

Radioactive Waste Management

ISBN 92-64-01075-0

The Regulatory Function and Radioactive Waste Management

International Overview

© OECD 2005
NEA No. 6041

NUCLEAR ENERGY AGENCY
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where the governments of 30 democracies work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

* * *

This work is published on the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the Organisation or of the governments of its member countries.

NUCLEAR ENERGY AGENCY

The OECD Nuclear Energy Agency (NEA) was established on 1st February 1958 under the name of the OEEC European Nuclear Energy Agency. It received its present designation on 20th April 1972, when Japan became its first non-European full member. NEA membership today consists of 28 OECD member countries: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, Norway, Portugal, Republic of Korea, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities also takes part in the work of the Agency.

The mission of the NEA is:

- to assist its member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes, as well as
- to provide authoritative assessments and to forge common understandings on key issues, as input to government decisions on nuclear energy policy and to broader OECD policy analyses in areas such as energy and sustainable development.

Specific areas of competence of the NEA include safety and regulation of nuclear activities, radioactive waste management, radiological protection, nuclear science, economic and technical analyses of the nuclear fuel cycle, nuclear law and liability, and public information. The NEA Data Bank provides nuclear data and computer program services for participating countries.

In these and related tasks, the NEA works in close collaboration with the International Atomic Energy Agency in Vienna, with which it has a Co-operation Agreement, as well as with other international organisations in the nuclear field.

© OECD 2005

No reproduction, copy, transmission or translation of this publication may be made without written permission. Applications should be sent to OECD Publishing: rights@oecd.org or by fax (+33-1) 45 24 13 91. Permission to photocopy a portion of this work should be addressed to the Centre Français d'exploitation du droit de Copie, 20 rue des Grands Augustins, 75006 Paris, France (contact@cfcopies.com).

FOREWORD

The involvement of both technical and non-technical stakeholders in national debates and decision making on radioactive waste management has become increasingly important in the last decade, and even more so as more countries move towards siting and implementing geological repositories. A feature of this involvement is the increasing extent to which reference is made to procedures and standards applied in other countries, and to comparisons between them.

As major stakeholders, the radioactive waste management regulators in the Radioactive Waste Management Committee (RWMC) of the Nuclear Energy Agency (NEA) have already recognised the value of exchanging and comparing information about national practices and have created a Regulators' Forum (RWMC-RF) for this purpose. Its first major action was to compile information about the regulatory control of radioactive waste management in NEA member countries, with emphasis on waste disposal. Information was given for each of 15 countries against a standard template and 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 ensuing compilation *The Regulatory Control of Radioactive Waste Management – Overview of 15 Member Countries* provides an important source of reference for all stakeholders intent on learning about the regulatory functions and practices in the countries covered. The information it contains is rather detailed, however, and its analysis too time-consuming for those requiring a quick overview or a simple comparison of one or two specific aspects.

The purpose of this overview is to provide an easily accessible synopsis of the compilation. It covers the management of radioactive waste from all types of nuclear installations, such as nuclear power plants, research reactors and nuclear fuel cycle facilities. It also addresses medical, research and industrial sources as well as defence-related sources where relevant. It does not address the regulatory control of radioactive waste from natural sources. The overview presents the national situations as of the first half of the year 2005.

Acknowledgements

The brochure was endorsed by the Regulators' Forum of the Radioactive Waste Management Committee. The Forum acknowledges the input of the other NEA committees to the revision of the final text as well as the contribution of A. Duncan and C. Pescatore in drafting the original text.

TABLE OF CONTENTS

Foreword.....	3
1. Introduction	7
2. The Regulatory Cycle.....	8
3. Comparative Analysis of Regulatory Arrangements.....	10
3.1 Policy, Objectives and Independent Advice.....	10
3.2 Primary and Secondary Legislation.....	11
3.3 Standards and Guidance	11
3.4 Licensing, Inspection, Enforcement and Appeals	12
3.5 Other Regulatory Activities.....	13
4. Overall Observations on the Regulators’ Role	17
Appendix 1: National Bodies Involved in the Management and Regulation of Radioactive Waste	19
Appendix 2: The RWMC-RF template of the compilation of information on Regulatory Control of Radioactive Waste Management.....	23
Figure 1: The Regulatory Cycle	8
Table 1: The Regulatory Infrastructure in NEA Member Countries.....	14

1. Introduction

Stakeholders in radioactive waste management include all those involved or having an interest in it, such as waste producers, waste management agencies, regulatory authorities, local communities and elected representatives. They also include the technical intermediaries between the public and decision makers, as well as national governments, civil society organisations, neighbours of facilities, interested members of the public and, in the wider waste management context, relevant bodies established under international agreements and conventions. The involvement of both technical and non-technical stakeholders will become increasingly important as more countries move towards the siting and implementing of geologic repositories. This is already true in respect of other aspects of radioactive waste management such as transport, interim storage and the authorised discharge of liquid and gaseous effluents into the environment. A feature of this involvement is the increasing extent to which reference is made to procedures and standards applied internationally as well as nationally, and to comparisons between them.

