NORM waste and environmental impact assessment (EIA) of facilities

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Abstract

Environmental impact assessment (EIA) is a formalized procedure that considers the environmental impacts of a project in the planning phase. In this procedure relevant effects have to be identified, predicted, and evaluated that may arise from a planned facility prior to major decisions being taken and commitments made. The question how radioactivity in construction materials has to be considered as an environmental aspect is a hitherto neglected aspect. The contribution discusses which case scenarios can occur and what effects of radioactive contamination should be considered. It is also shown that radioactive contaminations do not only occur in cases that are approved under the terms of atomic or radiation protection legislation. Rather, such effects can play a role in a variety of projects that are approved under mining law or other regulations.
The emphasis is laid on demolition waste with refractory materials of enhanced radioactivity from radionuclides of natural origin. Experience gained in the last years in solving these problems will be presented and discussed in regard to possible changes that may result from the implementation of Directive 2013/59/Euratom in national legislations. Problems occurred if demolition material of enhanced radioactivity generated from maintenance or dismantling of facilities was not recyclable and had to be disposed of with regard to waste law. Because these materials had been contaminated during operation with toxic chemical substances, in particular heavy metals like arsenic, lead, chrome, nickel, selenium and others, the suitable disposal facilities were limited.
Reuse of residues containing enhanced concentrations of natural radionuclides (NORM) in tailor-made building materials could be supported if the specific (radioactive and toxicological) properties of particular demolition materials are known and are considered over the whole lifetime of a facility ("from the cradle to the grave").