Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

NATIONAL REPORT BY IRELAND

DEPARTMENT OF THE ENVIRONMENT,
HERITAGE & LOCAL GOVERNMENT

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Section A: Introduction

This Report gives an outline of Ireland's national policy, State institutional framework and general legislation governing all aspects of the implementation of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management in Ireland. It also sets out measures adopted to implement the relevant obligations of the Convention noting that Ireland does not have any spent nuclear fuel to deal with.

Ireland became a member of the International Atomic Energy Agency in 1970. In March, 2000, Ireland was the 25th State to ratify the IAEA Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, thus bringing the Convention into force. As Ireland is a non-nuclear State (see below) ratification of the Convention by Ireland did not require any additional measures to be taken in Irish national legislation.

Ireland is also a member of the European Community and, therefore, transposes into its national legislation, EU Council Directives concerning the safety of nuclear installations and spent fuel, radioactive waste and radiation protection measures for workers and the public. In addition, Ireland is a signatory to a number of international Conventions and Agreements relating to nuclear and radioactivity matters, including the OSPAR Convention on the Protection of the Marine Environment of the North-East Atlantic. Where relevant, these are referred to later in the report.

Ireland currently meets its electricity requirements from a combination of thermal and renewable energy sources. Ireland is opposed to the use of nuclear power on the grounds of public health and safety, environmental protection and security. Ireland considers that any perceived benefits of nuclear power are significantly outweighed by the health and environmental impacts and risks associated with the industry. Furthermore, in Ireland's view, no acceptable solution to the problem of the long-term management of the large quantities of radioactive waste produced by nuclear power stations, has been found. Therefore, Ireland has:

- No civil power nuclear stations.
- No defence reactors for research or other purposes.
- No spent nuclear reactor fuel in storage or awaiting treatment and no associated spent fuel reprocessing facilities of any sort.
- No trans-boundary movement of spent nuclear fuel from other countries across its territory, nor through its territorial waters.

Moreover, Ireland has no civilian research reactors (including those for production of isotope sources, any requirements for which are met by importing sources in a ready made form).

However, like all advanced Western Countries, Ireland uses radioactive materials in the form of sealed and unsealed sources in support of its high technology industries and its medical and other societal infrastructure. These activities give rise to waste materials such as disused sealed sources.

There is also a quantity of natural uranium that was previously incorporated in a sub-critical assembly in a university. While this material is not strictly speaking spent fuel, in that there would have been no significant build-up of radionuclides during its use, it is included in this Report.

There are also small amounts of naturally occurring radioactive materials that are produced and also discharged as a result of Ireland's exploitation of natural resources.

Ireland, therefore, has a small but well-developed infrastructure to control and monitor these materials and provide the necessary protection of public and workers health. This is exercised though the Radiological Protection Institute of Ireland (RPII) which is based in Dublin and which is the national competent authority and regulatory body for regulating, inter alia, the custody, use and disposal of radioactive substances and irradiating apparatus (See Section E Article 20 for functions of the RPII).

Therefore, in respect of Article 32 of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Ireland's National Report focuses on radioactive waste arising from the medical, industrial and research applications of radioisotopes.

The scope of the application of the Convention states that the Convention shall not apply to waste that contains only naturally occurring radioactive materials and that does not originate from the nuclear fuel cycle, unless it constitutes a disused sealed source or it is declared as radioactive waste for the purposes of this Convention by the Contracting Party. To demonstrate Ireland's commitment to safety and the protection of its population from all sources of ionising radiation, reference is made in this National Report to the control of such sources and materials.

This National Report has been prepared taking account of comments and questions on Ireland's previous Report of 2003 and is laid out according to the requirements and headings contained in the IAEA Information Circular INFCIRC/604 of July 2002 (Ref 1) and according to the definitions in the IAEA INFCIRC/546 December 1997.

Section B: Policies and Practices

Article 32. Reporting - National Policy for Spent Fuel Management

Ireland has no civil or defence reactors and no fuel processing facilities.

The main policies and practices and classification criteria with respect to radioactive waste, therefore, centre on:

- Avoidance of the generation of radioactive waste in any form.
- Avoidance of the importation of radioactive waste in any form.
- Management of all sealed sources from "cradle to grave". This includes a long-running licensing system and take-back arrangements with the original overseas supplier of the source (discussed in detail below).
- Replacement of radioactive sources by non-radioactive alternatives, if available. This includes, for example, prohibiting the import and use of lightening conductors that employ radioactive sources or of radium used in luminising materials.
- A general adherence to the "polluter pays" principle. This was initially elaborated as an economic principle in the 1970s when it was set down in the first EC Action Programme on the Environment, that states: "The cost of preventing and eliminating nuisances must in principle be borne by the polluter". It was incorporated into the European Treaty (to which Ireland is a signatory) in 1987.
- Disposal limits in licence conditions relating to the disposal of radioactive waste in Ireland are generally set at levels such that it can be demonstrated that doses to the public will be very low (less than 10 µSv/year).

Definition and Categorisation of Radioactive Waste

Catagorisation of radioactive materials and radioactive waste in Ireland is based on a pragmatic approach consistent with the relatively simple needs of the country. The regulation by the RPII of practices involving ionising radiation and radioactive materials in Ireland is provided for in Ireland's Radiological Protection Act 1991 (Ionising Radiation) Order, 2000 (S.I. No. 125 of 2000). This is discussed in more detail under Section E Article 20. With respect to these particular areas, the main aspects of the legislation are as follows:

Exemption

Exemptions from the requirements of S.I. No. 125 of 2000 are covered under Article 5 of the S.I. and include exemptions with respect to the specific and total activity of materials that are being handled, used or disposed of as radioactive waste and also exemptions with respect to practices. With respect to the former, these are based on the Schedule to and text of Annex I of EU Council Directive 96/29 Euratom of 13 May 1996 laying down basic

safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation (Ref 2) and, therefore, fully consistent with other EU Countries. The Annex and Article 5 of S.I. 125 also include practices that may be treated as exempt from the regulatory regime. Practices may be exempt if it can be shown that under all circumstances doses will not exceed certain prescribed values.

Clearance levels

Regarding Clearance, this concept is deliberately excluded from S.I. No. 125 of 2000. The RPII must license the disposal, recycling or reuse of radioactive substances or radioactive materials arising from any licensed practice. In drafting the legislation and recognising that Ireland does not have a nuclear industry, it was decided not to include the concept of clearance levels in the legislation.

NORM (Naturally Occurring Radioactive Material)

Hazards from ionising radiation due to natural sources of radiation are covered within Ireland's Radiological Protection Act 1991 (Ionising Radiation) Order 2000 (S.I. No. 125 of 2000) Part 6 (Work Activities Involving Natural Radiation Sources). Essentially, this states that use or disposal of naturally occurring radioactive materials (NORM) in Irish workplaces are subject to regulation if they are liable to give rise to a radiation dose of greater than 1 mSv/year.

In response to this, the RPII has carried out an extensive survey of such industries and the materials they handle and dispose of, including those involving discreet sources (e.g. thoriated products) and diffuse sources (mainly those arising from extractive industries, especially oil and gas but also peat burning and bauxite and cement production). Because of the wide range of processes involved, the RPII has found it necessary to adopt a sector-specific approach to the risk assessment methodologies it has adopted. Studies are on-going and have included the extent of potential releases and discharges of waste from these industries (solid, liquid and gaseous). So far, the investigation has not identified any instances or cases (including those involving handling or disposal of waste) where doses to critical groups would exceed the 1 mSv/year limit for the public and hence where the NORM waste would be subject to regulation under S.I. No. 125 of 2000. (Ref 3)

Future Changes

Ireland is fully cogniscant of developments in the area of the categorisation of radioactive waste in general such as those set out in EUR 18324 EN1998 (Ref 4) and of sealed sources in particular, such as that proposed by the IAEA (Ref 5). The current licensing system and methods of record keeping will readily be able to accommodate such categorisation when required. Moreover, the current licensing and inspection regime in Ireland is designed to reflect the level of hazard posed by different types of sources and practices, i.e. the more hazardous practices and sources are inspected most frequently and in greatest detail.

Ireland is also in the process of implementing the EU Directive 2003/122/EURATOM of 22 December 2003 on the control of high-activity sealed radioactive sources and orphan sources (see Section J).

Section C: Scope of Application

Article 3(1). Reprocessing

Ireland does not carry out any storage or reprocessing of spent fuel from any civil nuclear programme, current or historic and, therefore, has not declared any spent fuel for the purposes of the Convention, pursuant to Article 3 (1).

