



Comparaison of ^{85}Kr measurements with the ADMS model (Atmospheric Dispersion Modelling System) on a coastal complex site

C. Leroy, D. Maro, O. Connan, D. Hebert, and M. Rozet

Institut de Radioprotection et de Sûreté Nucléaire, DEI/SECRE/LRC, 50130 Cherbourg-Octeville, France,
(celine.leroy@irsn.fr, fax :(33)+233014130)

Modelling atmospheric dispersion of radioactive plumes is a major issue for nuclear safety institutes to predict and estimate the radiological consequences to the population. The French Institute for the Radiological protection and the Nuclear Safety (IRSN) uses gaussian plume models, particularly adapted in accidental situations, because of short computation times. Due to the lack of experimental data, the reliability of these models is poorly documented and misunderstood for elevated sources in the near field and more particularly, in complex areas (topography, change of roughness). In order to improve the knowledge of dispersion mechanisms in such conditions, the IRSN ran a series of experimental campaigns between 1999 and 2002 in the vicinity of the La Hague nuclear reprocessing plant (AREVA NC - France). The La Hague peninsula is very narrow and the plant is located at 2 km from the coastline, at 150 m above sea level. During the experiments, the krypton-85 (^{85}Kr), a radionuclide, was used as a non-reactive tracer of the plumes released by the 100 m high stack. In this work, the Atmospheric Transfer Coefficients (ATC) obtained from ^{85}Kr measurements at La Hague are compared with the computations of the “next generation” gaussian model ADMS (Atmospheric Dispersion Modelling System) performed with “complex and coastal effects” ADMS modules.