



Oregon

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To: Energy Facility Siting Council

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Date: September 8, 2023

Subject: Agenda Item G (Action Item): Radioactive Waste Disposal Rulemaking Project, Initiation of Formal Rulemaking for the September 22, 2023 EFSC Meeting

Attachments: Attachment 1: Draft Notice of Proposed Rulemaking
Attachment 2: Previous RAC Comments and Staff Response
Attachment 3: Most Recent RAC Comments and Staff Response
Attachment 4: RAC Membership List
Attachment 5: Redline of Proposed Rule Changes

STAFF RECOMMENDATION

The Oregon Department of Energy (ODOE or Department) requests that the Energy Facility Siting Council (EFSC or Council) authorize issuance of a Notice of Proposed Rulemaking and initiate formal proceedings to adopt the revision to OAR-345-050-0006 through -0030 as shown in Attachment 1 (Draft Notice of Proposed Rulemaking) and Attachment 5 (redline of proposed rule changes). Additionally, the Department requests that Council suspend the rulemaking process for OAR-345-050-0035 through-0038 (the “Pathway Exemption” process), for reasons explained below.

BACKGROUND AND SUMMARY

In its 2020-2022 Rulemaking Schedule, Council approved a rulemaking project to evaluate the current regulatory landscape and body of evidence related to radioactive waste and identify potential updates to the Council’s rules under OAR 345-050, which govern radioactive waste definitions.

Longstanding Oregon statute (ORS 469.525) bans disposal of radioactive waste in Oregon, and Council, by rule, has established rules to define what constitutes “radioactive waste” subject to the disposal ban. This includes defining specific types of waste that are or are not considered

radioactive waste, and establishing thresholds for radioactivity that are used to assess whether certain wastes are considered radioactive.

In 2021, Oregon Senate Bill 246 directed Council to review and, as necessary, revise its rules to further consider and adopt standards and rules as necessary to prevent the disposal of radioactive waste within this state. ORS 469.300 includes a definition of radioactive waste and a definition of what is *not* radioactive waste. It states that “*Radioactive waste’ does not include: ... Materials identified by the council by rule as presenting no significant danger to the public health and safety.*” It is this task that is the focus of this rulemaking project.

Radiation occurs naturally in the environment and through human activity radioactive isotopes can be concentrated. Because radioactivity is so prevalent in the natural world, it is necessary for Council to adopt specific standards and rules to define what types of waste and levels of radioactivity are considered safe and allowable for disposal in Oregon.¹

It is important to note that the most common types of radioactive waste in Oregon are typically not subject to federal disposal regulation, contain very low levels of radiation, and are usually the product of industrial activity or medical treatments. These types of wastes originate both from Oregon-based and out-of-state sources.

Other types of highly radioactive waste, such as spent nuclear fuel from nuclear power plants, are subject to federal disposal regulations and sometimes state regulations as well. Waste with high levels of radioactivity, waste that originates at commercial nuclear power plants, waste that originates from America’s historic nuclear weapons production facilities, and other sources, is always considered “radioactive waste” by EFSC rules and thus never allowable for disposal in Oregon.

In fall 2021, Council appointed a Rulemaking Advisory Committee (RAC) comprised of a diverse cross-section of stakeholder groups. RAC members represent interests across the state. RAC members are listed in Attachment 4. The RAC met five times, most recently in April 2023. Additionally, the RAC and ODOE staff have shared information via email, particularly as drafts of the proposed rules have been developed. All materials from RAC meetings can be found on EFSC’s rulemaking website. A high-level summary of RAC meeting topics is presented below.

Meeting date/Milestone (number)	Topics Discussed/Actions Taken
October 2021 (1)	<ul style="list-style-type: none">• Overview of rulemaking process and existing rules

¹ All humans are exposed to radiation in the natural and human-made environment. Typical exposures to elevated levels of radioactivity come from radon gas emanating from the earth’s crust, solar radiation from flying in airplanes, medical and dental procedures, and even from natural stone kitchen countertops, bananas, or certain types of nuts, just to name a few common and well-known sources.

