

ASSESSMENT OF POPULATION DOSE COMING FROM HOSPITAL RADIOACTIVE WASTES

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The purpose of present work is the assessment of population dose due to releases of radioactive liquid wastes from the Spedali Civili of Brescia, where the following non-sealed isotopes are mainly employed: J-131 (40 Ci/year), Tc-99m (30), J-125 (.04), Cr-51 (.03). The knowledge of impact onto environment and man from such releases is achieved by either measuring radioisotope activities and concentrations in concerned water bodies and by studying radioactivity diffusion through food chains to man.

Measurement of the activity in contaminated water is performed by doing spectrometric analysis of treated water samples with a Ge(Li) detector connected to a MCA. Resulting spectra are processed by a computer program which performs peak search and identification, giving the activity of each identified isotope.

Measurements on J-131 have been performed, by which we obtained a dilution curve which allows one to calculate concentrations downstream from release point. By means of parameters of a linear compartmental model we calculated concentrations in critical pathways, i.e. fruit, cereals and milk, and consequently dose to concerned population.

Dose values obtained for J-131 are very low: 5.41×10^{-4} mrem/year/person to thyroid, 9.49×10^{-7} to total body. Collective dose values (250.000 concerned people) are very low, too: .135 man. rem/year for thyroid and 2.37×10^{-4} man/rem/year for total body.

Measurements concerning the other isotones are in progress and, hopefully, will be completed in the next few months.

Bibliografia

- United States Nuclear Regulatory Commission: Regulatory Guide 1.109-1976
- Albini E., Belletti, S., Rossetto, E.: Lo scarico radioattivo monitorato presso gli Spedali Civili di Brescia: risultato di una campagna di rilevazione e modello di impatto radiologico con l'ambiente.
 Radiologia Medica, to be published