The Disposal of NORM and TENORM in Kansas

by

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KDHE Environmental Conference
August 20, 2015

Our Mission: “To protect and improve the health and environment of all Kansans.”
What is NORM and TENORM?

NORM means:
“any nuclide (nucleus) that is radioactive in the nuclide’s natural physical state”

Radioactive means that material emits ioning radiation spontaneously (gamma rays, x-rays, alpha & beta particles, neutrons)

TENORM
Technically Enhanced NORM
(concentration increased by human activity)
What is NORM/TENORM Waste?

Solid waste defined in K.S.A. 65-3402 contaminated by NORM or TENORM

Common wastes containing NORM/TENORM

1) Drilling waste (O&G, other)
2) Refractory materials (brick)
3) Water treatment filters
4) Coal combustion residuals
5) Oil field pipe (scale)
6) Boiler scale
### Disposal of NORM/TENORM in Kansas

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<td>Prohibited; included in definition of “low-level radioactive waste” (LLRW); all concentrations</td>
<td>NORM/TENORM is not LLRW if less than ( \text{X} ) ( \text{X} ) - to be determined in rules and regulations to be adopted by KDHE Secretary</td>
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Historical Management

- Mostly did not know NORM concentrations
- Some material rejected from recyclers and MSWLFs
- Some stockpiled
- Some misused (pipe for fences)
- Some disappeared
- Some transported out-of-state to LLRW facility
Current Status

SAME - Until new regulations are adopted setting limits and disposal standards

3 Sets of Regulations Needed

1) Radiation standards
2) New solid waste generator and facility standards
3) Special waste update
Regulation Development Schedule

**2015**
- July 30: Regulations drafted
- Aug 11: Stakeholders meetings and draft update
- Sept 15: Technical stakeholders
- Late Oct: All stakeholders

**2016**
- Jan: Final regulations
- May-June: Dept of Admin and KS A.G. reviews
- July 1: Public notice period, hearings, comments
- Required adoption

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Radiation Regulations

- Definitions
- Exempt material/Limits
  - Concentration limit
  - Maximum exposure limit
- Analytical methods (lab and field testing)
- Storage
- Transfer and disposal
- General and specific licensing
Three Categories of NORM/TENORM Waste

- Exempt material - < 5 pCi/g
- Still classified as LLRW - > 50 pCi/g
- Eligible for disposal in Subtitle D MSWLF 5 to 50 pCi/g
Solid Waste Regulations

- Definitions
- Grace period of one year for disposal
- Generator requirements (storage, SWDAs, recordkeeping, reporting)
- Landfill design and operating standards
- Disposal limit
- Monitoring (leachate, groundwater, gas)
- General license and fee ($190/yr)
Special Waste Regulations

- Address radioactivity in addition to hazardous as appropriate
- Expand disposal option to industrial landfills if design/operations satisfied
- Notice requirements to KDHE radiation control program if problems
Possible NORM/TENORM Disposal Sites in Kansas
Questions?

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