IAEA OCCUPATIONAL RADIATION PROTECTION ACTIVITIES OF INTEREST TO ISOE

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Dr. MRABIT, Khammar
Head, Radiation Monitoring & Protection Services Section
Division of Radiation and Waste Safety
Department of Nuclear Safety
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BACKGROUND
IAEA RADIATION SAFETY FUNCTIONS

IAEA FUNCTIONS IN RADIATION SAFETY

- to facilitate and service international conventions and other undertakings
- to establish standards of radiation safety
- to provide for the application of international standards
INTERNATIONAL RADIATION SAFETY REGIME

✓ BINDING CONVENTIONS
✓ INTERNATIONAL STANDARDS
✓ PROVISIONS FOR APPLICATIONS
INTERNATIONAL SAFETY REGIME

✓ BINDING CONVENTIONS

✓ INTERNATIONAL STANDARDS

✓ PROVISIONS FOR APPLICATIONS
Article 15. Radiation protection:

......shall take the appropriate steps to ensure that in all operational states the radiation exposure to the workers and the public caused by a nuclear installation shall be kept as low as reasonably achievable and that no individual shall be exposed to radiation doses which exceed prescribed national dose limits.
INTERNATIONAL SAFETY REGIME

 ✓ BINDING CONVENTIONS

 ✓ INTERNATIONAL STANDARDS

 ✓ PROVISIONS FOR APPLICATIONS
IAEA SAFETY REPORTS

- IAEA Safety Reports Series
  - provide illustrative and technical ways of ensuring safety and fostering information exchange
INTERNATIONAL SAFETY REGIME

- BINDING CONVENTIONS

- INTERNATIONAL STANDARDS

- PROVISIONS FOR APPLICATIONS
APPLICATION of RADIATION SAFETY STANDARDS

INTERNATIONAL MECHANISMS FOR APPLYING STANDARDS

- Rendering RADIATION SAFETY SERVICES
- Providing TECHNICAL COOPERATION
- Fostering INFORMATION EXCHANGE
- Promoting EDUCATION & TRAINING
- Coordinating RESEARCH & DEVELOPMENT
PROVIDING ASSISTANCE

• > 80 Technical Co-operation Action Plans;
• 80 Country Radiation & Waste Profiles;
• > 30 peer review missions.
• Services are available on request;

• Services/Appraisals for Member States.
FOSTERING INFORMATION EXCHANGE

- 6 Major meetings; and
- 44 Advisory meetings on the application of radiation safety standards.
PROMOTING EDUCATION AND TRAINING

- > 45 Educational and training courses on radiation safety.
- > 1500 Participants.
SAFETY GUIDES, REPORTS & OTHER ACTIVITIES
SAFETY GUIDES

- ORPGUIDE
  - CD-ROM released end of 2000
- Radiation Protection and Radioactive Waste Management in the Operation of Nuclear Power Plants
  - Expected to be published in December 2002
- Design Aspects of Radiation Protection for Nuclear Power Plants
  - Draft to SS Committees in December 2002
SAFETY REPORTS

- **Optimization of Radiation Protection in the Control of Occupational Exposure**
  - Published early 2002, being translated into all IAEA languages

- **Occupational Protection in the Decommissioning of Nuclear Facilities**
  - Draft available

- **Safety Report on Work Management Issues Related to the Use of Contractors and Itinerant Workers** (advanced draft available)
OTHER ACTIVITIES

- Development guidance for decision aiding on the probability of causation from occupational exposure
  - Informal IAEA/ILO/WHO meeting held December 2000, TCM planned for 2003

- RADIOR in English on the IAEA Web site

- ALARA training material in English and Russian
  - available on CD-ROM
ALARA COURSES 1 AND 2

Course material on CD-ROM - in English and Russian

- Slides - PowerPoint file
- Lecturers help - Word file
- Reference papers - Word files
- Reference papers on examples of ALARA implementation - Word files
Current & Future Activities for Harmonization of Radiological Quantities

External Exposure

Internal Exposure

Excreta Monitoring

Whole Body Counter

Breath Monitoring

Dose Calculation

\( \gamma + \eta \)

\( \beta + \) Extremity

2001 2002 2003 2004 2005 2006
ORPAS

OCCUPATIONAL RADIATION PROTECTION APPRAISAL SERVICE.
Objectives:

- Provide objective assessment of the national occupational radiation protection prog.
- Identify and disseminate best practices.
- Promote self-assessment.
- Identify improvements and make recommendations for their implementation.

