



Radiological Protection Institute of Ireland Annual Report and Accounts 2008

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Radiological Protection Institute of Ireland
An Institiúid Éireannach um Chosaint Raideolaíoch

To the Minister for the Environment, Heritage 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 2008.



Prof Eugene Kennedy

Chairman

Mission Statement

*"In the three year period from 2008 to 2010
the RPII will grow the level of awareness and
implementation of the measures needed to
protect people in Ireland from the harmful
effects of ionising (and non-ionising) radiation
through scientifically based regulation,
monitoring and advice."*

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** This report is available in Irish at www.rpii.ie*

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Chairman's Statement



I am pleased to introduce the Annual Report and Accounts of the Radiological Protection Institute of Ireland for 2008. During the year, new initiatives resulted in some progress being made to address key radiation protection issues but further efforts are needed to ensure that the momentum established is not lost, particularly against a background of increased ongoing pressure on resources.

For the period 2008-2010, two ongoing key priorities for the RPII are 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. The RPII is fully committed to playing its part in achieving these goals but recognises that other stakeholders also have important contributions to make in the effective resolution of both issues.

Currently in Ireland, unwanted radioactive sources are held under licence at 80 different locations around the country. It has been the RPII's advice to Government over many years that these arrangements are out of step with international best practice promulgated by the International Atomic Energy Agency and they represent a serious concern from the point of view of safety and security. During 2008, some progress was made on the issue with the establishment by the Department of the Environment, Heritage and Local Government (DEHLG) of an interdepartmental High Level Group chaired by the then Minister of State, Mr Michael Kitt, TD, to examine the issue of a central radioactive waste storage facility for Ireland. This is the first time that all the relevant government departments and agencies, including those holding radioactive sources and those with remits touching on the management of disused radioactive sources, have come together to address the issue. The High Level Group is due to bring an interim report to Government later in 2009 setting out progress and

detailing options for consideration. I hope that the progress made to date can be consolidated to reach a solution to this long-outstanding issue.

For a number of years, the RPII has advocated the development and implementation of a national strategy to address exposure to radon in homes. Each year a number of homes with extremely high radon levels are identified and 2008 was no different with three homes in Counties Kerry, Tipperary and Waterford found to have radon concentrations between 5500 and 9000 Bq/m³. To put these radon levels in context, they represent radiation exposures to the occupants between 26 and 50 times greater than the Reference Level above which householders are encouraged to remediate their properties. Even where such extremely high levels are found, the homeowners can reduce their risk of contracting lung cancer due to radon exposure by having relatively straightforward remedial works carried out. The vast majority of homeowners, however, have not had their homes measured for radon and therefore have no idea of their risk. The RPII's radon monitoring database contains only 35,000 results indicating that a very small fraction of the total housing stock of 1,750,000 homes have been measured for radon.

The RPII engaged with some success in a number of bi-lateral initiatives on radon during the year with the DEHLG, the Health Service Executive, the Health and Safety Authority and individual local authorities. However, further efforts are needed to ensure that initiatives which are successful at local level are replicated across the country, particularly in High Radon Areas.

A key element in the promotion of good radiation practice is the availability of accessible and understandable information and guidance so that people can be adequately protected. This applies equally to members of the public exposed to radon in their homes or for people using sources of ionising radiation in their workplaces. During 2008, the RPII redeveloped its website to make it more user friendly, at the same time ensuring that the information it provides is up to date. The new website was launched in May 2009.

For the future, in addition to the radiation protection challenges posed in relation to the management of unwanted radioactive sources and exposure to radon, I would also draw attention to growing concerns internationally at the sharp increase in the collective exposure of the population due to medical exposures for diagnostic purposes. The results of the survey *Radiation Doses Received by the Irish Population* published by the RPII during 2008 estimated a total per caput dose from diagnostic procedures using X-rays and nuclear medicine of 540 µSv, representing a contribution of 13.7% to the average radiation dose to a person living in Ireland. While the use of ionising radiation for the diagnosis and treatment

of patients is very beneficial, it is nonetheless important that all exposures are optimised and that unnecessary exposure is avoided. During 2008, the RPII contributed to the implementation of patient-focused radiation protection which is being led by the HSE and it continues to work with partners in this field to ensure that the standard of radiation protection practice in Ireland remains high.

In acknowledging the excellent work of the RPII's staff, I welcome the approval during 2008 for an increase by six, from 46 to 52, in the RPII's staff complement. This increase allowed the RPII to implement new legislation on high-activity sealed radioactive sources and also to address a long-standing imbalance between scientific and administrative staff which had hampered the efficiency of RPII operations. However, the embargo on recruitment and promotion announced by the Minister for Finance in early 2009 is expected to have a negative impact on this situation.

On my own behalf, and on behalf of the Board members, I wish to thank all of the staff of the RPII for their dedication and hard work during the year. I wish to record my particular thanks and that of the RPII to Dr Patrick Connellan who retired from the Board in July having given generous service to the RPII since its establishment in 1992. I also wish to acknowledge the contribution to RPII of Dr Michael Hurley who resigned from the Board in May and to welcome the appointment of three new members, Ms Nuala Ahern, Dr Maurice Fitzgerald as the nominee of the Dental Council and Dr Éamann Breatnach as the nominee of the Medical Council. I wish to thank also the members of the RPII's three Advisory Committees on Environmental Radiation, Medical Radiation and Communications for giving of their time and expertise to assisting the RPII.

Finally, I wish to record the RPII's appreciation for the support received from the Minister for the Environment, Heritage and Local Government, Mr John Gormley, TD. The RPII is particularly indebted to the former Minister of State with responsibility for RPII, Mr Michael Kitt, TD for his active encouragement of the RPII's work. I acknowledge also the contribution to RPII of the officials of the Environmental Radiation Policy Section of the DEHLG and other officials in the Department for their wholehearted cooperation at all times. The positive engagement and helpful collaboration of other government departments, third-level educational institutions, agencies and other external organisations with which the RPII has worked during 2008 is also gratefully acknowledged.



Prof Eugene Kennedy
Chairman

Chief Executive's Statement



2008 marked the first year in the implementation of the RPII's Strategic Plan for the period 2008-2010 and good progress was made towards achieving our goal of ensuring that people in Ireland are adequately protected from the harmful effects of ionising radiation.

Regulation and Licensing

The year saw a further increase in the number of licences issued by the RPII, bringing the total number to 1704 by the end of 2008. A project to identify potentially unlicensed dental practices that was commenced in 2007 resulted in 29 new dental licences being issued during 2008 and RPII is now confident that there is good compliance with the requirement to hold a licence in this sector. In addition to the dental licences, new licences were also issued to industrial users, hospitals and veterinary surgeons.

In all, 152 inspections focused on radiation protection practice were undertaken and inspectors observed good standards of radiation protection across all sectors. A joint project was undertaken with An Garda Síochána involving 31 security surveys of licensees holding high-activity radioactivity sources. While the results were in general reassuring, a number of recommendations were made covering physical and administrative controls, the implementation of which will be followed up by RPII inspectors and/or An Garda Síochána, as appropriate.

The requirement to appoint a Radiation Protection Advisor to new dental practices which had been introduced from October 2007 was extended to existing licensees as part of the dental licence renewal programme at the end of September. These requirements were successfully implemented and their impact on radiation

protection standards in the sector will be assessed over the coming years. The arrangements for the establishment of a protocol and criteria for the approval of Radiation Protection Advisors for licensees in the industrial and third level educational sectors, and work activities involving natural radiation, were also finalised and a register will be developed during 2009.

Peer reviews by external experts of the regulation by RPII of industrial sterilisation plants and radiotherapy service providers, two of the most hazardous sectors licensed by RPII, were undertaken during the year to ensure that RPII both implements and enforces best regulatory practice in these areas. Both reviews concluded that the regulation and inspection regime operated by RPII was largely appropriate to the sector and each made a number of recommendations as to how RPII's regulatory programmes could be further strengthened.

During the year, 15 radiation doses in excess of reporting levels were notified to RPII. Following investigation by RPII inspectors only three were classified as a dose actually received by the wearer, the highest being a wholebody dose of 4.2 mSv received by a distributor of technetium-99m isotope generators to hospitals. This dose is lower than the relevant annual dose limit of 20 mSv, but is nonetheless higher than necessary and was received due to failure by the distributor to follow the correct handling procedures for transporting the generators.

Two prosecutions for unlicensed custody of nuclear devices were brought before the District Courts during the year. In one case the company was convicted while in the other, the judge applied the Probation Act.

A number of incidents involving licensed radioactive sources were investigated by RPII during the year including a mislaid source in transit, the inadvertent exposure by an industrial X-ray system and a minor spill involving an unsealed source. The RPII also investigated a number of incidents involving contaminated scrap and metal products. The incidents highlighted the importance of the use of portal monitoring systems in the detection of inadvertent or illicit trafficking of radioactive material.

A key strategic goal for the RPII is the engagement with relevant stakeholders to promote higher standards of radiation protection. In relation to its regulatory activities, RPII contributed to the implementation of patient focused radiation protection legislation and improved operational practice in cooperation with relevant bodies.

Exposure of the Irish Population to Radiation

In order to determine the actual exposure of the Irish population, each year the RPII undertakes a programme of monitoring activities aimed at assessing the doses to members of the public and to those occupationally exposed to radiation. This programme is supplemented by specific projects which provide additional information on selected pathways.

The marine monitoring programme undertaken in 2008 showed that the consumption of seafood remains the main pathway contributing to public exposure arising from the discharges of radioactivity from Sellafield. The mean annual committed effective dose to a typical consumer of seafood from the Irish Sea was found to be 0.09 μ Sv, and was consistent with values measured in recent years. Since the commencement of its marine monitoring programme in the early 1980s the RPII has derived its estimates of dose to the population by combining measured concentration data derived from actual samples with estimated consumption data. In 2008, RPII contracted the UK Centre for Environmental, Fisheries and Aquaculture Research (CEFAS) to undertake a marine habits survey. The aim of this survey was to identify the most important pathways by which people living in Ireland are exposed to ionising radiation as a result of discharges from Sellafield into the Irish Sea. While the report included some recommendations for improvement, it provides broad reassurance that the RPII's existing marine monitoring programme is comprehensive and that it covers the major exposure pathways and provides a realistic estimate of the exposure to the Irish population.

The radiation doses to the population from artificial sources other than Sellafield were also assessed during the year. Monitoring of radioactivity in milk, drinking water and a range of foodstuffs showed that levels of radioactivity continue to be very low and do not constitute a risk to health.

In 2008, two projects were commenced to determine the levels of natural and artificial radioactivity in groundwater and to estimate the contribution of the naturally occurring radioactive gas, thoron, to the population dose.

In terms of occupational exposure, information received from seven licensed air operators required under legislation to control exposure of aircrew to cosmic radiation showed that 9726 individual aircrew were estimated to receive annual radiation doses above 1 mSv. The number of aircrew in this category is increasing year on year, primarily due to an overall increase in the number of aircrew servicing additional demand for air travel. For those using radioactive sources in their workplaces, all doses were below the annual dose limits set out in legislation.

Radon

A key strategic goal for the RPII for the three-year period commencing in 2008 is to ensure that a national strategy for addressing high radon levels in homes is developed and implemented. During 2008, RPII worked with all relevant public authorities to progress this goal. In particular, under the terms of a Memorandum of Understanding signed the previous year, a radon working group was set up with the Health Service Executive (HSE) to ensure cooperation on the public health aspects of radon. The RPII also worked with the Health and Safety Authority to assist with its efforts to include radon in its inspections of workplaces.

The extremely high radon levels identified in a workplace in Mallow in May 2007 provided the impetus for a very successful collaboration between the RPII, Cork County Council and the HSE to develop a follow up measurement programme. The programme which covered 599 social houses in the north Cork area comprised radon measurements and a tailored communication campaign to explain the health issues involved to the tenants. The RPII believes that the multi-agency approach followed in north Cork is a model that can be implemented successfully in other counties and the model formed the central theme for the National Radon Forum held in November 2008.

In its Radon Action Plan, the RPII identified radon measurement at the time of sale and/or purchase of properties as an appropriate and cost effective mechanism to reduce the overall risk from radon. As the current minimum radon measurement period advocated by the RPII is three months, a research study to determine if it was possible to reduce the measurement period without compromising the accuracy of the result was commenced. A review of the available information on the relationship between radon concentrations in homes and the retrofitting of insulation highlighted a lack of relevant data and the need for further research. This work was undertaken in order to better advise Government in the context of the Home Energy Saving Scheme.

By the end of 2008, the RPII has measured radon in 35,660 homes in Ireland, but only 4643 of the estimated 91,000 homes above the national Reference Level have been identified. Of the homes with high radon levels, the highest percentages are still found in Counties Galway, Sligo and Waterford, with counties Wicklow, Mayo and Carlow the next worst affected. Four hundred and fifty homes had radon concentrations above 800 Bq/m³.

Radiation Measurement Services

In total, the RPII measured the radioactivity content in 2047 environmental samples and foodstuffs during the year. Certificates specifying the radioactivity content issued to exporters of Irish produce numbered 3301, a drop of about 4% on the previous year. The RPII's Dosimetry Service supplied approximately 92,000 dosimeters to clients during the year. These dosimeters were used to monitor the radiation exposure of over 9000 individuals. The Calibration Service tested 390 instruments for compliance with the relevant manufacturers' specifications. Radon measurements were completed in 1933 homes and 201 workplaces, of which 23 were schools.

Emergency Preparedness

The RPII's written sub-plan under the National Emergency Plan for Nuclear Accidents (NEPNA) was updated during 2008 to take account of the feedback received during the review of the sub-plan undertaken in 2007. Cooperation with Met Éireann under the NEPNA was formalised by the signing of a Memorandum of Understanding between the two organisations. In addition, the RPII worked to formalise its arrangements for responding to local incidents involving sources of ionising radiation.

