



Radiological Protection Institute of Ireland

ANNUAL REPORT AND ACCOUNTS 2010



Radiological Protection Institute of Ireland

An Institiúid Éireannach um Chosaint Raideolaíoch

To the Minister for the Environment, Community and Local Government

In accordance with the requirements of the Radiological Protection Act, 1991, I have the honour to present the Annual Report and Statement of Accounts of the Radiological Protection Institute of Ireland for the year ended 31st December 2010.



Prof Eugene Kennedy
Chairman

Mission Statement

“To ensure that people in Ireland are protected from the harmful effects of radiation.”

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Abbreviation list

ALMERA	Analytical Laboratories for the Measurement of Environmental Radioactivity	HALES	Highly Active Liquor Evaporation and Storage
AWIG	Analysts Informal Working Group	HASS	High Activity Sealed Sources
BAT	Best Available Techniques	HASTS	Highly Active Storage Tanks
Bq/l	becquerels per litre	HLG	High Level Group
Bq/m³	becquerels per cubic metre	HSA	Health and Safety Authority
CSN	Consejo de Seguridad Nuclear	HSE	Health Service Executive
DAFF	Department of Agriculture, Fisheries and Forestry	IAEA	International Atomic Energy Agency
DCENR	Department of Communications, Energy and Natural Resources	ICRP	International Commission on Radiological Protection
DCU	Dublin City University	ICSD	Ionisation chamber smoke detectors
DECC	Department of Energy and Climate Change	ICT	Information Communications Technology
DECLG	Department of the Environment, Community and Local Government	INAB	Irish National Accreditation Board
DEHLG	Department of the Environment, Heritage and Local Government	INES	International Nuclear Event Scale
EGIR	Expert Group on Ionising Radiation	IRAC	Ionising Radiation Advisory Committee
ENSREG	European Nuclear Safety Regulators Group	IRMF	Ionising Radiation Metrology Forum
EPA	Environmental Protection Agency	IRRS	Integrated Regulatory Review Service
EPR	European Pressurised Reactor	mSv	millisievert
ERPAN	European Radiation Protection Authorities Network	MoU	Memorandum of Understanding
EURADOS	European External Dosimetry Group	NCCP	National Cancer Control Programme
EURNMET	European Metrology Group	NEA	Nuclear Energy Agency
FSAI	Food Safety Authority of Ireland	NEPNA	National Emergency Plan for Nuclear Accidents
GDA	Generic Design Assessment	NEWS	Nuclear Events Web Based System
		NORM	Naturally Occurring Radioactive Materials
		NPP	Nuclear Power Plant
		NRPA	Norwegian Radiation Protection Authority

OSPAR	Oslo-Paris Convention
PMDS	Performance Management and Development System
PRMG	Personal Radiation Monitoring Group
QCS	Quality Customer Services
RASSC	Radiation Safety Standards Committee
RCSI	Royal College of Surgeons in Ireland
RPA	Radiation Protection Adviser
RPII	Radiological Protection Institute of Ireland
SI	Statutory Instrument
UCD	University College Dublin
UK-EA	UK Environment Agency
UK-HPA	UK Health Protection Agency
UK-HSE-ND	UK Health and Safety Executive-Nuclear Directorate
UK-NPL	UK National Physical Laboratory
UK-NDA	UK Nuclear Decommissioning Authority
WHO	World Health Organisation

Dose Limits and Reference Levels

The dose limit for a member of the public is 1 mSv in any 12 month period

The dose limit for radiation workers is 20 mSv in any 12 month period. Additional limits apply to exposure to specific parts of the body.

The Reference Level for radon in homes is 200 Bq/m³

The Reference Level for radon in workplaces is 400 Bq/m³

The Reference Level for radon in schools is 200 Bq/m³



Functions of the RPII

The RPII's principal objectives are:

- To provide advice to the Government, the Minister for Environment, Community and Local Government and other Ministers on matters relating to radiological safety.
- To provide information to the public on matters relating to radiological safety.
- To maintain and develop a national laboratory for the measurement of levels of radioactivity in foodstuffs and the environment, and to assess the significance of these levels for the Irish population.
- To provide a personnel dosimetry and instrument calibration service for those who work with ionising radiation.
- To control by licence the custody, use, manufacture, importation, transportation, distribution, exportation and disposal of radioactive substances, irradiating apparatus and other sources of ionising radiation.
- To assist in the development of national plans for emergencies arising from nuclear accidents and to act in support of such plans.
- To monitor developments abroad relating to nuclear installations and radiological safety in general; and to keep the Government informed of their implications for Ireland.

Strategic priorities for the RPII 2008-2010

The RPII has developed a clear strategy to strengthen radiation protection in Ireland over the three year period, 2008-2010. This is set out in full in the document

RPII Strategic Plan 2008-2010.

The RPII has set a number of goals by which its success in the period 2008-2010 can be measured:

- Information about radiation protection must be readily available, accessible and understandable to a non-scientific audience, so that the public is confident of its ability to be protected from its harmful effects.
- The information provided by the RPII must be scientifically based and accurate at all times. It will seek to sustain its position as a trusted source of information to public and professional audiences in Ireland on this area.
- The national regulatory infrastructure for practices and work activities involving ionising radiation must be complete and must function effectively. Identified gaps in the infrastructure, such as a national policy on radioactive waste disposal, must be successfully resolved.
- A national strategy for addressing high radon levels in homes must be developed and implemented. This strategy needs to target, in particular, those who have not participated in previous studies and the many new homes built in the last decade.
- Following the Government decision to give responsibility for non-ionising radiation to the RPII (including the allocation of resources), these new work streams must be successfully integrated into the work of the RPII.
- The RPII will continue to provide high-quality scientifically based advice on radiation protection issues as an input to Government policy. A targeted research programme will support this advisory role.

Impact will be measured by:

- User compliance with regulatory requirements.
- Effective cooperation with relevant regulatory bodies and partners with a role in radiation protection.
- Enhancement of the RPII's profile with key decision makers.
- Ease of access for the public and Government to high-quality information and monitoring data on all radiation protection issues of concern.
- A better understanding by the public of radiation protection issues.



Chairman's statement

I am pleased to introduce the Annual Report and Accounts of the Radiological Protection Institute of Ireland for 2010. Despite the challenging budgetary and staffing situation, RPII continued to deliver on its mission to ensure that people in Ireland are protected from the harmful effects of radiation. Advances were made in many areas of radiation protection in Ireland, in particular regarding the regulatory infrastructure and monitoring programmes, but further effort is needed nationally regarding exposure to radon, which represents the major controllable source of exposure to ionising radiation for people living in Ireland.

For the Strategic Plan period 2008-2010, RPII identified two key areas of risk that needed to be addressed to improve radiation protection in Ireland. These were the development of a national policy on radioactive waste disposal and the development and implementation of a national strategy for addressing high radon levels in homes.

I am very pleased to note the progress made on the development of a national policy for dealing with disused radioactive sources. The agreement by the Government to the recommendations made by the interdepartmental group, established in 2008 to analyse the issues involved and to explore options for a solution, is a concrete step forward. The RPII has long been calling for progress in this area and it is good to see agreement reached on the need for an inventory reduction programme, the establishment of a National Interim Storage Facility and arrangements for the short-term emergency storage of seized or orphan (no identifiable owner) radioactive sources. RPII is participating actively in the Implementation Committee established to bring this work to a successful conclusion.

I am also very pleased to note the decision by Government in September 2011 to approve the establishment of an inter-agency group comprising representatives from relevant public authorities to develop a National Radon Control Strategy for Ireland. Radon is by far the major contributor to the exposure of people in Ireland to radiation, with levels measured among the highest in Europe. Bi-lateral arrangements between RPII, the Department of the Environment, Community and Local Government (DECLG) and other key players have been

effective to some extent, but a unified Government-led national strategy is required to ensure that all arms of the state are working in concert to make certain that people living in Ireland are adequately protected from the harmful effects of radon gas. The discovery earlier this year of a second home in Castleisland, Co Kerry, with radon concentrations 185 times the national Reference Level is a stark reminder that some people in Ireland are exposed to dangerous levels of radon in their homes. Research undertaken by RPII during the year and advice from the World Health Organisation indicate that a whole-of-Government approach is needed for an effective radon programme. The RPII looks forward to playing its part in the development of the National Radon Control Strategy to address the health risks posed by high radon levels in Ireland.

The ongoing situation at the Fukushima Nuclear Plant in Japan, following the devastating tsunami in March this year, showed that despite the major international efforts to improve nuclear safety since the Chernobyl accident in 1986, serious accidents can still occur at nuclear facilities. The work completed by RPII in emergency preparedness and response over the last number of years and the joint working arrangements with key departments and agencies under the National Emergency Plan for Nuclear Accidents ensured that Ireland was able to mobilise its resources effectively and efficiently. Given the distance between Ireland and Japan there were no health implications in Ireland, but the emergency arrangements were effective in addressing the concerns of Irish citizens based in Japan. Through its international contacts and networks and based on its own radioactivity measurements, RPII was



able to provide reliable and accurate information to the Government, the public and the media on the situation as it unfolded. Access to measurement data and the capability to interpret it proved particularly important in addressing industry concerns about potential contamination of foodstuffs and non-food items.

An important element in the promotion of good radiation practice, for members of the public exposed to radon in their homes and for people using ionising radiation in the workplace, is the availability of accessible and understandable information. RPII launched a newly updated website in May 2009. Since then, the website has been further developed and expanded to include interactive features and online services for customers. In the coming years, RPII will continue to prioritise the development of its website. I would invite interested parties to view the website and to provide feedback to RPII so that we can continue to improve our service to the public and customers.

A major direction for the RPII over the period 2008–2010 has been to seek to enhance its effectiveness through working with other agencies and organisations, both nationally and internationally. Over the period, memoranda

of understanding were established with the Health Service Executive, the Health and Safety Authority, the Food Safety Authority of Ireland, Met Éireann and the Environmental Protection Agency to formalise and strengthen the co-operative working arrangements already in place. Actions under these agreements have enhanced the outcomes achieved by RPII and the other organisations and reduced duplication where it existed. Direct contacts were also established with individual local authorities in high radon areas to encourage and support their efforts to raise awareness of radon and to address radon in social housing. These collaborative efforts have been very successful in reducing the risk from radon to local authority tenants.

Internationally, through participation in the recently established European Nuclear Safety Regulators Group (ENSREG) and the Heads of the European Radiation Control Authorities (HERCA), RPII has reinforced its reputation and standing, enhancing its ability to influence decisions that impact the protection of people in Ireland.

Towards the end of 2010, the RPII developed its new strategic plan for the coming three year period. In radiation protection terms, radon remains by far the most

urgent challenge. The RPII's radon monitoring database contains only 43,000 results indicating that a tiny fraction of the total housing stock of 1,750,000 homes have been measured for radon. The majority of householders have not yet undertaken measurements and therefore have no idea of the risk to themselves and their families. RPII is continuing to press for the development of a national approach to radon with a view to ensuring the best return from the available resources in terms of public health and protection against radon.

Responses to the Fukushima accident across Europe have been varied as regards the future development of nuclear power, but all are agreed that comprehensive and transparent risk and safety assessments (so called "stress tests") of each country's nuclear power plants should be undertaken to determine the plants' resilience to extreme events and the adequacy of the severe accident management capabilities. The "stress tests" are now underway at all European nuclear power plants, coordinated at the European level. RPII represents Ireland in the technical aspects of this process and is committed to playing its part to ensure that the tests are comprehensive and transparent and that deficiencies found are properly addressed.

In the UK, the Government has recently identified eight possible sites for the development of new nuclear power stations, including Sellafield. It has also begun a consultation process to seek views on how potential sites for geological disposal of higher activity waste, much of which is currently stored at Sellafield, will be identified and assessed. New build, radioactive waste management and ongoing issues at Sellafield remain a high priority for the RPII.

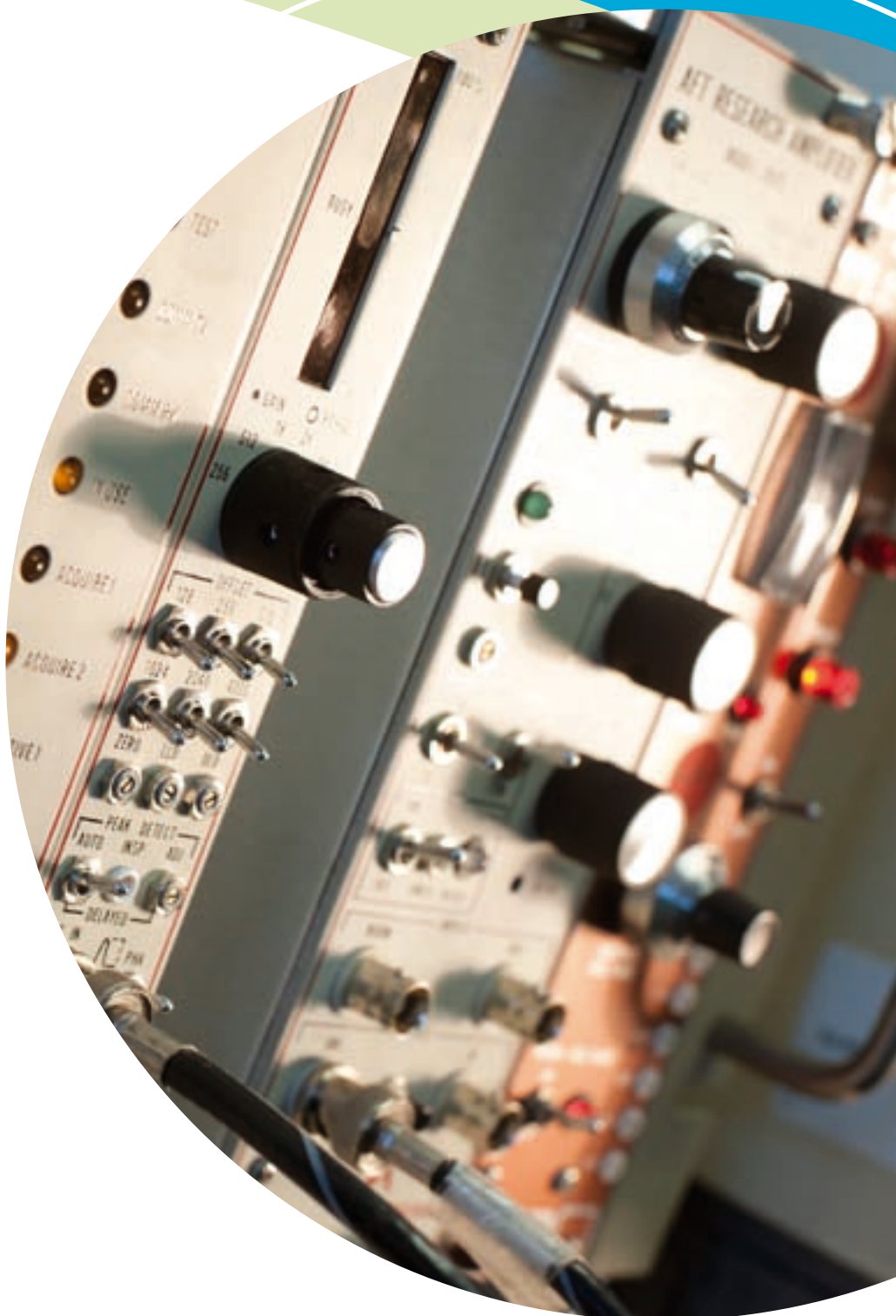
In 2007, the Government agreed that the RPII's mandate and resources be extended to include aspects of non-ionising radiation including those associated with phone masts and power lines. The Board welcomed this decision and remains ready to take on these new responsibilities, subject to the necessary resources being made available.

On my own behalf, and on behalf of the Board members, I wish to thank all of the staff of the RPII for their continuing professionalism, dedication and flexibility at all times. I wish to record also my own thanks and that of the RPII to Dr Niall McEniff who retired from the Board in April 2010. In his place, I welcome Dr Stephanie Ryan who was appointed in July 2010 as the nominee of the Faculty of Radiologists, RCSI. I wish to thank also the members of the newly established Ionising Radiation Advisory Committee and the members of the Audit Committee and Communications Advisory Committee for giving of their time and expertise to assisting the RPII.

Finally, I wish to record the RPII's appreciation for the support and encouragement received from the former Minister for the Environment, Heritage and Local Government, Mr John Gormley, TD and from the new Minister for the Environment, Community and Local Government, Mr Phil Hogan, TD. The RPII is also indebted to the officials of the Environmental Radiation Policy and Air Quality Section of the Department of the Environment, Community and Local Government and for other officials in the Department for their cooperation. The positive engagement and helpful collaboration of other agencies, government departments, third-level educational institutions and other external organisations with which the RPII has worked during 2010 is also gratefully acknowledged.



Prof Eugene Kennedy
Chairman





Chief Executive's statement

2010 marked the end of the 2008-2010 strategic planning period for RPII. Overall, RPII was very successful in achieving its goals, despite the challenging situation with regard to staffing. The key achievements and activities in each of the main areas of work of the RPII during 2010 are set out below.

Radon

The RPII's strategic objective on radon is to work to increase awareness among all key stakeholders of the RPII's advice on radon with the ultimate aim of the adoption and implementation of a national radon control strategy by Government. To this end, in April 2010, the RPII and Health Service Executive published a joint position statement on radon which recognises radon as an important public health hazard requiring a coordinated national response. The statement recommended the immediate establishment of an appropriately constituted National Expert Group to develop a National Radon Control Strategy for Ireland. Following publication of the statement, RPII worked with DEHLG to complete the preparatory work for the establishment of the National Expert Group.

In January 2010, RTÉ's Prime Time programme broadcast a special feature on radon which gave rise to increased awareness of the issue. To capitalise on the heightened level of awareness, RPII ran integrated local information campaigns in the following months in Sligo (March), Carlow (April) and Waterford (October); all counties previously identified as having high radon levels. The campaigns included distribution of awareness literature to every household in the county, advertising on local radio and in newspapers, as well as interviews, promotional activities, developing web and Facebook pages, public meetings and tailored briefing sessions for local public representatives and business/industry groups. The local campaigns were very successful and resulted in a substantial increase in the number of radon measurements undertaken by householders in each county.

