



FACT SHEET

Revision to 18 AAC 85.300 – Disposal by Burial in Soil

Why is DEC proposing to revise 18 AAC 85.300 (Disposal by Burial in Soil)?

- The Alaska Department of Environmental Conservation (DEC) is proposing this regulation change as a result of unintended consequences resulting from 2015 regulations changes. Prior to the 2015 regulations change, there was a mechanism in 18 AAC 85.300 through which low-concentration radioactive material could be allowed for disposal via burial in soil. This resulted in material with background level or *de minimis* level natural radiation not allowed for disposal in Alaska, which was both not the intent of the 2015 regulations change, and contrary to statutory requirements in AS 46.03.250, which requires DEC to “...adopt regulations establishing standards governing the discharge of low level radioactive materials to the air, water, land, and subsurface land of the state...”.

What are radioactive materials and how is disposal regulated?

- Radioactive materials are defined in 18 AAC 85 as “a material, solid, liquid or gas that emits ionizing radiation spontaneously.”
- The Nuclear Regulatory Commission (NRC) regulates the use, storage, transportation, and disposal of most radioactive materials, such as those from the medical field, industry, and nuclear energy activities.
- The NRC does not regulate naturally occurring radioactive material (NORM) or technologically enhanced naturally occurring radioactive material (TENORM), and as a result, regulation of NORM and TENORM wastes falls to the states. NORM or TENORM wastes can be generated through resource extraction processes, or industrial processes, where naturally occurring radioactive material is either brought to the surface, or otherwise concentrated, through processing. Examples of wastes that may have NORM or TENORM include oil and gas drilling waste or spent fracking sand, coal ash, drinking water treatment residuals, refractory brick, and pipe scale.

How are radioactive materials that are generated in Alaska disposed?

- For wastes regulated by the NRC, the majority meets the classification of Low-Level Radioactive Waste (LLRW). The LLRW is typically disposed at the U.S. Ecology Incorporated facility in Richland, Washington, through Alaska’s membership in the Northwest Interstate Compact on Low-Level Radioactive Waste (NWIC). Alaska adopted the rules for the NWIC in 1983 as Alaska Statute 46.45.
- For NORM and TENORM, disposal options vary. The NWIC facility will accept NORM and TENORM waste for disposal, although disposal at this facility is not obligatory. Oilfield drilling waste that contains NORM/TENORM can be disposed via underground injection.
- As currently written, after 2015 regulation changes to 18 AAC 85.300, NORM and TENORM waste cannot be disposed in soil in Alaska regardless of concentration.

What change is currently being proposed by DEC?

- ADEC is proposing to modify 18 AAC 85.300 to allow for land disposal in Alaska of waste with very low levels of naturally occurring radiation.

- The proposal is to allow for disposal of material with naturally occurring concentration of radium-226 plus radium-228, provided that that combined concentration is less than or equal to 5 picocuries per gram (pCi/g).
- Disposal will be limited to landfills with the highest level of design and operations controls. These will include Class I municipal solid waste landfills, drilling waste landfills, and industrial solid waste landfills. Note that facilities may apply more restrictive acceptance criteria, including not allowing certain wastes.
- Note that this regulation does not apply to LLRW regulated by the NRC and subject to the NWIC, or to drilling waste or fracking sand that is disposed of by underground injection.

Why was the limit of 5 picocuries per gram (pCi/g) of Ra-226 + Ra-228 chosen, and is this safe for disposal?

- Disposal of waste in accordance with proposed changes will pose minimal risk to the public.
- To determine a radiation level appropriate for disposal, the Solid Waste Program researched various states' standards and publications to gauge what radium levels are being used around the country. Out of 37 states researched, DEC found the following:
 - A total of eight states were found to allow materials exhibiting radiation levels at a specified limit to be disposed of in a Municipal Solid Waste Landfill or landfill meeting certain design specifications. These levels ranged from 5 pCi/g to 100 pCi/g. A study commissioned by the State of North Dakota found that the total radium concentration of 51 pCi/g did not expose the public or the landfill workers to levels above the safe exposure limit.
 - A total of five states were found to give exemption to obtain a license if what was being handled were below certain radiation levels. That level ranged from 5 pCi/g to 200 pCi/g, three of these states allowing exemption if the levels were 5 pCi/g or below.
- Of the states surveyed, several used a level of 5 pCi/g radium. Most of these states used a sum of radium-226 plus radium-228 to establish this limit.

Other factors support that DEC's proposed level will be protective, including:

- EPA uses a cleanup level of 5 pCi/g of radium-226 plus background for cleanup of sites where uranium was used (40 CFR 192.12). This level is used as an Applicable or Relevant and Appropriate Requirement (ARAR) in many Superfund cleanups (EPA Facts about radium).
- Radium occurs naturally in foods consumed by humans. For instance, Brazil nuts have been reported to have a radium concentration of 6.6 pCi/g and are safely consumed by humans. Other everyday products containing radium levels are summarized below:

ITEMS	RADIUM-226 LEVEL (pCi/g)
Brazil nuts	6.6
Building materials – red bricks	7.6
Natural soil and rock	0.5 – 5.0 (Total Radium)
Phosphate fertilizers	24