

# DEPARTMENT OF ENVIRONMENTAL CONSERVATION



**18 AAC 85**

## **Radiation Protection**

Amended as of November 7, 2017

**Bill Walker**  
Governor

**Larry Hartig**  
Commissioner

THE REGULATIONS REPRODUCED HERE HAVE BEEN PROVIDED BY THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION AS A PUBLIC COURTESY. WHILE EVERY EFFORT HAS BEEN MADE TO ASSURE THE ACCURACY OF THE REPRODUCED VERSION, THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION CANNOT GUARANTEE ITS ABSOLUTE ACCURACY. PAPER COPIES OF THE REGULATIONS AS ORIGINALLY FILED BY THE LIEUTENANT GOVERNOR ARE AVAILABLE FROM THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION.

THE REGULATIONS HAVE AN EFFECTIVE DATE OF NOVEMBER 7, 2017, ARE IN REGISTER 224, AND WILL APPEAR IN OFFICIAL PUBLISHED FORM IN THE JANUARY 2018 SUPPLEMENT TO THE ALASKA ADMINISTRATIVE CODE.

**Chapter 85  
Radiation Protection**

Article

1. Registration of Ionizing Radiation Sources. (18 AAC 85.010 - 18 AAC 85.110)
2. General Ionizing Radiation Protection Requirements. (18 AAC 85.120 - 18 AAC 85.400)
3. Use of X-rays in the Healing Arts. (18 AAC 85.410 - 18 AAC 85.490)
4. Use of Sealed Radioactive Sources in the Healing Arts. (18 AAC 85.500)
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**Article 1  
Registration of Ionizing Radiation Sources**

Section

10. (Repealed).
20. (Repealed).
30. (Repealed).
40. (Repealed).
50. (Repealed).
60. (Repealed).
70. (Repealed).
80. (Repealed).
90. (Repealed).
100. (Repealed).
110. (Repealed).

**18 AAC 85.010. Registration requirement.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.020. Exemptions.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.030. Approval not implied.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.040. Registration procedure.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.050. Maintenance of records.** Repealed. (Eff. 9/16/71, Register 39; repealed 9/4/2009, Register 190)

**18 AAC 85.060. Access to records.** Repealed. (Eff. 9/16/71, Register 39; repealed 9/4/2009, Register 190)

**18 AAC 85.070. Access to premises.** Repealed. (Eff. 9/16/71, Register 39; repealed 9/4/2009, Register 190)

**18 AAC 85.080. Vendor notification.** Repealed. (Eff. 9/16/71, Register 39; repealed 9/4/2009, Register 190)

**18 AAC 85.090. Out-of-state sources.** Repealed. (Eff. 9/16/71, Register 39; repealed

**18 AAC 85.100. Out-of-state users.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.110. Protection requirements.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**Article 2**  
**General Ionizing Radiation Protection Requirements**

Section

- 120. (Repealed).
- 130. (Repealed).
- 140. (Repealed).
- 150. (Repealed).
- 160. (Repealed).
- 170. (Repealed).
- 180. (Repealed).
- 190. (Repealed).
- 200. (Repealed).
- 210. Radioactivity in effluents to uncontrolled areas.
- 220. (Repealed).
- 230. (Repealed).
- 240. (Repealed).
- 250. (Repealed).
- 260. (Repealed).
- 270. (Repealed).
- 280. Approval of proposed disposal procedures.
- 290. Disposal by release into sanitary sewerage systems.
- 300. Disposal by burial in soil.
- 310. Disposal by incineration.
- 320. Intrastate transportation of radioactive material.
- 330. (Repealed).
- 340. (Repealed).
- 350. (Repealed).
- 360. (Repealed).
- 370. (Repealed).
- 380. (Repealed).
- 390. (Repealed).
- 400. (Repealed).

**18 AAC 85.120. Prohibited use.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.130. External limits in controlled areas.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.140. Doses exceeding prescribed limits.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.150. Determination of accumulated dose in controlled areas.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.160. Limits of airborne radioactive material in controlled areas.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.170. External limits in uncontrolled areas.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.180. Doses to minors.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.190. Dose limits for students.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.200. Limitation on electrical equipment used for teaching purposes.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.210. Radioactivity in effluents to uncontrolled areas.** (a) Except as authorized in 18 AAC 85.280 or in (b) of this section, a person may not possess, use, or transfer radioactive material in a manner that will release to an uncontrolled area radioactive material in concentrations that exceed the limits specified in 10 C.F.R. 20, Appendix B, Table 2, revised as of January 1, 2014 and adopted by reference. For purposes of this subsection, concentrations may be averaged over a period not greater than one year.