The National Radon Forum is a key focal point for the RPII's radon programme each year. In 2010, the Forum was held in Cork with the theme "Radon a well known health risk – how do we influence the public to take action?" The

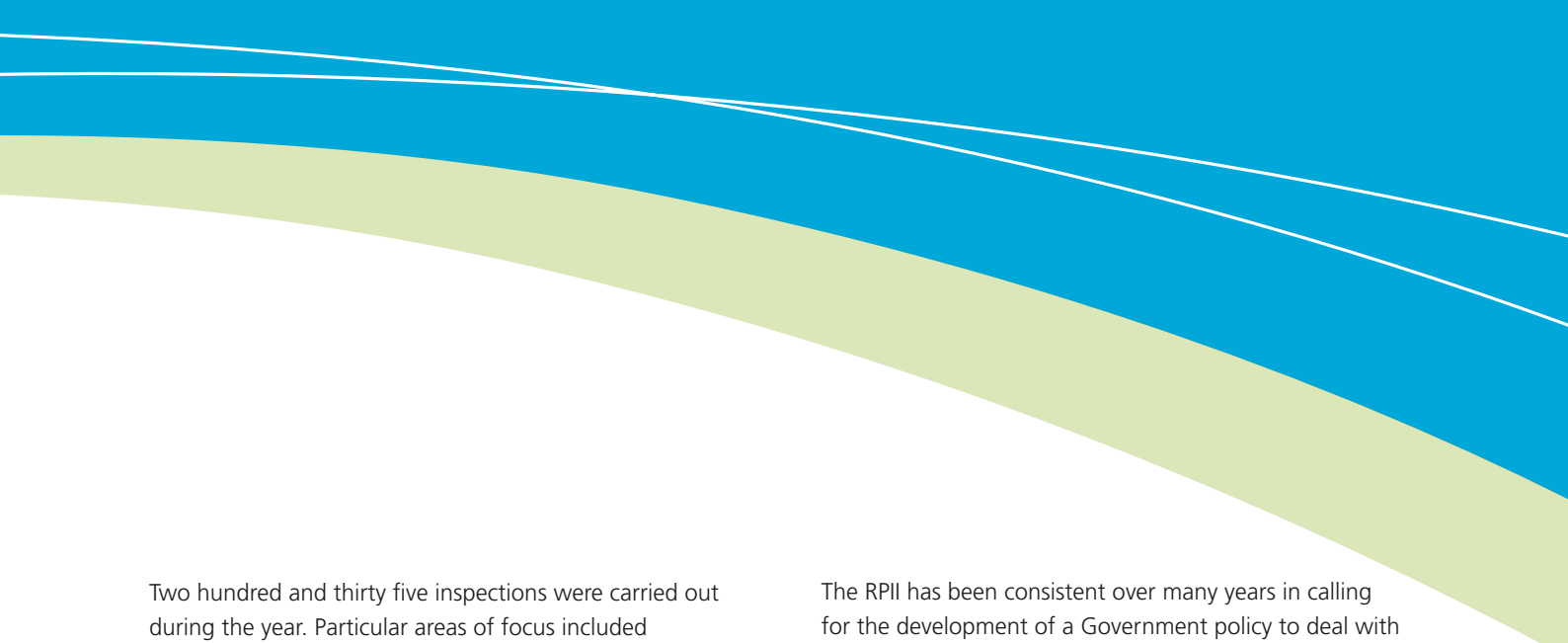
Forum was one of the largest to date with 75 people attending from local authorities, the HSE, HSA, DEHLG, State Claims Agency, radon measurement companies, radon remediation contractors and universities.

Employer information and education remained the primary focus of the RPII's radon in workplaces programmes in 2010. RPII inspectors included radon awareness in 146 of their inspections carried out during the year, while Health and Safety Authority inspectors addressed radon in 440 inspections of enclosed ground level workplaces in high radon areas. RPII inspectors also visited 6 underground workplaces during the year where occupational exposure to radon has to be managed on an ongoing basis.

By the end of the year, RPII's radon database included measurements for almost 43,000 homes. Of these, 5080 have radon concentrations above 200 Bq/m³ with 575 having levels above 800 Bq/m³. During the year, 9 homes with radon levels of more than 10 times the Reference Level were identified, reinforcing the RPII's message that Ireland has a serious radon problem requiring a coordinated Government led response.

Regulation and licensing

At the end of 2010, 1737 licences were in force across a range of sectors including medical, industrial, educational, dental and veterinary. Sixty five new licences were issued during the year including 33 in the dental sector. Fifty six licences were closed leading to a small increase overall when compared with 2009. The most notable licence application received during the year was for the new National Cancer Control Programme radiotherapy centres at St James's and Beaumont Hospitals in Dublin, each of which when completed will have four linear accelerators. Two of the four linear accelerators at St James's Hospital were licensed for use at the start of 2011.



Two hundred and thirty five inspections were carried out during the year. Particular areas of focus included distributors of ionisation chamber smoke detectors, security of radioactive sources, dental licensees and non-destructive testing companies. The inspections also focused on the enforcement of the Radiation Protection Advisor (RPA) requirement in the industrial sector and on raising radon awareness across all sectors. In the dental sector, the standard of radiation protection in the practices inspected was high, with significant improvement in licensing matters following the introduction of the requirement to appoint an RPA. Security audits of two large hospitals and one industrial facility were undertaken in conjunction with the National Crime Prevention Unit of An Garda Síochána. In general, inspectors continued to observe good standards of radiation protection across all sectors, with particular improvements noted in the industrial and educational sectors following the introduction of the requirement for these licensees to appoint an RPA.

Each year, the RPII undertakes a renewal programme for licenses that are due to expire within the year. During the 2010 renewal programme, the RPII's solicitor had to write to 27 licensees who failed to contact the RPII following correspondence reminding them to renew expired licenses. All but one licensee undertook the necessary action to ensure that they were compliant with their regulatory requirements. Dr Raymond Herring, Back and Neck Clinic, Castlebar, Co Mayo, failed to renew his licence in July 2009. Following an inspection in July 2010, Dr Herring was prosecuted and convicted in the Castlebar District Court in January 2011. He was fined €350 and ordered to pay €500 towards the RPII's legal costs.

In line with new guidelines on incident reporting published in 2009, RPII was notified of 12 incidents in the medical and dental sectors. The majority of incidents concerned individuals undergoing radiological procedures where hospital staff incorrectly examined the wrong patient. In all cases the incidents were fully investigated to the satisfaction of the RPII and measures put in place by the hospitals concerned to prevent recurrences.

The RPII has been consistent over many years in calling for the development of a Government policy to deal with radioactive waste management in Ireland. In December 2010, the interdepartmental group established in 2008 to assess the issues made its first report to Government. The Government agreed to the main recommendations of the Group including the implementation of a phased inventory reduction programme to decrease the number of disused radioactive sources currently stored in Ireland; the establishment of a National Interim Storage Facility for such sources; and the implementation as a matter of urgency of arrangements for the short-term emergency storage of orphan (no identifiable owner) or seized radioactive sources. An implementation Committee and working groups have been established to take this work forward.

Engagement with relevant stakeholders is an essential aspect of promoting and achieving higher standards of radiation protection, particularly in the regulatory environment. During 2010, the RPII engaged with Health Service Executive, Dental Council, Medical Council, Veterinary Council of Ireland, Health and Safety Authority, Department of Education and Science, Department of Transport, An Garda Síochána, Customs, Environmental Protection Agency, City and County Managers Association, Fire Engineering Systems Association, Department of Enterprise, Trade and Innovation (Import and Export Controls), Irish lamps industry and Irish Aviation Authority to discuss areas of mutual interest and to identify joint tasks aimed at generating efficiencies and avoiding duplication of effort.

The RPII's Dosimetry Service provides a personal monitoring service to determine occupational exposure to ionising radiation. In 2010, 127 or 1.5% of the individuals monitored had annual doses exceeding the minimum reporting level of 0.1 mSv. Twenty workers had annual doses exceeding the dose limit for members of the public of 1 mSv, but none exceeded the annual dose limit for workers of 20 mSv.



As is required by law, the exposure of aircrew to ionising radiation must be monitored to determine if measures to control exposure are required. During 2010, information received from 7 licensed air operators showed that 11,077 individuals were estimated to receive annual radiation doses above 1 mSv, with 113 of these in excess of 4 mSv and none over 6 mSv. Since monitoring of aircrew began in 2003 there has been a consistent yearly increase in the number of aircrew receiving doses in excess of 1 mSv, but doses have been maintained below 6 mSv.

Exposure of the Irish population to radiation

The RPII continued its programme of monitoring radiation in the environment during the year with the aim of assessing the exposure of the population. The 2010 programme showed that liquid discharges from the nuclear fuel reprocessing plant at Sellafield remain the dominant source of artificial radioactivity in the Irish Sea and that the consumption of seafood continues to be the main way in which the public is exposed to this radiation source. The radiation doses to typical consumers of seafood were well below 1 microsievert (μ Sv), and may be compared with the average annual dose to a person in Ireland from all sources of radioactivity of 3950 μ Sv.

Levels of ambient gamma dose rate and radioactivity in air measured at 14 and 12 stations around the country, respectively, showed no abnormal readings and were consistent with measurements in previous years. The levels of radioactivity in milk, drinking water and mixed diet were also low and consistent with levels measured in previous years. These measurements provide confirmation that the levels of artificial radioactivity in the environment do not constitute a risk to health and are very small when compared with the dose received as a result of natural background radiation.

The study of radioactivity in groundwater supplies, commenced in conjunction with the EPA in 2008, continued during the year. By the end of 2010, samples

from all 220 locations in the study had been collected and analysed for their radioactivity content. All the samples were found to comply with the EC Drinking Water Directive with regard to radioactivity content.

A study of tritium levels in seawater started in 2008 to fulfil Ireland's commitments to the OSPAR Convention for the protection of the marine environment of the NE Atlantic was completed during 2010. Tritium has a low radio-toxicity and as such is not included in RPII's routine monitoring programme. However, it is discharged from nuclear power stations and the aim of the study was to establish a baseline against which future discharges might be measured as nuclear power production increases in Europe. The majority of the 67 samples included in the study had tritium concentrations below the limit of detection, with the highest value of 2.4 Bq/l being measured in Balbriggan.

During 2009, a comprehensive review of the RPII's monitoring programme was undertaken by a specially constituted group of five independent experts to ensure that the programme meets its stated aims and to make recommendations for improvement, if required. The review panel broadly endorsed the RPII's monitoring programme and made some specific recommendations concerning sampling and skills maintenance for consideration in future programmes. In early 2010, the RPII conducted a number of internal workshops to address the recommendations and based on this a revised monitoring programme for 2011 has been developed.

Radiation Measurement Services

In total, the RPII measured the radioactivity content in 1932 environmental samples and foodstuffs during the year. Certificates specifying the radioactivity content issued to exporters of Irish produce numbered 3211, almost identical to the previous year, indicating an ongoing and steady demand for this service. The RPII's Dosimetry Service supplied approximately 74,000 dosimeters to clients during the year. These dosimeters were used to monitor the

radiation exposure of over 8000 individuals. The Calibration Service tested 443 instruments for compliance with the relevant manufacturers' specifications. Radon measurements were completed in 5371 homes and 393 workplaces, of which 47 were schools. As a result of the Prime Time programme and RPII's targeted local radon awareness initiatives, the number of measurements in homes greatly exceeded the 2550 measurements undertaken in 2009.

During the year, RPII maintained accreditation to the ISO 17025 standard for its key measurement services. It continued to increase the use of web and other electronic interfaces to improve service delivery for customers, while at the same time increasing process efficiency within the laboratory.

Emergency preparedness

During 2010, the RPII undertook a number of initiatives to enhance its capacity to respond to a nuclear accident abroad as part of the National Emergency Plan for Nuclear Accidents (NEPNA). A two-day joint workshop for staff from RPII and Met Éireann was organised to improve the way in which simulation of different weather conditions and weather forecast data is integrated into RPII's decision support system, ARGOS. The National Radiation Monitoring Network was upgraded with the installation of a new site at Coolgreany in Wexford and the closure of older sites in Kilkenny and Mullingar.

The annual programme of emergency exercises organised by RPII was supplemented by participation in 7 international emergency exercises organised by the International Atomic Energy Agency and the European Commission. These exercises are invaluable in highlighting any technical issues and gaps in Ireland's response needing rectification. RPII is represented on and participates actively in international groups related to nuclear and emergency preparedness to ensure that Ireland's response is in line with best practice and conforms to international guidelines.

Safety of nuclear facilities abroad

The RPII continued to closely monitor developments at Sellafield and other UK nuclear sites. At Sellafield, technical problems and planned outages in both the Highly Active Liquor and Evaporation Storage (HALES) facility and the waste vitrification plant resulted in lower than anticipated vitrification throughput, which taken together with other factors, resulted in a marginal increase in the volume of highly radioactive liquid stored on site by the end of the year. The levels remain, however, well below the limit specified by the UK regulators. In July, RPII staff were briefed by the Sellafield operating company on the Sellafield Lifetime Plan which sets out the work to be performed on the site over its lifetime to 2120. RPII noted that UK regulators are not satisfied with many of the dates included in the plan and that they are pushing for better performance. In July also, RPII staff were briefed by UK regulators on the likely extension to the operating lifetime of the Wylfa Nuclear Power Station in Wales for up to two years (i.e. December 2012) – the extension was subsequently confirmed in October 2010.

Also in 2010, the UK government announced plans to develop new nuclear power stations on up to 8 sites in England and Wales, five of which are on the Irish Sea Coast. The plans aim to see construction begin in 2012 with the first plants operational before 2025. RPII provided technical support to DECLG in their responses to consultations on these plans.

During the year, a number of incidents at Sellafield and other UK nuclear sites were brought to RPII's attention by UK regulators. All events were rated as Level 1 or lower on the seven-point International Nuclear Event Scale (INES) and there was no radiological impact on Ireland from any of the events. RPII was also notified of a number of INES rated Level 2 events in other European countries but again, none of the incidents had offsite consequences and, therefore, had no radiological impact on Ireland.

The most significant event during the year was the discovery of cobalt-60 pieces at a scrap metal dealer's premises in New Delhi, India. The incident was discovered

following seven patients presenting at a hospital with symptoms suspected to be caused by radiation exposure. It was subsequently rated Level 4 on the INES scale and was noted by the IAEA as the worst radiation incident in four years.

At the international level, RPII's efforts were directed towards participation in the European Nuclear Safety Regulators Group (ENSREG) and in particular, contributing to the development of the Euratom Nuclear Safety Directive and a directive on radioactive waste and spent fuel. RPII staff also provided support to DEHLG to review and update Ireland's National Plan for the implementation of the Radioactive Substances Strategy under the OSPAR Convention for the Protection of the Marine Environment of the North East Atlantic and to prepare for the Review Meeting of the IAEA Convention on Nuclear Safety due to be held in 2011.

Corporate Services

The Corporate Services Division supports all aspects of the RPII's work and aims to ensure that conditions are created that promote efficiency and effectiveness and a positive organisational culture, as well as strong governance and compliance.

2010 was a busy year in terms of communications activities. The coverage of radon in the Prime Time programme early in the year, followed by the local radon awareness campaigns in Sligo, Carlow and Waterford generated substantial media interest. The focus on radon was also reflected in an increase in visitor numbers to the RPII website.

Market research to help understand the needs and concerns of RPII stakeholders found that awareness of RPII is relatively low, while awareness of radon is quite high at 77%. Fifty six per cent of people perceive radon in the home to be a risk to health but among those aware of radon, 61% were unlikely to have their homes tested, highlighting the real challenge of turning awareness into

action. The research also included qualitative aspects which will inform future awareness campaigns and communications in general.

Continuing to deliver the RPII's statutory functions against a background of decreasing staff numbers remains challenging. Efficiencies and improved customer service were realised where possible through the use of technology. In particular, the Performance Management and Development System was updated and computerised, the groundwork was laid for the server configuration to be migrated to the new virtualisation technology and video conferencing was introduced. These and other actions are included in the RPII Action Plan under the Public Service Agreement which is available on our website.

All aspects of its governance remained a priority for the RPII during 2010. The major developments included the enhancement of the internal audit function, the establishment of a high-level expert advisory body to advise the Board on all matters to do with ionising radiation and the re-constitution of the Communications Advisory Committee.

I wish to express my personal appreciation to all the staff of the RPII for their continued dedication and professionalism during the year. 2010 was a difficult year due to the on-going uncertainty about future budgets and staff numbers, and all staff responded very positively to the additional demands made on them. I am also grateful to the staff of the Environmental Radiation Policy Section of the DECLG and other officials in the Department for their support for the work of the RPII.



Dr Ann McGarry
Chief Executive

Regulation and licensing

Ionising radiation plays an important role in the economic and social environment in Ireland. In particular, its use in our hospitals is vital to the delivery of high quality diagnostic and radiotherapy services and its use in industry contributes to efficient delivery of high quality services and products. However, sources of ionising radiation have to be managed safely and securely. The RPII is responsible for regulating the use of ionising radiation in Ireland through a system of licensing and inspection. The RPII also regulates the exposure of aircrew to cosmic radiation and, where appropriate, work activities involving Naturally Occurring Radioactive Materials (NORM).

Licensing

The licensing of all users of sources of ionising radiation is one of the core activities of the RPII. The fundamental requirements of the RPII's licensing system are based upon a 1996 European Directive on the protection of workers and members of the public which is transposed into Irish legislation. This Directive, together with other Directives dealing with separate aspects of ionising radiation, help ensure a consistent approach to the regulation of ionising radiation across Europe. It is through compliance by licensees with the requirements of legislation and the conditions attached to each licence, together with regular inspection by the RPII that it is ensured that the highest standards of radiation protection are implemented throughout Ireland.

At the end of 2010, licences were held by 1737 licensees across a range of sectors including medical, industrial, educational, dental and veterinary (Figure 1). Sixty five new licences were issued during the year, with over 50% (33) of these to licensees in the dental sector (Figure 2). Fifty six licences were closed during 2010 principally in the industrial (19), veterinary (14) and dental (12) sectors. Industrial sector licence closures principally included services to the airline industry, electronics industry and companies ceasing use of nuclear moisture density gauges following the down-turn in construction. Additionally, a small number of licensees also closed their licence following the disposal of remaining disused sealed and unsealed sources.

Figure 1: The number of medical, industrial, educational, dental and veterinary licensees from 1993-2010

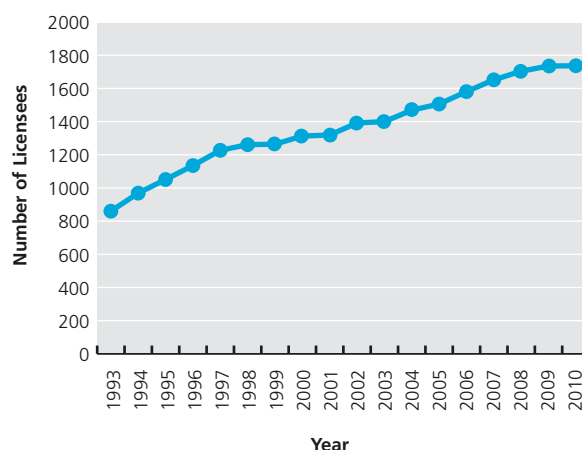
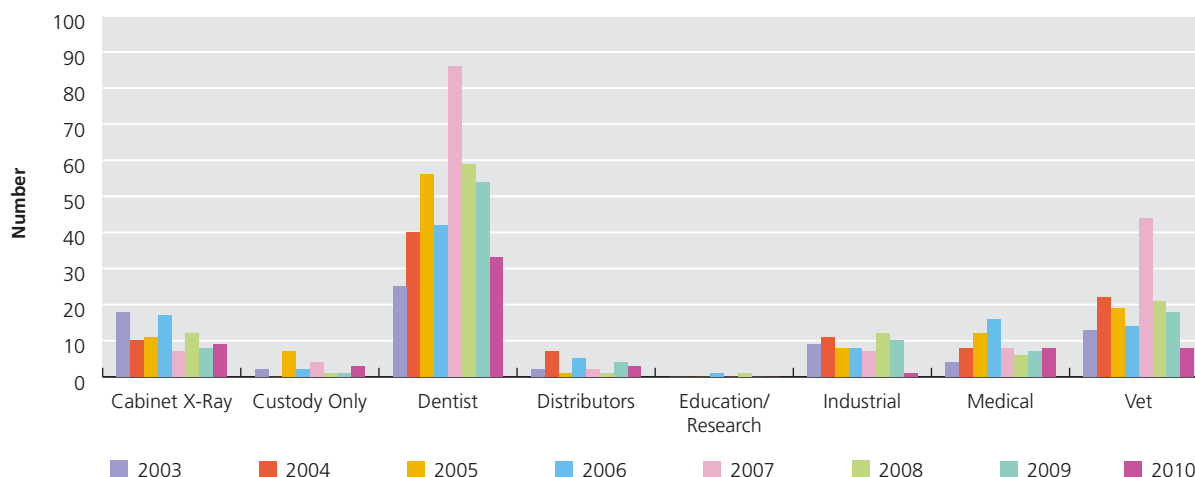


Figure 2: Categories of new licences since 2003





The most notable licence application received during the year was for the new National Cancer Control Programme (NCCP) radiotherapy centres at St James's and Beaumont Hospitals in Dublin. When completed, each of these new centres will have four linear accelerators for the treatment of cancers and, together with the existing facilities at St Luke's Hospital, Dublin, represent Phase I of the implementation of the recommendations contained in the Hollywood report, published in 2003 by the Department of Health and Children's Expert Working Group on Radiation Oncology Services. Towards the end of the year, an application for the first two accelerators at St James's Hospital to commence clinical service was made by the NCCP, and a licence for their use was granted at the start of 2011.

