

# Pathways Analysis: A Powerful Tool to Strengthen REMP at Canadian Nuclear Power Stations

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## Abstract:

Canadian nuclear power stations use a pathways analysis model called IMPACT™ to help define the REMP and demonstrate compliances with regulatory guidance. IMPACT is a Canadian standardized pathways analysis model that calculates activity concentrations in environmental medium and doses to humans at receptor locations from multiple airborne and waterborne effluent sources. IMPACT can be also used as an ERA (Environmental Risk Assessment) tool.

Monitoring data from the REMP are used to better define site-specific parameter values and to calibrate the model. Model predictions are compared to the observed data to validate the model. The validated model is then used to improve the REMP.

IMPACT model can be used to improve:

- Providing recommendations to optimize REMPs: add/remove/move sampling locations, focus on sensitive parameters etc
- Reporting of the REMP by predicting media concentrations and radiation dose to the public
- QA of data and dose predictions by using standard tool

An example for a Canadian power station will be provided to demonstrate the use of IMPACT to help define the REMP and regulatory compliance in reporting the annual radiation dose to the public.

**Keywords:** REMP, Radioactive human dose assessment, Pathways Analysis Model, Canadian Standard Association CSA N288.1