In 2008, the RPII contributed to the preparation of the Draft Protocol for Multi-Agency Response to Radiological/Nuclear emergencies developed under the Framework for Major Emergency Management. A joint exercise on environmental sampling and laboratory analysis of samples under emergency operating conditions was conducted with Civil Defence and a follow-up exercise was organised to refresh and re-enforce the knowledge gained during the 2007 NEPNA exercise which focussed on the protective actions to be applied in the agricultural and food sectors following a nuclear accident abroad. The RPII also participated in an international emergency exercise organised by the International Atomic Energy Agency (IAEA) based on an accident at a nuclear power plant in Mexico. Although the scenario modelled had no direct impact on Ireland, it provided an opportunity to exercise Ireland's capacity to provide advice to Irish nationals abroad and also to consider issues related to the importation of food from potentially contaminated areas into Ireland.

During the year, RPII received two alerts via the EC system for rapid notification of radiological emergencies with potential cross-border impacts. The first followed an incident at the Krško nuclear power plant in Slovenia which was quickly identified as minor with no contamination of the environment. The second followed a release of iodine-131 from a medical radioisotope production facility in Belgium which although more serious, also had no significant offsite risk.

International Activities and Safety of Nuclear Facilities Abroad

During 2008, RPII staff represented Ireland on over 20 international scientific and technical committees and working groups with remits covering radiation protection, nuclear safety and emergency preparedness. Staff also participated in IAEA expert missions to Botswana, Ghana, Spain and Tanzania.

RPII continued to monitor developments in relation to nuclear safety both in the UK and further afield and to advise Government in that regard. At Sellafield, as in the previous two years, the amount of highly radioactive liquid waste generated was low due to ongoing problems with reprocessing, resulting in a reduction in the volume of waste stored in the Highly Active Storage Tanks. THORP continued to operate at less than full production, which together with the continued unavailability of some of the evaporators at Sellafield, meant that the planned schedule for reprocessing of Magnox spent fuel was delayed. Failure to meet the planned deadlines and delays in the reprocessing of Magnox fuel are of concern in that the fuel already stored under water at Sellafield may be susceptible to corrosion over time. The RPII also monitored the development of plans in the UK to build new nuclear power plants. In particular, it is following closely the pre-licensing procedures being applied. During the year, RPII was advised of a number of incidents at Sellafield and other nuclear sites by UK nuclear regulators, but none had offsite consequences and, therefore, had no direct implications for Ireland.

RPII staff participated actively, together with DEHLG staff, in the 4th Review Meeting of the Convention on Nuclear Safety which took place over a two week period in April 2008 at the IAEA in Vienna. All contracting parties to the Convention are obliged to submit national reports which are then peer-reviewed through a written question and answer process in advance of the meeting and verbally at the meeting itself. During the peer-review of Ireland's report, good practices were identified in relation to the information exchange arrangements with neighbouring nuclear regulators and the emergency planning arrangements. The review identified maintenance of skills and ensuring that the public is well informed on the nature of potential nuclear emergencies as challenges facing Ireland.



Corporate Services

The RPII's Corporate Services Division continued to improve its capacity to support RPII's scientific and technical activities through improvements in its ICT and records management capabilities and the completion of a major project to centralise the financial management of the RPII's services and to implement a new financial management system to handle all financial transactions across the organisation. A very significant and welcome development during the year was approval by the Department of Finance to recruit six additional staff and to convert a technical post to IT Manager.

A customer service survey was carried out in February 2008 under the auspices of RPII's Quality Customer Service Working Group, with questionnaires being sent to 4000 customers from whom a response rate of 17% was achieved. The survey showed that "RPII customers generally value the service and quality of dealings with RPII staff" and highlighted a growing demand for online services via the website.

One of the key strategic goals for the RPII is to provide information on radiation protection in a readily accessible and understandable format, so that the public has the necessary information to protect themselves from the harmful effects of exposure to radiation. A range of communication activities was undertaken during the year to meet this objective, most notably a major project to redevelop the RPII's website which is due to be launched in 2009.

I wish to express my personal appreciation to all the staff of the RPII for their continued dedication and professionalism in effectively fulfilling the RPII's mandate during the year. I am also grateful to the staff of the Environmental Radiation Policy Section of the DEHLG and other officials in the Department for their support for the work of the RPII.

Dr Ann McGarry
Chief Executive

Strategic Priorities for the RPII

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.



Regulation and Licensing

Introduction

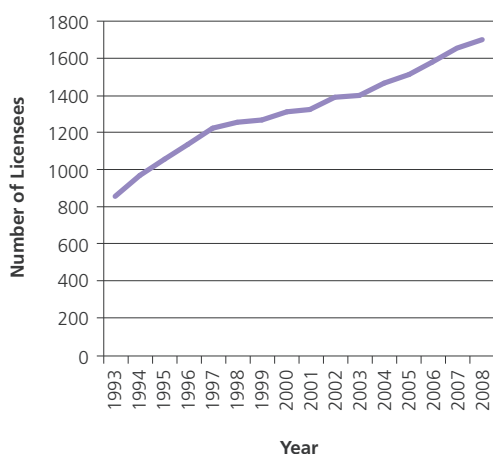
Ionising radiation plays an important role in the economic and social environment in Ireland. In particular, its use in our hospitals is vital to the delivery of high quality diagnostic and treatment services and its use in industry contributes to efficient delivery of infrastructural projects. However, 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.

Licensing

The operation of a licensing system for all users of sources of ionising radiation is a statutory responsibility of the RPII set out in the Radiological Protection Act, 1991. Any individual or organisation intending to use a radioactive source or irradiating apparatus is required to obtain a licence from the RPII prior to acquiring the item. Licences are issued for one, two, three or four years depending on the risk associated with the item(s) to be licensed and the nature of the applications involved.

At the end of 2008, licences were held by 1704 licensees across a range of sectors including medical, industrial, educational, dental and veterinary (Figure 1). One hundred and thirteen new licences were issued during the year, with over half of these to licensees in the dental sector. The most notable licence applications in the medical sector were three separate applications for the introduction of new iodine ablation therapy suites to treat patients with thyroid cancer using iodine-131. An application was also received for a new electron beam facility for the sterilisation of medical products. During the year, 554 amendments were made to existing licences.

Figure 1: The number of medical, industrial, educational, dental and veterinary licensees from 1993-2008



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 locations where sources of ionising radiation are held and used. In addition, during these inspections RPII inspectors will 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 2008, 152 inspections were carried out where the focus was on radiation protection (Table 1). Inspectors continued to observe good standards of radiation protection across all sectors. Particular areas of focus for the programme during the year were dental practices with computed tomography (CT) units, the use of portable X-ray units at horse sale venues, users of nuclear moisture density gauges, the non-destructive testing industry and sterilisation facilities. A joint project was also undertaken with An Garda Síochána involving 31 security surveys of licensees with High Activity Sealed Sources to assess the security arrangements that these licensees have in place.

Table 1: Inspections undertaken in 2008

Licence Category	Number in Category	Inspections Undertaken in 2008
Industrial Users	320	94
Industrial Distributors	25	3
Education & Research	21	2
Government Departments and State Run Services	5	2
Hospitals/Medical	169	29
Medical Distributors	24	5
Veterinary Surgeons	251	8
Dentists	889	9
Security Surveys		31
TOTAL	1704	183

Developments in Regulatory Practice Dental Licensing

Dentists using X-ray equipment, along with all other holders of sources of ionising radiation, are required to hold a licence from the RPII. In 2007, the RPII commenced work on identifying potentially unlicensed dental practices and initial results from this project indicated that there could be up to 141 unlicensed practices throughout Ireland. Work continued on this project during 2008 and, as a consequence, 29 new dental licences were issued. In the majority of cases, a new licence was not required where, for example, a dentist had either retired or died, or worked in an existing licensed practice. With the completion of this project, the RPII is confident that those practices targeted are now licensed and will work to ensure that all newly opened practices comply with their licensing requirements.

In August, the RPII commenced the renewal of 898 dental licences which were due to expire at the end of September. Licensees were advised that their licence would only be renewed where a Radiation Protection Advisor (RPA) had been appointed and requested to carry out a review of the radiation protection aspects of each practice and undertake quality assurance testing for each dental X-ray unit. These licensing requirements had previously been introduced for new dental licensees from October 2007. The RPII liaised closely with the Dental Council and Irish Dental Association to keep them up to date on the new licensing requirements. These requirements have now been successfully implemented and their impact on radiation protection standards in the sector will be assessed over the coming years.

Peer Reviews

Each year, the RPII allocates significant resources to its licensing and inspection programmes in terms of staffing and finance. In 2008, it continued a programme of peer reviews to evaluate whether its objectives and priorities for these programmes are still fit for purpose, particularly in the higher risk activities it licenses.

Industrial Sterilisation Peer Review

To ensure that the RPII both implements and enforces best regulatory practice in relation to the operation of industrial sterilisation plants, the RPII commissioned the Radiation Protection Division of the UK Health Protection Agency (HPA) to undertake a peer review of its activities in this sector. The final report by the expert consultant concluded that the regulatory and licensing infrastructure ensures a high standard of radiation protection. A number of recommendations were made which included the full implementation of the High Activity Sealed Sources (HASS) Directive and finalising arrangements for the establishment of a protocol and criteria for approval of Radiation Protection Advisers (RPAs) for industrial users of ionising radiation.

Radiotherapy Peer Review

The RPII contracted the HPA to undertake a similar peer review of the RPII's regulatory activities in the radiotherapy sector in 2008. The peer review took place over a week at the end of October and involved a review of the RPII's licensing requirements and internal procedures for radiotherapy facilities as well as the witnessing of inspections in both a public and private radiotherapy facility. The final report noted that the regulation and inspection of activities with ionising radiation was largely appropriate for radiotherapy services and made a number of recommendations as to how the RPII's regulatory programmes could be further strengthened in this sector.

Security of Radioactive Sources

The security of radioactive sources at licensed facilities continues to be an area that requires ongoing vigilance. During 2008, work continued with An Garda Síochána's National Crime Prevention Unit (NCPU) on a specific project reviewing the security arrangements in place at licensees' premises with radioactive sources that come under the scope of the European Commission's High Activity Sealed Sources Directive in the industrial, medical and education and research sectors. Security surveys were undertaken by officers from the NCPU, facilitated by RPII inspectors, with the objective of ensuring high standards of security. While the results were, in general, reassuring, a number of recommendations were made, covering physical and administrative controls. The implementation of these recommendations will be followed up by RPII inspectors and, where appropriate, members of the NCPU.

Radiation Protection Adviser Register for the Industrial and Educational Sectors

In order to enhance best practice in radiation protection and to address gaps in the regulatory infrastructure, the RPII finalised arrangements for the establishment of a protocol and criteria for approval of RPAs for licensees in the industrial and third level educational sectors using sources of ionising radiation. The approval scheme also included work activities involving natural radiation. This Category II RPA approval scheme is broadly similar to that already in place for Category I RPAs (Medical and Dental) and is based on a formal approval of core competence by the RPII. The development of a Register of Category II RPAs (individual and corporate) is expected in 2009.

Iodine Holding Tanks

The Oslo-Paris (OSPAR) Convention, adopted in 1992, requires contracting parties to take all possible steps to prevent and eliminate pollution of the marine environment. Ireland is a signatory to this Convention and in its 2002 national report to the Radioactive Substances Committee of OSPAR, dealing with the discharge

of radioactive substances to the marine environment, committed to undertaking a review of its licensing requirements with respect to the use of iodine-131 in hospitals. In particular, the review would consider the use of holding tanks to facilitate the decay of iodine-131 in patient excreta prior to discharge to the sewers.

Prior to 2008, licences were held by three public hospitals in Ireland authorising them to carry out iodine ablation therapies to treat patients with thyroid cancer using iodine-131. During 2008, applications were received from two hospitals, one public and one private, to introduce ablation therapy and from another hospital, which was already licensed for iodine ablation, to build a second ablation suite. At present, there is no mandatory requirement for iodine holding tanks to be incorporated into the design of these new treatment facilities and, with the exception of one facility, patient excreta containing radioactive iodine is discharged directly to the hospital's main sewer. One hospital has installed a holding tank where the radioactive content of the patients' excreta is allowed to decay prior to discharge to sewer.

During the year, the RPII awarded a contract to undertake an assessment of the requirement to retro-fit holding tanks to existing facilities and whether they should be mandated for new facilities. The final report from the consultants recommended that the benefit, from a radiation protection point of view, of retro-fitting these tanks to existing facilities was grossly disproportionate to the financial and logistical issues that would be incurred. The report also noted that, while doses to members of the public arising from the discharge of iodine-131 to the sewers were extremely low, these doses could be further reduced through the fitting of holding tanks in new facilities. However, rather than being a mandatory licensing requirement the report recommended that the requirement to fit holding tanks should be assessed on a case by case basis. The RPII's Board adopted these recommendations in 2008. In reviewing the three applications for new ablation suites received during 2008; the RPII determined that holding tanks were not warranted. This regulatory position was communicated to the Department of the Environment, Heritage and Local Government (DEHLG) for consideration as part of its review of Ireland's National Implementation Plan under the Radioactive Substances Strategy of the OSPAR Convention. The DEHLG is to establish an interdepartmental steering committee in 2009 to fully review the position.

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 mSv and 50 mSv respectively over a 16 week period.

The RPII was notified of 15 such cases during the year. Following investigations into each reported dose only three were classified as a dose actually received by the wearer: a distributor of technetium-99m isotope generators to hospitals who failed to follow the correct handling procedures for transporting the generators into the hospitals received a wholebody dose of 4.2 mSv and an industrial radiographer who received a reportable dose due to a period involving a high workload received a wholebody dose of 2.4 mSv. The third case involved a TLD, which had been assigned to a clinical specialist in a hospital nuclear medicine department, recording a dose of 20.8 mSv. Investigations into this recorded dose, by both the RPII and the hospital's RPA, established that the source of the exposure was a beta emitter and that when account was taken of this fact, the actual effective wholebody dose received by the clinical specialist was 0.5 mSv. In the other cases it was determined that the individuals to whom dosimeters were assigned were not wearing the dosimeters when the dose was recorded and so had not actually received the recorded dose in the course of their work activities.

