

## Risk-based environmental assessment for uranium mines –some Canadian and Australian experience

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The uranium producing countries of Canada and Australia have independently developed regulatory frameworks emphasising the importance of human health and ecological risk assessments as core tools for ensuring protection of the environment and public. The value of such an approach is presented as well as practical lessons learned through recent applications of this regulatory model.

In May 2000, the Canadian Atomic Energy Control Act was replaced by the Nuclear Safety and Control Act (NSCA). This law created the Canadian Nuclear Safety Commission, whose mission is to protect the health, safety and security of persons and the environment; and to implement Canada's international commitments on the peaceful use of nuclear energy. From an environmental perspective, the new law added a requirement for the protection of the environment and non-human biota, and a responsibility over hazardous substances in addition to nuclear ones. The NSCA requires the prevention of unreasonable risk to, and adequate provision for the protection of, the environment and the health and safety of the public. It was decided that environmental and public protection would recognize the principles of pollution prevention and ALARA, and that it would be risk based. For class 1 facilities and uranium mines and mills, Ecological and Human Health Risk Assessments are the core of both the Environmental Assessment process and the licensing process under the Nuclear Safety and Control Act. The Ecological Risk Assessment informs the Effluent and Environmental Monitoring Programs with the resultant monitoring data used to reinforce the risk assessments on a cyclical basis throughout the lifespan of the facility. A number of standards and regulatory documents have been completed supporting this environmental protection framework. In this presentation, a case study is used to illustrate the use of ERA for decision making.

In the last decade or so in Australia uranium mining proposals normally require assessment under the Federal Environment Protection and Biodiversity Act 1999, as well as a parallel State or Territory approvals. The previous generation of mines were approved under the former Environment Protection (Impact of Proposals) Act 1993 or earlier arrangements. In recent years various guidelines, both generic and developed for individual proposals have been issued by State, Territory and Federal governments.

Recent Australian guidelines, for uranium and other mining, all include a risk-based approach to environmental impact assessment, including consideration of design and operating measures to minimize impacts, and associated environmental monitoring programmes to assess actual against expected outcomes and provide early-warning of potentially adverse trends. Some recent guidelines and their application to new uranium projects or extensions of existing operations in three jurisdictions are reviewed and the usefulness of the approach discussed.

**Author:** Ms PHANEUF, Marcelle (IAEA)

**Co-authors:** Mr MCKEE, Malcolm (CNSC); Dr WOODS, Peter H. (IAEA)

**Presenter:** Ms PHANEUF, Marcelle (IAEA)

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