Revision of the International Guidance on Occupational Radiation Protection

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Radiation Safety and Monitoring Section
Division of Radiation, Transport and Waste Safety
Content

- IAEA statute
- IAEA Safety Standards/ The new BSS
- Development of the Safety Guide on occupational radiation protection
- Main changes and updated guidance
- Other relevant information
To establish or adopt, in consultation and, where appropriate, in collaboration with the competent organs of the United Nations and with the specialized agencies concerned, standards of safety for protection of health and minimization of danger to life and property (including such standards for labour conditions), and to provide for the application of these standards to its own operation as well as to the operations making use of materials, services, equipment, facilities, and information made available by the Agency or at its request or under its control or supervision; and to provide for the application of these standards, at the request of the parties, to operations under any bilateral or multilateral arrangements, or, at the request of a State, to any of that State's activities in the field of atomic energy.
IAEA Safety Standards

THE IAEA SAFETY STANDARDS: A GLOBAL REFERENCE FOR PROTECTING PEOPLE AND THE ENVIRONMENT

• Not binding on Member States but may be adopted by them

• Binding for IAEA’s own activities

• Binding on Member States in relation to operations assisted by the IAEA

• Binding on Member States entering into project agreements with IAEA
Hierarchy of IAEA Safety Standards

- Safety Fundamentals
- Safety Requirements
- GSR and SSR
- Safety Guides
  - GSG and SSG

High level underlying principles

Specify obligations and responsibilities ("shall" statements)

Recommendations to support requirements ("should" statements) based on international best practices

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<table>
<thead>
<tr>
<th>General Safety Requirements</th>
<th>Specific Safety Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 1 Governmental, Legal and Regulatory Framework</td>
<td>1. Site Evaluation for Nuclear Installations</td>
</tr>
<tr>
<td>Part 2 Leadership and Management for Safety</td>
<td>2. Safety of Nuclear Power Plants</td>
</tr>
<tr>
<td>Part 3 Radiation Protection and Safety of Radiation Sources</td>
<td>2.1 Design and Construction</td>
</tr>
<tr>
<td>Part 4 Safety Assessment for Facilities and Activities</td>
<td>2.2 Commissioning and Operation</td>
</tr>
<tr>
<td>Part 6 Decommissioning and Termination of Activities</td>
<td>4. Safety of Nuclear Fuel Cycle Facilities</td>
</tr>
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<td>6. Safe Transport of Radioactive Material</td>
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## History

<table>
<thead>
<tr>
<th>ICRP Recommendations</th>
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<tbody>
<tr>
<td>1958 (“Publication 1”)</td>
</tr>
<tr>
<td>1966 (Publication 9)</td>
</tr>
<tr>
<td>1977 (Publication 26)</td>
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<tr>
<td>1990 (Publication 60)</td>
</tr>
<tr>
<td>2007 (Publication 103)</td>
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<table>
<thead>
<tr>
<th>IAEA Basic Safety Standards</th>
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<tbody>
<tr>
<td>1962</td>
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<tr>
<td>1967</td>
</tr>
<tr>
<td>1982</td>
</tr>
<tr>
<td>1996</td>
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<td>2014 – The New BSS</td>
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</tbody>
</table>
Main requirements

- The BSS – GSR Part 3
- GSR Part – 1
- GSR Part – 7
- A number of safety guides/reports

- ILO
  Radiation Protection convention 115
- A number of occupational safety and health series.
Occupational  DS453
Medical      DS399
Public       DS432
Combine, revise and supersede five existing safety guides


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DS453 – new draft standard
Guidance on occupational radiation protection

JOINT SPONSOR

International Atomic Energy Agency - IAEA
International Labour Office - ILO
Table of contents

1. INTRODUCTION
2. FRAMEWORK FOR OCCUPATIONAL RADIATION PROTECTION
3. EXPOSURE OF WORKERS IN PLANNED EXPOSURE SITUATIONS
4. EXPOSURE OF WORKERS IN EMERGENCY EXPOSURE SITUATIONS
5. EXPOSURE OF WORKERS IN EXISTING EXPOSURE SITUATIONS
6. PROTECTION OF WORKERS IN SPECIAL CASES
7. ASSESSMENT OF OCCUPATIONAL EXPOSURES
8. MANAGEMENT SYSTEMS FOR PROVIDERS OF TECHNICAL SERVICES
9. ENGINEERED CONTROLS, ADMINISTRATIVE CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT
10. WORKERS’ HEALTH SURVEILLANCE