(b) A person may apply to the department for proposed limits higher than those specified in (a) of this section. The department may approve the proposed limits if the applicant demonstrates that

(1) the applicant has made a reasonable effort to minimize the radioactivity contained in effluents to uncontrolled areas; and

(2) it is not likely that radioactive material discharge in the effluent will result in the exposure of an individual to concentrations of radioactive materials in the air or water exceeding the limits specified in 10 C.F.R. 20, Appendix B, Table 2, adopted by reference in (a) of this section.

(c) An application for higher limits pursuant to paragraph (b) of this section shall include information demonstrating that the applicant has made a reasonable effort to minimize the radioactivity discharged in effluents to uncontrolled areas, and shall include, as pertinent

(1) information on flow rates, total volume of the effluent, peak concentrations of each radionuclide in the effluent, and concentration of each radionuclide in the effluent averaged over a period of one year at the point where the effluent leaves a stack, tube, pipe or similar conduit;

(2) a description of the properties of the effluents, including

- (A) chemical composition;
  - (B) physical characteristics, including suspended solids, content in liquid effluents, and nature of gas or aerosol for air effluents;
  - (C) the hydrogen ion concentrations (pH) of liquid effluents; and
  - (D) the size range of particulates in effluents released into air;
- (3) a description of the anticipated human occupancy in the uncontrolled area where the highest concentration of radioactive material from the effluent is expected, and in the case of a river or stream, a description of water used downstream from the point of release of the effluent;
- (4) information as to the highest concentration of each radionuclide in an uncontrolled area, including anticipated concentrations averaged over a period of one year
- (A) in air at any point of human occupancy; or
  - (B) in water at points of use downstream from the point of release of the effluent;
- (5) the background concentration of radionuclides in the receiving river or stream prior to the release of liquid effluent;
- (6) a description of the environmental monitoring equipment, including sensitivity of the system, and procedures and calculations to determine the concentrations of radionuclides in the uncontrolled area and possible reconcentrations of radionuclides; and
- (7) a description of the waste treatment facilities and procedures used to reduce the concentration of radionuclides in effluents prior to their release.
- (d) For purposes of this section, the concentration limits in 10 C.F.R. 20, Appendix B, Table 2, adopted by reference in (a) of this section apply at the boundary of the controlled area. The concentration of radioactive material discharged through a stack, pipe, or similar conduit may be determined with respect to the point where the material leaves the conduit. If the conduit discharges within the controlled area, the concentration at the boundary may be determined by applying appropriate factors for dilution, dispersion, or decay between the point of discharge and the boundary.
- (e) In addition to limiting concentration in effluent streams, the department may limit quantities of radioactive materials released in air or water during a specified period of time if the department determines that the daily intake of radioactive material from air, water, or food by a suitable sample of an exposed population group, averaged over a period not exceeding one year, would otherwise exceed the daily intake resulting from continuous exposure to air or water

containing one-third the concentration of radioactive material specified in 10 C.F.R. 20, Appendix B, Table 2, adopted by reference in (a) of this section.

(f) The provisions of this section do not apply to disposal of radioactive material into sanitary sewerage systems, which is governed by the provisions of 18 AAC 85.290. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190; am 7/1/2015, Register 214)

**Authority:** AS 46.03.020 AS 46.03.250 AS 46.03.260

**18 AAC 85.220. Surveys.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.230. Personnel monitoring.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.240. Posting, labeling, and caution signs.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.250. Instruction of personnel.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.260. Storage of sources.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.270. General requirements for waste disposal.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.280. Approval of proposed disposal procedures.** (a) Any person may apply to the department for approval of proposed procedures to dispose of radioactive material in a manner not otherwise authorized in this chapter.

(b) Each application shall include a description of the radioactive material, including the quantities and kinds of radioactive material and the levels of radioactivity involved, and the proposed manner and conditions of disposal.

