



Depleted Uranium

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Depleted Uranium

Military Uses

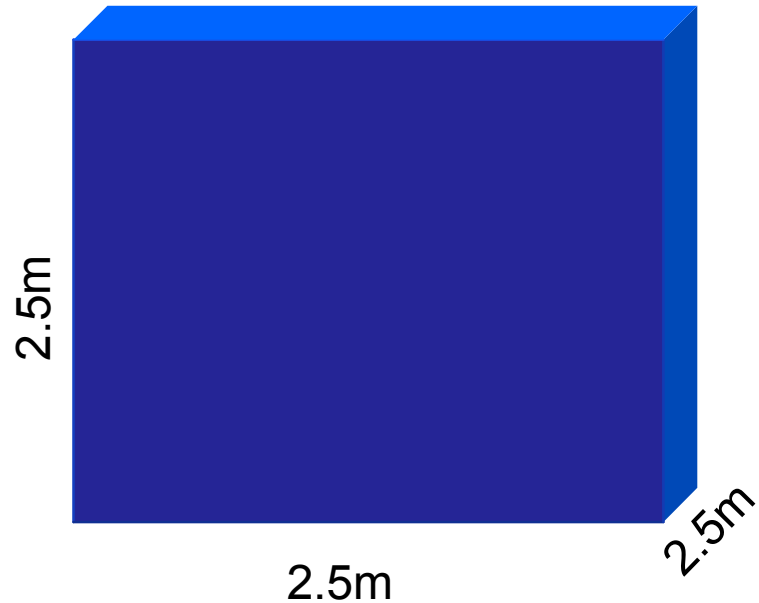




Depleted Uranium

Perspective on DU Use In Gulf War

- **Total**
 - 320 tons equate to a cube measuring:





Depleted Uranium

Perspective on DU Use In Gulf War

- **Air Force**

- 259 tons

- approx. 750,000 rounds

- 300 grams each

- Majority did not strike armor

- Intact rounds or large fragments in sand at depths of 2 - 30 meters depending on attack angle, altitude, air speed and soil density

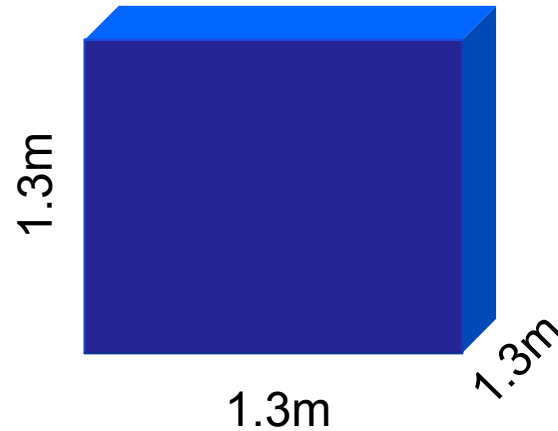
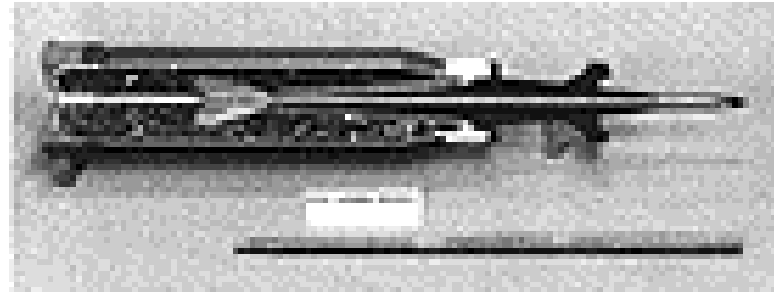




Depleted Uranium

Perspective on DU Use In Gulf War

- **Army**
 - 50.5 tons
 - 120mm round weighs 4.9Kg
 - Equates to a cube measuring:





