Depleted Uranium: DOH Update

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What is Depleted Uranium and How is it Used?

- Uranium (U) is a dense, weakly radioactive metallic element that exists naturally in our environment. Uranium is found everywhere in nature
- Depleted uranium (DU) is uranium metal whose isotopic composition has been changed by removal of the 235U and 234U such that the fraction of 238U increases. Depleted uranium is less radioactive than natural uranium.
- Due to its high density, DU is used in counterweights in aircraft, as containers for the transport of radioactive materials, and as stabilizers in boats and yacht keels. Some military uses include armor penetrating bullets and sabots, and defensive armor plating.

So Why the Concern? Are There Health Effects?

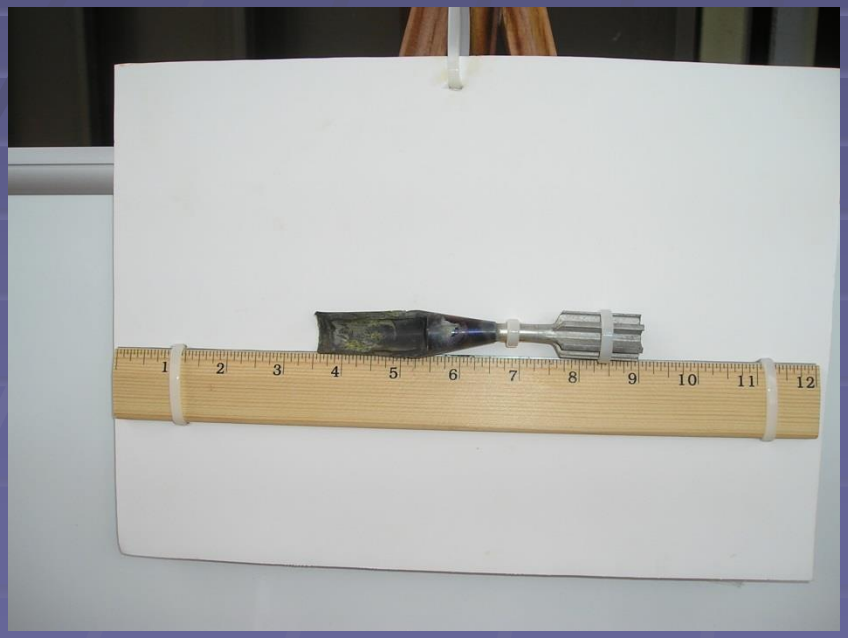
- All forms of uranium (enriched, natural, depleted) have the same chemical properties. In general, natural U and DU are considered chemical health hazards, rather than radiation hazards.
- Health risk depends on exposure level, exposure duration, and dose. Persons exposed to very large inhalation doses of uranium have shown minor, transitory kidney effects.
- Some human studies of uranium miners have found significant increases in the risk of lung cancer, although it was not clear whether uranium or other chemicals caused the cancer.

DU Discovery in Hawaii

- In August 2005, a contractor working on an ordnance range project at Schofield Barracks found 15 tail assemblies from the M-101 spotter round which was a component of the Davy Crockett Weapon System. The system was used from 1960 until 1968.

- In August 2007 at Pohakuloa Training Area (PTA), Army contractor, Cabrera Services, saw evidence of Davy Crockett use.

- Army Corps of Engineers' archival research on the use of the M101 spotter rounds revealed over 700 were shipped to Schofield Barracks in the early 1960s.



The M101 spotter round (20 mm) was manufactured with D38 Uranium Alloy (92% depleted uranium (DU) and 8% molybdenum) for weight purposes only. The round measures about seven inches in length and about one pound in weight (6.7 ounces of DU).

Chronology

- In 2007, the Army contracted Cabrera Services, Inc. to estimate potential health risks. A baseline human health risk assessment (BHHRA) was to be developed.
- In June 2007, the State Department of Health was invited by the Army to work together on the depleted uranium issue.
- Surveys began at Schofield Barracks in mid-July 2007.
- In addition, scoping surveys were conducted at Makua Military Reservation and the Pohakuloa Training Area.