(c) The application, where appropriate, 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; and the location of other potentially affected facilities; and procedures to be observed to minimize the risk of unexpected or hazardous exposures. (Eff. 9/16/71, Register 39)

**Authority:** AS 46.03.020 AS 46.03.260



**18 AAC 85.290. Disposal by release into sanitary sewerage systems.** (a) A person may not discharge any radioactive material subject to the provisions of this chapter into a sanitary sewerage system unless the:

(1) radioactive material is readily soluble or dispersible in water;

(2) quantity of the radioactive material released into the sewerage system by that person in any one day does not exceed the larger of

(A) the quantity that, if diluted by the average daily quantity of sewage released into the sewer by that person, will result in an average concentration not greater than the limits specified in 10 C.F.R. 20, Appendix B, Table 1, revised as of January 1, 2014 and adopted by reference; or

(B) 10 times the quantity of the material specified in 10 C.F.R. 20, Appendix C, revised as of January 1, 2014 and adopted by reference;

(3) quantity of any radioactive material released in any one month, if diluted by the average monthly quantity of water released by that person, will not result in an average concentration exceeding the limits specified in 10 C.F.R. 20, Appendix B, Table 3, revised as of January 1, 2014 and adopted by reference; and

(4) gross quantity of radioactive material released into the sewerage system by that person does not exceed one curie per year.

(b) Excreta, blood, and blood plasma from an individual undergoing diagnosis or therapy with radioactive material is exempt from any limitations contained in this section. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190; am 7/1/2015, Register 214)

**Authority:** AS 46.03.020 AS 46.03.250 AS 46.03.260

**18 AAC 85.300. Disposal by burial in soil.** A person may not dispose of radioactive material by burial in soil. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190; am 7/1/2015, Register 214)

**Authority:** AS 46.03.020 AS 46.03.250 AS 46.03.260

**18 AAC 85.310. Disposal by incineration.** A person may not incinerate radioactive material for the purpose of disposal or preparation for disposal, except as specifically approved by the department under 18 AAC 85.210(b) and 18 AAC 85.280. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190; am 7/1/2015, Register 214)

**Authority:** AS 46.03.020 AS 46.03.250 AS 46.03.260

**18 AAC 85.320. Intrastate transportation of radioactive material.** A person may not transport any radioactive material outside of the confines of a plant or other location of use, or deliver any radioactive material to a carrier for transportation, unless that person complies with all requirements appropriate to the mode of transportation, to the packaging of the radioactive material, and to the marking and labeling of the package and transporting vehicle that are contained in the regulations of the United States Department of Transportation contained in 10 C.F.R. Part 71 and 40 C.F.R. Part 173, revised as of July 8, 2014 and adopted by reference. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190; am 7/1/2014, Register 214)

**Authority:** AS 46.03.020 AS 46.03.250 AS 46.03.260

**18 AAC 85.325. Appeals.** Any person aggrieved by a permit decision under AS 46.03.250 may seek an informal review under 18 AAC 15.185 of an adjudicatory hearing under 18 AAC 15.195 – 18 AAC 15.310. (Eff. 11/7/2017, Register 224)

**Authority:** AS 46.03.020 AS 46.03.260 AS 46.03.880

**18 AAC 85.330. Records.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.340. Report to employees.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.350. Report to former employees.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.360. Report of theft or loss of sources.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.370. Notification of incidents.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.380. Reports of overexposures and excessive levels and concentrations.** (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.390. Vacating premises.** (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.400. Exposure levels in uranium mines.** (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**Article 3**  
**Use of X-rays in the Healing Arts**

Section

- 410. (Repealed).
- 420. (Repealed).
- 430. (Repealed).
- 440. (Repealed).
- 450. (Repealed).
- 460. (Repealed).
- 470. (Repealed).
- 480. (Repealed).
- 490. (Repealed).

**18 AAC 85.410. General safety provisions.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.420. Waiver.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.430. Proper use.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.440. Shielding.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.450. Fluoroscopic installations.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.460. Medical radiographic installations.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.470. Dental radiographic installations.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.480. Veterinary medicine radiographic installations.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.490. Therapeutic X-ray installations.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

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**Article 4**  
**Use of Sealed Radioactive Sources in the Healing Arts**

Section

500. (Repealed).