As major stakeholders, the radioactive waste management regulators in the Radioactive Waste Management Committee (RWMC) of the NEA have already recognised the value of exchange and comparison of information about national practices and have created a Regulators' Forum (RWMC-RF) for this purpose. Its first major action was to compile information about the regulatory control of radioactive waste management in NEA member countries, with emphasis on waste disposal. Information was given for each of 15 countries against a standard template and 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 ensuing report *The Regulatory Control of Radioactive Waste Management – Overview of 15 NEA Member Countries*¹ provides an important source of reference for all stakeholders intent on learning about the regulatory functions and practices in these NEA member countries. Additionally, the RWMC-RF members maintain a database of national fact sheets on the regulatory control of radioactive waste management, which is updated yearly.²

The purpose of this brochure is to provide an easily accessible synopsis of the report *The Regulatory Control of Radioactive Waste Management – Overview of 15 NEA Member Countries* in order to provide a quick introduction to regulatory systems and an overview of current systems in NEA member countries. To that effect Chapter 2 identifies the elements generally associated with the process of regulation, Chapter 3 provides a comparative analysis of the regulatory arrangements in radioactive waste management across 15 NEA member countries, and Chapter 4 draws general observations.

This brochure covers the management of radioactive waste from all types of nuclear installations, such as power reactors, research reactors, nuclear fuel cycle facilities, etc, as well as from medical, research and industrial sources and from 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.

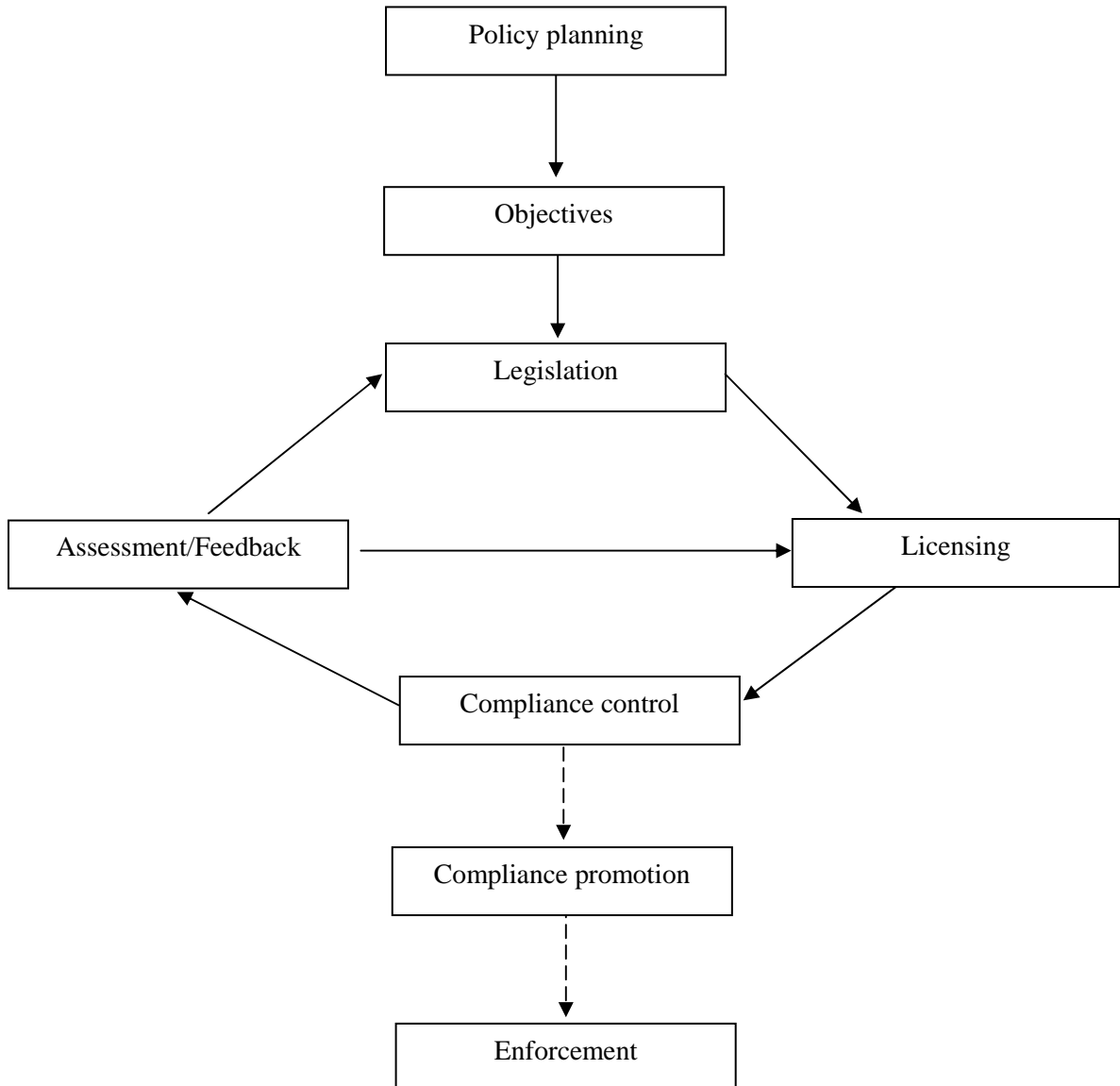
1. <http://www.oecdbookshop.org/oecd/display.asp?sf1=identifiers&st1=662004011P1>