Enforcement

In order to reinforce the need to maintain high standards of radiation protection and security of radioactive material, the RPII can and does prosecute in cases where regulations are clearly breached. In 2008, two prosecutions were brought before the District Courts. In February, Trimproof Ltd, Trim County Meath was convicted under the Radiological Protection Act, 1991 for the unlicensed custody of two nuclear devices (density level gauges for process control). The company was fined €1269 for each offence and ordered to pay the RPII's agreed costs at the Courthouse, Trim. In March, the RPII took legal action against an individual in County Kerry for the unlicensed custody of a nuclear moisture density gauge used in road construction projects. The presiding judge applied the Probation Act, upon payment of €600 to the Court poor box and ordered the defendant to pay the RPII's agreed costs at the District Court, Tralee.

Incidents and Investigations

During the year, the RPII investigated incidents involving the use and transport of radioactive sources and X-ray equipment in the industrial and medical sectors.

In April, the Dangerous Goods Division of the Department for Transport (UK) advised the RPII that HM Customs had detected and detained a driver carrying an undeclared nuclear moisture density gauge from Ireland on its way to its parent company in Portugal. The RPII informed the competent authority in Portugal, the Dublin Port Authority and the Irish Customs and inspected

the company locally in Ireland. No other gauges were present and a letter of censure was issued. The gauge was held by HM Customs until all ADR (International Agreement on the Carriage of Dangerous Goods)/IMDG Code (International Maritime Dangerous Goods Code) documentation and driver training requirements were addressed. This matter proved useful in terms of national and international cooperation between competent authorities and reaffirmed the requirement for nuclear moisture density gauges to be declared as dangerous goods and transported in accordance with the ADR and the IMDG Code. All relevant licensees have been reminded of their obligations in this regard. It also highlights the importance of the use of portal monitoring systems in the detection of inadvertent or illicit trafficking of radioactive material. The HASS Directive transposed into Irish legislation through S.I. No. 875 of 2005 encourages each Member State to establish such facilities at significant nodal points such as ports.

As part of the RPII's regulatory system, particular attention is paid to company take-overs, companies closing down and liquidations. A company that had a licence for a number of anti-static devices containing polonium-210 was taken over by a larger group which subsequently closed down the company but held on to its assets. After investigation by the RPII, an existing company within the larger group who already held a licence from the RPII took responsibility for the custody and subsequent disposal of the devices under licence. Monitoring business take-overs, closures, liquidations and receiverships is becoming more important in the control of radioactive sources in an increasingly uncertain business environment.

Another licensee reported minor damage to a shutter mechanism on a thickness probe containing an americium-241 source due to a machine shut down process not being correctly followed. The system was subsequently repaired by a service engineer on site. While the event was of no radiological significance, it highlighted the importance of companies providing operators with appropriate training and operation of these systems.

At the end of 2008, Ireland was notified that cobalt-60 had been detected in some elevator buttons stored in a warehouse in Italy. These contaminated elevator buttons were also detected in the UK which identified a sister company in Ireland possibly having being supplied with similar material. Investigations by the RPII on behalf of this local company identified a number of sites and measurements were undertaken and contaminated buttons were detected. These were removed and are to be returned to the UK supplier. It was determined that the levels of contamination were low and posed no risk to employees or members of the public.

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. In December, the RPII was awarded accreditation to the ISO standard by the Irish National Accreditation Board (INAB).

Shipments Directive

The RPII continued to advise the DEHLG on the transposition of European Council Directive 2006/117/EURATOM dealing with the supervision and control of shipments of radioactive waste and spent fuel between European Member States as well as third countries.

Radioactive Waste

Unwanted radioactive sources are held under licence at 80 different locations around the country and for reasons of safety and security it has been the RPII's long standing advice to Government that a central waste storage facility for the interim storage and management of these types of sources needs to be put in place. In a welcome development in 2008, the DEHLG established an interdepartmental High Level Group chaired by Michael Kitt TD, Minister of State at the Department of the Environment, Heritage and Local Government, to examine the issue and to report to Government in 2009. The RPII is actively participating and supporting the work of the group.

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 of radiation protection. This is particularly relevant in the regulatory environment and during 2008, the RPII met with the Health Service Executive (HSE), the Dental Council, the Medical Council, the Health and Safety Authority (HSA) and the Environmental Protection Agency (EPA) to discuss areas of mutual interest and to identify joint tasks aimed at generating efficiencies and avoiding duplication of effort. In particular, the RPII is contributing to the implementation of patient focused radiation protection legislation which is being led by the HSE. Also, the RPII is working with the EPA to develop waste management solutions for radioactive materials.

Exposure of the Irish Population to Radiation

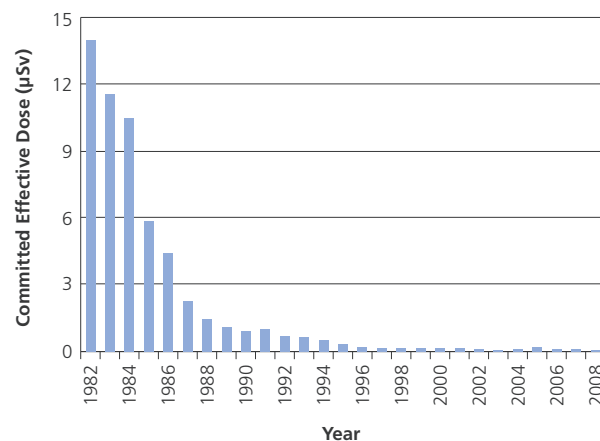
Introduction

The RPII continues to keep under review the exposure of the Irish population to ionising radiation and in May 2008 it published its updated assessment of the radiation doses to the Irish population from all sources of radiation. On an ongoing basis the RPII assesses doses to the public through its environmental monitoring programme and to workers through its regulatory and dosimetry programmes. From time to time the RPII undertakes specific projects to provide additional information on selected exposure pathways and to revise existing dose estimates. In 2008, the RPII initiated a national thoron survey, which aims to establish for the first time a definitive estimate of the dose from this source.

Environmental Monitoring

The RPII's environmental monitoring programme aims to measure the exposure of the Irish population to radioactivity in the environment, to assess the distribution of radioactivity in the Irish environment and to maintain systems and procedures which would allow a rapid assessment of environmental contamination to be made in the event of a radiological emergency. 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 inter alia to 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 in 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. In 2008, the mean annual committed effective dose to a typical consumer of seafood from the Irish Sea was found to be 0.09 μSv , which may be compared with 0.16 μSv in 2007. These data are consistent with measurements made over the last decade, during which time the doses to seafood consumers have remained relatively unchanged. Figure 2 illustrates the doses between 1982 and 2008 due to caesium-137, which accounts for approximately 55% of the seafood ingestion dose.

Figure 2: Committed effective doses to typical seafood consumers due to caesium-137, 1982-2008



The RPII, with the assistance of Met Éireann and a number of local authorities, operates a National Radiation Monitoring Network which includes continuous measurement of ambient gamma dose rate, airborne particulate sampling for assessment of radioactivity in air and collection of rain water. During 2008, ambient gamma dose rate was measured at 15 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.

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.

Marine Habits Survey

Doses to the population arising from radioactivity present in the environment are assessed by combining measured concentration data derived from environmental monitoring with habit data (such as consumption and occupancy rates) for the relevant exposure pathways. It is important, therefore, in as far as is practicable to have up to date and realistic habit data for the

important environmental exposure pathways. During 2008, a marine habits survey was undertaken so as to assess the pathways giving rise to radiation exposure of the public from radioactivity in the marine environment. This work was undertaken by the UK Centre for Environmental, Fisheries and Aquaculture Research (CEFAS) on behalf of the RPII. The aim of this survey was to identify the most important pathways by which people living in Ireland are exposed to ionising radiation as a result of discharges from Sellafield into the Irish Sea. This was carried out by collecting comprehensive information on the consumption of aquatic foods, the occupancy of intertidal areas, the handling of fishing gear and catch, the handling of sediment, the occupancy in and on water, and any other habits likely to lead to exposure of individuals.

The CEFAS report provides a detailed assessment of aquatic radiation exposure pathways leading to exposure of the public as a result of artificial radioactivity in the Irish Sea. It provides comprehensive habit data to enable realistic dose assessments to be made and sets out recommendations regarding the marine monitoring programme for the east coast of Ireland conducted by the RPII.

While the report includes some recommendations for improvement, it provides broad reassurance that the RPII's existing marine monitoring programme is comprehensive, that it covers the major exposure pathways and that it provides a realistic estimate of the exposure to the Irish population.

Radioactivity in Groundwater Sources

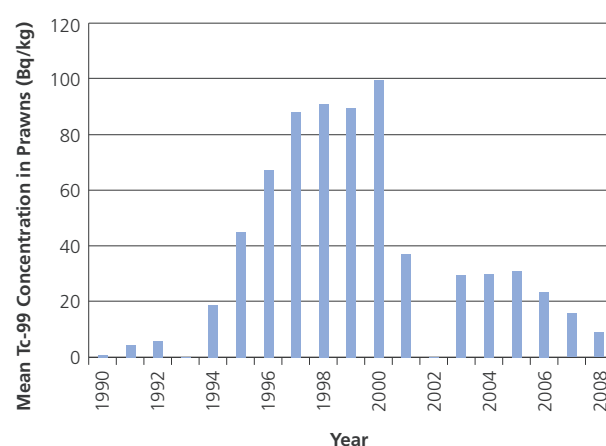
A national study of radioactivity in groundwater supplies commenced in 2008. This study is scheduled to run until 2010 and is being undertaken with the cooperation of the Environmental Protection Agency who will measure chemical parameters including uranium for the same sources.

In 2008, samples from 94 locations were collected and analysed for their total alpha and total beta activity. The World Health Organisation (WHO) guidelines on drinking water quality were used as a basis to evaluate these data. Locations, for which the measured total alpha and total beta activities exceeded the WHO screening levels, were identified for further investigation in later phases of the project. For all of the samples tested, the measured gross beta activities were below the WHO screening level of 1.0 Bq/l, while 86 were below the WHO screening level of 0.1 Bq/l for gross alpha activity thus identifying the need for further investigation at eight locations. Further sampling at these locations has been arranged and analysis will be completed in 2009.

Technetium-99 in Fish and Shellfish

Technetium-99 activity concentrations in fish and shellfish from the Irish Sea increased in the mid-1990s in line with increased discharges from Sellafield. Monitoring programmes prior to 1994 did not include measurement of technetium-99. Therefore, a retrospective study was undertaken, based on the analysis of samples from the RPII's sample bank, to establish a pre 1994 baseline for technetium-99 in fish and shellfish from the northwest Irish Sea and thereby to assess the impact on Irish consumers of increased discharges of this radionuclide from Sellafield from 1994 onwards. Figure 3 shows the annual average activity concentrations in prawns between 1990 and 2008. In 2003, technetium-99 discharges were reduced and have now returned to the levels of the early 1990s. Since then, there has been a reduction in technetium-99 activity concentrations in fish and shellfish landed at ports on the north-east coast of Ireland. This study showed that the dose to Irish seafood consumers has not returned to the baseline levels of the early 1990s, still being greater by a factor of two. Technetium-99 currently accounts for approximately 15% of the total dose (0.16 and 0.75 μ Sv for typical and heavy consumers, respectively) to Irish seafood consumers from all artificial sources of radioactivity in the Irish Sea.

Figure 3: Annual average technetium-99 activity concentrations in prawns landed at Clogherhead between 1990 and 2008



National Thoron Survey

Thoron is a naturally occurring radioactive gas produced by the decay of radium-224 which is present in the earth's crust. Thoron, like radon, can be found in higher concentrations in homes and workplaces than outdoor air. The RPII's national dose assessment report published in May estimated that exposure to indoor thoron

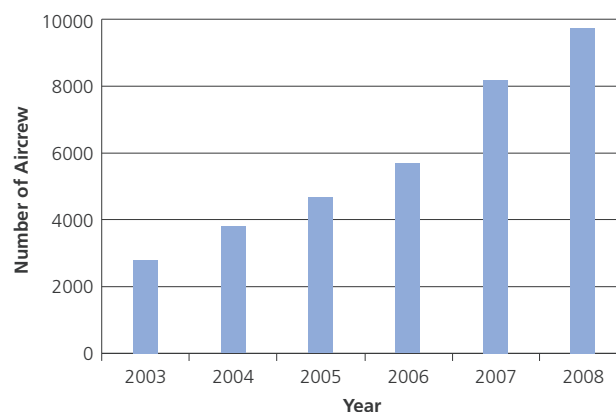
gas accounted for approximately 7% of the average per caput radiation dose in Ireland. This estimate, however, was based on very limited study and so a national survey of indoor thoron levels in Irish homes was commenced by the RPII. This is a collaborative project between the RPII, UCD and the National Institute of Radiation Science (NIRS) in Japan. The principal source of thoron in homes is thorium in building materials. Unlike radon, the local geology has little influence on the levels of thoron in homes because the short half-life of thoron (55.6 seconds) means that most of it has decayed by the time it migrates from the underlying soil into the home. The short half-life of thoron also means that it is the decay products and not thoron itself that contribute to radiation dose.

As part of the survey, thoron gas, thoron decay products and radon gas were measured in 253 homes in Cork, Dublin, Galway and Limerick. Homes were selected to be representative of major population centres and major housing types (houses, apartments, etc.). In each home measurements were made in the main living room and the main bedroom. Approximately 180 of the houses had previously been measured as part of the National Radon Survey and so this study also provides the opportunity to investigate long term variability in indoor radon levels. The survey was divided into two phases and measurements for phase one were completed in 2008. Based on the phase one results, the mean and highest annual dose received from thoron decay products were 0.3 and 2.6 mSv/year, respectively. These may be compared to a dose of 5 mSv/year from indoor radon concentrations at the national Reference Level of 200 Bq/m³.

