

## **Preliminary screening assessment of the potential impact of the phosphate industry on wildlife and potential need for remediation.**

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### **Abstract**

The activities of the phosphate industry may lead to enhanced levels of naturally occurring radioactivity in terrestrial and freshwater ecosystems. A preliminary environmental risk assessment (ERA) of the activities of the phosphate industry (phosphate ore mining, and phosphate fertilizer factories). We evaluated the environmental impact of 5 phosphate fertilizer plants (located in Belgium, Spain, Syria, Egypt, Brazil) and one phosphate-mine (Syria). These sites were selected because of accessibility to data on concentrations of naturally occurring radionuclides in the surrounding environments. The ERICA non-human biota assessment tool was used to predict radiation dose rates to the reference organisms and associated risks. Reference organisms were those assigned as default by the ERICA Tool. Potential impact is expressed as a risk quotient (RQ) based on a radiation screening value of  $10 \mu\text{Gy h}^{-1}$ . If  $\text{RQ} \leq 1$ , the environment is unlikely at risk. For all the cases assessed, RQ exceeded 1 for at least one of the reference organisms. The aquatic ecosystems in the vicinity of the phosphate fertilizer plants in Tessenderlo (Belgium), Huelva (Spain) and the Brazil site and the terrestrial environment around the phosphate mine in Palmyra (Syria) are the ecosystems predicted most at risk. Potential requirement for remediation is discussed.

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