Over 800 amendments were made to licenses throughout the year covering all sectors and mainly covered requested changes to inventory (additions and disposal) and personnel.

Inspection

One of the core elements of the RPII's regulatory activities is its annual inspection programme. The inspection programme allows the RPII to assess the radiation protection culture and standards that are in place at each location where sources of ionising radiation are held and used. In addition, during these inspections RPII inspectors encourage licensees to further improve radiation protection practices, often by sharing examples of good practice previously observed at similar facilities. The inspection programme is formally reviewed each year and specific areas where further improvements in radiation protection can be made are identified for future action.

The RPII takes a risk-based approach to developing its annual inspection programme, prioritising those licensees involved in higher risk activities such as radiotherapy, non-destructive testing, etc. Account is also taken of the time that has elapsed since individual licensees were last inspected, as well as any incidents that may have occurred. All radiation protection inspections are undertaken in accordance with the scope of the RPII's ISO 17020 accreditation.

During 2010, 235 inspections were carried out where the focus was on radiation protection (Table 1). While

inspections are undertaken primarily to assess compliance with both S.I. No. 125 of 2000 and the conditions attached to each licence, they also provide an opportunity for inspectors to observe examples of good practice which are then brought to the attention of other licensees with similar applications. Particular areas of focus for the work programme during the year were:

- Distributors of ionisation chamber smoke detectors (ICSDs).
- Enforcement of the Radiation Protection Advisor (RPA) requirement in the industrial sector on a phased basis.
- The incorporation of security of sources into relevant inspections.
- Raising radon awareness during routine inspections.
- Implementation of site radiography notification scheme with Non Destructive Testing companies.
- Dental sector.

A significant inspection campaign in the dental sector was undertaken during the year with 50 inspections of private dental practices carried out. The objective of this campaign was to assess general compliance in this sector, determine the level of radiation protection and to evaluate the impact that the appointment of RPAs, introduced in 2008, had made to radiation protection in the sector. Overall the standard of radiation protection in the practices inspected was high, with significant improvements in licensing matters compared with the situation before the introduction of the requirement to appoint an RPA.

The inspections of users of gauges, sterilisation facilities, X-ray equipment for non-destructive testing or security screening purposes and veterinary X-ray equipment were maintained. It is reassuring to note that inspectors continued to observe good standards of radiation protection across all sectors. A number of security surveys were also undertaken with An Garda Síochána of licensees to assess the security arrangements that these licensees have in place.

Table 1: Inspections undertaken in 2010

Licence Category	Number in Category	Inspections Undertaken in 2010
Industrial Users	296	73
Industrial Distributors	25	4
Education & Research	22	8
Government Departments and State Run Services	5	3
Hospitals/Medical	173	55
Medical Distributors	21	7
Veterinary Surgeons	262	22
Dentists	933	50
Security Surveys	-	3
Air Operators	-	4
Underground workplaces		6
TOTAL	1737	235

Security of radioactive sources

The RPII and An Garda Síochána's joint programme of work aimed at assessing current security provisions at licensee's premises with a view to raising the standards to best international security practice was maintained during 2010. During the year, security audits of two large hospitals and one industrial facility were undertaken in conjunction with the National Crime Prevention Unit (NCPU). A number of minor improvement measures were recommended to promote best practice.

Radiation Protection Adviser

In order to enhance best practice in radiation protection and to address gaps in the regulatory infrastructure, the RPII established the Category II register (industrial and educational sectors) of Radiation Protection Advisers (RPA) at the end of 2009. During 2010, the RPII approved two RPAs on this register and introduced the requirement for licensees to appoint an RPA to include new licence



applications, sterilisation facilities, industrial radiography, holders of high activity sealed sources, universities and holders of multiple radioactive sources.

Since the establishment of the Category I RPA register (medical and dental sectors) in November 2005, the RPII has approved 38 RPAs and enforced the requirement for all licensees in the medical and dental sectors to appoint an approved RPA. Approvals for the first of these RPAs will expire in March 2011. During the year, the RPII published criteria for the re-approval of RPAs which will require existing RPAs to demonstrate to the RPII's RPA Assessment Committee how they have kept their knowledge of the principles and practices of radiation protection up to date as well as new developments in both radiation protection philosophy and regulations, and new medical technologies and procedures.

Reportable doses

It is a condition of each licence that whenever a dose, exceeding a specified reporting level, is recorded on a personal dosimeter, a full investigation of the matter must be carried out by the licensee. The reporting levels specified in the licence for whole body and extremity doses are 2 millisievert (mSv) and 50 mSv respectively over a 16 week period.

The RPII was notified of nine such cases during the year, with the highest dose reported being an extremity dose of 1397.9 mSv on a ring dosimeter worn by a radiographer working in a nuclear medicine department. A full investigation was carried out by the hospital's RPA into the incident and the dose recorded on the dosimeter was attributed to a probable contamination of the dosimeter with a drop of Tc-99m, with no implications for the radiographer in question. A follow-up inspection of the nuclear medicine department of the hospital where the incident occurred was carried out in early 2011 and the RPII was satisfied with the findings of the investigation. Following investigations into each of the other reported doses, none of them were classified as a dose actually received by the wearer.

Enforcement

Each year the RPII undertakes a renewal programme for licences that are due to expire within the year. The categories of licensees whose licence falls for renewal within any given year will depend upon the nature of the activities that the licensee carries out, with the higher risk activities requiring renewal on an annual basis. In general, licensees are very compliant and renew their licence upon being invited to do so by the RPII. However, on occasion some licensees fail to apply for a renewal and the RPII has to undertake enforcement action. Following the failure of a chiropractor, Dr Raymond Herring, Back and Neck Clinic, Castlebar, Co Mayo to renew his licence in July 2009, the RPII carried out a regulatory inspection of Dr Herring's premises in July 2010. The visit was carried out after the RPII had exhausted all possible efforts to encourage Dr Herring to renew his existing licence. During the visit, the unlicensed custody of an X-ray unit was identified and Dr Herring was subsequently prosecuted and convicted in the Castlebar District Court in January 2011. Dr Herring was fined €350 and ordered to pay €500 towards the RPII's legal costs.

As part of the licence renewal process, during the year, the RPII's solicitor had to write to 27 licensees who failed to contact the RPII following correspondence reminding them of their obligations under the legislation to renew expired licences for licensable activities such as custody and use of X-ray equipment and radioactive sources. Each of the licensees subsequently undertook the necessary action to ensure that they were compliant with their regulatory requirements.

Incidents

In 2009, the RPII published new guidelines on the reporting of radiological incidents with new requirements for the types of incidents that are reportable in the medical sector. During the course of the year, the RPII was notified of 12 such incidents which took place in the medical and dental sectors. However, an analysis of the causes of the incidents determined that two of these incidents were not in fact reportable as they concerned incidents involving



patients which are outside the remit of the RPII. The majority of incidents that were deemed reportable concerned individuals undergoing radiological procedures where hospital staff incorrectly examined the wrong patient. As these individuals did not receive exposures which were to their benefit they cannot be classified as patients in the context of S.I. No. 125 of 2000 and accordingly can only be considered as members of the public. In a further two cases the incidents related to suspected faults with the equipment. In all cases the incidents were fully investigated to the satisfaction of the RPII and measures put in place by the hospitals concerned to prevent recurrences insofar as is reasonably possible.

No incidents involving the use or transport of radioactive material were reported to the RPII from either the industrial, veterinary or educational & research sectors during 2010.

Accreditation

As part of its commitment to continual improvement in quality and consistency of service, the RPII has implemented a quality system for its inspection activities. The system has been developed in line with the requirements of ISO 17020, an international standard specifically designed for inspection bodies. One of the requirements of the standard is that the technical

managers within the Regulatory Services Division must witness each inspector within their section carrying out inspections in all relevant sectors. During 2010, five witnessed inspections were undertaken by the technical managers within the Division. These witnessed inspections ensure that there is consistency between both inspectors and inspections, and play an essential part of ensuring the quality of inspection carried out each year. Additionally, an average of two internal audits per month were undertaken of the quality manual, procedures and associated documentation.

The RPII's accreditation to ISO 17020 was maintained following a surveillance visit by the Irish National Accreditation Board (INAB) in July. The surveillance visit included INAB assessors witnessing RPII inspectors carrying out an inspection of a sterilisation facility and a hospital diagnostic X-ray department.

Radioactive waste

The RPII has been consistent over many years in calling for the development of a Government policy to deal with radioactive waste management including the establishment of a national facility for the storage and interim management of radioactive waste. On foot of an updated report prepared by the RPII, an interdepartmental group was established in 2008 chaired by the DEHLG with



the primary objective of undertaking an analysis of radioactive waste management in Ireland and to explore options for a solution, taking into account international commitments, safety, security and public confidence. The Group made its first report to Government in December 2010. The Government agreed to the main recommendations including:

- That the inventory of disused radioactive sources currently stored in Ireland should be reduced through a coordinated and phased inventory reduction programme.
- A National Interim Storage Facility for disused radioactive sources should be established.
- Arrangements for the short-term emergency storage of orphan or seized radioactive sources in an existing facility should be put in place as a matter of urgency.

An implementation Committee and working groups have been established to take this work forward. This commitment from Government is a significant step forward in resolving this long standing and important public safety and security issue and will require the continued active support of all of the agencies involved.

Inter-agency cooperation

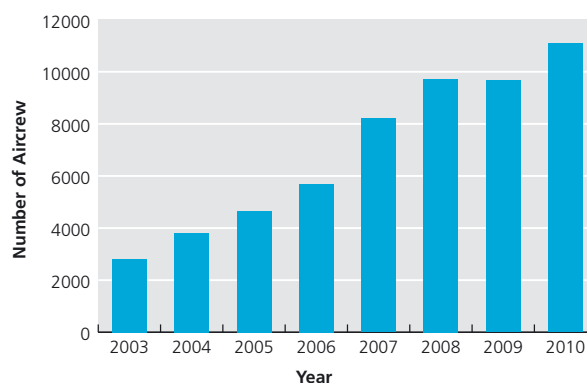
The RPII has reflected in its Strategic Plan and mission statement that engagement with relevant stakeholders is essential in promoting and achieving higher standards in radiation protection. This is particularly relevant in the regulatory environment and during 2010, the RPII met with the HSE, the Dental Council, the Medical Council, the Veterinary Council of Ireland, the Health and Safety Authority, the Department of Education and Science, the Department of Transport, the Garda Síochána, the Customs, the Environmental Protection Agency, the Chair of the City and County Managers Association, the Chair of the Fire Engineering Systems Association, the Department of Enterprise Trade and Innovation (Import and Export Controls), the Irish lamps Industry and the Irish Aviation Authority to discuss areas of mutual interest and to identify joint tasks aimed at generating efficiencies and

avoiding duplication of effort. The RPII also met with the French Authority for Nuclear Safety (ASN) in accordance with the RPII/ASN joint information exchange agreement.

Exposure to aircrew from cosmic radiation

Under S.I. No. 125 of 2000 the holder of an air operator's certificate is required to evaluate doses received by aircrew to determine if measures to control exposure to cosmic radiation are warranted. This requirement applies to those air operators whose aircrew is potentially liable to receive an annual dose greater than 1 mSv, which effectively applies only to those airlines flying above 8000 meters. Doses are estimated by the airlines using internationally recognised software models. For 2010, the information received from seven licensed air operators showed that 11,077 individuals were estimated to receive annual radiation doses above 1 mSv. Of these, 4415 received between 1 and 2 mSv, while 6549 received doses between 2 and 4 mSv and 113 received doses over 4 mSv. No doses over 6 mSv were reported. Since monitoring of aircrew began in 2003 there has been a consistent yearly increase in the number of aircrew receiving doses in excess of 1 mSv (Figure 3). This can be attributed to an increase in the number of aircrew required for the operation of new and existing routes as the demand for air travel increases.

Figure 3: Number of aircrew receiving radiation doses greater than 1 mSv



Exposure of the Irish population to radiation

Environmental monitoring

The aims and objectives of the RPII monitoring programme are:

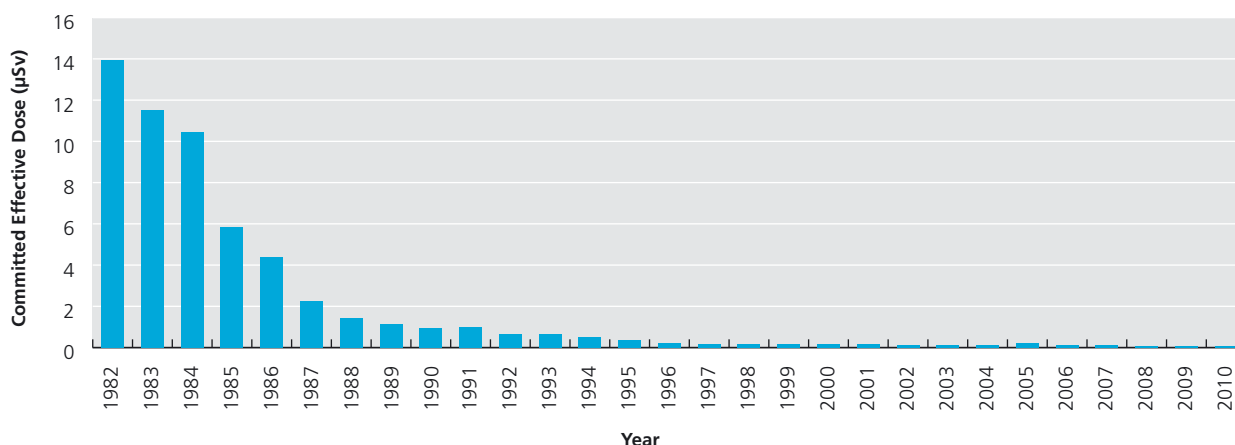
- To assess doses to individuals and the population from radionuclides in the environment.
- To assess the temporal and geographical distributions of concentrations of artificial and natural radionuclides in the environment.
- To maintain the systems, procedures and expertise necessary to facilitate a rapid assessment of environmental contamination in the event of a nuclear or radiological incident so that effective countermeasures to protect the Irish public can be implemented.
- To provide up to date and accurate information on radiation levels in the environment to Government and the public.
- To support the RPII's role to provide high quality scientifically based advice as an input to Government policy, in particular to assist in identifying measures necessary for the protection of individuals.
- To support the Irish food and agriculture industry through the rigorous assessment of the radioactivity status of Irish foodstuffs. This assessment provides the basis for certification of radioactivity in produce for export.

This programme involves the sampling and testing for radioactivity in air, drinking water, foodstuffs, fish, shellfish, seaweed, sediments and seawater as well as the continuous measurement of external gamma radiation at monitoring stations around the country. Artificial radioactivity is present in the environment due to, among other things, the testing of nuclear weapons, past nuclear accidents such as Chernobyl and routine discharges from nuclear installations. Liquid discharges from the Sellafield nuclear fuel reprocessing plant in the northwest of England remain the dominant source of artificial radioactivity to the Irish Sea. The marine monitoring data show that the consumption of seafood remains the main pathway contributing to public exposure arising from discharges of artificial radioactivity.

Figure 4 illustrates the doses to typical seafood consumers between 1982 and 2010 due to caesium-137, which accounts for the majority of the dose from this pathway. The doses incurred by the Irish public as a result of artificial radioactivity in the marine environment are small when compared with the average annual dose to a person in Ireland from all sources of radioactivity. In 2010, the dose to the typical seafood consumer from caesium-137 was estimated at 0.05 microsieverts (μSv) as compared to the total annual average dose of 3950 μSv .

The RPII, with the assistance of Met Éireann and a number of local authorities, operates a National Radiation Monitoring Network which includes continuous

Figure 4: Committed effective doses to typical seafood consumers due to caesium-137, 1982-2010





measurement of ambient gamma dose rate, airborne particulate sampling for assessment of radioactivity in air and collection of rain water. During 2010, ambient gamma dose rate was measured at 14 stations and radioactivity in air was measured at 12 stations. Current ambient gamma dose rate data are available on the RPII's website, www.rpii.ie. No abnormal levels of ambient gamma dose rate were observed during the period. Levels of airborne radioactivity measured were all low and consistent with measurements in previous years.

The RPII implements a systematic programme of monitoring radioactivity in milk, drinking water and mixed diet consisting of complete meals sampled from university canteens. In addition, a wide range of other food types are regularly tested. The results of these analyses show that levels of radioactivity in foodstuffs continue to be very low. The RPII's monitoring programme shows that the doses incurred by the Irish public as a result of artificial radioactivity in the environment do not constitute a health risk and are very small compared with the dose received as a result of background (natural) radiation. All results are published in a series of monitoring reports which are available on the RPII's website, www.rpii.ie.

Radioactivity in groundwater sources

A national study of radioactivity in groundwater supplies commenced in 2008. This study is almost completed with the final phase of sampling and analysis taking place in early 2011.

By the end of 2010, samples from all 220 locations in the study have been collected and analysed for their radioactivity content. The World Health Organisation (WHO) guidelines on drinking water quality were used as a basis to screen for samples requiring further analysis. For all of the samples tested, the measured gross beta activities were below the WHO screening level of 1.0 becquerels per litre (Bq/l). Twenty-seven samples were found to be near or above the WHO screening level of

0.1 Bq/l for gross alpha activity and further sampling at these locations was arranged. This was done in cooperation with the Environmental Protection Agency which measured chemical parameters including uranium for the same sources, while RPII measured radium-226 and polonium-210. Analyses of the samples collected in 2010 were completed in early 2011 and all samples were found to comply with the EC Drinking Water Directive with regards to radioactivity content.

To account for possible seasonal effects in the radon levels in the groundwater supplies, three separate rounds of sampling and analysis were undertaken. In 2010, two, of the planned three, rounds of sampling and analysis were completed. No groundwater source tested exceeded the RPII's recommended level of 500 Bq/l for radon in a public water supply.

Peer review of monitoring programmes

As part of the RPII's continual process of review and improvement, in 2009 the scope and effectiveness of the RPII's monitoring programme was reviewed by an international peer group. The key objective of the review was to consider whether the RPII environmental monitoring programme is meeting its stated aims and objectives and to provide recommendations for improvement if required.

The peer review group broadly endorsed the RPII monitoring programmes and considered that the current programme was both adequate and justified, both from the perspective of public reassurance and from the need to provide accurate and scientifically valid advice to Government. When looking at the monitoring programmes a number of recommendations were made in relation to reprioritisation of sampling, use of bio-indicators, such as seaweed, and batching of samples.

