

Appendix A

ITEM 1

ATOMIC ENERGY COMMISSION 10 Code Fed. Regs. Part 20

STANDARDS FOR PROTECTION AGAINST RADIATION

GENERAL PROVISIONS

§ 20.1 *Purpose.* (a) The regulations in this part establish standards for protection against radiation hazards arising out of activities under licenses issued by the Atomic Energy Commission and are issued pursuant to the Atomic Energy Act of 1954 (68 Stat. 919).

(b) The use of radioactive material or other sources of radiation not licensed by the Commission is not subject to the regulations in this part. However, it is the purpose of the regulations in this part to control the possession, use, and transfer of licensed material by any licensee in such a manner that exposure to such material and to radiation from such material, when added to exposures to unlicensed radioactive material and to other unlicensed sources of radiation in the possession of the licensee, and to radiation therefrom, does not exceed the standards of radiation protection prescribed in the regulations in this part.

§ 20.2 *Scope.* The regulations in this part apply to all persons who receive, possess, use or transfer byproduct material, source material, or special nuclear material under a general or specific license issued by the Commission pursuant to the regulations in Part 30, 40, or 70 of this chapter.

§ 20.3 *Definitions.* (a) As used in this part:

(1) "Act" means the Atomic Energy Act of 1954 (68 Stat. 919) including any amendments thereto;

(2) "Airborne radioactive material" means any radioactive material dispersed in the air in the form of dusts, fumes, mists, vapors, or gases;

(3) "Byproduct material" means any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material;

(4) "Commission" means the Atomic Energy Commission or its duly authorized representatives;

(5) "Government agency" means any executive department, commission, independent establishment, corporation, wholly or partly owned by the United States of America which is an instrumentality of the United States,

or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the Government ;

(6) "Individual" means any human being ;

(7) "Licensed material" means source material, special nuclear material, or byproduct material received, possessed, used, or transferred under a general or specific license issued by the Commission pursuant to the regulations in this chapter ;

(8) "License" means a license issued under the regulations in Part 30, 40, or 70 of this chapter. "Licensee" means the holder of such license ;

(9) "Person" means (i) any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency other than the Commission, any State, any foreign government or nation or any political subdivision of any such government or nations, or other entity ; and (ii) any legal successor, representative, agent, or agency of the foregoing ;

(10) "Radiation" means any or all of the following: alpha rays, beta rays, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other atomic particles ; but not sound or radio waves, or visible, infrared, or ultraviolet light ;

(11) "Radioactive material" includes any such material whether or not subject to licensing control by the Commission ;

(12) "Restricted area" means any area access to which is controlled by the licensee. "Restricted area" shall not include any areas used as residential quarters, although a separate room or rooms in a residential building may be set apart as a restricted area ;

(13) "Source material" means any material except special nuclear material, which contains by weight one-twentieth of one percent (0.05 percent or more of (i) uranium, (ii) thorium, or (iii) any combination thereof ;

(14) "Special nuclear material" means (i) plutonium, uranium 233, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of section 51 of the act, determines to be special nuclear material, but does not include source material ; or (ii) any material artificially enriched by any of the foregoing but does not include source material ;

(15) "Unrestricted area" means any area entry into which is not controlled by the licensee, and any area used for residential quarters.

(b) Definitions of certain other words and phrases as used in this part are set forth in other sections, including ;

(1) "Airborne radioactivity area" defined in § 20.203 ;

(2) "Radiation area" and "high radiation area" defined in § 20.202 ;

(3) "Personnel monitoring equipment" defined in § 20.202 ;

(4) "Survey" defined in § 20.201 ;

(5) Units of measurements of dose (rad, rem) defined in § 20.4 ;

(6) Units of measurement of radioactivity defined in § 20.5.

§ 20.4 *Units of radiation dose.* (a) "Dose," as used in this part, is the quantity of radiation absorbed, per unit of mass, by the body or by any portion of the body. When the regulations in this part specify a dose during a period of time, the dose means the total quantity of radiation absorbed, per unit of mass, by the body or by any portion of the body during such period of time. Several different units of dose are in current use. Definitions of units as used in this part are set forth in paragraphs (b) and (c) of this section.

