

The regulatory function in radioactive waste management

A. Duncan, C. Pescatore *

The Radioactive Waste Management Committee Regulators' Forum (RWMC-RF) was established in 2001 to facilitate multilateral communication and information exchange between RWMC regulators.¹ Its first major action was to compile information about waste management regulation in 15 NEA member countries, in particular information related to waste disposal. The compilation includes factual information about national policies for radioactive waste management, institutional frameworks, legislative and regulatory frameworks, available guidance, classification and sources of waste, the status of waste management, current issues and related R&D programmes. The resulting report, *The Regulatory Control of Radioactive Waste Management – Overview of 15 NEA Member Countries*,² provides an important source of information for all stakeholders interested in learning about the regulatory functions and practices in these NEA member countries.

The next step was to produce a brochure with an easily accessible synopsis of this report, in order to provide a quick introduction to regulatory systems and an overview of current arrangements in NEA member countries. The brochure describes the management of radioactive waste from all types of nuclear installations, such as power reactors, research reactors and nuclear fuel cycle facilities, as well as from medical, research and industrial sources, and defence-related sources where appropriate. It

presents the national situations during the first half of the year 2005, but does not address the regulatory control of radioactive waste from natural sources. Its main points are summarised below.³

The regulatory cycle

Like most forms of regulation, the regulatory control of radioactive waste management involves a number of elements and administrative bodies associated with its development and implementation. The elements generally associated with a regulatory process constitute a virtuous cycle, with feedback, that embraces the principle of continuous improvement.

These elements start with recognition of a *practice* requiring regulatory control and with the development of a *policy* for its implementation. In the case of radioactive waste management, the need was originally seen as being health protection of the general public and workers against the dangers of ionising radiation, and was based on *objectives* and *standards* traceable to the recommendations of the International Commission on Radiological Protection (ICRP). In more recent times, broader environmental, international, social and economic objectives have been recognised with the setting of objectives, standards and guidelines for repository site selection criteria, waste package requirements, monitoring criteria, etc. The ultimate objective remains to preserve the safety of both the public and the environment.

The establishment of broad policy and essential objectives is followed by *primary, enabling legislation* together with *secondary legislation* involving regulations, rules, ordinances, decrees and so forth. Except where these legal elements are judged to be sufficiently detailed, they are usually followed by

* Dr. Allan Duncan (e-mail: allan.duncan@talk21.com), formerly Director and Chief Inspector, Her Majesty's Inspectorate of Pollution, and Head of Radioactive Substances Regulation, Environment Agency (for England and Wales), is a member of the NEA Radioactive Waste Management Committee Regulators' Forum (RWMC-RF); Dr. Claudio Pescatore (e-mail: pescatore@nea.fr) is Principal Administrator for RWM at the NEA.

publication of the standards to be achieved and by guidance on how these legal elements are to be implemented in practice.

Consent to conduct a practice, by way of provision of legislation and regulations, is generally through some formal, legal instrument, often described as a *licence* but also at times as a permit, authorisation or decree. This legal instrument contains detailed terms and conditions and is issued to the person or company legally recognised as the operator of the regulated practice. In some cases a licence may cover all aspects of regulation related to the regulated process or activity, from initial planning and development, through matters such as occupational health and safety of workers and accident prevention, to the final act of disposal. In other cases they may address such aspects separately but having regard, of course, to the interactions between them. *Compliance* with the terms and conditions of a licence is then checked by inspection and monitoring of the operator's activities. Cases of non-compliance are often dealt with by way of notices or requirements placed on the operator or by other means, such as education, which may be described collectively as *compliance promotion*. If necessary, non-compliance is subject to some form of *enforcement* action.

All of these activities are accompanied, in most NEA member countries, by an important element of public involvement in the form of consultation and information exchange, and they are invariably supported by R&D programmes. In countries where specific arrangements are made for meeting the costs of the regulated activity, for example waste management, an associated element of cost estima-

tion, validation and fund management is involved. Where relevant, there are also elements of control related to transborder shipment of radioactive materials and waste and to international safeguards against nuclear weapons proliferation.

To complete the cycle, there are usually arrangements for reviewing the success of a regulatory system and, if necessary, for taking corrective action by way of *feedback* to the licensing stage, or to the controlling legislation. In addition, most regulatory systems involve following up the granting of a licence to ensure that safe performance is being achieved and, if necessary, taking remedial action such as physical intervention for repair or recovery. This is true for the regulation of such elements of radioactive waste management as transport, storage, effluent discharge and perhaps even the disposal of short-lived waste.

