Fact Sheet
Public Health Hazards of PFAS Incineration in Alaska
March 2021

PFAS (per- and polyfluoroalkyl substances) include multiple carbon-fluorine bonds, which are highly resistant to thermal destruction. Existing incinerators designed to treat other common hazardous wastes have not been shown to fully eliminate PFAS.[1,2] Some studies show break down of PFOS or PFOA to unmeasurable levels, but they do not document the ultimate fate of the compounds. These PFAS, when incinerated, form partially fluorinated breakdown products which include potent greenhouse gases, acutely toxic gases such as hydrogen fluoride or other fluorinated chemicals.[3]

Department of Defense (DOD) and Environmental Protection Agency (EPA) scientists have raised concerns about PFAS incineration, including the impact of incineration conditions (temperature, time, and turbulence) on PFAS destruction, the type of potential breakdown products formed, and the of absence analytical methods to measure PFAS and breakdown products in incinerator stack gases.[4] According to EPA, PFAS compounds are particularly "difficult to break down" via incineration. PFAS form more products of incomplete combustion than chlorinated compounds. It also notes that those breakdown products are currently unmeasurable and unquantifiable.[5]

The Department of Defense has similarly found that "many likely byproducts" of PFAS incineration "will also be environmentally unsatisfactory … or toxic," such as fluoroacetates or perfluoroisobutylene.[2] EPA has yet to approve incineration stack sampling methods for most PFAS, leaving incinerators unable to determine whether their incineration of AFFF and PFAS-contaminated soils is simply spreading PFAS chemicals as opposed to destroying them. Both agencies have called for additional research into alternate PFAS destruction technologies and the effects of incineration.[5,6]

Despite Congressional requirements to ensure community safety, the military continues to ship their AFFF and PFAS wastes to incinerators to be burned. In December 2019, the President signed the 2020 NDAA, which required that the DoD ensure that incineration be conducted at a temperature range adequate to break down PFAS to the maximum degree and also comply with the Clean Air Act.

In Alaska, OIT, Inc. established the Moose Creek incineration facility in 1990 to thermally remediate contaminated soils and other materials. In April 2019, it was acquired by NRC Alaska

LLC. and incineration of PFAS-contaminated soil began in May 2019. Sampling in test trials revealed releases of hydrogen fluoride and PFAS substances in air emissions from the facility. The presence of PFAS in treated soils also demonstrated incomplete combustion of the PFAS-contaminated soils. Permitting decisions were made without adequate data concerning incomplete combustion, air quality implications, and potential cumulative effects on the health of the surrounding community.

Incineration of PFAS is not a solution because it results in air contamination and wider exposures and harm to communities that are already overburdened with pollution sources. For example, in addition to the incineration facility, Moose Creek and North Pole have PFAS and sulfolane contamination in drinking water sources, as well as severe air pollution problems. The cumulative effects of these air and water pollution sources must be considered.

We recommend provisions that ban incineration of PFAS and require proper storage of PFAS-containing foam and other contaminated waste until a safe disposal method is brought to scale. There are promising technologies that can destroy PFAS. For example, the Department of Defense has developed advanced treatment technologies such as supercritical water oxidation to safely destroy highly toxic chemical weapons. Aquagga Inc., an Alaska and Washington State company, is also developing innovative destruction technologies for PFAS: https://www.aquagga.com/. These technologies show great promise for destroying PFAS. Airports, the military and other entities should store AFFF until these safer technologies can operate at scale. Legislation could include provisions to provide incentives for research and development of safe disposal technologies.

For more information, please contact Alaska Community Action on Toxics: (907) 222-7714; www.akaction.org; pamela@akaction.org

---

[1] Horst, 2020. Understanding and Managing the Potential By-Products of PFAS Destruction, https://doi.org/10.1111/gwmr.12372
[2] SBIR-STIR funding, AFFF disposal, https://www.sbir.gov/sbirsearch/detail/1254657
[3] Lundin, 2017, Destruction of Persistent Organic Compounds in Combustion Systems. Norway Umea University https://www.divaportal.org/smash/get/diva2:1155115/FULLTEXT01.pdf
[4] EPA, 2019, PFAS Air Emission Measurements: Activities and Research https://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=538634&Lab=NRMRL
[5] EPA, 2019. PFAS Incineration: EPA Activities and Research. Jeff Ryan, November 2019.
[6] SERDP, Strategic Environmental Research and Development Program, FY 2021: Improved Understanding of Thermal Destruction Technologies for Materials Laden with Per- and Polyfluoroalkyl Substances, https://www.serdp-estcp.org/index.php//content/download/50016/492599/file/ERSON21-C1%20Thermal%20PFAS.pdf