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 millisievert (mSv), which effectively applies only to those airlines flying above 8000 metres. Doses are estimated by the airlines using internationally recognised software models. For 2008, the information received from seven licensed air operators showed that 9726 individuals were estimated to receive annual radiation doses above 1 mSv. Of these, 3695 received between 1 and 2 mSv, while 5779 received doses between 2 and 4 mSv and 252 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 4). 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 4: Number of aircrew receiving radiation doses greater than 1 mSv



Occupational Exposure from Dosimetry Measurements

The Dosimetry Service provides a personal monitoring service for the determination of occupational exposure to ionising radiation. In 2008, 252 or 3% of individuals monitored by the Dosimetry Service had annual doses exceeding the minimum reporting level of 0.1 mSv.

One hundred and twenty three individuals working in industrial, medical, veterinary and research fields received measurable extremity doses. The highest annual dose was 72.6 mSv to the right hand of a medical physicist.

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

Radon

Introduction

Radon, a naturally occurring radioactive gas that originates from the decay of uranium in rocks and soils, is the principal source of radiation exposure of the Irish population. A specific objective of the RPII's Strategic Plan is to engage with other state agencies and to work towards developing a national strategy to reduce exposure to radon. During 2008, the RPII made significant steps towards this objective by working with the HSE and Cork County Council (CCC) in addressing radon problems in north Cork. In addition, the RPII worked closely with the HSA in raising the awareness of radon as a health and safety issue and in promoting radon measurements in workplaces.

Engagement with Other State Agencies and Organisations

During the year, the RPII and HSE, under the terms of the Memorandum of Understanding signed in 2007 between both organisations, set up a radon working group. A first task of the working group is to produce a Joint Position Paper on radon with a view to informing and influencing policy in this area. The Position Paper will provide a summary of the health risks associated with radon exposure in Ireland and will outline the commitment of both organisations to reduce the risks from radon in a coordinated manner.

Under the aegis of an existing Memorandum of Understanding, the RPII worked closely with the HSA to assist them in efforts to include radon in their inspections of workplaces. This involved regional meetings with HSA inspectors to inform them of radon. This HSA effort has resulted in a noticeable increase in enquiries from employers with regard to radon. The RPII also met with the Irish Business and Employers Confederation to promote radon measurements in workplaces.

Engagement with Local Authorities

During 2008, CCC carried out a comprehensive radon measurement campaign in 599 social houses in north Cork. This measurement programme was implemented following the discovery of very high radon levels in private homes and workplaces in Mallow in 2007. Of the homes measured by CCC, some 121 (20%) had radon concentrations above the national Reference Level. Of these, some 26 (4% of total) had radon concentrations above 800 Bq/m³ warranting immediate remediation.

As radon is a public health issue, the RPII and CCC collaborated with the HSE in assessing and communicating the radon risks to tenants. A tailored information pamphlet was developed to provide guidance to tenants on how to minimise their risk of lung cancer. CCC sent the pamphlet to each affected tenant as well as details of the type and scheduling of the proposed radon remediation works in their home. The HSE advised all local GPs of the elevated radon levels found in the area and of the potential health risk. The RPII and CCC held public meetings in Mitchelstown and Doneraile which strengthened the information dissemination efforts. In addition, the RPII met with Mallow Town Council to update them on the radon hazard in the town and to encourage the continued roll out of the measurement programme in homes under their responsibility. CCC undertook a radon measurement programme in all social housing throughout the county. The RPII commends CCC and HSE for their proactive approach to radon in Cork and is convinced that this multi agency approach is a model that can be implemented successfully in other parts of the country.

During the year, the RPII also met with Carlow and Sligo County Councils to support their efforts to measure radon in social housing. Both county councils indicated that the implementation of a radon measurement programme in 2009 in their areas was being considered. The RPII also met with the Local Authority Safety Advisors Group to promote radon measurements in local authority workplaces.

Radon and the Home Energy Saving Scheme

During the year, the RPII reviewed the available information on the relationship between radon concentrations in homes and retrofitting of homes with insulation. This review was undertaken in order to advise Government on the potential impact on indoor radon of proposed initiatives to improve the energy efficiency of homes in Ireland under the Home Energy Saving Scheme (HESS). The review highlighted a lack of data applicable to countries with climates like Ireland and identified a need for further research to determine how greater energy efficiency may affect indoor radon concentrations.

National Radon Forum

The National Radon Forum brings people together who have a role to play in helping to reduce the risk from radon in Ireland. These include measurement companies, remediation companies, researchers, public representatives, representatives of national agencies, health and safety experts and the public. The sixth National Radon Forum was held in November 2008 in Dublin. The Forum, which was opened by Michael Kitt TD, Minister of State at the Department of the Environment, Heritage and Local



Government, heard a keynote address from Dr Ferid Shannoun, coordinator of the World Health Organisation's International Radon Project. Dr Shannoun noted that the approach to dealing with radon in Cork, which had input from many state agencies, was the model that the WHO advocated. Minister Kitt said that the Government also supported this type of approach and announced that his Department would consult with the RPII to produce draft guidance for local authorities on how the radon risk in social housing can best be tackled.

Radon Measurements and Conveyancing of Properties

The RPII considers that radon measurement and, where necessary, remediation at the time of sale and/or purchase of properties is an appropriate and cost effective mechanism to reduce the overall risk from radon. As a shorter measurement period would be of benefit during conveyancing, in 2008, the RPII began research to determine if it was possible to reduce the measurement period to one month without compromising the accuracy of the result. This research will be completed during 2009.

Radon Measurement Statistics

Extremely high radon concentrations (above 4000 Bq/m³) were measured in three homes during the year. Two homes had radon concentrations of 9000 Bq/m³, one in south Tipperary, very close to the county boundary with Cork, and the second in County Waterford. Both homes are located in areas designated as High Radon Areas. The third house which had 5500 Bq/m³ is near Castleisland County Kerry which is an area where extremely high radon concentrations have previously been found. These radon concentrations can be compared to the national Reference Level of 200 Bq/m³. Their identification reinforces the RPII's advice that all householders especially those in High Radon Areas should test their homes for radon. In each case, the RPII worked closely with the householder to ensure they were aware of their risk and had sufficient information to enable them to carry out the necessary remediation work. In Waterford, the RPII in collaboration with Waterford County Council and the HSE held public meetings aimed at alerting the local public to the high radon levels found. Extensive radon publicity efforts have previously been carried out in Kerry and north Cork therefore a similar effort in these areas was not considered warranted. Press releases were issued aimed at maintaining awareness of radon and to make local people aware of the high radon levels found in each area.

Table 2 shows that at the end of December 2008, the RPII database of radon measurements contained 35,660 results, of which 11,319 were made as part of the National Radon Survey. The remainder were either fee-paying measurements or carried out as part of RPII local surveys. To date, only 4643 homes from an estimated 91,000 with radon concentrations above the national Reference Level of 200 Bq/m³ have been identified. Of these, 450 have radon concentrations above 800 Bq/m³. The counties with the highest percentage of homes identified above the Reference Level are Sligo, Waterford and Galway.

During 2008, high radon levels were identified in 322 homes and 30 workplaces.

Where individual results exceed 800 Bq/m³, the RPII contacts the householder directly by telephone to discuss the implications of the result and to encourage early remediation. When radon concentrations in homes above 4000 Bq/m³ are identified, a media campaign is initiated to encourage those living in the immediate vicinity to measure for radon.

Table 2: Distribution of radon measurement results by county (based on measurements completed up to 31st December 2008)

County	Number of houses measured	% homes > 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	677	18%	556	115	6	1725
Cavan	356	3%	344	12	0	780
Clare	3072	11%	2725	291	56	2980
Cork	4216	11%	3762	422	32	4516
Donegal	1039	5%	991	48	0	512
Dublin	2311	6%	2163	147	1	1410
Galway	4530	20%	3622	817	91	3434
Kerry	2981	14%	2563	329	89	49000
Kildare	955	5%	907	45	3	1114
Kilkenny	907	13%	793	108	6	2444
Laois	483	4%	465	18	0	565
Leitrim	287	6%	269	17	1	1630
Limerick	1018	8%	941	74	3	1857
Longford	262	7%	243	18	1	876
Louth	531	13%	460	71	0	751
Mayo	2981	16%	2498	452	31	6203
Meath	692	9%	631	59	2	932
Monaghan	243	7%	227	16	0	794
Offaly	407	3%	395	12	0	495
Roscommon	521	10%	467	52	2	1387
Sligo	1360	24%	1038	275	47	5508
Tipperary	1538	11%	1372	152	14	2394
Waterford	995	22%	778	186	31	9714
Westmeath	490	9%	445	45	0	699
Wexford	1257	14%	1075	168	14	2926
Wicklow	1551	17%	1287	244	20	16,438
TOTAL	35,660	13%	31,017	4193	450	

Radiation Measurement Services

Introduction

The Radiation Monitoring and Measurement Services Division provides a broad range of radiation measurement services covering personal dosimetry, radon measurement, instrument calibration and analytical services. These services are provided both in support of the RPII's statutory functions and on a commercial basis to contract customers. The RPII's customers include hospitals and dentists, universities, industry and householders.

The RPII is committed to maintaining a high standard of quality in all of its monitoring and measurement activities and implements a broadly based quality assurance programme. This programme includes participation in a range of international laboratory intercomparison programmes and the implementation of a quality management system accredited to ISO 17025 by the Irish National Accreditation Board (INAB). In addition, the RPII participates in a number of technical expert networks relevant to its work areas, which help to ensure that the services provided conform to best international practice.

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 2008 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, 2047 samples were tested during the year and Table 3 presents the breakdown of this number by sample type. The RPII provides a certification service to exporters of Irish foodstuffs and other produce. The number of product certificates issued in 2008 was 3301. This may be compared with 3445 in 2007 and 4229 in 2006 and indicates a continued gradual decrease in demand for this service.



Table 3: Radioactivity testing on environmental samples and foodstuffs, 2008

Environmental monitoring samples	774
Wipe tests	388
Contract analysis of foodstuffs and beverages	566
Contract analysis of drinking water	268
Contract analysis – animal feed, sediment, miscellaneous	51
Total	2047

Personal Dosimetry

In 2008, the Dosimetry Service issued approximately 92,000 wholebody, extremity and neutron dosimeters to over 9000 individuals in Ireland. This represented a significant increase in the number of dosimeters which were issued in 2007 and 2006 of 84,000 and 80,000, respectively.

Participation in international dosimetry groups is seen as vital to maintaining a high quality of service to customers and the Dosimetry Service staff continued to participate at European Council level in the European Radiation Dosimetry Group (EURADOS) and in the UK Personal Radiation Monitoring Group (PRMG). During 2008, the RPII participated in a EURADOS subgroup working to establish updated European Technical Recommendations for monitoring individuals exposed to external radiation.

During 2007 and 2008, the RPII worked with Panasonic Industrial Europe, University Hospital Birmingham and CIEMAT in Madrid to develop an algorithm for improved evaluation of doses from low energy X-rays using Panasonic UD-802A thermoluminescent dosimeters. This algorithm was successfully validated in 2008 during a wholebody X-ray intercomparison organised by the PRMG.

In 2008, the Dosimetry Service undertook a programme of visits to customers throughout Ireland to discuss new initiatives being introduced by the Service in 2009 and to obtain feedback on the operation of the Service. This exercise proved extremely useful and this type of consultation is seen as vital to the continuous improvement of the Service.

Also in 2008, the RPII hosted a training course in thermoluminescent dosimetry for Panasonic system users. This course which was presented by a US based consultant from Dosimetry Resources International Inc. was attended by RPII staff and other users of Panasonic systems from the UK and Portugal.

Calibration Service

In 2008, 390 instruments were tested by the Calibration Service for compliance with the relevant manufacturer's specifications.

A new track beam irradiation system manufactured by Hopewell Designs Inc. in the United States was delivered to the Calibration Service in April 2008. This new system contains four caesium-137 sources and one americium-241 source. The installation of the sources was completed in September 2008 and this new irradiator will come on line in the first half of 2009.

The Calibration Service successfully extended the scope of its INAB accreditation to include the calibration of contamination monitors. The procedure was audited during the routine INAB surveillance visit in November 2008 and accreditation will be awarded in 2009.

In 2008, Calibration Service staff continued to be members of the International Atomic Energy Agency Secondary Standard Dosimetry Network, (IAEA SSDL), the 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 2008, radon detectors were issued to 1933 homes and 201 workplaces of which 23 were schools. These numbers are down slightly on 2007, when detectors were issued to 2273 homes and 241 workplaces.

Emergency Preparedness

Introduction

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 a very active role in national initiatives linked to the NEPNA and other emergency planning groups. The linkages between these groups are shown in Figures 5 and 6 for emergency response and planning, respectively.

RPII Emergency Plans

All Government Departments and agencies with responsibilities under the NEPNA are required to have written sub-plans showing how they will carry out these responsibilities. In 2008, the feedback received during the previous year's review of the RPII's sub-plan was incorporated into the latest version of the sub-plan.

In addition to any response to large scale accidents under NEPNA, such as a nuclear accident abroad, the RPII may be called upon to respond to local incidents. In 2008, the RPII worked to formalise its arrangements for responding to local incidents by preparing a draft emergency plan. During this process the experience of responding to previous local incidents was reviewed and the arrangements planned under the Framework for Major Emergency were also considered. In 2009, this plan will be finalised and a training and exercise programme organised.

Framework for Major Emergency Management

The Framework for Major Emergency Management enables An Garda Síochána, the HSE and local authorities to prepare for and make a coordinated response to major emergencies resulting from local and regional events such as fires, transport accidents, hazardous substances incidents and severe weather. As part of the Major Emergency development programme, the RPII contributed to the preparation of the Draft Protocol for Multi-Agency Response to Radiological/Nuclear Emergencies. This protocol was published for comment on the Major Emergency Management website (www.mem.ie) at the end of 2008.

