



# **WASTE DISPOSAL – EXEMPTION OPTIONS**

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# OUTLINE OF PRESENTATION

- Definitions: Exempt Material and Exemption Concurrence
- Regulatory Agencies and the Regulations
- Specific Exemption Rules
- How to Obtain an Exemption Concurrence
- Process Knowledge and Sampling Data
  
- Regulatory Guide coming soon to the web page of the Radioactive Material Division of TCEQ.



# WHAT IS EXEMPT MATERIAL

- Exempt materials contain radioactivity but are exempt from the radioactive material regulations.
- Can be disposed in a facility that is not licensed for radioactive waste disposal.
- Exemption criteria defined in the regulations.
- NRC publication NUREG-1717
  - Assess potential dose of exempt material
  - Reasonably low risk of radiation exposure to individuals and low radiological impact to the environment.



# WHAT IS AN EXEMPTION CONCURRENCE

- Written confirmation from Regulatory Agency that the material is exempt from the radioactive waste disposal rules in Texas.
- Waste disposal facilities may still refuse it.
- Most exemption concurrence requests come from two hazardous waste disposal facilities:
  - Waste Control Specialist in Andrews County
  - U.S. Ecology at Robstown.



# DIVISION OF REGULATORY OVERSIGHT OF EXEMPT MATERIAL

- DSHS:
  - Use, storage, and transportation
  - Emergency Response: when the radiation detector alarms at the landfill gate.
- TCEQ: Disposal, except for
  - Material generated by a DSHS licensee
  - NORM wastes produced during oil and gas exploration and production: Railroad Commission.
- Out of state waste accepted, but must be exempted under Texas rules.



# TCEQ EXEMPTION REGULATIONS

- Title 30 Texas Administrative Code (TAC) §336.5.
- 30 TAC §336.5(c)
  - authorizes TCEQ to use 25 TAC §289.
  - 25 TAC §§289.251(d), 251(e), 259(d), and 202(ff)(2).
- 30 TAC §336.5(a): Alternate Path
  - Process similar to an application:
    - Application and Cost Recovery Fees
    - Reviewed by TCEQ and decided by the Commissioners in Agenda.
  - Applicant must show exemption is not prohibited by law and will not result in a significant risk to public health, safety or environment.
  - Never been used .



# SOURCE MATERIAL EXEMPTIONS

- Weight Percent under 0.05%: 25 TAC §289.251(d)(1)
  - Any chemical mixture, compound, solution, or alloy
  - Decay products covered if at or below equilibrium levels.
- Unrefined or Unprocessed Ore: 25 TAC §289.251(d)(2)
  - Does not apply to the mining of ore containing source material.
- Specific Items: 25 TAC §289.251(d)(3)
  - Incandescent gas mantles
  - Welding rods
  - Glazed ceramics (glaze is under 20% weight)
  - Metal-thorium alloys (under 4% weight)
  - Depleted Uranium counterweights in aircraft.
  - Activity and radiation exposure limits apply.



# NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM) EXEMPTIONS

- Small quantities of radium or NORM: 25 TAC §289.259(d)
  - 30 pCi/g radium-226 or radium-228
  - 150 pCi/g of other NORM
  - Soil and other media (any volumetric material other than soils and liquids)
  - No radon emission limit of 20 pCi/m<sup>2</sup>/s (disposal only).
- Phosphate Industry: 25 TAC §289.259(d)(6)
  - Phosphate and potash fertilizer (finished product only)
  - Phosphogypsum for agricultural uses if it meets 40 CFR §61.204
  - Does not apply to the manufacture of these products, which is under general license requirements.



# NORM EXEMPTIONS

- Recycled Contaminated Objects: 25 TAC §289.259(d)(2)
  - Must be recycled (returned to use in the form of raw materials in the production of new products), not reused
  - Exposure rate (including background) must not exceed 50  $\mu\text{R/hr}$ .
- Material used for building, construction, industrial processing, and other NORM: 25 TAC §289.259(d)(5) and (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.



# EXEMPT CONCENTRATIONS AND QUANTITIES OF NON-NORM

- Exempt Concentrations of Radionuclides:
  - 25 TAC §289.251(e)(1)
  - Table of values in 25 TAC §289.251(l)(1)
- Exempt Quantities of Radionuclides:
  - 25 TAC §289.251(e)(2)
  - Table of values in 25 TAC §289.251(l)(2)
- Applies to solid, liquid, and gas
- Only for waste generated in accordance with a specific or general license.



