

Long-Term Care of Closed Industrial and Construction & Demolition Landfills



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Overview

- **Post-Closure Care (PCC) Regulations & Policies for Industrial Landfills**
- **PCC Regulations and Policies for Construction and Demolition (C&D) Landfills**
- **New PCC Regulations for Industrial Landfills at Coal-Fired Power Plants**

Post-Closure Care Regulations

- **Responsible for care for at least 30 years**
- **KDHE may extend - protect human health and the environment**
 - **Release of chemical constituents into gw & risk to down gradient receptors**
 - **heavy metals, e.g., As, Ba, Cd, Cr, Pb, Hg, Cu**

Activities of Industrial Landfill O/O During PCC

- **Conduct inspections**
 - **Access control and security checks along perimeter**
- **Maintain the final cover system**
 - **Landfills w/ wastes that have potential to leach constituents into groundwater**
 - **Maintain environmental monitoring system if required**

Activities of Industrial Landfill O/O During PCC

- **Conduct inspections**
 - **Access control and security checks along perimeter**
- **Maintain the final cover system**
 - **Needs to be erosion proof**
 - **No woody vegetation in cover**
 - **Erosive velocities avoided by design**
 - **Terraces at regular intervals & let down structures**

Construction Phase: Sediment Control Fences



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Storm Water Drainage Culverts



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Storm Water Let Down Structure Materials



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Storm Water Let Down Structure



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Activities of Industrial Landfill O/O During PCC

- **Maintain final cover system**
 - **Inspect it to ensure that no erosion rills and gullies have developed**
 - **That no settlement has occurred that compromises the “weatherproof” containment & does not allow “ponding” of precipitation**

Activities of O/O for Industrial LFs

- **Environmental monitoring**
 - **Landfills w/ wastes that have potential to leach constituents into groundwater**

Activities of O/O for Industrial LFs

- **Groundwater monitoring**
 - **Liner is primary control system (clay or clay plus high density polyethylene)**
 - **If chemical constituents migrate thru liner system, GW monitoring data - warning system & decision-making guide**

GW Elevation Measuring



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Protective Casing for GW Monitoring Wells



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Permit Renewal Requirements for O/O During PCC

- If landfill has an environmental monitoring system
 - Permit renewal fee
 - Annual PCC cost estimate
 - Demonstration of financial assurance & liability insurance
 - GW monitoring report/s

Duties of KDHE/BWM Regarding PCC

- **Provide regulatory oversight**
 - **Periodic inspection of the final cover system**
 - **Inspection of monitoring system/s**
 - **Observe sampling procedures and obtain split samples of gw to verify water quality results & data quality**
 - **Review groundwater monitoring reports**

Duties of KDHE/BWM Regarding PCC (cont.)

- **Provide regulatory oversight**
 - **Review PCC cost estimate to determine if unit costs and quantities are reasonable for all PCC activities for the current renewal year**
 - **Ensure that financial assurance amount and a proper method is in place**

Financial Assurance Methods

- **Corporate Financial Test**
- **Funded Trust Fund**
- **Surety Bond – Guaranteeing Payment/Performance with Standby Trust**
- **Letter of Credit**

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PCC of C&D Landfills

- **O/O must conduct PCC for 30 yrs**
 - **Conduct & document annual inspections to ensure final cover effectiveness**
 - **Make repairs as needed**
 - **Prevent run-on & run-off – damaging cover**
 - **After 5 yrs a frequency change can be requested**

C&D LF: Passive Venting of Gases



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Final Cover at C&D Landfill



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Permit Renewal Requirements for O/O During PCC

- If landfill **does not** have an environmental monitoring system
 - Maintain and repair the final cover to prevent infiltration of precipitation

Permit Renewal Requirements for O/O During PCC

- If landfill **does not** have an environmental monitoring system
 - Permit renewal fee – NA = \$0
 - ~~PCC cost estimate~~
 - ~~Demonstration of financial assurance & liability insurance~~
 - ~~Environmental monitoring report~~

Restrictive Covenant Requirements for Industrial and C&D Landfills

- Need to clearly define the KDHE approved uses of the landfill surface where wastes have been covered

C&D Landfill: Final Cover & Alternate Temporary Uses



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New Landfill Regulations for Coal-Fired Power Plants

- **EPA Published Coal Combustion Residuals (CCRs) Regulations**
 - **April 17, 2015**
 - **Regulations become effective Oct. 19, 2015**
 - **Applicable to SIs and ILFs that TSD**
 - **CCRs – Fly ash, bottom ash, boiler slag and flue gas desulfurization mat.**

Fly Ash: Typical



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Bottom ash: typical



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New Landfill Regulations for Coal-Fired Power Plants

- **EPA Published Coal Combustion Residuals (CCR) Regulations**
 - **PCC regulations are similar to current KDHE/BWM regulations and industrial landfill permits**
 - **PCC Requirements**
 - **Applicable to CCR LFs accepting CCR wastes after Oct. 19, 2015**
 - **PCC Period – 30 yrs**

New Landfill Regulations for Coal-Fired Power Plants

- **EPA Published Coal Combustion Residuals (CCR) Regulations**
 - **PCC Requirements**
 - **Deadline for preparing initial PCC plan – Oct. 19, 2016**
 - **PCC Maintenance**
 - **Maintain final cover system, leachate collection system & gw monitoring system**

Contact Information

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PCC for Industrial and C&D Landfills



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