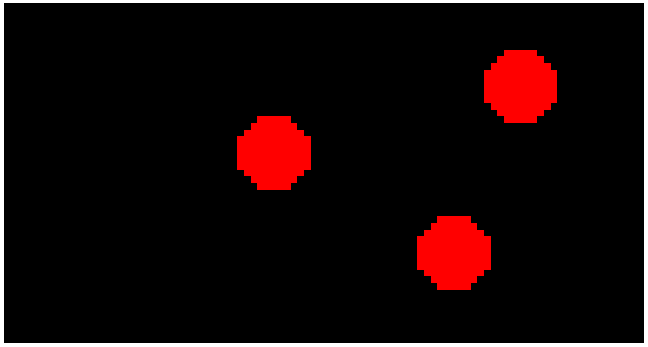
Depleted Uranium and the Gulf War(s)



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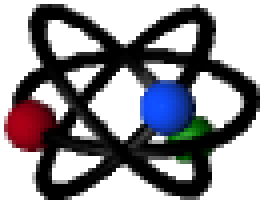
Talk Outline



- What is Depleted Uranium?
- Uses of Depleted Uranium
- Environmental and Health Effects
- Proliferation

Uranium

- Uranium: ^{238}U is >99% in nature
- ^{235}U is ~0.7% in nature – major ingredient in fission weapons
- ^{238}U and ^{235}U are isotopes - differing numbers of neutrons in the nucleus
- In order to make nuclear weapons, Uranium must be “enriched” to > 90% ^{235}U (“weapons grade”)
- There are several different ways to enrich Uranium to make weapons grade fuel – each leaves behind

Depleted Uranium

- Depleted Uranium can be put into fuel cells in a nuclear reactor and used to produce weapons grade ^{239}Pu
- This is why Israel bombed the French-built OSIRAK nuclear reactor in Iraq in 1981

Targets made of depleted U which will be bombarded by neutrons to make Pu

Depleted Uranium

- After processing, the remaining ^{238}U is still naturally radioactive (with a half-life of billions of years)
- Uranium is a very dense metal (1.7 x Lead), making it ideal for use in tank armor and shell casings
- Uranium is pyrophoric – friction causes it to burn
- The USA used depleted Uranium weapons in the Persian Gulf War (1991), in Bosnia (1995) and Kosovo (1999) and second Gulf War (2003)
- Aerosolized depleted Uranium is both a

^{238}U and the first Gulf War

- More than 640,000 pounds of contaminated equipment was left on the battlefields
- US-coalition forces used ^{238}U in
  - Large caliber shells fired from tanks
  - Small caliber shells fired from aircraft
  - Sniper bullets
  - Tank armor in 1/3 (2000+) of tanks

Problems from ^{238}U dust

- After burning, ^{238}U creates fine radioactive and toxic vapor and dust
- More than 50% of these particles are just the right size to be inhaled, where they lodge in the lungs and remain for years
- It is easily carried by the wind, and stays in the air for hours after impact
- It also easily dissolves in water
- Ground contamination allows resuspension into the air and eventual water contamination
- No ground cleanup has occurred in Iraq

Problems from ^{238}U fragments

- Unburned, ^{238}U remains radioactive – is classified as a “low-level” waste, subject to proper disposal and controls
- Fragments corrode with time, creating more dust and contaminated soil
- High levels of radioactivity have been measured from fragments found after the first Gulf War in Iraq, Kuwait and Saudi Arabia

Health problems

- Many US service people were exposed to depleted Uranium during the first Gulf War
- Local populations in Iraq, Kuwait and Saudi Arabia were also exposed
- Particles can be found in the brain, kidney, bone, reproductive organs, muscle and spleen
- Causing kidney damage, cancers of the lung and bone, non-malignant respiratory disease, skin disorders, neurocognitive disorders, chromosomal damage, and birth defects

Proliferation

- At least these countries now have weapons made of depleted Uranium:
  - United States
  - the United Kingdom
  - France
  - Russia
  - Greece
  - Turkey
  - Israel
  - Saudi Arabia
  - Kuwait
  - Bahrain
  - Egypt
  - Thailand
  - Taiwan
  - Pakistan

Additional Resources

- Depleted Uranium, a postwar disaster for environment and health http://www.rimbaud.freeserve.co.uk/dhap99f.html#FAHEY
- Canadian coalition for Nuclear Responsibility http://www.ccnr.org