# NON-NORM EXEMPTIONS

- Specific Items: 25 TAC §289.251(e)(3)
  - Smoke detectors
    - New rule: Exempt if  $^{241}\text{Am}$  does not exceed 1  $\mu\text{Ci}$
    - Exempt if on NRC license to distribute as exempt
  - Time pieces, hands, dials
  - Electron tubes
  - Self-luminous products
  - Activity and radiation exposure limits apply
- Emission control dust from electric arc furnaces contaminated as a result of inadvertent melting of  $^{137}\text{Cs}$  or  $^{241}\text{Am}$  sources: 25 TAC §289.202(ff)(2)



# ADDITIONAL CONSIDERATIONS

- Texas does not have an equivalent to Title 10 Code of Federal Regulations (CFR) §20.2002.
  - Exempt if can demonstrate exposure to individuals does not exceed a “few millirem.”
  - Not exempt in Texas if only exempt under this rule.
- Dilution Not Allowed to Change Waste Class in Texas: 30 TAC §336.229.
- Department of Transportation exempt material is not the same as material exempted under 30 TAC or 25 TAC.



# HOW TO OBTAIN AN EXEMPTION CONCURRENCE

- Contact Hans Weger, [hweger@tceq.state.tx.us](mailto:hweger@tceq.state.tx.us) (512) 239-6465
- Need a signed letter, which can be scanned and sent electronically.
- Documents stored for five years. Therefore, if request is over 50 pages, a hard copy must be mailed as well.
- Provide the following information :
  - Waste Generator Identification,
  - Volume of waste,
  - Physical form of the waste,
  - Characterization information,
  - Sampling protocol and data,
  - Device manufacturer's name and device model number, and
  - Any other information that may be helpful.
- No fee {unless using procedure of 30 TAC §336.5(a)}.



# PROCESS KNOWLEDGE

- Some items or waste can be exempted without a radiochemical analysis if sufficient documentation is submitted.
- Specific items manufactured to satisfy the exemption rules:
  - Smoke detectors (make and model, 1  $\mu\text{Ci}$   $^{241}\text{Am}$  sticker)
  - Sealed Source or Device Sheet from the NRC identifying the item as exempt
  - NRC license to commercially distribute the item as exempt.
- Company literature or Material Data Safety Sheet.
- Items used by the United States Armed Forces which are
  - Built according to military specifications and
  - Listed by a national part number and identified as exempt in Technical Bulletin 43-0116 (April 1998, Headquarters Department of the Army, Washington, D.C.).
- Manufacturing process that uses NORM material if it can be documented that the naturally occurring radionuclides are not concentrated.



# SAMPLING: AVERAGING AND HOMOGENEITY

- If homogeneity can not be guaranteed, then 4 to 5 samples are required for every 20 yd<sup>3</sup>.
- The maximum volume for averaging is 20 yd<sup>3</sup>.
- No single measurement used to calculate an average value shall exceed 10 times the exemption criteria.
- Each waste container is considered as a separate waste volume. Two waste volumes can not be averaged together.
- Lower number of samples acceptable if homogeneity can be established. Examples include:
  - Contaminated soil from a cleanup project that that has been thoroughly characterized.
  - A process that has been shown to produce homogeneous waste.



# SAMPLE ANALYSIS

- Composite samples are accepted.
- Radioanalytical results must be from a laboratory that is National Environmental Laboratory Accreditation Conference (NELAC) accredited by the Texas Laboratory Accreditation: 30 TAC §25.6.
- In Situ Object Counting System (ISOCS) may be used if combined with sampling of some of the waste to establish a relationship.
- Measurement of Daughters to Determine the Parent Radionuclide Activity (or vice versa) is accepted if the equilibrium status can be established.



# OTHER DATA REQUIREMENTS

- Surface Contaminated Waste ( $\text{Bq}/\text{cm}^2$ ) can be converted to volumetric values ( $\text{Bq}/\text{g}$ ) if
  - For disposal only.
  - Allowed on a case-by-case basis if follow ANSI/HPS N13.12-1999.
  - Can exceed the surface contamination release limits of 30 TAC §336.364
  - Cannot average the activity of a contaminated item with the entire mass in a container containing non-contaminated waste.
- Will accept a letter from the NRC documenting their analysis and conclusion that a specific waste is exempt if the federal regulation used is also in the Texas Administrative Code.



# Questions?