Article 3(2). Naturally Occurring Radioactive Materials (NORM)

The issue of NORM is addressed in Section B of this Report.

Article 3(3). Spent Fuel or Radioactive Waste (Within Military or Defence Programmes)

Ireland has no defence, research or other reactors, current, or historic and, therefore, has declared no spent fuel within military or defence programmes for the purposes of the Convention, pursuant to Article 3 (3).

Ireland has declared small amounts of radium, previously used in military equipment, such as gunsights, as waste. Further details are given under Section J (disused sealed sources).

Section D: Inventories and Lists

Article 32. Reporting - Paragraph 2 Inventory and lists

The only materials declared as radioactive waste under the current categories applicable in Ireland are disused sealed sources in storage/custody; unsealed radioactive material arising from medical applications that are disposed of, and the uranium rods described in Section J.

Ireland introduced a detailed licensing system for users (and their premises) using sealed sources in 1977. This has allowed a detailed pattern of the locations and life histories of sources to be built up, allowing tracking of those that are still in use and those which are now disused (and considered to be radioactive waste) to be maintained. It also allows a regular schedule of inspections and monitoring to be carried out by the RPII. The system of licensing and on-going developments is described in further detail below.

Using the licence records, the RPII is able to give a breakdown of the total number of sources that are disused and in safe storage (under the relevant licence conditions) and their locations. A summary list of the nuclides, activities and total number of disused sources from the RPII data is shown in Table 1 (see pages 26 and 27). Further details of the dominant sources (in terms of activities or numbers) are given in Section J. The location of

the sources is summarised in Table 2 (see page 28). This shows that most are located within the Dublin area (especially in city hospitals and the universities).

It will be noted that Table 1 shows that the activities of the disused sources in Ireland are relatively small. For example, the total inventory of Sr-90 in disused sources is 569,378 MBq or 0.56 TBq, compared with ~100 TBq that may be expected in a single reactor spent fuel element. Similarly, the total inventory of Cs-137 in disused sources is 0.106 TBq compared with ~120 TBq that may be expected in a single spent fuel element.

As most of the material is in sealed sources, the physical size of the inventory, even taking account of shielding and packaging, is also small in relation to the large volumes encountered in fuel cycle programmes.

Section E: Legislative and Regulatory System

Article 18. Implementing Measures

The Department of the Environment, Heritage and Local Government (DEHLG)

Responsibility for nuclear policy is vested in the Minister for the Environment, Heritage and Local Government. Within the Department of the Environment, Heritage and Local Government (DEHLG), the Nuclear Safety Section is responsible for:

- Implementing Irish Government National Policy in relation to nuclear matters.
- The transposition into national legislation of all relevant EU and other international legal instruments.
- Co-ordination of the national nuclear emergency plan.
- Representation at meetings of the EU, IAEA and other international organisations.

The Nuclear Safety Section is assisted in its activities by the Radiological Protection Institute of Ireland (RPII) described in more detail under Article 20 of this Section.

Ireland's policy on nuclear weapons non-proliferation and disarmament are the responsibility of the Department of Foreign Affairs. For many years now, Ireland has been very proactive in promoting and supporting nuclear weapons non-proliferation and nuclear disarmament.

Article 19. Legislative and Regulatory Framework

Because Ireland is a member of the European Union, its regulatory framework in respect of radioactive waste and the protection of workers and the public from the hazards associated with ionising radiation is based on the relevant EU Directives and Regulations.

The framework legislation governing the nuclear and radiation protection sectors in Ireland is the Radiological Protection Act, 1991 as amended. This Act repealed the Nuclear Energy Act, 1971. Under the 1991 Act, the Minister for the Environment, Heritage and Local Government has Ministerial responsibility in relation to nuclear and radiological protection matters. The Act also established the Radiological Protection Institute of Ireland (RPII) as the national Regulatory body.

The Radiological Protection Act, 1991 (Ionising Radiation) Order, 2000 (S.I. No.125 of 2000), which was made under Section 30 of the Radiological Protection Act of 1991, gives legal effect in Ireland to EU Council Directive 96/29/Euratom of 13 May 1996, which lays down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation (Ref 2), and EU Council Directive 90/641/Euratom of 4 December 1990 on the operational protection of outside workers exposed to the risk of ionising radiation during their activities in controlled areas. Under S.I. 125 of 2000, all activities involving radioactive sources, save those which meet the criteria for exemption specified in the S.I., require a licence from the RPII.

The Radiological Protection Act, 1991 sets out the functions of the RPII as well as the legislative powers of the Minister for the Environment, Heritage and Local Government in the areas of nuclear safety and radiological protection. The Act also provides for the implementation of future European Union legislation in the area of radiation protection by means of Ministerial Order. It also sets out specific responsibilities of other Government Ministers and functions of the Food Safety Authority of Ireland, principally in regard to the protection of individuals from radiological hazards in food.

The Radiological Protection Act, 1991 (Ionising Radiation) Order, 2000 (S.I. No. 125 of 2000) is divided into a number of sections and areas, which include the following: -

- Regulation of practices and work activities. A distinction is drawn between practices involving ionising radiation emanating from artificial or natural sources and work activities involving adventitious exposure to natural radiation such as radon (in excess of 400 Bq m^{-3}) or other natural sources.
- Justification, optimisation and dose limitation.
- Estimation of effective dose.
- Protection of exposed workers, apprentices and students.
- Work activities involving natural radiation sources.
- Radiation protection of the population for practices in normal circumstances.
- Intervention and Emergency Preparedness.
- Enforcement.

In addition to the Radiological Protection Act, 1991 and S.I. No. 125 of 2000, the principal Irish legislation directly or indirectly relating to nuclear matters and radiological protection includes the following:

- Health Act, 1953 (No. 26 of 1953).
- Safety, Health & Welfare at Work Act, 2005 (No. 10 of 2005).
- Dumping at Sea Act, 1996 (No. 14 of 1996).
- Harbours Act, 1996 (No. 11 of 1996), as amended by the Harbours (Amendment) Act 2000 (No. 21 of 2000).
- Containment of Nuclear Weapons Act 2003 (No 35 of 2003).
- European Communities (Radiological Emergency Warning to Public) Regulations 1993 (S.I. No. 209 of 1993).
- Electricity Regulation Act 1999 (No. 23 of 1999).

There is also other legislation relating to the transport of radioactive materials which is described later.

A list of the main Irish legislation pertaining to ionising radiation is in the Annex attached.

Article 20. Regulatory Body

The Radiological Protection Institute of Ireland (RPII)

The RPII is an independent public State sponsored body that reports to and is partially funded by the Department of the Environment, Heritage and Local Government. It was established under the Radiological Protection Act, 1991. The Regulatory Service of the RPII is under the overall responsibility of the Director of Regulatory Services who reports to the Chief Executive of the RPII. The RPII has the following duties and responsibilities:

- Provision of advice to the Government, the Minister for the Environment, Heritage and Local Government and other Government Ministers on matters relating to radiological safety.
- Provision of information to the public on any matter relating to radiological safety.
- Maintenance and development of a national laboratory for the measurement of levels of radioactivity in the environment, and assessment of the significance of these levels for the Irish population.
- Provision of a personnel dosimetry and instrument calibration service for those who work with ionising radiation.
- Control by licence the custody, use, manufacture, importation, transportation, distribution, exportation and disposal of radioactive substances, irradiating apparatus and other sources of ionising radiation.

- Assisting in the development of national plans for emergencies arising from nuclear accidents and acting in support of such plans.
- Provision of a radioactivity measurement and certification service.
- Preparation of codes and regulations for the safe use of ionising radiation.
- Carrying out or promoting research in relevant fields.
- Monitoring developments abroad relating to nuclear installations and radiological safety generally, and keeping the Government informed of their implications for Ireland.
- Co-operating with the relevant authorities in other States and with appropriate international organisations.
- Representing the State on international bodies.
- To be the competent authority for Ireland under International Conventions on nuclear matters.

The RPII has also been designated the national competent authority for the purposes of the IAEA Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency and the Convention on Early Notification of a Nuclear Accident and is the National authority responsible for the physical protection of nuclear material.

Under the Radiological Protection Act of 1991, the RPII regulates the custody, use and disposal of nuclear materials in Ireland through a licensing scheme, the terms and conditions of which are set out under S.I. No.125 of 2000 (referred to earlier), which is a Ministerial Order made under Section 30 of the 1991 Act. S.I. 125 of 2000, in addition to providing for the licensing scheme, also transposes Council Directive 96/29 Euratom of 13 May 1996, referred to earlier, into national legislation.

The RPII publishes an Annual Report on its activities. The most recent published Annual Report was for 2003, (Ref 6). The RPII's Annual Report for 2004 is expected to be published in November 2005.

