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On behalf of the International Human Rights Clinic at Santa Clara University School of Law, please refer to the attached PDF file for our written comments on the proposed LMR amendments. Thank you very much for the opportunity to provide public comment on this important matter.

SANTA CLARA UNIVERSITY
INTERNATIONAL HUMAN RIGHTS CLINIC

November 10, 2025

Clerks' Office, California Air Resources Board
1001 I Street
Sacramento, CA 95814
Submitted electronically to https://ww2.arb.ca.gov/lispub/comm/bclist.php

Re: Written Comment on Proposed Amendments to the Regulation on Methane Emissions from Municipal Solid Waste Landfills, Public Hearing on November 20, 2025

CARB Should Adopt the Proposed Landfill Methane Regulation Amendments and Incorporate Stricter Requirements to Protect Vulnerable Communities

A. Summary of Comment

1. Santa Clara Law School's International Human Rights Clinic[1] (IHRC) supports the proposed landfill methane regulation amendments because the amended regulation will benefit communities disproportionately impacted by methane pollution from landfills, like Avenal and other overburdened environmental justice communities. More effective landfill gas control not only helps the state achieve its methane emissions reduction targets but also reduces emissions of co-pollutants like volatile organic compounds, odorous compounds, and other toxic air contaminants of concern, directly improving local air quality in nearby communities. It should also meaningfully reduce the risk of subterranean fires and associated public health harms. Given the history of ongoing violations in landfill-impacted communities like Avenal, we particularly encourage the California Air Resources Board (CARB) to strengthen the amended Landfill Methane Regulation (LMR) by eliminating exemptions and exclusions, increasing monitoring and enforcement requirements, and ensuring rapid and transparent remediation, repair, and closure when problems arise. Accordingly, we advise CARB to adopt the amended regulation with additional requirements to protect vulnerable communities, as detailed below.

[1] The International Human Rights Clinic at Santa Clara University School of Law offers law students the opportunity to gain professional experience working on cases and issues related to international human rights law. Students collaborate with human rights organizations and experts, primarily in the United States and Latin America, through research, litigation, documentation, writing, and advocacy.

2. Santa Clara IHRC has a number of recommendations and general comments for CARB about the amended regulation. First, IHRC recommends that CARB ensure that the amendments address the impacts of landfill methane emissions on disadvantaged and overburdened communities like Avenal. Second, CARB should amend the regulation in a manner that responds to the serious risks that landfill methane emissions pose, as demonstrated by examples like the Chiquita Canyon Landfill fire. Third, we recommend that CARB give particular weight to the voices of those impacted most by methane emissions. Fourth, we suggest CARB apply the precautionary principle in face of scientific uncertainty about emissions levels and err on the side of stronger regulation where the available technology does not yet allow for precise monitoring of methane emissions. Fifth, CARB must strengthen the LMR in a manner that is consistent with international commitments made by the United States and California to reduce methane emissions. Sixth, we recommend CARB abide by the advisory opinions issued by the International Court of Justice and the Inter-American Court of Human Rights on climate change that countries are obliged to reduce methane pollution and have the duty to inform the public and affected communities of information regarding climate change, including methane pollution. Lastly, we re-emphasize that CARB should ensure the LMR requirements are strong enough to protect vulnerable communities affected by landfills, like Avenal, by ensuring quick and transparent remediation, repair, and closure when problems arise.

B. Methane Emissions Have Significant Negative Impacts on Avenal and Other Landfill-Adjacent Communities

3. Communities situated next to large landfills like Avenal continue to suffer due to inadequate regulation of methane emissions from landfills, and disadvantaged communities are particularly vulnerable to these harms. In Avenal, for example, the landfill has placed a weighty burden on its residents. Situated near the community's high school and residential neighborhoods, the landfill negatively affects quality of life, public health, and the ability of residents to meet basic needs and live a dignified life. Beyond residents' complaints of noxious odors that interrupt community activities like high school football games, residents also must live with the serious concerns of increased rates of asthma and other respiratory illnesses, the unknown health effects of living in proximity to decomposing dead animals and industrial sludge, and dangers posed by unaddressed subterranean fires within the landfill. Previous responses to these concerns have been inadequate.

4. By strengthening and enacting the proposed amendments, CARB could be helping communities address these concerns by removing exceptions to methane monitoring, control, and leak repair requirements, leveraging technology to improve the effectiveness of methane emissions monitoring and speed up response and repair times when issues arise, and improving the effectiveness of methane gas collection and control systems while strictly limiting downtime. Above all, affected communities deserve heightened protections, special attention to their concerns, and rapid and transparent communication and action in response to methane emissions

issues. Communities adjacent to landfills cannot be permitted to become unliveable environmental sacrifice zones.

