KDHE’s Proposed C&D LF Regulation Changes

Dennis A. Degner, P.E., Chief, SW Permits Section

at
Kansas Landfill Association 5th Annual Convention & Trade Show
Junction City
September 26, 2008
Overview of Presentation

- Why Considering Regulatory Changes?
- Brief Review of Key Current Regulations
- What C&D Landfills Will be Subject to Increased Level of Regulation?
- What is the Scope of the Proposed Changes?
- Future Schedule for Regulation Development
Effluent from Water Scrubber
June 2006
Where Did the Scrubber Water and Storm Water Go?
East Pond
What Do We Have Now?

- Tight shale base with some undulations, but no designed leachate collection system to help drain the contact water to a low point; contact water is ponding in the waste mass.
What Do We Have Now? (cont.)

- Organic wastes in the landfill
- Sheetrock/wallboard made from paper and CaSO4
What Do We Have Now? (cont.)

- Infiltration of process water and run-on water from storm events during the days, months, and years
What Do We Have Now? (cont.)

- Waste mass is about 74 acres with a contact water depth of about 10 feet.
- Est. 80,000,000 gal of contact water with low oxygen levels due to the microbial degradation of large quantities of organic wastes.
- With the anaerobic (low oxygen conditions) high concentrations of organics - CH₄ (gas) and inorganic H₂S (gas) are produced.
Why – Is this Facility of Major Concern?

- Approximately 5,000 addresses are within 1 mile of this facility that operates an asphalt plant and a C&D landfill; within 1.5 miles there are 5 Blue Valley District schools – 2 elementary schools, 1 middle school, and 2 high schools
Why is This Facility of Major Concern? (cont.)

- The data from the landfill gas collection system show that the CH$_4$ concentrations currently range from 34% to 36% (lower explosive limit is 5 %)

- The current H$_2$S concentrations in the landfill range from 4 ppm to 120 ppm

- The current average concentrations from the LFG extraction system are 54 ppm H$_2$S
Why is this Facility a Major Concern? (cont.)

- The average concentration of $\text{H}_2\text{S}$ is 54 ppm or 54,000 ppb
- Public health protection standards and guidelines are as presented in the following table
## Risk Based Comparison of H₂S Levels for Workers & Receptors

<table>
<thead>
<tr>
<th>Agency</th>
<th>H₂S Exposure Standards, Guidelines &amp; Test date (ppm)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIOSH</td>
<td>100</td>
<td>IDLH (Immediately dangerous to life or health)</td>
</tr>
<tr>
<td></td>
<td>54</td>
<td>9/08 avg. LF gas conc. in waste at APAC-KS LF</td>
</tr>
<tr>
<td>OSHA</td>
<td>20</td>
<td>Worker exposure – 15 min. ceiling</td>
</tr>
<tr>
<td>NIOSH</td>
<td>10</td>
<td>Worker exposure – 10 min. ceiling</td>
</tr>
<tr>
<td>ATSDR</td>
<td>0.07</td>
<td>Acute minimal risk – 14 days cont. exposure</td>
</tr>
<tr>
<td>ATSDR</td>
<td>0.02</td>
<td>Intermediate minimal risk – 15-365 days of continuous exposure</td>
</tr>
<tr>
<td>USEPA</td>
<td>0.0014</td>
<td>Reference concentration – lifetime exposure</td>
</tr>
<tr>
<td>USEPA</td>
<td>0.0005</td>
<td>Odor detection threshold</td>
</tr>
</tbody>
</table>
Current Design Regs

- Major design features 28-29-304
  - storm water control – prevent flow onto active areas for a 25 y, 24 h storm event
  - contact water control & management (one or more of the following)
    - Storage (outside the waste mass)
    - Beneficial use (no recirculation into waste)
    - Treatment on-site or haul off-site to WWTP
    - Discharge thru NPDES/WW Permit or Deep Well
Current Operational Regs & Policies

- Major Operational features 28-29-308
  - Water management
  - Access control
  - Cover (at least once for every 2,000 T of waste accepted)
  - Waste screening – enhanced for larger C&D LFs
Enhanced Waste Screening

- Applicable to Larger C&D LFs:
- Accepting waste from out-of-state TS:
  - Requires screening of every load
- Facilities receiving > 100 T or 200 cu yds:
  - Requires screening 1 load/ 50 T (100 cy) recd
- Non-compliant facilities:
  - Revise screening plan in the FOP to higher level
Key Operational Needs!

