



Innocent Until Proven Guilty:

Military Use of Depleted Uranium

Rachel Saltzman

Since the 1991 Persian Gulf War, debate about the effects of depleted uranium (DU) on the environment and on the human body has gained momentum. The U.S. Department of Defense has always claimed that DU is an indispensable component of munitions, and that any negative toxicological and radiological effects are negligible. Scientists in the private sector, however, have contended not only that an absence of sufficient evidence undermines the Defense Department's claims of no risk, but that DU in all likelihood causes a variety of adverse health effects. Until conclusive research has been gathered and evaluated by multiple interest groups, the United States should establish a moratorium on military use of DU.

DU is a byproduct of the uranium enrichment process, when fissionable U-235 and U-234 are separated from natural uranium.¹ A heavy metal made from uranium hexafluoride, DU has about 60 percent of the radioactivity of natural uranium and a half-life of 4.468 billion years.² Although DU has been used for decades in medical and industrial contexts (e.g. radiation shielding and counterbalance weights in aircrafts), it has more recently been used as a component of munitions by the U.S. military.³ DU's high density makes it ideal for use both in "penetrators" against armored targets and as armor plate for military vehicles.⁴ According to the United States Army, it offers a significant performance advantage over other materials, such as tungsten, used for these purposes.⁵ DU

may also be attractive for the financial advantage it offers to munitions companies. A waste product of U.S. nuclear weapons and energy facilities,⁶ DU is stored by the U.S. Department of Energy, which allegedly gives it free-of-charge to U.S. armaments companies and sells it to more than twenty other countries.⁷ In addition to the estimated 320 tons that were deployed by the Army during the Persian Gulf War, DU has been used in operations in Bosnia, Kosovo, Serbia, Montenegro, and recently in Iraq.⁸

The most likely victims of DU exposure are the crews of vehicles carrying DU ammunition or fitted with DU armor. Civilians returning to live in conflict areas are also at risk for exposure from contaminated food and water supplies.⁹ The extent of environmental contamination from DU particles and penetrator fragments left in the soil depends on corrosion rates, the amount of soil resuspension, the depth of DU penetrators buried in the soil, and the water sources that feed into local water supplies—which may also influence the extent of DU uptake by plants and animals.¹⁰ However, uncertainties in estimates about inhalation intakes, as well as exposure from food and water after a conflict, result from a lack of knowledge about local soil conditions and human behavior,¹¹ and a lack of empirical information on human DU exposure.

Humans can be exposed to DU through inhalation, ingestion, and dermal contact.¹² The heavy metal has both chemical and radiological toxicity, and is thought to be especially dangerous to the kidneys and lungs. DU, which is weakly radioactive, emits alpha particles, beta particles, and photons (x-rays and gamma rays).¹³ If it enters the body, the worst cell damage occurs from alpha particles.¹⁴ The greatest risk of inhalation is thought to be increased risk of lung cancer, while there is less estimated risk of contracting leukemia or other cancers.¹⁵ DU may also cause hepatic, hematological, respiratory, and cardiac toxic effects, and may even directly damage DNA because of the enhancement of chemical effects by alpha-particle radiation.¹⁶ Laboratory research performed over the last few years has shown that cells exposed to DU experience chromosome breaks, DNA cleavage, and cell death—effects that are all commonly accepted precursors to cancer, leukemia, lymphoma, and genetic disturbances, including sterility and birth defects.¹⁷

Inhalation is the most likely route of exposure to DU during a military conflict, when the impact of a DU penetrator against its target produces a cloud of fine dust that can be inhaled immediately by anyone within about 25 meters of the destroyed equipment.¹⁸ After a conflict, DU dust continues to present a hazard as it travels by wind throughout the surrounding environment.¹⁹ This dust is made up of particles

of ceramic uranium oxide, over 60 percent of which are smaller than five microns in diameter.²⁰ The small particles are easily inhaled and are likely to be retained in the lungs. After inhalation, some of the particles are cleared in mucus and swallowed, while some are absorbed into the blood.²¹ Other particles remain in the lungs, possibly for years, and are slowly absorbed into the bloodstream, cleared by the bronchial tree, or passed to nearby lymph nodes.²² When uranium is absorbed by the blood, most is passed out of the body through urine, while about ten percent goes to the kidneys and is lost within weeks, and another ten percent deposits in bone, where it remains for many years.²³ The British Royal Society, an independent scientific academy, suggests that after large inhalation intakes, health effects might include short-term respiratory effects or, in case of heavy exposure, fibrosis of the lung or increased risk of lung cancer.²⁴