5. The subterranean fire in the now closed Chiquita Canyon Landfill demonstrates the need for a much stronger LMR.[2] Stronger regulation, particularly through improved methane monitoring and more rapid responses to methane emissions at Chiquita Canyon Landfill may have prevented, or at least provided a timely warning of, the fire and severe air, water, and soil contamination that resulted.[3] Similarly situated communities living adjacent to landfills, like Avenal, need CARB to act to regulate, monitor, and prevent excess methane pollution that could lead to disastrous fires and other serious environmental and health impacts.

6. The existing regulation has failed to adequately address the concerns of communities like Avenal. Therefore, CARB should give particular weight to the comments of communities affected by landfills in finalizing the proposed amendments to the Landfill Methane Regulation. The people most impacted by the amended regulation – those that have to live with the methane pollution and other associated emissions from landfills in their daily lives – have the most urgent insights into what needs to change.

C. To Protect Public Health, CARB Should Require More Effective Monitoring Technology, More Frequent Monitoring, and Eliminate Monitoring Exemptions

7. While the proposed LMR amendments recognize the inadequacy of traditional monitoring methods and begin to close some of the resulting public health and environmental protection gaps, they should go farther. Traditional methods for monitoring methane emissions from landfills are inadequate and leave the health of landfill-adjacent communities unprotected. Available data demonstrates that the current requirement for annual walking surface emissions monitoring (SEM) does not lead to sufficient identification of methane leaks and exceedance events, demonstrating a need for more comprehensive monitoring requirements. These gaps are even more pronounced in areas that are currently excluded from monitoring requirements, such as the working face and areas of construction, where methane emissions are likely to be the highest. The new regulation must close these gaps and require landfill operators - particularly those in proximity to vulnerable communities - to monitor more frequently without exemptions or exclusions, using layered approaches to measure emissions and enable prompt, transparent corrective measures. Given the direct health impacts of methane, as well as its role as a carrier

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[2] United States Environmental Protection Agency, "Chiquita Canyon Landfill, Castaic, CA," https://www.epa.gov/ca/chiquita-canyon-landfill#reaction; Inside Climate News, "The Smoldering, Noxious Waste Dump Next Door," (Aug. 18, 2025), https://insideclimatenews.org/news/18082025/la-county-chiquita-canyon-landfill-toxic-waste-pollution/.

[3] Alyssa Ochs, "Residents report 'noxious waste' from nearby landfills releasing staggering amounts of air pollution: 'This is not normal'," Sept. 19, 2025, https://www.thecooldown.com/green-business/chiquita-canyon-landfill-pollution-california/.

gas for other air toxics, stricter monitoring and correction requirements are necessary to adequately protect public health.

8. Readily available, affordable, effective technologies exist to supplement traditional SEM. CARB should modify the proposed LMR amendments to require the use of such new technologies layered together with traditional SEM and newer aerial monitoring techniques. CARB should retain authority to determine the effectiveness of any new technology proposed in fulfillment of this requirement. Additionally, CARB should eliminate monitoring exclusions and extend this requirement to the entire landfill, including areas of high methane emissions such as the working face and construction areas.[4] We strongly oppose the decision to retain an exclusion for monitoring requirements on the working face for the first 180 days after initial waste placement, though we appreciate and support the addition of remote sensing requirements in unsafe-to-walk surface areas.

9. In formulating these stricter requirements, CARB should consider incorporating recommendations derived from Industrious Labs' recent study on California landfill methane emissions, such as limiting the size of the working face of the landfill, requiring earlier installation of gas wells, and requiring horizontal wells in the working face.[5] We also encourage CARB to adopt stricter requirements based on the recommendations from the U.S. Environmental Protection Agency's white paper on working face emissions.[6] Finally, the amended LMR should require landfill operators to conduct monthly monitoring rather than the current annual requirement, enabling rapid correction of leaks and other exceedances to limit negative impacts for communities, the environment, and the climate. Although the proposed amendment to require quarterly monitoring represents an improvement over the current LMR, we believe monthly monitoring is more appropriate given the serious effects of methane exceedances. At a minimum, we encourage CARB to adopt these stricter requirements for landfills adjacent to vulnerable communities.