2. <http://www.nea.fr/html/rwm/rf/welcome.html>

2. The regulatory cycle

Like most forms of regulation, the regulatory control of radioactive waste management involves a number of identifiable elements and, usually, a number of bodies associated with their development and delivery. The elements generally associated with a regulatory process are conveniently depicted as a virtuous cycle that embraces the principle of continuous improvement. This “regulatory cycle” is shown at Figure 1.

Figure 1. Regulatory cycle



These elements generally start with recognition of a *practice* or situation that needs a system of regulatory control and with development of a *policy* for its implementation. In the case of radioactive waste management, the need was originally seen as being the health protection of the general public and workers against the dangers of ionising radiation. For some time, therefore, regulation was largely an exercise of radiation protection, according to objectives and standards that were usually traceable to the recommendations of the International Commission on Radiological Protection (ICRP). In more recent times, however, broader environmental, international, social and economic objectives have been recognized with, for example, the setting of objectives, standards and guidelines for disposal site selection criteria, waste package requirements and monitoring criteria. The ultimate objective remains to preserve the safety of both the public and the environment.

The establishment of broad policy and essential objectives is then usually followed by creation of appropriate *primary, enabling legislation* together with *secondary legislation* involving regulations, rules, ordinances, decrees, arrêtés, etc. Except where these legal elements are judged to be sufficiently detailed, they are usually followed by publication of the standards to be achieved and by guidance on how these legal elements are to be implemented in practice.

Consent to act within the bounds of legislation and regulations is generally by way of some formal, legal instrument, often described as a *licence* but also, variously, as a permit, authorisation or decree. This contains detailed terms and conditions and is issued to the person or company that is recognised legally as the operator of a process or activity subject to regulation. 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 inductive means, 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 by way of consultation and exchange of information, and they are invariably supported by R&D programmes. In countries where specific arrangements are made for meeting the costs of the regulated activity, e.g. waste management, an associated element of cost estimation, validation and fund management is involved. Also, where relevant, there are elements of control related to transfrontier shipment of radioactive materials and waste and to international safeguards against nuclear weapon proliferation.

To complete the cycle there are also, in most cases, arrangements whereby the overall success of the regulatory system in meeting the objectives of policy is reviewed and, if necessary, corrective action is taken by way of *feedback* directly to the licensing stage, where detailed terms and conditions may be modified, or to the controlling legislation. In addition to such corrective action, most regulatory systems have the capacity to follow up the granting of a licence to ensure that safe performance is actually being achieved, which includes taking remedial action if necessary. It might also include some form of physical intervention for repair or recovery. This is true for regulation of elements of radioactive waste management such 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, regulatory follow up after granting of a disposal licence, in order to see that the desired long-term effects are being achieved, 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 definitive disposal of long-lived waste and closure of a repository involves giving up that key element of active control. It depends on the satisfactory assessment of disposal concepts that are designed to be safe, and actually involves an act of trust in the technology and the legal and regulatory systems, taken by the current generation on behalf of future generations.³

3. Comparative analysis of regulatory arrangements

With the general concept of the regulatory cycle in mind, the RWMC-RF has produced a compilation of regulatory arrangements based on a standard template (see Appendix 2) designed to elicit all the relevant information on regulatory control of radioactive waste management and to facilitate easy accessibility to specific aspects and comparison between different countries. An overview of the institutions or organisations broadly involved with the regulatory function in 15 NEA member countries is provided in Table 1. For each one, the table informs on the question of ‘who does what?’ and shows the authorities associated with each of 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 establishment of relevant funds.
- Other items (e.g. transboundary shipment of waste, nuclear safeguards, etc.).

Inevitably, the information in Table 1 can give only a crude representation of any particular regulatory infrastructure, and full comparison of radioactive waste management regulation in different NEA member countries will require reference to details in the compilation of national information. Nevertheless, it provides the basis for an initial comparison that may help to facilitate communication and exchange of experience.

3.1 Policy, objectives and independent advice

The formulation of Government policy is not always considered part of the process of regulation although it is clearly critical to the setting of aims and objectives for the regulatory framework. Thus, there are different views about where the process of regulation does actually start and about who, precisely, are the decision-makers or regulators.

Table 1 shows that overall policy for regulation of radioactive waste management lies with the central Government regardless of national constitution, i.e. whether federal or not, but that advice to Government may come from a wide variety of sources. Some sources may be considered independent; that is to say with no specific interest or stake in the outcome of Government policy decisions, other than that of a responsible and informed citizen. Typical of such sources are CNE (France), SSK (Germany), ACNRE (Japan), KASAM (Sweden), CoRWM (United Kingdom), KSA (Switzerland)

3. This is the subject of further study by the NEA RWMC.

and NWTRB (United States). Other typical sources may be considered somewhat less independent, such as Government Ministries or the technical authorities that are involved in implementing the regulatory process.

