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The Aluminum Association

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Secondary Aluminum Processing Waste Evaluation

The Aluminum Association participated with EPA and EREF in a joint research project to better define and understand the behavior of secondary aluminum processing wastes (SAPW) in landfills. Below is a summary of the reports and key conclusions generated from this research accompanied by an Association assessment of the findings. Note that all research/reports referenced focus on co-mingled disposal of SAPW with Municipal Solid Waste (MSW) in MSW landfills.

EPA Research

Secondary Aluminum Processing Waste: Saltcake Characterization and Reactivity (EPA/600/R-15/109)

- 39 saltcake samples from 13 SAPW producing sites were analyzed.
- Saltcake has aluminum and other metals compounds present which can react with water to generate heat and gases.
- Manage saltcake at landfills that have synthetic liners and leachate collection systems in place.as the SAPW salt content can increase the permeability of clay liners over time.
- Saltcake management co-mingled with MSW at MSW landfills is feasible but concerns exist with this practice regarding the elevated temperatures present and the potential for hydrogen and ammonia generation.

Secondary Aluminum Process Waste: Baghouse Dust Characterization and Reactivity (EPA/600/R-15/203)

- 78 samples from 13 SAPW producing sites were analyzed.
- Baghouse Dust has aluminum and other metals compounds present which can react with water to generate heat and gases.
- Manage Baghouse Dust at landfills that have synthetic liners and leachate collection systems in place.as the SAPW salt content can increase the permeability of clay liners over time.

- Baghouse Dust management co-mingled with MSW at MSW landfills is feasible but concerns exist with this practice regarding the elevated temperatures present and the potential for hydrogen and ammonia generation.

Modeling Thermal Changes at Landfills from Co-Disposal of Secondary Aluminum Processing Waste with Municipal Solid Waste (EPA/600/R-16/174)

- Finite element analysis was used to model MSW landfill temperature changes in a variety of SAPW placement scenarios.

- The heat generation rate of SAPW has the greatest single influence on overall waste temperature changes in the landfill.

- SAPW placement strategy in the landfill has a significant effect on the landfill temperature distribution, with the highest heat generation found when the SAPW was modeled as discrete pocket placement and the lowest heat generation found when the SAPW was modeled as a diffuse uniform mixture within the larger body of MSW at the landfill.

Aluminum Association Assessment

- Management of SAPW in a monofill prevents the effects of the MSW interactions noted in the research.

- SAPW management in as dry a state as possible minimizes water interaction/reactivity and the resultant heat/gas generation.

- Monofills with synthetic liners prevent interaction of the SAPW with clay liners.

- Monofills with leachate collection help keep the SAPW as dry as possible which minimizes water interaction/reactivity and the resultant heat/gas generation.

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