Nuclear Regulatory Commission

Subpart O—Enforcement

§ 20.2401 Violations.

(a) The Commission may obtain an injunction or other court order to prevent a violation of the provisions of—

(1) The Atomic Energy Act of 1954, as amended;
(2) Title II of the Energy Reorganization Act of 1974, as amended; or
(3) A regulation or order issued pursuant to those Acts.

(b) The Commission may obtain a court order for the payment of a civil penalty imposed under section 234 of the Atomic Energy Act:

(1) For violations of—

(i) Sections 53, 57, 62, 63, 81, 82, 101, 103, 104, 107 or 109 of the Atomic Energy Act of 1954, as amended;
(ii) Section 206 of the Energy Reorganization Act;
(iii) Any rule, regulation, or order issued pursuant to the sections specified in paragraph (b)(1)(i) of this section; and
(iv) Any term, condition, or limitation of any license issued under the sections specified in paragraph (b)(1)(i) of this section.

§ 20.2402 Criminal penalties.

(a) Section 223 of the Atomic Energy Act of 1954, as amended, provides for criminal sanctions for willful violation of, attempted violation of, or conspiracy to violate, any regulation issued under sections 161b, 161i, or 161o of the Act. For purposes of section 223, all the regulations in §§ 20.1001 through 20.2402 are issued under one or more of sections 161b, 161i, or 161o, except for the sections listed in paragraph (b) this section.

(b) The regulations in §§ 20.1001 through 20.2402 that are not issued under Sections 161b, 161i, or 161o for the purposes of Section 223 are as follows:


APPENDIX A TO PART 20—PROTECTION FACTORS FOR RESPIRATORS

<table>
<thead>
<tr>
<th>Description</th>
<th>Particulates</th>
<th>Particulates, gases, &amp; vapors</th>
<th>Tested &amp; Certified Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Air-Purifying Respirators:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facepiece, half-mask</td>
<td>10</td>
<td>30 CFR part 11, subpart K</td>
<td></td>
</tr>
<tr>
<td>Facepiece, full</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facepiece, half-mask full, or hood</td>
<td>1000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II. Atmosphere-Supplying Respirators:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Air-line respirator:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facepiece, half-mask</td>
<td>1000</td>
<td>30 CFR part 11, subpart J</td>
<td></td>
</tr>
<tr>
<td>Facepiece, full</td>
<td>2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Self-contained breathing apparatus (SCBA):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facepiece, full</td>
<td>50</td>
<td>30 CFR part 11, subpart H</td>
<td></td>
</tr>
<tr>
<td>Facepiece, full</td>
<td>10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facepiece, full</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facepiece, full</td>
<td>15,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III. Combination Respirators:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any combination of air-purifying and atmosphere-supplying respirators.</td>
<td>Protection factor for type and mode of operation as listed above</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Footnotes


a. For use in the selection of respiratory protective devices to be used only where the contaminants have been identified and the concentrations (or possible concentrations) are known.

b. Only for shaven faces and where nothing interferes with the seal of tight-fitting facepieces against the skin. (Hoods and suits are excepted.)

c. The mode symbols are defined as follows:
   - CF=continuous flow
   - DP=negative pressure (i.e., negative phase during inhalation)
   - PP=positive pressure
   - RD=demand, recirculating (closed circuit)
   - RP=pressure demand, recirculating (closed circuit)

2. The protection factors apply:

   (a) Only for individuals trained in using respirators and wearing properly fitted respirators that are used and maintained under supervision in a well-planned respiratory protective program.

   (b) For air-purifying respirators only when high efficiency particulate filters (above 99.97% removal efficiency by thermally generated 0.3 μm dioctyl phthalate (DOP) test or equivalent) are used in atmospheres not deficient in oxygen and not containing radioactive gas or vapor respiratory hazards.

   (c) For atmosphere-supplying respirators only when supplied with adequate respirable air. Respirable air shall be provided of the quality and quantity required in accordance with NIOSH/MSHA certification (described in 30 CFR part 11). Oxygen and air shall not be used in the same apparatus.

   (d) Excluding radioactive contaminants that present an absorption or submersion hazard. For tritium oxide, approximately one-third of the intake occurs by absorption through the skin so that an overall protection factor of less than 2 is appropriate when atmosphere-supplying respirators are used to protect against tritium oxide. If the protection factor for a device is 5 the effective factor for tritium is about 1.4; for devices with protection factors of 10 the effective factor for tritium oxide is about 1.9. Air-purifying respirators are not suitable for protection against tritium oxide.

   (e) Excluding radioactive materials. The mask is to be tested for fit prior to use, each time it is donned.

   (f) Canisters and cartridges shall not be used beyond service-life limitations.

   (g) Under-chin type only. This type of respirator is not satisfactory for use where it might be possible (e.g., if an accident or emergency were to occur) for the ambient airborne concentrations to reach instantaneous values greater than 10 times the pertinent values in Table II, column 3 of appendix B to §§20.1001-20.2401 of this part. This type of respirator is not suitable for protection against plutonium or other high-toxicity materials.