Memorandum of Understanding with Met Éireann

There are a number of areas in which cooperation between the RPII and Met Éireann is required in order to fulfil respective responsibilities under the NEPNA. In 2008, this cooperation was formalised by the signing of a Memorandum of Understanding

between the two organisations. Met Éireann assists the RPII in the operation of the National Radiation Monitoring Network through the hosting of monitoring equipment at meteorological sites and through the provision of maintenance and sample collection services at manned sites. Met Éireann also assists the RPII emergency Technical Assessment Team through provision of weather forecasts and other analyses which may be used to predict the dispersion of radioactive material in the atmosphere. In the event of a nuclear accident, one of Met Éireann's duty forecasters would join the Technical Assessment Team to provide expertise on meteorological issues. In 2008, RPII staff provided briefings on the NEPNA and RPII's technical assessment techniques to Met Éireann's duty forecasters.

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 rapid analysis of environmental samples. As part of the 2008 exercise programme, the RPII participated in a joint exercise with Civil Defence on environmental sampling and laboratory analysis of samples under emergency operating conditions.

The NEPNA exercise in 2007 focussed on the protective actions to be applied in the agricultural and food sector following a nuclear accident abroad. This exercise resulted in experts from RPII and the Department of Agriculture, Fisheries and Food (DAFF) and the Food Safety Authority of Ireland achieving a high level of common understanding on the priority issues for managing radioactive contamination of agricultural land. In 2008, the RPII organised a follow-up exercise to refresh and reinforce the knowledge gained during the previous exercise. As part of the exercise, the RPII ran its computer models to generate predictions of the concentrations of radioactivity in food and animal feed for three different times of year. The DAFF and RPII teams identified and discussed the steps to be taken to protect the food-chain for each of the three scenarios. The exercise participants identified the lessons from the exercise and agreed on topics for future exercises.

In addition to these national exercises, the RPII participated in a number of international emergency exercises organised by the International Atomic Energy Agency (IAEA) and the European Commission (EC). Of particular note was the Convex-3 exercise. Convex-3 exercises are large-scale international exercises that are organised by the IAEA once every three to five years. In 2008, the Convex-3 exercise was based on a potentially serious accident at the Laguna Verde nuclear power plant in Mexico. The exercise

started on 9th July and lasted for 38 hours. Given the distance of Mexico from Ireland, the main focus of Ireland's exercise was on advice to Irish nationals abroad. This issue was discussed and advice formulated by the RPII, the Department of Foreign Affairs and the DEHLG. In addition, the DAFF prepared a list of all agricultural/food products approved for import from Mexico. The exercise provided an opportunity to develop the response to a nuclear accident with no direct impact on Ireland. Convex-3 also provided the opportunity for the RPII and Met Éireann to further test aspects of the procedures for modelling the atmospheric dispersion of accidentally released radioactivity.

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 and the EC in Luxembourg. 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 highest level under the EC system (ECURIE). While ECURIE has been in operation since 1987, until 2008 no alerts had ever been generated.

In 2008, two alerts were sent via ECURIE, the first following an incident at the Krško nuclear power plant in Slovenia in June. This event was quickly identified as minor with a small leak of coolant water and no contamination of the environment. It was subsequently rated as below scale on the seven-point International Nuclear Event Scale (INES). The second alert was received in August following a release of iodine-131 from a medical radioisotope production facility in Fleurus, Belgium. This incident was rated as level 3 on the INES scale. This rating indicates that it was a serious incident but with no significant off-site risk. While neither incident had any radiological implications for Ireland they proved a live test of the notification systems, which were found to work well.

Figure 5: Strategic structures and linkages for emergency response

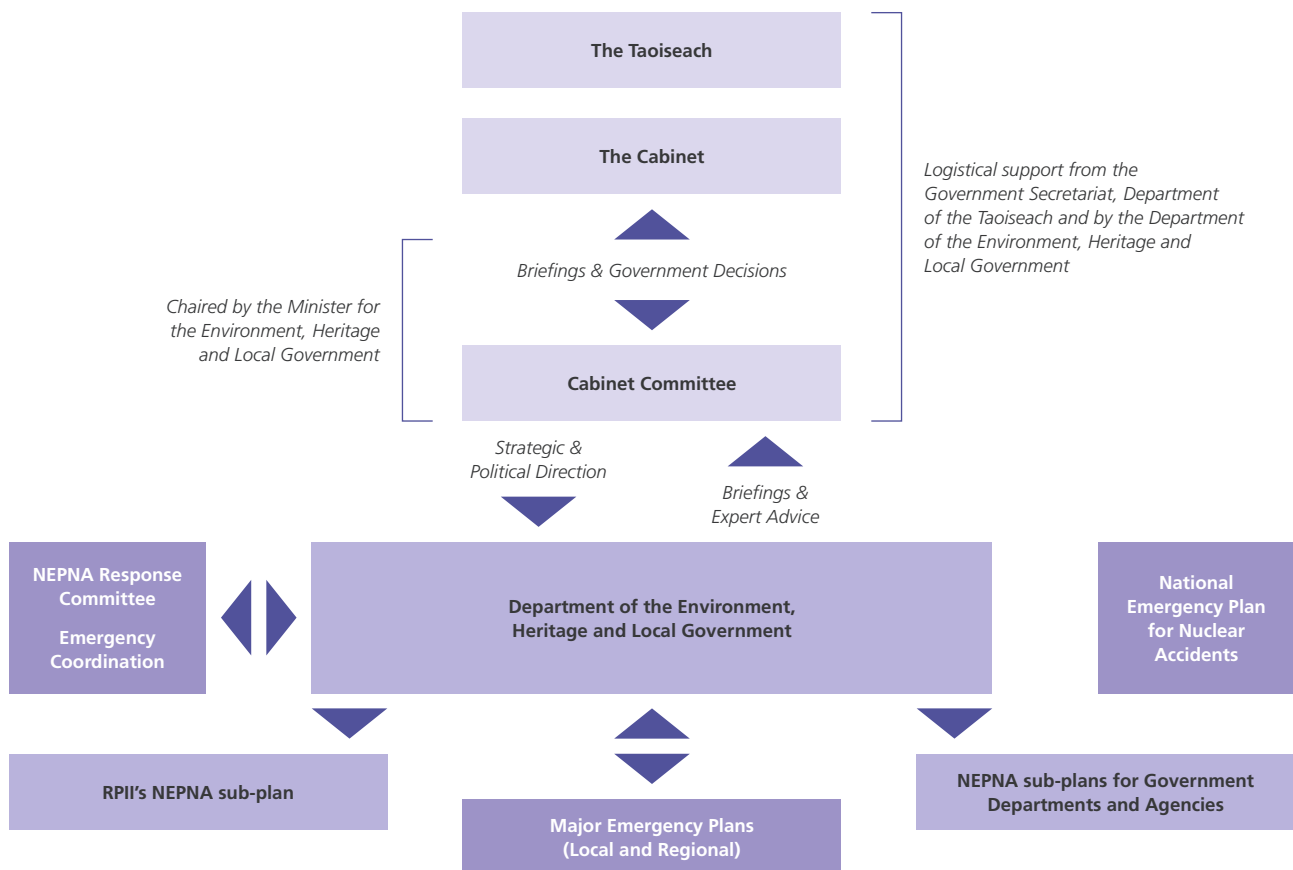
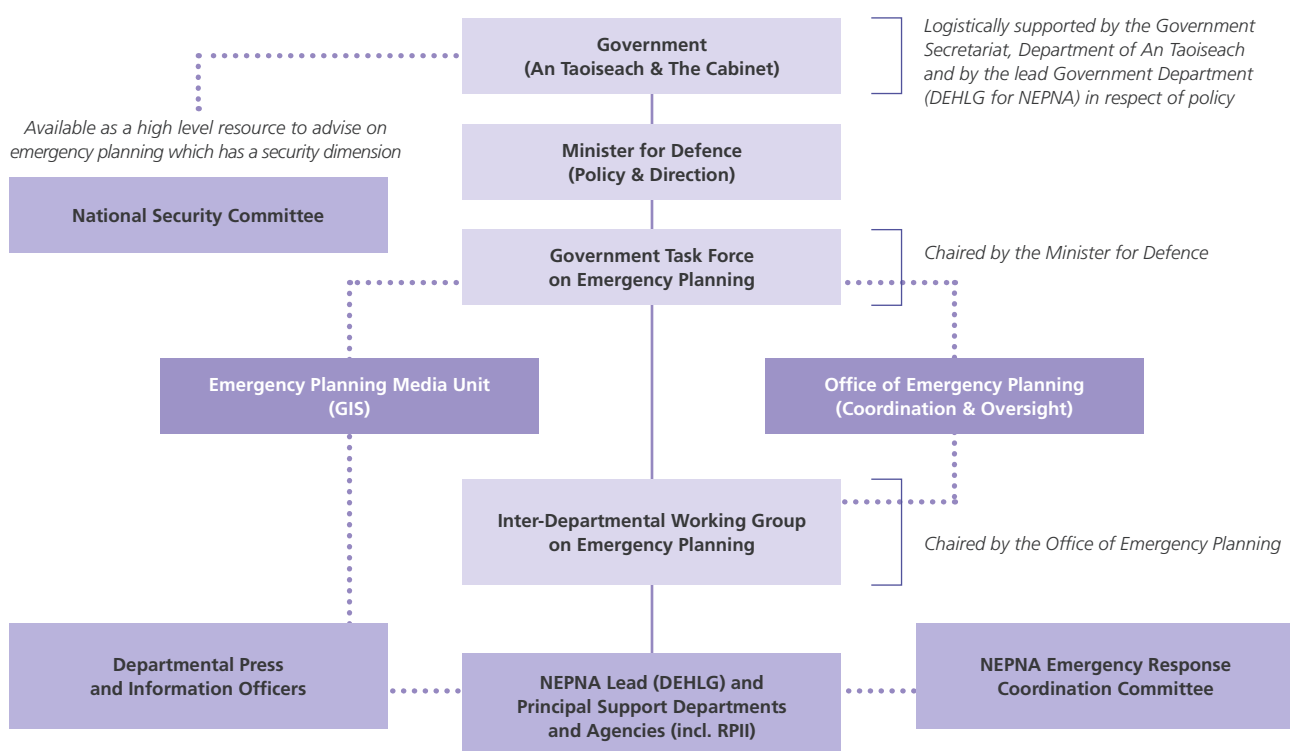




Figure 6: Strategic structures and linkages for emergency planning



International Activities

The RPII maintains an active involvement in the work of key international organisations that develop standards and guidance on nuclear safety and the uses of ionising radiation. These organisations include the European Union, the International Commission on Radiological Protection (ICRP), the International Atomic Energy Agency (IAEA), the Nuclear Energy Agency (NEA) of the Organisation for Economic Co-operation and Development and the World Health Organisation (WHO).

The RPII represents Ireland on over 20 international scientific and technical committees and working groups. Dr Stephen Fennell chairs the European Radiation Protection Authorities Network (ERPAN) and Dr Ciara McMahon chairs the Expert Group on Recovery, Agriculture and Food of the NEA Working Party on Nuclear Emergency Matters. Dr Tom Ryan was recently appointed as the Chairman of an advisory committee developing recommendations of the implementation of Article 37 of the Euratom Treaty dealing with the impact of nuclear installations on third countries.

RPII Chief Executive, Dr Ann McGarry, is a member of Committee 4 of the ICRP and is vice-chairman of the European Nuclear Regulator's Group (ENSREG). In September, the RPII hosted a meeting of Committee 4 of the ICRP in Dublin during which the work of the Committee was presented to an audience of national radiation protection experts.

The RPII maintains close contact with the two UK nuclear regulators, namely the Health and Safety Executive – Nuclear Directorate (HSE-ND) and the Environment Agency of England and Wales (EA). The RPII also maintains a Memorandum of Understanding with the French nuclear regulator, the Autorité de Sûreté Nucléaire (ASN). During 2008, formal meetings took place between the RPII and each of these organisations to exchange information and experience on a range of matters related to nuclear and radiation safety.

Through its Technical Co-operation Programme, the IAEA develops radiation protection standards and radioactivity measurement programmes in its Member States. The RPII contributes to this programme by providing experts to develop advisory literature, run training courses and provide guidance on radiation protection matters. During 2008, this involved working visits to Botswana, Ghana, Spain and Tanzania. In addition, under the EC Technical Assistance and Information Exchange programme a staff member provided training in Romania on the implementation of EU legislation on the monitoring of radioactivity in the environment.

Safety of Nuclear Facilities Abroad

Introduction

The RPII has a statutory responsibility to monitor developments in relation to nuclear safety and to advise Government in that regard. The RPII exercises these functions through liaison with nuclear regulators and visits to nuclear facilities abroad. The RPII also reviews the technical and scientific literature so that it is fully briefed on all international issues and their potential implications for Ireland.

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 liquid radioactive waste. The HASTs represent the major hazard at the site. The UK's 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 a final "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. As in the previous two years, the amount of liquid waste generated in 2008 was low due to ongoing problems with reprocessing. This meant that the reduction achieved in 2008 exceeded that required under the HSE-ND specification.

The decommissioning of redundant facilities and progress in reopening the THORP plant, which was closed following the detection of a major leak in 2005, are also matters of particular interest. In regard to the THORP plant, the HSE-ND gave consent to reopen it in January 2007 and Sellafield Ltd subsequently commenced a phased re-start of production in THORP. The phased approach involved spent fuel being passed to successive production steps only when the regulators were satisfied the previous step operated correctly. In the second half of 2008, the plant was again shut down for planned technical modifications.

As well as the ongoing difficulties with THORP, the continued unavailability of some of the evaporators at Sellafield meant that the planned schedule for reprocessing of Magnox spent fuel was delayed. Interruptions to the reprocessing of Magnox fuel are of concern in that the fuel already at Sellafield is stored under water and it may be susceptible to corrosion over time. The RPII receives regular updates on this issue from the UK nuclear regulators.