**18 AAC 85.500. Interstitial, intercavitary and superficial applications.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

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**Article 5**  
**Industrial Radiography Protection Requirements**

Section

510. (Repealed).

520. (Repealed).

530. (Repealed).

540. (Repealed).

550. (Repealed).

560. (Repealed).

570. (Repealed).

580. (Repealed).

590. (Repealed).

600. (Repealed).

610. (Repealed).

620. (Repealed).

630. (Repealed).

640. (Repealed).

**18 AAC 85.510. Locking machines.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**18 AAC 85.520. Storage.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**18 AAC 85.530. Survey instruments.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**18 AAC 85.540. Utilization logs.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**18 AAC 85.550. Personnel.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**18 AAC 85.560. Operating and emergency procedures.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**18 AAC 85.570. Personnel monitoring control.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**18 AAC 85.580. Security.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**18 AAC 85.590. Posting.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**18 AAC 85.600. Surveys and survey records.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**18 AAC 85.610. Cabinet radiography.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**18 AAC 85.620. Shielded room radiography.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**18 AAC 85.630. Field radiography.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**18 AAC 85.640. Instruction of industrial radiographers.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**Article 6**  
**Microwave Radiation Protection Limits**

Section

650. (Repealed).

660. (Repealed).

**18 AAC 85.650. Exposure rate limit from microwave ovens.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**18 AAC 85.660. Microwave oven design standards.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

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**Article 7**  
**Laser Protection Standards**

Section

670. Exemptions.

675. Exposure level limits.

680. General precautions.

690. High powered lasers.

700. Low powered gas continuous wave and semi-conductor lasers.

710. Carbon dioxide and nitrogen gas lasers.

720. Precautions for outdoor use of lasers.

730. Personnel protection equipment.

**18 AAC 85.670. Exemptions.** (a) The following lasers are exempt from these regulations:

(1) lasers during their storage, shipment, or retail sale in the course of which the laser does not emit laser radiation; and

(2) lasers in such a condition that they are impossible to energize.

(b) Closed installations are exempted from these regulations. A closed installation is defined as one in which the laser radiation is completely contained within an enclosure which precludes human occupancy, and any access ports are interlocked so as to interrupt the laser operation if the port is opened.

(c) Persons are exempted from these requirements when the laser emission levels are shown to be not in excess of the maximum permissible exposure levels as defined in sec. 675 of this chapter. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**Authority:** AS 46.03.020

**18 AAC 85.675. Exposure level limits.** The maximum permissible exposure levels for laser radiation are presented in Table VII.

TABLE VII  
MAXIMUM PERMISSIBLE EXPOSURE LEVELS FOR  
LASER RADIATION AT THE CORNEA FOR  
DIRECT ILLUMINATION OR SPECULAR  
REFLECTION AT WAVE-  
LENGTH = 6943 Å

	Q-SWITCHED PULSE 1 nsec, -1 usec.	NON-Q- SWITCHED PULSE 1 usec.- 0.1 sec.	CONTINUOUS WAVE EXPOSURES
Lighting Conditions	P.R.F. < 10 (j/cm <sup>2</sup> )	P.R.F. < 10 (j/cm <sup>2</sup> )	>0.1 sec. (W/cm <sup>2</sup> )
Daylight 3 mm pupil	5.0 x 10 <sup>-8</sup>	5.0 x 10 <sup>-7</sup>	5.0 x 10 <sup>-5</sup>
Laboratory 5 mm pupil	2.0 x 10 <sup>-8</sup>	2.0 x 10 <sup>-7</sup>	2.0 x 10 <sup>-5</sup>
Night 7 mm pupil	1.0 x 10 <sup>-8</sup>	1.0 x 10 <sup>-7</sup>	1.0 x 10 <sup>-5</sup>

(Eff. 9/16/71, Register 39, am 4/9/2009, Register 190)