Chronology
-cont-

- In November 2007, the characterization survey at Schofield Barracks was completed and the health risk assessment for Schofield Barracks was submitted to the Army in 2008.

- The final baseline human health risk assessment report for Pohakuloa Training Area, was submitted to the Army in June 2010 by Cabrera Services. The report was based on previous sampling results and modeling estimates.

Results of the Survey

- The Army conducted an extensive survey at Schofield Barracks, which resulted in over 1,400 air, vegetation and soil samples sent to independent labs for testing and analysis. A risk assessment released in 2008 concluded that “no adverse human health impacts are likely to occur as a result of exposure to the uranium present in soil.” The Army is using this comprehensive analysis along with information concerning the presence of DU at each range and other installation and range-related factors (e.g., land access, adjacent communities) to assess potential health risks posed.

Schofield Barracks (Central Oahu)

Makua Military Reservation (Waianae)

- Heavy ground cover
- Endangered species
- No evidence of Davy Crockett use

Pohakuloa Training Area (Big Island)

- Distinctive terrain-lava field
- Evidence of Davy Crockett use
- Difficult to find and recover

Legal Constraints

- DU is under the sole authority of the U.S. Nuclear Regulatory Commission (NRC).
- DOH does not have authority on federal property for radioactive materials.
- DOH can independently monitor off-post, not on post.
- In early 2007, DOH was invited by the Army to provide assistance on the DU issue on Army posts in Hawaii.

DOH Objectives

- Ensure that DU does not harm the general public.
- Ensure that the Army, as the responsible party, conducts activities to control DU according to current federal requirements on radioactive materials.
- Inform the general public of our findings and health risk assessments.

DOH Strategies

- Monitor the Army's health risk assessment and public health protection.
  - DOH reviews data, protocols, analyses, & results.
  - The Army has made all records available.
  - DOH recently observed live-fire training and air monitoring activities in a radiation control area on Schofield Barracks.
  - DOH retains a third party radiation expert, David Allard, Certified Health Physicist, who has extensive experience in health physics, DU production & clean-up. Mr. Allard recently provided DU training to IRHB staff.

- Conduct independent monitoring of DU.
  - DOH has measured ambient radiation levels periodically since May 2007.
  - Air sampling conducted on the Big Island in 2009. Analysis by Pennsylvania's environmental laboratory.

DOH Monitoring Results

- Since May 2007, average ambient levels have been ≤0.005 milliroentgens per hour (mR/hr).
  - Action level is 2.0 mR/hr (400x greater) to meet the general public exposure limit of 2 mrems in any one hour.
  - Limit specified by the National Council on Radiation Protection & Measurements (NCRP), NRC, and State Rules (Hawaii Administrative Rules, Chapter 11-45).
- Air sampling analyses have revealed no uranium levels above ambient.
  - No DU identified off-post.

DOH Continuing Actions

- Remain in contact with the NRC regarding the Army's licensed activities, and monitor as needed.
  - DOH accompanied NRC inspectors at the live-fire training at Schofield Barracks.
  - DOH kept informed by the NRC and the Army about any upcoming activities.

- Review available literature with regards to DU health risks.
  - Given the nature of the spotting rounds, the environmental data indicating a low potential for DU to become airborne, and the distance to populated areas, the Agency for Toxic Substances and Disease Registry(ATSDR), a federal health agency, concluded that DU would not pose any adverse health impact to persons offsite.
  - In his technical paper, "Estimating Public Exposure to Airborne Depleted Uranium Outside the U.S. Army Pohakuloa Training Area", Jim Morrow concluded that data analysis suggests that the presence of DU residue in range impact areas related to the historical use of M101 spotting rounds has not previously and does not currently pose any inhalation hazard to the citizens residing outside the boundaries of the installation.

Expectations

- NRC enforcement of conditions and requirements on their license for legacy DU.
- Determination of actions to be taken to assure public health.
- Standing communication with the Army on DU issues.
- Public health assurance.
- Continued dialogue with military services and the Nuclear Regulatory Commission.

Thank You! Any Questions?

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