

Technical Bulletin

US EPA Proposes Revisions to AP-42 Air Emission Factors for Municipal Solid Waste Landfills

Background

A proposed revision to [AP-42](#), specifically related to emission factors for Municipal Solid Waste (MSW) Landfills was issued by the U.S. Environmental Protection Agency (EPA) in September 2008. AP-42 is the **Compilation of Air Pollutant Emission Factors** guidance document developed by the EPA to assess air pollution emission from various sources. AP-42 is periodically updated by the EPA to include new source categories and emission factors. The last update to AP-42 section on landfills (2.4) was in 1998; this update is a culmination of work that began in 2001 with EPA's industry-support research. The Environmental Defense Fund has issued a notice that it plans to sue the EPA regarding the Landfill New Source Performance Standards, which will make this revision even more controversial.

The proposed update was developed to better characterize landfill gas (LFG) emissions from facilities developed after the revisions to the Subtitle D regulations (40 CFR 258) became effective in 1993, which among other things limited the types of waste that could be landfilled with MSW. The previous emission factors in AP-42 are thought by EPA to be more reflective of pre-Subtitle D regulations.

Key Revisions

Several key changes to note in AP-42 are summarized below:

1. Proposed k factor for wet landfills: A factor of 0.30 is proposed; however, AP-42 does not clearly justify the selection of

this factor other than a reference to a June 2005 EPA paper/document (EPA-600/R-05/072) nor do they define the term "wet." The concern is this factor may inappropriately overstate emissions for wet climate landfills, where a k of 0.30 might be too high versus a bioreactor landfill where a k of 0.30 may be appropriate.

2. Correction factor for Lo of 1.3 (to compensate for not including uncollected gas). This assumes a default collection efficiency of 75%, which does not account for the higher collection efficiencies that the industry believes are achievable at well-controlled landfills.
3. Enclosed and open flares have same destruction efficiency (97.7%) and same emission factors. Source test data for flares suggest that this number for enclosed flares (open flares cannot be source tested) should be more like 99% or greater. The 97.7% does not even meet the requirements of EPA's own NSPS rule, which flares easily can meet.
4. EPA encourages/recommends sampling to determine site-specific hydrogen sulfide concentrations in LFG, but updates the default values. These defaults should be used with caution.
5. There are two tables of emission factors for LFG constituents: pre-1992 and 1992 and newer landfills.
 - a) Volatile organic compound (VOC) is 99.7% of nonmethane organic compound (NMOC) (not 39% as in previous versions) for 1992 and newer

- landfills, remains at 39% for pre-1992 landfills with no or unknown co-disposal and is 85% at pre-1992 co-disposal sites. The 99.7% value assumes that almost all NMOC are reactive VOCs, which the industry does not believe to be the case.
- b) Acrylonitrile is now below detection level for all landfills, which is something the industry had suggested back in 2001.
- c) Default NMOC concentration is now 838 parts per million by volume (ppmv) for post 1992, remains at 595 ppmv pre-1992. This inconsistent with research that the industry has completed, which showed NMOC concentrations decreasing with time due to less NMOC-containing wastes being disposed in landfills after Subtitle D implementation. This is also inconsistent with EPA's data for toxics in this updated AP-42 section (most of which are NMOCs), which show an overall decline in concentrations after 1992.
- d) Carbon monoxide (CO) emission factor for flares went down. New emission factors for various LFG control devices are provided and are an improvement over previous factors. However, some nitrogen oxides (NO_x) factors went up from earlier versions, which is inconsistent with technology improvements and lower best available control technology (BACT) levels that have occurred for flares, engines, and turbines.
- e) Overall the post 1992 values for toxics in LFG are an improvement and consistent with industry data, but EPA ignored industry's proposal to purge the old data, and EPA did not use a lot of the industry-supplied data.
6. 75% collection efficiency unless demonstrated and documented site values support higher rate. The new range is from 50-95%, rather than 60 to 85%
7. Recommended approach for quantifying landfill emissions at area sources is EPA's ORS-RPM (optical remote sensing-radial plume mapping). Many in the industry are concerned that state agencies will require sites to use this method even though the proposed technology has not been fully demonstrated and is very expensive.

Industry Action

The Waste Industry Air Coalition (WIAC), which involves participants from Solid Waste Association of North America (SWANA), National Solid Waste Management Association (NSWMA), and public and private interests, is preparing a response to the proposed revisions to AP-42 and is in the process of setting up a meeting with EPA to discuss the industry's issues with the proposal.

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