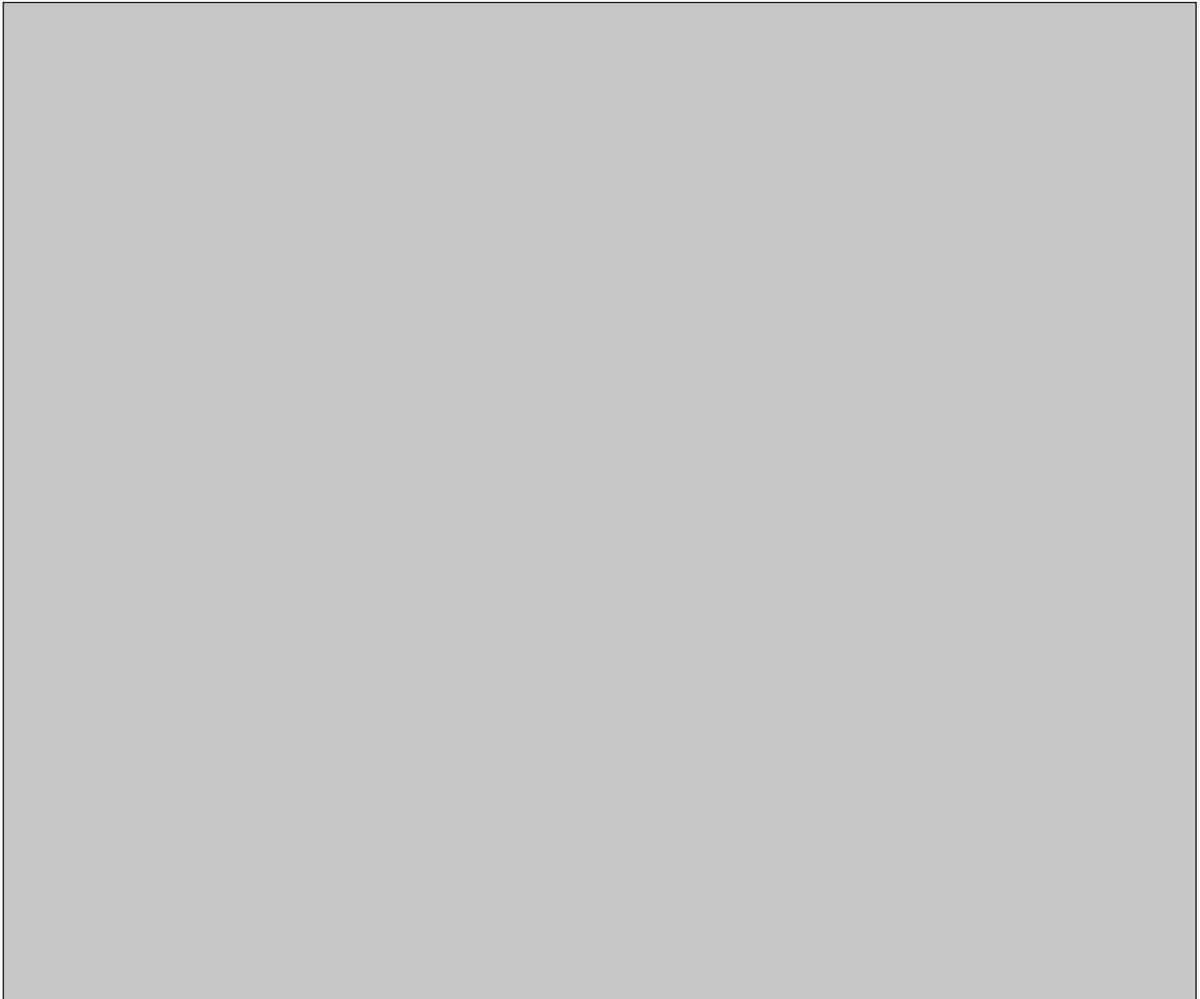


NWMO BACKGROUND PAPERS

7. INSTITUTIONS AND GOVERNANCE

**7-7 RELEVANCE OF INTERNATIONAL EXPERIENCES IN THE SOUND MANAGEMENT
OF CHEMICALS TO THE LONG TERM MANAGEMENT OF USED NUCLEAR FUEL
IN CANADA
EXECUTIVE SUMMARY**

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EXECUTIVE SUMMARY

This report reviews principles and concepts that have influenced the development of international agreements, programs and initiatives that address the health and environmental risks resulting from the generation, use and/or release of chemical substances due to their physical and chemical properties. A separate radiation protection regime for nuclear and radioactive materials has been developed to address similar risks that may result from the generation, use and/or release of some chemicals due to their radiological properties. As chemicals are involved in both regimes, the objective of this report is to provide information on the global chemicals management regime that might be relevant to NWMO in the development of proposals for the long term management of used nuclear fuel in Canada.

