Outline

- Landfill GHG Regulation Overview
- MOU Overview
- Landfill Enforcement Activities
  - L and D Case Settlement
  - CA Statewide Methane Survey
- Conclusion
Methane Emissions from Municipal Solid Waste Landfills

- Methane is a potent GHG, 21 times the GWP of carbon dioxide

- Landfills are the second largest man-made source of methane in California

- Municipal solid waste landfills represent about 1-2 percent of the statewide greenhouse gas inventory
Applicability and Exemptions

**Applicability**
- All MSW landfills that received solid waste after January 1, 1977

**Exemptions**
- Hazardous waste landfills
- Landfills that received only construction and demolition waste or non-decomposable solid waste
- Closed or inactive MSW landfills having <450,000 tons of waste-in-place
Landfill GHG Regulation

- Establishes statewide standards for municipal solid waste (MSW) landfills
- Smaller MSW landfills must track and report waste-in-place
- Large MSW landfills have most significant requirements
  - Gas collection and control systems
  - Surface emission monitoring
Monitoring and Testing Requirements

- Quarterly surface emissions monitoring for landfills
- Quarterly component leak testing
- Monthly wellhead monitoring
- Annual gas control device testing
Surface Methane Emission Standards

- **Instantaneous Monitoring**
  - 500 ppmv emission standard
  - Used to identify surface leaks

- **Integrated Monitoring**
  - 25 ppmv emission standard
  - Good indicator of how well the gas collection system is operating overall

- Establishes timelines to correct exceedances
Recordkeeping and Reporting Requirements

- Waste acceptance rates
- Surface methane monitoring data
- Component leak checks
- Gas flow rates
- Control device destruction efficiency testing results
Alternative Compliance Requests

- Allows flexibility due to site-specific nature of landfills
- Landfill owner/operator must demonstrate need for an alternative and demonstrate equivalent levels of methane control and enforceability
- Subject to approval by Air Pollution Control Officer or ARB
Reporting Requirements

- Annual reports
- Surface methane monitoring reports
- Component leak checks
- Gas flow rates
- Control device destruction efficiency testing results
Landfill Memorandum of Understanding

Purpose:

- Agreement between ARB and air districts for air districts to implement and enforce Landfill GHG regulation
- Provides for coordination between ARB and air districts to reduce methane emissions from MSW landfills
CARB Case Settlement

L and D Landfill

- Primary waste: Construction and demolition waste material
- Used green waste as “Alternative Daily Cover”

Failed to monitor, maintain records and report as required

- Case settled for $70,000
California Statewide Methane Survey

- Joint collaboration between CARB, CEC, and NASA/JPL

- Timeline:
  - Phase 1 completed in 2016
  - Phase 2 ongoing in 2017
  - Additional funds from NASA for enhanced data analysis (2018)
Survey Area

- Survey area selected to capture majority of methane point sources in California
- CARB-funded Phase 1 study completed in 2016
  - 15,000 km²
- Phase 2 study started in August 2017
Small fraction of landfills present persistent large plumes, but some show almost no methane
Conclusion

Enforcement Strategies:

- Inspection and investigation of landfills with significant methane plumes
- ARB and air district partnership via MOU
Questions?

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