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Study reveals Bay Area methane emissions double previous estimations

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A recent study published by Lawrence Berkeley National Laboratory researchers has revealed that local methane emissions predominantly originate from biological sources such as landfills, making Bay Area methane emissions approximately twice as high as originally estimated.

Methane gas is roughly 80 times as potent at capturing atmospheric heat than carbon dioxide is, but it lasts in the environment for only 10 years as compared to carbon dioxide's 100 years, according to a Berkeley Lab press release.

The Berkeley Lab study, which was largely funded through the California Energy Commission, focused on natural gas infrastructure in the Bay Area. According to Marc Fischer, one of the authors of the study, natural gas-related methane emissions have never before been evaluated on a regional level.

The Bay Area has a significant population density that requires several landfills and an influx of natural gas, Fischer said. While most landfills utilize soil gas capture, which minimizes environmental contamination, such capture technologies can be inefficient, according to Fischer.

In their study, Fischer and his partner Seongeun Jeong measured concentrations of methane in the atmosphere over a four-month period in 2015, through measurements collected at six air quality and greenhouse gas sites across the region. They then measured concentrations of methane emission by using an inverse modeling technique that compared the assessment with predicted concentrations.

"This research provides a quantitative estimate of how much methane in the Bay is coming from biological and natural gas sources," Fischer said. "If you know where it's coming from, then you can start thinking about how to mitigate it - it's clear that we need to work predominantly on the waste sector and on the natural gas sector."

According to California Energy Commission chair Robert B. Weisenmiller, the commission chose to fund Berkeley Lab's specific research because it recognized that methane is a potent greenhouse gas. In an effort to reduce methane emissions and their impact on our climate, the commission felt the first step needed was proper characterization of these emissions, Weisenmiller said in an email.

Most of California's biological methane is generated in the Central Valley, but 80 to 90 percent of the state's natural gas is produced outside of California and is imported, according to Fischer. The gas is imported through transmission pipelines, generally from northwestern and southwestern states.

"The fact that the researchers were able to estimate methane emissions from the natural gas pipeline system is a significant scientific advancement," said the California Energy Commission in an email. "Other sources of emissions such as landfills and water treatment plants make it very difficult to estimate and differentiate sources of methane emissions."

Both Fischer and the commission stated that this research will have a significant and enriching impact on the collective knowledge of greenhouse gas emissions in the Bay Area and in the state as a whole - allowing mitigation efforts to proceed more effectively.

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