

An Overview of the International Conference on Occupational Radiation Protection

Enhancing the Protection of Workers - Gaps, Challenges and Developments

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**Regional IRPA Congress
Buenos Aires 12 to 17 April 2015**



IAEA

International Atomic Energy Agency

Second International Conference of Occupational Radiation Protection

International Conference on Occupational Radiation Protection: Enhancing the Protection of Workers — Gaps, Challenges and Developments

1–5 December 2014
Vienna, Austria



Organized by the
 **IAEA**
International Atomic Energy Agency

Co-sponsored by the
 **ILO**
International Labour Organization

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In cooperation with:
European Commission (EC)
International Commission on Radiological Protection (ICRP)
International Committee for Non-Destructive Testing (ICNDT)
International Mining & Minerals Association (IMMA)
International Organisation of Employers (IOE)
International Radiation Protection Association (IRPA)
International Organization for Standardization (ISO)
International Society of Radiology (ISR)
International Society of Radiographers and Radiological Technologists (ISRTT)
International Trade Union Confederation (ITUC)
OECD - Nuclear Energy Agency (OECD/NEA)
Pan American Health Organization (PAHO)
United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR)
World Health Organization (WHO)



CONFERENCE SECRETARIAT

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ORP is Important!

- **Over 23 million monitored workers worldwide**
 - 860,000 in the nuclear industry
 - 870,000 in industry
 - 3.5 million in medical area
 - numbers continue to increase
- **Potential for overexposures exists**
- **Strong framework for occupational safety worldwide**
 - occupational radiation protection is an integral component of workplace safety



Background - 1



- First International Conference on Occupational Radiation Protection - Geneva 2002
- International Action Plan on Occupational Radiation Protection (IAPORP), led by IAEA and ILO, supported by other organizations

Background - 2

IAPORP approved by IAEA Board of Governors in Sep. 2003

- 14 actions
- Implemented more than ten years
- Review and oversight by a Steering Committee



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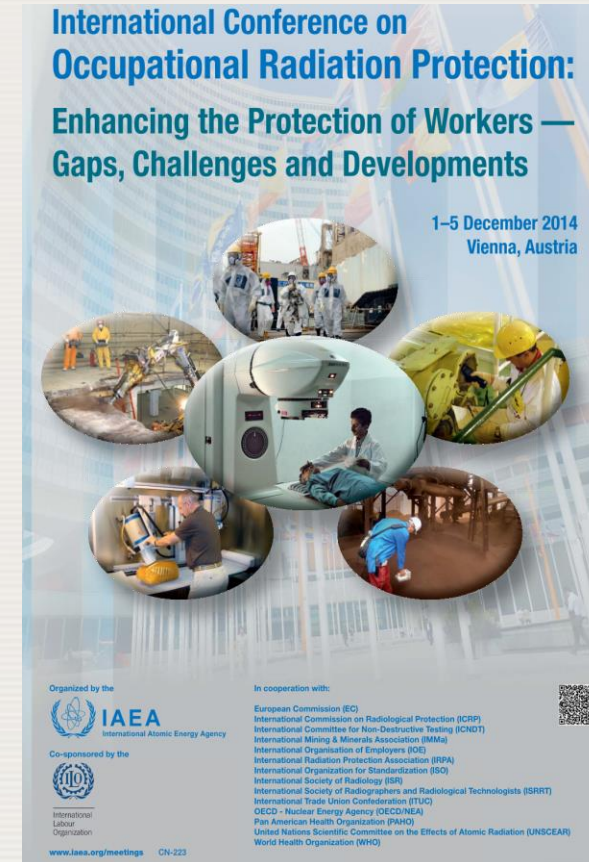


Conference Objectives

- To exchange **information and experience** in the field of occupational radiation protection
- To review **advances, challenges and opportunities** since the first conference on this topic
- To identify areas for **future improvement**

Conference Participation

- 471 Participants
 - 79 Member States
 - 21 International Organisations / Associations
 - 159 from developing countries
- ~ 100 invited speakers / chairpersons
- 127 Contributed Papers
- 82 Posters
- 20 Exhibitors



Conference Participation



Programme Structure

- **Opening Session**
 - Keynote address from Conference President
- **Briefing Session**
 - International Organizations presenting their activities in ORP and main challenges
 - Synthesis of IAEA Action Plan
- **12 Plenary Sessions**
 - Opened with a topic keynote lecture
 - 3 to 4 invited lectures
 - Summary of contributing papers
- **4 Round Tables + Young Professionals Round Table**
- **Closing Ceremony**
 - Summary of conclusions
 - Call for actions



• **Posters**

Overarching Issues - 1

- **New ICRP Recommendations**, notably
 - 103 – 2007 Recommendations of ICRP
 - 118 – ICRP Statement on Tissue Reactions – new recommended equivalent dose limit of the lens of the eye
 - 126 – Protection against Radon Exposure
- **Revision of the International Basic Safety Standards**
 - IAEA (General Safety Requirements Part 3 - 2014)
 - Some new issues, some reinforced issues
- **New IAEA Safety Standards** notably
 - Safety Guide on Occupational Radiation Protection