(b) The rad, as used in this part, is a measure of the dose of any ionizing radiation to body tissues in terms of the energy absorbed per unit mass of the tissue. One rad is the dose corresponding to the absorption of 100 ergs per gram of tissue. (One millirad (mrad) = 0.001 rad.)

(c) The rem, as used in this part, is a measure of the dose of any ionizing radiation to body tissue in terms of its estimated biological effect relative to a dose of one roentgen (r) of X-rays. (One millirem (mrem) = 0.001 rem.) The relation of the rem to other dose units depends upon the biological effect under consideration and upon the conditions of irradiation. For the purpose of the regulations in this part, any of the following is considered to be equivalent to a dose of one rem:

- (1) A dose of 1 r due to X- or gamma radiation;
- (2) A dose of 1 rad due to X-, gamma, or beta radiation;
- (3) A dose of 0.1 rad due to neutrons or high energy protons;
- (4) A dose of 0.05 rad due to particles heavier than protons and with sufficient energy to reach the lens of the eye;

If it is more convenient to measure the neutron flux, or equivalent, than to determine the neutron dose in rads, as provided in subparagraph (3) of this paragraph, one rem of neutron radiation may, for purposes of the regulations in this part, be assumed to be equivalent to 14 million neutrons per square centimeter incident upon the body; or, if there exists sufficient information to estimate with reasonable accuracy the approximate distribution in energy of the neutrons, the incident number of neutrons per square centimeter equivalent to one rem may be estimated from the following table:

| Neutron energy | Number of neutrons per square centimeter equivalent to a dose of 1 rem |
|------------------------|---|
| Thermal | 960 × 10 ⁶ |
| 0.0001 mev. | 480 × 10 ⁶ |
| 0.01 mev. | 480 × 10 ⁶ |
| 0.1 mev. | 96 × 10 ⁶ |
| 0.5 mev. | 38 × 10 ⁶ |
| 1 mev. | 29 × 10 ⁶ |
| 2 mev. | 19 × 10 ⁶ |
| 3 mev. and higher..... | 14 × 10 ⁶ |

§ 20.5 *Units of radioactivity.* (a) Radioactivity is commonly, and for purposes of the regulations in this part shall be, measured in terms of dis-

integrations per unit time or in curies. One curie (c) = 3.7×10^{10} disintegrations per second (dps) = 2.2×10^{12} disintegrations per minute (dpm). A commonly used submultiple of the curie is the microcurie (μc). One $\mu\text{c} = 0.000001 \text{ c} = 3.7 \times 10^4 \text{ dps} = 2.2 \times 10^6 \text{ dpm}$.

NOTE: Many radioisotopes disintegrate into isotopes which are also radioactive. In expressing maximum permissible concentrations in air and water of these materials, as in Appendix B of this part, the activity stated is that of the parent isotope. In some cases, the fact that daughter products may contribute to the total dose has been taken into account in the determination of the maximum permissible concentration of the parent isotopes. In the tables of Appendix B of this part this is indicated by writing $\text{Ba}^{140} + \text{La}^{140}$, $\text{Sr}^{90} + \text{Y}^{90}$, $\text{Rn}^{222} + \text{dr}$, $\text{Ra}^{226} + \frac{1}{2} \text{ dr}$, etc.

EXAMPLE. In Column I, Table I, Appendix B, the maximum permissible concentration of Ba^{140} in air for occupational use is $2 \times 10^{-7} \mu\text{c/ml}$. This is the maximum permissible concentration regardless of whether or not any of the La^{140} which may have resulted from the decay of the Ba^{140} is present or not. However, the value given for Ba^{140} is less than it would be if La^{140} were a stable isotope, not only because of the possibility of La^{140} in the air but principally because, if the Ba^{140} is inhaled, its radioactive decay in the body will result in the production of La^{140} in the body.