In 2002, The Royal Society released a report on the health effects of DU munitions. Using information from animal studies considered alongside limited evidence from human exposure, the Royal Society reported that the kidney is the most susceptible organ to the toxic effects of uranium. There have been substantial difficulties, however, in assessing the nephrological health of exposed veterans. Adverse effects of uranium concentrations in human kidneys are not well documented, and the few existing epidemiological studies have been less than conclusive. The only measurements of uranium isotopes in veterans' urine referenced by the Royal Society report came from a Canadian study which cited uncertainty about the reliability of its measurements.²⁵

The Royal Society maintains that except in extreme circumstances, an increased risk of developing fatal cancers from exposure to DU on the battlefield, or from returning to live the area after a conflict, is undetectable.²⁶ Yet uncertainties in research on battlefield intake have made estimation of general radiological effects difficult.²⁷ Similarly, while exposure to DU may result in short-term kidney dysfunction, speculation about long-term effects has been impossible because of a lack of studies devoted to long-term monitoring of exposed individuals.²⁸ Despite a failure to present conclusive findings, the Royal Society report did show that claims about lack of health risk from DU should be regarded as suspect. Assessments of risk resulting from DU exposure are largely based on poor data for concentrations and properties of DU oxides released during test firings.²⁹ Furthermore, predictions of resulting concentrations in tissues and organs, as well as radiological and toxicological risks, have been based on modeling procedures rather than on actual data.³⁰

In a presentation to the Royal Society on July 19th, 2000—two years before the Society’s report was published—radiation expert Chris Busby challenged the deductive method that has been used both to set legal exposure levels and to maintain that exposure to DU is safe for human beings.³¹ He argued that the physics-based, “nuclear establishment” model for analyzing the health threats of DU is antiquated and reductionist.³² Most problematically, the model uses data from high level, acute, external exposure to predict health effects for low-level, chronic, internal exposure.³³ Busby, along with other scientists concerned about the risks associated with the use of fissile materials, recommends that risk evaluation for DU should instead be based on an inductive analytical method that would involve using specific epidemiological information to look at the way in which doses from isotopes directly react with cells in various stages of biological development.³⁴ This type of research, in addition to being more conclusive and scientifically sound, would allow scientists to explore legitimately the dose-response relationship of DU with human cells.

The difficulties of finding reliable research methods that can produce conclusive data to describe the effects of DU exposure is compounded by an artificially limited flow of information. A 1994 report to Congress by the U.S. Army Environmental Policy Institute provides an example of the way in which concerns regarding DU’s adverse effects have been downplayed. The report states, “It is highly unlikely that DU is a contributing factor to the unexplained illnesses currently being reported by veterans of Desert Storm. This conclusion is based on assessment that there was little or no internal DU exposure by most Desert Storm soldiers.”³⁵ However, according to a 1991 to 1995 survey of 10,051 Persian Gulf War veterans, 82 percent of veterans reported having entered captured Iraqi vehicles—suggesting that about 123,000 soldiers were directly exposed to DU during that conflict.³⁶

In addition to the claim that U.S. soldiers probably were not exposed during the Persian Gulf War, the Environmental Policy Institute report frequently uses the lack of conclusive data about risk as evidence of no risk: “While there are no data that can be used directly to establish the human cancer and hereditary risks from low-level, low-dose radiation, there is general agreement that the models currently in use do not underestimate either the cancer or hereditary risks.”³⁷ The claim that there is no appreciable risk associated with DU is based on “general agreement”—yet the report does not specify who exactly is included in this consensus. At the same time, it contains an admission that all evaluation of risk has been based on empirically unsupported estimation, for the

simple reason that there are no data available. Certainly it is the responsibility of the U.S. Army to achieve “maximum battlefield advantage.”³⁸ It should not follow, however, that the adverse health effects of DU should be regarded as “minimal” simply because the long-term effects are not “well-defined.”³⁹ For the health of our soldiers, we cannot afford to employ an innocent-until-proven-guilty approach with respect to potentially dangerous materials.

