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Air Permitting Procedure and Challenges for Leachate Evaporators

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Agenda

- > Introduction
- > Overview of Leachate Evaporator
- > Leachate Evaporator Air Permitting
- > MSW Landfill Leachate Evaporator Compliance Challenges

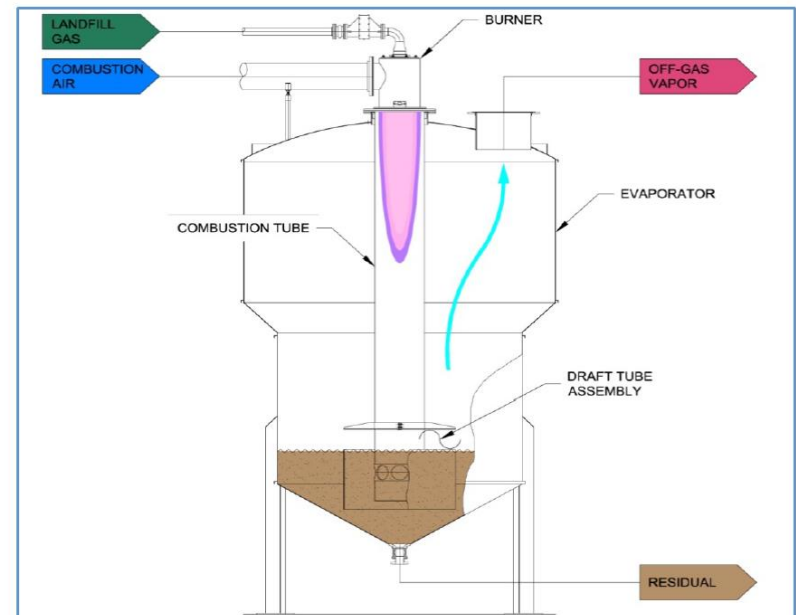
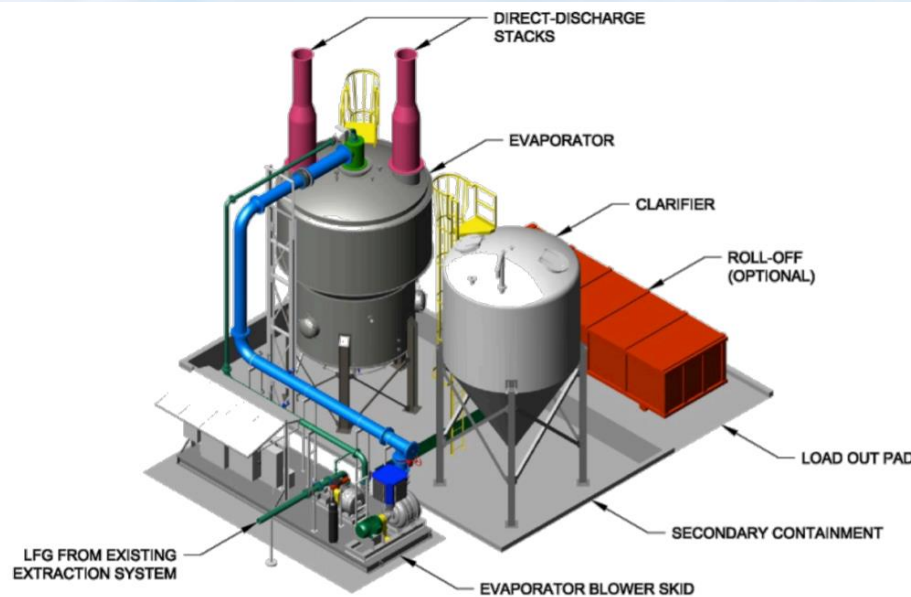
Overview of Leachate Evaporator

Overview of Leachate Evaporator

- > What is Landfill Leachate?
 - ❖ Leachate is liquid generated from rainfall and the natural decomposition of waste that is filtered through the landfill to a leachate collection system.
- > What is Landfill Leachate Collection System?
 - ❖ Collect and remove leachate liquids from the bottom of the landfill.

