



## Ohio Administrative Code

### Rule 3701:1-54-05 Radioactive waste processing.

Effective: November 14, 2022

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(A) This rule covers the licensing of radioactive waste processors. The requirements of this rule are in addition to those in Chapters 3701:1-40, 3701:1-44 and 3701:1-56 of the Administrative Code, and other rules pursuant to Chapter 3748. of the Revised Code.

(B) The performance objectives for a radioactive waste processing facility are to:

(1) Protect the environment, the general public, and workers from unnecessary exposures to ionizing radiation and radionuclide releases exceeding the limits and constraints delineated in Chapter 3701:1-38 of the Administrative Code;

(2) Keep radioactive material secure from unauthorized access or removal; and

(3) Use sound engineering designs and prudent procedural practices to maintain doses to workers and the general public and radionuclide releases to the environment as low as reasonably achievable (ALARA).

(C) A facility is exempt from the licensing requirements of this rule to process radioactive waste if:

(1) The facility, in accordance with a specific license, processes only its own radioactive waste;

(2) Site decommissioning activities are conducted on-site in accordance with a specific license; or

(3) The facility is not required to have a decommissioning funding plan pursuant to rule 3701:1-40-17 of the Administrative Code.

(D) The application for a radioactive waste processing facility shall provide sufficient information on the facility and its operators, and the types of waste processed, to provide reasonable assurance that the performance objectives in paragraph (B) of this rule will be met. As a minimum, the applicant



shall do the following:

- (1) Submit a license application pursuant to Chapter 3701:1-40 of the Administrative Code;
- (2) Provide a description of the site suitability for processing radioactive waste for each of the following categories:
  - (a) The location of the facility in terms of land use. Include in the description the nearby structures present, local land usage, local populations, public facilities, local roads and traffic;
  - (b) The characteristics of the site in accordance with criteria contained in paragraph (E)(1) of this rule; and
  - (c) The site radiological environmental monitoring program to meet the criteria in paragraph (I) of this rule. Include baseline information for the data to be collected.
- (3) Provide a complete description of the facility, including but not limited to drawings, to meet the criteria of paragraphs (E) and (F) of this rule.
- (4) Submit details on the operation of the facility covering the topics listed in paragraph (G) of this rule.
- (5) Submit the quality assurance program used in accordance with rule 3701:1-54-04 of the Administrative Code to ensure that the construction, maintenance and operation of the facility meets the performance objectives, is consistent with the contents of the license application, and satisfies the requirements for the receipt, handling, processing and shipping of waste in this rule.
- (6) In addition to the requirements of rule 3701:1-40-38 of the Administrative Code, provide a description of the community awareness and communication program to be used. Identify the means of communication, types of information to be provided, and when the information will be provided to notify the community of the proposed operation and licensing, and identify how the effectiveness of the communication will be monitored and ensured.



(7) Describe the program for training personnel in procedures for packaging, handling, placement, inspection, surveying and emergency response for radioactive waste processing, storage and transportation.

(E) The facility design, location, and site geology shall provide reasonable assurance that radioactive materials will remain isolated from the environment as intended.

(1) The overall hydrogeologic environment of the site, in combination with engineering design, shall act to minimize and control potential radioactive material migration into surface water and ground water in the event of an accidental release. Identification and consideration of the hydrogeologic environment shall include, but is not limited to:

(a) Upstream drainage features including the potential for frequent ponding and slope stability;

(b) Characteristics of nearby rivers, streams, wetlands, or other bodies of water;

(c) Distance to the water table and aquifer;

(d) Analysis of earthquake potential or other land movement and its consequences; and

(e) Soil types under the facility with respect to compatibility with the foundation and structural design.

(2) Ensure that the licensee's structures shall meet the standards prescribed in ASCE/SEI 7-10 "Minimum Design Loads for Buildings and Other Structures" for a Category II facility as defined in the standard. This publication may be purchased from the "American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, Virginia 20191-4400, telephone (800) 548-2723," or this publication can be viewed at "the Bureau of Environmental Health and Radiation Protection library, 246 N. High Street Columbus, Ohio 43215." Facilities that will have containers exceeding type A quantities of radioactive material in normal form, as defined in Chapter 3701:1-50 of the Administrative Code, must meet the criteria for a category III facility as defined in the standard.

(3) No facility shall be:



- (a) Located in a one hundred year flood plain;
- (b) Located in a wetland; or
- (c) Operated where an emergency response plan would be required as identified in paragraph (G) of rule 3701:1-40-14 of the Administrative Code.
- (4) The facility shall be constructed to:
  - (a) Safely handle and process the waste commensurate with the characteristics of the waste;
  - (b) Aid in fire suppression, provide filtered air ventilation, maintain environmental controls, and to the extent possible, be constructed of nonflammable building materials; and
  - (c) Use materials considered to ease future decontamination and decommissioning efforts.
- (5) The facility shall incorporate the following design features to aid in keeping the radioactive waste isolated.
  - (a) Buildings and areas used for processing radioactive waste shall have appropriate ventilation and fire protection systems to minimize the release of radioactive materials into the soil, water, or atmosphere.
  - (b) Provide facilities and equipment for repackaging leaking or damaged containers.
  - (c) The facility shall be designed to confine spills. Independent and diverse engineering barriers shall be provided as necessary to minimize potential releases from the facility.
  - (d) Any person's radioactive waste may not be held on site for more than one year from the time of receipt.
- (F) Using both general descriptions and detailed drawings of the facility, identify the following



features, and any design features used in support of the performance objectives.

