



Exempt and Low Activity Radioactive Waste Disposal

Bobby Janecka, Manager
Hans Weger, Ph.D., Work Leader
Radioactive Materials Section

2018 Environmental Trade Fair



Outline

- Waste that contains radioactive material that is exempt by rule
- Alternative Path: Very Low Level Radioactive Waste Disposal
- Presentation, Question and Answer period with Waste Control Specialists



Applicable Regulations

- TCEQ authorized to use exemption rules from Department of State Health Services (30 TAC §336.5(c))
- Source Material (U and Th) (25 TAC §289.251(d))
- Naturally Occurring Radioactive Material (NORM) (25 TAC §289.259(d))
- Radioactive Material (25 TAC §289.251(e))
- Alternate Path (30 TAC §336.5(a))
 - This is not exempt by rule
- Exempt by rule materials do not require any action or authorization from the regulatory agency to be exempt



Common Exemption Rules: Source Material

- Weight Percent under 0.05% (25 TAC §289.251(d)(1))
 - 167.5 pCi/g U-238; 54.9 pCi/g Th-232
 - Solids and liquids
 - Decay products covered if at or below equilibrium levels
 - Not for waste classified as by-product material [30 TAC §336.2(20)(B)] since 10 CFR §40.13 excludes by-product material from definition
- Specific Items (25 TAC §289.251(d)(3))
 - Metal-thorium alloys (under 4% weight)
 - Depleted Uranium counterweights in aircraft.



Common Exemption Rules: NORM

- Small quantities of radium or other NORM
(25 TAC §289.259(d)(1))
 - 30 pCi/g radium-226 or radium-228
 - 150 pCi/g of other NORM
 - Other NORM does not include uranium and thorium (source material)
 - Cannot be used for liquids
 - For disposal: radon emission limit of 20 pCi/m²/s does not apply



Common Exemption Rules: NORM (contd.)

- Material used for building, construction, industrial processing, and other NORM: (25 TAC §289.259(d)(5) & (6))
 - Radionuclides must not have been concentrated to higher concentrations than found in natural state
 - Examples:
 - Refractory bricks (furnaces)
 - Zirconium oxide (zircon, zirconium): blasting agent
 - Monazite sand (glass made from such sand)
 - Alumina, used for ceramic insulators in electrical equipment



Common Exemption Rules: Radioactive Material

- Exempt Concentrations of Radionuclides (25 TAC §289.251(e)(1) and 251(l)(1))
 - Applies to solid, liquid, and gas
 - Table of exempt concentration values
- Exempt Quantities of Radionuclides (25 TAC §289.251(e)(2) and 251(l)(2))
 - Applies to solid, liquid, and gas
 - Table of exempt activity values
- Specific Items (25 TAC §289.251(e)(3))
 - Smoke detectors (1 μCi Am-241 or if exempt by NRC)
 - Time pieces, hands, dials
 - Electron tubes



What is an Exemption Concurrence?

- Even though no action is required by TCEQ, some disposal facilities require an exemption concurrence letter
- A letter in which TCEQ confirms that the waste is exempt from the rules for disposal
- Waste disposal facilities may still refuse the waste
- Information about the regulations and how to obtain an exemption concurrence letter are in the Regulatory Guide RG-486



Regulatory Guide RG-486: Disposal of Exempt Waste That Contains Radioactive Material

- Currently undergoing update
 - Last updated in November 2010
 - Not currently available on the TCEQ website
 - To request a copy: radmat@tceq.texas.gov or (512) 239-6466
- Rule Changes since November 2010
 - Exemptions for specific items
 - Po-210 and Ra-226 removed from table of exempt concentrations (25 TAC 289.251(I)(1))
 - Be-7 and Sr-87m removed from table of exempt quantities (25 TAC 289.251(I)(2))
 - Radioactive tracers for oil, gas, and geothermal exploration, development, and production



Alternate Paths to Exemption

- Texas does not have an equivalent to Title 10 Code of Federal Regulations (CFR) §20.2002
- TCEQ can exempt a source of radiation or a kind of use or user from the application of a rule in 30 TAC §336 (30 TAC §336.5(a))
 - Must not be prohibited by law
 - Must not result in a significant risk to public health and safety or the environment
 - Done in accordance with §401.106 of the Texas Health and Safety Code
 - NRC equivalent is 10 CFR §20.2301



Alternate Path Used for Very Low Level Radioactive Waste

- Waste Control Specialist used this rule under their radioactive material license R04100
- Authorizes the licensee to exempt very low level radioactive waste (VLLRW) to be disposed in their RCRA disposal facility
- Table of concentrations to determine the maximum concentrations values allowed
- Used GoldSim model in a Radiological Impact Assessment to determine concentrations that would result in a dose of 1 mrem/year at 1,000 years



VLLRW Disposal and the Texas Compact Commission

- Texas Low-Level Radioactive Waste Disposal Compact Commission adopted final rulemaking, effective May 28, 2018.
- Requires semi-annual reporting to the Compact Commission by Texas waste processors of any “noncompact” or out of state waste for management other than by disposal in the Compact Waste Facility.