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[4] Office of Air Quality Planning and Standards, United States Environmental Protection Agency, "Improvements to Working Face and Daily Cover to Reduce LFG Emissions," (October 2024), https://docs.publicnow.com/viewDoc?filename=139931%5CEXT%5CE6F866E7840A637539F9E588EF8EC89083EF8B3B_1239774D54D7D32DE3F26A1A62374F2B3B0FD1AF.PDF.

[5] Industrious Labs. Golden Opportunity: California's Roadmap to Slashing Methane Emissions from Landfills (March 2025), https://cdn.sanity.io/files/xdjws328/production/75bb242795e667a2d5abf3cbf552858f6da5f455.pdf. Note that the report modeled outcomes from compliance with SB 1383's mandate to divert organic waste away from landfills and found that these additional regulatory requirements are needed to meaningfully reduce landfill methane emissions in the short and medium term; diversion of organic waste alone will not be sufficient to meet the state's methane emissions reduction targets.

[6] Office of Air Quality Planning and Standards, United States Environmental Protection Agency, "Improvements to Working Face and Daily Cover to Reduce LFG Emissions," (October 2024), https://docs.publicnow.com/viewDoc?filename=139931%5CEXT%5CE6F866E7840A637539F9E588EF8EC89083EF8B3B_1239774D54D7D32DE3F26A1A62374F2B3B0FD1AF.PDF. The recommendations suggest minimizing the size of the working face, implementing a system to monitor methane emissions from the working face area, and installing appropriate alternative daily covers. Crucially, the paper reaffirms that all the necessary technology and approaches for reducing methane emissions from landfill working face areas are currently available. *Id.* at 6-10.

10. This approach takes into account the uncertainties generated by the fact that more advanced monitoring technologies of methane emissions, including drones, are still developing and those that are widely available may not yet be able to accurately measure total methane emissions from a particular landfill over time.[7] In the face of scientific uncertainty, CARB should apply the precautionary principle throughout this revised regulation. This means that even when there is scientific uncertainty about the adverse health effects of landfill emissions, CARB should enact regulations that are protective of public health.[8] Therefore, for known climate pollutants like methane, the precautionary principle directs CARB to implement more stringent monitoring requirements and reduce areas of the landfill that are excluded from compliance, GCCS downtime, and other opportunities for methane emissions to go undetected and unremediated. This is also in line with California's increasingly ambitious targets to reduce GHGs in the state, as outlined in CARB's 2022 Scoping Plan.[9] Accordingly, we respectfully encourage CARB to set the surface methane emissions standard for instantaneous monitoring at 200 ppmv as initially proposed, rather than maintaining the 500 ppmv level from the current LMR.[10]

11. CARB's efforts to strengthen the LMR are also critical to fulfilling climate commitments made by the United States and by California, particularly given that methane is a powerful greenhouse gas and that landfills represent the second largest source of methane emissions in California. The United States is a signatory to the Global Methane Pledge, where countries have committed to working to reduce methane emissions by taking domestic action and "focusing on standards to achieve *all* feasible reductions in the energy and waste sectors."[11] Additionally, California itself has gone even further by launching the Subnational Methane Action Initiative, where CARB plays an integral role in achieving these emissions reduction goals.[12] By enacting the proposed amendments and adding the stricter requirements outlined here, CARB will be directly fulfilling its responsibilities in this regard.

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[7] Leah Burrows, "EPA Underestimates Methane Emissions From Landfills, Urban Areas: Research Highlights Importance of High-Resolution Methane Accounting," *Harvard John A. Paulson School of Engineering and Applied Sciences News*, https://seas.harvard.edu/news/2024/05/epa-underestimates-methane-emissions-landfills-urban-areas. *See* D. Fosco, et. al, "Progress in monitoring methane emissions from landfills using drones: an overview of the last ten years" in *Science of the Total Environment*, *1 October 2024*. "The uncertainty associated with the [Unmanned Aerial Vehicle]-based methods discussed in this paper is as broad as it is difficult to determine and compare, because each step of any method introduces a source of uncertainty and specific studies in this regard are limited." pg. 14. *See also* California Air Resources Board, "Public Workshop: Landfill Methane Emissions in California," at 14:30.

[8] For example, there may not yet be strong data to demonstrate the cumulative and synergistic effects of the various landfill gases, including methane, VOCs, HAPs, and criteria air pollutants, upon human health. Regulation in the face of such uncertainty must err on the side of protecting vulnerable residents.

[9] California Air Resources Board, "2022 Scoping Plan for Achieving Carbon Neutrality," pg. 41.