The Licensing System

The licensing system operated by the RPII according to the requirements of the Radiological Protection Act, 1991 and of S.I. No. 125 of 2000 is central to the control of radioactive materials and radioactive waste in Ireland. Key aspects of licensing central to implementing the overall policy on radioactive waste are as follows (it also covers aspects of the responsibilities of licence holders):-

- The licensing system in Ireland for sealed and unsealed sources has been in operation since 1977. As part of that system, information has been gathered and maintained on

all such sources. This database provides a useful tool in the the "cradle to grave" management of sources.

- Holders of disused sources are required to verify their holdings at specific periods which are set out in their licences and to report any anomalies to the RPII. Sealed sources, whether in use or not, must be leak tested not less than once every two years or as recommended by the manufacturers and reported to the RPII.

- Licence conditions include requirements for the management of radioactive waste.

- Licensees are required, as a prerequisite to licence issue, to have an agreement with the source supplier or manufacturer to take back sources ("take back agreement") when they become disused. The RPII looks for written evidence from the supplier or manufacturer that the source will be accepted back when no longer required before issuing a licence.

- Licensees wishing to transfer sources between sites must comply with the IAEA transport regulations and any licence conditions that the RPII may see fit to impose. Similar arrangements apply to transboundary shipments (see Section I). Transboundary shipments of sources within the EU are governed by specific pieces of European Community legislation.

- General requirements of the licence include a duty on licensees to keep records, to ensure proper labeling of sources and containers, to provide training and to arrange for the appointment of responsible persons by the licensees. Licensees are obliged to inform the RPII of any changes in the inventory of radioactive waste for which they are responsible and to have their licence amended accordingly.

- Inspectors from the RPII carry out inspections to assess compliance with the licence conditions (see below).

- The licence information held by the RPII is enhanced by occasional questionnaires to licensees. The most recent of these was issued in 2005 and involved a detailed questionnaire to all licensees who hold custody only licences for sources no longer in use. In this questionnaire, licensees have been requested to provide details of the age, origin and former use of the source as well as the status of any take back agreements that might exist. Other issues, including security of sources, were also addressed.

As a result of a combination of a well established licensing system, take back arrangements and a comprehensive inventory of sources, there have been very few incidents involving orphan sources. Where orphan sources have been identified they have been taken into the safe custody of existing licensees.

The RPII has powers of enforcement under the Radiological Protection Act of 1991 and under S.I. 125 of 2000. It uses these powers where the appropriate standards of radiation protection are not upheld. In particular, the RPII has successfully prosecuted 32 licensees in

the period between 1992 and 2005 for offences ranging from a breach of licence conditions to unlicensed disposal of an irradiating apparatus. In addition, the RPII has responded to incidents involving orphan sources and contaminated scrap and has worked with all of the actors concerned to resolve the issues involved.

Section F: Other General Safety Provisions

Article 21. Responsibility of the Licence Holder

Duties and responsibilities of licence holders in Ireland are described in the licence conditions in Section E Article 20 above.

Article 22. Human and Financial Resources

The staff structure and organisation of the RPII is shown in Figure 1 (see page 30). The RPII has a staff complement of 46. Additional staff are recruited, with approval of the Department of the Environment, Heritage and Local Government where necessary, as the needs of the RPII change and the regulatory and policy regime evolve.

The RPII has a number of inspectors who carry out regular inspections of licensees premises and facilities to ensure that they comply with their relevant licence conditions. The frequency of the inspections is generally adjusted to be consistent with the degree of hazard and risk involved in the practices covered by each licence. The inspection schedule in 2004 is set out in Table 3 (see page 29). The schedule puts into context the emphasis on inspections of licensees holding disused sealed sources (so called “custody only” licensees), i.e., radioactive waste covered by this Report.

Other aspects of operational radiation protection are described below (Article 24 of the Convention).

The income of the RPII is made up of a grant from the Irish Government and from licence and other fees paid by users of its services.

Article 23. Quality Assurance

The RPII has recently been pursuing accreditation for its inspectorate to the ISO Quality Standard 1702. In addition, its laboratories are accredited to ISO 17025 Standard and also participate in national and international inter laboratory comparison studies.

To assist with its regulatory duties, the RPII uses a modern information technology infrastructure. The most relevant system to the current report is the RPII database, which includes all licensable radioactive material including radioactive waste. Licensees are obliged to inform the RPII of any changes in the inventory of radioactive waste for which they are responsible. Inventories are checked on inspection to ensure that they concur with what the licensee actually holds.

An IAEA Peer Review Mission conducted in 2000 found that the essential infrastructure for radiation protection in Ireland is well established and that the regulatory programme is effective. The report included a number of recommendations to improve the system of regulation and inspection. These include, in particular, increasing the number of staff, reducing the administrative work load through a combination of increasing the period of validity of licences, and streamlining licensing procedures, in particular for low risk practices. The Peer Review also recommended that inspection programmes include an examination of actual work practices such as that of on site radiography procedures. It also recommended an improvement in co-operation with other agencies such as the Department of Health. These recommendations have been addressed.

Article 24. Operational Radiation Protection

Ireland has no historic or current nuclear reactors or spent fuel storage or reprocessing activities. Its operational radiation protection measures are, therefore, centred on:

- Inspections of the premises and procedures of licence holders. An appropriate focus is given to licensees holding custody licences for disused radioactive sources. This has already been covered in Section E under Article 20.

- Emergency monitoring systems. These are described in detail separately (under Article 25 below).

- Routine environmental radiation monitoring of food and water, mainly from the marine environment. This is mainly aimed at ensuring protection from the effects of discharges from the Sellafield re-processing plant in the UK and also commitments to various EU Directives. It also supports Ireland's commitments to OSPAR. In 2003, a total of about 2,500 samples were collected and analysed.

- Personnel dosimetry of occupationally exposed workers. The RPII operates a personnel radiation dosimetry service using thermoluminescent dosimeters (TLDs). Licensees are entitled to use any personnel dosimetry service, which is accredited by the Irish National Accreditation Board or by its equivalent in another EU Member State.

- Licence conditions which include limits on the quantities of radioactive materials that may be disposed of to the environment.

- In the case of unplanned or uncontrolled release of radioactive materials into the environment, the appropriate measures under the emergency preparedness plan referred to in Article 25 would be initiated.

Article 25. Emergency Preparedness

Ireland's Emergency preparedness is divided into two main areas, i.e.,

- Site emergency planning. These relate to licensees' responsibilities in the keeping of sources or of disused sources or their transport.

- National emergency planning - designed to cater for a widely dispersed radiological emergency or crisis such as that arising from a major incident at a nuclear installation abroad (notably to the east in the UK or Europe and including spent fuel and large nuclear waste facilities) resulting in radioactive contamination reaching Ireland. Certain elements of the national emergency response would also come into play in the case of a local emergency depending on the extent of the emergency.

These are described in outline below.

Site Emergency Plans

Licensees are obliged to draw up emergency plans based on a risk assessment approach to workers. In the case of licensees involved in activities where the RPII is of the view that an incident or accident could impact on the environment or members of the public, an intervention plan is also required. The plans must be prepared in consultation with the RPII and with the local authority within whose functional area the licensee is situated.

Licensees are obliged to report incidents within 24 hours to the RPII. Where it is concluded that the incident was the result of failure of equipment or shortcomings in procedures, other licensees who use the same equipment or who are involved in the same or similar procedures and where by implication, the same incident could occur, are advised accordingly. Incidents, which arise from negligence on the part of the licensee, may result in prosecution. (See section E Article 20 above).

It should be noted that Ireland does not hold any very large disused sources or radioactive waste equivalent to those in Categories I or II that would require it to prepare site emergency plans defined for the purposes of IAEA Safety Requirements GS-R-2 (Ref 7).

Ireland's National Emergency Plan for Nuclear Accidents (NEPNA)

Under Article 37 of S.I. 125 of 2000, Ireland's Department of the Environment, Heritage and Local Government has the lead responsibility for coordinating the emergency response arrangements among Government Departments and Agencies and is responsible for preparing a National Emergency Plan for Nuclear Accidents (NEPNA). This Plan is also in conformity with the International Atomic Energy Agency document – Safety Standard Preparedness and Response for a Nuclear or Radiological Emergency (GS-R-2). Under the NEPNA, the RPII has special responsibilities for radioactivity monitoring and for the

provision of advice on the potential consequences of any accident or emergency and on the measures to be taken.