Chemicals are used in producing almost all man-made products, formulations and articles and new ones are constantly being developed. In addition to the thousands of commercial chemicals that are produced each year, many chemicals are unintentionally produced as by-products in industrial, manufacturing and combustion processes. These by-products may be present as contaminants in products, formulations, articles, wastes and releases to air and water. Both intentionally and unintentionally produced chemicals are released into the environment, leading to degradation of environmental media and consequential exposure of humans and wildlife. Policies for the sound management of chemicals are now recognized as essential components of overall public policy in countries at all stages of development due to the potential impacts of chemicals on human health, the environment, economic growth and development and, ultimately, global sustainable development.

Upon release into the environment, a chemical becomes distributed in different media, undergoes transport over short or long distances, is transformed into other chemicals and eventually the chemical and/or its transformation products are distributed between soil, sediment, water, air and living organisms. Processes have been developed to identify the hazards of chemicals, assess the pertinent risks and, where there have been found to be unacceptable risks, impose risk management actions to reduce or eliminate the risks. The four main processes that are most often involved in this are problem identification and priority setting, risk assessment, risk management, and monitoring and evaluation. These processes are followed in countries with well-established risk assessment and management programs, such as most developed countries, and are incorporated into some current international chemicals agreements.

The current global chemicals management regime includes at least 50 legal agreements, all but two of which were developed over the past three decades and most of which are less than 15 years old. These agreements address the following main areas of interest: occupational risks; biodiversity impacts; air pollution; water pollution; prevention of accidents and emergency response measures; transportation and storage; trade; chemical weapons; production, use or release to any environmental medium; and transboundary movement and disposal of hazardous wastes. About 40 programs and initiatives contribute to the global chemicals regime. Several were started following the creation of the UN in 1945 and others began in response to scientific and other developments such as the UNCED Conference in 1992, which called for enhanced action by all stakeholders in pursuit of the sound management of chemicals. The following key concepts and principles have influenced the development and implementation of national and international measures to address the sound management of chemicals and are relevant to the current task of NWMO.

Knowledge has always been the currency for decision-making related to chemicals management. The dependency on sound and reliable information was formally recognized in 1978 when OECD countries began developing internationally agreed procedures to determine the physical and toxicological properties of chemicals and to ensure that these data would be reliable and accepted by countries for national decision-making. OECD also developed guidelines concerning access to confidential data and

information exchange procedures to promote the sharing of information on potential problems with chemicals and on the regulation and marketing of chemicals.

In the early 1970's, recognizing that national decisions to control chemicals and pesticides could impact on trade, health and/or the environment of other countries, actions were taken to ensure that potentially affected countries would receive appropriate information. These actions progressed from a voluntary information exchange program between OECD countries, to a voluntary UNEP international mechanism to provide notification of the intent to export banned or severely restricted chemicals and pesticides, and finally to a legally binding UNEP global convention on prior informed consent (PIC) for such substances. These actions were based on the principle that decisions on hazardous materials should not be made in isolation of the interests of those who may consequentially be impacted by such decisions. This experience demonstrates the need for and value of mechanisms to ensure that potential recipients of hazardous materials may be enabled to make informed decisions prior to receiving any such materials.

Public access to information and participation in decision making have been important issues throughout the development of national and international approaches to the sound management of chemicals. The term right-to-know is now used to describe the rights of people to have access to information on issues that affect them. This includes issues related to chemicals that may affect individuals or communities, such as workplace safety, preparation for and response to accidents at industrial sites, public information on releases of chemicals from sites that manufacture or handle chemicals, and involvement of national stakeholders in national plans to implement convention obligations. There is a clear international trend to provide, at the national level, the widest possible access to information on environmental issues and to ensure that open, inclusive and transparent processes are followed in taking related decisions and in seeking access to justice in environmental matters.

Comprehensive "life cycle" assessment approaches have been used for many years to identify, early in the planning process, the potential risks associated with chemicals to permit the design and implementation of appropriate risk management measures. This has been accompanied by the "cradle-to-grave" management approach, in which identified risks are subjected to management measures at appropriate stages of the life cycle. More recently, the "cradle-to-cradle" approach was introduced with the objective of designing a product so that when it completes its originally planned use or lifespan, it constitutes an input to another process or product and, thus, is not a waste. Another approach involves the use of "sustainable chemistry", the objective of which is to reduce the health and environmental impacts associated with the production and use of chemicals by maximizing resource efficiency, conserving energy and non-renewable resources, minimizing risk, preventing pollution, minimizing waste at all stages of a product's life cycle and developing durable products that could be re-used and recycled.