Whereas the U.S. Army and Defense Department have treated DU as an issue of tactical advantage and not as a potential health threat, scientists and physicians in the private sector have attempted to discover the full effects of DU on the human body. Doug Rokke, the former head of the Pentagon’s Depleted Uranium Project, released an independent paper in November of 2002 on the uses and hazards of DU. During the Persian Gulf War, Rokke left his research job with the University of Illinois Physics Department when he was recalled to active duty in the U.S. Army and assigned to the Depleted Uranium Assessment Team.⁴⁰ “As the team health physicist and medic,” he explained in a November 2000 address to Vietnam and Desert Storm veterans, “I was responsible for planning and implementing DU (Uranium 238) contaminated equipment and terrain clean-up and for providing medical care recommendations for exposed personnel.”⁴¹ Rokke’s work contradicts official claims about the risk associated with DU, maintaining that it poses a significant threat to human health. He lists twelve effects of DU that have been verified by his own personal experience, the observations of physicians, and personal reports from individuals with known DU exposure. The effects include reactive airway disease, neurological abnormalities, kidney stones and chronic kidney pain, rashes, vision degradation and night vision losses, gum tissue problems, lymphoma, various forms of skin and organ cancer, neuro-psychological disorders, uranium in semen, sexual dysfunction, and birth defects in offspring.⁴² The likelihood that these effects have been caused by DU exposure is supported by the similar effects experienced by residents of several cities in the United States where DU is manufactured and tested for use in munitions.⁴³ Iraqi and other humanitarian agency physicians have similarly reported adverse health effects in populations that were exposed to DU.⁴⁴ Rejecting the official claims of the U.S. Army, Rokke suggests that one reason no adverse health effects of DU have been definitively proven is that U.S. authorities have engaged in “deliberate denial and delay of medical screening and consequent medical care” for U.S. soldiers exposed to DU.⁴⁵ The small number of exposed soldiers that have been monitored typically were not approached for testing, or even informed of potential health threats, until

years after their last contact with DU. Yet according to health physics guidelines, testing should be completed within thirty days—not several years—of exposure.⁴⁶

Not only have exposed individuals faced difficulties in receiving medical assessments, but they have also encountered an impeded flow of information surrounding DU data. Rokke writes that in 1994 and 1995, “United States Department of Defense medical personnel at a U.S. Army installation hospital removed, separated, and hid documented diagnoses from affected individuals and other physicians.”⁴⁷ These confiscations occurred around the same time that the Army Environmental Policy Institute made its report to Congress repudiating the notion of health threats associated with DU. The juxtaposition of the Army’s official report and the actions of the Defense Department seems contradictory. It appears that the military has long been aware of a correlation between DU and adverse health effects. Physicians and exposed individuals, however, have found it difficult to pursue treatment once the patients’ problems were associated with DU exposure. Rokke confirms this censorship by U.S. authorities with his reference to a memorandum sent to his team in Saudi Arabia in March 1991. “This memo,” he writes, “told us to be sure no matter what we did or reported that we should only report information so DU could always be used.”⁴⁸ The Depleted Uranium Assessment Team, it seems, was not used to compile legitimate research to protect U.S. soldiers. In the absence of such research, the Army was able to claim that investigation into DU’s effects had taken place and that members of the U.S. Army were safe.