(b) *Radon*. Airborne radioactivity of radon and its decay products may be determined by measurement of the activity of one or more decay products on dust filtered from the air. For purposes of the regulations in this part, the limit prescribed here will be considered to be met if the measured radioactivity of one or more decay products (for example, RaC') does not exceed that which would result from the occurrence, at the time of sampling, of 1×10^{-7} microcuries, per milliliter of air, of Rn^{222} and each of its short-lived decay products, RaA , RaB , RaC , and RaC' . For this purpose, due allowance shall be made for changes in the radioactivity of the measured decay products from time of sampling through the period of measurement.

(c) *Natural uranium and natural thorium*. Natural uranium and natural thorium occur as mixtures of isotopes of the respective elements. In the case of uranium or of thorium, the number of microcuries shall be determined by dividing the total rate, in dpm, of alpha emissions from the mixture by 2.2×10^6 dpm per μc .

§ 20.6 *Interpretations*. Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

§ 20.7 *Communications*. All communications and reports concerning the regulations in this part, and applications filed under them, should be addressed to the Atomic Energy Commission, 1901 Constitution Avenue NW., Washington 25, D. C., Attention: Division of Civilian Application.

PERMISSIBLE DOSES, LEVELS, AND CONCENTRATIONS

§ 20.101 *Exposure of individuals in restricted areas*—(a) *Exposure to radiation.* (1) Except as provided in subparagraph (2) of this paragraph, no licensee shall possess, use, or transfer licensed material in such a manner as to cause any individual in a restricted area to receive in any period of seven consecutive days from radioactive material and other sources of radiation in the licensee's possession a dose in excess of the limits specified in Appendix A of this part.

(2) A licensee may permit an individual in a restricted area to receive a dose in excess of the limits established in subparagraph (1) of this paragraph: *Provided*, (i) That the dose during any period of 7 consecutive days does not exceed three times the limits specified in Appendix A of this part, and (ii) that the dose during any period of 13 consecutive weeks does not exceed 10 times the limits specified in Appendix A of this part.

(b) No licensee shall possess, use or transfer licensed material in such a manner as to cause any individual in a restricted area to be exposed to airborne radioactive material possessed by the licensee in an average concentration in excess of the limits specified in Appendix B, Table I, of this part.

The limits given in Appendix B, Table I of this part, are based upon exposure to the concentrations specified for forty hours in any period of seven consecutive days. In any such period where the number of hours of exposure is less than forty, the limits specified in the table may be increased proportionately. In any such period, where the number of hours of exposure is greater than forty, the limits specified in the table shall be decreased proportionately.

(c) *Exposure of minors.* No licensee shall possess, use, or transfer licensed material in such a manner as to cause any individual under 18 years of age within a restricted area to receive in any period of seven consecutive days from radioactive material and other sources of radiation in the licensee's possession a dose in excess of 10 percent of the limits specified in Appendix A of this part, or to be exposed to airborne radioactive material possessed by the licensee in a concentration in excess of the limits specified in Appendix B, Table II, of this part. For purposes of this paragraph, concentrations may be averaged over periods not greater than a week.

§ 20.102 *Permissible levels of radiation in unrestricted areas.* (a) There may be included in any application for a license or for amendment of a license proposed limits upon levels of radiation in unrestricted areas resulting from the applicant's possession or use of radioactive material and other sources of radiation. Such applications should include information as to anticipated average radiation levels and anticipated occupancy times for each unrestricted area involved. The Commission will approve the proposed limits if the applicant demonstrates that the proposed limits are not likely to cause any individual to receive a dose in any period of seven consecutive

days in excess of 10 percent of the limits specified in Appendix A of this part.

(b) Except as authorized by the Commission pursuant to paragraph (a) of this section, no licensee shall possess, use, or transfer licensed material in such a manner as to create in any unrestricted area from radioactive material and other sources of radiation in his possession:

(1) Radiation levels which, if an individual were continuously present in the area, could result in his receiving a dose in excess of two millirems in any one hour, or

(2) Radiation levels which, if an individual were continuously present in the area, could result in his receiving a dose in excess of 100 millirems in any seven consecutive days.