Overarching Issues - 2

- **Implementation of the recent changes in ICRP recommendations and International Basic Safety Standards**, notably
 - Planned / existing / emergency exposure situations
 - New occupational dose limit for the lens of the eye
 - Occupational exposure to NORM
 - New radon dose coefficients
- **Developing countries**
 - Specific issues in implementing ORP: regulatory infrastructures, financial means, education and training,...
- **Itinerant workers**
 - Monitoring and recording of individual doses
 - Training and qualifications

Overarching Issues - 3

- **Medical field**
 - Increasing number of exposed workers
 - Monitoring of staff dose
 - Education and training
- **Nuclear Power Plants**
 - New build – partly in currently non-nuclear power countries
 - Decommissioning: RP together with industrial safety issues
- **Emergency situations**
 - Approaches, measures and actions for radiation protection of emergency workers and first responders



Naturally Occurring Radioactive Materials (NORM) - 1

- Industries involving NORM have been identified and characterised, but now need to implement a **proportionate system of control**
- Planned Exposure Situations -v- Existing Exposure Situations has caused confusion and delay. However, **graded controls are required for both**
- Need to consider the **application of optimisation in practice**, need **realistic dose estimates** for NORM workers using workplace measurements, not models that overestimate exposures.



Naturally Occurring Radioactive Materials (NORM) - 2

- More guidance is required on **Dose Constraints and Reference Levels** – for NORM industries in practice.
 - the use of reference level instead of action levels requires also a change of philosophy and in protective measures
- **Industry specific** approach essential.
- Management of **residues/wastes** – re-use, storage, disposal
- More emphasis is still needed on **awareness and training**



IRPA Regional Congress, Buenos Aires
12-17 April 2015



Cosmic Radiation

Aircrew exposure

- Exposures can be well characterised.
- Individual and collective occupational exposures are **significant**, and are **increasing**
- **Scope for optimisation is limited** (work planning, flight planning, optimization en route) and not easy to implement (issues notably in terms of cost, human factors, feasibility)
- Monitoring of couriers?
- A future issue to be followed and analysed



ORP in Nuclear Fuel Cycle Facilities - 1

- **Operating NPP's**
 - Practical/structured implementation of ALARA associated with networking and sharing of experience => decrease of occupational exposure
- **Design stage of NPP's**
 - from "a posteriori" to "a priori" approach towards radiation protection
 - Building for 40 years of operation : several generations of workers
 - Will save money, time and exposure

ORP in Nuclear Fuel Cycle Facilities - 2

- **New nuclear countries**

- All has to be created: training, dosimetry services, regulations, inspection, operator RP programmes,...
- Specificity of regulatory bodies with staff from many countries

- **Decommissioning**

- Specificities for ORP
- Need to share experience (within commercial restriction)
- Need to improve knowledge maintenance (esp. on concepts and procedures)
- Challenge to retain an appropriate level of awareness on radiation related risks

ORP in Nuclear Fuel Cycle Facilities - 3

- **Reprocessing plant (specificity of Sellafield)**
 - Wide range of different processes
 - Issue of legacy: need to learn from this experience to question what we will leave to the next generation
 - Judgement of ALARA is subjective (individuals perception of risk)
 - A flexible approach and a range of different techniques are needed to deliver risk reduction.



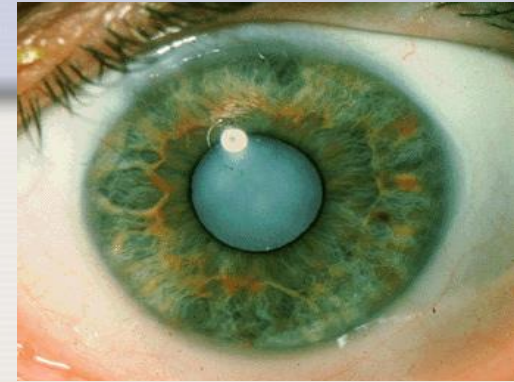
Specific Challenges - 1

- **Specific issue of vehicle scanning**
 - Install appropriate information panels everywhere x-ray scanning is performed
 - Develop x-ray scanning certificates to avoid repetitive scanning and to accelerate the x-ray scanning process
 - Implement internationally recognised x-ray scanning procedures
 - Improve education of drivers, customs officers and x-ray scanning operators on the functioning and risks of x-ray scanning

Specific Challenges - 2

- **Dose Limit to the Lens of the Eye**

- Range of optimization «tools» and their effectiveness reasonably known in the medical field
- Lack of information on distribution of doses in other work situations
 - industrial radiography
 - veterinary medicine (especially on site)
 - decommissioning operations
- Need improved dosimetry



Future Priorities - 1

1. Enhancing training and education
2. Improving safety culture
3. Developing young professionals in radiation protection, particularly for developing nations
4. Implementing the existing international safety standards
5. Developing and implementing new international guidance



Future Priorities - 2

6. Promoting exchange of operating experience
7. Convening an appropriate international forum to exchange additional information and analysis of worker protection in different exposure situations
8. Applying the graded approach of the BSS in protecting workers against exposures to NORM.
9. Enhancing assistance to Member States with less developed programs for occupational radiation protection to support practical implementation of international safety standards

Second International Conference of Occupational Radiation Protection

- All the presentations and contributed papers can be downloaded from the link:

<http://www-ns.iaea.org/tech-areas/communication-networks/orpnet/news/cn223-programme.asp>

Thank you!