The disposal of long-lived radioactive waste, however, is different from the above activities in that the impacts are unlikely to become apparent until far into the future, if at all. Therefore, such follow-up is effectively impossible. This means that any remedial action is unlikely, unless undertaken by future generations on their own initiative. Accordingly, an important conventional component for securing safety is unavailable to current regulatory bodies. Hence, the granting of a licence for the disposal of long-lived waste and the closure of a repository involves giving up that key element of active control. It depends on the satisfactory assessment of concepts that are designed to be safe, and actually involves an act of trust, taken by the current generation on behalf of future generations,⁴ in the technology and in the legal and regulatory systems.



Posiva Oy, Finland.

Tunnel entrance to the ONKALO underground characterisation facility at the site of the foreseen repository in Finland.

Analysis of regulatory arrangements in NEA member countries

With all of the above elements of the “regulatory cycle” in mind, the RWMC-RF compiled relevant information about national arrangements. This was done on the basis of a standard template designed to address all aspects of the regulatory control of radioactive waste management and to facilitate comparison of specific aspects between countries. For each of the 15 NEA member countries the brochure shows, in tabular form, the authorities associated with the following aspects:

- policy, objectives and independent advice;
- primary and secondary legislation, regulations, etc.;
- standards and guidance;
- licensing, inspection, enforcement and appeals;
- public involvement;
- research and development;
- cost estimation for the establishment of relevant funds;
- other items (e.g. transboundary shipment of waste, nuclear safeguards, etc.).

Inevitably, the information is only a very simple representation of any particular element of regulatory infrastructure, and a full comparison of radioactive waste management regulation across NEA member countries requires reference to details in the main compilation of national information. Nevertheless, the brochure clearly identifies national authorities responsible for specific elements of regulation and provides the basis for initial comparison that may help to facilitate communication and exchange of experience. This comparison is presented in the brochure and leads to a number of helpful observations summarised in the following section.

General observations on the roles of regulators

Systems for the implementation of all of these legislative or regulatory elements vary from one country to another, and arrangements may vary as well concerning the regulation of waste from nuclear sites, from non-nuclear sites such as hospitals, universities, research laboratories and industry, and from national defence establishments. It is clear, however, that there is no unique or best way of arranging such implementation and that it depends on the national constitutional structure (federation or single state), the structure of legal systems, organisational frameworks and, to a large extent, upon national regulatory culture.

In most cases regulatory decisions emerge after coordination of a wide range of relevant and authorita-

tive inputs, and involve bodies ranging from central government to local communities, together with governmental technical authorities and independent advisory bodies or commissions. These technical authorities are most often referred to as the “regulators”, “regulatory bodies” or “safety authorities”. It may also be seen that there are usually one or more key, or lead, technical authorities responsible for granting licences (or for advising on their content), for checking compliance with their terms and conditions and, in many cases, for taking enforcement action in cases of non-compliance.

Against this background, the terms “regulator” and “decision maker” need to be placed in the context of the issue that is being addressed, and the decision that needs to be made. In particular, in trying to identify the lead “regulator” for a particular issue, it is important to understand the country’s legislative and constitutional structure at a detailed level, as these differ substantially from country to country. It also needs to be understood that these bodies are rarely unconstrained and that, in most NEA member countries, they must have regard to the responsibilities and authority of other bodies, often government ministries.

For further information on the work of the RWMC Regulators’ Forum, see www.nea.fr/html/rwm/regulator-forum.html. ■

Notes

1. For a full description of the RWMC-RF mandate see www.nea.fr/html/rwm/regulator-forum.html.
2. This title (ISBN 92-64-10650-2) can be purchased online at www.oecdbookshop.org/. The 15 NEA member countries are: Belgium, Canada, Finland, France, Germany, Hungary, Italy, Japan, Norway, the Slovak Republic, Spain, Sweden, Switzerland, the United Kingdom and the United States.
3. It may also be noted that RWMC-RF members maintain a database of national fact sheets on the regulatory control of radioactive waste management that is updated yearly at www.nea.fr/html/rwm/rt/welcome.html.
4. This is the subject of further study by the NEA Radioactive Waste Management Committee (RWMC).