



## NATIONAL DIRECTORY FOR RADIATION PROTECTION

### Amendment No. 2, 2008

### Exclusions and Exemptions

Approved by Radiation Health Committee on 16 July 2008

#### 3.1 Exclusions

*Part (c) is amended to include footnote 1.*

The following exposures whose magnitude or likelihood is essentially not amenable to control through legislation are excluded from regulation<sup>1</sup>:

- (a) K-40 in the body;
- (b) cosmic radiation at the surface of the earth;
- (c) unmodified concentrations of radionuclides in most raw materials; unless otherwise specified in this Directory.

#### 3.2 Exemptions

*3.2.1(a) is amended to add the words “and the risks to the environment”*

*3.2.2(a) is amended to include footnote 5*

*3.2.2(b) is amended to include footnote 6 and to replace “or” with “and” in line 2.*

*3.2.3 is amended to include footnote 8*

*3.2.4 is amended to include footnote 9*

*3.2.5 is amended to include footnote 10*

*A new clause 3.2.7 is inserted*

**3.2.1** The general criteria for granting an exemption are:

- (a) the health risks and the risks to the environment associated with the source, practice, or type of person using a source are sufficiently low as to be of no regulatory concern; and
- (b) radiation protection, including the cost of regulatory control, has been optimised<sup>2</sup>.

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<sup>1</sup> For normal exposure situations, the concept of exclusion usually applies to exposures from materials containing radionuclides of natural origin, where the concentration of each radionuclide is below 1 Bq/g. Typically, ‘most raw materials’ would include raw materials, except for uranium, which is mined to recover radionuclides; mineral sands, which have radionuclide content high enough to warrant a regulatory approach; and other materials specifically identified in this Directory

<sup>2</sup> For ionizing radiation optimisation means, in relation to any particular source within a practice, the magnitude of individual doses, the number of people exposed, and the likelihood of incurring exposures where these are not certain to be received are all kept as low as reasonably achievable, economic and social factors being taken into account. For non-ionizing radiation, optimisation can be equated to cost-effectiveness.

3.2.2 The criteria to exempt radioactive material<sup>3</sup> or practices from notification, registration and licensing are:

- (a) the radioactive material has an activity concentration<sup>4</sup> less than that prescribed in Schedule 4<sup>5</sup> or consists of or contains less than the activity prescribed in Schedule 4, or
- (b) the radioactive material has an activity concentration greater than that prescribed in Schedule 4 and consists of or contains greater than the activity prescribed in Schedule 4, but causes an annual effective dose to an individual member of the public of less than 10  $\mu$ Sv, and a collective effective dose to the critical group committed by one year of performance of the practice, as determined by the Authority, of less than 1 person.Sv<sup>6</sup>, or
- (c) in the case of a mixture of radioactive materials, where each of the radioactive materials present does not exceed the individual activity or activity concentration, the mixture is defined as exempt if the sum of the fractions obtained by dividing the activity of each material present by the appropriate activity value from Schedule 4, or the sum of the fractions obtained by dividing the activity concentration of each material present by the appropriate activity concentration value from Schedule 4, does not exceed 1.
- (d) in the special case of exposure to naturally-occurring radon-222 in the workplace, the long-term average concentration of radon-222 is less than 1000 Bq/m<sup>3</sup>.

3.2.3 The Authority may exempt material or practices that are not exempt under 3.2.2 above, subject to conditions that may be determined by the Authority<sup>7</sup>, where an assessment for the optimisation of protection shows that exemption is the optimum option<sup>8</sup>. When this provision is used, the Authority must notify the Radiation Health Committee (RHC) immediately after granting the exemption.

3.2.4 The Authority may declare material or practices otherwise exempt under 3.2.2 above to be subject to the legislation if an assessment of the magnitude of individual doses, the number of people exposed and the likelihood that potential

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3 The definition of radioactive material and the exemption levels for activity and activity concentration for particular radionuclides in this Directory are based on those of the International Atomic Energy Agency. The rationale for the definition and exemption levels is provided in Annex 2.

4 The 'activity concentration' of a radionuclide means the activity per unit mass of the material in which the radionuclide is essentially uniformly distributed. [A sealed source in a lead surround does not constitute being uniformly distributed].

5 All dealings with all radioactive material below the activity concentration or activity levels in Schedule 4 of the Directory are exempt from regulation without approach to the Authority. In relation to the transport of radioactive material, the activity concentration levels for exempt material, the activity limits for exempt consignments, and the modifying factor in clause 107(e) in the *Code of Practice for the Safe Transport of Radioactive Material* apply.