Documented evidence shows that U.S. authorities have known about the hazards of DU for a significant length of time but have not widely publicized this information. A letter sent to General Leslie R. Groves on October 30, 1943, by the Subcommittee of the S-1 Executive Committee on the Use of Radioactive Materials as a Military Weapon, suggested that uranium could be used as an air and terrain contaminant.⁴⁹ The memo stated:

Areas so contaminated by radioactive material would be dangerous until the slow natural decay of the material took place ... for average terrain no decontaminating methods are known. No effective protective clothing for personnel seems possible of development ... Reservoirs or wells would be contaminated [and] food poisoned.⁵⁰

The letter stated that inhalation of uranium would result in “bronchial irritation coming on in a few hours to a few days.”⁵¹ Individuals

exposed to DU dust during Operation Desert Storm experienced exactly these symptoms, yet were never informed of their exposure to DU or told to seek medical screening.

Without these medical evaluations, the number of reported medical problems experienced by people with DU exposure is far lower than it would otherwise be—thus bolstering the claim that such cases do not exist. A physician in California reported being trained by the Pentagon, with other doctors, months before the 2003 Iraq war began—to diagnose returning soldiers with mental problems only.⁵² This claim is interesting in light of a recent *Gulf War Review*, which reported that as of September 2003, only 262 veterans had been treated for DU poisoning.⁵³ Meanwhile, of nearly 700,000 American veterans of the Persian Gulf War, 240,000 are on permanent medical disability, and over 11,000 are dead.⁵⁴ Furthermore, statistics suggest that veterans exposed to contamination during the Persian Gulf War have passed on health problems to their families. According to a U.S. government study of babies born to 251 Persian Gulf War veterans, 67 percent of the babies had serious illnesses or birth defects.⁵⁵ Children of veterans were born without eyes and ears, had missing organs, fused fingers, and thyroid or other malfunctions.⁵⁶ Significantly, similar birth defects have been reported in populations in Iraq, Yugoslavia, and Afghanistan, where DU weapons have been used.⁵⁷ Using concrete data from the 2003 Iraq war to expand upon previous statistics is difficult, as compiled information is still fragmentary. However, many veterans of the current war are already suffering from Gulf War Syndrome, a disease whose symptoms indicate chemical or radiation poisoning, which was first experienced by veterans of the Persian Gulf War.⁵⁸ It has been reported that in one unit of twenty U.S. soldiers who were exposed only to DU in 2003, eight developed malignancies within six months.⁵⁹ As further data from the current Iraq war is compiled, reported adverse health effects will likely echo those of previous conflicts in the Middle East and the Balkans.

DU has come to be regarded as one of the main possibilities for the cause of Gulf War Syndrome. Asaf Durakovic of the Uranium Medical Research Center (UMRC) describes Gulf War Syndrome as “a complex, progressive, incapacitating multiorgan system disorder” whose symptoms include incapacitating fatigue, musculoskeletal and joint pains, headaches, neuropsychiatric disorders, affect changes, confusion, visual problems, changes of gait, loss of memory, lymphadenopathies, respiratory impairment, impotence, and urinary tract morphological and functional alterations.⁶⁰ Generally, only three possibilities have been regarded as potential causes for Gulf War Syndrome: Iraqi chemical and biological weapons,

the cocktail of vaccinations given to coalition soldiers, and DU.⁶¹ As there were no detectable biological agents used during the 2003 Iraq war, the possibilities for the cause of adverse health effects experienced by U.S. soldiers are likely limited to prewar vaccinations and DU.⁶² However, Iraqi children who did not receive vaccinations experienced the same adverse effects as U.S. veterans.⁶³ DU is thus becoming more widely regarded as the most likely culprit of Gulf War Syndrome.

