

Depleted Uranium: Pernicious Killer Keeps on Killing

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I live a few miles from an ATK (Alliant Tech) plant that produces depleted uranium (DU) tank shells for the military. Tank shells destroy and kill, and they, along with all military hardware, are a constant reminder of our failure as a civilization. But DU weapons and tank shells are only two of many items that raise questions that even our violence prone society needs to address. Since shortly after Gulf War I, soldiers and civilians have been questioning the safety of these weapons which are made of radioactive material. The more questions raised, the more the military-industrial complex has hauled out studies showing the safety of DU munitions. One CEO called DU the “skim milk” of uranium in an article penned for my local paper. An Air Force officer is even stalking the internet, trying to intimidate anyone who suggests DU is anything but benign.

Yet the numbers suggested that something insidious happens when DU munitions are used. How to explain the exploding rates of cancer, birth defects, and radiation poisoning among Iraqis in the Basra region? How to explain a Department of Veterans Affairs study of 21,000 veterans of the Gulf War that found rates of birth defects were twice as great for male vets and three times as great for female vets who served in the Gulf War compared to vets who did not? How to explain a Washington Post report in January of 2006 that 518,00 of the 580,000 Gulf War veterans were on disability, over half on permanent disability. How to explain over 13,000 dead Gulf War veterans when only 250 were killed and 7,000 injured in the war itself?

Finally, through the work of internationally recognized research scientist, Dr. Rosalie Bertell, we may have an answer to these questions. The answer has to do with using an analytical methodology appropriate to low level radiation, as opposed to inappropriate methodologies used to date that show DU is harmless, and, equally important, understanding that DU has both a radiological component as well as a heavy metal component, and the two in combination are far more toxic than either is singly.

What is DU and Why Is It a Problem?

Depleted Uranium (DU) is the waste left after the isotope uranium-235 (used for bombs and nuclear reactors) has been removed. DU (mostly U-238) makes up the largest amount of radioactive waste other than uranium mining waste worldwide and has a half-life of 4.5 billion years. In the United States, DU can only be handled by persons trained in radiation safety procedures. DU must also be isolated from the environment.

Much of the scientific evaluation of uranium oxide has come from analysis of uranium mining and milling, but this ignores a major fact-that battlefield uranium oxide is very different from uranium oxide produced at normal temperatures. When a DU shell hits a

hardened target, it bursts into flame and creates an invisible metal fume, often called an aerosol. (Tests carried out eight to ten years after Gulf War I found that the DU aerosol from the battlefield had been carried to Basra and Baghdad, though no fighting occurred in those areas.)

Aerosolizing DU involves temperatures between 3,000 and 6,000 degrees centigrade, which turn the oxide into a nano-sized ceramic particle that is insoluble in body fluids. If these nano particles are inhaled, they provide contact radiation and a source of heavy metal poisoning. These high temperatures will also aerosolize other heavy metals in the area such as steel, nickel, aluminum, and iron, which can be inhaled. Nano-sized uranium oxide [along with other metals] is roughly the size of a virus [scientifically: nanometer-sized], invisible, able to penetrate the lung-blood barrier and can be carried throughout the body. Nano particles can reach sensitive targets, including the lymph nodes, spleen, heart, and access to the central nervous system.

Uranium-238 is an alpha particle emitter. The range of these alpha particles is only about six cells; therefore, it is highly localized. Because DU has less radioactivity than natural uranium, many consider DU to be low-level radiation and not harmful to people. But research does not bear this view out.

Assessing the Effects of DU

A major problem with most DU assessment is that many effects of alpha radiation on cell structure, including DNA proteins that release biochemical signals and important cell metabolic enzymes, are ignored by nuclear physicists who use dose estimates based on uranium dust in mines, a completely inappropriate approach for a battlefield aerosol. Many medical professionals believe the protein problem is responsible for various neurodegenerative diseases evidenced by Gulf War veterans.

As Dr. Bertell writes, "Heavy metal exposure (including uranium) can cause loss of cellular immunity, autoimmune diseases, joint disease such as rheumatoid arthritis, and diseases of the kidneys, circulatory system, and nervous system.... Decline in functional mitochondria is most damaging to the heart, kidney, brain, liver, and skeletal muscle, in that order." Loss of cellular immunity opens an organism up to viral, bacterial, and mycoplasmal invasions connected to a variety of diseases.