§ 20.103 *Concentrations in effluents to unrestricted areas.* (a) There may be included in any application for a license or for amendment of a license proposed limits upon concentrations of licensed and other radioactive material released into air or water in unrestricted areas as a result of the applicant's proposed activities. Such applications should include information as to anticipated average concentrations and anticipated occupancy times for each unrestricted area involved. The Commission will approve the proposed limits if the applicant demonstrates that it is not likely that any individual will be exposed to concentrations in excess of the limits specified in Appendix B, Table II, of this part. For purposes of this paragraph, concentration may be averaged over periods not greater than one year.

(b) Except as authorized by the Commission pursuant to § 20.302 or paragraph (a) of this section, no licensee shall possess, use, or transfer licensed material in such a manner as to release into air or water in any unrestricted area any concentration of radioactive material in excess of the limits specified in Appendix B, Table II of this part. For purposes of this paragraph, concentrations may be averaged over periods not greater than one year.

(c) For purposes of this section, determinations as to the concentration of radioactive material shall be made with respect to the point where such material leaves the restricted area. Where the radioactive material leaves the restricted area in a stack, tube, pipe, or similar conduit, the determination may be made with respect to the point where the material leaves such conduit.

(d) The provisions of this section do not apply to disposal of radioactive material into sanitary sewerage systems (see § 20.303).

§ 20.104 *Medical diagnosis, therapy, and research.* Nothing in the regulations in this part shall be interpreted as limiting the intentional exposure of patients to radiation for the purpose of medical diagnosis or medical therapy.

§ 20.105 *Measures to be taken after excessive exposures.* In the event

that any individual in a restricted area receives a dose or is exposed to concentrations of radioactive material in excess of the permissible limits established in § 20.101, the licensee shall limit the weekly dose or exposure of the individual to 10 percent of such permissible limit until such time as the average weekly dose or exposure to the individual for the period beginning with the week in which the excessive dose or exposure occurred is less than the permissible limit established in § 20.101.

PRECAUTIONARY PROCEDURES

§ 20.201 *Surveys.* (a) As used in the regulations in this part, "survey" means an evaluation of the radiation hazards incident to the production, use, release, disposal, or presence of radioactive materials or other sources of radiation under a specific set of conditions. When appropriate, such evaluation includes a physical survey of the location of materials and equipment, and measurements of levels of radiation or concentrations of radioactive material present.

(b) Each licensee shall make or cause to be made such surveys as may be necessary for him to comply with the regulations in this part.

§ 20.202 *Personnel monitoring.* (a) Each licensee shall supply appropriate personnel monitoring equipment to, and shall require the use of such equipment by:

(1) Each individual who enters a restricted area under such circumstances that he receives, or is likely to receive, a dose in excess of 25 percent of the limits specified in Appendix A of this part;

(2) Each individual who enters a high radiation area.

(b) As used in this part,

(1) "Personnel monitoring equipment" means devices designed to be worn or carried by an individual for the purpose of measuring the dose received (e. g., film badges, pocket chambers, pocket dosimeters, film rings, etc.);

(2) "Radiation area" means any area, accessible to personnel, in which there exists radiation, originating in whole or in part within licensed material, at such levels that a major portion of the body could receive in any one hour a dose in excess of 5 millirem, or in any 5 consecutive days a dose in excess of 150 millirem;

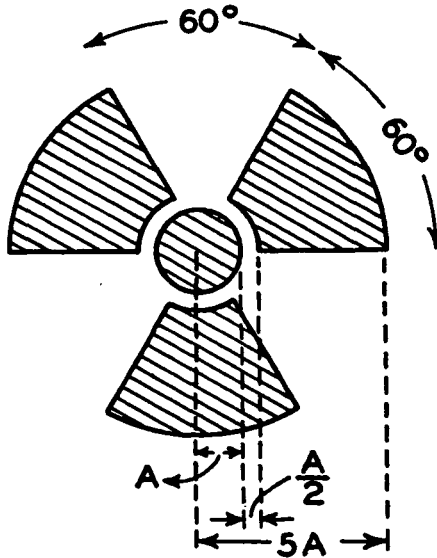
(3) "High radiation area" means any area, accessible to personnel, in which there exists radiation originating in whole or in part within licensed material at such levels that a major portion of the body could receive in any one hour a dose in excess of 100 millirem.

