You claim that "little appears to be known about the level of exposure to DU in the Gulf." If, however, the battlefields were contaminated with DU as some have charged, then the DU should still be there and we should be able to find it. In fact, we *have* been looking. Almost three hundred soil samples have been taken in Kuwait and Saudi Arabia including samples from the yard containing Iraqi vehicles destroyed by DU rounds. All samples were at "background" with one exception at the "bone yard," and that was one third the level at which EPA would require a clean-up. Why didn't you send your crews to Kuwait to check this out?
- We certainly agree that we should not rely on "theoretical", (and possible) "inaccurate" exposure levels. That is why we have placed so much emphasis on monitoring the health status of the friendly fire and clean-up crew veterans. You hardly mentioned this program in your coverage. You dismissed the VA findings in less than a sentence. Veterans need to know that we have an active monitoring program and they should be aware of the results of the VA's monitoring. That would have been a real service.
- I certainly agree that "countless veterans have little understanding of the science of DU," and that imaginations are running wild. But what did you do to give them a better understanding of the science of DU? You had an opportunity to help educate our veterans and to address what you seem to agree are the "completely unrelated symptoms," associated by some with DU. Instead, you reinforced this lack of understanding by using veterans to speculate about what may be making them ill. Our veterans deserve better than being put on display before the TV cameras to speculate that their "completely unrelated symptoms stem from their exposure to DU." These are your words, not mine. If you believe that "countless veterans have little understanding of the science of DU," why did you put them before your audience? Why didn't you help them and other concerned veterans get a better understanding of what science tells us about DU?
- The DoD has not been "circumspect" concerning the level of exposure to DU. My office has published two papers concerning the level of exposure to DU and the health consequences of these exposures. We support the VA's program to monitor veterans exposed to DU because we are concerned about their health and the health of all that served in the Gulf. Imaginations will run wild when programs like yours do not tell the whole story. We need to give those who served in the Gulf the full picture including the monitoring program that the VA is running and the results of that program. Why didn't you tell our veterans that the most recent published peer reviewed study of those friendly-fire veterans exposed to DU concluded that "no evidence of adverse clinical outcomes associated with uranium exposures at this time in these individuals?"

Again, I appreciate that you took the time to answer my letter. I hope to hear from you again.

Sincerely,



Bernard Rostker

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324 West 57th Street New York, N.Y. 10019

Mr. Dan Fahey
National Organizer
Military Toxics Project
P.O. Box 21309
Washington, DC 20009

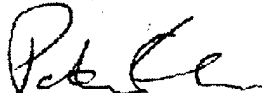
February 15, 2000

Dear Mr. Fahey:

On behalf of Morley Safer and the entire senior staff of *60 Minutes*, I would like to thank you for your hard work on depleted uranium and for the invaluable help you provided us in putting our program together. As you know, we spoke with hundreds of soldiers, officers and scientists in the course of researching this topic. You are the single most knowledgeable person on this topic that I have encountered, and I was very impressed with the sober approach you've taken. The matter of harm from depleted uranium exposure can lead to polarized viewpoints, but you seem to have risen above the rhetoric.

The response to our story has been excellent, with people from both sides of the issue acknowledging we did a balanced story. This is undoubtedly due, at least in part, to you. I sincerely hope we can work together in the future.

Sincerely,



Peter Klein
Producer