6 Subject to the agreement of the Authority on the applicable scenarios and method of calculation to be applied, dealings with radioactive materials involving activity concentrations or activities greater than Schedule 4 but which are demonstrated through direct measurement or the calculation of doses from applicable scenarios to result in doses less than those on which Schedule 4 is based are exempt.

7 When an exemption is granted, the Authority should be able to impose appropriate conditions on the exemption, such as requirements for reporting and monitoring.

8 Exemptions will be granted for practices (generally expected to be dealings involving quantities of naturally occurring radioactive materials) resulting in individual doses up to about 1 mSv per year on the basis of an assessment to be agreed between the operator and the Authority that the radiation protection is optimised. Such an exemption may be subject to monitoring and reporting conditions to ensure that the basis for the exemption remains in place.

exposures will actually occur justify the practice being subject to the legislation<sup>9</sup>. When this provision is used, the Authority must notify the Radiation Health Committee immediately after making such a declaration.

- 3.2.5 Where the Authority has determined that regulatory controls will apply, the stringency of the regulatory measures should be proportionate to the degree of risk associated with the material<sup>10</sup>.
- 3.2.6 A radiation generator or electronic tube, of a type approved by the Authority, must be exempted from the notification, registration or licensing requirements specified, provided that:
- (a) in normal operating conditions it does not cause an ambient dose equivalent rate or a directional dose equivalent rate, as appropriate, exceeding  $1 \mu\text{Sv h}^{-1}$  at a distance of 0.1 m from any accessible surface of the apparatus; or
  - (b) the maximum energy of the radiation produced is no greater than 5 keV; or
  - (c) the apparatus is listed in Schedule 5.
- 3.2.7 A radioactive source listed in Schedule 5 must be exempted from the notification, registration or licensing requirements specified, subject to disposal of radioactive waste meeting the requirements of Section 4.2.2 and Schedule 14.

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<sup>9</sup> Material or practices otherwise exempted through the operation of Schedule 4 of the Directory will only be subjected to regulation if the Authority can demonstrate that the magnitude of individual doses, the number of people exposed and the likelihood that potential exposure will occur significantly exceed the values upon which the exemptions in Schedule 4 are based.

<sup>10</sup> A graded approach will be applied to the regulation of material and practices commensurate with hazard.

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## Schedule 5 – Exemptions relating to radiation generating apparatus, electron tubes and radioactive sources

(Refer section 3.2.6(c) and 3.2.7)

*This Schedule is amended to include a new section on radioactive sources, as follows:*

The radioactive sources listed below are exempt from the provisions specified<sup>11</sup>:

- (a) americium-241 sealed sources of activity up to 40 kBq used in domestic smoke alarms meeting the requirements of AS3786:1993 are exempted from the requirements of registration, and of licensing the end user to possess or use.
- (b) Depleted uranium in solid massive form that is used for ballast in aircraft and boats and ships is exempted from the requirements of registration, and of licensing the end user to possess or use.
- (c) Depleted uranium that is completely contained within an appropriate metallic sheath, and is used as radiation shielding in a container for radioactive sources that complies with the requirements of RPS2 is exempted from the requirements of registration, and of licensing the end user to possess or use.
- (d) A gaseous tritium light source that is solely used for safety purposes and includes less than 74 GBq of tritium is exempted from the requirements of registration, and of licensing the end user to possess or use.
- (e) A sealed radioactive source used for teaching the characteristics and properties of radiation or radiation sources and containing a radionuclide listed in Table S5.1 below, with an activity not greater than listed in the Table, is exempted from the requirements of registration, and of licensing the end user to possess or use.

Table S5.1

| Radionuclide  | Activity (kBq) |
|---------------|----------------|
| Cobalt-60     | 200            |
| Strontium-90  | 80             |
| Caesium-137   | 200            |
| Radium-226    | 20             |
| Americium-241 | 40             |

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<sup>11</sup> It should be noted that the provisions of clause 4.2.2(a) requiring authorisation prior to disposal of radioactive materials still apply, unless the disposal is in accordance with Schedule 14.

- (f) A geological sample that contains radioactive material is exempted from the requirements of registration, and of licensing the end user to possess or use, if:
  - a. It emits radiation at a level not more than 5 micrograys an hour, measured at a distance of 10 cm from its surface; and
  - b. It is being used as a sample in teaching or for display as a geological specimen.
- (g) An electron capture detector or similar device used in gas chromatography containing a nickel-63 sealed source with activity not more than 750 MBq, or tritium source with activity not more than 20 GBq, is exempted from the requirements of registration, and of licensing the end user to possess or use.