In early 2010, the RPII conducted a number of internal workshops to review the aims and objectives of the programme and to consider in detail the peer group's technical recommendations. Each of the workshops

focused on different elements of the RPII's monitoring section namely: marine, continuous monitoring and terrestrial foodstuffs/drinking water. This examination addressed all of the peer review recommendations and identified any changes required together with a time frame for their implementation. Based on this a revised monitoring programme for 2011 has been developed.

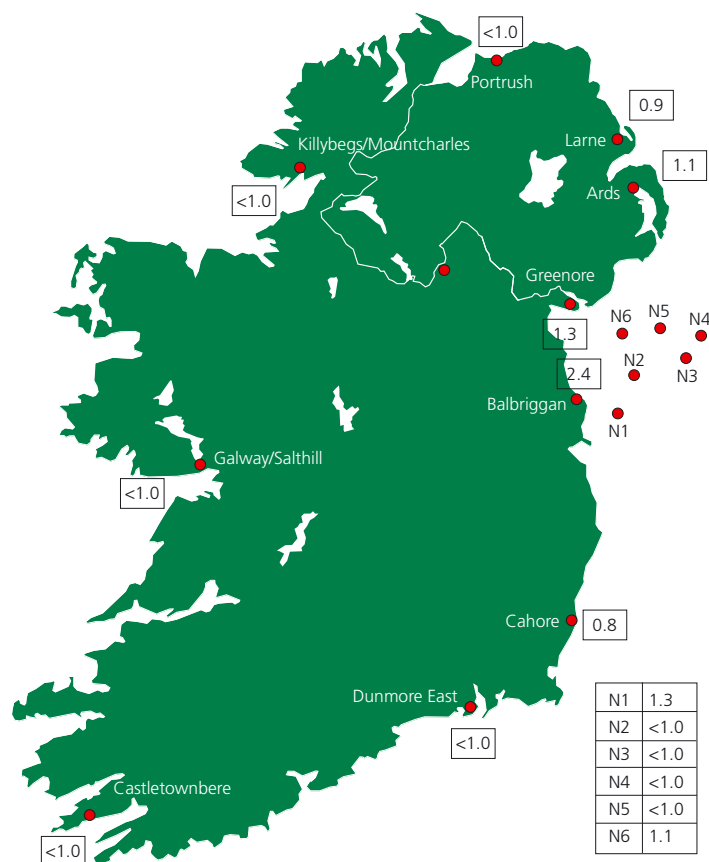
Tritium in seawater project 2008-2010

While the low radio-toxicity of tritium means that it is not included as a radionuclide of interest in the RPII's routine environmental monitoring programme, RPII undertook a project to measure tritium in seawater around the Irish coast between 2008 and 2010 to determine the current levels of this radionuclide in the Irish marine environment. This was done in order to fulfil Ireland's commitments to OSPAR Convention for the protection of the marine environment of the north east Atlantic and to provide a baseline, given the possibility of increased discharges of tritium into the marine environment as nuclear power production increases in Europe in the future.

A total of 67 seawater samples from around the Irish coastline and from the Irish Sea were collected over a period of three years (2008–2010). The highest activity measured was 2.4 Bq/l in Balbriggan in 2010. The majority of the samples analysed had tritium in seawater concentrations below the limits of detection: the maximum concentration measured at each sampling location is shown in Figure 5. This work was presented by an RPII member of staff at the 11th International Symposium on Environmental Radiochemical Analysis organised by the Royal Society of Chemistry, UK.

While the concentrations of tritium in seawater samples observed around the Irish coastline were all low, it is intended to extend the measurement project as the UK has indicated that discharges of tritium may temporarily increase from Sellafield during the next five years as a result of decommissioning work.

Figure 5: Maximum Tritium (H-3) activities (Bq/l) measured in seawater around the Irish coast





Border monitoring

In July 2010, RPII was notified by the Belgian Federal Agency for Nuclear Control of a shipment of tea concentrate from India, bound for Cork, which had triggered radiation monitors at the Port of Zeebrugge. After docking in Cork, a number of samples of the concentrate were taken by the Revenue Commissioners' Customs Service and sent for analysis by RPII. All samples were found to contain relatively high levels of potassium-40 (K-40), a naturally occurring radionuclide. This was almost certainly the cause of the alarm registered at Zeebrugge. As K-40 is a natural radionuclide found in most foods, is not a radionuclide that accumulates in the body and as the tea concentrate was to be diluted before consumption, these levels were considered to present no cause for concern from a public health perspective.

Occupational exposure

The RPII's Dosimetry Service provides a personal monitoring service to determine occupational exposure to ionising radiation. RPII provides both wholebody and extremity dosimeters, which should be selected depending on the nature of the work and the type of radiation. Wholebody

dosimeters are used to estimate effective dose and are used where the exposure is likely to be uniform over the whole body. This type of dosimeter is used by the majority of RPII's customers. Extremity dosimeters are used in situations where a specific area of the body, such as the hands are liable to be exposed. This might arise, for example, where the work involves working with materials close to a radiation beam or manipulation of beta sources.

In 2010, 127 or 1.5% of individuals monitored by the Dosimetry Service had annual wholebody doses exceeding the minimum reporting level of 0.1 mSv. Of these, 20 workers from medical, veterinary and industrial sectors had annual doses exceeding the dose limit for members of the public of 1 mSv.

One hundred individuals working in industrial, medical, veterinary and research fields received measurable extremity doses. The highest cumulative annual dose was 64.8 mSv to the left hand of a medical physicist.

These doses may be compared with the annual dose limits for whole body and extremity doses to workers exposed to ionising radiation of 20 mSv and 500 mSv, respectively.

Radon

Radon is a naturally occurring radioactive gas formed in the ground by the radioactive decay of uranium which is present in varying quantities in all rocks and soils. Radon is the principal source of radiation exposure to the general population and is linked to approximately 200 lung cancer deaths each year in Ireland. Radon levels in Ireland are relatively high by international comparison; a recent WHO report showed that Ireland has the 8th highest average indoor radon concentration out of 29 OECD countries surveyed.

Reducing the health risk from radon involves a range of interventions, which address both prevention in new buildings and identification and remediation of radon problems in existing buildings. The RPII has long been of the view that to achieve this, a coordinated approach is necessary involving all of the relevant state agencies and other stakeholders. Consequently, it has since 2006 advocated the adoption of a Government led National Radon Control Strategy. This approach is supported both by the World Health Organisation (WHO Radon Handbook, 2009) and the European Commission (Draft Recast Basic Safety Standards Directive), both of which call for Member States to establish national strategies for dealing with radon. In the meantime, the RPII continues to work bilaterally on the radon issue with Government departments and agencies including the Department of the Environment, Heritage and Local Government (DEHLG), the Health Service Executive (HSE), the Health and Safety Authority (HSA) and Local Authorities.

Joint RPII HSE position paper on radon gas in Ireland

In April, the RPII and the HSE published a Joint Position Statement on radon gas in Ireland seeking to influence policy in this area. This statement, which was prepared by a joint RPII HSE working group on radon established in 2009, provides a summary of the health risks associated with radon exposure in Ireland and of the steps that can be taken to reduce those risks.

The Joint Position Statement provides significant endorsement of the RPII's position on the need for a National Radon Control Strategy and it specifically recommended the immediate establishment of an appropriately constituted National Expert Group tasked with driving the development of such a strategy for Ireland. Following publication of this statement, the RPII in collaboration with DEHLG completed detailed preparatory work for the establishment of the National Expert Group. It is intended that a Memorandum will be submitted to Government by the Department on the development of a National Radon Control Strategy prior to the establishment of such a group.

Work with Local Authorities

The RPII continues to provide technical support and advice to local authorities regarding radon testing and remediation in workplaces and/or social housing. During the year, the RPII met with local authorities in Counties Longford, Louth, Wicklow and Cork to provide such support and advice. During 2010, major local authority measurement and remediation programmes were underway or planned for social housing in Counties Cork, Carlow and Galway. These programmes continue to deliver tangible success in reducing the risk from radon.

The RPII also worked with local authorities in Counties Sligo, Carlow and Waterford to implement extensive public awareness campaigns in those counties. In addition, local presentations were made at the Kerry Environmental Recognition Group Conference attended by many local representatives, the annual meeting of the Irish Building Control Institute and the Waterford Health and Safety Forum organised by the Waterford Leader Programme.

The measurement data from local authority programmes can provide useful evidence both on the success of remediation and on radon levels in houses built since the implementation of the 1998 building regulations that required incorporation of radon preventive measures. These data are important in supporting the evidence base for the National Radon Control Strategy and consequently



during 2010, the RPII in collaboration with Cork County Council commenced work on analysing the results from over 4500 homes measured in the county. Preliminary conclusions from this work were presented at the National Radon Forum in October.

Radon in workplaces

The primary focus of RPII's radon in workplaces programme in 2010 continued to be employer information and education. Within the framework of the Memorandum of Understanding with the HSA, HSA inspectors included radon awareness in 440 inspections of enclosed ground level workplaces in high radon areas during 2010. Similarly, RPII Regulatory Service inspectors included radon awareness in 146 inspections carried out since May 2010. Additionally, RPII regulatory staff visited 6 underground workplaces (mines and caves) during 2010 where exposure to radon has to be managed on an ongoing basis. The RPII also gave presentations aimed at promoting awareness of radon in workplaces at regional seminars organised by the Irish Business and Employers Confederation and by the Dublin Hospitals Group Risk Management Forum. These efforts resulted in a noticeable increase in enquiries from employers with regard to radon.

Public awareness

In January 2010, RTÉ's Prime Time programme broadcast a special feature on radon which raised awareness of the radon issue nationally. This resulted in a large increase in the number of requests to the RPII for information and for radon measurements. In order to capitalise on the heightened level of awareness of radon generated by this publicity, the RPII ran integrated local awareness campaigns in Sligo in March and in Carlow in April. Both counties Sligo and Carlow have a widespread radon problem and were previously identified as priority counties for RPII. These campaigns included advertising on local radio and newspapers as well as interviews, promotional

activities, developing web and Facebook pages, public meetings and tailored briefing sessions for local public representatives and business/industry groups. The integrated and comprehensive campaigns were considered to be very successful and consequently, a third campaign was undertaken in Waterford in October.

There was positive feedback and engagement at the public meetings during all three campaigns. An increase in public enquiries seeking information on radon as well as in the number of measurements carried out was seen in all cases. During the Carlow campaign, Carlow County Council announced it would measure radon in all of its social housing stock. The average number of radon in home measurements per year in Carlow, Sligo and Waterford between the end of the National Radon Survey and 2009 were: 39, 92 and 71 respectively. In comparison, the number of applications for measurements, subsequent to the campaigns in each county, in 2010 was: 369, 538 and 874 respectively.

In June, RPII commissioned Millward Brown Lansdowne to undertake qualitative research using four focus groups in two locations. The aim of this work was to identify the public's perception of the radon message and to understand their motivation or de-motivation to undertake a radon test. Ways of strengthening the RPII's radon message were also investigated. One important finding was that the radon message should be endorsed not just by RPII but by other relevant Government agencies such as DEHLG, Local Authorities and the HSE. The issue of message endorsement was also considered by the joint RPII HSE radon group, who concluded that endorsement of radon as a public health issue by HSE strengthens the effectiveness of the RPII public radon message. As a result the material used during the Waterford campaign carried the branding of the DEHLG, HSE and the Local Authority. This was seen to be effective in increasing the impact of the Waterford campaign.



National Radon Forum

In November, the RPII hosted the eighth National Radon Forum in Cork. The theme of the 2010 Forum was "Radon a well known health risk - how do we influence the public to take action?". This theme built on research carried out for the RPII which showed that while some 76% of adults in Ireland were aware of radon, persuading householders to take action on radon remains a significant challenge. The Forum heard speakers from Millward Brown Lansdowne, who had carried out the research, Cork County Council, South Tipperary County Council, the State Claims Agency and the RPII. Other topics included lessons from the Cork County Council radon in social housing programme, a building control perspective on radon and the results of a survey of radon in workplaces carried out by the State Claims Agency. The Forum was one of the largest to date with 75 people attending including representatives from local authorities, the HSE, HSA, DEHLG, radon measurement companies, radon remediation contractors, universities and members of the public.

Radon measurement statistics

Radon measurements were completed by RPII in 5371 homes during 2010, which is a significant increase from the 2550 homes measured in 2009. Table 2 shows the breakdown by County of the measurements made in 2010. The increased publicity on radon during 2010 is

likely to be a major contributing factor to the high number of measurements made. Of note is that some 743 homes were identified as having radon concentrations above the national Reference Level of 200 Bq/m³. Of these, nine had extremely high levels of more than 10 times the Reference Level. These figures represent the highest number identified in any period since the national radon programme began over 20 years ago and underpins the RPII's message that Ireland has a serious radon problem requiring a co-ordinated Government led response.

Research and scientific publications

New seasonal correction factors for radon measurements in Irish homes were determined in collaboration with the Statistics Department at University College Dublin (UCD) and this work was published in June. The new factors were derived from measurements made in over 5600 Irish homes and replace the seasonal correction factors previously used, which were interpolated from UK data. The RPII's radon measurement protocol, which is used for all radon measurement services in Ireland, will be updated to include this new seasonal correction factors with effect from January 2011.

The RPII continued its involvement in the European Commission funded RADPAR (Radon Prevention and Remediation) network. The key work of this group during 2010 was to gather together data on the effectiveness of radon remediation techniques from across Europe.

Table 2: Distribution of radon measurement results by county (based on measurements completed up to 31st December 2010)*

County	Number of houses measured	Percentage of houses >200 Bq/m ³	Number of houses in categories of radon concentration			Highest measured concentration (Bq/m ³)
			0-199 Bq/m ³	200-800 Bq/m ³	>800 Bq/m ³	
Carlow	1010	17%	830	160	8	1700
Cavan	415	2.5%	400	10	0	800
Clare	3455	12%	3050	340	63	3500
Cork	4865	12%	4305	520	38	4500
Donegal	1270	4.7%	1210	60	0	600
Dublin	2860	6.3%	2775	180	2	1400
Galway	5260	21%	4145	985	122	3400
Kerry	3415	15%	2905	400	108	49000
Kildare	1120	4.2%	1070	45	3	1100
Kilkenny	1060	13%	925	130	7	2400
Laois	520	3.8%	500	20	0	600
Leitrim	345	6.1%	325	20	1	1600
Limerick	1185	7.0%	1100	80	3	1900
Longford	290	7.2%	270	20	1	900
Louth	685	12%	600	80	0	700
Mayo	3640	16%	3050	545	45	6200
Meath	865	7.7%	795	65	2	900
Monaghan	270	5.6%	255	15	0	800
Offaly	735	14%	720	10	0	500
Roscommon	620	10%	560	60	2	1400
Sligo	1990	24%	1515	395	76	5500
Tipperary	1765	11%	1570	175	17	2800
Waterford	1250	21%	980	230	36	9700
Wexford	1495	15%	1270	205	19	2900
Westmeath	630	7.9%	575	50	0	700
Wicklow	1835	16%	1530	280	22	16000
Total	42850	13%	37230	5080	575	

* The number of houses in the columns has been rounded down to the nearest 0 or 5. The exception to this is the column headed greater than 800 Bq/m³ where the relatively low numbers did not need rounding down.

Radiation Measurement Services

The RPII's laboratory provides radiation measurement services on a commercial basis to industry, the health sector, the education sector and other State agencies. Currently services are provided in the areas of personal dosimetry, instrument calibration, radon measurement, analytical services and product certification. The RPII is committed to maintaining high quality in all of its services consistent with customer requirements and international best practice. The RPII adopts a three stranded approach to maintaining and developing quality: intercomparison exercises, accreditation and international best practice. The laboratory takes part in a wide range of measurement intercomparison exercises organised by the IAEA, the European Commission and others. During 2010, it took part in a total of 11 intercomparison exercises; 1 in relation to calibration, 4 dosimetry, 1 radon and 5 radiochemistry. The laboratory's quality system is externally audited and accredited to the ISO 17025 standard. RPII actively participates in international technical expert groups and networks so as to ensure that the methods used are up to date and in line with internationally accepted good practice.

During 2010, RPII continued to increase its use of web and other electronic interfaces in the delivery of its services. Specific developments in this area during the year included an expansion of dosimetry online functionality and the introduction of text alerting for radon customers to remind them when their detectors are due to be returned. The use of the web provides significant opportunities to improve customer service while at the same time increasing process efficiency within the laboratory.

Personal dosimetry

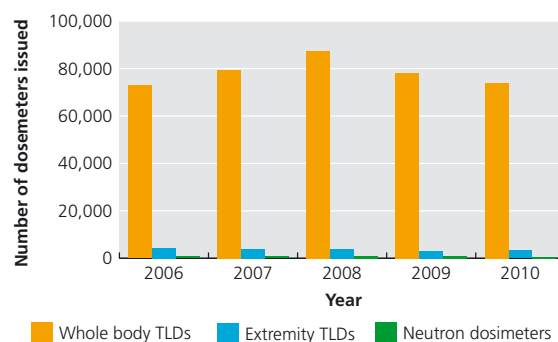
In 2010, the Dosimetry Service issued approximately 74,000 whole body dosimeters for over 8000 workers in Ireland. This represented a decrease on the number of whole body dosimeters which were issued in 2009 at 78,000. This decrease reflects changes in the number of personnel being monitored and the length of their wear periods.

Approximately, 570 neutron dosimeters were issued by the Dosimetry Service in 2010 which also represented a decrease on the number of neutron dosimeters issued in 2009 at 890. This decrease may be attributed to a

reduction in the number of personnel requiring monitoring due to the downturn in activity in the construction sector. In 2010, the Dosimetry Service issued approximately 3300 extremity dosimeters which was broadly similar to the number issued in 2009 at 3200.

During 2010, the dosimetry online system was extended to give customers additional functionality. Through this system, customers can now access their dosimetry records, run queries, review their dosimetry reports and request amendments to wearer requirements. This system provides significant benefits both to the customer as it allows them immediate access to their records and reduces their administrative load and to the service as it increases process efficiency. The number of whole body, extremity and neutron dosimeters issued per year since 2006 is shown in Figure 6.

Figure 6: Number of dosimeters issued per year, 2006-2010



Participation in international dosimetry networks is seen as vital to maintaining a high quality of service to customers and in ensuring that procedures are in line with internationally accepted best practice. During 2010, the Dosimetry Service staff continued to participate in the European Radiation Dosimetry Group (EURADOS) and in the UK Personal Radiation Monitoring Group (PRMG).

Calibration Service

The accurate measurement of ionising radiation is central to ensuring its safe and effective use. It is important, therefore, that instruments used for radiological

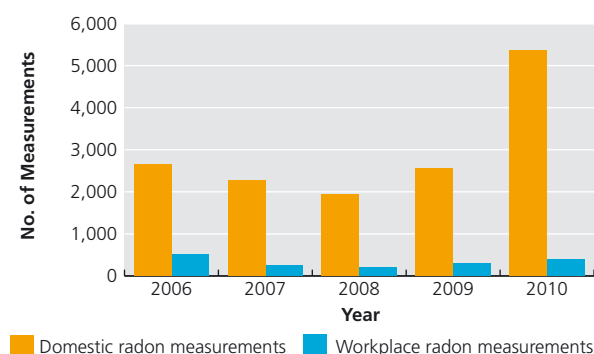
surveillance are regularly calibrated. In 2010, 443 instruments were tested by the Calibration Service for compliance with the relevant manufacturers' specifications.