Equally important, scientists have found that tiny amounts of DU too small to be toxic and only mildly radioactive seem to reinforce each other in terms of causing cancers and risk to offspring. The Armed Forces Radiobiological Research Institute has even admitted that DU can cause cancer.

Humans are normally exposed to about 1.9 micrograms of uranium a day in food and water, with between one and two percent absorbed. The rest is passed in feces. Humans screen natural uranium quite effectively. But our screening system won't eliminate nano particles that are ceramic and enter through the lungs. These particles won't dissolve and won't lose their radioactivity.

International Condemnation

The special investigator of the UN Sub-Committee on the Promotion and Protection of Human Rights has declared DU munitions illegal under existing humanitarian law. DU

weapons also produce a toxic metal fume that violates the Geneva Protocol on the Use of Gas in War, which the US signed in 1975.

Why Ignore the Evidence?

We have enough evidence to suggest with considerable certainty that DU munitions break the four basic laws and customs that govern modern weapons use: that the weapon is confined to the battlefield, that it does not kill after a battle is over, that it doesn't cause inhumane suffering, and that it doesn't have a negative effect on the natural environment. We certainly have enough evidence to stop using these weapons until further research by independent scientists has been done. And yet we continue to produce, sell, and use DU munitions. How can this be justified?

Perhaps looking at the paradigm of Agent Orange gives insight. Our government ignored veterans affected by Agent Orange for thirty years before admitting Agent Orange was, in fact, the cause of many physical problems endured by Vietnam veterans. By then, the most seriously affected veterans were dead. The government incurred a far smaller financial liability than if the government had owned up to the problems earlier.

If the government ever admitted what it has done in Iraq-between 1,000 and 2,000 tons of DU ordnance expended according to most estimates-the financial consequences, not to mention the moral outrage engendered, is almost beyond imagination. Cleaning up the DU blanketing Iraq would entail enormous costs. And in a few years, soldiers who have served in the current debacle-many with two or three tours-are going to start coming down with the same diseases that have struck Gulf War I veterans. Some who got good doses of DU have already seen their lives ruined by multiple physical problems.

We must also consider the real possibility of Iraq as an uninhabitable wasteland, with the residue of the DU aerosol blowing in the wind and flowing in the waters to adjacent lands, a residue with a half-life of 4.5 billion years. Is this outlook too bleak?

Dr. Jawad Al-Ali, director of the Oncology Center at the largest hospital in Basra said the following in 2003. "Two strange phenomena have come about in Basra which I have never seen before. The first is double and triple cancers in one patient.... We have 58 families here with more than one person affected by cancer.... My wife has nine members of her family with cancer." He went on to point out that these were families with no history of cancer. After Gulf War I, the United Kingdom's Atomic Energy Authority estimated that DU contamination could kill half a million Iraqis.

Conclusions

I suspect the military-industrial complex will stonewall admitting the effects of DU for as long as possible to avoid accepting responsibility, not to mention liability, for their reckless actions. When John Hanchette, a founding editor of USA Today tried to publish stories about DU, he received a phone call from the Pentagon asking him to desist. He was later replaced at USA Today. The World Health Organization's chief expert on radiation and health had his report on DU suppressed. Dr. Asaf Durakovic, then a colonel in the U.S. Army, was asked to lie about the risks of DU to humans. So the stonewalling will continue, even as cancers rage among our soldiers and Iraqi civilians, even as our soldiers die, or commit suicide to escape the horrific pain, even as birth defects proliferate across Iraq and among our veterans.

But what of that? DU is a moneymaker for corporations like ATK. And turning DU into munitions helps the government solve a big problem-what to do with mountains of DU it must store and, by law, keep out of the environment. What better solution than giving it free to the munitions makers, who then sell the munitions back to Uncle Sam at a handsome profit? Everyone wins.

Unless we continue to fight for the truth, and to cry out for justice, our soldiers and Iraqi civilians will suffer and die in increasing numbers. Estimates of how many may die in Iraq are truly staggering – up to 11% of Iraq’s 27 million population. This is a massive crime against humanity that remains in the shadows.

Much of this article is based on the work of Dr. Rosalie Bertell. See her article, “Depleted Uranium: All the Questions About DU and Gulf War Syndrome Are Not Yet Answered,” in the International Journal of Health Services, Volume 36, Number 3, pages 503-520, 2006. E-mail requests for a summary of Dr. Bertell’s article can be sent to cetchison@allegany.edu.

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