3.2 Primary and secondary legislation

Table 1 shows that primary legislation in the form of Acts or Laws is generally the responsibility of the main, national legislative body, usually described as “Parliament” or, otherwise, as “Congress” (USA) or “Diet” (Japan).

Secondary legislation, in the form of ordinances, regulations, rules, decrees, etc., appears most often to be the individual or collective responsibility of those Government Departments or Ministries whose portfolios cover one or more aspects affected or influenced by management of radioactive waste. Typically, these are ministries for environment, health, nuclear safety and radiation protection, agriculture, water, food, energy, trade, industry, economy, interior, foreign or international affairs, finance, natural resources, conservation, rural affairs, building, land use or regional development, transport, education, science and technology, etc.

Exceptionally, secondary legislation in the form of binding rules or codes, as distinct from standards, may be the responsibility of other bodies such as the EPA and NRC in the United States or SSI and SKI in Sweden.

This shows that, in most countries, the overall process of regulation of radioactive waste management involves elected politicians, ministers and government officials at an early stage. A wide range of relevant considerations is thus taken into account. The Table also shows that, whether or not these individuals are regarded as regulators, they will have a legitimate interest in the activities and decisions of those charged with implementation and enforcement of legislation and regulations, etc.

3.3 Standards and guidance

In some situations primary or secondary legislation is sufficiently detailed to be a prime source of standards and guidance. This is the case in most countries for the fundamental standards concerned with radiation protection of workers and members of the public, for example. In some countries, such as Germany, United States and Hungary, the nature of legislation is highly detailed and addresses wider issues. In other countries, or where the law is not sufficiently detailed, technical standards to be met in radioactive waste management are generally defined by the technical authorities charged with implementing and enforcing the law.

In some specific cases, such as in the definition of radioactive waste treatment and/or waste packaging specifications, a national waste management body may have a role in the setting of standards. Examples are NIRAS/ONDRAF in Belgium and Nirex in the United Kingdom. It is questionable as to whether or not these are standards in the regulatory sense, but such standards or specifications are usually agreed with licensing bodies before promulgation. Subsequent regulatory approval for waste treatment and packaging usually depends on compliance with such standards.

In the specific case of European Union Member Countries, some standards originate by way of European Commission Directives, such as the Directive on “Basic Safety Standards for the Health Protection of the General Public and Workers against the Dangers of Ionising Radiation” but they are generally given effect by national legislation.

As regards the publication of guidance on implementation of legal or regulatory requirements, no specific pattern seems to exist across NEA member countries. In many cases, those who set standards also provide guidance on how to meet them but this is not universal. It is common, however, for member countries to have regard to the international guidance published by NEA, IAEA and ICRP.

3.4 Licensing, inspection, enforcement and appeals

Licensing, inspection and enforcement are the elements most usually associated with the term “regulation”. Those involved with its implementation are termed “regulators” or “regulatory authorities”. In most countries, technical authorities are established for the purpose of implementing and enforcing the body of law associated with management of radioactive waste. In some cases a single piece of legislation covers management of radioactive waste from all sources, such as medical, nuclear, and other. In other cases the law associated with operation of nuclear installations, such as power reactors, research reactors, fuel cycle facilities, etc, also covers regulation of the management of radioactive waste from these sources, and separate legislation covers management of waste from other sources, such as medical, research and industrial sources, and defence-related sources where appropriate. In other legal variations, separate laws or regulations cover different elements of radioactive waste management. This is the situation in the United Kingdom, for example, where nuclear safety law covers waste management on a nuclear installation, separate legislation covering radioactive waste management from all other sources also covers disposal of waste from nuclear installations, and further, land-use planning law covers siting and development of disposal facilities.

Accordingly, there are quite different arrangements in different countries for implementation and enforcement of the law. In many countries, one technical authority deals with the licensing, inspection and enforcement of on-site health and safety matters and of waste disposal, while others deal with siting and development of disposal facilities. Belgium, Canada and Finland are typical in this regard. In other countries such as Hungary and the United Kingdom, the situation is more complex. In countries with Federal Government, such as Germany and the United States, the situation is different in that the Federal States have responsibilities of their own. In Germany, for example, licensing of a repository is carried out by State (Länder) Licensing Authorities, although the latter have no repository supervision role.

Regardless of these variations and complications, few, if any, of these technical authorities are free to act independently of other parties with relevant interests or responsibilities, which may be also surmised from examination of Table 1. In regard to licensing at least, there is usually a mandatory requirement for consultation with, or reference to, other bodies. Thus, in some cases there is a legally established system of public consultation during the licensing process, and the observations collected from the public consultation are taken into account when a decision is issued. Additionally, in many cases, the technical authorities only propose licence conditions or provide advice, and the ultimate responsibility for decision-making and granting of licences lies with one or more Government Ministries. This is the case in Finland, France, Italy, Norway, Spain, Sweden and Switzerland.