In January, the scope of ISO 17025 accreditation was extended to include the calibration of contamination monitors. During 2010, Calibration Service staff continued to be members of the International Atomic Energy Agency Secondary Standard Dosimetry Network (IAEA SSDL), the UK Ionising Radiation Metrology Forum (IRMF), and the European Metrology group EURAMET.

Radon measurement

The RPII provides a radon in air measurement service for homes, workplaces and schools. In 2010, radon measurements were completed in 5371 homes and 393 workplaces of which 47 were schools. This represented a significant increase in the number of measurements which were completed in 2009 at 2550 homes and 302 workplaces. The number of radon measurements in homes and workplaces since 2006 is shown in Figure 7.

Figure 7: Number of radon measurements in homes and workplaces



During 2010, the Radon Measurement Service introduced a number of technical enhancements including the introduction of new reader technology to streamline the measurement process, changes to the radon database to streamline the processing of online radon applications and the introduction of text alerting to remind customers when to return their detectors. 2010 also saw an increase in the use of the online application system for radon detectors. Online is now the most common mode of application and accounts for more than 50% of total applications.

Analytical Services

The RPII measures radioactivity in a wide range of foodstuffs and environmental samples. This work is undertaken both in support of the RPII's environmental radioactivity monitoring programme and on a contract basis on behalf of external clients. The contract analytical services provided during 2010 included: testing of Irish produce for compliance with the requirements of importing countries, testing of drinking water for compliance with the requirements of the European Communities Regulations, testing of wipe tests for radioactive sources, testing of dredging samples for compliance with the requirements of the Dumping at Sea Act, 1996, and measurement of radon in drinking water. In total, 1932 samples were tested during the year and Table 3 presents the breakdown of this number by sample type.

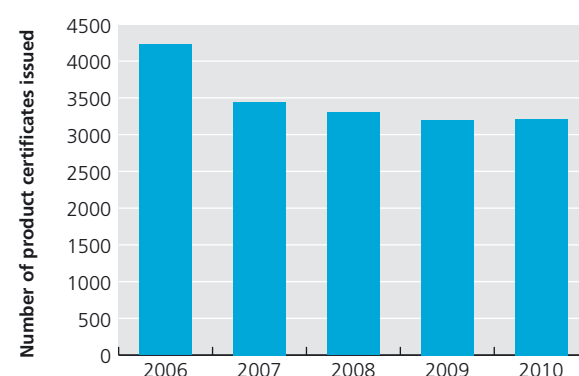
Table 3: Radioactivity testing on environmental samples and foodstuffs, 2010

Sample Type	Numbers
Air filter samples	201
Environmental samples – terrestrial & marine	733
Wipe Test samples	371
Contract Samples	627
Total	1932

The RPII provides a certification service to exporters of Irish foodstuffs and other produce. The number of product certificates issued in 2010 was 3211. This may be compared with 3198 in 2009 and 3301 in 2008 and indicates that there has been little change in demand for this service in the last few years.

The number of product certificates issued per year since 2006 is shown in Figure 8.

Figure 8: Number of product certificates issued 2006-2010



Emergency preparedness

Under the National Emergency Plan for Nuclear Accidents (NEPNA), the RPII is responsible for assessing the impact on Ireland of any nuclear accident taking place abroad and offering advice on the range of protective actions that might be considered. In support of these functions, the RPII operates a National Radiation Monitoring Network, maintains emergency procedures and regularly participates in national and international emergency exercises.

The RPII also plays an active role in national initiatives linked to the NEPNA and other emergency planning groups. The linkages between these groups are shown in Figure 9 for emergency response and planning, respectively. One of the current national initiatives currently being supported by the RPII is the development of a national coordination protocol for responding to a malign CBRN (Chemical/Biological/Radiological/Nuclear) incident. RPII's main role in responding to such an incident would be in the provision of expert advice on radiation protection measures.

Collaboration with Met Éireann

The assessment of the impact on Ireland of a nuclear accident abroad would be done by the RPII in conjunction with other expert organisations including Met Éireann, the Department of Agriculture, Fisheries and Food and the Food Safety Authority of Ireland. The main tool used by the RPII to support this role is the decision support system ARGOS (Accident Reporting and Guiding Operational System) and weather forecast data, supplied by Met Éireann, is essential for its operation. In an emergency, one of Met Éireann's duty forecasters would join the RPII on the Technical Assessment Team to provide expertise on meteorological issue and for this reason joint exercises involving RPII and Met Éireann are organised to train staff and test emergency preparedness procedures.

Figure 9: Structures and linkages for national coordination in a nuclear emergency

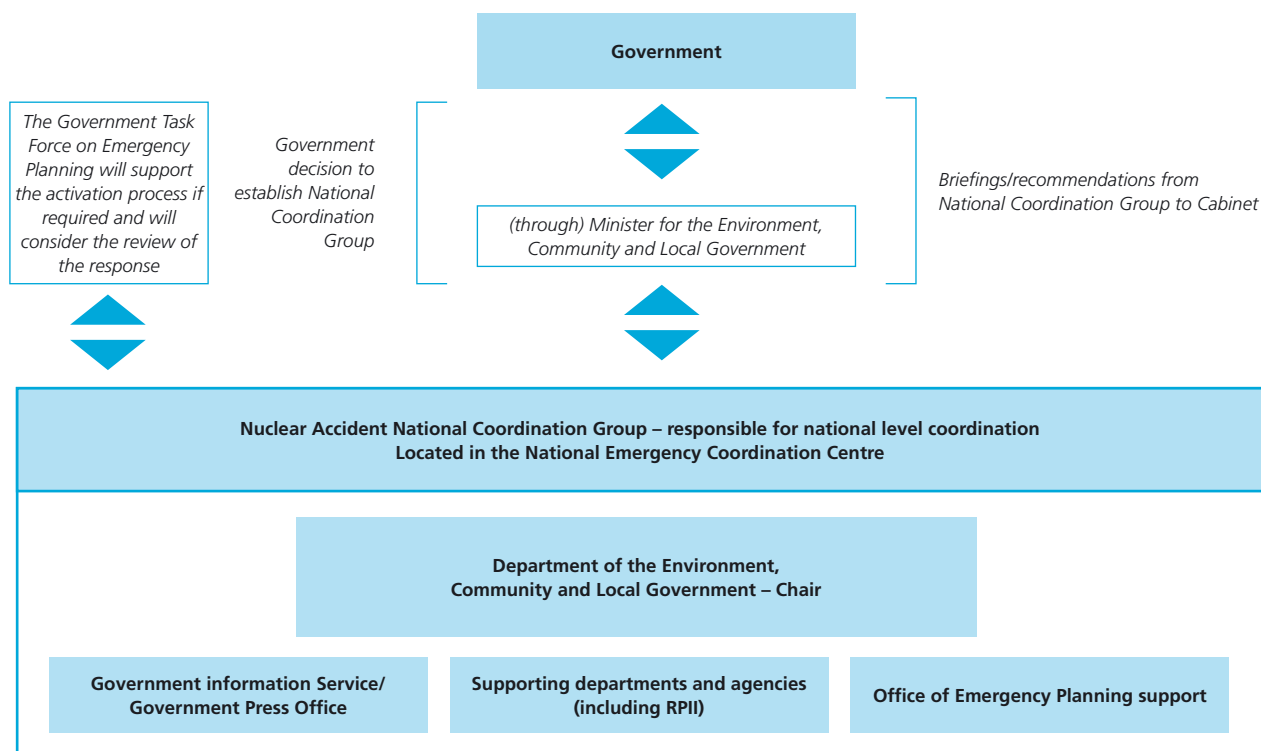


Figure 10: National Radiation Monitoring Network



In 2010, the RPII organised a two-day workshop for staff from the RPII and Met Éireann. The workshop provided an opportunity for the RPII and Met Éireann to have an in-depth discussion on a range of topics of relevance to the emergency assessment work including uncertainties associated with the results from simulations in different weather conditions and how weather forecast data is integrated and used by the models. As the lead developer of the atmospheric dispersion model in the ARGOS system, an expert from the Technical University of Denmark (RISØ) was invited to provide training on the second day.

National Radiation Monitoring Network

The RPII, with the assistance of Met Éireann and a number of local authorities, operates a National Radiation Monitoring Network (Figure 10) which includes continuous measurement of ambient gamma dose rate, airborne particulate sampling for assessment of radioactivity in air and collection of rain water. During 2010, ambient gamma dose rate was measured at 14 stations and radioactivity in air was measured at 12 stations. No abnormal levels of ambient gamma dose rate were observed during the period. Levels of airborne radioactivity measured were all low and consistent with measurements in previous years.

Of particular note for 2010 were the installation of the final site in the National Radiation Monitoring Network at a Wexford County Council site in Coolgreany and the closure of two of the RPII's monitoring stations. The stations in Mullingar and Kilkenny were closed due to the automation and closure, respectively, of the meteorological sites operated by Met Éireann at these locations.

Emergency exercises

The RPII runs an annual programme of emergency exercises to maintain staff expertise. These exercises include rehearsing aspects of the RPII's emergency plans, such as initial notification of the RPII's duty officer,



assessment of a simulated nuclear accident using computer prediction tools and use of the dedicated communication links with the National Emergency Coordination Centre.

In addition to its internal emergency exercises, the RPII also participated in seven international emergency exercises organised by the International Atomic Energy Agency (ConvEx exercises) and the European Commission (ECURIE exercises). Of particular note was the ECURIE Level-3 exercise in July 2010. This exercise was designed to test the ECURIE information exchange procedures in a situation where there was a radioactive release to atmosphere following a simulated accident at the Brokdorf Nuclear Power Plant in Germany.

This one-day exercise was a very useful test of information sharing on national responses to an incident that could affect many countries. The RPII's computer prediction tools were used to model the simulated release and the prevailing weather systems and as it was clear that there would have been no direct impact on Ireland, the RPII focus for the remainder of exercise was on use of the EU's EURDEP system which provides access to all the national radiation monitoring networks across the EU and preparation of advice for Irish citizens in or planning to visit Germany. During the exercise a technical problem was experienced with the computer server that sends Irish monitoring data to the EURDEP system but the fault was quickly identified and rectified. Enhanced recovery procedures for the RPII's emergency response related IT servers will be implemented in 2011.

Emergency alerts

There are two independent international systems in place for rapid notification of any radiological emergencies with potential cross border impacts. These are operated by the IAEA in Vienna (EMERCON) and the EC in Luxembourg (ECURIE). These systems operate continuously and are regularly tested and updated (for example, communications channels for the EC system are tested automatically on a daily basis). The messages communicated via these systems have different levels of urgency, with an 'alert' being the most urgent. There were no EMERCON or ECURIE alerts in 2010.

International activities

The RPII is represented on a number of international groups related to nuclear and radiological emergency preparedness. In 2010, these included the Nuclear Energy Agency (NEA) Working Party on Nuclear Emergency Matters (NEA-WPNEM), the ECURIE (European Community Urgent Radiological Information Exchange) Competent Authorities and the IAEA's INES (International Nuclear Events Scale) National Officers; these groups aim to share good practice and develop international guidance and arrangements for nuclear emergencies. One of the expert groups established by the NEA-WPNEM to develop strategies to improve emergency management in the areas of recovery, food and agriculture was chaired by an RPII member of staff; in 2010 the group completed its work with the publication of the NEA report "Strategic Aspects of Nuclear and Radiological Emergency Management".

Safety of nuclear facilities abroad

Nuclear safety in the UK

The RPII continues to closely monitor developments at Sellafield and other UK nuclear sites. At Sellafield, particular attention is given to progress in emptying the Highly Active Storage Tanks (HASTs) which contain large amounts of high level liquid radioactive waste that is produced as a result of reprocessing spent fuel. The HASTs are emptied by incorporating the liquid waste into glass blocks (this process is called vitrification). The UK's Health and Safety Executive-Nuclear Directorate (UK HSE-ND) specifies strict limits on the amount of liquid waste, that can be stored in the HASTs at any given time and this limit gets stricter with time to an ultimate limit of just a "buffer" volume of 200 m³ by 2015. The RPII is kept fully informed on progress in reducing the volume of liquid waste stored in the HASTs. Technical problems and planned outages during 2010 in both the Highly Active Liquor Evaporation and Storage (HALES) facility and the waste vitrification plant resulted in lower than anticipated vitrification throughput. Consequently, the volume of liquid waste stored in the HASTs has marginally increased in 2010. However, the levels remain well below the ND specified limit.

The DEHLG and the RPII were briefed on the Sellafield Lifetime Plan (LTP10) in July 2010. LTP10 describes work that will be performed on the Sellafield site over its lifetime (to 2120), including a detailed four year programme of work and an outline programme for a further 13 years. The Lifetime Plan is comprised of two separate plans – the 'worst case' deliverable plan ('Lifecycle Baseline') which represents the contract baseline which must be delivered and the 'performance plan' which is a target-setting plan, with shorter deadlines than the contract baseline. In discussions with RPII, the UK regulators have noted that they are not satisfied with many of the dates in the Lifecycle Baseline and have signalled that they will be tracking progress on the finalisation of the Performance Plans. Developments on LTP10 will be one of the areas monitored by the RPII over the next number of years.

The UK Nuclear Decommissioning Authority announced in October 2010 that the Wylfa Nuclear Power Station in Wales is to continue generating electricity beyond the previously planned shut-down date of December 2010, for up to two additional years. The RPII was briefed by the UK HSE-ND and the UK's Environment Agency (UK EA) of the likely extension to the operating lifetime by teleconference in July 2010.

Nuclear incidents

Through its Memorandum of Understanding with the UK HSE-ND and ongoing liaison with the UK EA, a number of incidents at Sellafield and other UK nuclear sites were brought to the attention of the RPII during the course of the year. All events were rated as Level 1 or lower on the seven-point International Nuclear Event Scale (INES). One of the events was the disruption of supplies of cooling water to the Highly Active Liquor Evaporation and Storage (HALES) plant at Sellafield for a brief period on 22nd January. This resulted in a slight temperature rise in the tanks which was well within the safety limits. While there was no release of radioactivity and all the cooling water remained within containment, the RPII requested and received a briefing from UK HSE-ND as this was the second such incident at the same facility within a year. In addition, the electricity supply to HALES was interrupted for approximately 20 minutes in August resulting in a temporary loss of cooling water circulation. The electrical supply and cooling water circulation were quickly restored and there was no release of radioactivity. The UK HSE-ND is carrying out an investigation into the root cause of both the HALES incidents and RPII will monitor any developments.

Another event notified to the RPII was where Sellafield disposed of, in error, a number of bags of low-level radioactive waste to a local landfill site. This was identified on discovery of a fault with one of the bag monitoring devices. Sellafield Ltd suspended the disposal of all bagged waste while investigations were ongoing and all the bags



have since been recovered. RPII was briefed on the details of the incident by the UK EA. On 21st December an earthquake of magnitude 3.5 on the Richter Scale occurred in the Cumbria area. While no damage was reported to buildings on the Sellafield site, on hearing of the earthquake, the RPII contacted the UK HSE-ND who assured the RPII that the seismic characteristics of the Cumbria area mean that it is extremely unlikely that there would be a severe enough earthquake to threaten the safety of the Sellafield site. UK HSE-ND also noted that, as a precautionary measure, Sellafield Ltd was reviewing all buildings on the site for any signs of damage. There was no radiological impact on Ireland from any of the above events.

In addition to the UK events, the RPII was also informed of a number of INES Level 2 nuclear events in other European countries through the IAEA's Nuclear Events Web Based System (NEWS). A Level 2 event is the second lowest point on this scale and is classified as an 'incident'. These included an overexposure of mine workers in Sweden; a worker overexposure at nuclear power plant in France; a contamination incident at a French metal foundry; worker overexposure at a nuclear power plant in Switzerland, radiography overexposure in Finland;

contamination of six workers in Val-de-Marne, France; and the discovery of cobalt-60 (Co-60) orphan source in a container of metal scraps at Genova Port in Italy. Again, none of these incidents had offsite consequences and, therefore, had no radiological impact on Ireland.

The most significant event in 2010 was the discovery of cobalt-60 pieces at a scrap metal dealer's premises in New Delhi, India. This followed seven patients presenting at a hospital with symptoms suspected to be caused by radiation exposure. Dose assessments indicated that the patients received doses in the range 0.4 to 3.7 Gray (Gy). As a comparison, the average radiation dose from an abdominal X-ray is 0.0014 Gy and that from an abdominal CT scan is 0.008 Gy. One of the patients has since died of multiple organ failure. The incident has been rated as Level 4 on the International Nuclear Event Scale (INES) and has been noted by IAEA as the worst radiation incident in four years. A level 4 event is classified as an 'accident with local consequences'. Given the seriousness of the incident and in order to remind users of radioactivity in Ireland of the potential consequences of mishandling or loss of radioactive sources, the RPII placed an information note on the incident on its website.



Plans for new nuclear power plants in the UK

In 2010, the UK Government announced plans to develop new nuclear power stations on up to eight to ten sites in England and Wales. Five of the sites earmarked for potential development by 2025 are on the Irish Sea Coast (with a further two sites on the Irish Sea coast possibly to be developed at a later date). The UK's current plans aim to see construction begin on the first of the new nuclear plants in early 2012, with the power plants becoming operational before 2025, and possibly as early as 2017. There have been a number of consultations run by the UK Government over the last 12 months on the UK's energy strategies and plans and the RPII has been providing technical support to the DEHLG in their responses to these consultations.

In light of these plans, the RPII was asked by the DEHLG to undertake an assessment of the likely effects on the environment in Ireland of the new nuclear build programme. In order to answer this request and to support RPII's future needs for data on projected environmental concentrations and doses to people in Ireland from the proposed nuclear power plants, the RPII designed and commenced a project to assess the radiological impact to people and the environment. The project is considering radioactive discharges to air and sea from the proposed power plants, both under normal operating conditions and in the event of an accident and includes an overview of

proposed new build plans in the context of the reactor designs under consideration, the principles of nuclear safety and radiation protection, as well as the regulatory regime in place in the UK. The modelling of radioactive releases is being undertaken with the support of colleagues in Met Éireann, the National University of Ireland, Galway and the US National Oceanic and Atmospheric Administration and an independent peer review panel has been established to provide comment on the project as it progresses and produces results. The project is due to be completed in 2011.

European Nuclear Safety Regulators Group (ENSREG)

The RPII remained actively involved in the work of the European Nuclear Safety Regulators Group (ENSREG) throughout 2010. ENSREG's role is to help to establish the conditions for continuous improvement and to reach a common understanding in the areas of nuclear safety and radioactive waste management. In 2010, ENSREG's work focussed on (i) the transposition and implementation measures of the European Council Directive (Directive 2009/71/EURATOM) establishing a Community framework for the safety of nuclear installations (the Nuclear Safety Directive) (ii) improvements in transparency arrangements in the area of nuclear safety and (iii) the development of a draft directive on radioactive waste and spent fuel management. ENSREG has agreed the date for the first in a series of



European Nuclear Safety conferences which aim to review the achievements in nuclear safety in Europe so far and to discuss with stakeholders future challenges and perspectives. The first conference will take place in Brussels in June 2011 and Dr McGarry is a vice-chairperson of the Conference.

Oslo-Paris Convention (OSPAR)

The 1992 OSPAR Convention for the Protection of the Marine Environment of the North East Atlantic requires signatory countries to take all possible steps to prevent and eliminate pollution of the marine environment by the year 2020. In 2010, in accordance with Ireland's obligations as a Contracting Party to OSPAR, the DEHLG, assisted by the RPII, completed the review and update of Ireland's National Plan for the implementation of the Radioactive Substances Strategy.

