WATEC 3
Highlights of
IAEA Waste Safety Programme

Gordon Linsley
Head, Waste Safety Section
Outline

- Joint Convention
- Progress Safety Standards
- Protection of the Environment
- Environmental Assessments
- New International Biospheric Modelling Project (EMRAS)
Joint Convention

• Status
  • September 2003 – 32 Contracting Parties – 1 Contracting State

• Meetings
  • Coordinators and Rapporteurs 22-23 September 2003
  • 1st Review Meeting – 3-14 November 2003
## Contracting Parties

(Current status, September 2003 – 32 countries)

<table>
<thead>
<tr>
<th>Argentina</th>
<th>Korea (Republic of)</th>
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<tbody>
<tr>
<td>Australia</td>
<td>Latvia</td>
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<td>Austria</td>
<td>Luxembourg</td>
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<td>Belarus</td>
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<td>Germany</td>
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<td>Greece</td>
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<td>Hungary</td>
<td>United Kingdom</td>
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<td>Ireland</td>
<td>United States of America</td>
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Joint Convention

• Secretariat instructed by Contracting Parties to promote the Convention

• Letter to all Member States
• Information Pack
• Briefings at General Conference and at Regional TC meetings
• Emphasise in future Training Activities and Conferences
Benefits for a country from becoming a Contracting Party to the Joint Convention

• Improvements in safety as an outcome of the review process
• Gain in knowledge through information exchange
• Improved credibility because of involvement in an international convention on safety
• Evidence of an open and transparent national approach
• Support in cases of malpractice in neighbouring States
• Greater influence in a regional context
• Possible technical assistance from other Contracting Parties
HIERARCHY OF INTERNATIONAL STANDARDS

Fundamentals

Requirements

Guides
Scope of RADWASS

Safety in the management of all types of material, once declared as “waste”

Pre-disposal management – waste collection, treatment, packaging, storage
Decommissioning and associated waste management
Discharge control
Release of solid materials from control
Disposal – near surface, geological disposal
Management of U mining and milling waste
Remediation of areas affected by residual waste
**Overview of the RADWASS document plan**

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Guides</th>
<th>Guides</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fundamentals</strong></td>
<td>SS111-F (1995) The principles of radioactive waste management</td>
<td></td>
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<tr>
<td><strong>Legal and governmental infrastructure for nuclear, radiation, radioactive waste and transport safety</strong></td>
<td>GS-R-1 (2000)</td>
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<tr>
<td><strong>Near surface disposal of radioactive waste</strong></td>
<td>WS-R-2 (2000) Predisposal management of radioactive waste, including decommissioning</td>
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<tr>
<td><strong>Decommissioning of nuclear power plants and research reactors</strong></td>
<td>WS-R-1 (1999) Near surface disposal of radioactive waste</td>
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<tr>
<td><strong>Geological disposal of radioactive waste</strong></td>
<td>DS154</td>
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<td><strong>Cleanup of areas contaminated by past activities and accidents</strong></td>
<td>DS162</td>
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<tr>
<td><strong>Decommissioning of medical, industrial and research facilities</strong></td>
<td>DS159 (WS-G-2.5) Predisposal management of low and intermediate level radioactive waste</td>
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<tr>
<td><strong>Decommissioning of nuclear power plants and research reactors</strong></td>
<td>DS163 (WS-G-2.6) Predisposal management of high level radioactive waste</td>
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<tr>
<td><strong>Safety assessment for near surface disposal</strong></td>
<td>WS-G-2.1 (1999) Decommissioning of nuclear power plants and research reactors</td>
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<tr>
<td><strong>Siting of near surface disposal facilities</strong></td>
<td>111-G-3.1 (1994) Siting of near surface disposal facilities</td>
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<tr>
<td><strong>Siting of geological disposal facilities</strong></td>
<td>111-G-4.1 (1994) Siting of geological disposal facilities</td>
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<tr>
<td><strong>Cleanup of areas contaminated by past activities and accidents</strong></td>
<td>DS172</td>
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<tr>
<td><strong>Decommissioning of nuclear power plants and research reactors</strong></td>
<td>SS111-G-1.1 (1994) Classification of radioactive waste</td>
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<tr>
<td><strong>Management of radioactive waste from the use of radioactive materials in medicine, industry and research</strong></td>
<td>DS160</td>
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<tr>
<td><strong>Decommissioning of nuclear fuel cycle facilities</strong></td>
<td>WS-G-2.4 (2001) Decommissioning of nuclear fuel cycle facilities</td>
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<tr>
<td><strong>Management of radioactive waste from the mining and milling of ores</strong></td>
<td>DS162</td>
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<tr>
<td><strong>Safety assessment for nuclear and radiation facilities other than reactors and waste repositories</strong></td>
<td>DS284</td>
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<tr>
<td><strong>Regulatory control of radioactive discharges to the environment</strong></td>
<td>WS-G-2.3 (2000) Regulatory control of radioactive discharges to the environment</td>
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<tr>
<td><strong>Guides for environmental and source monitoring for public protection purposes</strong></td>
<td>DS82</td>
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<tr>
<td><strong>Strategy for environmental and source monitoring for public protection purposes</strong></td>
<td>DS292</td>
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<td><strong>Storage of radioactive waste</strong></td>
<td>DS163 (WS-G-2.6) Predisposal management of high level radioactive waste</td>
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<td><strong>Guides</strong></td>
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**Notes:**
- **Doc ID (year):** Published
- **DSxxx (Doc ID):** In print
- **DSxxx:** Under development
RADWASS features