As there are no nuclear installations in Ireland, the NEPNA is primarily orientated towards potential hazards from abroad. Such potential hazards include nuclear power plants in other countries (there are 12 operational power reactors within 250 km of the Irish Coastline); nuclear powered submarines passing through the Irish Sea; shipments of nuclear materials through the Irish Sea and satellites carrying major nuclear sources. However, certain sections of the NEPNA, for example, activation of emergency response arrangement, would also apply in the case of an accident or incident involving a radiation source located in Ireland.

The NEPNA includes provision for:

- The issue and receipt of notifications and other information about radiological emergencies that may occur.
- Activation of emergency response arrangements.
- Co-ordination of multi agency response including specifying the duties of Ministers of the Government, local authorities and other public bodies with regard to the measures to be taken under the NEPNA and the procedures to be followed by them for the purposes of co-coordinating those measures.
- The criteria for evaluating the need for intervention and, if appropriate, procedures for the implementation of countermeasures.
- The organisation of appropriate intervention, taking account of the characteristics of the radiological emergency.
- The procedures for the assessment of technical information related to any emergency or potential emergency.
- The assessment and recording of the consequences of the radiological emergency and of the effectiveness of the intervention.
- The procedures for ensuring that the public is kept fully informed of the nature and extent of any risks to which they might be exposed and of any actions taken to minimise or reduce such risks. The provision of timely and credible information to the public is seen as a vital component of any emergency response. It is recognised, for example, that incidents, which may have little or no direct radiological impact on Ireland, may be a cause of significant public anxiety.

The main elements of the nuclear emergency response arrangements in existence in Ireland are published in a booklet entitled "National Emergency Plan for Nuclear Accidents" which is available free of charge from the Department of the Environment, Heritage and Local Government. It is also published on the DEHLG website (www.environ.ie) and that of the RPII (www.rpii.ie).

Further details of the NEPNA are provided in Appendix 1 to this Report.

Article 26. Decommissioning

Ireland has no historic or current civil or defence nuclear reactors or spent fuel storage or reprocessing facilities. There are currently no centralised waste stores. The issue of the decommissioning of such facilities, therefore, does not apply in Ireland.

Any decommissioning activities relating to disused sealed sources or the sub-critical uranium assembly are readily covered and accommodated with the other relevant guidance and legislation applicable in Ireland. For example, the safety of workers will be covered under the Radiological Protection Act 1991 whilst the relevant Transport Regulations covering radioactive materials (covered in detail in Section I Article 27 below) will cover packaging and transport within and outside Ireland.

Furthermore, Ireland has never carried out mining of uranium for manufacture of nuclear fuel and, as such, there are no requirements in respect of decommissioning such facilities.

Section G: Safety of Spent Fuel Management

Articles 4 and 5. General Safety Requirements and Existing Facilities

As already stated in this Report, Ireland is opposed to the use of nuclear power. Therefore, Ireland has:

- No civil power nuclear reactors
- No Defence reactors for research or other purposes.
- No spent nuclear reactor fuel in storage or awaiting treatment and no associated spent fuel facilities of any sort.
- No trans-boundary movement of spent fuel from other countries across its territory nor through its territorial waters.

Moreover, Ireland has no research reactors (including those for isotope production).

Furthermore:

- The Nuclear Non-Proliferation Treaty was proposed by Ireland, who as a result received the honor of becoming the first signatory in 1968. By 1992, all five then-declared nuclear weapons States had signed the Treaty, and the Treaty was renewed in 1995 (and followed by the Comprehensive Test Ban Treaty in 1996).

- Ireland has stated that it does not consider that nuclear energy provides a sustainable energy resource but fully accepts that a number of other countries do not share this view (Ref 8).

- Ireland's views on nuclear energy are transposed into policy and legislation. In particular, the 1999 Electricity Regulation Act (Section 18 of the Act) prohibits the use of nuclear energy for the generation of electricity in Ireland.

There are, therefore, no short or long term plans to develop any such nuclear installations/facilities in Ireland. Furthermore, Ireland has no historic or current civil or defence nuclear reactors or spent fuel storage or reprocessing activities.

Article 6. (Siting of proposed facilities)
Article 7. (Design and construction of facilities)
Article 8. (Assessment of safety of facilities)
Article 9. (Operation of facilities) &
Article 10 (Disposal of spent fuel)

Ireland has no historic or current civil or defence nuclear reactors or spent fuel storage or reprocessing activities. There are, therefore, no specific plans relating to the siting, design or operation of spent fuel storage, reprocessing or disposal facilities and no plans relating to the disposal or treatment of spent nuclear fuel to which these Articles of the Convention relate.

Section H: Safety of Radioactive Waste Management

Article 11. General Safety Requirements

General Safety Requirements for radioactive waste in Ireland are laid down in the relevant legislation, particularly in the Radiological Protection Act 1991 (Ionising Radiation Order), 2000 (S.I. No. 125 of 2000). These are enforced by the RPII. The overall principles and policies have been laid out in Section B of this report.

Article 12. Existing Facilities and Past Practices

This Section of the National Report is limited to radioactive waste arising from the medical, industrial and research applications of radioisotopes from unsealed sources. These are described and itemised below. (Disused sealed sources are dealt with separately under Section J Article 28)

Management of Unsealed Radioactive Material

Radioactive waste in unsealed form arises from the use of radionuclides mainly in hospitals and in a few educational and research establishments. The sources are either imported from the relevant overseas suppliers or short-lived ones generated on the main hospital sites using standard accelerator techniques.

Requirements for the licensing of the use and disposal of unsealed sources, or exemption from such requirements, are established by Article 5 of the Radiological Protection Act 1991 (Ionising Radiation) Order 2000 (S.I. 125 of 2000)). Quantities or concentrations

requiring licensing under S.I. 125 of 2000 are based on Annex I of the EU Council Directive 96/29/Euratom. Normal practice in regard to requirements for licensing is to apply the limits or concentrations used on a daily basis.

The licence also includes conditions relating to disposal, which have been amended to ensure that the system of reporting takes account of Ireland's obligations under the OSPAR Convention to which Ireland is a signatory (Ref 9). The mandatory use of holding tanks is also being considered within the framework of the OSPAR Strategy with regard to Radioactive Substances (this is discussed in further detail below).

The main aspects of the safety and management of unsealed sources in Ireland are as follows:

- The generator cores that produce Tc-99 are returned to the supplier. Most are being imported from Holland or the UK. Transport to and from Ireland is in accordance with the necessary transport Regulations.

- The practice of liquid radioactive waste disposal relates mainly to the medical sector in Ireland. It is a condition of licences granted in the medical sector, where unsealed sources are used, that there is annual reporting of the quantities discharged. This data is now collated annually by the RPII and submitted to the OSPAR Commission as part of Ireland's reporting requirements under the OSPAR Convention. In addition, recent assessments have shown that the maximum dose to the critical public group (sewer workers) from such disposals is less than 10 uSv/year. These findings are fully consistent with the results of similar studies in the United Kingdom that has similar arrangements in the medical sector.

- Solid waste materials from hospitals that contain residual activity are segregated and controlled at source. In particular, they are isolated and stored until the levels of radioactivity are such that disposal is permitted under the conditions set out in the hospitals' licence.

- Licensees are obliged to report the quantities of radionuclides which are actually disposed of to sewers.

- Licence conditions on hospitals include requirements to ensure that precautions are taken to prevent contamination, including contamination in the form of excreta from patients.

- The licence condition places an obligation on hospitals and clinics to keep records of radionuclide administrations to patients which will enable estimates of the quantities excreted to the sewers to be made, using established excretion factors.

- The RPII also requires that any licence application to use unsealed radionuclides for medical purposes be accompanied by an estimation of doses to critical groups. In the

case of disposal to sewers, the licensee must demonstrate that doses to sewer workers, who are taken as the critical group, will be below 10 μSv/year.

Use and Potential use of Holding Tanks for Discharges from Hospitals

All hospitals in Ireland that use significant amounts of radionuclides for therapeutic purpose are situated close to the sea. This means that discharges to sewers pass into treatment works and then via a normally short route to sea where dilution takes place quickly. There are no discharges from such facilities into fresh water that may be used for human consumption. However, in accordance with its obligations under the OSPAR Convention, Ireland is reviewing the issue of the need for holding tanks in both existing and any new planned facilities.

There are currently three hospitals in Ireland, which are involved in radioiodine thyroid ablation treatments and therefore use the most significant amounts of radioiodine (~3-5 GBq/patient). One of these has installed a holding tank. The merits and drawbacks of holding tanks are still under discussion. In this regard, the doses to critical groups averted by such tanks must be balanced against the potential radiation doses to workers involved in their maintenance (and decommissioning) and risks from bacteriological hazards.

