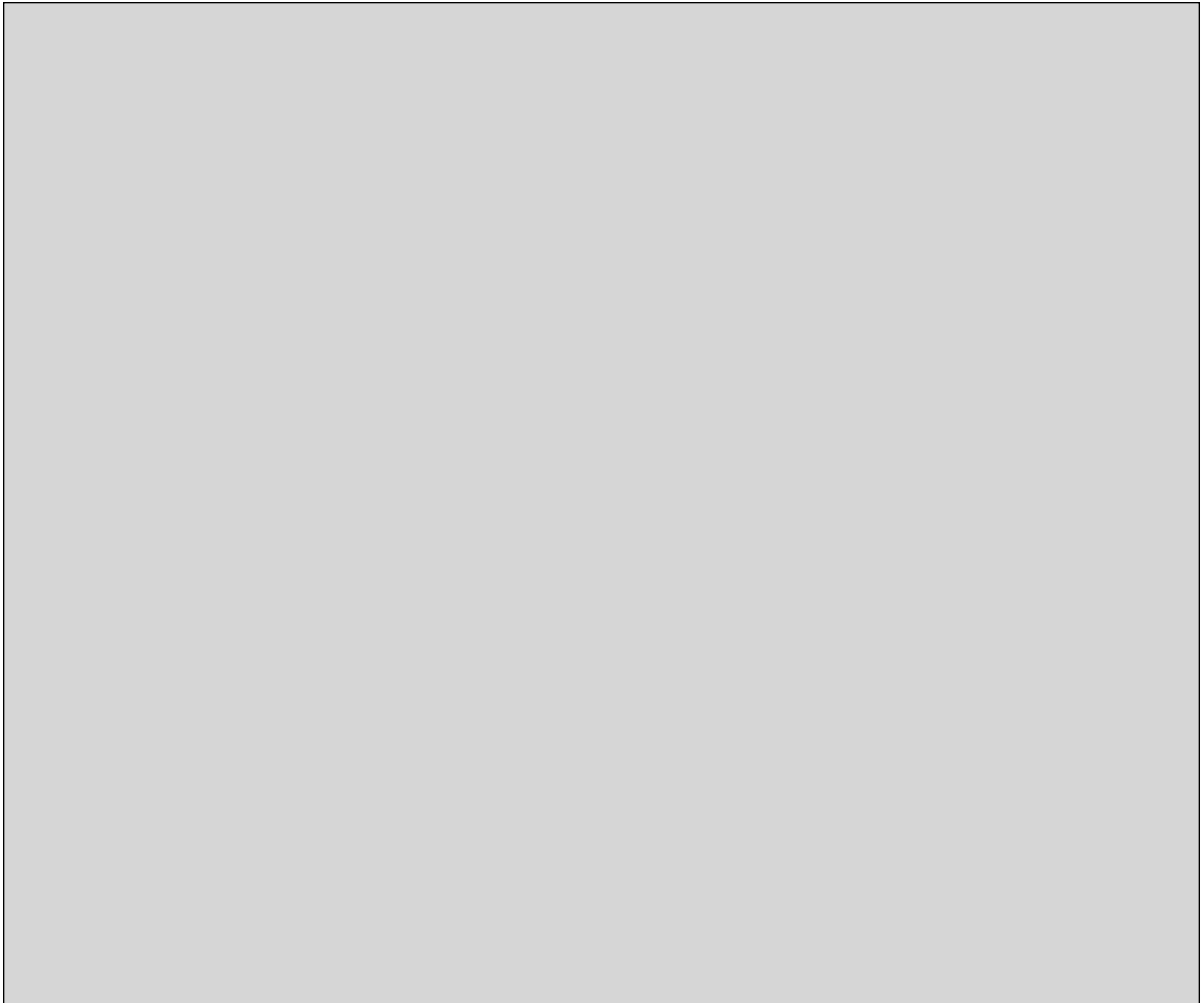


**NWMO BACKGROUND PAPERS**  
**7. INSTITUTIONS AND GOVERNANCE**

**7-2 THE STATUS OF THE LEGAL AND ADMINISTRATIVE ARRANGEMENTS  
FOR LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT IN CANADA**

**EXECUTIVE SUMMARY**

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## EXECUTIVE SUMMARY

The purpose of this paper is to summarize the legal and administrative arrangements for low level radioactive waste (LLRW) management in Canada, and to provide observations that may be helpful for the long term management of used nuclear fuel. The primary purpose of the legal and administrative arrangements governing the management of all radioactive waste is to safeguard the health of the people and the environment.

This paper begins with a brief primer on radioactivity, ionizing radiation, sources of radiation and dose limits designed to protect the health of occupationally exposed workers. This is followed by an explanation of the categories of the wastes, the types of radioactive waste materials in each category, how LLRW are classified and managed in Canada. The key legal and administrative arrangements are summarized for Canada with references to LLRW management in the USA and France. The paper ends with a summary of the key elements that may be helpful for the management of used nuclear fuel .