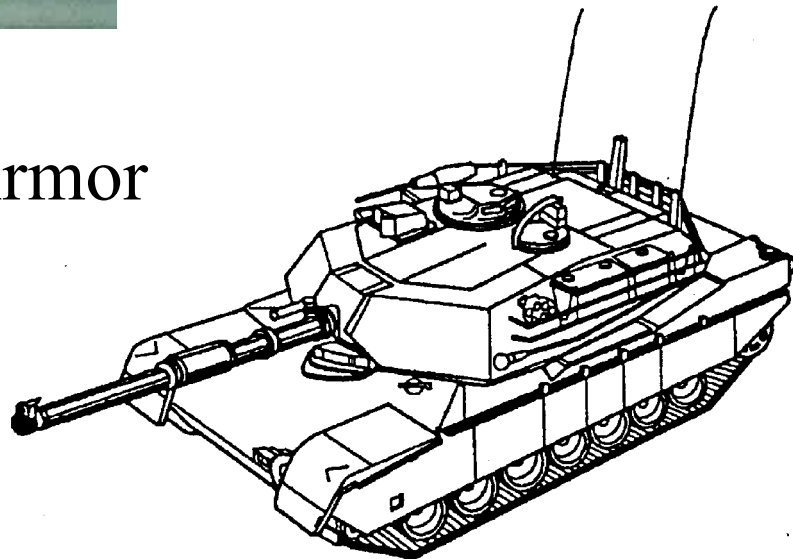
Depleted Uranium

Military Uses



Anti-Armor Munitions

Abrams Heavy Armor





Depleted Uranium

How and Why Is DU Used?



Artist depiction shows why a DU penetrator, which sharpens itself as it moves through armor, is much more effective than tungsten, which becomes blunt.



Depleted Uranium

How and Why Is DU Used?