Article 13. Siting of Proposed Facilities

Radioactive waste management in Ireland centres on the cradle to grave management of sealed sources. Management of unsealed sources is addressed above. Management of disused sealed sources is addressed in Section J where it is shown that disused sources, which for whatever reason cannot be returned to the original supplier, are held in secure store on the premises where they were previously used and subject to any licence conditions which the RPII may see fit to impose and to inspection by the RPII.

As mentioned earlier under Section E (the licensing system), the RPII is currently updating its inventory of disused sources and to this end has sent a questionnaire to all licensed holders of disused sources to ensure that the data it holds is up-to-date and complete.

The Department of the Environment, Heritage and Local Government is currently examining options for dedicated storage facilities for those sources (small in number) that cannot be returned to the supplier or otherwise disposed of as well as for orphan sources which may be found in the future. These options include modifying an existing radioactive waste store or stores or possibly constructing a new unit.

Article 14. Design and Construction of Facilities

It should be noted that if a new radioactive waste storage facility is considered necessary, Ireland would, in the planning and siting of any future waste storage facility and, as a member of both the IAEA and the European Community, take due account of all relevant aspects of the requirements for public consultation (as required by the Aarhus Convention, to which Ireland is a signatory; (Ref 10 & Ref 11) an Environmental Impact Assessment,

where required, (Ref 12) and would also take due account of the regulations, both national and international governing the siting, planning, construction and operation of such a facility.

Article 15. Assessment of Safety of Facilities

Under the current regulatory regime, the RPII would assess any application for facilities for the short or long term storage or the disposal of sealed sources in Ireland. The RPII would not license the facility until it was satisfied that it did not present a hazard to persons or the environment. All such applications would have to take due account of the standards for such facilities as promulgated by the IAEA.

Article 17. Institutional Measures after Closure

Ireland has no historic or current civil or defence nuclear reactors or spent fuel storage or reprocessing activities. There are currently no centralised waste stores. There are, therefore, no specific plans or requirements relating to post closure institutional control and associated activities of, for example, monitoring or security. Any institutional regulatory measures for stored waste sources and current disposals in Ireland are fully covered under the current legislative and regulatory regime (notably the Radiological Protection Act 1991 (Ionising Radiation) Order 2000, (S.I. 125 of 2000) and are described in Section E (Legislative and Regulatory System (especially under licence conditions).

Section I: Transboundary Movement (Article 27)

In Ireland, any internal or transboundary transport of radioactive sources (whether in use or disused) is controlled and authorised by the RPII. The shipment and transfer of radioactive substances are governed by the national legislation derived from the relevant European Commission Directives and Regulations. This means transboundary movements are governed by:

- The provisions of the ADR (European Agreement Concerning the International Carriage of Dangerous Goods by Roads) and of RID (Regulation Concerning the International Carriage of Dangerous Goods by Rail) which apply directly.

- Technical Instructions of the International Civil Aviation Organisation (ICAO) and the Dangerous Goods Regulations of the International Air Transport Association (IATA) that are directly applicable.

- Council Directive 92/3 EURATOM of 3 February 1992 on the supervision and control of shipments of radioactive waste between Member States and into and out of the Community.

- Commission Decision 93/552/EURATOM of 1 October 1993 establishing the standard document for the supervision and control of shipments of radioactive waste referred to in Council Directive 92/3/EURATOM.

- Council Regulation 93/1493/EURATOM of 8 June 1993 on shipments of radioactive substances between Member States.

The transfer of radioactive sources or waste from Ireland to other countries is limited to the return of disused sources to the suppliers or to the transfer of disused sources to an overseas waste management facility.

Section J: Disused Sealed Sources (Article 28)

In Ireland, sealed and unsealed sources are used in the State and private sectors of the economy. In the State sector, the main users are medical and educational establishments. In the private sector, sealed sources are used for gauges, check sources, medical devices etc. Licence conditions have already been described (Section E (Article 20)). The lists of sources that are now classified as disused and held in custody have been summarised in Tables 1 and 2 which relate to the position at end 2004. The following Sections give further details of the main groups.

Inventory of Sealed Sources

The inventory of sources in use is dominated by large gamma sources Cs-137 and Co-60 but Table 1 shows that disused (i.e. waste) sources in custody are dominated by tritium (in terms of activity) and I-125 (in terms of number). There are fewer disused Cs-137 and Co-60 sealed sources, consistent with the success of the take back arrangements that form part of the licensing regime.

Natural Uranium Rods in a Sub-critical Assembly

Ireland has in storage 2.5 tonnes of uranium metal in the form of rods that were originally supplied as an experimental sub-critical assembly to a University Department from the United States under the "Atoms For Peace" programme. The sub-critical assembly was assembled and used for student experiments. The neutron fluxes and consequent build up of fission products is considered negligible and the system was then dissembled. The rods are currently stored in boxes and have been declared as radioactive waste for the purposes of the Convention, pursuant to Article 3(2). They are included in Table 1 as 1,439 separate sources but are in fact in a single secure store fitted with CCTV cameras and are the subject of inspections and quarterly reports under the Safeguards Agreement with the International Atomic Energy Agency (IAEA) (INFCIRC/263) and the European Atomic Energy Community (EURATOM). The store is used specifically for these materials so that access is required and available only to personnel with specific responsibilities for the safekeeping and condition monitoring of the material. The only other materials subject to inspection under this Safeguards Agreement (representing a coherent policy of transparency and openness by Ireland under the Agreement) are two sealed sources containing Plutonium.

The sites where the uranium and plutonium sources are held are also subject to declarations made under the Additional Protocol to the Safeguards Agreement which is transposed into Irish law by the Containment of Nuclear Weapons Act (2003) Regulations 2004.

Return of the uranium rods to the United States would be controlled by the RPII under the relevant transport regulations (see Section I) and also under the appropriate export controls and with agreement of the EURATOM Safeguards Office and the EURATOM Supply Agency in Luxemburg. The total activity shown in Table 1 is based on the total approximate activity of uranium of natural isotopic composition.

Iodine-125 Sources

Table 1 shows the largest number of disused sources held are 2,004 I-125 seeds. These are Prostate brachytherapy sources (max activity 33 MBq) currently held in a hospital some of which have since been returned (in 2005) to the supplier.

Radium Sources

In common with all countries, Ireland historically (from about 1900 to 1960) used radium in medical and some other applications but has replaced this with safer, more efficient and easier to use radioisotopes. Only small amounts of radium remain in use for educational purposes and as check sources for monitors. Most radium was returned to the main suppliers in the UK. However, Table 1 shows that some radium has been retained in Ireland - this is stored in hospitals under secure and safe conditions where it can be readily monitored and subject to appropriate checks by local radiation protection officers and the RPII inspectors. Included in Table 1 is disused radium from luminising activities in military equipment, now stored in a military base.

Lightening Preventors Incorporating Radium

In the 1970s a number of lightening preventors incorporating radium in semi-sealed sources were imported and used on a number of buildings in Ireland. They are no longer considered to provide any benefit over conventional lightening conductors and the RPII does not allow their importation. Twenty-one of these devices are either surplus to requirements or were removed from buildings (total activity ~27 MBq) and are in secure storage on the premises of the company that was responsible for their removal. A smaller number remain in use under appropriate licence conditions.

Tritium

Table 1 also shows the largest total activity held as disused material is tritium. This is in the form of closed sources in the form of disused and redundant tritium activated GTLDs (Gaseous Tritiated Luminescent Devices) held securely at a number of locations.

Technetium 99 (Tc-99).

A number of older Tc-99m (t ½ ~6 hours) generators, which were not subject to take-back agreements, are held in storage. While, strictly speaking, they are not sealed sources they are included under this heading for the purposes of this Report. The generator cores contain the very long-lived and hence low specific activity Tc-99 daughter.

Implementation in Ireland of the EU Directive on the Control of High Activity Sealed Radioactive Sources (HASS Directive) – (with special reference to disused sources)

The purpose of the HASS Directive (2003/122/EURATOM) is to prevent exposure of workers and the public to ionising radiation arising from inadequate control of high activity sealed radioactive sources and orphan sources and to harmonise controls in place in the Member States by defining specific requirements ensuring that each such source is kept under control. It must be transposed into national law in Member States by 31st December 2005 (Ref 13).

At present there are approximately 1,040 licensed sealed sources in Ireland, which have activities that would bring them under the control of the HASS Directive. Of these 1,040 sources, 943 are used in the irradiation cells of 3 sterilisation plants. The majority of the remaining sources coming within the scope of the HASS Directive are held by industrial radiography companies, universities, and hospitals and by a manufacturer of radioactive gauges. All but 10 of the sealed sources in Ireland are subject to take-back agreements and only 4 of these 10 are licensed for custody only (i.e. are disused sources).