- (1) Describe the ventilation system and how it will assure adequate environmental controls of the processing and holding areas. Describe any applicable exhaust air filtration used.
  - (2) Describe the fire protection and suppression system to minimize the likelihood and extent of fire.
  - (3) Describe the physical security of the radioactive waste areas and the facility.
  - (4) Identify radioactive waste processing areas and where radioactive waste will be held. Identify how the processing areas and radioactive waste containers will be accessible for routine inspections.
  - (5) Describe the locations of radioactive waste handling areas, air sampling stations, effluent filters and any sources of flammable or explosive material.
  - (6) Provide a description and accurate drawing of any required special handling equipment to be employed.
  - (7) Describe the equipment installed to maintain control over the maximum concentrations of radioactive materials in gaseous and liquid effluents produced during normal operation and the means employed to keep levels of radioactive material in effluents to unrestricted areas ALARA.
  - (8) Identify the building codes and standards applied to the design and construction of the facility, and verify that the facility has been certified as complying with these codes.
- (G) Pursuant to the requirements of paragraph (B) of this rule, describe the following.
- (1) Procedures to secure radioactive materials from unauthorized access and removal, including control of access to the facility;
  - (2) Procedures used to ensure that all radioactive waste subject to transportation will meet transportation requirements;



- (3) Radiation safety program for control and monitoring of radioactive effluents to ensure compliance with the occupational radiation exposure limits, and to control contamination of personnel, vehicles, equipment, buildings, and the facility. Both routine operations and accidents must be addressed. The program description must include procedures, instrumentation, facilities, and equipment;
  - (4) Procedures for receipt and acceptance of waste packages. The procedures shall include examination of shipping documents, visual check of waste package, survey for removable contamination and external radiation level, identification of packages requiring remediation, corrective actions, and disposition of unacceptable packages;
  - (5) A program for safe placement and inspection of waste and maintaining occupational exposures ALARA when it is not being processed. The program shall include periodic radiation and contamination surveys of individual packages;
  - (6) A program for periodic inspections of radioactive waste packages to ensure that they retain their integrity and containment of radioactive waste;
  - (7) The procedures and equipment used for remote handling and/or repackaging damaged or leaking waste containers;
  - (8) General flow diagram and detailed procedures of radioactive waste receipt, handling, processing, and storage operations;
  - (9) Spill detection equipment and cleanup plans for the site and associated transportation of radioactive material; and
  - (10) A system for maintaining inventory of receipt, processing, storage, and transfer of radioactive waste.
- (H) The radiation safety requirements shall include the following documents and content:
- (1) The radiation safety manual shall include a description of personnel monitoring methods, training



and procedures to be followed to limit employees' exposure to radioactive materials, and methods to keep radiation exposures ALARA;

(2) The operating manual shall include procedures to protect the integrity of the equipment and radioactive material containment during normal handling, processing, and storage conditions, and when shipping radioactive materials; and

(3) An emergency response manual shall include procedures to address likely accident conditions.

(I) The facility shall maintain a radiological environmental monitoring program, to measure and monitor radionuclides in all pathways to individuals, the environment, and the general public from radiological operations. In establishing such a program, the facility must do the following:

(1) Identify all the possible onsite and offsite environmental radiological exposure pathways. The exposure pathways shall include but are not limited to applicable air, soil, groundwater, surface water, and vegetation. The offsite pathway exposure locations shall take into consideration meteorological, terrestrial, and emission source parameters;

(2) Describe the environmental monitoring program to provide data to evaluate radionuclide releases and accumulations in the environment;

(3) Describe the action levels of radionuclides in the environment that will initiate an investigation or corrective action; and

(4) Describe the plan for taking corrective measures if an unintentional release of radionuclides material is indicated.

(J) The licensee shall:

(1) Keep records showing the receipt, inventory, processing, transfer, and disposal of all radioactive waste; and

(2) Prepare and send an annual summary report to the director and publish a local notice of the



report's availability to the public. The report shall include, at a minimum, a summary of radioactive waste received, processed, disposed, transferred, incidents, and environmental monitoring results. The annual summary report shall be completed and submitted within ninety days after the end of the licensee's fiscal year.

(K) The processor shall contractually agree with the generator to the return of radioactive waste to the generator. The waste processor may dispose of the radioactive waste on behalf of the generator at a licensed disposal facility in a timely manner.