Similarly, in regard to enforcement in cases of non-compliance with licence conditions, there is a range of legal arrangements. In some countries, as in the United Kingdom for example, certain technical regulatory authorities such as the EA may initiate legal proceedings against an offender directly. In other countries, such as Germany for example, the public prosecutor has the power to decide whether or not to initiate investigations.

The siting and development of a radioactive waste disposal facility is, of course, an extreme case of multiple interests and responsibilities, including those of local communities. It is apparent that in

this particular case, the input of technical authorities normally associated with licensing and inspection of waste management operations is only one consideration amongst many others.

In some countries, such as the United Kingdom, there is a well-established system by which an aggrieved operator may appeal to a higher authority against the terms or conditions of a licence granted by the normal licensing body. In some cases this right is also extended to third parties who have a legitimate interest. These arrangements are separate from the usual legal provision for judicial review of regulatory action which, unlike the provision for appeal, may address only the process by which a regulatory decision was made, and not the substance of the decision itself.

3.5 *Other regulatory activities*

Although they usually comprise a small part of the task by comparison with licensing, inspection and enforcement, other important activities in the overall picture of radioactive waste management regulation typically include providing relevant information to the public as well as consulting it, conducting or directing R&D, estimating costs of waste management for the purpose of maintaining a strategic fund, controlling transfrontier shipment of radioactive waste and implementing the requirements of international agreements on nuclear material safeguards. Table 1 shows that these activities usually fall to those technical authorities charged with licensing, inspection and enforcement and, in some specific cases to national bodies responsible for management of radioactive waste.

A policy of openness towards the general public – including public meetings and consultation – is a basic feature of regulatory frameworks. Its implementation has become a more and more important task in recent years highlighting changes in the perception and role of the regulator.⁴

Box. Notes on Table 1

- The acronyms used in the Table are defined in Appendix 1.
- Member States of the European Union are bound by the European Council Directive 96/29/EURATOM, laying down basic safety standards for the health protection of the general public and workers against the dangers of ionising radiation.
- Most NEA member countries have regard to the international guidance published by NEA, IAEA and ICRP.
- Identity of responsible authority depends, amongst other things, upon the type of installation and the nature and level of hazards involved.
- Member States of the European Union, under Article 37 of the Euratom Treaty, must seek and receive an opinion from the EC on certain plans for the disposal of radioactive waste before issue of a licence.
- In some countries the body shown only initiates enforcement action by way of submissions to the relevant prosecuting authority.
- Some States in the United States, so-called “Agreement States”, are allowed to regulate use of radioactive material according to NRC regulations.

4. NEA (2003), *The Regulator’s Evolving Role and Image in Radioactive Waste Management*, OECD, Paris, (ISBN 92-64-02142-6).

Table 1. **The regulatory infrastructure in NEA member countries** (See Box “Notes on Table 1”)

Regulatory element/activity	Associated bodies				
	Belgium	Canada	Finland	France	Germany
Policy	Government	Government (NRCan)	Government	Government	Federal Government (BMU, BMBF, BMWA, BMF, BMVBW)
Primary legislation	Parliament	Parliament	Parliament	Parliament	Parliament
Secondary legislation	Government, FANC	Government, CNSC	MTI/Government	Government (MoI, MoE, MoH)	BMU
Advice to government	FANC	NRCan, CNSC (Secretariat)	STUK, MTI's advisory bodies	OPECST, CNE, DGSNR + other Civil Serv. Depart.	RSK, SSK, KAT, GRS
Standards	NIRAS/ONDRAF (Waste packaging)	CNSC, ECan	STUK	DGSNR	BMU (KTA)
Guidance		CNSC, ECan	STUK	DGSNR	BMU
Licensing (disposal)	FANC, MINT	CNSC	Government (Parliament + municipality)	Government (advised by DGSNR).	Länder licensing author.
Licensing (health and safety)	FANC, MINT	CNSC	Government (Parliament + municipality), STUK	Government (advised by DGSNR), regional government	Länder licensing author.
Licensing (Spatial plan./dev.)	FANC, MINT	CNSC, ECan, CEAA, Prov. Govt	Min. of Env. municipality	Regional government	Länder licensing author.
Inspection/Monitoring	FANC	CNSC	STUK	DGSNR, DSNR, DRIRE, DSND ³	Länder supervision author., BfS (self-surveillance for disposal)
Enforcement	FANC	CNSC	STUK	DGSNR, DSNR, DRIRE, DSND	As above
Appeals		CNSC			
Public consultation	FANC, local authorities	CNSC, NRCan		DGSNR	BMU, Länder lic. Author.
R&D (including industrial work)	NIRAS/ONDRAF, FANC, CEN/SCK, others	Industry, CNSC	Waste producers (NPP utilities, Posiva) Small public P&D programme)	IRSN, ANDRA, DGSNR, CEA	BfS, BMU, BMBF, BMWA, Industry, GRS, BGR, DBE, GSF, FZJ, FZK, Universities etc.
Cost estimation (incl. industrial work)	NIRAS/ONDRAF	CNSC	SNWMF (MTI)	MoI	BfS, BMBF
Transboundary shipment	FANC	CNSC (OIA)	MTI, STUK	DGSNR	Bundesausfuhramt
Safeguards		CNSC (OIA)	MTI, STUK	DSND	BMW A