Perhaps the most telling study to date correlating DU exposure with adverse health effects was begun in 2002 by the Uranium Medical Research Center of Washington D.C., an independent non-profit organization founded in 1997 to provide scientific and medical research into the effects of uranium, transuranium elements, and radionuclides produced by the process of uranium decay and fission.⁶⁴ Entering Afghanistan at the end of Operation Anaconda in March 2002, the UMRC team conducted studies of populations in the Jalalabad, Spin Gar, Tora Bora, and Kabul regions and identified civilians suffering from the same symptoms encountered in the Persian Gulf War and the Balkan conflicts.⁶⁵ These symptoms included physical weakness, headache, muscular and skeletal pains, respiratory changes, fever, persistent dry cough, chest pain, gastrointestinal problems, neurological symptoms, memory loss, anxiety, and depression.⁶⁶ Twenty-four hour urine samples were collected from test subjects who were present in the area of the bombings, displayed symptoms that began relative to the bombing raids, and showed clinical manifestations.⁶⁷ High uranium levels were found in the urine of 100 percent of the test subjects, averaging 20 times higher than uranium levels in the urine of the non-exposed population.⁶⁸ In a subsequent study later in the year, the UMRC found uranium concentrations up to 200 times higher than in the control population.⁶⁹ This study is important to establishing the correlation between adverse health effects and DU exposure. However, Durakovic points out that there is still “a conspicuous absence of a meaningful comprehensive research effort that would correlate [Persian Gulf War and Balkan Syndromes] with uranium contamination.”⁷⁰ The UMRC remains the only organization that has performed sustained research on DU using advanced methodology.⁷¹

As DU has begun to receive increasing attention as a possible cause of Gulf War Syndrome, reliable press coverage of its hazards has faced difficulties at every step. Investigative reporting about DU has mostly appeared in independent publications, such as *American Free Press*, rather than in mainstream newspapers. John Hanchette, editor of *USA Today* from 1991 to 2001, reports having written several news articles about the effects of DU on Persian Gulf War veterans, none of which

were published because of pressure from the Pentagon.⁷² This silencing of speculation about the dangers of DU has allowed the U.S. Army to continue using the DU munitions that are strategically effective in the short run, but that are ultimately damaging both citizens of foreign nations and U.S. veterans in ways that are not yet fully understood. President George W. Bush has repudiated efforts to question the morality of continued use of DU munitions, referring to the “false claim that the depleted uranium rounds fired by coalition forces have caused cancers and birth defects in Iraq.”⁷³ However, as representatives from the United Nations Environment Program have not been allowed into Iraq to assess DU pollution, no one has even had the opportunity to attempt to substantiate the president’s claim that the association of health problems with DU is “false.”⁷⁴

Keith Baverstock, formerly the top expert on radiation and health at the World Health Organization (WHO), has experienced first-hand the type of censorship that impedes both journalistic commentary and scientific research on DU. Baverstock’s own study on DU’s health effects was suppressed by WHO, suggesting that the control of certain information is not isolated to the United States. In November 2001, Baverstock composed a paper with two other scientists on the radiological toxicity of DU that was allegedly blocked from publication by WHO. He believes that if the article had been published at the time of its completion, the United States and the United Kingdom would have been compelled to restrict use of DU in military combat, and to clean up contaminated sites.⁷⁵ In February 2004 he told the *Sunday Herald*, an independent newspaper in Scotland, “Our study suggests that the widespread use of depleted uranium weapons in Iraq could pose a unique health hazard to the civilian population.”⁷⁶

Baverstock’s study challenged the research of the Royal Society and WHO with criticism of previous methods of risk evaluation. His paper suggested that the study of DU’s health effects should include consideration of a “bystander effect,” in which unirradiated cells growing close to cells exposed to radiation from DU display genetic alteration supposed to be related to cancer induction.⁷⁷ The alpha particles emitted by heavy metals such as DU are known to be a potent cause of bystander effects, which may be enhanced by combined radio-chemical exposure.⁷⁸ These findings cast uncomfortable doubt on the claims of multiple organizations that the health effects of DU are negligible.

In email correspondence from March 17, 2005, Baverstock wrote that both the International Commission on Radiological Protection (ICRP) and the International Atomic Energy Agency (IAEA) have

