Seven Key Solutions to Landfill Methane

and one big mistake to avoid

Landfills are the third largest source of anthropogenic methane emissions (1). Reducing methane emissions now is the most effective way to reduce global heating in the coming decades, which can be best done by implementing a zero waste strategy. Zero waste is a comprehensive waste management approach that prioritizes waste reduction and material recovery, with the ultimate goal of creating a circular economy. A comprehensive zero waste plan includes interventions to reduce overconsumption, increase recycling, promote reuse systems, ban or redesign problematic products and packaging, and integrate the informal and formal waste workers as key partners.

Landfill methane results from the anaerobic decomposition of organic waste in landfills. The following elements of zero waste dramatically reduce landfill methane emissions:

1

Reduce food loss and waste. Food loss and waste are responsible for 6% of all greenhouse gas emissions (2). Reducing supply chain losses and consumer wastage means fewer emissions in food production and less food going to disposal (3–5).

2

Implement source separation. Separate collection of organic (putrescible) waste is critical. It keeps methane feedstock out of landfills, enables the utilization of organic matter, and maximizes the recycling rate by preventing cross-contamination with other discards (6–8).

3

Use the organics. Organic discards are full of carbon and valuable nutrients. Composting (at home or in a municipal facility) returns these to the soil, improves soil fertility, improves water retention (reducing vulnerability to drought and floods), and reduces the use of synthetic fertilizers (9–11).

4

Alternative uses for organics. Alternative uses for organics include animal feed and biogas (produced through anaerobic digestion) (8).

5

Stabilize the residual. Using Mechanical-Biological Recovery and Treatment (MBRT) to process the residual before landfilling reduces methane generation by 80-90% (12–15).

6

Install methane capture at landfills. Old landfills will continue to produce methane for decades; landfill gas capture systems are effective at capturing this methane and can generate heat or power on site (16).

7

Apply biologically active cover to landfills. Selected soil organisms break down up to 80% of fugitive methane emissions (17,18).

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Zero waste is effective, inexpensive, and offers important co-benefits, including significant job generation. Many cities around the world have successfully implemented zero waste systems. See case studies at www.zerowasteworld.org.

Incineration, or "waste-to-energy" is NOT an appropriate method for tackling landfill methane.

- Incineration is itself a major source of greenhouse gas emissions (19–22).
- Incinerators must co-fire fossil fuel — plastic or coal — to burn the waste.
- Incineration competes with recycling and discourages waste reduction, the two most effective means of reducing greenhouse gas emissions in the waste sector (23–27).
- Incineration is the most expensive waste management strategy available (28).

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