The RPII also continues to monitor the development of plans in the UK to build new nuclear power plants to replace those that are scheduled to close over the next 20 years. The RPII is following closely the pre-licensing procedures being applied that will decide which reactor designs are potentially licensable in the UK as well as the ongoing debate on the suitability of existing nuclear sites for the construction of new reactors.

Nuclear Incidents

Through its Memorandum of Understanding with HSE-ND and ongoing liaison with the 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. None of these had offsite consequences and, therefore, had no direct implications for Ireland. None of them was classified as higher than level 1 on the seven-point INES scale. A level 1 incident is the lowest point on this scale and is classified as an 'anomaly' or minor incident.

In addition to the two events notified as alerts on the ECURIE notification system, which were previously described, the RPII was also informed of a number of minor nuclear incidents in other countries through the IAEA's Nuclear Events Web Based System (NEWS). These included an environmental release of uranium-bearing effluents at the Société Auxiliaire du Tricastin (SOCATRI) nuclear facility located on the Tricastin nuclear site on the Rhône River in the south east of France, which was rated as INES Level 1.

Review Meeting of the Convention on Nuclear Safety

The IAEA's Convention on Nuclear Safety is the international convention which obliges all participating countries (Contracting Parties) 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, 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. The fourth Review Meeting took place in April 2008 in Vienna.



RPII staff participated in the Review Meeting by contributing to the preparation of Ireland's national report, reviewing and posing questions on other national reports, presenting Ireland's report at the Meeting and participating in the discussions. RPII Chief Executive, Dr McGarry, was appointed Vice President of the Review Meeting and chaired the open-ended working group that considered improvements to the review process, including provisions for continuity between Review Meetings, increased transparency of the review process and an expanded outreach programme.

During the peer-review of Ireland's report, the following were identified as representing good practice by Ireland: regular information exchanges with neighbouring nuclear regulators; publication (in different languages) of an emergency planning booklet; regular emergency exercises; conduction of a public survey on attitudes to government emergency planning; public on-line access to a comprehensive and modern radiation monitoring network and encouraging RPII staff to participate in international peer-review

activities. The review identified maintenance of skills and ensuring that the public is well informed on the nature of potential nuclear emergencies as challenges facing Ireland.

The Review Meeting concluded that a satisfactory level of overall safety and radiation protection exists at nuclear reactors worldwide. However, there was a cautionary warning that both industry and regulators must avoid complacency regarding safety. The need for greater openness and transparency by both operators and regulatory bodies was emphasised.

Corporate Support Services

Introduction

The Corporate Services Division encompasses all of the support services required to run the RPII. The work of Corporate Services Division represents a strategic area of action which aims to ensure that the RPII is appropriately resourced to operate efficiently and effectively, that governance and compliance infrastructure is robust and that appropriate management information is in place. Notable achievements for the year are listed below under the various section headings.

Finance

The RPII's income in 2008 was €7.009m made up of a grant of €3.876m for current purposes, a grant receivable of €1.148m for pension purposes as required under FRS 17, and earnings of €1.368m from licence charges and dosimetry, product certification, radon measurement and other services. €0.617m of capital grant was amortised in the year.

The RPII also received a capital grant of €0.800m for the upgrading and maintenance of its equipment. Expenditure for the year exceeded income by €0.071m and was funded from a surplus carried over from the previous year.

Prompt Payment 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 2008.

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 99.65% of all payment demands during 2008 were made within the prescribed timeframe. There were three late payments with a value in excess of €317 and these exceeded the due payment date by an average of 35 days. The total value of these late payments was €6050 and the penalty interest payments associated with these late payments amounted to €61.21. The late payments represented 0.35% of total supplier payments to suppliers in 2008.

Financial Services

During 2008, a major project was undertaken to centralise the financial management of the RPII's services and to implement a new financial management system to handle all financial transactions across the organisation. The system went live on 1st September and work to embed the new processes and procedures will continue during 2009.

Information Communication Technologies

In 2008, a key focus was on improving disaster recovery of IT systems. A centralised backup solution was installed to standardise backups across all servers. This new system increased the efficiency of backups, significantly reduced restore times and also reduced the management overhead.

Improvements were also made to the management of database systems with the centralisation of all databases systems onto a central database server. This resulted in more efficient management and easier recovery in the event of failure. Other improvements included the upgrading of data links between remote office locations and the use of these links to facilitate offsite backup of data.

Also in 2008, a project to link the RPII's voice and data systems to the National Emergency Communications Centre (NECC) was successfully completed, enhancing the RPII's capacity to support the National Emergency Plan for Nuclear Accidents.

Quality Customer Services

The RPII is committed to the provision of a high quality of service delivery to all of its customers across the full range of its activities. The RPII's Quality Customer Service (QCS) working group represents all four divisions of the RPII and assists in achieving improvements in the quality of service delivered.

In 2008, the RPII's QCS working group carried out a final review of the implementation of the actions identified in the 2006-2007 QCS Action Plan. Following this review, the group began development of an action plan for the period 2008-2010. This new action plan was developed alongside the strategic plan for the same period, allowing it to be fully aligned with strategic objectives.

In February 2008, a customer service survey was carried out with questionnaires being sent to 4000 customers. A response rate of 17% was achieved. This survey showed that "RPII customers generally value the service and quality of dealings with RPII staff". The survey also highlighted a growing demand for online services via the website. The survey can be viewed at www.rpii.ie.

Also, in 2008, a customer service training course was developed and delivered to all staff.

Records Management

A system was purchased towards the end of 2008 for the management of electronic records. This relatively simple software and scanning system provides for the capture and organised storage of records in an electronic form. Stored records can be retrieved using a number of criteria including word search. The implementation of this system will be carried out on a pilot basis with a view to making it available across the RPII in coming years.

Human Resources and Staffing

In 2008, the RPII was granted approval by the Department of Finance to recruit six additional staff and to convert a technical post to IT manager at Assistant Principal/Senior Scientific Officer grade. This staffing approval followed lengthy discussions with our parent department, the DEHLG, and addressed a long standing imbalance in the staff structure. HR immediately commenced implementation of these changes which involved internal competitions at all administrative grades. The impact of these changes has been improved customer service, greater efficiencies in administrative arrangements, an improved career structure for administrative and IT staff and elimination of the reliance on agency staff to meet administrative requirements.

Non-ionising Radiation

In March 2006, 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 should be extended to include aspects of non-ionising radiation and that RPII should be properly resourced to carry out this work. The new mandate for the RPII is to be set out in a Memorandum which is to be brought to Government by the Minister for the Environment, Heritage and Local Government. During 2007, RPII forwarded a report to the Minister for his consideration which sets out RPII's views on the appropriate mandate for RPII and includes an implementation plan covering the first three years of operation. During 2008, RPII staff and experts who assisted in preparation of the report made a presentation to senior officials of the DEHLG. Progress on the development of the second Memorandum to be brought to Government is ongoing but is taking longer than anticipated.

Health and Safety

The RPII operates a Safety Management System to the OHSAS 18001 standard. The goal for 2008 was to "raise staff awareness of general office safety". The impact of efforts made in 2008 in this regard was a reduction of the number of office safety infringements observed during safety inspections compared with 2007, indicating enhanced staff awareness. Other actions taken

in 2008 include the installation of a panic button to provide some back up for our receptionists, improved management of the fire register during fire drills, upgrade and integration of fire alarm systems between the RPII's two office buildings.

There were no "reportable accidents" or dangerous occurrences in 2008 however RPII staff were involved in two traffic accidents while on official business. No serious injuries resulted.

Equality

The RPII is committed to a policy of equal opportunity in all aspects of its activities. Particular attention is given to equality in recruitment, conditions of employment and access to promotion, training and career development. The RPII recognises that flexible working arrangements are an important component of equality policies and operates schemes such as flexitime, study leave, career breaks and work-sharing, subject to there being sufficient staff cover at all times to allow the Institute fulfil its statutory functions.

An audit was undertaken to assess the RPII's infrastructure in terms of compliance with the Disability Act 2005. As a result, the 2008 refit of new offices incorporated a ground floor meeting room and accessible facilities; these developments have significantly enhanced the accessibility of our office accommodation. Special funding was received from the DEHLG which supported development and testing of the RPII's website from the point of view of user accessibility.

Towards 2016

Two reports setting out the RPII's progress during 2008, in relation to its Action Plan under the National Agreement "Towards 2016", were submitted to the DEHLG, in March and December. Both reports were approved in full by the Department, and reflected the significant support that the RPII has shown, across a range of issues, for the Government's modernisation agenda.

Partnership

Workplace partnership continued within the RPII during 2008 with the Partnership Committee meeting on nine occasions. The aim of Partnership is to improve the work environment, productivity and service delivery within the RPII. The Partnership Committee provides a means of sharing information, consultation and problem solving. The Committee aims to achieve joint ownership of the process of change, by Management, staff, and Trade Union. All parties have an opportunity to influence the way things are done in the RPII. The issues dealt with during 2008 included:

- The integration of the PMDS and Human Resources systems;
- Review of the 2007 Climate Survey's Results;

- Review of staff survey from strategic plan development;
- Review of outside bandwidth arrangements;
- European mobility week;
- Team building;
- Environmental awareness (green) event;
- Internal Communications Audit;
- Matters raised by staff.

Accommodation

In early 2008, the RPII undertook a lease on new offices in Clonskeagh Square to meet the need for additional accommodation. These offices required complete refurbishment. The refurbishment work commenced in September and was completed in December. The refurbishments were tailored to improve accessibility, maximise energy efficiency and enhance fire safety and security.

Energy Efficiency

As part of the Partnership green energy initiative, in 2008, all office accommodation was assessed by energy experts to identify where energy savings could be made. A report was received outlining improvements to be made and a presentation on the findings will be made to all staff in early 2009. The findings of the report will be addressed during 2009.

Communications

One of the key strategic goals for the RPII is to provide information on radiation protection, in a readily accessible and understandable format, so that the public has the necessary information to protect themselves from the harmful effects of exposure to radiation. The information provided by the RPII must be scientifically based and accurate at all times and the RPII seeks to sustain its position as a trusted source of information to the public and professional audiences. A range of communication activities was undertaken during the year to meet this objective and to promote the work of the RPII through the media, events, advertising, the RPII website, Freefone Radon and a number of publications.

Media

The media plays a significant role in disseminating information and in reporting on radiological protection issues of public concern. Press releases were issued to coincide with the RPII's major events and media interest in RPII activities continued during the year with staff participating in over 40 television and radio programmes. This resulted in widespread coverage of activities, particularly in relation to radon. In 2008, the RPII was mentioned in 213 articles in local and national newspapers.

Events

During 2008, the RPII hosted a number of events including the launch of a report "Radiation doses received by the Irish population". The report was the first compilation of all national data on exposure to radiation in Ireland. The presentation was attended by over 50 individuals from a diverse range of technical backgrounds and received extensive media coverage.

In September, the RPII hosted a meeting of Committee 4 of the International Commission on Radiological Protection (ICRP). As part of the meeting, a seminar to explain the work of ICRP Committee 4 and to discuss more general radiation protection issues was held for people involved in working with radiation.

In November, a report "Radioactivity monitoring of the Irish environment 2007" was launched at the RPII to a group of customers and representatives of bodies the RPII works with.

As part of the RPII commitment to providing information on radiation protection, the RPII's scientific staff presented papers at approximately 40 conferences, seminars, public meetings and specialist courses.

Website

The RPII's website, www.rpii.ie, is a valuable source of key information. In 2008, over 53,000 people visited the website with the most popular sections being information on radon, publications, press releases, live gamma dose rate measurements and emergency planning information.

The plan to redevelop the website progressed during the year with a project to re-write the website content and improve its functionality in line with customer's expectations being undertaken. The content of the new website will be more accessible to both technical users and the general public. Also, the RPII invited tenders through the Government's eTenders website for the design and development of the new website and supply of a content management system. Following an evaluation process, which including presentations and face-to-face interviews, the contract was awarded in October. The new website will be the primary communications tool for the RPII.

Sponsorship

For the first time, the RPII sponsored a special award for the best project on ionising radiation at the BT Young Scientist & Technology Exhibition at the RDS in Dublin at the beginning of the year. The winning entry was from Mr Henrik Bruesecke, St Columba's Comprehensive School, Glenties, Co Donegal.

The RPII continued to provide financial support for a postgraduate research project entitled "Determination of the Resuspension Rate of Aerosol Particles from Human Body Surfaces for Post-Accident/

Incident Radiological Risk Assessment” being undertaken at NUI Galway. Following a release of radioactivity to the environment, the radioactive contamination can be inhaled directly, deposited on the body or deposited on the ground and buildings. This project is assessing the situation where individuals may be unwittingly contaminated and may spread this contamination to others via the process of resuspension from their skin, hair and clothing.

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

Organo, C., Fenton, D. (2008).

Radiological assessment of NORM industries in Ireland – radiation doses to workers and members of the public.

Colgan, P.A., Organo, C., Hone, C., Fenton, D. (2008).

Radiation doses received by the Irish population.

Fegan, M., Dowdall, A., Hanley, O., Hayden, E., Kelleher, K., Long, S., Smith, V., Somerville, S., Wong, J., Pollard, D. (2008).

Radioactivity monitoring of the Irish environment 2007.

Journal Articles & Conference Papers

Colgan, P. A. (2008).

Key strategic decisions in designing and implementing a measurement program for radon in homes.

Proceedings of the 8th International Symposium on the Natural Radiation Environment (NRE VIII), Buzios, Rio de Janeiro (Brazil), 07-12 October 2007. American Institute of Physics 1034: p. 131-136.

Colgan, P.A., McGarry, A. (2008).

Radon monitoring and control of radon exposure.

