The draft of the new International Basic Safety Standards (BSS):

Implications for the Assessment of Exposures to the Public and the Environment

Gerhard Proehl

EMRAS II Technical Meeting
Vienna, 24–28 January 2011
UNSCER → ICRP → IAEA

Effects of radiation

Recommendations for protection

IAEA Safety Standards
for protecting people and the environment

Fundamental Safety Principles
No. SF-1

IAEA Safety Standards
for protecting people and the environment

Requirements for Radiation Safety
(Basic Safety Standards)
No. GSR Part 3
The Basic Safety Standards (1996)

Objective
- Protection of people and the environment
- Safety of sources

Target audience
- Governments and regulators
- Health authorities
- Professional bodies
- Service providers
- Technical support organizations
Latest draft
21 January 2011

Approval by the IAEA Board of Governors is planned for mid 2011

International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources 2012 Edition
Safety Standards Series No. GSR Part 3
Draft Safety Requirements DS379

Jointly sponsored by
Food and Agriculture Organization of the United Nations
International Atomic Energy Agency
International Labour Organization
Nuclear Energy Agency of the OECD
Pan American Health Organization
World Health Organization
Potential sponsors
European Commission
United Nations Environment Programme

IAEA
International Atomic Energy Agency
Why a revision?

- Started in 2006, when the publication of the new ICRP recommendations was anticipated
- Assimilate the new recommendations in ICRP 103 (2007) which replaced ICRP 60 (1991)
- Specific issues
  - Strengthening requirements related to
    - safety of sealed sources
    - medical exposures
  - Include education and training
  - Requirements on suppliers
  - Protection of the environment
Protection against radiation risks

• Development is co-sponsored by
  • FAO, ILO, OECD/NEA, PAHO, WHO

• Establish basic requirements for
  • Occupational exposure
  • Medical exposure
  • Public exposure

• Application
  • The basis for legislation in many countries
Public exposure

- **Planned exposures**
  - E.g. Licensing of a new nuclear installation
  - Dose limit: 1 mSv/a

- **Emergency** (was “intervention” in the old BSS)
  - Accident, malicious acts
  - Reference level: 20 - 100 mSv

- **Existing exposures** (was “intervention” in the old BSS)
  - Residual radioactive material from past activities, NORM, legacies
  - Late phase of an emergency
  - Reference level: 1 - 20 mSv/a
Protection of the Environment

General issues

• Prevention of radiological effects on flora and fauna
• Man is an integral part of the environment
• Ensure the sustainable use of natural resources – now and in the future
  • Agriculture
  • Forestry
  • Fisheries
  • Tourism

Requirements

• Consider Protection of the Environment
  • Registration and licensing
  • Setting discharge limits
  • Protection of the environment is one factor during optimization in existing and emergency exposure situations
Implications

• Impact to environment cannot be considered in isolation
• Link to humans through the use of resources in unpopulated areas
  • Sea: fishing,
  • Soil: agriculture, forestry, tourism
• Integrated approach is needed
Integration of human and environmental protection

Planned, existing, and emergency situations

Environmental concentrations

Humans

Exposure scenarios for Reference Persons

Dose limits
Dose constraints
Reference levels

Biota

Exposure scenarios for Reference Animals and Plants Reference Organisms

Reference Levels

Decision making

► Public health ► Biota ► Environmental resources
Issues related to public and environmental exposure

- Applications
  - Routine discharges
  - Accidental releases
  - Uranium mining
  - NORM contaminations
  - Legacies
  - Long-term safety studies for waste disposals

- Ecosystems
  - Terrestrial
  - Freshwater
  - Marine
  - Urban areas

- Climates
  - Temperate
  - Tropical
  - Arctic

- Living habits
  - Africa
  - America
  - Asia
  - Australia
  - Europe
Recent developments

Demand for assessment tools

• Increasing applications of nuclear technologies
• Awareness of impacts of NORM contaminations
Implications for modelling

- Requirements for assessment models
  - Simple
  - Transparent
  - Harmonized
  - Widely applicable
  - Conservative, but not too pessimistic
- Requires a sound scientific base
  - Achieve knowledge on underlying transfer and exposure processes
  - Explore possibilities and limitations of simple models
  - How far can harmonization go?
EMRAS II and follow-up

- The EMRAS II programme will conclude in 2011
- The intention is to continue activities on environmental modelling and radiation safety
- A new programme will be designed during this year
- Questionnaire to ask for needs and ideas
- Setup a programme that meets the requirements for modelling in radiation safety
- Kick-off meeting of the new programme planned for 1st quarter 2012
Thank you for your attention!