HEALTH EFFECTS OF DEPLETED URANIUM ON PEOPLE AT THE SOUTH OF IRAQ

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Introduction

• Radiation from any source is one of the factors which induce cancers and birth defects in babies and abortion in pregnant women.

• Low level radiation is more dangerous because of the prolonged exposure.

• DU is used for the first time in history during 1991 gulf war and repeated again in 2003 gulf war. In 2003 the DU is dropped on the civilian residency areas (300 sites all over Iraq).
Nominated contaminated areas with DU in Basra province
## NATURAL & DEPLETED URANIUM

<table>
<thead>
<tr>
<th>Uranium</th>
<th>$^{238}\text{U}%$</th>
<th>$^{236}\text{U}%$</th>
<th>$^{235}\text{U}%$</th>
<th>$^{234}\text{U}%$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural</td>
<td>99.2749</td>
<td>0.0</td>
<td>0.7196</td>
<td>0.005</td>
</tr>
<tr>
<td>Depleted</td>
<td>99.7947</td>
<td>0.003</td>
<td>0.2015</td>
<td>0.0008</td>
</tr>
</tbody>
</table>

Table (1)
Routes of contamination with DU

1- Internal exposure:
- Inhalation of DU particles
- Wounds contamination by DU particles or shrapnel.
- Ingestion of soluble oxides of DU (absorption is more in children than in adults)

2- External exposure
What happen after contamination with DU

- Respirable particles < than 5 microns will stay in the lungs for long time and cause lung cancer and damage the lung tissues causing lung fibrosis and asthma like syndrome. Particles might move to regional lymph nodes causing lymphoma.

- DUO which is partly soluble might be absorbed through the digestive tract or the lungs and distributed all over the body to affect important organs like nervous system, liver and kidney.

- DU affects the tubular functions of the kidneys leading to stone formation then kidney failure (heavy metal toxicity).

- DU affects the cell DNA, chromosomes and genes and leads to changes in the rapidly growing cells like the bone marrow cells, producing leukemia, in lymph nodes it causes lymphomas and other types of cancers in any organ.
DU bullets found in soil
Tank hit by DU weapon
Measuring the Radiation level
Oil station contaminated
Contaminated military Targets
Measurement from areas contaminated in 1991

- **Sample**  
  $U^{238}$ Bq/kg  
  $U^{235}/U^{238}$

- **Soil**  
  1964.91- 67.73  
  0.0021-26

- **Surface water**  
  -

- **Ground water**  
  -

- **Wild plants**  
  32.51 – 11.48

- **Vegetables**  
  -

- **Air filters (mBq/m³)**  
  23.4
Shovel driver died from cancer
Contaminated during his military service
Soldier with huge abdominal cancer
Military officer contaminated with DU in 1991 war died from Soft tissue cancer
Basrah city contamination in 2003
Contaminated targets near Basrah international airport
DU contaminated tanks
Old Basrah airport
### DU Contamination in 2003

<table>
<thead>
<tr>
<th>Sample</th>
<th>$U^{238}$ Bq/kg</th>
<th>$U^{235}/U^{238}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>519.66 – 4.82</td>
<td>0.0022</td>
</tr>
<tr>
<td>Surface water</td>
<td>8.67</td>
<td></td>
</tr>
<tr>
<td>Ground water</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Wild plants</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Vegetables</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Air filters (mBq/m$^3$)</td>
<td>3.7</td>
<td></td>
</tr>
</tbody>
</table>
Scrub of contaminated vehicles inside Basrah
South of Basrah city
Sampling surface water for DU contamination
Scrub of tanks inside Basrah
<table>
<thead>
<tr>
<th>Sample</th>
<th>U238 Bq/kg</th>
<th>U235/U238</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>1869.21 – 129.61</td>
<td>0.0022-23</td>
</tr>
<tr>
<td>Surface water</td>
<td>56.71 – 8.52</td>
<td></td>
</tr>
<tr>
<td>Ground water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wild plants</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Vegetables</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Air filters (mBq/m3)</td>
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</tr>
</tbody>
</table>

**DU contamination after 2003 gulf war**
The victims after 2003 gulf war

- The victims include children with cancers, familial clustering of cancers and birth defects
6 years girl with ovary tumor
4 years old girl with ovarian tumour
3 years old boy with lymphoma
Died within few days after diagnosis
3 years girl with lymphoma
Children with bone cancer who had amputation of arms
3 cancers in one patient
Wife has breast cancer

Husband has kidney cancer
Birth defect