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Re: Informal Comment Period for 173-408 WAC Landfill Methane Emissions

Thank you for this opportunity to provide comments on the informal draft rules to reduce methane emissions from landfills.

Although I'm now retired, I worked for close to 25 years on waste prevention and recycling issues for local governments and a statewide non-profit. I'm currently volunteering with the 350 WA Civic Action Team, which advances socially equitable solutions to the climate crisis. However, the following comments solely represent my personal perspectives and recommendations.

I urge the Department of Ecology to take full advantage of this opportunity to reduce methane emissions from Washington's landfills by strengthening these draft rules. Methane is a potent greenhouse gas and landfills are a major source of methane in Washington. The stronger these rules, the greater the impact on methane.

#### Applicable landfills

Neither the law nor the draft rules (WAC 173-408-020 and -030) explicitly refer to limited purpose landfills, either to include or exclude them. This is a concerning omission, since organic CDL and wood will emit methane. However, the definition of MSW landfills in both the law and draft rules are landfills that receive household waste. Therefore, landfills that receive wood and CDL from households should be covered by these rules.

#### Surface emissions monitoring

Since landfills settle and shift, frequent and comprehensive monitoring is needed to manage and limit methane emissions. To control methane emissions, we need to first know where they are occurring. I urge the Department to strengthen the monitoring requirements in the draft rules to ensure frequent, accurate, comprehensive, and transparent monitoring.

- Please consider requiring bimonthly surface monitoring so that potential problems will be identified and corrected more quickly.

- At the very least, please do not provide exceptions to quarterly monitoring. For example, please delete WAC 173-408-070(1)(a)(iii), (1)(b)(iii), and (1)(c). Because waste settles and shifts even in closed landfills, surface monitoring of closed landfills should be required at least quarterly, not weakened to annual monitoring.
- Please require comprehensive surface monitoring with no more than 25-foot spacing intervals so that exceedances will be discovered and corrected as soon as possible. Delete WAC 173-408-090(3)(a)(ii)(A) and (B) that would allow 100-foot intervals if there are no exceedances over a certain timeframe. Allowing 100-foot intervals coupled with annual (rather than quarterly) surface monitoring would be even more problematic.
- The draft rule lists requirements that must be met to remove or cap the gas collection and control system at a closed MSW landfill. Surface emissions monitoring is required to determine whether the gas collection and control system will be permanently shut down or restarted. Since adequate data is needed to make that decision, I recommend that WAC 173-408-080(9)(d)(i) be deleted so that the walking grid must remain at 25-foot intervals.
- WAC 173-408-090(3)(b)(iii) requires that surface areas with cover penetrations, distressed vegetation, cracks, or seeps must be inspected visually and with a hydrocarbon detector. Please add language that landfill operators must perform this inspection at least monthly.
- Monitoring should be conducted only when barometric pressure is normal.
- MSW landfill owners and operators should be able to take advantage of new or evolving technologies for improved surface emissions monitoring, for example the use of drone remote sensing technology that is able to survey the entire landfill surface. I understand that surface monitoring using new technology may be requested as an alternative compliance measure. However, I urge you to look for opportunities during rulemaking to authorize the use of available, effective methane sensing technologies. For example, please consider requiring surface monitoring and mitigation when a landfill is notified that a leak has been detected using technologies such as satellites. Please also consider including a process to evaluate and approve the use of new technologies. (See recent public workshop slide #11 from the California Air Resources Board [here](#).)

### Landfill cover

The type of landfill cover has been found to have a big impact on the level of methane emissions, generating higher emissions with the use of daily and intermediate cover.

- The definition and use of “inactive area” in the rules creates a problematic exemption for areas of the landfill that only have temporary cover and are

only temporarily inactive. Areas with temporary cover will emit higher levels of methane than those with final cover. But instead of being more frequently monitored, the draft rules do the opposite by allowing annual monitoring in certain situations. I recommend deleting this damaging definition of “inactive area” and any reference to it. For example, “inactive areas on an active MSW landfill” should be removed from WAC 173-408-070 (1)(a)(iii) and (1)(b)(iii) to ensure that areas with temporary cover are monitored at least quarterly.

- WAC 173-408-100(3)(a) states that requirements related to methane concentration limits do not apply to the working face of the landfill. However, working faces generate significant methane emissions. I therefore recommend that the Department of Ecology develop standards and best practices to minimize emissions from the working face, e.g. by limiting the area of the working face, moving more quickly to intermediate cover, limiting the concentration of wet waste, etc. It would also be useful to require monitoring of methane emissions on the working face to collect data that will help inform how best to manage those emissions.

#### Gas collection and control system monitoring & wellhead monitoring

- Please strengthen Washington’s draft rules on gas collection and control systems by incorporating relevant sections of Oregon’s rules.
- Owners and operators of MSW landfills should be required to keep records and notify the Department and local authority when component leaks are tagged and when repairs/corrective actions are taken. Retesting should also be required.
- Owners and operators of MSW landfills should be required to keep records and notify the Department and local authority of any positive pressure measurements, corrective action taken, and retesting.

