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GiNRE - Bioreactors

Statement against Bioreactor Landfills as a Source of Renewable Energy

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Group name strongly objects to the classification of bioreactor landfills as renewable energy. Bioreactor landfills are incompatible with the goals of renewable energy and sustainable development as bioreactors seek to create, not avoid, greenhouse gas emissions and do not have a proven record for mitigating these emissions.

Bioreactors rely upon insufficient evidence of gas collection.

Bioreactor landfills emphasize the production of methane gas, a greenhouse gas 23 times more effective at trapping heat than carbon dioxide. To generate sufficient energy, a bioreactor landfill also depends upon the ability to capture the majority of these emissions. However, estimates of the collection efficiency of landfill gas systems differ widely among experts and models, and due to heterogeneity of the waste mass, there may be no clear model of landfill gas production and capture. The U.S. EPA assumes 75% gas collection efficiency at landfills but measured efficiencies have been reported as low as 9 percent. The 2006 Intergovernmental Panel on Climate Change (IPCC) report on greenhouse gas inventories suggests a default estimate of recovery efficiency of 20 percent. The IPCC cites studies measuring collection efficiencies ranging from 9-90 percent, representative of the many uncertainties involving modeling gas generation and collection efficiency. Even the waste industry attests methane emissions are not accurately tabulated. Given the discrepancy of gas collection and generation data, it is probable bioreactor landfills continue to be net contributors to climate change, not a tool to prevent greenhouse gas emissions.

The safety of bioreactors is in serious question.

The EPA admits all landfills will eventually leak and there is no evidence to support bioreactors as exempt from this conclusion. On top of increased gas generation, several other concerns surround bioreactor technology, most notably the physical instability of the landfill and the instability of and stress upon liner systems meant to prevent the seepage of leachate. The additional stress and instability arise from the additional weight and momentum of the increased moisture content.

Bioreactors necessitate the burial of organic waste, despite higher end uses and markets.

Organic materials such as yard trimmings, food scraps, soiled paper and other paper products are the primary cause of methane emissions from landfills, but more importantly, they are valuable soil amendments. Composting these materials not only reduces greenhouse gas emissions by avoiding landfill emissions, but it also decreases fertilizer and pesticide use, improves soil structure, reduces irrigation needs, decreases the effects of high salinity, increases soil productivity, limits erosion, and helps store carbon in our soils. The production of energy from bioreactors creates incentives to continue burying of these valuable organic resources and directly oppose the goals of long-term soil health and sustainable agriculture.

Landfilling incompatible with sustainable development.

Landfills remain an antiquated and unsustainable method of resource management, a threat to public and environmental health, and a substantial contributor to climate change. Bioreactor technology will not mitigate these issues and is merely a stop-gap measure that fails to address the real issue of wasted resources in this country. By relying upon the continued generation and landfilling of waste and generation of potent greenhouse gases, bioreactors represent the antithesis of renewable energy and should not be classified as such under any incentive program or policy.

Sincerely,

Group name

Sources

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- 46 FED. REG. 11128-11129 (February 5, 1981). "A liner is a barrier technology that prevents or greatly restricts migration of liquids into the ground. No liner, however, can keep all liquids out of the ground for all time. Eventually liners will either degrade, tear, or crack and will allow liquids to migrate out of the unit. Some have argued that liners are devices that provide a perpetual seal against any migration from a waste management unit. EPA has concluded that the more reasonable assumption, based on what is known about the pressures placed on liners over time, is that any liner will begin to leak eventually." FEDERAL REGISTER (July 26, 1982), at pp. 32284-32285.
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