

Depleted Uranium: Then and Now

In an article written for the Depleted Uranium Education Project, and in a speech before the Advisory Committee (12-4-95) we were given the opportunity to speak about uses of depleted uranium (DU) before and during the Gulf War (GW1), the exposures of military and civilian personnel and the resultant cover-up of the records of the "Atomic Veterans" exposed to ionizing radiation during the Cold War, as well as the expectation of the same treatment of the Gulf War Veterans. The following description of depleted uranium and its origins first came to my attention when the Depleted Uranium Network (then in its infancy) requested my input. The following is my response, which was printed in the winter 1996-1997 of the NAAV newsletter.

Separation of the slow-neutron-fissionable uranium **235** isotope (**U-235**) from the major isotope, uranium **238** (**U-238** or DU) was necessary to build the uranium bomb detonated over Hiroshima, Japan, and other gun-type uranium weapons. Natural uranium is almost **99.3** percent **U-238** and only about **0.7** percent **U-235**. To obtain a few kilograms of **U-235** leaves more than a ton of **U-238** and remaining **U-235** waste.

A more important early use was as the "tamping" material between the high explosives and plutonium core of implosion bombs, such as the first Fat Man bomb design used at Alamogordo, New Mexico; Nagasaki, Japan; and twice at Operation Crossroads. A large mass of **U-238** acted both to hold the core together until it could fission more efficiently and to reflect neutrons back into the core for more fissions. The plutonium core of Fat Man was only the size of a grapefruit, but the **U-238** tamper and explosive lens surrounding it increased the bomb diameter to five feet.

In addition, about **20** percent of the Fat Man TNT-equivalent explosive yield of **21,000** tons was from fast-neutron fission of **U-238**, because large quantities of fast neutrons are produced in a fission explosion.

This capability of **U-238** to fast fission led to its use in thermonuclear bombs to create more explosive yield. The reaction became fission of a small trigger fission bomb to create the heat and pressure for fusion of hydrogen-containing components, then fission of **U-238** by fast neutrons produced in copious amounts by both the fission trigger and fusion reaction. A negative aspect was production of large amounts of fission products in the fission-fusion-fission reaction from the large amount of DU employed to enhance total explosive yield significantly compared to the large fusion yield. This greatly increased fission product inventory was essentially the opposite of the "clean bomb" development intent. Resultant heavy fallout from tests such as Shot Bravo, during **1954** in the Pacific, caused beta burns and overexposure of Japanese fishermen on the "Lucky Dragon" fishing boat, Americans on Navy ships caught in the fallout, Marshall Islanders exposed on Rongelap Island, as well as American military personnel on Rongerik Island.

Besides nuclear bomb munitions, other military uses were found. Armor-piercing shells made of DU or with DU claddings were developed as well as hardening of armor with DU cladding. Burn tests of DU munitions alone, as well as DU munitions in shipping containers, in lightly armored Bradley fighting vehicles, and turrets and hulls of Abrams tanks, were conducted at the Nevada Test Site to determine hazards. These uses were prevalent in the Gulf War (GW1), the cause of "friendly fire" deaths and injuries.

Thus, DU was produced in great quantities during **U-235** enrichment operations at Oak Ridge, Tennessee, and large numbers of both civilian and military personnel were exposed during World War II in these operations and subsequent fabrication and operations at Los Alamos, including manufacturing of fission bomb tampers and components for hydrogen bombs, there and at other locations. Thousands of these personnel have been exposed to DU and its adverse health effects.

Military personnel exposed to DU during the Gulf War (GW1) have developed a variety of illnesses that may have been caused by the synergistic effect of additional exposure to airborne petroleum products, adverse reaction to vaccines, and possibly exposure to chemical or biological warfare agents released by Iraq. Our thoughts go back to Atomic Veterans exposed to ionizing radiation, DU, and other toxins throughout atmospheric and underground nuclear testing.

Although the DNA* (now DTRA)* when queried about the numbers of military involved in nuclear-related activities, admits to approximately **400,000** from **1945** to **1963**, the Veterans Affairs Committee on Environmental Hazards (chartered by Congress in **1984**, P.L. **98-542**), in **1993** estimated another approximately **543,000** exposed to ionizing radiation, **post-1963** to **1970** (mandated by P.L. **102-578**, **1992**). However, since that figure included 60,000 underground military personnel, and since underground testing continued to **1992**, we can only assume there may

be several hundred thousand more exposures.

Atomic Veterans of the Cold War exhibited many of the same illnesses borne by Gulf War veterans and their families upon return from Desert Storm, as well as sterility, stillbirths, and mutagenic effects suffered by their children. Unlike the Atomic Veterans, the Gulf War veterans were able to talk about their illnesses and those of their families. The Atomic Veteran was sworn to secrecy and told he would be court martialed or sent to prison **if** he discussed his experiences during the Cold War period. It was just recently that the former Secretary of Defense, William Perry, released these men from their vows of silence. Because they did not speak about their experiences or illnesses and the government destroyed or classified their military and medical records, the subject was unknown to most of the American people. Even the wives of the men were not told by their husbands of this awful chapter in our history. Children's textbooks were barren of the subject, so even today, millions in this country do not know of this shameful chapter in our history. And so the men died, the awful secret buried within their patriotic hearts.

Both groups of veterans and their families are victims of the same voodoo technology, some as recently as the last underground nuclear test, where military personnel worked underground in toxic atmospheres. Because of the cover-up of documents to "prove" exposures, fewer than **50** Atomic Veterans/survivors have received benefits from the VA under P.L. **98-542**. The same fate is in store for the Gulf War Veterans. The health of these veterans and their families has been compromised forever in the name of "national security."

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*Earl's Note – Original names: Atomic Energy Commission (AEC); Then, Defense Nuclear Agency (DNA) Now, Defense Threat Reduction Agency (DTRA). Over \$1Billion spent studying this "veteran's problem".