The 2010 Plan contains a review of the implementation of the objectives set up in the 2002 Plan and a review of the discharge authorisations and technical improvements to reduce Irish discharges of radioactive substances to the marine environment. It also provides information on Ireland's forecasted discharges of radioactive substances to the year 2020 and established new objectives for the next five to ten years. Progress noted since 2002 includes the adoption of a national position on the need for iodine holding-tanks at hospitals with iodine-ablation facilities, the undertaking of an assessment of iodine-131 discharges into the Dublin Bay area and the completion of a peer review of the RPII's environmental monitoring programmes. The 2010 plan was presented at the 2010 meeting of OSPAR's Radioactive Substances Committee by a member of RPII's staff.

Convention on Nuclear Safety

The IAEA's Convention on Nuclear Safety is the international convention which obliges all signatory countries to maintain a high level of nuclear safety in power reactors and report on measures taken in this respect. The Convention includes obligations relating to the national regulatory framework, safety of nuclear installations and emergency planning arrangements. The Convention came into force in 1996 and every three years Contracting Parties, including Ireland, must submit a national report that sets out measures adopted by that country to implement the relevant obligations of the Convention. These national reports are peer-reviewed by other Contracting Parties and questions are put to the countries on their reports and nuclear safety programmes.

In 2010, the RPII assisted the DEHLG in preparing for the Review Meeting by contributing to the preparation of Ireland's national report and by reviewing and posing questions on other national reports. The RPII will present Ireland's report at the Review Meeting in 2011.

Corporate Support Services

Through the provision of support services the Corporate Services Division ensures that the efficiency and effectiveness of the organisation as a whole is maintained and developed.

Notable achievements for the year are listed below under the various section headings.

Communications

As a public body, communicating information to the public, decision-makers and all stakeholders is at the core of RPII activities with ease of access to information about radiation protection and monitoring data a key strategic goal. To meet this objective, a range of communication activities was undertaken during the year including participation by the RPII at a wide range of events, seminars, conferences and meetings with other organisations.

The RPII utilise the media to disseminate information on radiological protection issues of public concern. In 2010, 11 press releases were issued to the national media with additional press releases, tailored to suit each county and containing specific local information on radon, issued to the regional media. There was significant media coverage of RPII activities during the year and in particular of the radon issue. RPII staff participated in 3 television and 56 radio programmes at national and regional level. Newspaper coverage, both at national and regional level was effective in raising public awareness of radiation protection issues, particularly in relation to radon gas with 263 articles referring to the RPII.

Market research was undertaken during the year in order to understand the needs and concerns of RPII stakeholders in relation to radiation protection issues. Quantitative research was undertaken by telephone of a nationally representative sample of 1000 adults to quantify the level of concern in the population in relation to radiation and radioactivity. Qualitative research, through four focus groups in two locations, was undertaken to identify the public's perception of the radon message and their motivation or de-motivation to undertake a radon test.

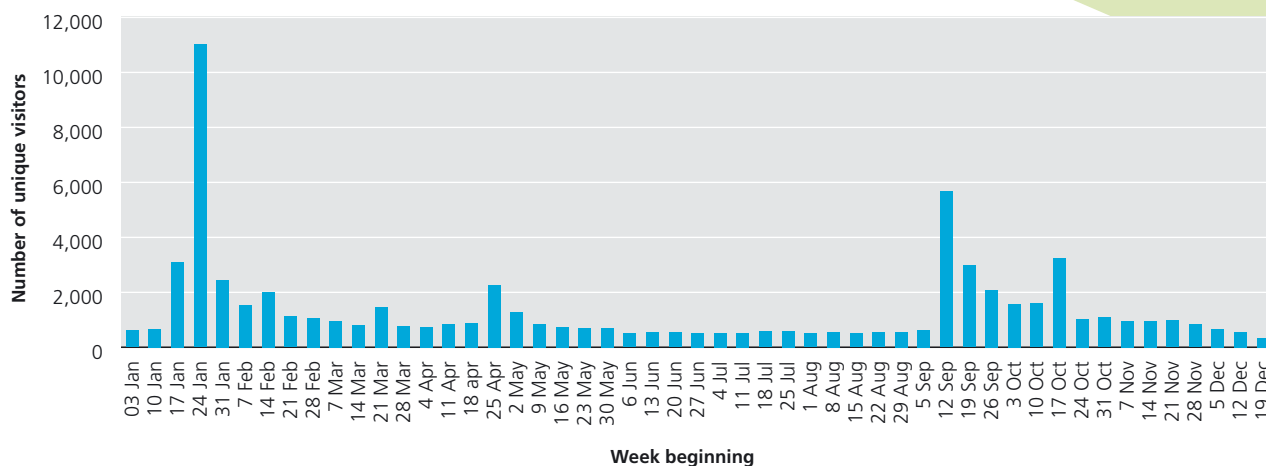
The quantitative research found that awareness of RPII is relatively low. Just over one in four adults are aware of the organisation. However, almost two thirds of the population think it is important to have a regulatory body that ensures the safe administration of radiation and radioactivity in Ireland.

This research also found that 77 per cent of people were aware of radon gas with 56 per cent perceiving radon in the home to be a risk to health. However, the research also found that, among those aware of radon, 61 per cent were unlikely to have their homes tested. The focus group research (discussed on page 26) provided critical feedback on the RPII's promotional materials and the approach taken in the radon awareness campaigns, as well as an insight into why people do not translate awareness of radon into actual measurement. The findings of this research have and will inform awareness campaigns and communications in general.

The website www.rpii.ie is the primary source of all information for the public and stakeholders about RPII. Information on radiation protection, news and information about RPII activities are presented in a readily accessible format which is updated and monitored on a daily basis. Features on the website include an interactive radon map where visitors can enter their home address to determine if they live in a High Radon Area, they can apply and pay online for a radon measurement, they can estimate their own radiation dose using the online dose calculator and they can see the RPII's monitoring network and access the results of the environmental monitoring programme. Visitors can also keep up to date with developments in radiation protection by signing up to alerts which give notice of new publications, press releases and news.

The RPII's website has shown an approximate six-fold increase in visitor numbers since 2000 with more than 84,000 visits by nearly 60,000 unique visitors in 2010. Visitors spend, on average, just under five minutes on each session on the site visiting approximately six pages. This indicates that most visitors find what they expect and are engaged by the content. Approximately 55% of visitors came to the website via a search engine;

Figure 11: Unique visitors per week to the RPII website during 2010



28% came directly to the website and 16% were referred from other sites. Popular areas of the website include the radon map, information on radon, radon measurement, publications, the radiation dose calculator, licensing information, monitoring stations, publications, emergency planning information, news alerts and press releases.

Peaks in traffic to the website coincide with media activity; in particular nearly 22,000 and 18,000 unique visitors to the website were recorded in January/February and September/October, respectively, on foot of an appearance by a RPII staff member on national TV and press release on the issue of radon in homes (Figure 11).

Publications

Each year, the RPII produce a number of publications, including reports, guidance notes, codes of practice, information leaflets and posters – all of which are available free of charge on www.rpii.ie.

RPII Reports

Fegan, M., Currivan, L., Dowdall, A., Hanley, O., Hayden, E., Kelleher, K., Long, S., McKittrick, L., Somerville, S., Wong, J., Pollard, D.
Radioactivity Monitoring of the Irish Environment 2008.
RPII Report 10/01.

McGinnity, P., Currivan, L., Dowdall, A., Fegan, M., Hanley, O., Kelleher, K., McKittrick, L., Somerville, S., Wong, J., Pollard, D.
Radioactivity Monitoring of the Irish Environment 2009.
RPII Report 10/02.

RPII and HSE

Radon Gas in Ireland. Joint Position Statement by the Radiological Protection Institute of Ireland and the Health Service Executive.

Guidance Notes

RPII protocol for the measurement of radon in homes.
Revised guidance note.

Guidance Note on the Disposal of Prepared Uranium/Thorium Compounds.

General Articles

Fennell, S. Iodine-131 Ablation Holding Tanks in Ireland.
European ALARA Newsletter. February 2010, Issue No 26.

Long, S., and Brennach, E. Radon gas and the risk of lung cancer. *Irish Medical Times*, October 2010.

Long, S. and Fenton, D. An Overview of Ireland's National Radon Policy. *Proceedings 6th Conference on Protection against Radon at Home and Work*. Prague, September 2010.

McGarry, A. Nuclear Safety and Radiation Protection in Europe – a common approach. *Contrôle, the French Nuclear Safety Authority Review*, No. 189, *The construction of a European Nuclear Safety and Radiation Protection Area*, November 2010.

Journal articles, conference papers and posters

Alves, J.G., Ambrosi, P., Bartlett, D.T., Currivan, L.,* van Dijk, J.W.E., Fantuzzi, E., Kamenopoulou, V., Recommendations for monitoring individuals occupationally exposed to external radiation. *Hospital Imaging & Radiology*. Summer 2010, Vol 5, No 2.

Burke, Ó., Long, S.,* Murphy, P., Organo, C.,* Fenton, D.* and Colgan, P.A., Estimation of seasonal correction factors through Fourier decomposition analysis – a new model for indoor radon levels in Irish homes. *J. Radiol. Prot.* 30 (2010) 433-443.

Burke, Ó., Long S.*, Murphy, P., Organo C.*, Fenton D.*, Colgan, P.A.*, Estimation of seasonal correction factors through Fourier decomposition analysis – a new model for indoor radon levels in Irish homes. Poster presented at the Third European Congress of the International Radiological Protection Association. Helsinki June 2010.

Fennell, S., Cunningham, N., Howett, D., Kenny, T., Ryan, T., Synnott, H., A training programme for Regulatory Inspectors under ISO 17020. *Proceedings of Third European IRPA Congress of the International Radiological Protection Association* June 2010, Pages 14-18.

Olbert, A.I., Hartnett, M., Dabrowski, T., Kelleher, K.* Effects of complex hydrodynamic processes on the horizontal and vertical distribution of Tc-99 in the Irish Sea. *Science of The Total Environment* Vol 409, Issue 1, 1 December 2010, p. 150-161.

Rochford, H.*, Fenton, D.*, Murphy, P. and Regan L., A comparison of one month and three month measurements in Ireland. *Proceedings of Third European IRPA Congress of the International Radiological Protection Association*. Helsinki, June 2010.

Rochford, H., Fegan, M. and Fenton, D., An assessment of radon exposure to CR-39 alpha track detectors during postal transit in Ireland. . Poster presented at the Third European Congress of the International Radiological Protection Association. Helsinki June 2010.

**RPII Staff in conjunction with other authors*

Partnership

The Partnership committee brings together Staff, Management and Trade Union to exchange information, discuss challenges and share in the resolution of issues. 2010 saw a rapid economic change that impacted on the public service in general and much discussion in the media and elsewhere of the value of the public service. This forum provided a good opportunity for staff to understand the challenges and allowed all concerned to share in the RPII response to them.

The issues dealt with by Partnership can be suggested by any staff member. The committee met seven times in 2010 and examples of the issues dealt with are:

- Review of RPII Employee Handbook
- Review of RPII Recruitment and Promotions Policy
- RPII Action Plan under the Public Service Agreement 2010-2014
- Actions to prevent spread of swine flu
- Internal Communications

Finance

RPII Income

The RPII's income in 2010 was €7.353m made up of a grant of €3.381m for current purposes, a grant receivable of €1.329m for pension purposes as required under FRS 17, and earnings of €2.008m from licence charges and dosimetry, product certification, radon measurement and other services. €0.649m of capital grant was amortised in the year.

The RPII also received a capital grant of €0.304m for the upgrading and maintenance of its equipment. Income for the year exceeded expenditure by €0.254m.

Financial Services

A credit control system was introduced during the year to support improved efficiency of management of late debts. By the end of 2010 the RPII had achieved a 95% reduction in the value of late debts.

Prompt Payments of Accounts

The RPII comes under the remit of the Prompt Payment of Accounts Act, 1997, which came into effect on 2nd January, 1998, and the European Communities (Late Payment in Commercial Transactions) Regulations 2002 which came into effect on 7th August 2002. The following is a report on the payment practices of the RPII for the year ended 31st December 2010.

It is the policy of the RPII to ensure that all invoices are paid promptly. The organisation's system of internal control includes accounting and computer controls to ensure the identification of invoices and contracts for payment within the prescribed timeframe of the Act. The accounts department produces a report that identifies unpaid outstanding invoices and this report is reviewed regularly.

Approximately 99.75% of all payment demands during 2010 were made within the prescribed timeframe. There were 4 late payments with a value in excess of €317 and these exceeded the due payment date by an average of 16 days. The total value of these late payments was €16,675.85 and the penalty interest payments associated with these late payments amounted to €102.04. The late payments represented 0.0024% of total supplier payments to suppliers in 2010.

Advisors and consultants

In 2010, the RPII engaged a number of experts and advisors. Table 4 lists the main contracts and the nature of the services provided.

Table 4: Main contracts in 2010 with external advisors and the nature of the work undertaken

Advisor	Nature of work undertaken
The Royal Surrey County Hosp	Analysis of complex radiotherapy licensing applications
Public Authority Pension Services Ltd	Pensions administration advice
Marine Modelling Centre	Modelling the behaviour of radionuclides in the marine environment
The Marine Institute	Marine Sampling
Dr James McLaughlin	Thoron research project
Grant Thornton	Review of pricing structures
Prof Pat Horton	RPA assessments and inspections
Integrity Solutions	IT Security Systems
Mooney O'Sullivan and Associates	Legal advice
Prospectus Ltd	Review of board performance
Norton and Associates	Accountancy
X-Communications Ltd	Web design and development
Team Info Sec Ireland	IT and Data protection review
RILTA Environmental	Source removal
Health Protection Agency	Peer Review of radiotherapy licensing and inspection systems
First Impression	Publications design and printing
Murray Consultants	Communications advice

Human resources and staffing

The moratorium on recruitment and promotion continues to be a challenge for the RPII. Since its introduction in 2009, the RPII has lost 6 staff through the non replacement of staff retiring and resigning, and non renewal of contracts. We were, however, successful in securing approval from the DEHLG and the Department of Finance to fill a Principal Scientific Officer post by internal competition with the suppression of the post arising. The post was filled in December 2010.

An updated performance management and development system (PMDS) was rolled out to all staff in 2010 following a successful pilot in 2009. This streamlined system allowed more effort to be focussed on performance discussions than on the process.

Supporting staff learning and development is an important activity of the HR function. As well as continuing to deliver a targeted development programme for managers, a specific programme was also rolled out to the administration group with the aim to enhance RPII performance through consistency of management and clarity of expectations.

Non ionising radiation

In March 2007, on foot of a Memorandum to Government tabled by the then Minister for Communications, Marine and Natural Resources, the Government agreed that the RPII's mandate and resources should be extended to include aspects of non-ionising radiation. Since 2008 progress towards the handover of responsibilities to the RPII has slowed and a commencement date is not currently available.

Health and safety

The RPII operates a Safety Management System (SMS) to support the sound management of health and safety in all its activities. During 2010, a total review of the SMS was undertaken and some refresher training for managers was

delivered to raise awareness of new developments and responsibilities. The SMS encourages continuous improvement through the setting of annual performance goals. In 2010, the Safety Committee looked at health and safety implications of the RPII being spread over three separate office locations. Aspects looked at included fire emergency management and welfare and safety of staff in transit between offices.

There were no "reportable accidents" or dangerous occurrences in 2010.

Equality

The RPII is committed to a policy of equal opportunity. This is reflected in relation to staff in terms of equality in recruitment, conditions of employment and access to promotion, training and career development. The RPII also supports flexible working arrangements as they are vital to making the workplace accessible to people juggling work and other commitments. In relation to the customer, the RPII constantly strives to make its work accessible to all. Publications and documents are screened for plain English and training in disability awareness was delivered to all staff in 2010.

Accommodation and energy usage

In 2010, improvements were made to the Board room and reception areas of the main RPII offices. In addition, an office was converted to a meeting room to make more meeting space available. The installation of video conferencing facilities means that savings are being made in the time and costs involved in travel to meetings.

Energy usage in the RPII offices is roughly 50% electricity and 50% natural gas. Heating accounts for the majority of the gas consumption and electricity is used for lighting, some water heating and powering IT and lab equipment. In 2010, the RPII consumed 523.9MWh of energy, consisting of 259.5MWh of natural Gas and 264.4MWh of electricity.



In recent years, the RPII has implemented a number of energy saving measures. In 2008, an energy audit was undertaken and key recommendations have since been implemented including reduction in number of fluorescent tubes which saved approximately 25% of lighting costs and the installation of thermostatic controls on radiators following which gas consumption was measurably less.

In 2010, during refurbishments works, low energy bulbs were installed in the reception area and meeting rooms and motion activated lighting was installed in suitable locations. During the year, the option of virtualising servers as a means of achieving long-term savings, the most significant savings relating to energy (power and cooling) savings was investigated. It was decided to proceed with full virtualisation in 2011.

Customer Service

RPII completed its second Quality Customer Service (QCS) action plan in 2010 which had commenced in 2008. This action plan led to significant improvements in service delivery across the organisation with the most notable improvement in the launch of a new customer focused website which delivered improved access to services. A customer can now purchase radon detectors online and dosimetry customers can now access and manage their own information online.

The RPII's customer service working group also finalised an internal complaints procedure to ensure that all complaints are managed in a consistent manner and that appropriate corrective action is taken following investigation. The

working group will now have ongoing responsibility in reviewing the management of complaints reporting to the Director of Corporate Development.

Customer service training is delivered to staff annually and the training delivered in 2010 focused strongly on disability awareness.

Information Communications Technology

In 2010, a key focus was on the improvement of internal systems including server management and Information Communications Technology security.

A review of the physical computer server configuration used at RPII showed that a migration to the new virtualisation technology could deliver advantages both in terms of further improvements in disaster recovery and general server management as well as significant cost savings. A decision was taken to proceed to full migration in 2011.

Every three years, the RPII employs external security experts to conduct a review of security. In 2010, a comprehensive review of security was carried out based on the ISO 27001 information security standard. While no immediate concerns were identified, a number of areas of improvement were identified and these will be addressed in 2011.

Other improvements in 2010 included improved remote access to e-mail, updating of security systems, introduction of endpoint security, updating of presentation systems as well as the introduction of video conferencing.

Our Governance

In establishing its governance framework the RPII has been guided primarily by the requirements of the Radiological Protection Act (1991) under which the RPII was established and the 2009 Code of Practice for the Governance of State Bodies. The RPII follows the Department of Finance lead on rules and procedures in relation to the financial functions of payroll, pensions, purchasing and budgeting.

The RPII reports to a Board that is supported by three advisory committees: The Audit Committee which advises on finance, governance and organisational risk; the Ionising Radiation Advisory Committee which is a high level advisory body on all matters pertaining to ionising radiation; and the Communications Advisory Committee which advises on communications strategy. Membership of the Board and the committees are detailed in following sections.

Strategic planning

2010 marked the end of the current strategic planning period and significant effort was devoted towards the end of the year to review of progress against the Strategic Plan 2008 – 2010 and development of the new Strategic Plan covering the period 2010 – 2013. The work was led by the senior staff of the RPII, with the support and input of the Board and through a series of face-to-face consultations with all staff and key external stakeholders. Taking account of the external and internal environment and of stakeholders' views expressed during the consultations, four strategic priorities were developed. The priorities address the core work of the RPII which is to provide the expertise, technical capability and information essential to the protection of the Irish population and the environment and to regulate the safe and secure use of ionising radiation in Ireland. They emphasise and build on the need for RPII to work in partnership with others to achieve its goals. Key themes underpinning all four strategic priorities are public value, transparency, communication and sustainability.

