LOS ANGELES COUNTY
SANITATION DISTRICTS
Converting Waste Into Resources

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Landfill Methane Regulation
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

Dear Sir/Madam:

Comments on CARB's "Preliminary Concepts for
Potential Improvements to Landfill Methane Regulation"

Thank you for the opportunity to comment on California Air Resources Board (CARB)'s workshop on Preliminary Concepts for Potential Improvements to Landfill Methane Regulation (LMR). We appreciate CARB's efforts and leadership in pursuing a better understanding of landfill methane emissions and identifying effective emissions reduction strategies needed to achieve carbon neutrality.

The Los Angeles County Sanitation Districts (Sanitation Districts) are a public agency focused on converting waste into resources like recycled water, energy, and recycled materials. The agency consists of 24 independent special districts serving about 5.5 million people in Los Angeles County. Our service area covers approximately 850 square miles and encompass 78 cities and unincorporated areas in the county. The Sanitation Districts' solid waste management system currently provides about one-fifth of the countywide solid waste disposal needs through the operation of two sanitary landfills and two materials recovery/transfer facilities. In addition, the Sanitation Districts manage four closed landfills and operates two landfill gas to energy facilities.

In the workshop, CARB presented concepts for potential LMR improvements that include leveraging recent research and technological advancements in remote sensing to increase effectiveness of landfill methane emissions control measures, revising surface methane emission standards, improving surface methane monitoring procedures, and encouraging beneficial use of landfill gas (LFG). We agree that potential LMR improvements should be explored in the areas of landfill methane monitoring, operational strategies, and reporting for compliance. The following are Sanitation Districts' comments in response to CARB's presentation.

Applications of Remote Sensing Technologies in Surface Methane Monitoring

While emerging remote sensing technologies (e.g., satellites, aircraft, drones, etc.) are good screening tools for identifying large methane emission sources, they are, at this time, unable to quantify emissions from point sources. For example, methane sensors mounted to satellites, planes and drones can detect methane above landfills, which can signal a potential gas leak on the ground. However, since these types of aerial surveys only provide an average methane concentration throughout the entire vertical column below the measurement device, results from these devices only provide a two-dimensional snapshot of a three-dimensional methane plume. In other words, additional ground surveying is required to pinpoint emission sources.

Due to the existing limitations of remote sensing technology, we support a hybrid landfill surface methane emissions monitoring approach that combines remote sensing technology as a screening tool with on-ground surface emissions monitoring. This proposed hybrid approach would use remote sensing technologies as an initial screening tool for the identification of potential surface methane emissions. Screening data, over a pre-determined threshold, would be utilized to more efficiently deploy monitoring crews to verify and pinpoint methane emission sources identified by remote sensing screening. This hybrid monitoring approach would reduce inefficient handheld monitoring of large areas and allow more-frequent, more-timely, more-targeted, and more-effective landfill surface methane emissions monitoring.

We believe this hybrid surface emissions monitoring approach is based on sound science and proven practices, that would take advantages of recent advancements in remote sensing technologies and enable us to manage landfill surface methane emissions in a more effective, scientifically-sound manner.

Surface Methane Emission Standard

We believe that the current 500 ppmv instantaneous limit is already very stringent and has a long history of successful use in limiting landfill surface emissions. When landfill surface leaks are detected, they are generally higher than 500 ppmv and would therefore be subject to corrective action. Our historic monitoring data suggests that for landfills, especially closed landfills, there are few surface leaks between 200 to 500 ppmv. Accordingly, no meaningful emission reductions would be achieved by modifying the standard. We are also concerned that lowering the standard would increase air intrusion, which would increase the risk of subsurface fires, and reduce LFG energy content, threatening the recovery of LFG for renewable energy. We request that CARB review and thoroughly evaluate applicable data from active and closed landfills to determine whether a reduction in the instantaneous limit would provide any meaningful reductions in surface methane emissions.

Surface Emissions Monitoring

We appreciate CARB's consideration of revising monitoring procedures to determine the extent of surface methane leaks and ensure effective mitigation of affected areas.

We are supportive of developing a surface monitoring procedure that, improves upon the current practices, whenever a surface methane threshold (e.g., 500 ppmv) is exceeded during an on-ground surface monitoring survey. For example, upon identifying an exceedance, the monitoring crew would stop and pause the integrated monitoring mode, and start a potential instantaneous point source detection mode by monitoring around the "hot-spot" to verify the point source, determine the extent of the point source, and flag and mark the "hot-spot" for subsequent remedial actions before ending the instantaneous point source detection mode and continue in the integrated monitoring mode along the grid monitoring path.

We believe this is an efficient monitoring procedure that would effectively detect and capture potential surface methane leaks without increasing the complexity of required monitoring by shortening the spacing interval between walking paths.

Corrective Action and Re-monitoring

As pointed out by workshop participants and industry experts, further shortening the current 10-10-45 day system required for remedial and corrective actions may not be feasible, as contract development, approval, and contractor mobilization could take weeks after providing notification to the contractor. We concur that the current 10-10-45 day system should be maintained.

Beneficial Use of Landfill Gas

Although landfill gas has the potential to be used for energy recovery, several challenges can make beneficial use infeasible. Projects such as gas-to-electricity and pipeline injection rely primarily on the landfill gas's quantity and quality. Both of these can differ greatly, depending on various factors, such as the age of the landfill, the quantity and type of waste within the landfill, and the operational status of the landfill (closed vs. active). Without sufficient gas quantity and quality, beneficial usage is infeasible. Currently, no proven technology is available for the beneficial use of landfill gas with relatively low energy content. We believe that all landfill operators would prefer to use landfill gas for beneficial uses for various reasons. Unfortunately, beneficial use projects require significant capital costs, including the construction of auxiliary infrastructure, such as electrical substations and natural gas pipelines. Moreover, landfill gas quantity and quality will decline after closure and due to food waste diversion (i.e., SB 1383). These factors also negatively impact potential beneficial use of landfill gas.

In summary, we commend CARB staff on their efforts and leadership in improving the LMR and working to achieve carbon neutrality. We also appreciate the opportunity to work with CARB to improve the LMR.

Thank you for your consideration of our comments. Please feel free to call me at (562) 908-4288, extension 2412, should you have any questions.

Very truly yours,

David Rothbart

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