[10] Although it is outside the scope of this comment to provide detailed feedback on the more technical aspects of the proposed amendments, we support efforts to improve GCCS, for example by minimizing downtime, and cover integrity, such as the added requirement to submit a cover integrity plan and address repairs on a monthly basis.

[11] *Global Methane Pledge*, 2023. (emphasis added)

[12] California Air Resource Board, "California launches international methane-reduction initiative during Climate Week," Sept. 20, 2023, https://ww2.arb.ca.gov/news/california-launches-international-methane-reduction-initiative-during-climate-week.

12. In the International Court of Justice's Advisory Opinion on Climate Change, the Court stated that countries have duties under customary international law to prevent environmental harm and use due diligence as the standard for preventing such harm.[13] This means that appropriate rules and measures must be put in place that regulate polluters and create effective enforcement and monitoring systems.[14] Additionally, regulatory bodies must apply the precautionary principle to mitigate potential harm in the face of scientific uncertainty.[15] CARB can contribute to California's obligations to reduce environmental harm by amending the LMR to promote effective enforcement and monitoring.

13. The Inter-American Court of Human Rights also stated in its Advisory Opinion on the Climate Emergency and Human Rights that governments have obligations to "eliminate [short-lived climate pollutants] as quickly as possible."[16] Here, CARB should take this to mean that it should not delay in adopting the strongest possible LMR amendments and undertaking continued regulatory action to help eliminate short-lived pollutants like methane to the greatest extent possible. Governments also have an obligation to provide government-held information relating to the causes and impacts of climate change, including that of methane emissions, to the public and particularly to affected communities; this helps the public participate in environmental protection goals, access justice in relation to it, enables effective protection of rights, and guides environmental and social impact assessments.[17] CARB should continue to promote transparency to achieve this goal by ensuring communities like Avenal that are affected by landfill methane emissions have access to the information regarding emissions and reparative measures in an accessible format and language. To fulfill these obligations, CARB should require all landfills to provide data about the composition and concentrations of landfill gas emissions and establish a public dashboard to share this information in real time. This dashboard should also provide updated information about leaks and corrective actions.[18]

14. Furthermore, the Inter-American Court found that governments must closely supervise and monitor public and private activities generating greenhouse gas emissions and evaluate their compliance with environmental regulations in relation to the risk they pose.[19] To effectively do so, governments must create strong mechanisms to monitor these activities and make necessary

[13] International Court of Justice, "Obligations of States in respect of Climate Change," (2025), para. 273, 281-82.
[14] International Court of Justice, "Obligations of States in respect of Climate Change," (2025), para. 283-86.
[15] International Court of Justice, "Obligations of States in respect of Climate Change," (2025), para. 293.
[16] I/A Court H.R., *Climate Emergency and Human Rights AO 32-25*, Advisory Opinion on May 29, 2025, para. 337.
[17] I/A Court H.R., *Climate Emergency and Human Rights AO 32-25*, Advisory Opinion on May 29, 2025, para. 520.
[18] This proposal echoes the proposed data sharing requirements in AB 28, a bill currently under consideration by the California State Assembly designed to prevent recurrence of the devastating subterranean fire at the Chiquita Canyon Landfill. See https://legiscan.com/CA/text/AB28/id/3186898.
[19] I/A Court H.R., *Climate Emergency and Human Rights AO 32-25*, Advisory Opinion on May 29, 2025, para. 352-53.

recommendations to ensure mitigation targets are met.[20] The government must inform the public about these targets and the strategies in place to achieve them in a timely and effective manner.[21] CARB should implement similar risk assessments into its existing mitigation and monitoring framework and prioritize transparency to ensure Californians are adequately informed about polluting actors.

D. Conclusion

15. Above all, CARB should ensure that the amended Landfill Methane Regulation's requirements are strong enough to protect vulnerable communities that live in proximity to municipal landfills, particularly those that accept high volumes of waste and types of waste that are likely to produce high volumes of methane emissions, like Avenal. To do this, CARB should close loopholes in the existing LMR by making it harder for landfill operators in such communities to obtain waivers or otherwise exempt portions of their operations for monitoring and gas control measures, particularly on the working face. CARB should also ensure that the process of remediation, repair, and closure due to emissions problems is quick and transparent when problems arise to ensure that landfill operators cannot ignore the health and safety of affected communities.

[20] I/A Court H.R., *Climate Emergency and Human Rights AO 32-25*, Advisory Opinion on May 29, 2025, para. 354-55.
[21] I/A Court H.R., *Climate Emergency and Human Rights AO 32-25*, Advisory Opinion on May 29, 2025, para. 519, 521.