Commercial Services

In 2009, the Board established a subcommittee to review the role of RPII in the provision of commercial radiation protection related services. In particular, the Board was aware of changes in demand for some of its services and of increased competition in the marketplace. Given that RPII derives between a fifth and a third of its income from such services in any year, the Board considered it prudent to undertake a review of the services and to develop a strategy for the future provision of such services by RPII. The Subcommittee submitted its final report to the Board in November 2010. The Board noted that the RPII is essentially a non-commercial body and that it should only provide commercial services if they are in line with the RPII's overall strategy to support radiation protection. Given the major changes in the external environment, market conditions and reductions in staff numbers, the Board agreed that RPII must target its resources and ensure that where RPII is providing particular radiation protection related services, this represents best public value. Detailed proposals in relation to the future of each of the services were developed and agreed by the Board.

Review of Board Performance

During 2010, the Board commissioned an external independent review of its performance. The Review was the second such exercise, the first having been carried out in 2006. The Review found that the governance of the RPII had improved significantly through the implementation of the recommendations of the earlier review and that it would now be considered to adhere to best practice. Particular areas for further improvement included the relationship between the RPII and its parent department from a governance and operational point of view and the management and reporting of risk. Changes have now been implemented to address these recommendations.

Audit Committee

The Audit Committee met four times during 2010. A key achievement was the enhancement of the internal audit function already in place by the appointment of the consultancy firm Deloitte as internal auditors. Deloitte undertook a detailed audit of purchasing during the year. No significant findings were identified but some improvements in process resulted.

Ionising Radiation Advisory Committee

The inaugural meeting of the RPII's Ionising Radiation Advisory Committee (IRAC) took place on 11th May 2010 and this was followed by a second meeting in October. The Committee was established to act as a high level scientific advisory body on any matter concerning ionising radiation, with particular emphasis on public health matters, referred to it by the Board or by the Executive of the RPII. The 16 members of the committee include both national and overseas experts and cover a wide range of disciplines including: radiation protection, public health, epidemiology, emergency response and medical physics. The topics discussed by IRAC during 2010 included the RPII strategic plan for 2011 to 2013, changes to the regulatory system and maintenance of skills and capabilities within RPII.

Communications Advisory Committee

The terms of reference of the Communications Advisory Committee were reviewed in 2010 and the Board approved a change in the membership. The number of Board members on the committee was increased to three and the option to appoint an external expert was introduced. During 2010, the Committee focused on the RPII radon campaigns, the development of a communications strategy for the RPII and the important role of the new RPII website in communicating with the stakeholders.

Public Service Agreement

The publication by Government of the Public Service Agreement and the associated Action Plan 2010-2014 placed obligations on public bodies to develop their own action plans. The RPII Action Plan was submitted to our parent department as required and is available on our website. In addition, the RPII have reported progress against the actions to the National Implementation Body, which is responsible for the implementation of the Public Service Agreement.

The key achievements in 2010 have been:

- Improved efficiency and customer service by facilitating online amendments to orders and access to test results for customers of our dosimetry services.
- Improved efficiency and customer service by facilitating online ordering of and payment for radon measurement services.
- Development and implementation of an enhanced performance management system that addresses performance and quality of performance.
- Improved debtor management with a 95% reduction in the value of late debts in 2010.
- Implementation of video conferencing which saves on travel costs while supporting interagency communications.
- Joint training with partner agencies on areas of common interest to achieve cost savings.
- Provision of emergency response and radiation safety training by RPII to other relevant agencies to share our expertise.

Members of the Board

The Board met eight times during the year. The number of meetings attended by each Board member is shown below, the number in brackets indicating the number of meetings the member in question was eligible to attend. Also shown is the name of the nominating person/organisation and the date of first appointment.

Name	Nominated by	Date of First Appointment	Meetings attended during 2010
Prof Eugene Kennedy <i>Chairman</i>	Minister for the Environment, Community and Local Government	August 2006	8(8)
Ms Nuala Ahern	Minister for the Environment, Community and Local Government	May 2008	8(8)
Ms Fionnuala Barker	Irish Nuclear Medicine Association	May 2007	6(6)
Dr Éamann Breatnach	Medical Council	November 2008	5(8)
Dr Maurice Fitzgerald	Dental Council	July 2008	5(8)
Mr James Fitzmaurice	Minister for the Environment, Community and Local Government	April 2002	3(6)
Mr Patrick Gilligan	Association of Physical Scientists in Medicine	August 2006	7(8)
Dr Kevin Kelleher	Health Service Executive	September 2007	5(6)
Dr Niall McEniff	Faculty of Radiologists RCSI	April 2007 (retired April 2010)	2(3)
Ms Darina Muckian	Minister for the Environment, Community and Local Government	April 1997	8(8)
Mr John O'Dea	Minister for the Environment, Community and Local Government	November 2009	7(8)
Ms Adi Roche	Minister for the Environment, Community and Local Government	June 1997	7(8)
Dr Stephanie Ryan	Faculty of Radiologists RCSI	July 2010	1(2)



Professor Eugene Kennedy (*Chairman*)

Professor Kennedy was appointed RPII Board Chairman in 2006. He has been Professor of Physics at Dublin City University (DCU) for more than 20 years, and is currently Vice-President for Research.

Well-known internationally for his research in atomic and plasma physics, his work has been published widely. Elected a Fellow of the Institute of Physics in 1987, and a member of the Royal Irish Academy in 2004, Professor Kennedy has served on many national and international boards.

Ms Nuala Ahern

Appointed to the Board in 2008, Ms Ahern is an environmental policy analyst and writer on ecology and psychology. She is a former member of the European Parliament (Green Party) and represented Leinster for 10 years from 1994-2004.

Ms Fionnuala Barker

Ms Barker was appointed to the RPII Board in 2007. As Principal Physicist in St Luke's Hospital Dublin, she has extensive expertise in the field of medical physics, notably in nuclear medicine and radiation protection. Ms Barker is a past Secretary of the Irish Nuclear Medicine Association, and a past Chair of the Association of Physical Scientists in Medicine.

Dr Éamann Breatnach

Dr Breatnach is a Consultant Radiologist at the Mater Hospital and past Dean of the Faculty of Radiologists, Royal College of Surgeons in Ireland. He is Chairman of the Education Committee of the European Society of Radiology and a member of the Society's governing executive.

Dr Maurice Fitzgerald

Dr Fitzgerald qualified from UCC in 1989 and works as a general dental practitioner in Sligo. He received an MSc in Dental Radiology in 2000 from the University of London and serves on the board of the RPII as the nominee of the Dental Council, of which he is an elected member.

Mr James Fitzmaurice

Appointed to the Board in 2002, Mr Fitzmaurice is Chairman of the RPII's Communications Advisory Committee and also serves on the Audit Committee. He is the Managing Director of the Bradan Publishing Group, which publishes Public Sector Times and various local newspapers. He is a member of the Chartered Institute of Journalists and holds a degree in management, BA (Mgmt); and an MBA. Positions he has previously held include Chairman of the ISME; President of Bray Chamber of Commerce; and Chairman of the Irish e-Government Awards. He has served on many small business task forces and committees, as well as being a long-term member of the Wicklow County Council's Strategic Policy Committee on Environment and Waste.

Mr Patrick Gilligan

Appointed to the Board in 2006, Mr Gilligan is a Principal Physicist providing radiation protection services and medical physics expertise to the Mater Private Hospital. He is a past Chairman of the Association of Physical Sciences in Medicine and is a member of the Medical Council's Medical Ionising Radiation Committee.

Dr Kevin Kelleher

Appointed to the Board in 2007, Dr Kelleher is Assistant National Director Population Health – Health Protection, managing the public health services for the HSE. He has a strong interest in environmental impacts on human health.

Dr Niall McEniff

Dr Niall McEniff was appointed to the Board in 2007. Dr McEniff is a Consultant Radiologist in St James's Hospital, Dublin. He is a fellow of the Faculty of Radiologists in the Royal College of Surgeons of Ireland.

Ms Darina Muckian

Appointed to the Board in 1997, Ms Muckian is a Physics graduate with more than ten years engineering experience in electronics and software industries and has campaigned on environmental issues.

Mr John O'Dea

Mr John O'Dea was appointed to the board in 2009 having worked as a teacher/lecturer of physics, environmental science and education. He has published in the areas of radiation both academically and for the general public. He has had a long involvement in social and cultural activities including periods as chairperson of Sligo CND, Sligo Arts Festival and The Model Arts Centre.

Ms Adi Roche

Appointed to the Board in 1997, Ms Roche is the Founder/CEO, Chernobyl Children International, the leading international children's organisation with UN NGO status, providing medical, humanitarian, social and educational programmes across the Chernobyl regions. She holds many prestigious international humanitarian awards, honorary doctorates, is a prolific author and has produced several documentaries on Chernobyl.

Dr Stephanie Ryan

Dr Stephanie Ryan was appointed to the Board in 2010. Dr Ryan is a Radiologist in the Children's University Hospital, Temple Street, Dublin. She is also a member of the Faculty of Radiologists and she is a committee member of the Medical Ionising Radiation Committee of the Medical Council.

Advisory Committees

Audit Committee

This Committee advises the Board on finance, governance and organisational risk. The Committee met four times during 2010.

<i>Chairman:</i> Mr Patrick Gilligan	Mr James Fitzmaurice
Ms Darina Muckian	Prof Ciarán O hOgartaigh

Board Subcommittee on Commercial Services

This Subcommittee was set up by the Board in 2009 to review the provision of commercial services by RPII and to develop a strategy for future provision of such services by RPII. The Subcommittee met three times during 2010 and delivered its final report to the Board in November 2010.

<i>Chairman:</i> Dr Kevin Kelleher	
Ms Nuala Ahern	Mr Patrick Gilligan
Mr James Fitzmaurice	Secretary: Mr David Pollard

Communications Advisory Committee

This Committee provides advice relating to communication with the public. The Committee met three times during 2010.

<i>Chairman:</i> Mr James Fitzmaurice	
Ms Fionnuala Barker	Dr Ann McGarry
Ms Marie Kelly	Dr Barbara Rafferty

Ionising Radiation Advice Committee

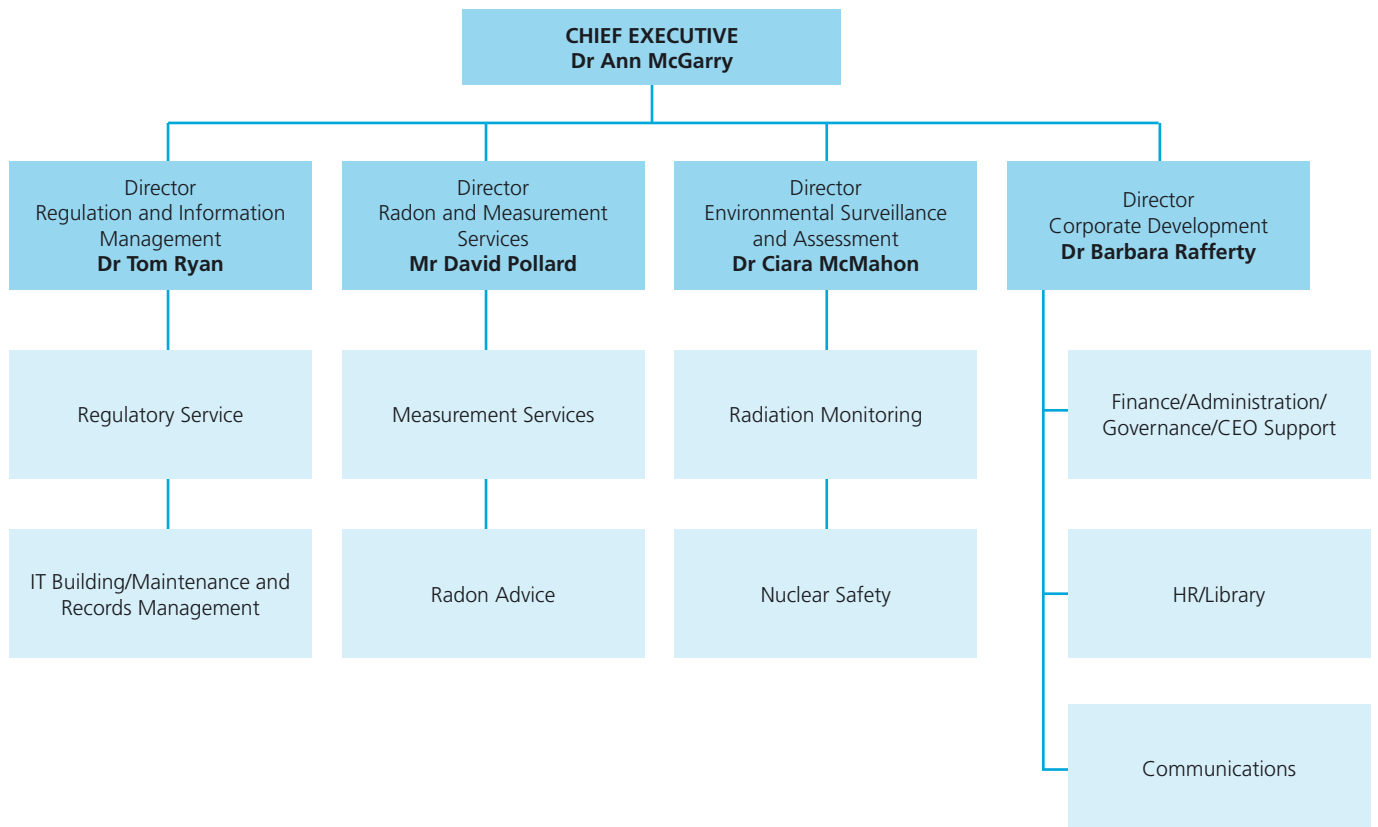
This Committee acts as a high level scientific advisory body on any matter concerning ionising radiation, with particular emphasis on public health matters, referred to it by the Board or by the Executive of the RPII. With effect from January 2010 this Committee replaced the Environmental Radiation and the Medical Radiation Advisory Committees. The Committee met twice during 2010.

<i>Chairman:</i> Dr Éamann Breatnach	
Ms Nuala Ahern	Dr Michael Casey
Dr Harry Comber	Dr Dominique Crowley
Mr Sean Hogan	Dr Jean-Luc Godet
Prof Ian McAulay	Prof Brendan McClean
Dr Jim McLaughlin	Dr Jill Meara
Prof Peter I Mitchell	Dr Neil O'Donovan
Dr Geraldine O'Reilly	Dr Jane Renehan
Prof Wil Van Der Putten	
<i>Scientific Secretary:</i> Ms Stephanie Long	

Staff structure



Dr Ann McGarry



Dr Tom Ryan



Mr David Pollard



Dr Ciara McMahon



Dr Barbara Rafferty

The RPII team of 2010

Alison McIntyre	Ann McGarry	Ann Marie Kelly
Ashley Curran	Barbara Rafferty	Catherine McCarron
Catherine Organo	Catherine Scully	Ciara Maguire
Ciara McMahon	David Dawson	David Fenton
David Pollard	David Spain	Dermot Howett
Eileen Hayden	Emily Clarke	Glenda Griffin
Hugh Synnott	Isabella Bolger	Jack Madden
Jarlath Duffy	Jennie Wong	Kevin Kelleher
Kilian Smith	Leo McKittrick	Linda Coyne
Lorraine Currivan	Lucy Doody	Marie Kelly
Máirín O'Colmáin	Mary Fegan	Michael Murray
Noeleen Cunningham	Olivia Cluskey	Olwyn Hanley
Pamela Lennon	Paul Fitzgerald	Paul McGinnity
Rachael Flynn	Rose Timmins	Sarah Baker
Sharon Wade	Sheila Powell	Stephen Fennell
Stephanie Long	Stephen Somerville	Tanya Kenny
Teresa Grant	Tom Ryan	Veronica Smith



Financial statements

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Comptroller and Auditor General

Report for presentation to the Houses of the Oireachtas

I have audited the financial statements of the Radiological Protection Institute of Ireland for the year ended 31 December 2010 under the Radiological Protection Act, 1991. The financial statements, which have been prepared under the accounting policies set out therein, comprise the Statement of Accounting Policies, the Income and Expenditure Account, the Statement of Total Recognised Gains and Losses, the Balance Sheet and the related notes. The financial reporting framework that has been applied in their preparation is applicable law and Generally Accepted Accounting Practice in Ireland.

Responsibilities of the Institute

The Institute is responsible for the preparation of the financial statements, for ensuring that they give a true and fair view of the state of the Institute's affairs and of its income and expenditure, and for ensuring the regularity of transactions.

Responsibilities of the Comptroller and Auditor General

My responsibility is to audit the financial statements and report on them in accordance with applicable law.

My audit is conducted by reference to the special considerations which attach to State bodies in relation to their management and operation.

My audit is carried out in accordance with the International Standards on Auditing (UK and Ireland) and in compliance with the Auditing Practices Board's Ethical Standards for Auditors.

Scope of Audit of the Financial Statements

An audit involves obtaining evidence about the amounts and disclosures in the financial statements, sufficient to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or error. This includes an assessment of

- whether the accounting policies are appropriate to the Institute's circumstances, and have been consistently applied and adequately disclosed
- the reasonableness of significant accounting estimates made in the preparation of the financial statements, and
- the overall presentation of the financial statements.

I also seek to obtain evidence about the regularity of financial transactions in the course of audit.

In addition, I read all the financial and non-financial information in the annual report to identify material inconsistencies with the audited financial statements. If I become aware of any apparent material misstatements or inconsistencies I consider the implications for my report.

Opinion on the Financial Statements

In my opinion, the financial statements, which have been properly prepared in accordance with Generally Accepted Accounting Practice in Ireland, give a true and fair view of the state of the Institute's affairs at 31 December 2010 and of its income and expenditure for the year then ended.

In my opinion, proper books of account have been kept by the Institute. The financial statements are in agreement with the books of account.

Matters on which I Report by Exception

I report by exception if

- I have not received all the information and explanations I required for my audit, or
- my audit noted any material instance where moneys have not been applied for the purposes intended or where the transactions did not conform to the authorities governing them, or
- the information given in the Institute's Annual Report for the year for which the financial statements are prepared is not consistent with the financial statements, or
- the Statement on Internal Financial Control does not reflect the Institute's compliance with the Code of Practice for the Governance of State Bodies, or
- I find there are other material matters relating to the manner in which public business has been conducted.

I have nothing to report in regard to those matters upon which reporting is by exception.



Andrew Harkness

For and on behalf of the Comptroller and Auditor General

30th June 2011

Statement on Internal Financial Control

On behalf of the Board of the Radiological Protection Institute of Ireland, I acknowledge our responsibility for ensuring that an effective system of internal financial control is maintained and operated, for preparing the accounts of the RPII and for complying with all statutory obligations applicable to the RPII.

The system of internal financial controls can provide only reasonable and not absolute assurance that assets are safeguarded, transactions are authorised and properly recorded, and that material errors or irregularities are either prevented or would be detected and rectified in a timely manner.