   (h)(1) Equipment shall be operated in a manner that ensures that proper air flow-rates are maintained. A protection factor of no more than 1000 may be utilized for tested-and-certified supplied-air hoods when a minimum air flow of 6 cubic feet (0.17 cubic meters) per minute is maintained and calibrated air-line pressure gauges or flow measuring devices are used. A protection factor of up to 2000 may be used for tested and certified hoods only when the air flow is maintained at the manufacturer's recommended maximum rate for the equipment, this rate is greater than 6 cubic feet (0.17 cubic meters) per minute, and calibrated air-line pressure gauges or flow measuring devices are used.

   (i) Appropriate protection factors shall be determined, taking into account the design of the suit and its permeability to the contaminant under conditions of use. There shall be a standby rescue person equipped with a respirator or other apparatus appropriate for the potential hazards and communications equipment whenever supplied-air suits are used.

   Ambient airborne concentration
  
   Protection factor

   Concentration inhaled = --

   

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(j) No approval schedules are currently available for this equipment. Equipment is to be evaluated by testing or on the basis of reliable test information.

(k) This type of respirator may provide greater protection and be used as an emergency device in unknown concentrations for protection against inhalation hazards. External radiation hazards and other limitations to permitted exposure, such as skin absorption, must be taken into account in such circumstances.

(l) Quantitative fit testing shall be performed on each individual and no more than 0.02% leakage is allowed with this type of apparatus. Perceptible outward leakage of gas from this or any positive pressure self-contained breathing apparatus is unacceptable because service life will be reduced substantially. Special training in the use of this type of apparatus shall be provided to the wearer.

Note 1: Protection factors for respirators as may be approved by the U.S. Bureau of Mines/National Institute for Occupational Safety and Health (NIOSH), according to applicable approvals for respirators for type and mode of use to protect against airborne radionuclides, may be used to the extent that they do not exceed the protection factors listed in this table. The protection factors listed in this table may not be appropriate to circumstances where chemical or other respiratory hazards exist in addition to radioactive hazards. The selection and use of respirators such circumstances should take into account applicable approvals of the U.S. Bureau of Mines/NIOSH.

Note 2: Radioactive contaminants for which the concentration values in table 1, column 3 of appendix B to §§ 20.1001-20.2401 of this part are based on internal dose due to inhalation may, in addition, present external exposure hazards at higher concentrations. Under these circumstances, limitations on occupancy may have to be governed by external dose limits.

APPENDIX B TO PART 20—ANNUAL LIMITS ON INTAKE (ALIs) AND DERIVED AIR CONCENTRATIONS (DACs) OF RADIONUCLIDES FOR OCCUPATIONAL EXPOSURE; EFFLUENT CONCENTRATIONS; CONCENTRATIONS FOR RELEASE TO SEWERAGE

INTRODUCTION

For each radionuclide table 1 indicates the chemical form which is to be used for selecting the appropriate ALI or DAC value. The ALIs and DACs for inhalation are given for an aerosol with an activity median aerodynamic diameter (AMAD) of 1 µm and for three classes (D,W,Y) of radioactive material, which refer to their retention (approximately days, weeks or years) in the pulmonary region of the lung. This classification applies to a range of clearance half-times of less than 10 days for D, for W from 10 to 100 days, and for Y greater than 100 days. The class (D, W, or Y) given in the column headed "Class" applies only to the inhalation ALIs and DACs given in table 1, columns 2 and 3. Table 2 provides concentration limits for airborne and liquid effluents released to the general environment. Table 3 provides concentration limits for discharges to sanitary sewer systems.

NOTE

The values in tables 1, 2, and 3 are presented in the computer "E" notation. In this notation a value of 6E-02 represents a value of 6×10^-2 or 0.06, 6E+2 represents 6×10^2 or 600, and 6E+0 represents 6×10^0 or 6.

Table 1 "OCCUPATIONAL"

Note that the columns in table 1 of this appendix captioned "Oral Ingestion ALI," "Inhalation ALI," and "DAC," are applicable to occupational exposure to radioactive material.

The ALIs in this appendix are the annual intakes of a given radionuclide by "Reference Man" which would result in either (1) a committed effective dose equivalent of 5 rems (stochastic ALI) or (2) a committed dose equivalent of 50 rems to an organ or tissue (non-stochastic ALI). The stochastic ALIs were derived to result in a risk, due to irradiation of organs and tissues, comparable to the risk associated with deep dose equivalent to the whole body of 5 rems. The derivation includes multiplying the committed dose equivalent to an organ or tissue by a weighting factor, wT. This weighting factor is the proportion of the risk of stochastic effects resulting from irradiation of the organ or tissue, T, to the total risk of stochastic effects when the whole body is irradiated uniformly. The values of wT are listed under the definition of weighting factor in §20.1003. The non-stochastic ALIs were derived to avoid non-stochastic effects, such as prompt damage to tissue or reduction in organ function.

A value of wT=0.06 is applicable to each of the five organs or tissues in the "remainder" category receiving the highest dose equivalents, and the dose equivalents of all other remaining tissues may be disregarded. The following parts of the GI tract—small intestine, upper large intestine, and lower large intestine—are to be treated as four separate organs.

Note that the dose equivalents for extremities (hands and forearms, feet and lower