EXPERIENCE AT THE ISTITUTO SUPERIORE DI SANITÀ ON ENVIRONMENTAL RESEARCH AND MONITORING WITH *IN SITU* TECHNIQUES

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Abstract

Since the 80's the former Physics Laboratory of the Istituto Superiore di Sanità has been using gamma spectroscopy to perform research activity, particularly on *in situ* natural radioactivity (^{238}U and ^{232}Th series and ^{40}K in soil and water, disequilibrium in the radioactive chains, etc) and radiological emergencies involving large areas (uncontrolled nuclear satellites re-enter in the atmosphere, Chernobyl accident). Afterwards, this technique was used to study the contribution of natural radionuclides in building materials to the indoor radon, thoron and gamma dose rate. Moreover, a method to estimate the radionuclide activity concentration in building materials and a procedure to evaluate gamma dose rate indoors from outdoor measurements were developed. At the same time, in collaboration with the Italian Fire Brigades, Civil Protection and Environment Ministry and groups from Universities and Research Institutes, the SNIFFER aerial platform for radiological emergencies has been designed and developed. The platform is equipped with a peculiar air sampling unit and gamma detectors able to permit a quantitative characterization of the atmospheric and ground radioactive contaminations.