

# Updated Interim Guidance on PFAS Destruction and Disposal from U.S. EPA (2024)

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# FY 2020 National Defense Authorization Act required EPA to:

- **Publish interim guidance** on the destruction or disposal of PFAS and PFAS containing materials including six specific PFAS containing materials
- Take into consideration the **potential for PFAS releases** during destruction or disposal and potentially vulnerable populations living near likely destruction or disposal sites
- Provide guidance on **testing and monitoring for releases** near potential destruction or disposal sites
- **Revise** the interim guidance **at least every 3 years**, as appropriate

# PFAS Containing Materials Identified in the FY 2020 NDAA

The interim guidance covers the **six PFAS containing materials**, including their manufacture and use:

- 1) aqueous film-forming foam;
- 2) soil and biosolids;
- 3) textiles, other than consumer goods, treated with PFAS;
- 4) spent filters, membranes, resins, granular carbon, and other waste from water treatment;
- 5) landfill leachate containing PFAS; and
- 6) solid, liquid, or gas waste streams containing PFAS from facilities manufacturing or using PFAS.

# Destruction and Disposal Technologies

Includes the following information, where available, on **thermal treatment, landfills, and underground injection:**

- Types of treatment within the technology “class”
- Ability to destroy/contain PFAS, and control measures for PFAS if not destroyed
- Potential for releases
- Testing and monitoring
- Uncertainties/unknowns and prioritized research needs
- Technology and infrastructure considerations

# Underground Injection

- **Permitted** deep injection wells (Class I) for **hazardous and non-hazardous** materials can minimize migration of PFAS into the environment
- Limitations include:
  - Only liquid waste streams
  - Availability of Class I wells
  - Suitability of geology for development of new Class I wells
  - Cost
- Uncertainties include:
  - Limited understanding of the long-term fate and transport properties of PFAS (including precursors) in the deep injection zone

# Landfills

- Recent research has shown that the **type of PFAS** and the **components of mixed waste** will impact the ability to control PFAS migration from landfills
  - Stable polymeric PFAS vs volatile, water soluble or oxidizable PFAS
  - Organic/biodegradable components in the waste
- Uncertainties include:
  - Understanding of long-term PFAS fate and migration in landfills
  - Lack of information on PFAS content of mixed wastes entering landfills
  - Lack of sampling and analytical methodologies
  - Efficacy of leachate and gas treatment for PFAS

# Thermal Treatment

- Hazardous waste combustors may be effective at destroying PFAS and minimizing products of incomplete combustion (PICs) **when operating under certain conditions**
  - Conditions include feeding liquid PFAS-containing materials, higher temperatures  $>1,100^{\circ}\text{C}$ , well-mixed, and with adequate residence time (based on limited research)
- Newly released analytical methods will improve emissions and PIC characterization
  - OTM-45 for select PFAS
  - OTM-50 for volatile fluorinated compounds

# Thermal Treatment (cont.)

- Uncertainties include:
  - Operating temperatures adequate to completely destroy PFAS  
– **break all C-F bonds**
  - Formation and ID of PICs
  - Lack of emissions characterization data/emission control efficiency
- Updated guidance recommends **air emission testing** prior to full scale thermal treatment and provides a test plan outline (see Appendix A)



# Interim Storage

- Interim storage may be an option when
  - Immediate destruction or disposal is not imperative;
  - On-site capacity is readily available; and
  - Proper controls are in place to reduce potential releases
- More appropriate for some materials than others
  - Recommended for low volumes of containerized materials or high PFAS-concentration materials

# Emerging D&D Technologies

- Presents a **Technology Evaluation Framework** for evaluating and selecting a technology
  - Based on technology, material, analytical methods, efficacy, community considerations & regulatory requirements
  - Can also be used by technology developers and vendors as an outline for information-sharing

# Potentially Vulnerable Populations Near D&D Sites

- Interim guidance includes considerations for potentially vulnerable populations living near likely destruction or disposal sites
  - Defines the properties of **vulnerability** and potential for **disproportionate impacts** (e.g., environmental justice concerns)
  - Describes **how to consider vulnerable populations** when assessing the potential impact of releases
  - Provides **links to EPA's tools** for developing risk assessments that incorporate vulnerability

# Research Needs on PFAS D&D

- The interim guidance identifies **broad areas where further research is needed**:
  - Better characterize PFAS-containing materials targeted for D&D
  - Improve our understanding of the performance of PFAS D&D methods
- Specific research needs were prioritized as *high*, *medium*, or *low* to help inform future versions of this guidance
- EPA, DoD, and others are conducting relevant research in these areas; EPA seeks collaborative access to facilities to generate additional data to address information gaps
- Additional information on EPA's PFAS research is available at <https://www.epa.gov/chemical-research/research-and-polyfluoroalkyl-substances-pfas>

# Questions?

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**Accepting public comments until October 15, 2024:**

**<https://www.regulations.gov/docket/EPA-HQ-OLEM-2020-0527/document>**