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International Coalition to Ban Uranium Weapons

A Critical Review of the Reports on UNEP Missions in the Balkans and Iraq

The United Nations Environmental Programme (UNEP) has been a pioneer in the investigation of depleted uranium in the environment. Overall, UNEP did not find widespread DU contamination on any of their missions. They found that radiation could be detected up to 2 meters from a DU shell and in some instances up to 150-200 meters.[1] DU was also detected 20, 40, 60 and even 80 cm below the ground surface.[2] UNEP's primary concerns in the Balkans were potential contamination of ground water, risk asessment and the need to educate local populations about DU. In Iraq, a real concern was the removal of fragments or pieces of metal from tanks destroyed by DU shells[3] from scrap metal yards. UNEP was also concerned by the use of DU munitions in urban areas, urging registration of contaminated sites.

A chief problem with the UNEP missions was that it was impossible to investigate conditions existing in any of the countries immediately after the conflict. In fact, a significant amount of time elapsed between the conflict where DU shells were used, and the UNEP teams' arrival on the scene. UNEP visited Kosovo 1 ½ years after the war there and went to Bosnia Herzegovina 7-8 years after the conflict. The Iraqi UNEP assessment team did their field work 3 years after the 2003 Iraq war.[4]

Problems encountered by UNEP in Kosovo included difficulty in gaining access to sites. They were able to visit only 11 out of 85 sites known to be targeted. Some sites in the Balkans were heavily mined and had unexploded cluster bombs; these sites or parts of them could not be visited. Often other authorities/organizations had been to sites before UNEP and removed DU shells or vehicles. Dense vegetation prevented the UNEP team from investigating an un-decontaminated area at the Cape Arza citadel tourist area on the Montenegran coast.

Detective work was needed to determine the number of DU shells that were in an area even with the knowledge of the number of DU shells that had been fired and the retrieval of a few DU shells. Most 30 mm DU shells miss their target and are buried in the ground. Some lie on or close to the ground surface, where they may be covered by a thin layer of leaves, grass or dust, making it difficult for beta detection instruments to pick up their radiation.[5]

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[1] There are different findings. For 200 meters, see **Bosnia and Herzegovina**, pp.9, 92. In **Kosovo**, UNEP gives the figure of 10-50 meters (p. 25) and in **Serbia and Montenegro**, UNEP gives the figure of 100 meters (p. 41). For full citations of the different missions, see listing at end of this report.
[2] UNEP, **Serbia and Montenegro**, pp. 55, 68.
[3] UNEP, **Assessment of Environmental "Hot Spots" in Iraq**, pp. 112-121 deals with a scrap metal facility.
[4] UNEP, **Technical Report on Capacity-building for the Assessment of Depleted Uranium in Iraq.**
[5] UNEP, **Bosnia and Herzegovina**, p. 143.

UNEP said in its Kosovo Report, "localized points of contamination can be heavily contaminated and that level of contamination can vary greatly."[6]

Strategic considerations decide where A 10 jets will fire DU shells without consideration of other factors. DU rounds, 655 in all, were fired near a sizeable dam next to a large artificial lake that supplies drinking water for most of southern Kosovo. The vast majority of the DU shells were buried underground. UNEP stated that "the drinking water could possibly become contaminated in the future".[7]

DU shells destroyed the tourist haven at Cape Arza in Montenegro. One hundred and two intact DU shells had been found by the Montenegran government in a decontaminated area at the site. Ten kg. of "highly contaminated" soil with the activity of 1,450-7,000 Bq. uranium and two tons of rock and soil showing low levels of radioactivity had to be removed from the site.[8]

UNEP stated, "It is very difficult to achieve comprehensive detection and complete decontamination of DU at a given site."[9] UNEP also asserted that the longer decontamination and other countermeasures were put off, the more difficult it became to put these measures into effect.[10]

In Bosnia Herzegovina DU shells buried in the ground showed that 25 percent of the mass of DU shells (66-92 g) had corroded over 7-8 years. The depth of detectable dispersion of DU corrosion products was 40 cm below ground. With regard to groundwater contamination, the composition of the soil and hydrogeological conditions were important in considering potential contamination of the ground water. Where DU shells had landed near wells and other drinking water supplies, or were considered to be near the groundwater table, UNEP recommended monitoring the wells etc. as a precautionary measure.

In testing for DU contamination in the air, UNEP took samples of lichen, mosses and bark to determine the past presence of DU in the air and vicinity. They also used air samplers. DU was found in air samples at two sites in both Serbia and Montenegro and in Bosnia and Herzegovina. One air sample taken in a contaminated storage barn in Bosnia Herzegovina was found to be nearly 100 percent DU and its concentration was approximately 50 times that of natural background uranium but was still considered to be insignificant radiologically and chemically.[11]

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[6] UNEP, **Kosovo**, p. 82.
[7] **Ibid**, p. 63.
[8] **Bosnia and Herzegovina**, p. 15
[9] **Serbia and Montenegro**, p. 35.
[10] **Bosnia and Herzegovina**, p. 11.
[11] **Ibid**, p. 95. UNEP defined "insignificant" as "a low and insignificant probability of getting a serious illness from that dose", p. 19.

