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# Liquids addition to, and Alternate Final Covers for, Subtitle D MSWLFs in Kansas

By

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# Subtitle D MSWLFs

- Subtitle D Landfills – 1990's to date
  - Composite liner at the base
  - “NO” liquids into the waste mass
  - **No greater than 12 inch head of leachate on the composite liner, and**
  - Composite cap.

# 1990's through 2004, in Kansas

- Municipal Solid Waste had to pass the paint filter test
- Liquid waste streams would need to be conditioned to pass paint filter test – permit mod.
- Alternate Final Covers approved as a **variance** to the prescriptive regulation
  - One capillary barrier cover
  - Several ET covers
- **No greater than 12 inch head of leachate on the composite liner**

# So what happened in 2004, in Kansas

- Not just Kansas, the USA
- March 22, 2004, EPA promulgated the RD&D rule – 40 CFR 258.4
- Allows approved states to issue RD&D permits to certain MSWLFs.
- RD&D? PERMITS

# Permits

- Requires **statutory** authority.
- Is based on standards established in **regulations** – typically.
- A regulator is empowered by the statutory authority and is credible when administering well defined standards.

# Permits (contd.)

- What standards could the regulator use to assess compliance?
- For the permit mod related to liquid restrictions
  - Get it to pass the paint filter test
    - Add flyash, or sawdust, or just plain old dirt available on site, and
    - Stir, and stir, and stir, till it passes the paint filter test!
- For permit mods processed as **variances** for alternate final covers
  - Design dependent – design criteria included
    - Rainfall events to be used
    - Soil parameters to be used
    - Plant community to be used
    - Flux through the final cover to be expected
    - Required the installation of pan lysimeters to evaluate performance.
    - Required good Construction Quality Assurance

## Permits (contd.)

- So, really what standards are the regulators to require?

Kansas considered several

- The rainfall events that should be modeled
  - Locations of, and numbers of, lysimeters to require
  - Plant community to be used – native species?
  - Flux that should be allowed through the cover
- 
- And what constitutes compliance?

## The Kansas Story (contd.)

- Kansas actively participated in the formulation of the ITRC guidance document on Alternative Final Landfill Covers – December 2003
- Stakeholders in Kansas are overwhelming in favor of making Alternate Final Covers work
- The Bureau of Waste Management obtains approval from EPA to administer the RD&D rule – November 2009
- The Bureau of Waste Management announces that it encourages enhanced waste degradation/stabilization within MSWLFs and this would result in timely generation and management of LFG
- Kansas is awarded EPA LMOP's 2009 State Partner of the Year

## The Kansas Story (contd.)

- Favorable plant communities vary across the state, and **appear to vary with time**
- Post closure use needs, such as enhancing wildlife habitats and wildlife corridors are being considered which favor native vegetation and planned tree plantings
- Maintaining a maximum 12 inch head of leachate appears to be more dependent on the depth of waste within the unit and less of an issue in areas with intermediate cover
- Stakeholders in Kansas are overwhelming in favor of making Alternate Final Covers work

## The Kansas Story (contd.)

- **R**esearch, **D**evelopment and **D**esign Permit
- Permit it for **R**esearch
- Gather data
- **D**evelop the process and adjust it based on data gathered – an iterative process.
- Permit mod is renewed every two years in Kansas
- Continue development till finalization of a **D**esign that matches the specific site.

# The Regulatory Standards during research, and development phase?

- Not greater than 12 inch head of leachate on the liner,
- Data to be reported to the regulatory agency
- No **regulated** quantities of hazardous waste (Subtitle C waste) into a Subtitle D landfill.
- That's it.
- Research, Develop, Research, Develop....till we have a great Design.

# Looking Ahead in Kansas as we embark in the RD&D era

- MSWLF's that have maximized utilization of air space by enhancing biodegradation till the waste mass is rendered "stable"
- Final covers that can be erosion resistant and stable even while allowing infiltration of planned quantities of precipitation to facilitate biodegradation
- Final covers that can support great post-closure uses
- Strive to stabilize the waste mass well within the 30-year post-closure period as evidenced by leachate generated – quantity and quality

Questions ?

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