§ 20.203 *Caution signs, labels, and signals*—(a) *General.* (1) Except as otherwise authorized by the Commission, symbols prescribed by this section shall use the conventional radiation caution colors (magenta or

purple on yellow background). The symbol prescribed by this section is the conventional three-bladed design:

RADIATION SYMBOL

1. Cross-hatched area is to be magenta or purple.
2. Background is to be yellow.



(2) In addition to the contents of signs and labels prescribed in this section, licensees may provide on or near such signs and labels any additional information which may be appropriate in aiding individuals to minimize exposure to radiation or to radioactive material.

(b) *Radiation areas.* Each radiation area shall be conspicuously posted with a sign or signs bearing the radiation caution symbol and the words:

CAUTION ¹

RADIATION AREA

(c) *High radiation areas.* (1) Each high radiation area shall be conspicuously posted with a sign or signs bearing the radiation caution symbol and the words:

CAUTION ¹

HIGH RADIATION AREA

(2) Each high radiation area shall be equipped with a control device which shall either cause the level of radiation to be reduced below that at which an individual might receive a dose of 100 millirem in one hour upon

¹ Or "Danger."

entry into the area or shall energize a conspicuous visible or audible alarm signal in such a manner that the individual entering and the licensee or a supervisor of the activity are made aware of the entry. In the case of a high radiation area established for a period of 30 days or less, such control device is not required.

(d) *Airborne radioactivity areas.* (1) As used in the regulations in this part, "airborne radioactivity area" means (i) any room, enclosure, or operating area in which airborne radioactive materials, composed wholly or partly of licensed material, exist in concentrations in excess of the amounts specified in Appendix B, Table I, Column 1 of this part; or (ii) any room, enclosure, or operating area in which airborne radioactive material composed wholly or partly of licensed material exists in concentrations which, averaged over the number of hours in any week during which individuals are in the area, exceed 25 percent of the amounts specified in Appendix B, Table I, Column 1 of this part.

(2) Each airborne radioactivity area shall be conspicuously posted with a sign or signs bearing the radiation caution symbol and the words:

CAUTION ¹

AIRBORNE RADIOACTIVITY AREA

(e) *Additional requirements.* (1) Each area or room in which licensed material is used or stored and which contains any radioactive material (other than natural uranium or thorium) in an amount exceeding 10 times the quantity of such material specified in Appendix C of this part shall be conspicuously posted with a sign or signs bearing the radiation caution symbol and the words:

CAUTION ¹

RADIOACTIVE MATERIAL(S)

(2) Each area or room in which natural uranium or thorium is used or stored in an amount exceeding one-hundred times the quantity specified in Appendix C of this part shall be conspicuously posted with a sign or signs bearing the radiation caution symbol and the words:

CAUTION ¹

RADIOACTIVE MATERIAL(S)

(f) *Containers.* (1) Each container in which is transported, stored, or used a quantity of any licensed material (other than natural uranium or thorium) greater than the quantity of such material specified in Appendix C of this part shall bear a durable, clearly visible label bearing the radiation caution symbol and the words:

CAUTION ¹

RADIOACTIVE MATERIAL

¹ Or "Danger."

(2) Each container in which natural uranium or thorium is transported, stored, or used in a quantity greater than ten times the quantity specified in Appendix C of this part shall bear a durable, clearly visible label bearing the radiation caution symbol and the words:

CAUTION¹

RADIOACTIVE MATERIAL

(3) Notwithstanding the provisions of subparagraphs (1) and (2) a label shall not be required:

(i) If the concentration of the material in the container does not exceed that specified in Appendix B, Table I, Column 2 of this part, or

(ii) For laboratory containers, such as beakers, flasks, and test tubes, used transiently in laboratory procedures, when the user is present.