Proceedings of the 12th International Congress of the International Radiation Protection Association (IRPA 12), Buenos Aires, Argentina, 19-24 October 2008. www.irpa12.org.ar

Colgan, P.A.*, McLaughlin, J., Nieto, L.M. (2008).

Editorial.

Journal of Environmental Radioactivity, 99, p. 1519.

Curry, L., Murray, M., O’Colmáin, M., Pollard, D. (2008).

Radon in Irish show caves – personal monitoring data From 2001-2006.

Proceedings of the 8th International Symposium on the Natural Radiation Environment (NRE VIII), Buzios, Rio de Janeiro (Brazil), 07-12 October 2007. American Institute of Physics 1034:p. 161-164.

Hanley, O.*, Gutiérrez-Villanueva, J.L., Curry, L.*, Pollard, D.* (2008).

Assessment of the uncertainties in the Radiological Protection Institute of Ireland (RPII) radon measurements service.

Journal of Environmental Radioactivity, 99, p. 1578-1582.

Hone, C. (2008).

Fifty years of radiological protection: The CRPPH 50th anniversary commemorative review.

Journal of Radiological Protection, 28, (1), March 2008, p. 127-128.

Hone, C. (2008).

Visit by the Radiological Protection Institute of Ireland to the Wylfa nuclear power plant.

Journal of Radiological Protection, 28, (3), September 2008, p. 427-428.

Howett, D. (2008).

Review of radioactive waste in Ireland.

Proceedings of the 11th European ALARA Network Workshop “ALARA in Radioactive Waste Management” Athens, Greece 9-11 April 2008.

Inn, K.G.W., Hall, E., Woodward IV, J.T., Stewart, B., Pollanen, R., Selvig, L., Turner, S., Outola, I., Nour, S., Kurosaki, H., LaRosa, J., Schultz, M., Lin, Z., Yu, Z., McMahon, C.* (2008).

Use of thin collodion films to prevent recoil-ion contamination of alpha-spectrometry detectors.

Journal of Radioanalytical and Nuclear Chemistry, Vol. 276, (2) 2008, p. 385-390.

McGinnity, P., Smith, K.J., McMahon, C.A., Colgan, P.A. (2008).

Prompt simulation of the transfer of radioactivity in the Irish food chain following a nuclear accident

Proceedings of the International Conference on Radioecology and Environmental Radioactivity, Bergen, Norway, 15-20 June 2008. Norwegian Radiation Protection Authority.

Organo, C.*, Murphy, P. (2008).

A comparative study of the lognormal, gamma and beta modeling in radon mapping with recommendations regarding bias, sample sizes and the treatment of outliers.

Journal of Radiological Protection, 28, (3), September 2008, p. 293-302.

Organo, C., Colgan, P.A., Fenton, D., Synnott, H., Curry, L. (2008).

Occupational exposure to natural sources of ionising radiation in Ireland.

Proceedings of the 8th International Symposium on the Natural Radiation Environment (NRE VIII), Buzios, Rio de Janeiro (Brazil), 07-12 October 2007. American Institute of Physics 1034: p. 193-196.

* RPII staff in conjunction with other authors.

Our Governance

Corporate Governance

The Code of Practice for the Governance of State Bodies sets out the governance requirements for all commercial and non-commercial state bodies, including the RPII. During 2007, the Board approved a comprehensive Corporate Governance Manual covering all aspects of the governance of the RPII including the conduct of Board business, strategic and business planning, operational processes, risk management, audit and reporting, financial management and control and standards of behaviour. During 2008, additional procedures on the implementation of requirements in relation to budgeting, management of fixed assets and Board standing orders were developed and approved by the Audit Committee and subsequently by the Board for inclusion in the Corporate Governance Manual. Reviews of the Terms of Reference of the Audit Committee, of legislation relevant to RPII and of the Schedule of Matters reserved to the Board were also carried out during the year.

In addition to its review of progress against the strategic and business plans incorporated in its regular Board Meetings, in December, the Board held a half-day session dedicated to the review of the new strategy and discussion of future challenges.

Also during the year, in line with the recommendations of a review of the performance of the Board undertaken in 2006, training sessions were implemented for all newly appointed Board members to apprise them of the work of the RPII and of the governance requirements associated with Board membership.

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, in the case of the six members who were nominated for appointment to the Board by particular organisations, is the name of the respective nominating organisations.

Chairman

Professor Eugene Kennedy 8 (8)

Ms Nuala Ahern

(Appointed 28th May 2008) 3 (4)

Ms Fionnuala Barker

Irish Nuclear Medicine Association 8 (8)

Dr Patrick Connellan

(Retired 11th July 2008)
Dental Council 4 (4)

Dr Maurice Fitzgerald

(Appointed 11th July 2008)
Dental Council 2 (4)

Dr Éamann Breatnach

(Appointed 7th November 2008)
Medical Council 0 (1)

Mr James Fitzmaurice

8 (8)

Mr Patrick Gilligan

Association of Physical Scientists in Medicine 8 (8)

Dr Michael Hurley

(Resigned 31st May 2008)
Medical Council 0 (4)

Dr Kevin Kelleher

Health Service Executive 4 (8)

Dr Niall McEniff

Faculty of Radiologists,
Royal College of Surgeons Ireland 3 (8)

Ms Darina Muckian

7 (8)

Ms Adi Roche

7 (8)

Mr Francis J Turvey

7 (8)

The total figure for Board remuneration and expenses in 2008 was €101, 582.



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1 **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.

2 **Ms Fionnuala Barker**

Fionnuala 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.

3 **Dr Patrick Connellan**

Appointed to the Board in 1992, Dr Connellan is Chairman of the RPII's Audit Committee. He is a former Board member of the Postgraduate Medical and Dental Board and is currently Chairman, Continuing Dental Education Accreditation Committee of Postgraduate Medical and Dental Board. He was awarded a Fellowship of the International College of Dentists.



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4 **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.

5 **Mr James Fitzmaurice**

Appointed to the Board in 2002, Mr Fitzmaurice is Chairman of the RPII's Communications Advisory Committee. He is the Managing Director of the Bradan Group, which publishes the Public Sector Times and various local newspapers. Positions he has previously held include Chairman of the ISME; President of Bray Chamber of Commerce; and Chairman of the Irish e-Government Awards and Centres of Excellence. He has served on many small business task forces and committees and is currently a member of the Wicklow County Council's Strategic Policy Committee on Environment and Waste.

6 **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.

7 **Mr Francis J Turvey**

Appointed to the board in 2001, Mr Turvey is a former assistant Chief Executive Officer of the RPII. Since retirement, he has worked as a consulting engineer in the fields of radiological protection and nuclear safety.

He is a Chartered Engineer and Fellow of several professional organisations, including the Irish Academy of Engineering; the Institution of Engineers of Ireland; the Institute of Nuclear Engineers; and the Institute of Physics. He also holds a UK Board of Trade Certificate of Service as First Class Engineer in the Merchant Navy.

8 **Ms Adi Roche**

Appointed to the Board in 1997, Ms Roche is the founder of Chernobyl Children's Project International. For the past 16 years, she has worked to provide humanitarian aid to the children of Belarus, Western Russia and the Ukraine. Ms Roche is the Executive Director of the Chernobyl Children's Project.

9 **Dr Michael Hurley**

Appointed to the Board in 2005, Dr Hurley is a Consultant Radiologist in Cork University Hospital. He is a Board member of the Medical Council of Ireland and Chairman of the Medical Council's Medical Ionising Radiation Committee.

10 **Dr Niall McEniff**

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 Nuala Ahern (not pictured)

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 Ahern was a member of the European Parliament's Committee on Trade and Industry, Energy and Research for ten years and vice president of that committee from 1999-2004.

Dr Maurice Fitzgerald (not pictured)

Dr Maurice 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.

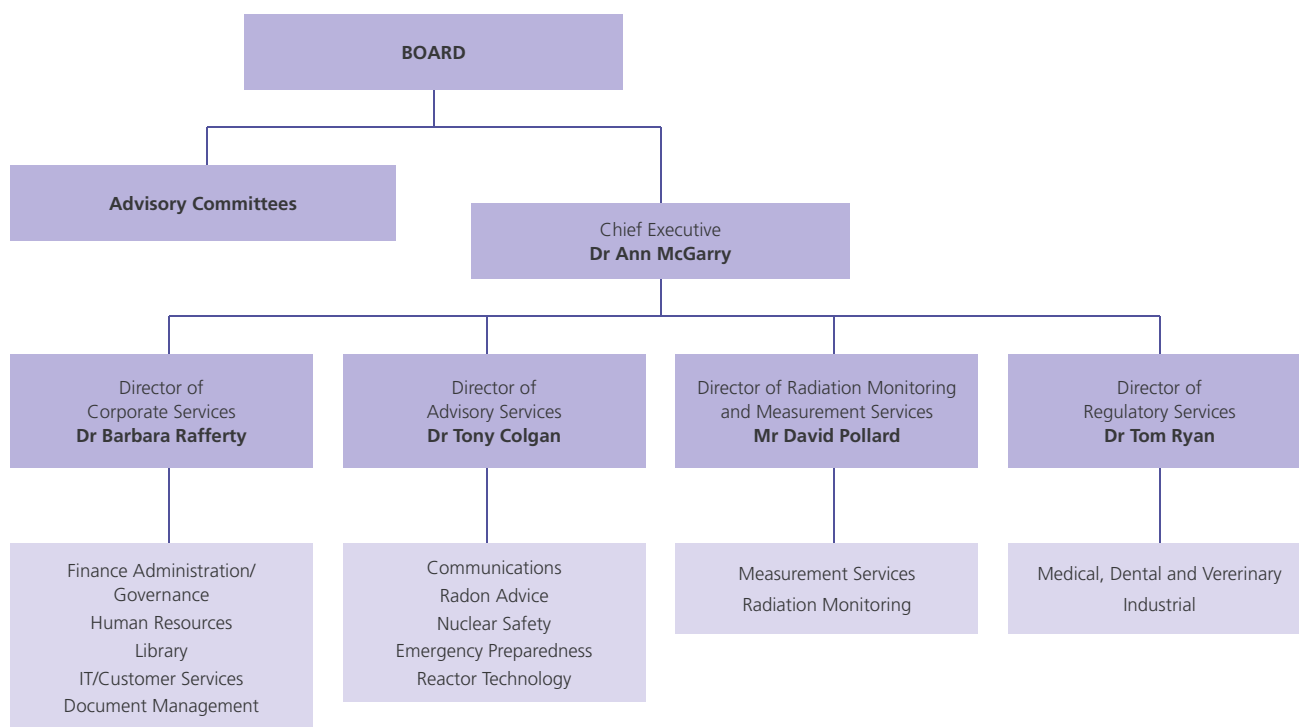
Dr Éamann Breatnach (not pictured)

Dr Breatnach, the nominee of the Medical Council, 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 Kevin Kelleher (not pictured)

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.

Staff Structure



Dr Ann McGarry
Chief Executive

Mr David Pollard
Director of Radiation
Monitoring and
Measurement Services

Dr Barbara Rafferty
Director of
Corporate Services

Dr Tony Colgan
Director of Advisory Services

Dr Tom Ryan
Director of
Regulatory Services

The RPII Team of 2008

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

Advisory Committees

Environmental Radiation Advisory Committee

This Committee provides advice to the Board on radioactivity in the environment.

Chairperson Vacant

Dr Tony Colgan

Mr David Fenton

Mr Dermot Howett

Prof Ian R. McAulay

Dr Ann McGarry

Prof James P. McLaughlin

Prof Peter I Mitchell

Ms Darina Muckian

Dr Geraldine O'Reilly

Mr David Pollard

Dr Barbara Rafferty

Prof William Reville

Ms Adi Roche

Prof Philip Walton

Scientific Secretary Ms Stephanie Long

Advisory Committees

Medical Radiation Advisory Committee

This Committee advises the Board on the uses of ionising radiation in medicine and dentistry.

Chairman Dr George Duffy

Ms Fionnuala Barker

Dr David Clarke

Ms Susan Dennen

Dr Stephen Fennell

Mr Christopher Hone

Dr Pat Kenny

Dr Brendan McClean

Dr Ann McGarry

Dr Lesley Malone

Ms. Kate Matthews

Dr Michael Moriarty

Dr Geraldine O'Reilly

Prof Wil van der Putten

Dr Tom Ryan

Dr Stephen Skehan

Scientific Secretary Ms Noeleen Cunningham

Communications Advisory Committee

This Committee provides advice relating to communication with the public.

Chairman Mr James Fitzmaurice

Ms Fionnuala Barker

Dr Tony Colgan

Ms Marie Kelly

Dr Ann McGarry

Audit Committee

The audit committee supports the Board in ensuring the integrity of internal financial control, effective risk management and sound corporate governance.

Chairman Mr Patrick Gilligan (*Appointed September 2008*)

Prof Ciarán Ó hÓgartaigh (*Appointed December 2008*)

Mr James Fitzmaurice

Ms Darina Muckian (*Appointed December 2008*)

Mr Patrick Connellan (*Retired May 2008*)

Financial Statements

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Report of the Comptroller and Auditor General

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 31st December 2008 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.

Respective Responsibilities of the Institute and the Comptroller and Auditor General

The Institute is responsible for preparing the financial statements in accordance with the Radiological Protection Act, 1991, and for ensuring the regularity of transactions. The Institute prepares the financial statements in accordance with Generally Accepted Accounting Practice in Ireland. The accounting responsibilities of the Members of the Institute are set out in the Statement of Responsibilities of the Institute.

My responsibility is to audit the financial statements in accordance with relevant legal and regulatory requirements and International Standards on Auditing (UK and Ireland).

I report my opinion as to whether the financial statements give a true and fair view, in accordance with Generally Accepted Accounting Practice in Ireland. I also report whether in my opinion proper books of account have been kept. In addition, I state whether the financial statements are in agreement with the books of account.

I report any material instance where moneys have not been applied for the purposes intended or where the transactions do not conform to the authorities governing them.