The application of the precautionary approach has had a significant impact on several components of the current global chemicals regime, especially the development of regional and global environmental agreements and national laws over the past 15-20 years. There has been a growing trend to incorporation of references to precaution in the preambular and operative sections of international legal instruments and recently developed Canadian federal legislation on toxic chemicals and pesticides. A recent federal government policy paper addresses the general application of precaution in science-based decision making about risk. Thus, the application of precaution is now an important factor that influences the development of policy and legislation to control toxic substances and current expectations are that major risk management decisions will incorporate precaution in an appropriate and meaningful manner.

Over the past 30 years, as chemicals issues became truly global concerns, demands grew for all industry sectors that contributed to environmental chemical pollution to accept increased responsibility for preventing the health and environmental consequences of its operations and to reflect more fully the costs of health and environmental protection in the price of its products. In 1972, the OECD adopted the

Polluter-Pays Principle which states that the costs of carrying out national pollution prevention and control measures should be reflected in the cost of goods and services that cause pollution during production, consumption or accidents at industrial sites. Introduction and application of this principle changed the mind-set of both industry and government and has resulted in many significant changes in behaviour over the past three decades.

In the early 1990's, OECD developed guidance for waste minimization practices and for extended producer responsibility (EPR). The latter was a policy approach to extend the typical environmental responsibilities of producers and importers to include responsibility for the treatment or disposal of post-consumer products. EPR may be viewed as an extension of the Polluter-Pays Principle, as the responsibility for addressing disposal aspects of post-consumer products would be assigned to the producers and/or importers of these products.

Responsible Care® is a voluntary initiative of the chemicals industry. Initiated in 1985 in Canada, it is now operated in 47 countries that account for 85% of the global production of chemicals by the International Council of Chemicals Association, a council of trade associations representing chemical manufacturers at the national or regional level. The program addresses all aspects of chemical industry operations and the complete life cycle of products and wastes. It is intended to contribute to sustainable development of local communities and of society as a whole by improving all aspects of the chemical industry's health, safety and environmental performance, communication and public accountability. This initiative may be extended to chemical and allied industries, including the supply chain, and partners in related industries have been encouraged to tailor it to fit their own organizations.

The author identified several issues related to these principles and concepts that may be relevant to the development of proposals for the long term management of used nuclear fuel. Concerning access to information and decision making, it was suggested that the following aspects be clarified: the knowledge base on which proposals and decisions would be based; accessibility of the knowledge base to all stakeholders; confidentiality of data; disclosure of uncertainties and unknowns in the knowledge base; the nature of the multistakeholder consultation process; the role of stakeholders in decision making; provisions for openness, inclusiveness and transparency in decision-making; and involvement of affected jurisdictions and communities to address any PIC issues.

With regard to risk assessment and risk management, it was suggested that the NWMO proposal should clarify whether a life cycle risk assessment is used, include the results of the risk assessment and, at a minimum, incorporate a cradle-to-grave approach in the risk management aspects. As cradle-to-grave risk management approaches are now being used in the chemicals area, it was noted that it might be worth exploring the practicality of such approaches for this industry. The NWMO proposal is likely to be evaluated on the manner in which it incorporates the precautionary approach, given relevant developments at the national and international level, especially in light of the uncertainties in the data to be used and the time periods that will be considered for management of used nuclear fuel. Therefore, it might be advisable to explain how precaution has been factored into the proposal.

With regard to industry roles and responsibilities, the nuclear power industry has created a trust fund to address its financial obligations for the long term management of used nuclear fuel, thus demonstrating that the industry is addressing the Polluter-Pays Principle. However, noting the long term nature of managing used nuclear fuel, it will have to be demonstrated that the measures that will be proposed in this regard will be sufficient and sustainable in the long term. As the issue before NWMO relates to waste, it seems appropriate to examine whether the industry has fully explored its options for waste minimization while it is seeking solutions for its current waste dilemma. Furthermore, it might be appropriate to challenge the industry to address whether an examination of extended producer responsibilities could assist in minimizing the wastes produced or, possibly, be used to extend responsibility for nuclear wastes

to the original suppliers of the fuel. Finally, it is noted that the international chemicals industry adopted a voluntary program to address public concerns about the manufacture, distribution and use of chemicals and to regain public trust in its industry. If the nuclear industry finds itself with similar needs today, perhaps it might be appropriate to consider developing and implementing a modified form of *Responsible Care* for the nuclear power sector.

While the global chemicals regime was established to address the health and environmental risks presented by the physical and chemical properties of non-radioactive substances, many of the issues relating to knowledge development, access to information, stakeholder involvement in decision-making, making risk assessment and risk management decisions, applying the precautionary approach, and the roles and responsibilities of industry are common to both the chemicals and nuclear industries. The present examination of experiences in developing the global chemicals regime has identified some concepts and principles that could be worth exploring, and possibly exploiting, in the pursuit of the long term management of used nuclear fuel in Canada.