Since the operation and maintenance of nuclear power stations produces both used nuclear fuel and LLRW (including intermediate level radioactive wastes), this paper discusses how radioactive wastes are managed by Ontario Power Generation, Hydro Quebec and New Brunswick Power, the three utilities in Canada that have nuclear reactors. Atomic Energy of Canada Limited (AECL) is also discussed since AECL produces LLRW and provides storage facilities for LLRW that others producers and users of radioactive materials are unable to store. There is no long-term disposal or management facility in Canada for LLRW. Currently, OPG together with the municipality of Kincardine is studying the possibility of establishing a facility for the long term management of low-level and intermediate-level radioactive wastes. Also, AECL, Chalk River, is considering a below ground concrete vault for long term management of LLRW

There are 5 key legal instruments in Canada for the management of LLRW. These include:

- The Nuclear Safety and Control Act (NSCA) which established the Canadian Nuclear Safety Commission (CNSC).
- The Nuclear Liability Act ensures that nuclear facility operator funds are available to compensate third parties for injuries or damage as a result of a nuclear accident, makes the operator exclusively liable and limits the operator's liability.
- Regulations established by the CNSC covering all aspects of LLRW from site preparation to closing down a facility.
- The Canadian Environmental Assessment Act (CEAA) which may be triggered by the licensing activities of the CNSC and requires the proponent to carry out an environmental assessment (EA) on the proposed undertaking. Where a provincial EA process is involved, the federal and provincial processes are harmonized so that one EA is carried out considering blended requirements
- The Transportation of Dangerous Goods Regulations from Transport Canada are triggered if the LLRW is transported off the owner's site to another facility. The

regulation is coordinated with the CNSC regulation relating to packaging of the material for safe transport.

Various provincial statutes may come into play for the siting and construction of a LLRW facility relating to effects that it may have on activities under provincial jurisdiction such as natural resource management, environmental protection and land use. The provincial officials normally act in a review capacity to make sure that their mandates are protected.

Natural Resources Canada (NRCan) establishes policy related to LLRW management, such as the 1996 policy making the owners and producers of ongoing LLRW, including nuclear power station owners, responsible for funding and managing their radioactive wastes. NRCan also provides an oversight role, funding and policy advice for the historic waste cleanup program administered by the LLRW Management Office, located administratively within Atomic Energy of Canada Limited (AECL).

In Canada, Low-level Radioactive Waste (LLRW) is defined by exclusion. If the material is radioactive waste and is not used nuclear fuel or mine and mill tailings, then it is LLRW. The definition in the USA is similar. In France, radioactive waste is defined by radioactivity and half-life based on recommendations of the International Atomic Energy Agency (IAEA).

The Canadian definition for LLRW includes a large range of radioactivity and half-lives. Consequently, after excluding used nuclear fuel, nuclear power station managers and AECL have developed management practices for intermediate and low level radioactive waste.

In Canada, radioactive waste may be divided into four categories based on administrative responsibility for management. The categories are:

- **Used Nuclear Fuel**, which is high level waste, funded and administered by the producers and owners of the waste such as operators of nuclear power stations.
- **Low Level Radioactive Waste**, which is further classified into:
- **Historic waste**, which is funded by the federal government and administered by the Low Level Radioactive Waste Management Office of Atomic Energy of Canada Limited. The Port Hope Initiative includes 95% of historic LLRW in Canada.
- **On-going waste**, which is funded and administered by the owners and producers of the wastes such as nuclear power station operators.
- **Mine and mill tailings**, which are administered separately from other LLRW. They are funded and administered by the owners of the waste
- **Naturally occurring radioactive materials (NORM), which** are administered by the provinces and territories and the owners of the material according to guidelines produced by a federal/ provincial committee and published by Health Canada. When these wastes are transported they are subject to CNSC regulations.

The accumulated amount of used nuclear fuel in Canada is small compared to the amount of LLRW and mine tailings. For instance, in 1998 there was 5,580 m<sup>3</sup> of used nuclear fuel stored in Canada. This compares to 571,250 m<sup>3</sup> of on-going waste (mostly from the operation and decommissioning of reactors), 1,200,000 m<sup>3</sup> of historic LLRW (mostly in

the Port Hope area, and 210,018,000 tonnes of mine and mill tailings (including operating and inactive mines) in Ontario and Saskatchewan.<sup>4</sup>

The three utilities in Canada with nuclear reactors, Ontario Power Generation, Hydro Quebec and New Brunswick Power, manage radioactive waste in four ways: wet storage of used nuclear fuel, dry storage of used nuclear fuel, storage of intermediate level radioactive waste and processing and storage of LLRW. The material is currently stored on their own properties according to the terms of licenses from the CNSC. All material is containerized or bailed so that it can be retrieved for long term storage and management.

Many of the lessons learned from the management of LLRW that may be helpful for the management of used nuclear fuel are not found in the legal and administrative arrangements themselves. Rather, they are found in the application of the legal and administrative arrangements and in the decision-making processes involved. The paper ends with some observations on these matters including observations regarding public perception of radiation, licensing activities, LLRW management technology and lessons learned from facility siting and public consultation processes involved in the Historic LLRW program. Suggestions for further studies are also included.