The current licensing and inspection system, as implemented under S.I. No. 125 of 2000, meets or can be adapted to meet the requirements of the HASS Directive. A short Statutory Instrument (legislation) will be required to designate the RPII as the Competent Authority for implementing the HASS Directive in Ireland.

The need for portal monitors at border posts and ports and airports to prevent the illicit movement of radioactive sources and radioactive waste is currently being examined. It is expected that decisions in this regard will be taken on an all Ireland basis to ensure that similar levels of control apply in both Ireland and Northern Ireland which is part of the United Kingdom.

Section K: Planned Activities To Improve Safety

The Regulatory Service of the RPII continually reviews its licensing and inspection system to ensure that it remains focused on ensuring a high level of safety and security and takes account of developments in radiation protection philosophy and radiation safety standards. Recent developments include increasing the level of expertise in relation to the surveillance of medical applications and the setting up of a register of approved radiation protection advisers to advise licensees on all matters pertaining to radiation safety. Other recently implemented or planned activities to improve safety include the following:-

- Upgrading of fixed monitoring station network. The system of fixed monitoring stations has been recently reviewed by the RPII and is being updated and extended to increase reliability, range of measurements and geographic coverage.

- Improved co-operation with regulatory authorities in other countries, including, in particular exchange of information arrangements with the UK and with France.

- Implementation of the EU HASS Directive.

- Continued work on naturally occurring radioactive materials (NORM) and their discharge into the environment and health impacts (see Section B: Policies and Practices).

Conclusion

This National Report describes how Ireland is meeting its obligations as a Contracting Party to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. It describes the regulatory infrastructure, the operational radiation protection arrangements, the system of emergency preparedness and recent and planned initiatives to improve safety.

Ireland believes that the current Report answers all the comments made and questions posed by other Contracting Parties on the first Report relating to the infrastructure and operational arrangements in place to ensure the safety of radioactive waste management in Ireland.

With regard to the particular issue of institutional measures after closure of facilities for radioactive waste storage and disposal (Article 17), which was also the subject of a question at the first Review Meeting, it should be made clear that any facility in Ireland which is used to store radioactive waste in any form will be subject to regulatory controls and inspection until all radioactive material is removed. Moreover, with currently no centralised radioactive waste disposal facility in Ireland, the issue of post-closure monitoring of such a facility does not, therefore, currently arise.

Ireland is of the view that its robust regulatory system has led to a situation where the status of all radioactive materials, including those for which no further use is envisaged, is known with a high level of confidence.

Furthermore, a number of steps have been taken to further improve safety since the first Review Meeting. The level of surveillance of disused radioactive sources has been significantly increased. In addition, the implementation of the EU High Activity Sealed Source (HASS) Directive will lead to further improvements in safety, not only in relation to those sources to which the Directive applies, but to all sources including disused sources. Appropriate legislation will be made to designate the RPII as the competent authority in Ireland for ensuring implementation of the Directive in Ireland. To conclude, Ireland believes that it is meeting its obligations under the Joint Convention.

TABLE 1

SUMMARY DATA FOR DISUSED SOURCES IN IRELAND (SORTED ACCORDING TO ACTIVITY AND NUMBER OF SOURCES) FROM RPII DATABASE

Nuclide	Activity MBq	Number
H-3	957,630	343
Sr-90	569,378	90
Am-241	260,250	71
Fe-55	202,170	8
Pm-147	185,047	32
Sr-90+	140,790	5
Gd-153	140,600	4
Cs-137+	139,486	10
Kr-85	111,000	154
Cs-137	106,096	132
Pu-238	93,980	3
U-238	~60000	1,439
Am-241/Be	43,290	16
Cu-244	20,360	3
Co-57	18,019	77
Ni-63	16,268	63
Co-60	15,399	19
Po-210	10,360	3
Cm-244	9,260	1
Sm-151	7,770	3
Y90	3,700	1
Ge-68	1,200	3
Sn-119	818	6
Cd-109	790	6
Co-57/Fe-59	740	2
Tl-204	566	9
U-238+	556	54
I-125	135	2,004
Ra-226	106	927
Ir-192	100	1
P-32	50	1
Fe-59	37	1
C-14	15	68
Th-232N	11	3
Na-22	8	3
Tl-204	6	2
Ur	4	4

Nuclide	Activity MBq	Number
I-125	135	2,004
U-238	~60000	1,439
Ra-226	106	927
Tc-99	<1	349
H-3	957,630	343
Kr-85	111,000	154
Cs-137	106,096	132
Sr-90	569,378	90
Co-57	18,019	77
Am-241	260,250	71
C-14	15	68
Ni-63	16,268	63
U-238+	556	54
Th-232	<1	45
Pm-147	185,047	32
Co-60	15,399	19
Am-241/Be	43,290	16
Cs-137+	139,486	10
Tl-204	566	9
Fe-55	202,170	8
Sn-119	818	6
Cd-109	790	6
Sr-90+	140,790	5
Gd-153	140,600	4
Ur	4	4
Pu-238	93,980	3
Cu-244	20,360	3
Po-210	10,360	3
Sm-151	7,770	3
Ge-68	1,200	3
Th-232N	11	3
Na-22	8	3
Co-57/Fe-59	740	2
Tl-204	6	2
Hg-203	1	2
Y-88	1	2
Cm-244	9,260	1

TABLE 1

SUMMARY DATA FOR DISUSED SOURCES IN IRELAND (SORTED ACCORDING TO ACTIVITY AND NUMBER OF SOURCES) FROM RPII DATABASE

Nuclide	Activity MBq	Number		Nuclide	Activity MBq	Number
Hg-203	1	2		Y90	3,700	1
Y-88	1	2		Ir-192	100	1
Ba-133	<1	1		P-32	50	1
Mn-54	<1	1		Fe-59	37	1
Cl-36	<1	1		Ba-133	<1	1
Cf-252	<1	1		Mn-54	<1	1
I-129	<1	1		Cl-36	<1	1
Bi-217	<1	1		Cf-252	<1	1
Sr-85	<1	1		I-129	<1	1
Tc-99	<1	349		Bi-217	<1	1
Th-232	<1	45		Sr-85	<1	1
Rn-222+	<1	1		Rn-222+	<1	1
Total		6,159		Total		6,159

TABLE 2

LOCATIONS OF DISUSED SOURCES FROM RPII DATABASE

County	Quantity (No)
Dublin	2516
Cork	1496
Kildare	946
Clare	307
Waterford	289
Galway	74
Carlow	44
Louth	34
Limerick	26
Westmeath	21
Dundalk	16
Meath	11
Kilkenny	9
Sligo	8
Wexford	8
Tipperary	6
Wick.ow	6
Offaly	5
Donegal	3
Thurles	3
Kerry	2
Leitrim	1
Roscommon	1
Wicklow	1
Total	6,159