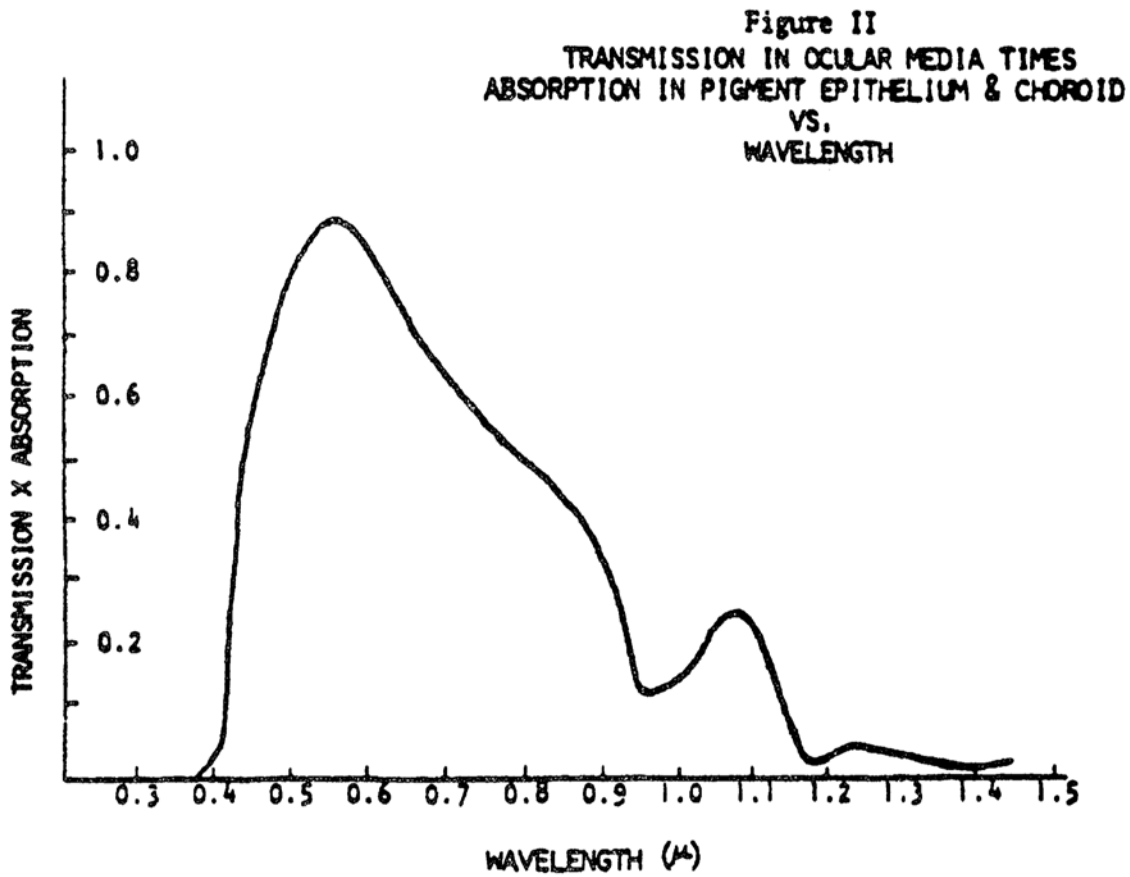
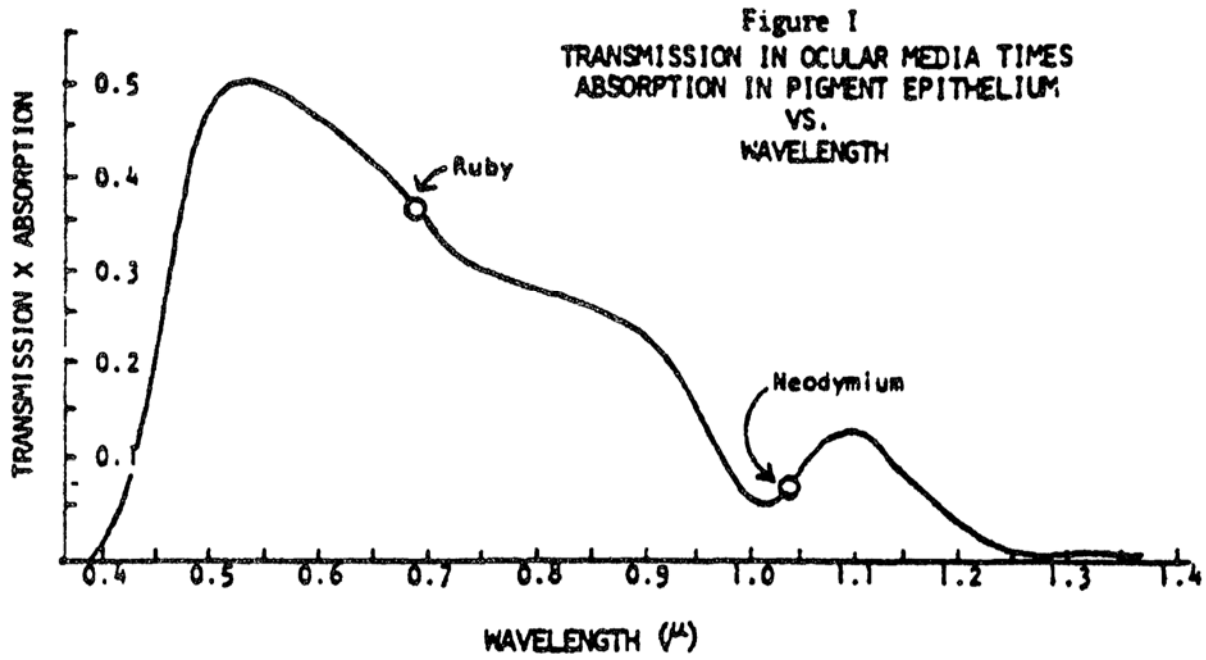
**Authority:** AS 46.03.020 AS 46.03.260

