

Monitoring of Radioactive Plumes and Risk Assessment

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ABSTRACT

The evolution of computational simulation modeling methods has made its results more precise, consequently, the error rates becoming smaller, and increasing its credibility to the point of adopting its calculations for estimates in several areas. For Chemical, Biological, Radiological and Nuclear Defense, we can apply these modeling methods to scenarios of accidents or attacks for the definition of radioactive plumes and, based on equations developed by the American National Research Council, published in the BEIR VII report, which collected probabilities for decades in survivors of the Hiroshima and Nagasaki bombings, to determine the likelihood of an individual developing cancer by exposure to radiation, and to define the group of key individuals who would be "less sensitive" to the stochastic effects of ionizing radiation and, based in these analyzes, plan the rescue of the civilians already exposed. In this context, two limitations present themselves decisively: (a) determination of the radioactive plume and dose rates within them and, (b) correlation of these rates with potential deleterious effects on biological systems. These limitations may have a solution aided by the ARGOS code, a method of consequence modeling and risk assessment by computational simulation of radioactive plumes, which is currently in operation at IEAv.