TABLE 3

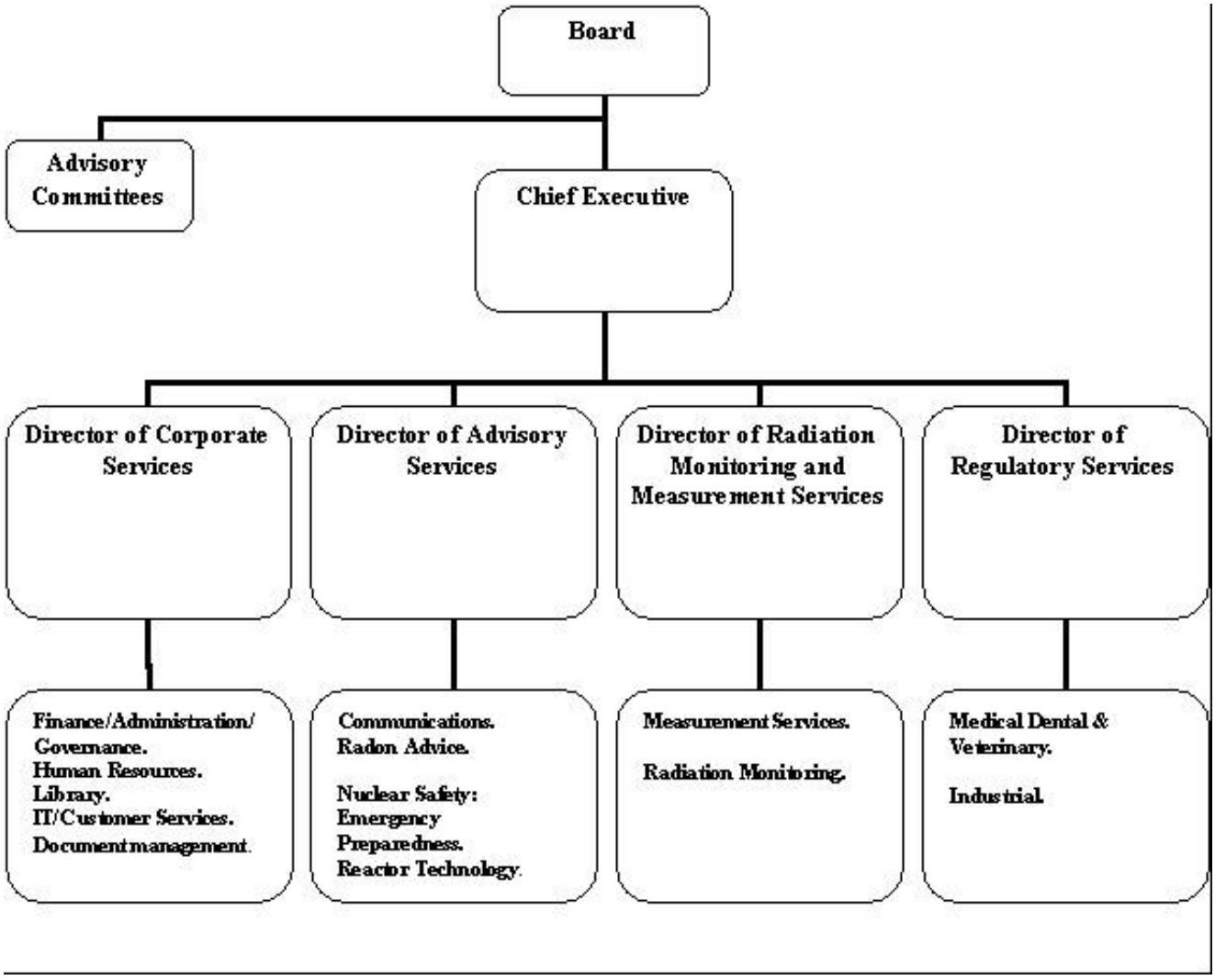
SUMMARY OF INSPECTIONS CARRIED OUT BY THE RPII IN 2004

Sector and applications	Number of licensees in Category	Number of Inspections	% licensees in category inspected (in 2004)
Process irradiators and cyclotron	5	5	100
Contaminated scrap metal	2	2	100
Industrial radiography	18	13	72
Government Departments	11	6	55
Custody only	26	14	54
Manufacturers of devices	4	2	50
Education and research	18	7	39
Industrial users	229	77	34
Lightening preventors	9	3	33
Hospitals and medical	128	41	32
Distributors	54	17	31
Chiropractors	10	2	20
Veterinary surgeons	154	28	18
Dentists*	801	12	1
Totals	1,469	229	

***** Dental Xray units are normally only inspected by the RPII where a matter of concern is brought to its attention. However, it is a licence condition that they be subject to appropriate quality assurance tests both during commissioning and while in use.

FIGURE 1

RPII STAFF STRUCTURE (2005)



APPENDIX 1

The National Emergency Plan For Nuclear Accidents (NEPNA)

Introduction and background

Under Article 37 of the Radiological Protection Act, 1991 (Ionising Radiation) Order (S.I.125 of 2000), the Department of Environment, Heritage and Local Government has the lead responsibility for coordinating the nuclear emergency response arrangements among Government Departments and Agencies and for preparing the National Emergency Plan for Nuclear Accidents (NEPNA). The NEPNA is in conformity with the International Atomic Energy Agency document – Safety Standard Preparedness and Response for a Nuclear or Radiological Emergency (GS-R-2).

The NEPNA is designed to respond to a major disaster at a nuclear installation in the UK or elsewhere, which would result in a major release of radioactivity into the environment and pose a radiological hazard in Ireland whether the disaster is caused by an accident or a terrorist attack. It provides a framework for effective coordination so as to ensure that all State resources are distributed to good effect and that gaps in the response arrangements are not allowed to develop. The NEPNA shows how Ireland will respond to a nuclear disaster, how technical information and radioactivity monitoring data will be provided and what measures may be taken for the protection of the public in the short and long term.

Notification of a Nuclear Incident

Early notification of a nuclear accident abroad would be received through either or both of the following:

- The European Community Urgent Radiological Exchange system (ECURIE) arrangements which have been set up with the EU to implement Council Decision 87/600/Euratom, providing for the early exchange of information in the event of a radiological emergency.

- The IAEA EMERCON arrangements, which are based on the 1986 Early Notification Convention.

- The National Police Service (An Garda Siochana) operates the Irish National Contact Point (NCP) for both ECURIE and EMERCON. The RPII is the national competent authority for both sets of arrangements and to support this the RPII operates an on-call duty officer system whereby a senior member of the RPII staff is available 24 hours a day and for all days of the year to assess any alert and where necessary activate the emergency response (see below).

- In the event of an incident at a nuclear establishment in the UK involving a release of radioactivity to the environment, arrangements have operated since 1992 whereby the UK Department of Environment, Food and Rural Affairs (DEFRA) informs Ireland's Department of Environment, Heritage and Local Government. This is regardless of whether the incident has any radiological significance for Ireland.

- The Irish Government has a comprehensive Bi-lateral Agreement with the UK Government in relation to the provision of information regarding nuclear accidents/incidents and radiological emergencies.

- A bilateral agreement covering information exchange between the RPII and the UK Nuclear Installations Inspectorate (NII) is also in place. A similar agreement has recently (August 2005) been put in place between the RPII and the French Regulatory Authority. (DGSNR)

Emergency Monitoring Systems

As part of Ireland's emergency preparedness, the RPII operates 3 monitoring systems for the detection and measurement of radioactivity in the air and deposits on the ground.

- A continuous gamma dose rate monitoring system operated at 12 strategic sites. These are carried out 24 hours a day and continuously fed back to the RPII with an alarm system. An additional 33 non-automated gamma sites can be activated if required.

- An air sampling system operates at 10 sites. Samplers are equipped with aerosol and gaseous iodine systems.

- A rainwater collection system operates at 12 sites.

- In the event of an incident, further monitoring of soil and foodstuffs would be carried out.

The system has been recently reviewed and is being updated to increase reliability, range of measurements and geographic coverage.

Arrangements for Assessing the Potential Impact of a Nuclear Accident/Incident

Since 2000, the RPII has implemented the ARGOS (Accident Report and Guiding Operational System) decision support tool as its primary platform for handling environmental data in an emergency. The Danish Emergency Management Agency (DEMA) in association with Prolog Development Centre Inc. originally developed ARGOS. An international consortium consisting of DEMA, RPII, the Swedish Radiation Protection Authority (SSI), the Norwegian Radiation Protection Authority (NRPA) and Health Canada now manages ongoing development and maintenance of the system. The ARGOS system allows prognostic, measurement, agricultural and

meteorological data to be viewed and overlaid in a geographic information system. The system is updated regularly so that any lessons learnt from exercise or emergency use can quickly be incorporated into operational systems.

Public Information in Support of the NEPNA

Measures to keep the public informed about a nuclear accident or emergency are addressed in the NEPNA. Arrangements are in place to inform the public of the accident, its consequences and of any countermeasures that are to be implemented to reduce doses to the population. This information would be issued through media channels: radio, TV including teletext, internet, press statements and press conferences. Regular updates of the situation would be given.

In Ireland, the EU Council Directive (89/618/Euratom) on informing the general public about the health protection measures to be applied and the steps to be taken in the event of a radiological emergency, is implemented by means of the European Communities Act, 1972 (Radiological Emergency Warning to Public) Regulations, 1993. The RPII is the Competent Authority for the purpose of these Regulations.

Measures are in place to keep the public informed about emergency planning arrangements. A detailed information booklet on the NEPNA was published in 2002 by the Department of the Environment, Heritage and Local Government and updated in 2004 and is available on the websites of the RPII and the DEHLG. To coincide with the publication of this booklet, an information leaflet and stable Iodine tablets were distributed to all households in Ireland in 2002. Public opinion is an important part of emergency preparedness and comments received from the public are taken into consideration as part of the planning process. Emergency planning developments are addressed and arrangements are published in the Annual Reports of the RPII. Other statutory agencies such as local authorities update their emergency planning procedures including for nuclear emergencies on a regular basis.

Through the Government Information Service, an emergency response press officers' group has been established. This group would coordinate media response across Government Departments and public authorities in the event of a major emergency or crisis.