Table 1. The regulatory infrastructure in NEA member countries (*continued*)

Regulatory element/activity	Associated bodies				
	Hungary	Italy	Japan	Norway	Slovak Republic
Policy	Government (MoH, Minister for HAEA)	Government (MoPA + other ministries)	Government (AEC)	Government	Government
Primary legislation	Parliament	Parliament	Parliament (Diet)	Parliament	Parliament
Secondary legislation	Government (Orders by various ministers)	Government (Ministerial Decrees)	METI, MEXT	Government (MoH)	All regulatory bodies
Advice to government	AECC	TCNSHP, Expert Gr. (disposal site select.)	NSC (advises Prime Minister)	NRPA	MH SR, MZ SR, UJD SR
Standards	Given in above Orders	(Adopted from EC Dir. by Legisl. Decrees)	METI, MEXT, MLIT	NRPA	Given in Regulations
Guidance	Given in above Orders	MoPA, ANPA	NSC	NRPA	UJD SR
Licensing (disposal)	Parliament, SPHAMOS, HAEA + special authorities	MoPA (based on APAT judgements)	METI, MEXT	Government, MoH (advised by NRPA)	UJD SR as Civil Construction Office (based UVZ judgement)
Licensing (health and safety)	SPHAMOS, HAEA + special author.	MoPA (based on APAT judgements.)	METI, MEXT	As above	As above
Licensing (Spatial planning/development)	SPHAMOS and special authorities		MLIT		MZP SR, Municipal Office
Inspection/Monitoring	SPHAMOS, HAEA + special authorities	APAT	METI, MEXT	NRPA	UJD SR, UVZ
Enforcement	SPHAMOS, HAEA + special authorities	APAT	METI, MEXT	NRPA	UJD SR, UVZ.
Appeals					
Public consultation	RBEP		All regulatory bodies	All regulatory bodies, mainly NRPA, IFE	All regulatory bodies.
R&D (including industrial work)	PURAM	APAT, SOGIN	NUMO, JNC, JAERI, RWMC, CRIEPI	IFE	VUJE, UJD SR, waste producers
Cost estimation (incl. industrial work)	PURAM (in agreement with HAEA and HEO) + appr. by HAEA Minister	SOGIN	METI	IFE, MoTI	MH SR
Transboundary shipment	HAEA	APAT	MLIT, METI	NRPA	UJD SR, MZ SR
Safeguards	HAEA	APAT	MEXT	NRPA	UJD SR

Table 1. The regulatory infrastructure in NEA member countries (*continued*)

Regulatory element/activity	Associated bodies				
	Spain	Sweden	Switzerland	United Kingdom	United States
Policy	Gov. (MITYC, advised by ENRESA + MoE)	Government	Federal Council (federal government)	Government (Defra, SE, NAW, DoE(NI))	Federal government
Primary legislation	Parliament	Parliament	Parliament	Parliament, Scot Parliam.	Congress
Secondary legislation	MITYC (adv. by CSN)	Government	Fed'l Council, UVEK, BFE	Defra, SE, NAW, DoE(NI)	DoE, EPA, NRC
Advice to government	CSN	KASAM, SKI, SSI	HSK, KSA, AGNEB, KNE	CoRWM, NUSAC, RCEP, COMARE, NRPB,	EPA, NRC, NWTRB, NAS
Standards	(Adopted from EC Direct. by Decrees or Orders)	SKI, SSI	HSK	EA, SEPA, DoE(NI), HSE. Nirex (waste packaging)	EPA, NRC
Guidance	CSN	SKI, SSI	HSK	EA, SEPA, DoE(NI), HSE	NRC, EPA (for WIPP)
Licensing (disposal)	MITYC (advised by CSN)	Gov. on advice from SKI (nuclear facilities) and SSI, Environmental Court	Federal Council or UVEK (advised by HSK KSA, AGNEB)	EA, SEPA, DoE(NI)	NRC(NMSS), EPA (for WIPP), DOE (self-licensing in some cases)
Licensing (health and safety)	MITYC (advised by CSN)	As above	As above	HSE(NII) on nuclear sites, HSE(FO) on non-nuclear sites	NRC(NMSS), exc. oper. power reactors and all other non-power reactors
Licensing (spatial planning/development)	MoE, MITYC, CSN	County administrative boards	Fed'l Council after consult. of cantons, neighbour countries, appr. by Parl., facultative referendum	Local govt., Defra, SE, NAW, DoE(NI)	NRC, federal States.
Inspection/Monitoring	CSN	SSI, SKI (nuclear sites)	HSK	EA, SEPA, DoE(NI), HSE(NII) (nuclear sites)	NRC(NMSS and OSTP), EPA (for WIPP)
Enforcement	CSN	SSI, SKI (nuclear sites)	HSK	EA, SEPA, DoE(NI), HSE(NII) (nuclear sites)	NRC(NMSS), EPA (for WIPP)
Appeals		Environmental Court	UVEK (Appeals Board)	Defra, SE, NAW, DoE(NI)	
Public consultation	CSN	SSI/SKI (jointly)	BFE, objections submitted to Federal Council	All regulatory bodies CoRWM, NDA	NRC(OPA)
R&D (including industrial work)	CSN, ENRESA	SKB (reviewed by SKI + SSI), SKI + SSI	PSI, universities (funded by Fed. State + NAGRA), NAGRA	EA, Defra, Nirex, Waste producers	NRC(RES), NRC(NMSS) for HLW confirm. research
Cost estimation (including industrial work)	ENRESA	SKB/SKI/BNWF	NPP operators + NAGRA, reviewed by HSK	NDA, operators	NRC
Transboundary shipment	CSN	SKI, SSI	BFE advised by HSK	EA, SEPA, DoE(NI)	NRC(NMSS), DoT
Safeguards	MITYC	SKI	BFE	DTI	NRC(NSIR)

