Geophysical Research Abstracts, Vol. 8, 08337, 2006
SRef-ID: 1607-7962/gra/EGU06-A-08337

Development of a strategy for using atmospheric dispersion modelling to determine intervention zones in case of nuclear accidents.

S. Bader, H Eleveld and YS Kok-Palma

National Institute for Public Health and the Environment (RIVM), Bilthoven, The Netherlands (Sam.Bader@rivm.nl)

In many (nuclear) emergency plans, countermeasures are restricted to areas where predefined intervention levels are exceeded. These areas, here referred to as intervention zones, are evaluated in relation to variable weather conditions. In addition to previous studies [e.g. *A risk assessment method for accidental releases from nuclear power plants in Europe*, **Slaper H, Blaauboer RO, Eggink GJ,** RIVM Report 743030002], where weather conditions were dealt with probabilistically, our analysis involves a strategy to account for all possible meteorological conditions in a typical year.

To determine the size of these intervention zones, a nuclear accident was simulated for power plants in the Netherlands, or just across the border in Belgium and Germany. The release of a radioactive cloud from these nuclear power plants was simulated at certain time intervals during one model year. Using an atmospheric dispersion model, the spread of radioactivity was calculated, and a statistical method was employed to assess the size of the resulting zones of intervention. The results obtained will be presented for various accident scenarios and physical properties of the radioactive release.

The applied model NPK-PUFF is in use for application in the Dutch National Plan for Nuclear Emergency Planning and Response. The current operational version allows not only for long-range, but for short-range prediction of atmospheric transport of radionuclides as well. The model is fed with real-time meteorological input from KNMI, the Royal Netherlands Meteorological Institute.