(4) Where containers are used for storage, the labels required in this paragraph shall state also the quantities and kinds of radioactive materials in the containers and the date of measurement of the quantities.

§ 20.204 *Exceptions from posting requirements.* Notwithstanding the provisions of § 20.203,

(a) A room or area is not required to be posted with a caution sign because of the presence of a sealed source provided the radiation level twelve inches from the surface of the source container or housing does not exceed five millirem per hour.

(b) Rooms or other areas in hospitals are not required to be posted with caution signs because of the presence of patients containing byproduct material provided that there are personnel in attendance who shall take the precautions necessary to prevent the exposure of any individual to radiation or radioactive material in excess of the limits established in the regulations in this part.

(c) Caution signs are not required to be posted at areas or rooms containing radioactive materials for periods of less than eight hours provided that (1) the materials are constantly attended during such periods by an individual who shall take the precautions necessary to prevent the exposure of any individual to radiation or radioactive materials in excess of the limits established in the regulations in this part and; (2) such area or room is subject to the licensee's control.

§ 20.205 *Exemptions for radioactive materials packaged for shipment.* Radioactive materials packaged and labeled in accordance with regulations of the Interstate Commerce Commission shall be exempt from the labeling and posting requirements of § 20.203 during shipment, provided that the inside containers are labeled in accordance with the provisions of § 20.203 (f).

¹ Or "Danger."

§ 20.206 *Instruction of personnel.* All individuals working in or frequenting any portion of a restricted area shall be informed of the occurrence of radioactive materials or of radiation in such portion, and shall be instructed in the hazards of excessive exposure to such materials or radiation and in precautions or procedures to minimize exposure.

§ 20.207 *Storage of licensed material.* Licensed materials stored in an unrestricted area shall be secured against unauthorized removal from the place of storage.

WASTE DISPOSAL

§ 20.301 *General requirement.* No licensee shall dispose of licensed material except:

(a) By transfer to an authorized recipient as provided in the regulations in Part 30, 40, or 70 of this chapter, whichever may be applicable; or

(b) As authorized pursuant to § 20.302; or

(c) As provided in § 20.303 or § 20.304, applicable respectively to the disposal of licensed material by release into sanitary sewerage systems or burial in soil, or in § 20.103 (Concentrations in Effluents to Unrestricted Areas).

§ 20.302 *Method for obtaining approval of proposed disposal procedures.* Any licensee or applicant for a license may apply to the Commission for approval of proposed procedures to dispose of licensed material in a manner not otherwise authorized in the regulations in this chapter. Each application should include a description of the licensed material and any other radioactive material involved, including the quantities and kinds of such material and the levels of radioactivity involved, and the proposed manner and conditions of disposal. The application should also include an analysis and evaluation of pertinent information as to the nature of the environment, including topographical, geological, meteorological, and hydrological characteristics; usage of ground and surface waters in the general area; the nature and location of other potentially affected facilities; and procedures to be observed to minimize the risk of unexpected or hazardous exposures.

§ 20.303 *Disposal by release into sanitary sewerage systems.* No licensee shall discharge licensed material into a sanitary sewerage system unless:

(a) It is readily soluble or dispersible in water; and

(b) The quantity of any licensed or other radioactive material released into the system by the licensee in any one day does not exceed the larger of subparagraphs (1) or (2) of this paragraph:

(1) The quantity which, if diluted by the average daily quantity of sewage released into the sewer by the licensee, will result in an average concentration equal to the limits specified in Appendix B, Table I, Column 2 of this part; or

(2) Ten times the quantity of such material specified in Appendix C of this part; and

(c) The quantity of any licensed or other radioactive material released in any one month, if diluted by the average monthly quantity of water released by the licensee, will not result in an average concentration exceeding the limits specified in Appendix B, Table I, Column 2 of this part; and

(d) The gross quantity of licensed and other radioactive material released into the sewerage system by the licensee does not exceed one curie per year.

