England & Wales EA

England & Wales Environment Agency

The Environment Agency (EA) has a duty to ensure that the activities that it authorises do not cause an adverse effect on Special Areas of Conservation (SACs) for sensitive habitats or Special Protection Areas (SPAs) for birds. The EA is the regulatory body responsible for authorising discharges of radioactive waste to the environment under the Radioactive Substances Act 1993, and therefore needs to ensure that the discharges do not cause adverse effects to the integrity of SACs and SPAs.

The EA, together with Natural England and the Countryside Council for Wales have concluded that 40 µGy/h is the threshold below which adverse effects on the integrity of SACs and SPAs will not occur. Environmental radiological assessments are completed to ensure that discharges do not cause this dose rate threshold to be exceeded. Full details of the assessment methodology are provided in the Habitats Assessment for Radioactive Substances report [1] and are summarised as follows:

- Dose per unit release factors (DPUR) were derived for the radionuclides in R&D Publication 128 [2] for reference organisms using dose rate per unit concentration (DPUC) data in air, soil and water combined with simple dispersion modelling factors (DPUCs were calculated based on reference organism geometries, concentration factors and occupancy factor information; the method is described in full in the Sp1a report [3]).
- Surrogate radionuclides were selected for those not included in R&D128 [1] generally based on cautious assumptions.
- A spreadsheet tool (incorporating the DPUR for each radionuclide, site specific dispersion parameters and the authorisation limit) was used to calculate the dose rate to the worst affected reference organism. This tool is not currently publicly available, however, the DPUR data is provided in [1] and the method and data used to incorporate site specific dispersion parameters is published in the Initial Radiological Assessment Methodology Reports [4, 5].
- Results compared with the dose rate threshold of 40 µGy/h.

This methodology is a precautionary approach and is used to determine whether new permits or variations to existing permits are acceptable. In addition, all existing discharges that might affect a SAC or SPA have been assessed using this methodology [1]. Out of the 277 sites assessed, two exceeded the dose rate threshold: the Ribble and Alt Estuaries SPA (520 µGy/h) and the Drigg Coast SAC (41 µGy/h). Additional assessments were completed for these sites and the results reported in the Impact of Radioactive Substances on Ribble and Alt Estuarine Habitats report [6], and are summarised as follows:

- The Springfields Fuels Ltd site was identified to be the source of the radionuclides which were the dominant contributors to the dose rates at the Ribble and Alt Estuaries SPA. The authorisation limits for this site were reduced (for operational reasons, before the results of the environmental assessment were available).
- Detailed assessments were completed for these two sites using the ERICA assessment tool and the new, lower authorisation limit for the Springfields site.
- The revised calculated dose rates were all less than 40 µGy/h, due to the lower limits and use of more realistic data in the ERICA assessment tool.

The EA also complete work to improve environmental radiological assessments, such as assessing the contribution that naturally occurring radionuclides make to the radiation dose received by non-human species [7], investigating the effect of radiation on fish, soil fauna and aquatic organisms [8, 9, 10], and improving calculations for the dose rates to non-human biota from radon daughters [11].

References

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Spreadsheets can be downloaded from EA R&D128

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Other Information

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