The first ORPAS mission - including Krsko NPP - Slovenia in July 2001
TECHNICAL CO-OPERATION PROJECTS
Enhancing occupational radiation protection in NPPs

- Project will continue in 2003-2004
- New task: Self-assessment of occupational radiation protection in NPPs
Regional TC project for East Asia

Improving occupational radiation protection in NPPs

- ALARA training material available
- ALARA action plan adopted for designated NPPs; results being evaluated
  - recognized good ALARA practices will be disseminated
- Self-assessment will be introduced
Countries (since 2001) participating in the Model Project on Upgrading Radiation Protection Infrastructure

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AREAS COVERED BY THE MODEL PROJECTS

- Legislation and regulations.
- Regulatory Authority.
- Notification, Authorization and Control.
- Inventory of radiation sources and installations.
- Occupational Exposure Control.
- Medical Exposure Control.
- Public Exposure Control.
- Emergency Preparedness & Response.
32 peer review missions in 1999-2001:

Status end 2001:

- 80% have an operational national programme for individual monitoring
- 60% have an operational national programme for workplace monitoring
INTERNATIONAL CONFERENCE IN 2002

INTERNATIONAL CONFERENCE ON

OCCUPATIONAL RADIATION PROTECTION:
PROTECTING WORKERS AGAINST EXPOSURE TO IONIZING RADIATION

hosted by the Government of Switzerland in Geneva, 26-30 August 2002
PARTICIPATION

- 328 participants
- 72 countries represented
- 33 participants from 12 organizations
- 71 papers presented as posters (out of 122 contributed papers)
TOPICAL SESSIONS

- Radiation risks in the workplace in perspective
- Infrastructure development
- Implementation of Basic Safety Standards
- Monitoring
- ORP in medicine
- ORP in workplaces involving natural radiation
- ORP in industrial and research facilities
- ORP in nuclear facilities
- Probability of causation of occupational harm due to radiation exposure
ROUND TABLE SESSIONS

• Is the co-operation between regulators, employers and workers achieving optimum ORP?

• Has the continued improvement in radiation protection standards gone far enough in comparison with standards for other hazards?

• Can control of occupational exposure to natural sources be made compatible with controls of occupational exposure to artificial radiation?
What are the main problems in operational implementation of radiation protection standards?

Is there a need for a major change in ICRP recommendations involving occupational exposure?
OCCUPATIONAL EXPOSURE IN PERSPECTIVE

● UNSCEAR underestimates the number of exposed workers - 10 million underground workers in China
● International standards are satisfactory
● Risks are comparable to those from other occupational hazards

● Optimization should be supported, e.g through ALARA Networks
● Focus on higher individual doses, above ~2 mSv/a
● Objectives of optimization are related to local circumstances
IMPLEMENTATION OF BASIC SAFETY STANDARDS

- The IAEA Model Project is a good example of international co-operation
- ALARA Networks useful
  - Identify workers likely to be subject to higher exposures
  - Female workers: chronic intake may pose a risk to embryo/foetus
- Update ILO Convention 115
- Integrate ORP with other health and safety measures
More attention to ORP than in other practices

The ALARA principle has been applied
Future concerns

- High individual doses
- Itinerant workers and contractors
- More involvement of the workers
  - Time, distance, shielding, awareness
- Optimization in decommissioning and in old facilities
- Maintaining competence
MONITORING OF OCCUPATIONAL RADIATION EXPOSURES

- Individual monitoring for neutron, beta and internal exposure is still a challenge
- Optimization of monitoring practices is another concern
- Standardization of data formats for recording and reporting is required
Some countries have not updated their regulations based on the recent International BSS; different quantities and non SI units are hindering the international communication.
PROBABILITY OF CAUSATION OF OCCUPATIONAL HARM

- Occupationally exposed workers will develop cancer
- Some countries use schemes for compensation
- Compensation schemes should be scientifically and evidence based
Dose reconstruction is an essential component

Stakeholder involvement is strongly desirable

International co-operation is needed to develop guidance
IS A MAJOR CHANGE IN ICRP RECOMMENDATIONS NEEDED?

- For occupational exposure major changes do not seem necessary.
  - Attention should be given to the most exposed workers
    - Worldwide agreed standard level of protection needed
    - Optimization is the main tool
  - Exposure to natural radiation deserves attention
    - Define amenability to control
  - Clarification of terminology necessary, particularly with regard to detriment
OVERALL OUTPUTS

- Participants highly appreciated the Conference
  - Holistic approach to ORP
  - “Intelligent” discussions
    - Developing and developed countries participated
    - Different stakeholders presented their views

- Nine specific recommendations for action
  - GC – formulate an International Action Plan in cooperation with ILO and other relevant bodies
IMPACT ON FUTURE PROGRAMME

- Harmonize terminologies and interpretations of requirements, incl. ILO Convention 115
- Collaborate closely with ILO
- Widen ISOE - ALARA Networks
- Produce training packages
- Disseminate lessons learned
- Develop guidance on natural radiation
- Develop guidance on probability of causation
Further information

http://www.iaea.org/ns/rasanet/
Thank you!