Overview of Leachate Evaporator⁵ (cont'd)

- > What is Leachate Evaporator?
 - ❖ Use landfill gas (LFG) generated from solid waste decomposition as primary fuel to evaporate the liquid portion of leachate.



Overview of Leachate Evaporator⁶ (cont'd)

- > Benefits of Leachate Evaporator
 - ❖ LFG = Free fuel supply
 - ❖ Reduce leachate water volume by up to 97% =
Reduce leachate transportation cost
 - ❖ Helpful when disposal options are limited

Leachate Evaporator Air Permitting

Leachate Evaporator Air Permitting

> Planning Ahead

- ❖ Air permitting can be over-looked
 - 40,000 gal/day Evaporator could result in more than 20 tons per year of PM emissions depending on what testing data is available
- ❖ Approval in some jurisdictions may take up to 6 months
 - AL approved an recent evaporator application 2 months after submittal of application
- ❖ Leachate composition testing needed to support application?

Leachate Evaporator Air Permitting (cont'd)

> Leachate Evaporator Air Emissions

❖ Combustion of Landfill Gas

- Emission Factors
 - Manufacturer guaranteed emission factors (NO_x & CO)
 - Total reduced sulfur (TRS) from LFG will form sulfur dioxide during combustion
 - Many landfills do not measure TRS conc.
 - Similar to landfill open flare, AP-42 Chapter 2.4
- LFG Design Flow Rate: Nominal vs Upper Range

Leachate Evaporator Air Permitting (cont'd)

> Leachate Evaporator Air Emissions

❖ Leachate Evaporation

- VOC/HAP content of leachate
 - Assuming complete volatilization? (Ammonia may not be 100%. Historical applications/testing shows 6%).
- PM emissions due to salts left after evaporation
 - Testing data from landfill evaporator is limited
 - Derive throughput based emission factor

Leachate Evaporator Air Permitting (cont'd)

> Toxic Air Pollutant Modeling

- ❖ Depending on the composition of the leachate, toxic air pollutants may need to be evaluated
- ❖ Emissions from leachate evaporator are considered as point source emissions
 - For example Georgia's toxics program has specific minimum emission rate level for point source emissions, therefore, dispersion modeling could be required.

Leachate Evaporator Air Permitting (cont'd)

- > NSPS WWW or XXX for MSW Landfills
 - ❖ Leachate burner system is considered a treatment system or control device for LFG
 - ❖ Leachate burner system will subject to NSPS WWW or XXX, if your facility is subject to GCCS control requirements under NSPS WWW or XXX
 - More monitoring and testing requirements

MSW Landfill Leachate Evaporator Compliance Challenge and Testing

MSW Landfill Leachate Evaporator Compliance Challenges ¹⁴

- > NSPS WWW and NSPS XXX Initial Testing
 - ❖ Test required within 60 days of reaching rated capacity or 180 days if rated capacity is not reached
 - Evaporator burners will need to reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume
 - Real emission test - Not like a NSPS open flare test
 - Need for test ports, access to reach the ports, power for testing trailer etc.
 - ❖ Testing can be tricky
 - Only burner exhaust is regulated. However, organics from evaporating process come out combined with the burner exhaust.
 - Possible solution - test on clean water rather than leachate

MSW Landfill Leachate Evaporator Compliance Challenges (cont'd)

> Ongoing Compliance

- ❖ Continuous flow monitor (at least every 15 minutes) as required by NSPS WWW and NSPS XXX
- ❖ Report any period of free venting under NSPS XXX (or period over 1 hour under NSPS WWW)
 - Flow meter itself does not tell whether the gas is combusted or not – Need to look at the operating status of burner, i.e. temperature and flow information together
 - Difficult without good documentation from the facility

MSW Landfill Leachate Evaporator Compliance Challenges (cont'd)

> Ongoing Compliance

- ❖ Start up, shutdown and malfunction (SSM) records as required by NESHAP AAAA

- Update SSM plan

- ❖ GHG Reporting

- Unlike landfill flare, evaporator burners must be reported under Subpart C
- Update GHG monitoring plan

Questions & Discussion

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