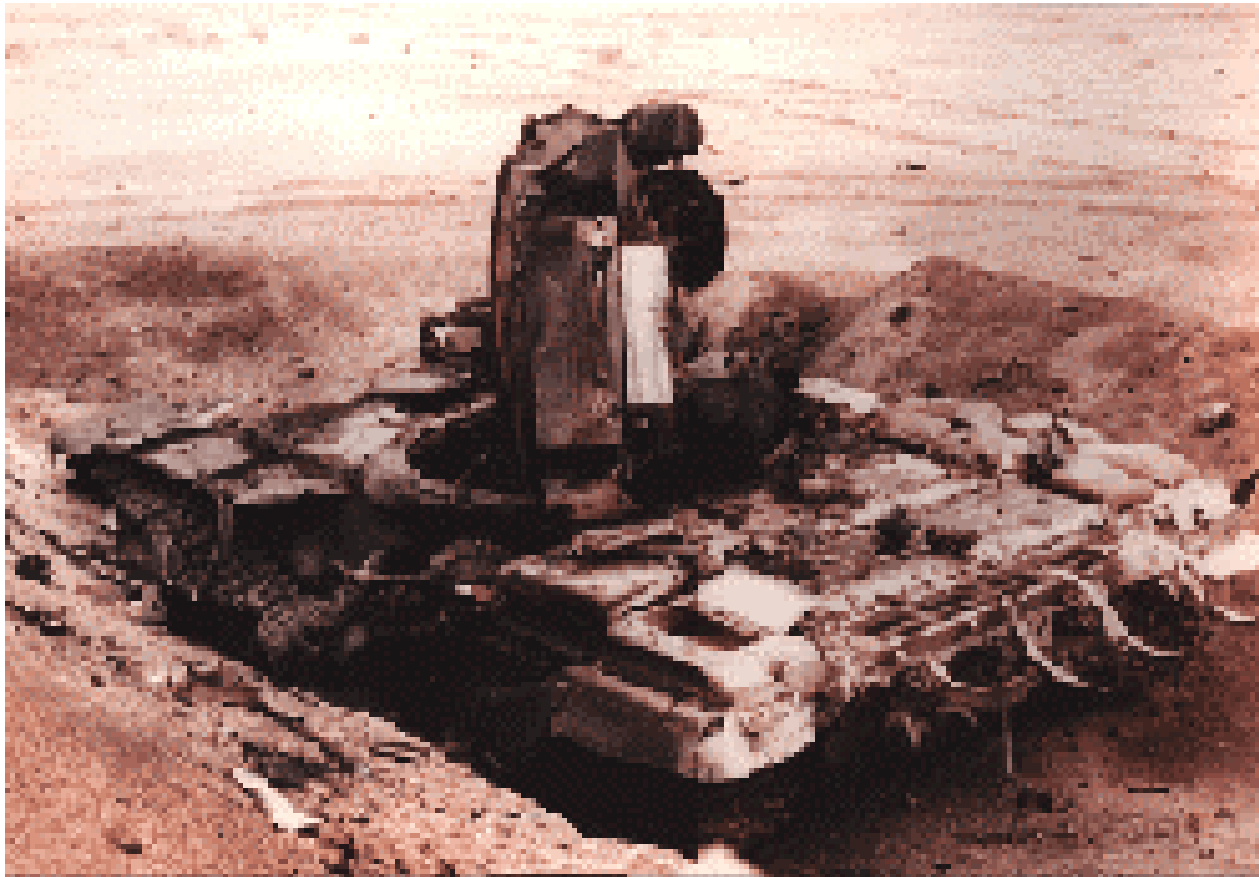


DU's self-sharpening properties are evident in this x-ray. Note how the tungsten penetrator's tip deforms into a mushroom shape.



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How and Why Is DU Used?



Iraqi T-72 tank hit with DU penetrator.



Depleted Uranium

Background

- We eat, drink, breathe natural uranium daily
 - Worldwide - 4 tons of natural uranium in the top meter of soil per square kilometer
 - High phosphate region of Florida - 160 tons/sq. Km.
- Uranium health hazards studied extensively since 1940s
- Health and environmental impact of DU use has been studied since the early 1970s



Depleted Uranium

Health Effects of Depleted Uranium

- **Chemical - Primary Concern**

- DU is a heavy metal, like lead, tungsten, and nickel
- Kidney is the primary target organ
- Damage to a specific portion of the kidney could occur when very large amounts are internalized
- Follow-up studies of highly exposed veterans with embedded DU fragments show no adverse residual effects



Depleted Uranium

Health Effects of Depleted Uranium

- **Radiological**

- Chemically DU is the same as natural uranium, but it is 40 percent less radioactive than natural uranium
- No medical evidence of natural or depleted uranium causing cancers, including leukemias
- Transuranics account for less than a 1 percent increase in the radiation dose



Depleted Uranium

Medical Surveillance

- Medical surveillance of individuals in or on vehicles hit by DU friendly fire
 - No cancers of bone or lungs, or leukemias
 - No subsequent medical problems from the DU exposure
 - Approximately 20 with embedded DU fragments
 - Urine uranium levels normal in those without DU fragments



Depleted Uranium

Leukemia

- Rates in U.S. are two cases per 100,000 per year
- Cause is often not known
- Post atomic blast or chemotherapy cases start after two years and peak in four to six years
- Toxic solvent exposures cause disease earlier



Depleted Uranium

Environmental Testing of DU Munitions

- Over 40 tests, DoD and non-DoD
 - External dose measurements
 - DU munitions striking targets
 - Fires in vehicles loaded with DU munitions
 - Fires involving DU munitions in storage
 - CAPSTONE Test
- All but CAPSTONE are summarized in “Environmental Exposure Report, Depleted Uranium in the Gulf War (II)”
- Testing continues



Depleted Uranium

Recent Environmental Assessments

- United Nations Environmental Programme Office
- World Health Organization
- European Commission
- European Parliament
- United Kingdom Royal Society



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Recent Environmental Assessments

- United Kingdom Ministry of Defense
- Expert Meeting on “Depleted Uranium in Kosovo: Radiation, Public Health and Environmental Aspects,”
Germany, June 2001



Depleted Uranium

Recent Environmental Assessments

- Common conclusions
 - DU residue is highly localized
 - No widespread contamination
 - DU residue difficult to locate on battlefield
 - In the context of other cleanup efforts, they recommended collecting loose penetrators on the surface
 - Problems with drinking water are highly unlikely
 - No impact on the health of the residential population or deployed military personnel



Depleted Uranium

Summary

- Uranium has been extensively studied and shown not to be linked with leukemia in humans
- Medical surveillance of highest exposed shows no adverse health effects related to DU
- Reviewed by multiple U.S. and non-U.S. scientific organizations with consistent conclusions



Depleted Uranium

Summary

- Scientific evidence assures us of the safety of Depleted Uranium
- DU radiation and chemical doses are below safety standards – DU Capstone test is underway
- Research on embedded DU fragments is continuing
- DU munitions and armor give U.S. forces range, lethality, and survivability advantages



Depleted Uranium

Information Resources

DeploymentLINK.osd.mil/du_library/

What is depleted uranium?

How and why is it used?

Use in the Gulf War and the Balkans

Health concerns and scientific reports