- Operational and Safety Training for Supervisory and Operational Personnel
- Providing Operational Personnel the Proper Operating Equipment and Storage Containers
- Waste Screening
Key Needs in Current Landfill Management!

- Have a consulting engineer on retainer to:
  - Review your phasing plan to ensure proper CQA occurs prior to disposal
  - Review your operations annually
  - Prepare your annual closure and post-closure cost estimate
What is the Focus of the Proposed C&D Landfill Regulatory Changes?

- Landfill Gas Monitoring and Control

  - Facility Applicability:
  - Precipitation > 25/yr
  - Permeability of in-situ soil liner – $1 \times 10^{-7}$ cm/sec or less
  - For Comparison: Concrete – $1 \times 10^{-12}$ cm/sec, HDPE 60 mil geomembrane liner – $1 \times 10^{-14}$ cm/sec
What types of C&D LFs Will Likely Be Affected?

- Quarries with shale base or sites with low permeability bases – $1 \times 10^{-7}$ cm/sec or less
Distribution of Active C&D Landfills Known or Believed to be in Quarries

<table>
<thead>
<tr>
<th>Permit No.</th>
<th>County</th>
<th>Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Allen</td>
<td>Allen Co.</td>
</tr>
<tr>
<td>669</td>
<td>Dickinson</td>
<td>Blixt</td>
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<tr>
<td>118</td>
<td>Greenwood</td>
<td>Greenwood Co.</td>
</tr>
<tr>
<td>487</td>
<td>Johnson</td>
<td>APAC-KS</td>
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<tr>
<td>263</td>
<td>Johnson</td>
<td>Deffenbaugh</td>
</tr>
<tr>
<td>763</td>
<td>Johnson</td>
<td>Asphalt Sales</td>
</tr>
<tr>
<td>790</td>
<td>Johnson</td>
<td>O’Donnell &amp;</td>
</tr>
<tr>
<td>840</td>
<td>Johnson</td>
<td>Holland Corp.</td>
</tr>
<tr>
<td>804</td>
<td>Leavenworth</td>
<td>American Roofing</td>
</tr>
<tr>
<td>862</td>
<td>Leavenworth</td>
<td>Larkin Excavating</td>
</tr>
<tr>
<td>515</td>
<td>Montgomery</td>
<td>Heartland Cement</td>
</tr>
<tr>
<td>851</td>
<td>Pottawatomie</td>
<td>Acres of CD Landfill</td>
</tr>
<tr>
<td>843</td>
<td>Riley</td>
<td>Tarkio CD Disposal</td>
</tr>
</tbody>
</table>
Draft - Landfill Design

- Construct at least 2 foot drainage layer across the base of the landfill
- Contact water collected and removed from the containment unit/cell
- Minimize infiltration
- Fully control generated gases from migrating offsite
Draft - Landfill Operations

- Monitor H₂O content in waste to determine adequacy of water management practices
- Phase waste placement to shed precipitation and minimize infiltration
- Cover wastes frequently with soil or approved material to minimize infiltration
- Control head of contact water to less than 1 foot in the drainage layer
Draft - C&D Landfill Gas Monitoring

- Gas monitoring plan as part of FOP
- Type of monitoring
- Gas monitoring system
- Alarm system
- Gas sampling & analysis for methane & H$_2$S
Active gas controls may be required depending on the concentrations and volumes of methane and H₂S onsite and at property boundary.
Draft - Corrective Action

- If methane gas levels exceed 25% of the lower explosive limit or 1.25% for buildings on the LF property
- If methane gas levels exceed 50% of the lower explosive limit or 2.5% in soil at the LF boundary
- $H_2S$ will also be included
Estimated Schedule for Development

- December 2008 – Complete Draft
- January 2009 – Internal Review Completed
- March 2009 – Review Completed by Stakeholders
- May 2009 – Administrative Review Completed
Estimated Schedule for Development (cont’d)

- June 2009 – Place on Public Notice in KS Register
- July 2009 – Hold Public Hearing
- August 2009 – Review Comments & Revise
- October 2009 – Publish Regulation in KS Register
Questions?

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