Meeting date/Milestone (number)	Topics Discussed/Actions Taken
	<ul style="list-style-type: none"> • Legislative history and national context • Potential questions for the RAC to answer
December 2021 (2)	<ul style="list-style-type: none"> • Current and alternate dose thresholds and how they were derived • Discussion of missing exposure pathways • Discussion of a standard for enriched lead-210 • Discussion of the challenges associated with the “7 day rule”
February 2022 (3)	<ul style="list-style-type: none"> • Overview of pathway exemptions • Discussion of potential modifications- cumulative dose, acceptable limits, new pathways • Distribution of a survey to RAC members (see comment response matrix, Attachment 2)
November 2022 (4)	<ul style="list-style-type: none"> • Presentation of draft rules, initiation of a RAC comment period
April 2023 (5)	<ul style="list-style-type: none"> • Presentation of the refined scope rule concept • Presentation by RAC member on alternate legal interpretation • Decision to proceed with refined scope rule concept
May 2023	<ul style="list-style-type: none"> • Draft rules distributed for a RAC comment period (see comment response matrix, Attachment 2)
August 2023	<ul style="list-style-type: none"> • Revised draft rules distributed for a final RAC comment period (see final comment responses, Attachment 3)

Summary of Proposed Rule Changes

OAR 345-050-0006: This rule change updates the language to reflect changes to ORS 469.525 and to clarify temporary storage exclusions.

OAR 345-050-0010: Addition of (5)(a)-(d) fix the discrepancy between practicable disposal timeframes and the existing “7 day” rule. Radioactive waste that must be properly managed and disposed of out of state is handled by a small number of companies, which typically only make pick-ups in Oregon once per quarter, except in emergencies. As such, it is simply not possible to move radioactive waste to an out-of-state disposal facility within seven days. Additionally, the Department and the RAC propose to create a clear process for facilities not licensed by Oregon Health Authority (OHA) to handle radioactive material that may occasionally end up with radioactive waste (typically landfills, waste transfer stations, or metal recyclers). The proposed rules would require unlicensed facilities that unintentionally receive radioactive waste to work with ODOE and OHA to safely store the waste until it can be retrieved for disposal out of state. Finally, the proposed rules would clarify that OHA-licensed facilities that knowingly handle radioactive material and produce radioactive waste can continue to

temporarily store such radioactive waste in accordance with their license requirements and to dispose of this waste at an out-of-state facility.

OAR 345-050-0020: This rule change is a reorganization of exempt quantities (including a text transfer to and from -0030) and minor wordsmithing. As seen in the draft, the Department swapped language in current OAR 345-050-0020 and OAR 345-050-0025 to fix an error in order of reference to Tables 1 and 2. The Department also added an exemption for lead-210 concentration when out of equilibrium with U-238. The current rules have an expectation which states that all isotopes in a decay chain are at equilibrium, i.e., both parents and daughters are roughly the same concentration. However, certain petroleum processing settings include wastes that are out of equilibrium and enriched in one of the daughter isotopes, lead-210. Lead-210 and its daughter polonium-210 comprise the highest risk driver for exposure by consumption of material that has made its way into plants. The addition of a lead-210 exemption for petroleum products when it is outside of equilibrium would eliminate a potential loophole in the rules that could adversely impact a member of the public if the waste is land-spread.

OAR 345-050-0025: This rule change is a reorganization of exempt quantities (including a text transfer from -0030) and minor wordsmithing. Additionally, as discussed above, the language of rule 20 and rule 25 have been swapped to fix an error in the order of references to Tables 1 and 2.

OAR 345-050-0030: This rule was modified for clarity via a reorganization of exemptions (including text transfer to and from -0020, to -0025). Changes to (3) added animals to the burial specific exemption to account for a rise in radiotherapy in veterinary use.