Excreta from individuals undergoing medical diagnosis or therapy with radioactive material shall be exempt from any limitations contained in this section.

§ 20.304 *Disposal by burial in soil.* No licensee shall dispose of licensed material by burial in soil unless:

(a) The total quantity of licensed and other radioactive materials buried at any one location and time does not exceed, at the time of burial, 1,000 times the amount specified in Appendix C of this part; and

(b) Burial is at a minimum depth of four feet; and

(c) Successive burials are separated by distances of at least six feet and not more than 12 burials are made in any year.

RECORD, REPORTS, AND NOTIFICATION

§ 20.401 *Records of surveys, radiation monitoring, and disposal.* (a) Each licensee shall maintain records showing the radiation exposures of all individuals subject to personnel monitoring control under § 20.202 of the regulations in this part.

(b) Each licensee shall maintain records showing the name of each individual exposed to radiation pursuant to § 20.101 (a) (2) and the weekly dose of each such individual for the 13 consecutive weeks of highest cumulative weekly dose.

(c) Each licensee shall maintain records in the same units used in the appendices to this part, showing the results of surveys required by § 20.201 (b), and disposals made under §§ 20.302, 20.303, and 20.304.

§ 20.402 *Reports of theft or loss of licensed material.* Each licensee shall report by telephone and telegraph to the Manager of the nearest Atomic Energy Commission Operations Office listed in Appendix D, immediately after its occurrence becomes known to the licensee, any loss or theft of licensed material in such quantities and under such circumstances that it appears to the licensee that a substantial hazard may result to persons in unrestricted areas.

[22 F. R. 3389, May 14, 1957]

§ 20.403 *Notifications and reports of incidents*—(a) *Immediate notification.* Each licensee shall immediately notify the Manager of the nearest Atomic Energy Commission Operations Office listed in Appendix D by tele-

phone and telegraph of any incident involving licensed material possessed by him and which may have caused or threatens to cause:

(1) Exposure of any individual to 25 rems or more of radiation, including any radioactive material taken into the body; or

(2) The release of radioactive material in concentrations which, if averaged over a period of 24 hours, would exceed 5000 times the limits specified for such materials in Appendix B, Table 2; or

(3) A loss of one working week or more of the operation of any facilities affected; or

(4) Damage to property in excess of \$100,000.

(b) *Twenty-four hour notification.* Each licensee shall within 24 hours notify the Manager of the nearest Atomic Energy Commission Operations Office listed in Appendix D by telephone and telegraph of any incident involving licensed material possessed by him and which may have caused or threatens to cause:

(1) Exposure of any individual to 3 rems or more of radiation, including any radioactive material taken into the body; or

(2) The release of radioactive material in concentrations which, if averaged over a period of 24 hours, would exceed 500 times the limits specified for such materials in Appendix B, Table 2; or

(3) A loss of one day or more of the operation of any facilities affected; or

(4) Damage to property in excess of \$1,000.

(c) *Thirty-day reports.* Each licensee shall make a report in writing within 30 days to the Director, Division of Civilian Application, United States Atomic Energy Commission, Washington 25, D. C., of each incident involving licensed material possessed by him which appears to have resulted in the exposure of an individual to radiation or to concentrations of radioactive material, or to have resulted in levels of radiation or concentrations of radioactive material, in excess of any applicable limits set forth in these regulations or in the licensee's license. Each report required under this paragraph shall describe the nature of the incident, the extent of exposure of persons to radiation or to radioactive material, the levels of radiation and concentrations of radioactive material involved, the cause of the incident, and corrective steps taken or planned to assure against a recurrence of the incident. A copy of each report shall be transmitted to the Manager of the nearest Atomic Energy Commission Operations Office listed in Appendix D. [22 F. R. 3389, May 14, 1957]

EXCEPTIONS AND ADDITIONAL REQUIREMENT

§ 20.501 *Applications for exemptions.* The Commission may, upon application by any licensee or upon its own initiative grant such exemptions