“considerable leverage over the WHO, not so much in a formal mandate sense but through interagency committees and personal contacts.”⁷⁹ Both of these agencies reaffirmed in 2003 the “establishment”⁸⁰ position that DU dust could be treated as a natural insoluble uranium oxide—meaning that permissible levels would be based on radiotoxicity rather than chemical toxicity. Yet Baverstock’s research suggests that the chemical toxicity of DU, especially as it interacts with the radiological properties, may be more important than previously assumed. Thus, it may have been more convenient for ICRP and IAEA that Baverstock’s paper was not formally published. He told the *Sunday Herald* in 2004, “I believe our study was censored and suppressed by the WHO because they didn’t like its conclusions. Previous experience suggests that WHO officials were bowing to pressure from the IAEA, whose remit is to promote nuclear power.”⁸¹ Baverstock reconfirmed through email correspondence that in the past, “The Geneva Office [of the WHO] has acted to my certain knowledge on the wishes of IAEA and against the best interests of public health.”⁸² This situation, then, may simply be one of many in which politics trumps human well-being. Whether WHO publication of the article was prevented by a bureaucratic “turf war”⁸³ within the agency or by pressure, for political reasons, from the IAEA, its suppression has allowed continued—and largely un-criticized—use of DU by the United States and the United Kingdom during renewed conflict in Iraq.

Some of the most immediate victims of censorship have been members of the U.S. Armed Forces. Despite the U.S. government’s long-standing knowledge that exposure to DU causes health problems, U.S. soldiers participating in military conflicts during the 1990s were never officially warned about the danger. UMRC’s Durakovic reported that during his service in Operation Desert Shield as a unit commander, “My expertise of internal contamination was never used because we were never informed of the intended use of DU prior to or during the war.”⁸⁴ As a member of the Depleted Uranium Assessment team, Rokke was one of the few soldiers aware of his and others’ exposure. However, after his 1991 stint on the DU assessment team, he was ordered to restrict discussion of his knowledge of DU hazards to commanders and medical personnel.⁸⁵ Under orders to stop informing commanders and troops about the hazards, Rokke was prohibited from helping U.S. soldiers take preventative measures to protect themselves, or deal with health consequences after exposure.⁸⁶ It appears that such active perpetuation of veterans’ ignorance continued long after the end of the conflict. A comment by Senator Paul Wellstone, before his death in 2002, to Joyce Riley, the

executive director of the American Gulf War Veterans Association, suggests continued secrecy of the type that Rokke describes.⁸⁷ Wellstone informed Riley that 95 percent of Persian Gulf War veterans had been released from military service by 1995.⁸⁸ Meanwhile, any Desert Storm veterans remaining in the U.S. military were isolated from each other in order to prevent information about DU from being transferred to new troops.⁸⁹

Members of the U.S. Armed Forces, however, are not the only victims of DU exposure. Both military personnel and civilians of nations against whom the United States has used DU weapons suffer from a host of cancers and developmental problems. In 1990, the United Kingdom Atomic Energy Authority (UKAEA) released a report that predicted, "If 50 tonnes of residual DU dust remained [in Iraq] there could be half a million extra cancers by the end of the century."⁹⁰ The estimated amount of DU used during Persian Gulf War ranges from the Pentagon's admitted 320 tons to estimates of other scientific bodies reaching as high as 900 tons.⁹¹ According to the UKAEA's estimate, the projected number of cancer cases could reach as high as 9,000,000 from the Persian Gulf War alone.⁹²

Since the renewal of conflict in 2003, human rights activists have mobilized against the usage of DU. Leuren Moret, an independent scientist and radiation specialist, has bluntly described U.S. use of DU against third world countries as "genocide."⁹³ Moret believes that the irreversible pollution of the landscape by a radioactive and chemically toxic substance will permanently damage the genetic makeup of the third world populations against which DU has been used.⁹⁴ The United States has been further criticized by proponents of international law, who object to the use of weapons that target civilians as well as military personnel and have encouraged the United Nations to take a stand on DU. In 1996, a subcommission of the U.N. Human Rights Commission declared DU a weapon of mass destruction, concluding that its use violates the Geneva Convention on four counts: "the principle that there is no unlimited right to choose the means and methods of warfare," "the ban on causing unnecessary suffering and superfluous injury," "indiscriminate warfare," and "the use of poison or poisoned weapons."⁹⁵ An international ban, however, has not been officially enacted.

