

Using science to create a better place

Impact of radioactive substances on Ribble and Alt estuarine habitats

Science summary: SC060083/SS2

This report follows on from the Environment Agency report on *Habitats Assessments for Radioactive Substances*, SC060083/SR but concentrates on data for the Ribble and Alt Estuaries SPA where earlier Stage 3 assessments had indicated dose rates to wildlife well above the agreed threshold. For this Natura 2000 site it was not possible to conclude from the assessments that there was no adverse effect on the integrity of the site from authorised discharges of radioactive substances. The primary reason was potential releases at the authorised discharge limits from the Springfields Fuels Ltd site.

The total dose rate to the worst affected organism for the Ribble and Alt Estuaries SPA was 520 microgray/h. This was significantly in excess of the agreed threshold, and therefore this Natura 2000 site was included in the Stage 4 process (determination of permissions).

The Environment Agency and Natural England have agreed a habitats protection objective for the Ribble and Alt Estuaries SPA and have considered how this objective can be met. The objective includes meeting the agreed dose threshold of 40 microgray/h. For operational reasons, new lower Radioactive Substances Act 1993 authorisation limits came into force on 1 January 2008 for the Springfields Fuels Ltd site. A reassessment has been made of discharges at these new limits using the newly available EU-funded ERICA assessment tool.

The reassessed dose rates to reference organisms and feature species in the Ribble and Alt Estuaries SPA for discharges at the new Springfields Fuels Ltd authorisation limits are less than 40 microgray/h. A variability and uncertainty assessment has been carried out which shows that, for phytoplankton only, doses above 40 microgray/h might occur in some circumstances.

However, the dose threshold above which populations of phytoplankton would suffer adverse effects is much higher than 40 microgray/h.

Overall, it is concluded that the environmental outcomes objectives for the Ribble and Alt Estuaries SPA will be met through the introduction of the new authorisation limits for the Springfields Fuels Ltd site.

In light of the study reported here, it is recommended that, if practicable, phytoplankton samples should be obtained from the Ribble and Alt Estuaries SPA and monitored for thorium-228, thorium-230, thorium-232 and thorium-234 to reduce the uncertainty in the dose assessment for these organisms, given their importance in the food chain. Alternatively, it may be possible to study uptake of these radionuclides by phytoplankton in the laboratory.

Before a new permit is authorised or an existing permit varied with the potential to impact on the Ribble and Alt Estuaries SPA, it is recommended that the dose assessment be reviewed to ensure that any combination effects from multiple discharge sources of radioactive substances continues to achieve the required environmental outcome. A process now exists to ensure that this review is undertaken if and when an application for a new or varied authorisation is received.

This summary relates to information from Science Project SC060083/SR2, reported in detail in the following output(s):

Science Report: SC060083/SR2

Title: Impact of radioactive substances on Ribble and Alt estuarine habitats

ISBN: 978-1-84911-002-0

May 2009

Internal Status: Released to all regions

External Status: Publicly available

Project manager: Claire Cailes, Head Office

This project was funded by the Environment Agency's Science Department, which provides scientific knowledge, tools and techniques to enable us to protect and manage the environment as effectively as possible.

Further copies of this summary and related report(s) are available from our [publications catalogue](#) or our National Customer Contact Centre T: 08708 506506 or E: enquiries@environment-agency.gov.uk.

© Environment Agency.