

# Sandia completes depleted uranium study

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Sandia National Laboratories has completed a two-year study of the potential health effects associated with accidental exposure to depleted uranium (DU) during the 1991 Gulf War.

The study, “An Analysis of Uranium Dispersal and Health Effects Using a Gulf War Case Study,” performed by Sandia scientist Al Marshall, employs analytical capabilities used by Sandia’s National Security Studies Department and examines health risks associated with uranium handling.

U.S. and British forces used DU in armor-piercing penetrator bullets to disable enemy tanks during the Gulf and Balkan wars. DU is a byproduct of the process used to enrich uranium for use in nuclear reactors and nuclear weapons. During the enrichment process, the fraction of one type of uranium (uranium-235) is increased relative to the fraction found in natural uranium. As a consequence, the uranium left over after the enrichment process (mostly uranium-238) is depleted in uranium-235 and is called depleted uranium.

The high density, low cost, and other properties of DU make it an attractive choice as an anti-tank weapon. However, on impact, DU particulate is dispersed in the surrounding air both within and outside the targeted vehicle and suspended particulate may be inhaled or ingested. Concerns have been raised that exposure to uranium particulate could have serious health problems including leukemia, cancers, and neurocognitive effects, as well as birth defects in the progeny of exposed veterans and civilians.

Marshall's study concluded that the reports of serious health risks from DU exposure are not supported by veteran medical statistics nor supported by his analysis. Only a few U.S. veterans in vehicles accidentally struck by DU munitions are predicted to have inhaled sufficient quantities of DU particulate to incur any significant health risk. For these individuals, DU-related risks include the possibility of temporary kidney damage and about a 1 percent chance of fatal cancer.

Several earlier studies were carried out by the U.S. Department of Defense, by University Professors Fetter (University of Maryland) and von Hippel (Princeton), and by an Army sponsored team from Pacific Northwest National Laboratories and Los Alamos National Laboratory.

The conclusions from the Sandia study are consistent with these earlier studies. The Sandia study, however, also includes an analysis of potential health effects of DU fragments embedded as shrapnel in the bodies of some U.S. veterans. The Sandia study also looked at civilian exposures in greater detail, examined the potential risk of DU-induced birth defects in the children of exposed individuals, and provided a more detailed analysis of the dispersion of DU following impact with a number of targeted vehicles.

For a full copy of the report, download the [pdf file](#).

Source: Sandia National Laboratories

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