Actions to Implement the NEPNA

The national response to a widespread radiological emergency or crisis is likely to involve mobilisation of the resources and expertise from a broad range of public authorities/agencies within the State. The NEPNA envisages that in the event of a major radiological emergency or crisis necessitating the activation of the NEPNA, an Emergency Response Coordination Committee (ERCC) would be convened to coordinate the response. The ERCC is made up of officials from key Government Departments and other public authorities and is chaired by DEHLG. This ERCC is responsible, inter alia, for providing advice on countermeasures and for coordinating their implementation. The

RPII has a special responsibility for radioactivity monitoring and for the provision of advice on the potential consequences of any accident and on the measures to be taken. Other Government Departments and statutory organisations have responsibilities, within the NEPNA to establish appropriate procedures to implement measures within their particular fields of competence.

The NEPNA updates and formalises earlier arrangements for responding to overseas nuclear accidents, which were put in place following the accident at Chernobyl.

Testing of the Emergency Plan

In 2001, a major nuclear emergency exercise was carried out in Ireland. External consultants were engaged by the DEHLG to conduct a comprehensive test of the NEPNA. This project included a critical review of the existing Plans, a table top exercise to examine some of the issues confronted in the NEPNA and the large scale exercise conducted in November 2001. Arising from the exercise, the consultants made 37 specific recommendations for improving the NEPNA in their report of August 2002. These recommendations covered aspects of NEPNA such as national emergency preparedness structures, threat assessments, the functioning of the ERCC, clarification of roles and responsibilities, alerting mechanisms and communication with the public.

The recommendations in the consultant's report have been acted upon by DEHLG and the RPII as well as by emergency planners across other Government Departments and public authorities. Some of the key developments in this area include: the establishment of the Office of Emergency Planning; the introduction of a formal procedure to audit emergency response plans and arrangements of Government Departments, and preparation of a report by an inter-Departmental group setting out recommendations for the completion by the RPII of a review of national monitoring arrangements.

A National Emergency Control Centre (NECC) would be established to meet the needs of the community in the event of an emergency situation, including a nuclear emergency. An emergency, in this regard, has been defined as an event, incident or situation, that may present a serious treat to the welfare of the population, the environment, the political, administrative, economic stability or the security of the State, which will require the political and strategic involvement of the Government. With regard to the RPII's national monitoring arrangements, an upgrade of the RPII monitoring equipment is currently in hand. In addition to these measures, significant improvements have been made in a number of areas including: alerting arrangements, threat assessment, exercise programmes, public information and emergency data management. On foot of the consultant's report, regular national exercises are planned, and Ireland is participating in the INEX exercise under the aegis of the Nuclear Energy Agency in November 2005.

Communication systems and arrangements for exchange of early notifications are tested regularly. A detailed programme of testing of the ECURIE arrangements is coordinated by the European Commission. This includes daily tests of the physical communication lines, tests of the National Contact Point (4 times per year), tests of the duty officer

contact arrangements (4 time per year) and the exchange of simulated radiological data between Member States once a year. Equivalent arrangements are in place to test the EMERCON notification system coordinated by the IAEA.

It is recognised that international cooperation on exercises is essential. Irish authorities regularly participate in international exercises such as those in the INEX series and those coordinated by the IAEA. Ireland plans to participate in both the INEX-3 and Convex 3 exercises, scheduled for 2005. There is also co-operation with the relevant UK authorities, in particular those in Northern Ireland, on emergency exercises.

In addition to participation in major national exercises, individual public authorities and agencies which have been assigned responsibilities under the NEPNA are required to routinely test their emergency arrangements. The RPII, for example, routinely tests its arrangements including: communications arrangements, duty officer arrangements, emergency laboratory procedures and sample collection.

REFERENCES:

Ref 1 IAEA Information Circular INFCIRC/604 of 1 July 2002 - Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. Guidelines regarding the form and structure of National Reports.

Ref 2 Council Directive 96/29/Euratom of 13 May 1996 laying down the basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation.

Ref 3 Status of the Implementation of the European Directive 96/29/Euratom in Ireland and with Relation to NORM. C ORGANO, Radiological Protection Institute of Ireland, 3 Clonkeagh Square, Dublin, 14 e-mail

Ref 4 European Commission. Radioactive Waste Categories. Current Position in the EU Member States and in the Baltic and Central European Countries EUR 18324 EN, 1998.

Ref 5 IAEA-TECDOC-1344 (Categorisation of radioactive sources Revision of IAEA-TECDOC-1191, July 2003).

Ref 6 Radiological Protection Institute of Ireland. Annual Report and Accounts 2003.

Ref 7 GS-R-2. Preparedness and response for a nuclear or radiological emergency: safety requirements - ISSN 1020-525X. - [9], 72p.: 24 cm. - Jointly sponsored by FAO, IAEA, ILO, OECD/NEA, PAHO, OCHA, WHO.

Ref 8 Statement by H.E Ambassador Ronan Murphy Head of Delegation of Ireland to the 47 th Session of the IAEA General Conference, 17 th Sept 2003.

Ref 9 OSPAR Convention. Appendix 1-Criteria for the definition of Practices and Techniques mentioned in Paragraph 3(b)(i) of Article 2 of the Convention.

Ref 10 Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters (1998 Aarhus Convention).

Ref 11 Socio-economic and other non-radiological impacts of the near surface disposal of radioactive waste. IAEA-TEC-DOC-1308.

Ref 12 Environmental Impact Assessment. Directive 85/337/EEC, as amended by Directive 97/11/EC. Assesses the effects of certain public and private projects on the environment, including the dismantling or decommissioning of specified nuclear power stations and nuclear reactors.

Ref 13 Council Directive 2003/122/Euratom on the control of high activity sealed radioactive sources and orphan sources (the HASS Directive).

References to national laws, regulations, requirements, guides, etc.

Radiological Protection Act, 1991 (Number 9 of 1991) as amended by the Energy (Miscellaneous Provisions) Act, 1995; the Food Safety Authority Act of 1998; the Electricity Regulation Act of 1999 and the Radiological Protection Amendment Act of 2002 (This Act, as amended, established the Radiological Protection Institute of Ireland (RPII) and, inter alia, sets out the appointment and powers of inspectors (Articles 28 and 29 of the 1991Act) and the framework for the RPII licensing system (Article 30 of the 1991 Act as amended).)

Radiological Protection Act, 1991 (Ionising Radiation) Order, 2000 (S.I. No. 125 of 2000)
(This statutory instrument gives effect to Council Directive 96/29/Euratom (Basic Safety Standards Directive) and to Council Directive 90/641/Euratom (Outside Workers Directive.)

European Communities (Medical Ionising Radiation Protection) Regulations, 2002 (S.I. No. 478 of 2002)
(This statutory instrument gives effect to Council Directive 97/43/ Euratom on the health protection of individuals against the dangers of ionising radiation in relation to medical exposures.)

European Communities (Supervision and Control of Certain Shipments of Radioactive Waste) Regulations, 1994 (S.I. No. 276 of 1994)
(This statutory instrument gives effect to Council Directive 92/3/Euratom on the shipment of radioactive waste.)

Carriage of Dangerous Goods by Road Act, 1998 (Number 43 of 1998)
(This Act enables effect to be given to the ADR agreement).

Carriage of Dangerous Goods by Road Regulations, 2001 (S.I. No. 492 of 2001)
(This statutory instrument gives effect to Council Directives 94/55/EC as amended by Directive 2000/61/EC and Directives 96/86/EC and Directive 1999/47/EC and Directive 95/50/EC as amended by Directive 2001/26/EC on the carriage of dangerous goods by road; including the loading and unloading of the dangerous goods in relation to their carriage.)

European Communities (Safety Advisors for the transport of Dangerous Goods by Road and Rail) Regulations, 2001. (S.I. No 6 of 2001)
This statutory instrument gives effect to Directive No. 96/35/EC and Directive 2001/18/EC.

Council Regulation (Euratom) No 1493/93 on shipments of radioactive substances between Member States.
This regulation sets out the procedure to be followed when shipping sealed sources to

Member States of the European Union.

Containment of Nuclear Weapons Act 2003 (No. 35 of 2003)
This Act provides the legislative basis for the implementation of Ireland's obligations under the 1998 Protocol to the 1973 Agreement between the European Atomic Energy community (EURATOM); the non-nuclear weapons States of EURATOM and the International Atomic Energy Agency.

The Containment of Nuclear Weapons Act, 2003 Regulations, 2004 (S.I. 123 of 2004).
This Regulation provides the regulatory basis to enable Ireland to implement its obligations under the Protocol Additional to the 1973 Agreement referred to above.