I also report if I have not obtained all the information and explanations necessary for the purposes of my audit.

I review whether the Statement on Internal Financial Control reflects the Institute's compliance with the Code of Practice for the Governance of State Bodies and report any material instance where it does not do so, or if the statement is misleading or inconsistent with other information of which I am aware from my audit of the financial statements. I am not required to consider whether the Statement on Internal Financial Control covers all financial risks and controls, or to form an opinion on the effectiveness of the risk and control procedures.

I read other information contained in the Annual Report, and consider whether it is consistent with the audited financial statements. I consider the implications for my report if I become aware of any apparent misstatements or material inconsistencies with the financial statements.

Basis of Audit Opinion

In the exercise of my function as Comptroller and Auditor General, I conducted my audit of the financial statements in accordance with International Standards on Auditing (UK and Ireland) issued by the Auditing Practices Board and by reference to the special considerations which attach to State bodies in relation to their management and operation. An audit includes examination, on a test basis, of evidence relevant to the amounts and disclosures and regularity of the financial transactions included in the financial statements. It also includes an assessment of the significant estimates and judgements made in the preparation of the financial statements, and of whether the accounting policies are appropriate to the Institute's circumstances, consistently applied and adequately disclosed.

I planned and performed my audit so as to obtain all the information and explanations that I considered necessary in order to provide me with sufficient evidence to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or other irregularity or error. In forming my opinion I also evaluated the overall adequacy of the presentation of information in the financial statements.

Opinion

In my opinion, the financial statements give a true and fair view, in accordance with Generally Accepted Accounting Practice in Ireland, of the state of the Institute's affairs at 31st December 2008 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 books of account.



Gerard Smyth

for and on behalf of the Comptroller and Auditor General

30th September 2009

Statement on Internal 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.

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

Key Control Procedures

The Board has taken steps to ensure an appropriate control environment by

- clearly defining management responsibilities;
- establishing formal procedures for reporting significant control failures and ensuring appropriate corrective action.

The Board established formal processes to identify and evaluate business risks by

- identifying the nature, extent and financial implications of risks facing the body including the extent and categories which it regards as acceptable;
- assessing the likelihood of identified risks occurring;
- assessing the body's ability to manage and mitigate the risks that do occur.

The system of internal financial control is based on a framework of regular management information, administrative procedures including segregation of duties, and a system of delegation and accountability. In particular it includes:

- a comprehensive budgeting system with an annual budget which is reviewed and agreed by the Board;
- regular reviews by the Board of bi-monthly management accounts and annual financial reports which indicate financial performance against forecasts;
- clearly defined capital investment control guidelines.

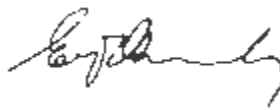
The Board's monitoring and review of the effectiveness of the system of internal financial control is informed by the work of the internal auditor, the Audit Committee which oversees the work of the internal auditor, the executive managers within the Radiological Protection Institute of Ireland who have responsibility for the development and maintenance of the financial control framework, and comments made by the Comptroller and Auditor General in his management letter or other reports.

The Radiological Protection Institute of Ireland established an internal audit function which operates in accordance with the Framework Code of Best Practice set out in the Code of Practice on the Governance of State Bodies. The work of internal audit is informed by analysis of the risk to which the body is exposed, and annual internal audit plans are based on this analysis. The analysis of risk and the internal audit plans are endorsed by the Audit Committee and approved by the Board. The Board is provided with an annual report of internal audit activity by the Internal Auditor. The report includes the Internal Auditor's opinion on the adequacy and effectiveness of the system of internal financial control.

Annual Review of Controls

I confirm that in the year ended 31st December 2008 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

30th September 2009

Statement of Responsibilities of the Institute

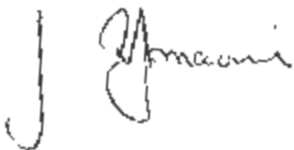
Section 16 (1) of the Radiological Protection Act, 1991, requires the Institute to prepare financial statements in such form as may be approved by the Minister for the Environment, Heritage and Local Government with the concurrence of the Minister for Finance. In preparing these financial statements,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



James Fitzmaurice
Board Member

30th September 2009

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. 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 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 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

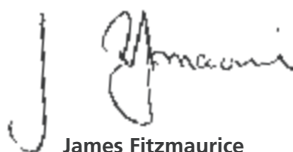
for the year ended 31st December 2008

2007 €		2008 €
	Income	
3,971,000	Oireachtas Grant	4,676,000
1,415,908	Net Deferred Funding for Pensions (Note 7 b)	1,147,666
147,972	Transfer to Capital Account (Note 2)	-183,135
5,534,880		5,640,531
635,084	Dosimetry & Calibration Service	635,937
179,359	Radon Measurement Service	154,969
290,581	Radiation Monitoring Service	295,672
159,288	Regulatory Service	261,716
17,312	Miscellaneous/Contract Income	20,302
1,281,624		1,368,595
6,816,504		7,009,126
	Expenditure	
3,102,633	Salaries (Note 3)	3,221,717
1,411,115	Pension (Note 7c)	1,398,173
109,014	Dosimetry & Calibration Service	99,115
37,096	Radon Measurement Service	51,205
134,887	Radiation Monitoring Service	176,146
114,285	Regulatory Service	89,185
179,809	Communications	155,716
77,948	Nuclear Safety	81,881
51,164	Library & Document Management	151,471
458,577	Accommodation & Insurance	568,953
177,664	Travel & Subsistence	159,479
176,605	Recruitment & Training	95,734
175,459	MIS, IT & Customer Service	61,043
93,010	Postage, Phone & Office Supplies	83,068
12,500	Audit Fees	12,250
63,633	Professional Fees & Miscellaneous	58,252
0	Bad Debts	0
547,972	Depreciation	616,865
6,923,372		7,080,253
-106,868	Surplus/(Deficit) for Year	-71,127
787,633	Balance as at 1st January	680,765
680,765	Balance as at 31st December	609,638

The Statement of Accounting Policies and Notes 1 to 11 form part of these Financial Statements.



Prof Eugene Kennedy
Chairman



James Fitzmaurice
Board Member

30th September 2009

Statement of Total Recognised Gains and Losses

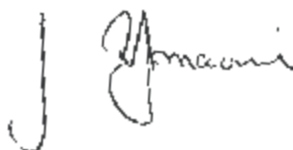
for the year ended 31st December 2008

2007 €		Notes	2008 €
-106,868	Surplus/(Deficit) for year		-71,127
-75,000	Experience (Losses)/Gains on pension scheme liabilities		430,000
2,280,000	Change in assumptions underlying the present value of pension scheme liabilities		-1,398,000
2,205,000	Actuarial (Loss)/Gain on Pension Liabilities	7f	-968,000
-2,205,000	Adjustments to Deferred Pension Funding		968,000
-106,868	Total recognised gain/(loss) for the year		-71,127

The Statement of Accounting Policies and Notes 1 to 11 form part of these Financial Statements.



Prof Eugene Kennedy
Chairman



James Fitzmaurice
Board Member

30th September 2009

Balance Sheet

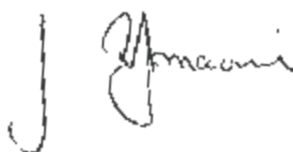
as at 31st December 2008

2007 €		Notes	2008 €
1,610,625	Fixed Assets	1	2,021,883
	Current Assets		
851,287	Cash on Hand & at Bank		1,123,993
475,458	Debtors	8	291,700
1,326,746			1,415,692
	Creditors – amounts falling due within one year		
295,129	Creditors	9	428,090
231,973	Capital Grant in Advance	10	3,850
118,879	Income in Advance		374,114
645,981			806,055
680,765	Net Current Assets		609,638
2,291,390	Total Assets Less Current Liabilities		2,631,521
16,811,654	Deferred Pension Funding	7d	17,191,147
-16,811,654	Pension Liability	7e	-17,191,147
2,291,390	Net Assets		2,631,521
	Financed by:		
680,765	Income and Expenditure Account		609,638
1,610,625	Capital Account	2	2,021,883
2,291,390			2,631,521

The Statement of Accounting Policies and Notes 1 to 11 form part of these Financial Statements.



Prof Eugene Kennedy
Chairman



James Fitzmaurice
Board Member

30th September 2009

Notes to the Financial Statements

for the year ended 31st December 2008

1. Fixed Assets

	Leasehold Improvements €	Office and Laboratory Furniture and Equipment €	Total €
Cost			
At 1st January 2008	788,301	5,827,260	6,615,561
Additions	0	1,028,123	1,028,123
Disposals	0	-67,466	-67,466
At 31st December 2008	788,301	6,787,917	7,576,218

Depreciation

At 1st January 2008	506,547	4,498,389	5,004,936
Charge for year	25,618	591,247	616,865
On disposals	0	-67,466	-67,466
At 31st December 2008	532,167	5,022,170	5,554,335

Net Book Value at

31st December 2007	281,754	1,328,871	1,610,625
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Net Book Value at

31st December 2008	256,136	1,765,747	2,021,883
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During 2008, the Institute reviewed its Register of Fixed Assets and removed items originally costing €67,466 which were no longer in use.

2. Capital Account

	2008 €	2008 €	2007 €	2007 €
Balance at 1st January 2008		1,610,625		1,007,520
Capital Grant Received	800,000		400,000	
Less Grant Amortised in the Year	-616,865		-547,972	
Transfer from (to) Income & Expenditure Account		183,135		-147,972
Transfer from Capital Grant in Advance		228,123		751,077
Balance at 31st December 2008		2,021,883		1,610,625

3. Salaries and Pensions

	2008 €	2007 €
Gross Salaries	3,079,559	2,973,695
Employers P.R.S.I.	142,158	128,938
	3,221,717	3,102,633

The average number of full-time persons employed, excluding Board members, in the financial year was 46 (2007 – 46).

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 €70,000 on the basis of current rental rates, and comprise rental payments on a 20 year leasehold interest commencing on 25th January 2008, with a break clause on 1st October 2018. The rent is subject to review at five-yearly intervals. The rent for the full area amounts to €140,000 per annum, but this is abated to €70,000 per annum as the RPII does not gain possession of the first floor until 1st February 2009. This additional space will be sub-let for the first year at a rent of €60,000 per annum.

5. Capital Commitments

The value of capital commitments authorised at 31st December 2008 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.

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 2008. 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 31/12/2008	At year-end 31/12/2007	At year-end 31/12/2006
<i>Rate of increase in pensionable salaries</i>			
Discount rate	5.60%	5.50%	4.70%
Inflation assumption	2.00%	2.50%	2.25%
Rate of increase in pensionable salaries	3.50%	4.00%	4.00%
Rate of increase of pensions in payment	3.50%	4.00%	4.00%

b. Net Deferred Funding for Pensions in Year

	Year to 31/12/2008 €'000s	Year to 31/12/2007 €'000s	Year to 31/12/2006 €'000s
<i>Funding Recoverable in respect of Current Year</i>			
Pension Costs	1,598	1,604	1,382
State Grant Applied to Pay Pensions	-450	-188	-177
	1,148	1,416	1,205

c. Analysis of Total Pension Costs Charged to Expenditure

	Year to 31/12/2008 €'000s	Year to 31/12/2007 €'000s	Year to 31/12/2006 €'000s
Current Service Cost	668	763	792
Interest Cost	930	841	590
Employee Contributions	-200	-193	-203
Past Service Cost	—	—	—
Curtailment Cost	—	—	—
Settlement Cost	—	—	—
Net return	1,398	1,411	1,179

7. Pensions *(continued)*

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 2008 amount to €17.191m (2007: €16.803m).

e. Movement in Net Pension Liability During the Financial Year

	Year to 31/12/2008 €'000s	Year to 31/12/2007 €'000s	Year to 31/12/2006 €'000s
Net Pension Liability at 1st January	16,812	17,601	13,577
Current Service Cost	668	763	792
Interest Cost	930	841	590
Benefits paid in year, net of staff contributions	-251	-197	-177
Actuarial (gains)/losses on liabilities *	-968	-2,205	2,819
Past Service Costs	-	-	-
Curtailments	-	-	-
Settlements	-	-	-
Net Pension Liability at 31st December	17,191	16,803	17,601

* includes impact of changes to the assumptions.

f. History of Experience Gains and Losses

	Year to 31/12/2008 €'000s	Year to 31/12/2007 €'000s	Year to 31/12/2006 €'000s
Experience (gains)/losses on scheme liabilities amount (€'000)	430	-75	3,000
As a percentage of the present value of scheme liabilities	2.50%	-0.40%	17.00%
Total actuarial (gains)/losses recognised in STRGL (€'000)	-968	-2,205	2,819
As a percentage of the present value of scheme liabilities	-5.70%	-13.10%	16.00%
Cumulative amount of (gains)/losses recognised in STRGL ^	2,377	3,345	5,550

^ 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 show the life expectancy for members attaining age 65 in 2009, 2029 and 2049.

Year attaining age 65	2009	2029	2049
Life expectancy – Male	86.7	89.6	91.5
Life expectancy – Female	88.3	90.6	92.4

8. Debtors

	2008 €	2007 €
Debtors for Services	170,653	225,552
Bad Debts Provision	-6,311	-6,797
Prepayments	127,358	256,703
	291,700	475,458

9. Creditors

	2008 €	2007 €
Accruals	418,444	284,884
Collector General	9,646	10,245
	428,090	295,129

10. Capital Grant in Advance

	2008 €	2007 €
Opening Balance at 1st January	231,973	983,050
Transfer to Capital Account	-228,123	-751,077
Balance at 31st December	3,850	231,973
<i>This figure comprises</i>		
Capital Expenditure	-1,028,123	-1,151,077
Grant Received	800,000	400,000
	-228,123	-751,077

11. Approval of Financial Statements

The financial statements were approved by the Board on 30th September 2009.

Notes



Radiological Protection Institute of Ireland

An Institiúid Éireannach um Chosaint Raideolaíoch

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