APPENDICES
REFERENCES
ANNEXES

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APPENDICES
1. Exposure of workers to NORM
2. Methods and Systems for Individual Monitoring for Assessment of External Exposure
3. Workplace Monitoring Instruments for Assessment of External Exposure
4. Biokinetic Models for Internal Exposure Assessment
5. Methods for Individual Monitoring of Internal Contamination

REFERENCES
245 references

ANNEXE
1. Techniques for Retrospective Dosimetry.
Main Changes

- Terminologies and concepts
- Planned exposure situations – practice
- Dose limits – lens of the eye
- Existing exposure situations – Reference Level
- Itinerant workers
- Female workers during and after pregnancy
- Emergency exposure situations
- Exposure of workers to natural sources
- Remediation of contaminated areas
- Occupational exposure to cosmic rays
- Assessment of occupational exposure
Section 2

- Frame work
  - Types of exposure situations
  - RP principles
  - Responsibilities
  - Graded approach
  - Management system
- Dosimetric quantities
  - Operational quantities for individual (external and internal) and workplace monitoring
  - Quantities for monitoring radon and thoron progeny
Guidance

Planned exposure situations
- Optimisation
- Dose limits
- RPP
- Nat. sources

Existing exposure situations
- Optimisation
- Reference level
- Remediation work
- Radon at workplace
- Cosmic ray exposure

Emergency exposure situations
- Emergency workers
- Dose guidance values
- Exposure assessment
- Medical attention

Sections:
- Section 3
- Section 4
- Section 5

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Special cases

OCCUPATIONAL EXPOSURE

Exposure Assessment

External dosimetry
Internal dosimetry
Records

Management systems

Calibration and testing service

Section 6

Section 7

Section 8

Female workers during and after pregnancy
Itinerant workers
Guidance

OCCUPATIONAL EXPOSURE

Engineered controls
Administrative controls
PPE

Health surveillance

Section 9
Section 10
The application of the requirements of these Standards in planned exposure situations shall be commensurate with the characteristics of the practice or source within a practice and with the magnitude and likelihood of the exposures.
## The types of dose restrictions

<table>
<thead>
<tr>
<th>Type of situation</th>
<th>Occupational</th>
<th>Public</th>
<th>Medical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned exposure</td>
<td>Dose limit</td>
<td>Dose limit</td>
<td>Diagnostic reference level</td>
</tr>
<tr>
<td></td>
<td>Dose constraint</td>
<td>Dose constraint</td>
<td></td>
</tr>
<tr>
<td>Emergency exposure</td>
<td>Reference level&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Reference level</td>
<td>N.A.</td>
</tr>
<tr>
<td>Existing exposure</td>
<td>Reference level</td>
<td>Reference level</td>
<td>N.A.</td>
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</table>

<sup>a</sup> Long-term recovery operations should be treated as part of planned occupational exposure
## Schedule III:
### Dose Limits for Planned Exposure Situations

<table>
<thead>
<tr>
<th></th>
<th>Occupational Exposure</th>
<th>Public</th>
<th>Apprentices</th>
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<tbody>
<tr>
<td><strong>Effective dose</strong></td>
<td>20 mSv/yr (5yrs avg)</td>
<td>1 mSv/yr (at least 5 yrs avg)</td>
<td>6 mSv/yr</td>
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<tr>
<td></td>
<td>*100 mSv/5yrs</td>
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<td></td>
<td>50 mSv:single yr</td>
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<tr>
<td><strong>Eq. dose to lens of the eye</strong></td>
<td>20 mSv/yr (5yrs avg)</td>
<td>15 mSv/yr</td>
<td>20 mSv/yr</td>
</tr>
<tr>
<td></td>
<td>*100 mSv/5yrs</td>
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</tr>
<tr>
<td></td>
<td>50 mSv:single yr</td>
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<tr>
<td><strong>Eq. dose to hands, feet &amp; skin</strong></td>
<td>500 mSv/yr</td>
<td>50 mSv/yr</td>
<td>150 mSv/yr</td>
</tr>
</tbody>
</table>

* 5yrs avg: 5 years average
• Radon at workplace – Maximum Reference Level 1000 Bq/m3
• Cosmic exposure – 5 mSv/y
• NORM
Other relevant guidance material (1)
Other relevant guidance material (2) - NORM
Many thanks for your attention...

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