Proposed changes to (4) add an exemption for metabolized medical treatment isotopes, provided the landfill has an approved plan in place. Plans would be approved by ODOE staff in consultation with OHA. This type of waste is primarily soiled diapers from patients receiving radio-medicine treatments. This is an important issue for landfill operators, which are routinely receiving such waste in loads of municipal solid waste. Current practice is for site workers to manually sort through piles dumped from trash trucks to identify and isolate bags containing soiled diapers. Commonly used medical isotopes quickly decay to low levels of radioactivity. It is safer for workers at landfills to be able to dispose of such waste in compliance with an approved plan once the isotope is identified and poses little to no risk to the environment after disposal.

Finally, the proposed rule would add an exemption for materials that were legally disposed under current rules, provided that the waste remains in place.

Recommendation to Suspend “Pathway Exemption” Rulemaking

The Department recommends that Council suspend rulemaking related to the “pathway exemption” covered by OAR 345-050-0035 through -0038 given supplemental safeguards that

exist from other state and local regulatory agencies and the limited benefit gained from pursuing this rulemaking.

The pathway exemption allows for waste that would otherwise be considered radioactive to undergo a series of tests to determine levels of gamma radiation, radon emanation, and water leachate. If results from all three tests are in compliance with the standards set in EFSC rules, the waste is not considered “radioactive waste” and thus is allowable for disposal in Oregon.

This pathway exemption process is only allowed for the type of waste termed “naturally occurring radioactive material” or “NORM.” NORM waste is produced by multiple Oregon businesses and is safely disposed of at Oregon landfills, in accordance with current EFSC rules. Examples of NORM waste includes waste metal casting shell, refractory furnace brick, pipescale build-up inside water and wastewater pipes, and filters from the geothermal energy industry and the oil and gas industry. NORM is not regulated by the federal government. The risk from NORM is typically from chronic, long-term exposure and as such, the EFSC pathway rules (and most other states) regulate NORM material and waste with a focus on reducing or eliminating public exposure to NORM over the long-term.

EFSC’s existing pathway exemption process takes the long-term approach. By focusing on gamma radiation (direct exposure), radon (inhalation risk), and water leaching (ingestion risk), the existing rules consider a model of exposure to a hypothetical future person living on a landfill of NORM waste. NORM waste is allowed for disposal only if the modeling results demonstrate expected exposure below a radiation dose limit established in EFSC’s rules.

The Department is confident that the pathway exemption process, including the current dose limit as set in existing rule, is protective to the public now and in the foreseeable future given other supplemental safeguards that exist from other state and local regulatory agencies (e.g., Oregon Department of Environmental Quality (DEQ) illegal dumping rules, DEQ landfill regulations, OHA-Radiation Protection Services licenses requirement that NORM waste is disposed in an industrial landfill, and county land use restrictions on landfills that make it unlikely a person would build a house on top of a closed landfill in the future). The Department does not believe EFSC should modify the pathway exemption to reflect a lower national unrestricted public dose limit at this time, as it is not a critical public safety concern for Council to address due to the limits and restrictions that are otherwise placed on landfills and industrial waste generators.

The current EFSC exposure standard is 500 millirem per year (mR/year); the national unrestricted public dose limit is 100 mR/year. Based on the Department’s modeling assumptions, lowering the acceptable pathway dose to 100 mR/year, adding a plant ingestion pathway, and making all pathways except radon cumulative would limit acceptable wastes to those below existing concentration or quantity exemptions, effectively eliminating the pathway exemption for minimal benefit in reducing risk to public health and safety.

Attachments:

Attachment 1: Draft Notice of Proposed Rulemaking

Attachment 2: Previous RAC Comments and Staff Response

- Notes: there were multiple iterations of draft rules prepared by staff and commented on by RAC members. This attachment includes the previous and current comment/response matrix but does not include each RAC comment letter from previous draft rule iterations (comments from comment letters are included in the matrices)

Attachment 3: Most Recent RAC Comments and Staff Response

- Notes: there were multiple iterations of draft rules, prepared by the Department and commented on by RAC members. This attachment includes comments and responses within the proposed revised rules, and the most recent comment letters. The attachment also includes previous draft rule comment response matrix reports but not each RAC comment letter from previous draft rule iterations as the comments are included in the matrices.

Attachment 4: RAC Membership List

Attachment 5: Redline of Proposed Rule Changes