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Retrospective Search for Evidence of the 1957 Windscale Fire in NE Ireland Using 129I and Other Long-Lived Nuclides

2005-08-17

The accident at Windscale in October 1957 resulted in the release to the atmosphere of a large quantity of radioactivity. The presented work is a retrospective search for evidence of contamination from the accident in the northeastern region of Ireland. The data suggest that any contamination from the Windscale fire that might have reached this catchment has been overwritten by input from the testing of nuclear weapons in the atmosphere. A time-series for 129I in lake sediment shows that concentrations in recent sediments are approximately 10 times greater than concentrations recorded in strata corresponding to the period of maximum fallout of other radionuclides from atmosphere testing of nuclear weapons (1964). These recent increases in 129I are attributed to increased emissions from the nuclear industry. The study yields no evidence of any enhancement in radioisotope concentrations, over and above global fallout, in strata dated to 1957, and authors conclude that contamination from the Windscale fire had negligible impact on the northeastern region of Ireland.

Authors: Gallagher, D.; McGee, E. J.; Mitchell, P. I.; Alfimov, V.; Aldahan, A.; Possnert, G.

Full source: Environmental Science and Technology 2005, 39(9), 2927-2935 (Eng)

Description of exemplary pollutant sources for use in deterministic models

2005-08-17

Two methods to determine the liberation rate of pollutant sources are demonstrated with examples. Liberation rates of formaldehyde in pathology and of anesthetic gases in surgery were determined from measurements at work places. The results show lognormal distribution in both cases. Indoor concentrations of CO, NOx, and hydrocarbons caused by use of engine-driven machines were calculated from literature values (European limit values).

Authors: Liesche, A.; Wegscheider, W.; Naujoks, G.; Eickmann, U.

Full source: Gefahrstoffe - Reinhaltung der Luft 2005, 65(1/2), 19-21 (Ger)

Prediction of extreme ozone levels in Barcelona, Spain

2005-08-17

Barcelona is one of the most polluted cities in Western Europe, although the levels of air pollution are within the World Health Organization air quality guidelines. However, high concentrations of air pollution have not been studied yet. Ground ozone levels is a topic of considerable environmental concern, since excessive level of ozone are taken as indicative of high pollution. In terms of the air quality guidelines ozone levels higher than 100 mug m-3 can start to be health-hazards for human health. The objective is to report a detailed analysis of ozone data exceeding the thresholds established by the air quality guidelines. The analysis reveal that the ozone threshold values for the protection of human health has exceeded many times in both stations. The estimated return values for 3, 10, and 40 yr exceed the threshold value for information to the public of almost once in both stations, also it seems to be unlikely that the threshold value for warning to the public will be exceeded in 40 years.

Authors: Tobias, Aurelio; Scotto, Manuel G.

Full source: Environmental Monitoring and Assessment 2005, 100(1-3), 23-32 (Eng)
Natural radioactivity in sand used in thermal therapy at the Red Sea Coast

2005-08-17

The development of climatotherapy in Safaga opens the field of medical tourism in Egypt, in order to detect any harmful radiation that would affect the patients during treatment and is becoming important economic resource. Studies and survey of natural radiation and radioactivity in upper Egypt conducted since 1990 included monitoring of the concentration of natural radionuclides in environmental samples. The results of the study reveals that, for all sand samples, the mean activity concentration of 40K (618 ± 122-548 ± 82 Bq kg⁻¹) are much higher than that of both 226Ra (25.3 ± 14-20.6 ± 10 Bq kg⁻¹) and 232Th (21.4 ± 10-22.4 ± 10 Bq kg⁻¹). Different radiation hazard indexes were calculated, the radiation dose to which workers are subjected is not negligible (26.5-50.9 nGy h⁻¹), although depending on the inhalation of dust.

Authors: El-Arabi, A. M.

Full source: Journal of Environmental Radioactivity 2005, 81(1), 11-19 (Eng)