Completion of current phase – 2004

Current emphasis:

- Safety Requirements on Geological Disposal
- Safety Guide on Specification of Radionuclide Content in Commodities requiring Regulation for Purposes of Radiation Protection
- Safety Guide on Strategy for Environmental Monitoring
Waste safety – still a developing situation

• Borehole disposal
• Long-term storage of waste
• Release of sites and buildings after decommissioning
• Protection of the environment
Global safety regime

• International Conventions – legally binding – (i) nuclear safety, (ii) spent fuel and waste and (iii) emergencies

• International safety standards – recommendations

• Standards increasingly seen as global reference points and as a basis for demonstrating compliance with the conventions
Safety Standards – a new scheme

• Five safety areas
  • Safety of nuclear facilities
  • Radiation protection and safety of radiation sources
  • Safe management of radioactive waste
  • Safe transport of radioactive material
  • General safety (cross-cutting themes)
Thematic areas

- Legal and governmental infrastructure
- Emergency preparedness and response
- Management systems
- Assessment and verification
- Site evaluation
- Radiation protection
- Radioactive waste management
- Decommissioning
- Rehabilitation of contaminated areas
Facilities and activities

• Nuclear power plants
• Research reactors
• Fuel cycle facilities
• Radiation related facilities and activities
• Waste treatment and disposal facilities
• Transport of radioactive material
International Conference on the
PROTECTION OF THE ENVIRONMENT
FROM THE EFFECTS OF IONIZING RADIATION

CONTRIBUTED PAPERS

Stockholm, Sweden
6–10 October 2003

IAEA CM 109
RADIOLOGICAL CONDITIONS AT REGGANE AND IN-EKKER ALGERIA
"Reference Biospheres" for solid radioactive waste disposal

Report of BIOMASS Theme 1 of the BIosphere Modelling and ASsessment (BIOMASS) Programme

Part of the IAEA Coordinated Research Project on BIosphere Modelling and Assessment (BIOMASS)

BIOsphere Modelling and ASsessment

BIOMASS programme

July 2003
LIST OF BIOMASS DOCUMENTS

Modelling the Migration and Accumulation of Radionuclides in Forest Ecosystems (IAEA-BIOMASS –1) (August 2002).

Testing of Environmental Transfer Models Using Data from the Atmospheric Releases of Iodine-131 from the Hanford site, USA, in 1963 (IAEA-BIOMASS-2) (March 2003).

Modelling the Environmental Transport of Tritium in the Vicinity of Long Term Atmospheric and Sub-Surface Sources (IAEA-BIOMASS-3) (March 2003).

Testing of Environmental Transfer Models Using Chernobyl Fallout Data from the Iput River Catchment Area, Bryansk Region, Russian Federation (IAEA-BIOMASS-4) (April 2003).

Modelling the Transfer of Radionuclides to Fruit (IAEA-BIOMASS-5) (July 2003).


Testing of Environmental Transfer Models Using Data from the Remediation of a Radium Extraction Site (IAEA-BIOMASS-7) (to be published).
Environmental Modelling for Radiation Safety (EMRAS) – started September 2003

- Working groups
- 1 Revision of TRS-364, Handbook of parameter values for the prediction of radionuclide transfer in temperate environment
- 2 Modelling of tritium and carbon-14
- 3 Modelling the effectiveness of countermeasures used against releases of iodine-131
- 4 Model validation of radionuclide transport in aquatic systems
- 5 Modelling of NORM releases and remediation
- 6 Assessment of the behaviour of radionuclides dispersed in urban environments