A smear of sand and dust taken from the contaminated storage barn had a uranium concentration of 1,890 mg. per kg, a concentration that was about 1,000 times higher than the uranium concentration of the soil.[12]

Nearly 300 contamination points were found largely at the Hadzici Tank Repair Facility in Bosnia Herzegovina. There was a contaminated air sample and also the water in two wells showed contamination by DU but the radioactivity was about 0.1μSv per year and was considered insignificant.

Ways in which humans could be contaminated by DU included touching a DU shell, especially a corroded shell and then putting one's hand in one's mouth – this would pertain particularly to children. A corroded DU fragment or shell could lead to inhalation of corrosion particles which could contain alpha particles which could be hazardous if they reached the deep lung. However, if one were to keep a DU metal fragment in one's pocket for several weeks, the beta radiation might be a problem.

DU penetrators found in the Balkans contained traces of transuranics such as plutonium and neptunian. UNEP laboratories found the concentration of these elements to be "very low"[13]

At the time of the 2003 war in Iraq, UNEP advised people to wear "high quality dust masks" when within 150 meters of sites where DU munitions had been used.[14]

The military scrap metal industry in Iraq "is currently one of the few thriving industries in Iraq"[15] Ouireej, 15 miles south of Baghdad, is one such facility. Tanks and armored personnel vehicles hit by 2-7 DU shells[16] were "expected to have extensive DU contamination in the form of dust and large fragments."[17] Some of these fragments were corroded. UNEP stated that DU dust is "distributed on the ground surface around the original combat area and the scrap yard storage and processing areas".[18] Looters took away metal scraps including DU shell fragments and DU contaminated materials; some of these were made into ingots.

UNEP recommended that no new buildings be built at the Ouireej site until it was cleaned up.[19] UNEP stated, "In the absence of effective licensing and controls, any funds expended on site-cleanup would probably be wasted, as ongoing scrap activities would re-contaminate the area." [20]

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[12] **Ibid**, p. 93.
[13] **Ibid**, p. 217.
[14] UNEP, **Desk Study on the Environment in Iraq**, p. 82.
[15] UNEP, **Assessment of Environmental "Hot Spots" in Iraq**, p. 49.
[16] **"Hot Spots" in Iraq**, p. 115.
[17] **Ibid**
[18] **Ibid**
[19] **Ibid**, p. 121.
[20] **Ibid**

In its **Technical Report on Capacity-building for the Assessment of Depleted Uranium**, UNEP discusses the investigations by the Iraqi UNEP team, of urban areas where DU shells had been used in fighting in 2003. Radiation levels in the vicinity of destroyed tanks were generally low. However, in As Samawah tanks hit by DU measured up to 50 μSv per hour on tank surfaces.[21] In Az Zubayr, measurements of radiation went as high as 346 μSV per hour on tank surfaces or on surfaces in tank dump sites and a steel recycling site.[22]

In their conclusions they stated[23]:

1. The study resulted in a number of very useful findings, such as the presence of DU-impacted tanks in open areas and uncontrolled recycling of DU impacted scrap, which could be used as the basis of decision-making for immediate action.

2. At a technical level, the work demonstrated that military equipment impacted by DU ammunition had in many cases not been collected or moved to secure areas.

3. The assessment also found that local people were being exposed to DU and other heavy metals in uncontrolled scrap yards and scrap metal processing areas, with potential consequences for their health. Indeed, it should be noted that the toxic effects of DU may be more serious for human health than its radiological effects.

UNEP's recommendations[24] based on the findings of the Iraqi UNEP teams in the field included the following:

1. Destroyed military equipment (including tanks) that had been impacted by DU shells needed to be identified and moved to a secure area.

2. Metal scrap yards should be searched for vehicles hit by DU ammunition.

3. Attention should be given to long-term health and safety effects with respect to people working in scrap yards – that the chemical toxicity as well as radiation effects of DU could be linked to possible health problems in the future.

4. UNEP called for education about "DU-related issues" so populations know of its potential hazards and the hazards of DU scrap metal fragments. (UNEP had continually called for the posting of signs at sites potentially contaminated with DU and consciousness raising of local people in all its reports)

5. UNEP stated, "The issue of the storage and disposal of DU-contaminated scrap metal should be taken into account as part of national efforts to decommission and store radioactive sources."[25]

[21] UNEP, **Technical Report on Capacity-building for the Assessment of Depleted Uranium**, p.27.
[22] **Ibid**, p. 29.
[23] **Ibid**, p. 19
[24] **Ibid**
[25] **Ibid**