

Multistate Visit to US EPA Andrew W. Breidenbach Environmental Research Center

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Ohio EPA's suggested research topic: Investigating the causes and remedies for subsurface heating events at municipal waste (MSW) landfills in Ohio.

Summary

The number of Ohio landfills experiencing subsurface heating events is increasing. With the initial case of Countywide landfill (2006), followed by Rumpke Hughes Road landfill (2009), subsurface heating events have been detected in six additional MSW landfills since 2015. Heating events can cause a number of environmental issues, including federal NSPS Subpart WWW compliance, increased leachate production and management, objectionable odors to the surrounding community, subsidence, damage to landfill engineered components, slope stability, and capping issues.

Landfills currently being investigated exhibit gas/waste temperatures between 170 – 200 deg. F. Some have had significant odor problems and increased leachate production. Aside from Countywide, all of these subsurface heating events appear to be caused by reactions within the waste mass rather than by air infiltration. Three major waste management companies operate these MSW landfills in different parts of the state. Some corrective measures have been employed: isolation break, liquid nitrogen injection, closed loop cooling, odor control blanket, more gas extraction wells, etc., with varying degrees of effectiveness.

Ohio EPA recognized the NSPS Higher Operating Value (HOV) request and evaluation process as an opportunity to identify heating event indications early. Ohio EPA developed Engineering Guide #78 to inform landfill owner/operators of what information is needed to review HOV requests. Despite this, more research is needed to assist Ohio EPA in identifying the causes of these events.

Specific research needs:

1) what causes subsurface heating, 2) what specific landfill data can detect, or predict a heating event, 3) how does the quantity and quality of leachate relate to heating events, 4) what are potential remedies, 5) best practices for odor management, 6) how can the types of waste or waste placement practices contribute to heating events, 7) how to determine a heating event has been abated.

Additional info: USEPA POLRep site for Rumpke Hughes Road landfill
https://response.epa.gov/site/site_profile.aspx?site_id=5373

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