4. Overall observations on the regulators' role

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

In most cases regulatory decisions emerge after co-ordination of a wide range of relevant and equally authoritative 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” or “regulatory bodies” or “safety authorities”. It may be seen, also, that there are usually one or more key, or lead, technical authorities charged with the granting of 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” are 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 legislative and constitutional structure in the relevant country 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.

Appendix 1

**NATIONAL BODIES INVOLVED IN THE MANAGEMENT AND
REGULATION OF RADIOACTIVE WASTE
(Information up to date to May 2005)**

Belgium

CEN/SCK	Centre for Nuclear Energy
FANC	Federal Agency for Nuclear Control
MINT	Ministry of Interior, responsible for Radiation Protection and Nuclear Safety
NIRAS/ONDRAF	National Organisation for the Management of Radioactive Waste

Canada

AECB	Atomic Energy Control Board (previous regulatory body)
CEAA	Canadian Environmental Assessment Agency
CNSC	Canadian Nuclear Safety Commission
CNSC (OIA)	CNSC Office of International Affairs
ECan	Environment Canada
NRCan	Natural Resources Canada

Finland

MTI	Ministry for Trade and Industry
SNWMF	State Nuclear Waste Management Fund
STUK	Radiation and Nuclear Safety Authority
VTT	Technical Research Centre of Finland
Posiva OY	Finnish Implementing Organisation for Spent Fuel Disposal

France

ANDRA	National Agency for Radioactive Waste Management
CEA	Atomic Energy Commission
DGSNR	Directorate General for Nuclear Safety and Radioprotection
DRIRE	Regional Directorates(s) for Industry, Research and the Environment
DSND	Delegate for Nuclear Safety and Radioprotection on Defence Sites
DSNR	Directorate for Nuclear Safety and Radioprotection
MoE	Ministry of Environment
MoH	Ministry of Health
MoI	Ministry of Industry
CNE	National Review Board
IRSN	Institute for Radioprotection and Nuclear Safety
OPECST	Parliamentary Office for Evaluation of Scientific and Technical Choices

Germany

BGR	Federal Institute for Geosciences and Natural Resources
BMBF	Federal Ministry of Education and Research
BMF	Federal Ministry of Finance
BMU	Federal Ministry of Environment, Nature Conservation and Nuclear Safety
BMWA	Federal Ministry of Economics and Labour
BMVBW	Federal Ministry of Transport, Building and Housing

BfS	Federal Office for Radiation Protection
DBE	German Company for Construction and Operation of Waste Repositories
FZJ	Jülich Research Centre
FZK	Karlsruhe Research Centre
GRS	Gesellschaft für Anlagen- und Reaktorsicherheit mbH
KTA	Nuclear Safety Standards Commission
RSK	Reactor Safety Commission
SSK	Radiation Protection Commission

Hungary

AECC	Atomic Energy Co-ordination Council
HAEA	Hungarian Atomic Energy Authority
HEO	Hungarian Energy Office
MoH	Ministry of Health, Social and Family Affairs
PURAM	Public Agency for Radioactive Waste Management
RBEP	Regulatory Body for Environmental Protection
SPHAMOS	State Public Health and Medical Officer's Service

Italy

APAT	National Agency for Environmental Protection and Technical Services
ENEA	National Agency for New Technology, Energy and Environment
MoPA	Ministry for Productive Activities
SOGIN	Society for Management of Nuclear Installations
TCNSHP	Technical Commission for Nuclear Safety and Health Protection

Japan

ACNRE	Advisory Committee for Natural Resources and Energy
METI	Ministry of Economy, Trade and Industry
MEXT	Ministry of Education, Culture, Sports, Science and Technology
MLIT	Ministry of Land, Infrastructure and Transport
NSC	Nuclear Safety Commission
NUMO	Nuclear Waste Management Organization