This is not the first time that munitions have been employed without sufficient knowledge as to their adverse health effects. During the 1960s and 70s, the Defense Department maintained that Agent Orange did not cause adverse health effects in humans long after it was proven that dioxin, a potent carcinogen, was a major contaminant of the herbicide.⁹⁶

As a result, eighty million liters of herbicides were spread across the landscape in South Vietnam between 1961 and 1971.⁹⁷ People living in that region now suffer from cancers, nervous system damage, and other debilitating diseases comparable to the problems now experienced by populations that have been exposed to DU.

This approach to military conflict should not be allowed to continue. The United States must act to protect the members of its Armed Forces, and to spare civilians of other nations from getting caught in the crossfire of international politics. At least until sufficient epidemiological studies have been conducted and evaluated by reputable interest groups that are not associated with the nuclear power industry, the U.S. Department of Defense, the U.K. Ministry of Defense, or military suppliers, the U.S. military should stop using DU. While there is still research to be done to establish the exact scientific relationship between DU exposure and adverse health effects, the wealth of research that points to DU as dangerous to human health should be enough to warrant a moratorium on military use of this radioactive and chemically toxic heavy metal. In March 2003, Rep. Jim McDermott (D-WA) introduced a bill in the House of Representatives entitled the Depleted Uranium Munitions Study Act of 2003 (H.R. 1483). McDermott's bill proposed that a study be conducted by the Agency for Toxic Substances and Disease Registry (ATSDR) to establish the effects of exposure to DU on veterans and their children. The bill also called for a cleanup effort of contaminated sites in the United States. In May 2004, Rep. José Serrano (D-NY) introduced the Depleted Uranium Screening and Testing Act of 2004 (H.R. 4463), calling for identification and screening of exposed members of the U.S. Armed Forces. Until the kind of evaluation proposed in these two bills is undertaken and completed, a moratorium on the use of DU weapons must be enacted.

It seems unlikely, however, that the federal government will take action in the near future as these bills continue to receive little attention. In the meantime, a secondary solution may be to combat the problem at the state level. Louisiana and Connecticut, which both recently passed laws providing for screening of veterans, are the only states thus far to aid veterans in dealing with DU exposure. Both laws, which go into effect October 1, 2005, require the adjutant generals of their respective states to assist members of the National Guard who served in the Persian Gulf War, Operation Enduring Freedom, or Operation Iraqi Freedom in obtaining federal treatment services.⁹⁸ These services include a health screening test for DU exposure that uses a bioassay procedure able to detect DU at low levels.⁹⁹ Although no state funds are to be used,¹⁰⁰ the

laws are designed to help veterans receive recognition and access to federal services. Furthermore, both laws call for research into the feasibility and cost of adding pre-deployment training for members of the Armed Forces concerning potential exposure to DU and other toxic substances,¹⁰¹ and Connecticut's law calls for a task force dedicated to studying the health effects of exposure to DU and other hazardous substances in a military context.¹⁰²

This united effort, equally supported by Democrats and Republicans in both Louisiana and Connecticut, should encourage officials in other states to take action on an issue that must remain free of partisanship. State legislatures should continue to pass laws that acknowledge the health problems of veterans and commit to training soldiers in the necessary precautions to avoid being exposed to DU in the first place. The legislative battle, however, cannot end here. The steps taken by the Connecticut and Louisiana legislatures are more concerned with evaluating the problems associated with DU than with directly improving the situation. Furthermore, state laws cannot protect civilians around the world that continue to be exposed to the hazards of DU munitions used by the U.S. military. State involvement is a good first step. However, until our federal government bans the use of DU munitions and make efforts to repair the damage caused by these weapons, the United States will continue to engage in conduct that both violates the Geneva Convention and places its own citizens at risk.

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ABOUT THE AUTHOR

Rachel Saltzman is a rising sophomore at Yale. A prospective English major from Evansville, Indiana, Saltzman graduated cum laude from Choate Rosemary Hall in 2004. Her interests include social justice and environmental concerns as they relate to global policy. She hopes to combine her study of literature and the cultural politics imbedded in texts with her concern for environmental politics. After graduating from Yale, Saltzman plans to attend law school.

For correspondence, please email Rachel Saltzman at rachel.saltzman@yale.edu.