**Editor's note:** These levels can be adjusted for other wavelengths by using the graph of energy transmitted to and absorbed by the retina (Figures I and II). Figure II may be normalized at L 6943 Å. Figure I is applicable to *pulsed lasers* and Figure II to *c.w. lasers*. The adjusted levels shall not exceed the corresponding levels in Table VII by a factor greater than ten. Maximum permissible exposure levels for the skin shall not exceed the daylight levels for the eye (Table VII) by a factor of more than 105.

**18 AAC 85.680. General precautions.** The following general precautions are required or recommended in the use of laser radiation:

- (1) Aiming a laser with the eye should be avoided.
- (2) Work with lasers should be performed in areas of high general illumination.
- (3) Laser beams shall be terminated by a material having reflectance and fire resistance commensurate with the power density of the beam except when the beam is intended to interact with the termination.
- (4) Where lasers must be used in other than closed installations, an area shall be cleared of individuals for a reasonable distance on all sides of the anticipated laser beam path.
- (5) Signs warning of laser operation shall be posted at conspicuous and strategic locations. The signs may be permanent or temporary depending on the type and frequency of operation. For high powered lasers, a sign such as shown below is recommended.





(Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**Authority:** AS 46.03.020 AS 46.03.260

**18 AAC 85.690. High powered lasers.** The following are design requirements or recommendations for high powered laser installations:

(1) The laser installation shall be provided with safety interlocks constructed so that unauthorized or transient individuals are denied access to the installation while the laser power supply is charged and capable of firing.

(2) An alarm system including a muted sound, flashing light (visible through laser safety eyewear) and a countdown is advisable once the capacitor banks begin to charge.

(3) Walls and ceiling shall be painted with light diffusing non-gloss paint, preferably black near the target area, and a light color elsewhere to increase the ambient illumination. Where practical and possible, it is recommended that the color of paint be chosen complimentary to the color of the laser radiation.

(4) Lasers, such as solid state ruby pulsed devices, with power outputs in the megawatt and gigawatt range should be operated by remote control firing with viewing through protective shields or by television. For lower powered lasers, consideration should be given to providing protection commensurate with the risk. An alternative is to enclose the laser and beam within a light tight box. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**Authority:** AS 46.03.020 AS 46.03.260

**18 AAC 85.700. Low-powered gas continuous wave and semi-conductor lasers.** The following are design requirements or recommendations for a low-powered gas continuous wave laser and a semi-conductor laser:

(1) All unnecessary reflective material shall be eliminated from the area of the beam.

(2) A diffuse matte should be used to position the beam. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)

**Authority:** AS 46.03.020 AS 46.03.260

**18 AAC 85.710. Carbon dioxide and nitrogen gas lasers.** The following are design requirements for carbon dioxide and nitrogen gas lasers:

(1) A sufficient thickness of firebrick, asbestos, or other fire retardant material shall be provided as a backstop for the beam to provide fire protection.

