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:

2.5m x 2.5m x 2.5m
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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
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Perspective on DU Use In Gulf War

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

Anti-Armor Munitions

Abrams Heavy Armor
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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.
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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.
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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
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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
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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
  – Transurananics account for less than a 1 percent increase in the radiation dose
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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
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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
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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
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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
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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
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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
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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
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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