The methodology for dose-assessment for NORM industries and NORM contaminated sites in Belgium.

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The Belgian radiation protection legislation defines a "positive" list of NORM industries, which must register to the Belgian radiation protection authority (FANC, Federal Agency for Nuclear Control): production of phosphate, use of zircon sand, tin foundries, rare earths extraction, manufacturing of thorium welding rods. The companies of these sectors must provide a set of information, which allows the authority to assess the radiological impact of the industrial activity. If the resulting dose exceeds 1 mSv/y, corrective measures have to be implemented. FANC has issued a methodology to clarify the data required to evaluate the radiological impact: companies must provide a flowchart of their processes and fill out a standardized table with all relevant data (specific activities of their materials, dust concentration, radon concentration, etc.). The methodology lists also the exposure pathways which have to be taken into account and the relevant parameters for the evaluation of the doses. This methodology will be illustrated with concrete examples from the phosphate and zirconium industries.

FANC has also developed a methodology for the remediation of NORM contaminated sites: this methodology includes guidelines for the scenarios which have to be taken into account in the dose-assessment; at least three scenarios must be considered:
  i) a scenario which corresponds to the current use of the site;
  ii) a worst-case scenario; it is the (realistic) scenario which leads to the highest exposure (typically an intrusion scenario such as the construction of dwellings on the site);
  iii) a "likely" scenario which doesn't necessarily correspond to the current use of the site but corresponds to a likely evolution in the use of the site.

This methodology will also be presented along with a few concrete examples. The importance of sensitivity analysis will be underlined.