(2) The use of this type of laser shall be such as to preclude the exposure of individuals to hazardous levels of ionizing and/or ultra-violet radiation.

(3) Reflections of the infrared laser beam shall be attenuated by enclosure of the beam and target area or by the use of eyewear constructed of a material opaque to the carbon dioxide wavelength, such as plexiglass. (Eff. 9/16/71, Register 39)

**Authority:** AS 46.03.020 AS 46.03.260

**18 AAC 85.720. Precautions for outdoor use of lasers.** (a) All individuals lacking adequate protective clothing and eyewear, and who are not forewarned, shall be excluded from the beam path of a laser used outdoors to a distance where the power or energy density is within a permissible level.

(b) The tracking of all occupied vehicles, aircraft and watercraft within a calculated hazardous distance is prohibited if the occupants are not adequately protected and forewarned. The tracking of humans within a calculated hazardous distance is prohibited if such individuals are not adequately protected and forewarned.

(c) Operation of a laser in rain, snow, fog, or dust shall be done with extreme caution.

(d) The beam path of a laser used outdoors shall be cleared of all objects capable of producing potentially hazardous reflections unless individuals capable of being exposed to potentially hazardous radiation are adequately protected and forewarned. (Eff. 9/16/71, Register 39)

**Authority:** AS 46.03.020 AS 46.03.260

**18 AAC 85.730. Personnel protection equipment.** (a) Personnel capable of being exposed to hazardous laser beam reflections shall be furnished and required to wear suitable eye safety shields.

(b) Exposure of the skin of personnel to laser beams shall be prevented by the use of protective gloves and protective coverings or shields as required. (Eff. 9/16/71, Register 39)

**Authority:** AS 46.03.020 AS 46.03.260

**Article 8**  
**General Provisions**

Section

740. (Repealed).

750. (Repealed).

760. (Repealed).

770. Definitions.

780. (Repealed).

**18 AAC 85.740. Application of regulations.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.750. Effective date.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.760. Communications.** Repealed. (Eff. 9/16/71, Register 39; repealed 4/9/2009, Register 190)

**18 AAC 85.770. Definitions.** Unless the context requires otherwise, in this chapter,

(1) “continuous wave laser” means a laser that emanates a continuous beam as opposed to a pulsed laser;

(2) “controlled area”

(A) means an area in which access is controlled by a person subject to this chapter for purposes of protection of individuals from exposure to radiation and radioactivity;

(B) does not include residential quarters, except that a separate room or rooms in a residential building may be set apart as a controlled area;

(3) “curie” means that quantity of radioactive material that decays at the rate of  $3.7 \times 10^{10}$  disintegrations per second;

(4) “department” means the Department of Environmental Conservation;

(5) “gas laser” means a type of laser in which the laser action takes place in a gas medium, such as a continuous wave laser;

(6) “laser” means light amplification by stimulated emission of radiation and is a device that emits a monochromatic, coherent beam of light, such as a light possessing a single wave length and all waves in phase;

(7) “person” includes

- (A) a business;
- (B) a health facility;
- (C) an individual;
- (D) an institution;
- (E) a municipal corporation;
- (F) a partnership;
- (G) a political subdivision;
- (H) a public or private corporation; and
- (I) any other entity;

(8) “pulsed laser” means a laser that delivers energy in short pulses, as opposed to a continuous beam in a continuous wave laser;

(9) “radiation” mean ionizing and non-ionizing radiation and sonic, infrasonic, and ultrasonic waves;

(10) “radioactive material” means a material, solid, liquid or gas that emits ionizing radiation spontaneously;

(11) repealed 7/1/2015;

(12) “uncontrolled area” means an area to which access is not controlled by a person subject to this chapter for purposes of protection of individual from exposure to radiation and radioactive materials, and, except as described in (2)(B) of this section, any area used for residential quarters. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190; am 7/1/2015, Register 214)

**Authority:** AS 46.03.020            AS 46.03.250            AS 46.03.260

**18 AAC 85.780. Forms.** Repealed. (Eff. 9/16/71, Register 39; am 4/9/2009, Register 190)