Norway

MoE	Ministry of Environment
MoH	Ministry of Health
NRPA	Norwegian Radiation Protection Authority
MoTI	Ministry of Trade and Industry
IFE	Institute for Energy Technology

Slovak Republic

MH SR	Ministry of Economy
MZ SR	Ministry of Health
UJD SR	Nuclear Regulatory Authority
UVZ	Public Health Authority
MZP SR	Ministry of Environment
VUJE	Engineering, Design and Research Organization

Spain

CSN	Nuclear Safety Council
ENRESA	Spanish National Company for Radioactive Waste
MITYC	Ministry of Industry, Tourism and Commerce
MoE	Ministry of Environment
CIEMAT	Research Centre for Technology, Energy, and the Environment

Sweden

BNWF	Board of the Nuclear Waste Fund
KASAM	Swedish National Council for Nuclear Waste
MoE	Ministry of Environment
SKB	Swedish Nuclear Fuel and Waste Management Company
SKI	Swedish Nuclear Power Inspectorate
SSI	Swedish Radiation Protection Institute

Switzerland

AGNEB	Interdepartmental Working Group on Radioactive Waste Management
BFE	Federal Office of Energy
HSK	Swiss Federal Nuclear Safety Inspectorate
KNE	Nuclear Waste Management Sub-commission of the Federal Geological Commission
KSA	Swiss Federal Nuclear Safety Commission
PSI	Paul Scherrer Institute
NAGRA	National Co-operative for the Disposal of Radioactive Waste
NPP	Nuclear Power Plant
UVEK	Federal Department for Environment, Transport, Energy, and Communication

United Kingdom

COMARE	Committee for Medical Aspects of Radiation in the Environment
CoRWM	Committee on Radioactive Waste Management
Defra	Department for Environment, Food and Rural Affairs
DoE(NI)	Department for Environment (Northern Ireland)
DTI	Department for Trade and Industry
EA	Environment Agency (for England and Wales)
HSE(NII)	Health and Safety Executive (Nuclear Installations Inspectorate)
HSE(FO)	Health and Safety Executive (Field Operations)
NAW	National Assembly for Wales
NDA	Nuclear Decommissioning Authority
Nirex	UK national radioactive waste management organisation
NRPB	National Radiological Protection Board
NuSAC	Nuclear Safety Advisory Committee
RCEP	Royal Commission on Environmental Pollution
SE	Scottish Executive
SEPA	Scottish Environment Protection Agency

United States of America

DOE	Department of Energy
DOT	Department of Transportation
EPA	Environmental Protection Agency
NAS	National Academy of Sciences
NRC	Nuclear Regulatory Commission
NRC(NMSS)	NRC (Office of Nuclear Material Safety and Safeguards)
NRC(NSIR)	NRC (Office of Nuclear Security and Incident Response)
NRC(OPA)	NRC (Office of Public Affairs)
NRC(OSTP)	Office of State and Tribal Programs
NRC(RES)	NRC (Office of Nuclear Regulatory Research)
NWTRB	Nuclear Waste Technical Review Board
WIPP	Waste Isolation Pilot Plant (for defence TRU waste)

Appendix 2

THE RWMC-RF TEMPLATE OF THE COMPILATION OF INFORMATION ON REGULATORY CONTROL OF RADIOACTIVE WASTE MANAGEMENT

With the general concept of the regulatory cycle in mind, the RWMC-RF compilation was produced against a standard template designed to elicit all the relevant information on regulatory control of radioactive waste management and to facilitate easy accessibility to specific aspects and comparison between different countries. Its structure is as follows:

1. NATIONAL AND REGULATORY FRAMEWORK

- 1.1 National Framework
 - 1.1.1 *National Policy*
 - 1.1.2 *Institutional Framework*
- 1.2 Regulatory Framework
 - 1.2.1 *Regulatory Function*
 - 1.2.2 *Organisation and Resources*

2. LEGISLATION AND REGULATION

- 2.1 Legislation
- 2.2 General Regulations
- 2.3 Specific Regulations
- 2.4 Guidance
- 2.5 Other Legislative Aspects

3. CURRENT STATUS

- 3.1 National Issues
 - 3.1.1 *Waste Classification and Sources*
 - 3.1.2 *Waste Management Strategy*
 - 3.1.3 *Current Issues/Challenges*
- 3.2 Regulatory Issues
 - 3.2.1 *Policy and Regulation Development*
 - 3.2.2 *Current Issues/Challenges*
- 3.3 Research and Development Programmes
 - 3.3.1 *Organisational Functions and Responsibilities*
 - 3.3.2 *Contents of R&D programmes and future plans*

The published compilation – referenced in this brochure – is up-to-date at the end of 2003. Given, however, the dynamic nature of legislation and regulation in most countries, the national reports are updated yearly and readers are advised to refer to the NEA web site at <http://www.nea.fr/html/rwm/rf/welcome.html> for the latest version of each national report.

OECD PUBLICATIONS, 2 rue André-Pascal, 75775 PARIS CEDEX 16
Printed in France.