#### Design Plans for gas collection and control systems

- All required plans, including the Design Plan, should be submitted electronically and be available to the public on request.
- All required plans, including the Design Plan, should be submitted to both the Department and the local authority, and reviewed by the local authority in consultation with the Department. The local authority should approve the plan only if it contains all required information.
- The working face of a landfill can generate significant methane emissions. Please require that the Design Plan described in WAC 173-408-080 includes a description of how the release of methane will be minimized on the working face, for example by limiting the area of the working face, moving more quickly to intermediate cover, limiting the concentration of wet organic waste, etc.

- WAC 173-408-100(3) (b) through (e) states that methane concentration limits do not apply to areas of the landfill surface where cover material has been removed for various purposes, e.g. installing landfill cover, gas, and leachate systems, where there is active mining, etc. I appreciate that the draft rules require that records are kept on these activities. However, please consider strengthening WAC 173-408-080 (2)(a)(iv) to clarify that all the activities in 100(3)(b) through (e) must be covered in the Design Plan and that a Design Plan update is required prior to undertaking any new activities. Required information should include a description of mitigation measures that will be taken to minimize methane emissions, the areas of the MSW landfill that will be affected, the reason the actions are required, any landfill gas components that will be affected, projected start and finish dates, and projected shut down times for individual gas collection system components.

#### Test methods and procedures

- The description of the method for determining the landfill gas heat input capacity (HIC) for landfills without Carbon Adsorption or Passive Venting Systems (WAC 173-408-090(2)(a)) states that “*Site-specific data may be substituted when available.*” It’s not clear what data is being referenced. However, to calculate the most accurate HIC, site-specific data should be used whenever possible. Therefore, please consider changing “may” to “must” in that sentence.
- WAC 173-408-090(6) indicates that enclosed combustors (which by definition include enclosed flares, steam generating boilers, internal combustion engines, and gas turbines) must reduce methane by 99%. However WAC 173-408-080(5)(a)(i) requires gas control devices other than flares (which also include internal combustion engines, boilers and boilers-to-steam turbine systems, and gas turbines) to reduce methane by at least 97%. This seems confusing to me. Please clarify which is correct.

#### Record keeping

- Records should be maintained in electronic format and be available to the public.
- WAC 173-408-110(1)(a)(v) requires records of all instantaneous surface readings of 200 ppm or greater. I recommend strengthening this to require records of all instantaneous surface readings of 100 ppmv or greater, which would match [Oregon’s rule](#).
- The draft rules should also require record keeping for integrated surface emissions readings.

- Please add a requirement to maintain records describing mitigation measures taken to prevent the release of methane or other emission on the landfill's working face.
- Please require record keeping for monitoring of leaks and repairs of components containing landfill gas.
- In section 110(1)(a)(xiii), the term “non-routine maintenance construction” is not clear. Why doesn't this section include all construction activity where landfill cover material is moved?

### Reporting

- Required reports should be submitted electronically to both the Department of Ecology and the local air pollution control agency to increase accessibility by the public.
- Please require that gas component leaks, exceedances, and repairs be reported annually. This information should be added to the list of required annual reports in WAC 173-408-110(2).
- WAC 173-408-110(2)(f) should require reporting of all instantaneous surface readings of 100 ppmv or greater and all integrated surface emissions readings.
- The draft rules on initial waste in place reporting do not state to whom those reports must be submitted. Please add the following underlined language to WAC 173-408-050 (1): *Each owner or operator of a MSW landfill that received solid waste after January 1, 1992, must submit an initial waste in place report to the local authority and the Department pursuant to WAC 173-408-110(2)(a).* In addition, please include the following underlined language in WAC 173-408-110(2)(a): *Each owner or operator of a MSW landfill that meets the requirements of WAC 173-408-050(1) must submit to the local authority and the Department an initial waste in place report that includes the waste in place in tons and how that has been determined.*
- Please add the following underlined language to WAC 173-408-110(2)(g)(vii): *Total volume of landfill gas shipped off-site and how the gas is shipped, the composition of the landfill gas collected (reported in percent methane and percent carbon dioxide by volume), and the recipient of the gas.*
- In cases where a gas collection and control system must continue to operate after a landfill submits a closure notification report, the owner or operator should be required to continue performing surface emissions monitoring, GCCS component monitoring, annual reporting, etc. Please add clarifying language about this in WAC 173-408-110(2)(h).

### Alternative compliance measures

- WAC 173-408-120(3) states that the *local authority* must review and either approve or disapprove requested alternatives and that the *department* may request additional information. This is confusing, but there would be advantages to involving both agencies. Please consider keeping the review and approval responsibility with the local authority but requiring that they consult with Department of Ecology.

Thank you for this opportunity to provide input as you develop these critical rules. We owe it to future generations to do all we can to limit methane emissions from landfills.

Sincerely,

Suellen Mele