https://cen.acs.org/environment/pollution/3-PFAS-disposal-technologies-promising/98/web/2020/12

3 PFAS disposal technologies are most promising, US EPA says

Burning, landfills, and underground injection are deemed most likely to prevent spread of PFAS chemicals

by Cheryl Hogue
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Three technologies offer the best potential for disposing of per- and polyfluoroalkyl substances (PFAS) while keeping these "forever chemicals" out of the environment, the US Environmental Protection Agency says.

PFAS are synthetic compounds that resist heat, harsh chemical conditions, or moisture, and they have broad applications in industry and society. Those same properties mean that they don't readily degrade in the environment, creating a challenge when it comes time for disposal.

Burning PFAS as hazardous waste to destroy the chemicals is one of the three technologies the EPA suggests in interim guidance issued Dec. 18. Commercial incinerators, cement kilns, and lightweight aggregate kilns "can potentially achieve temperatures and residence times sufficient to break apart the PFAS contained in the waste stream being thermally treated," according to the guidance.

But this technology has a big unknown-—what's emitted into the air when these facilities burn PFAS. The EPA says it is gathering information to determine whether these facilities can adequately control potential products of incomplete combustion, including novel PFAS that could form during burning.

A second disposal technology the EPA selected is placing PFAS waste into landfills. Hazardous waste landfills that have extensive pollution controls, such as double liners, leak detection, and collection and treatment of leachate, are more effective at keeping PFAS waste out of the environment than municipal solid waste landfills, the guidance says.

Disposal of PFAS in landfills also has significant unknowns, the EPA says. These include how PFAS waste might interact with and affect the integrity of landfill liners and whether these chemicals might escape from landfills into the atmosphere.

The third technology is disposing of liquid PFAS into deep injection wells. However, a limited number of these disposal wells accept PFAS waste and the cost of transporting liquid waste to them could render this option impractical, the EPA says.

In addition, "Waste streams disposed of by underground injection will likely need to have low concentrations of suspended solids. This restriction may limit both the type and quantity of PFAS-related liquid waste streams," the agency says.

"The EPA recognizes that many large data gaps exist regarding the full suite of disposal and destruction methods it outlines, including thermal destruction," says Olga Naidenko, vice president for science investigations at the Environmental Working Group, an environmental advocacy nonprofit. "Many of these same scientific uncertainties and concerns have been raised by communities on the frontlines of PFAS pollution for years." Naidenko faults the EPA guidance for failing to "stop the environmental injustice of PFAS contamination in communities near the disposal sites."

The EPA guidance applies to materials with PFAS, such as fire-fighting foams, that are not consumer products. Congress required the EPA to prepare the guidance on destruction and disposal of PFAS as part of the fiscal 2020 military spending law. That law directs the Defense Department to stop using fluorinated fire-fighting foams by Oct. 1, 2024. This marks the first guidance the EPA has provided on the disposal of any sort of PFAS.