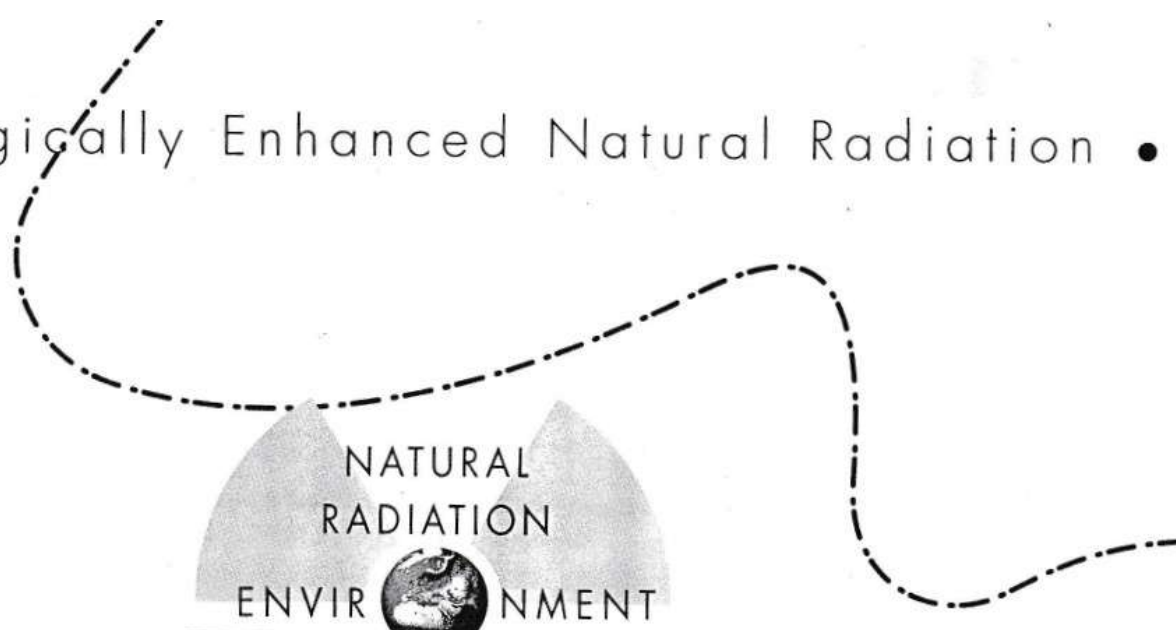


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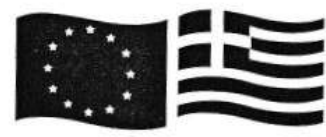


NRE-VII

Book of Abstracts

Seventh International Symposium
NATURAL RADIATION ENVIRONMENT (NRE-VII)
20-24 May 2002, Rhodes, Greece
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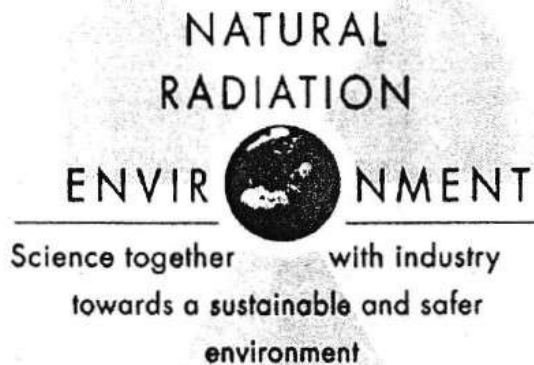
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ENVIRONMENTAL DAMAGE ASSESSMENT CAUSED BY THE USE OF THE DEPLETED URANIUM (DU) AMMUNITION IN YUGOSLAVIA

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ABSTRACT

To estimate the environmental pollution by uranium and its daughters, data on geological origin, physical/chemical forms, distribution, migration and concentration of uranium in the environment should be available, and physical and (geo)chemical processes and characteristics of different ecosystems should be considered.

In Serbia, natural uranium is found in greater amounts (0,63 - 19,3 ppm), in the mountain regions of Bukulja, Stara Planina, Avala-Kosmaj-Babe, Rudnik, Vranje-Pcinj, Fruska Gora etc. Besides uranium, lead and coal mines, power plants and their by-products, particularly important sources of uranium in Serbia are phosphate compounds used in mineral fertilizers production plants. Annual import of 1.000.000 tons of phosphorite (average uranium concentration 150 ppm), resulted in 150 tons of uranium or 50 TBq disseminated as fertilizers on agricultural land. An average uranium daily input through food equals 10 to 100 mBq: the uptake of uranium is mostly through grains and meat, approximately 10 mBq/day. Uranium input through inhalation is minor concerning human population on the whole, but population living close to electric power plants is endangered as it is exposed to uranium deposited from dross and ashes, that may contain more than 100 mBq U/kg. The equivalent dose in the vicinity of power plants in Yugoslavia is estimated to be 1,5 - 4,8 nSv/h . i.e. 3 μ Sv/year. Important parameter for making final conclusions on uranium health effects are data on its concentration in urine : uranium concentration in urine in population in Serbia in non-accidental conditions, is about 1 μ g/l.

During NATO aggression in Yugoslavia, approximately 500.000 missiles were used i.e. 3600 kg of uranium oxide, yielding activity of $18,3 \times 10^{10}$ Bq. In Serbia, 8 locations in the region of Vranje, Bujanovac and Lustica peninsula (outside Kosovo) were hit by DU ammunition. Soil was contaminated with 200.000-250.000 Bq U/kg, mainly in agricultural areas. According to the Report of The Federal Ministry of Development, Science & Environment, no DU ammunition was used above 44th parallel. More than a hundred locations in Kosovo hit by DU ammunition (Prizren-Djakovica-Pec) are not in Ministry jurisdiction. For comparison, total activity released in the environment during the Chernobyl nuclear plant accident. 1986, equaled 12×10^{18} Bq, but due to the type of explosion and emission of radiation, the effects and damages can hardly be compared.

The paper presents data of the long term measurements of the uranium concentrations in soils, vegetations, food and feeds in Serbia, including data on the radioecological areas with higher concentrations of uranium and on bioindicators (honey bee, etc). Taking into the account the contents of uranium that reached the certain areas in the country due to the use of DU