Key Procedures to Provide Effective Internal Financial Control

- i) The Board of the RPII has taken steps to ensure an appropriate control environment within the RPII by:
 - Publishing the RPII Strategy Statement 2008-2010. This Strategy covers the period to 2010 and sets out the RPII's organisational goals. Implementation of the Strategy is monitored and reported to the Board of the RPII on a periodic basis. A new strategy for the period 2011-2013 has been prepared.
 - Agreeing a detailed work programme for each year and monitoring and evaluating progress against the work programme on a regular basis.
 - Holding regular Board meetings and monthly management meetings where the agenda includes strategic issues such as Corporate Governance and Financial Management.
 - Adopting a set of financial procedures to control the significant financial elements of the RPII's business and publishing these in the Employee Handbook.
 - Maintaining a comprehensive schedule of insurances to protect the RPII's interests.
 - Establishing an Internal Audit Committee, and appointment of an internal auditor as part of the ongoing systematic review of the control environment and governance procedures within the RPII.
 - Establishing and operating a Risk Management Policy and Framework.
 - Clearly defining management responsibilities, delegating appropriate functions, and reviewing and approving key RPII policies and procedures.
 - Adopting a Code of Business Conduct for Directors and Staff in accordance with the requirements of the Code of Practice for the Governance of State Bodies.
 - Ensuring compliance with the Ethics in Public Office Acts requirements and the Paragraph 21 of the First Schedule of the RPII Act 1991 relating to the Declaration and Disclosure of Interests.

- ii) During 2010 the RPII Risk Registers were reviewed in accordance with the RPII Risk Management Policy and a Corporate Risk Register was prepared.
 - iii) The system of internal financial controls is based on a framework of regular management information, a system of delegation and accountability, a set of financial procedures, administrative procedures including segregation of duties. In particular it includes:
 - A comprehensive budgeting system with an annual budget, which is reviewed and approved by the Board.
 - The assignment of budgets and budgetary authority and responsibility for specific functions to selected senior managers.
 - Restricting authority for authorising all payments of RPII monies and applying limits to the amounts authorised.
 - Regular reviews by the Board of periodic and annual financial information and reports (including management accounts), which indicate financial performance against budgets.
 - A system of control on the overall approval of capital and consultancy contracts.
 - iv) The financial implications of business risks have been considered through the formal business risk assessment process and in the preparation of the RPII Internal Audit Plans.
- Procedures have been issued to control the significant financial elements of the RPII's business, and authorisation limits have been set by the Board for purchasing.
- v) The RPII's Audit Committee is comprised of three members of the Board and an external person with financial and audit expertise.

In 2010 the firm Deloitte was appointed to fulfill the RPII internal audit function and report to the Audit Committee. In 2010 Deloitte conducted a review of accounting and financial management with a focus on procurement. There were no critical findings identified in these audits.

Annual Review of Controls

I confirm that in the year ended 31 December 2010 the Board conducted a review of the effectiveness of the system of internal financial controls.

Signed on behalf of the Board



Prof Eugene Kennedy
Chairman

29th June 2011

Statement of Responsibilities of the Institute

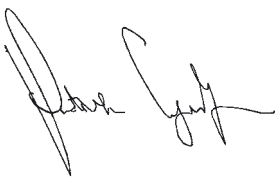
Section 16 (1) of the Radiological Protection Act, 1991, requires the Institute to prepare financial statements in such form as may be approved by the Minister for the Environment, Heritage and Local Government with the concurrence of the Minister for Finance. In preparing these financial statements, the Institute is required to:

- Select suitable accounting policies and then apply them consistently.
- Make judgements and estimates that are reasonable and prudent.
- Prepare financial statements on the going concern basis unless it is inappropriate to presume that the Institute will continue in operation.
- State whether applicable accounting standards have been followed, subject to any material departures disclosed and explained in the financial statements.

The Board confirm that they have complied with the above requirements in preparing the financial statements. The Institute is responsible for keeping proper books of accounts which disclose with reasonable accuracy at any time the financial position of the Institute and which enable it to ensure that the financial statements comply with Section 16 (1) of the Act. The Institute is also responsible for safeguarding the assets of the Radiological Protection Institute of Ireland and for taking reasonable steps for the prevention and detection of fraud and other irregularities.



Prof Eugene Kennedy
Chairman



Patrick Gilligan
Board Member

Statement of Accounting Policies

1. Basis of Accounting

The Financial Statements are prepared on an accruals basis, except as stated below, and under the historical cost convention, in accordance with generally accepted practice. Financial reporting standards recommended by the recognised accountancy bodies are adopted as they become applicable. The unit of currency in which the financial statements are denominated is the Euro.

The Financial Statements are in the format approved by the Minister for the Environment, Heritage and Local Government with the consent of the Minister for Finance.

2. Income

Income shown in the Financial Statements under Oireachtas grants represent actual cash receipts in the year.

3. Fixed Assets

Fixed Assets are stated at cost less accumulated depreciation. Cost includes the estimated cost of disposal of radioactive sources. Depreciation is calculated on a straight line basis by reference to the expected useful lives of the assets concerned. The rates are used as follows:

- Office & Laboratory Furniture & Equipment: 20%.
- Leasehold Improvements are depreciated over the life of the lease.

4. Superannuation

The Radiological Protection Institute of Ireland operates a defined benefit pension scheme which is funded annually on a 'pay-as-you-go' basis from monies provided by the Minister for the Environment, Heritage and Local Government and from contributions deducted from staff salaries.

Pension costs reflect pension benefits earned by employees in the period and are shown net of staff pension contributions which are retained by the Institute. An amount corresponding to the pension charge is recognised as income to the extent that it is recoverable, and offset by grants received in the year to discharge pension payments.

Actuarial gains or losses arising on scheme liabilities are reflected in the Statement of Total Recognised Gains and Losses and a corresponding adjustment is recognised in the amount recoverable from the Department of the Environment, Heritage and Local Government.

Pension liabilities represent the present value of future pension payments earned by staff to date. Deferred pension funding represents the corresponding asset to be recovered in future periods from the Department of the Environment, Heritage and Local Government.

5. Capital Account

The Capital Account represents the unamortised amount of income used to purchase fixed assets.

6. Income in Advance

Income in advance relates to licence fee income paid in advance by licensees in respect of future periods.

Income and Expenditure Account

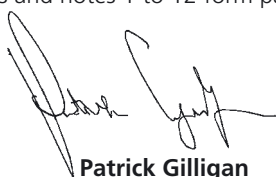
for the year ended 31st December 2010

2009 €		2010 €
	INCOME	
4,245,000	Oireachtas Grant	3,685,000
1,039,310	Net Deferred Funding for Pensions (Note 7b)	1,329,822
272,441	Transfer from/(to) Capital Account (Note 2)	329,643
5,556,751		5,344,465
573,300	Dosimetry & Calibration Service	489,570
160,590	Radon Measurement Service	529,893
283,979	Radiation Monitoring Service	288,857
598,418	Regulatory Service	698,465
12,137	Miscellaneous/Contract Income	1,794
1,628,424		2,008,579
7,185,175		7,353,044
	EXPENDITURE	
3,284,383	Salaries (Note 3)	3,068,984
1,340,432	Pension (Note 7c)	1,469,884
123,138	Dosimetry & Calibration Service	123,187
32,958	Radon Measurement Service	57,358
147,564	Radiation Monitoring Service	114,153
77,887	Regulatory Service	50,166
146,334	Public Information & Communications	303,337
75,579	Nuclear Safety	60,273
107,965	Library & Document Management	129,370
587,429	Accommodation & Insurance	559,776
130,010	Travel & Subsistence	143,532
97,263	Recruitment & Training	107,010
64,277	MIS, IT & Customer Service	73,202
71,441	Postage, Phone & Office Supplies	85,043
11,515	Audit Fees	11,515
59,900	Professional Fees & Miscellaneous	51,857
652,441	Depreciation	649,611
25,000	Provision for the disposal of radioactive sources	40,492
7,035,516		7,098,750
149,659	SURPLUS FOR YEAR	254,294
609,638	Balance as at 1st January	759,297
759,297	Balance as at 31st December	1,013,591

The Statement of Accounting Policies and notes 1 to 12 form part of these Financial Statements



Prof Eugene Kennedy
Chairman



Patrick Gilligan
Board Member

29th June 2011

Statement of Total Recognised Gains and Losses

for the year ended 31st December 2010

2009 €		Notes	2010 €
149,659	Surplus for year		254,294
(266,000)	Experience/Gains on pension scheme liabilities		(1,181,000)
(442,000)	Change in assumptions underlying the present value of pension scheme liabilities		(950,000)
(708,000)	Actuarial Gain on Pension Liabilities	7f	(2,131,000)
708,000	Adjustments to Deferred Pension Funding		2,131,000
149,659	Total recognised gain for the year		254,294

The Statement of Accounting Policies and notes 1 to 12 form part of these Financial Statements



Prof Eugene Kennedy
Chairman



Patrick Gilligan
Board Member

29th June 2011

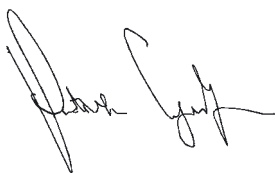
Balance Sheet

as at 31st December 2010

2009 €		Notes	2010 €
1,721,158	FIXED ASSETS	1	1,423,649
	CURRENT ASSETS		
1,472,563	Cash on Hand & at Bank		1,886,901
304,112	Debtors	8	169,630
1,776,675			2,056,531
	CREDITORS – amounts falling due within one year		
353,494	Creditors	9	337,420
32,134	Capital Grant in Advance	10	0
43,400	Provision for Disposal of Radioactive Sources	11	58,892
588,350	Income in Advance		646,629
1,017,378			1,042,941
759,297	NET CURRENT ASSETS		1,013,590
2,480,455	TOTAL ASSETS LESS CURRENT LIABILITIES		2,437,239
18,938,457	Deferred Pension Funding	7d	18,137,279
(18,938,457)	Pension Liability	7e	(18,137,279)
2,480,455	NET ASSETS		2,437,239
	Financed by:		
759,297	Income and Expenditure Account		1,013,591
1,721,158	Capital Account	2	1,423,649
2,480,455			2,437,240



Prof Eugene Kennedy
Chairman



Patrick Gilligan
Board Member

29th June 2011

Notes to the Financial Statements

for the year ended 31st December 2010

1. FIXED ASSETS

	Leasehold Improvements €	Office and Laboratory Furniture and Equipment €	Total €
Cost:			
At 1st January 2010	788,301	7,122,528	7,910,829
Additions	0	352,102	352,102
Disposals	0	(532,239)	(532,239)
At 31st December 2010	788,301	6,942,391	7,730,692
Depreciation:			
At 1st January 2010	557,782	5,631,889	6,189,671
Charge for year	25,617	623,994	649,611
On disposals	0	(532,239)	(532,239)
At 31st December 2010	583,399	5,723,644	6,307,043
Net Book Value at			
31st December 2010	204,902	1,218,747	1,423,649
Net Book Value at			
31st December 2009	230,519	1,490,639	1,721,158

2. CAPITAL ACCOUNT

	2010 €	2010 €	2009 €	2009 €
Balance at 1st January 2010		1,721,158		2,021,883
Capital Grant Received	304,000		380,000	
Assets funded from current grant	15,968			
Less Grant Amortised in the Year	(649,611)		(652,441)	
Transfer (to) Income & Expenditure Account		(329,643)		(272,441)
Transfer from/(to) Capital Grant in Advance	Note 10	32,134		(28,284)
Balance at 31st December 2010		1,423,649		1,721,158

Notes to the Financial Statements (continued)

for the year ended 31st December 2010

3. SALARIES AND PENSIONS

	2010 €	2009 €
Gross Salaries	2,928,974	3,135,188
Employers P.R.S.I.	140,010	149,195
	3,068,984	3,284,383

The CEO received salary payments of €147,009 in 2010. Delegates allowance of €2,680 was made to the CEO. The CEO received recoupment of travel and subsistence expenses of €14,978 in 2010. The CEO is a member of an unfunded defined benefit public sector scheme and her pension entitlements do not extend beyond the standard entitlements in the public sector defined benefit superannuation scheme.

€191,896 was deducted from staff by way of pension levy and was paid over to the Department of the Environment, Heritage and Local Government.

The average number of full-time persons employed, excluding Board members, in the financial year was 50 (2009 - 52).

4. COMMITMENTS & LEASE OBLIGATIONS – Operating Leases

3 Clonskeagh Square

Lease commitments payable in the next twelve months amount to €300,000 on the basis of current rental rates and comprise rental payments on a leasehold interest, the term of which expires on 1st October 2018. The rental is subject to review at five-yearly intervals. The last such review was 1st October 2008.

1 Clonskeagh Square

Lease commitments payable in the next twelve months amount to €140,000 (in respect of two floors), on the basis of current rental rates, and comprise rental payments on a 20 year leasehold interest with a break clause on 1st October 2018. The rent is subject to review at five-yearly intervals. The ground floor is occupied by the Institute since 2008. The first floor was leased in 2009 to provide accommodation in respect of additional responsibilities which were due to be assigned to the RPII by Government. Pending this, the first floor was sub-let for twelve months from February 2009 at an annual rent of €60,000 and for a further twenty four months from February 2010 at an annual rate of €45,000.

5. CAPITAL COMMITMENTS

The value of capital commitments authorised at 31st December 2010 amounted to €0.

6. BOARD MEMBERS' INTERESTS

The Board adopted procedures in accordance with guidelines issued by the Department of Finance in relation to the disclosure of interests by Board members and these procedures have been adhered to in the year. There were no transactions of any significance in the year in relation to the Institute's activities in which the Board members had any beneficial interest. A breakdown of Board member's fees paid during 2010 is as follows:

	€		€
Professor E Kennedy (Chairman)	11,970	Dr E Breatnach	7,695
Dr N McEniff	4,050	Dr S Ryan	3,468
Ms F Barker	4,430	Ms D Muckian	8,370
Ms N Ahern	7,695	Ms A Roche	8,370
Mr M Fitzgerald	7,695	Mr P Gilligan	8,370
Mr J Fitzmaurice	5,621	Mr J O'Dea	8,392

Travel and subsistence expenses paid during 2010 to Board Members:

Professor E Kennedy (Chairman)	321	Ms A Roche	1,180
Mr J O'Dea	1,913	Mr M Fitzgerald	1,147

7. PENSIONS

(a) Pension Scheme

The disclosures below have been prepared for the Radiological Protection Institute of Ireland (RPII) in relation to benefits payable from the Radiological Protection Institute of Ireland Superannuation Scheme ("the Scheme").

The Scheme is a defined benefit type, providing retirement benefits based on final salary, in accordance with the Public Sector model rules. The Scheme is funded annually on a pay as you go basis from monies provided by the Minister for the Environment, Heritage and Local Government and from contributions deducted from staff salaries.

The valuation used for FRS17 disclosures has been based on a full assessment of the liabilities of the Scheme as at 31st December 2010. The present values of the defined benefit obligation, the related service costs and any past service costs were measured using the projected unit credit method.

The principal assumptions used by independent qualified actuaries to calculate the liabilities under FRS17 are set out below:

	At year-end 31/12/2010	At year-end 31/12/2009	At year-end 31/12/2008
Discount rate	5.50%	5.50%	5.60%
Inflation assumption	2.00%	2.25%	2.00%
Rate of increase in pensionable salaries	3.25%	3.50%	3.50%
Rate of increase of pensions in payment	3.25%	3.50%	3.50%

Notes to the Financial Statements (continued)

for the year ended 31st December 2010

7. PENSIONS (continued)

(b) Net Deferred Funding for Pensions in Year

	Year to 31/12/2010 €'000s	Year to 31/12/2009 €'000s	Year to 31/12/2008 €'000s
Funding Recoverable in respect of Current Year			
Pension Costs	1,667	1,548	1,598
State Grant Applied to Pay Pensions and Gratuities	(337)	(509)	(450)
	1,330	1,039	1,148

(c) Analysis of Total Pension Costs Charged to Expenditure

	Year to 31/12/2010 €'000s	Year to 31/12/2009 €'000s	Year to 31/12/2008 €'000s
Current Service Cost	618	583	668
Interest Cost	1,049	965	930
Employee Contributions	(197)	(208)	(200)
Net return	1,470	1,340	1,398

(d) Deferred Funding Asset for Pensions

The RPII recognises amounts owing from the State for the unfunded deferred liability for pensions on the basis of a number of past events. These events include the statutory backing for the superannuation scheme, and the policy and practice in relation to funding public service pensions including the annual estimates process. While there is no formal agreement and therefore no guarantee regarding these specific amounts with the Department of Environment, Heritage and Local Government, the RPII has no evidence that this funding policy will not continue to progressively meet this amount in accordance with current practice. The deferred funding asset for pensions as at 31st December 2010 amount to €18.137 million (2009:€18.938 million).

(e) Movement in Net Pension Liability During the Financial Year

	Year to 31/12/2010 €'000s	Year to 31/12/2009 €'000s	Year to 31/12/2008 €'000s
Net Pension Liability at 1st January	18,938	17,191	16,812
Current Service Cost	618	583	668
Interest Cost	1,049	965	930
Benefits paid in year	(337)	(509)	(251)
Actuarial (gains)/losses on liabilities*	(2,131)	708	(968)
Past Service Costs			
Curtailments			
Settlements			
Net Pension Liability at 31st December	18,137	18,938	17,191

*includes impact of changes to the assumptions

7. PENSIONS *(continued)*

(f) History of Experience Gains and Losses

	Year to 31/12/2010 €'000s	Year to 31/12/2009 €'000s	Year to 31/12/2008 €'000s
Experience (gains)/losses on scheme liabilities amount:	(1,181)	266	430
As a percentage of the present value of scheme liabilities	(6.50%)	1.40%	2.50%
Total actuarial (gains)/losses recognised in STRGL	(2,131)	708	(968)
As a percentage of the present value of scheme liabilities	(11.80%)	3.75%	5.70%
Cumulative amount of (gains)/losses recognised in STRGL [^]	954	3,085	2,377

[^]represents cumulative gains/losses from 31/12/2002 inclusive

The mortality assumptions are based on standard mortality tables which allow for future mortality improvements. The mortality basis explicitly allows for improvements in life expectancy over time, so that life expectancy at retirement will depend on the year in which a member attains retirement age (age 65 years). The table below shows the life expectancy for members attaining age 65 in 2011, 2031 and 2051.

Year attaining age 65	2011	2031	2051
Life expectancy – Male	88.1	91.6	93.6
Life expectancy – Female	89.6	92.7	94.5

8. DEBTORS

	2010 €	2009 €
Debtors for Services	61,707	121,813
Bad Debts Provision	(1,299)	(5,778)
Prepayments	109,222	188,077
	169,630	304,112

9. CREDITORS

	2010 €	2009 €
Accruals	313,046	320,064
Collector General	24,374	33,430
	337,420	353,494

Notes to the Financial Statements (continued)

for the year ended 31st December 2010

10. CAPITAL GRANT IN ADVANCE

This represents Capital Grants received in respect of projects that were not completed during the year:

	2010 €	2009 €
Opening Balance at 1st January	32,134	3,850
Transfer (to)/from Capital Account	(32,134)	28,284
Balance at 31st December	0	32,134
This figure comprises:		
Capital Expenditure for the Year	(352,102)	(351,716)
Grant Received	304,000	380,000
Assets funded from the current grant	15,968	
	(32,134)	28,284

11. PROVISION FOR DISPOSAL OF RADIOACTIVE SOURCES

The Institute holds a number of radioactive sources, some of which will be held for several years. It makes a provision for the cost of the disposal of the material in the year in which it receives new sources.

	2010 €	2009 €
Opening Provision	43,400	
Utilised	(25,000)	18,400
Provided in the year	40,492	25,000
Closing Provision	58,892	43,400

12. APPROVAL OF FINANCIAL STATEMENTS

The financial statements were approved by the Board on 2nd March 2011.



Radiological Protection Institute of Ireland

An Institiúid Éireannach um Chosaint Raideolaíoch

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