

July 16, 2019

Mary Walker, Administrator
USEPA REGION 4
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SENT BY ELECTRONIC MAIL

RE: Citizen Petition to prohibit OB/OD of PFAS and require a PFAS Site Assessment at HSAAP

Dear Administrator Walker:

This letter serves as a Citizen Petition for an immediate order by EPA Region IV to prohibit further open air burning and detonation (OB/OD) and/or other thermal treatment of all PFAS and PFAS-contaminated materials or wastes at the Holston Army Ammunition Plant in Kingsport, Tennessee as constituting an ongoing imminent and substantial endangerment of human health and the environment.



Perfluoroalkyl and polyfluoroalkyl substances (PFAS) may be released to the environment via wastewater discharges, on- and off-site disposal of wastes, accidental releases such as leaks and spills. Air emissions may result in aerial deposition of PFAS to soil and surface water (with subsequent infiltration to groundwater) within the airshed of the facility.

Air emissions may result in both short- and long-range air transport of PFAS. PFAS in aerosols and adsorbed on particles are more likely to be deposited near the source, while long-range transport typically involves PFAS vapors.¹ Industrial facilities may also contain areas where fire training or fire response has occurred, aqueous film-forming foam (AFFF) storage areas, and AFFF fire suppression systems inside buildings.

Given the proximity of OB/OD activities at Holston to surface water, consumption of fish is also a potential route of exposure. Certain PFAS such as PFOS can accumulate to levels of concern in fish, at some sites requiring restrictive fish consumption advice.²

Spanning more than 6,000 acres in Kingsport, Tennessee, the Holston Army Ammunition Plant is the major supplier of RDX- and HMX-based explosives to the U.S. Department of Defense.

RDX is a major component of many polymer-bonded explosives (PBX); RDX-based PBXs typically consist of RDX and at least thirteen different polymer/co-polymer binders.³ With an explosive such as HMX, an elastomer can make the final product rubbery, and reduce the likelihood of an unplanned explosion due to shock. Fluorinated polymers (such as Teflon) are preferred for explosives as they are not chemically reactive. Underwater weapons also benefit from the water resistance of PBX explosives.

In 2015, defense contractor BAE Systems reported that Holston produces PBXs. Examples include PBXIH-18, PBXN-7, and PBXW-14. PBXIH-18 is an aluminized HMX-based explosive with an unreactive plasticizer.⁴ The formulation composition of PBXN-7 is 60% TATB (triamino-trinitrobenzene), 35% RDX, and 5% Viton.⁵ PBXW-14 is 45% TATB, 50% HMX, and less than 5% Viton.⁶ Viton is a fluoropolymer with a common fluorine content of 66 to 70%.

In 2012, the U.S. Army at Holston Army Ammunition Plant reported that it expected to generate approximately 120,000-150,000 pounds (measured as net explosive weight) per year **requiring disposal in the burn pans** over the

next five years; this waste stream included nonconforming plastic bonded explosives (PBXs).⁷ It is important to note here that some wastes are not manufactured at Holston but are part of product formulations that may be treated in the burn pans.⁸

According to one EPA source, a typical open burning source temperature is approximately 727 degrees Celsius, and even lower with dunnage at approximately 427 degrees Celsius.⁹ However certain PFAS, such as PFOS, are thermally resistant at temperatures below 1,100 degrees Celsius.¹⁰ Detonation is even less likely to achieve even a modicum of PFAS destruction. Detonation occurs at supersonic speeds and typical source temperatures range from only 527 to 727 degrees Celsius.¹¹ Destruction of PFAS requires both much higher temperatures and much longer residence time, in some cases as much as 30 minutes.¹²

Therefore, as open air burning and detonation do not provide either sufficient or sustained temperatures times to achieve destruction, OB/OD activities at Holston are very likely resulting in the ongoing release and dispersion of PFAS to the environment, posing a potentially substantial health risk to workers and residents.

At the Blue Grass Army Depot in Richmond, Kentucky – also located in U.S. EPA Region 4 – the U.S. Army recently applied for a permit to continue open burning/open detonation (OB/OD) of wastes containing PFAS including Viton™ and Teflon™. The potential for the ongoing uncontrolled release PFAS to the environment was significant. For example, LX-04 explosive contains 85% HMX and 15% Viton™.

In November 2018, the Kentucky Department for Environmental Protection (Division of Waste Management) **expressly prohibited OB/OD of PFAS at the Blue Grass Army Depot**. Kentucky regulators defined PFAS as: “Munitions wastes that are a potential source of Per- and polyfluoroalkyl substances (PFAS), including Teflon, Viton, and Viton-A. This includes both short and long chain PFAS.”¹³

However, despite all of the above, we are unable to find any permits and approvals issued by the State of Tennessee that directly address potential sources, management, treatment and storage of fluoropolymers and other per-and polyfluoroalkyl substances (PFAS) at Holston Army Ammunition Plant.

Citizen Petition

Therefore, we request that EPA Region IV issue an immediate order to prohibit ANY open air burning or open air detonation or other thermal treatment of PFAS and/or PFAS-contaminated materials or wastes at the Holston Army Ammunition Plant (Holston) in Kingsport, Tennessee.

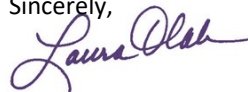
Further, the U.S. Army should be required to provide a detailed description and quantification of PFAS and PFAS-contaminated wastes that are received, handled, stored, disposed and/or treated at Holston.

This assessment should include all potential sources that could result in a release of PFAS to the environment including open burning, open detonation, recycling, landfilling and other disposal, stormwater discharges, wastewater discharges, surface water discharges, and air emissions. Data should be collected to measure and define the extent of PFAS contamination in and near Holston.

The facility should also be required to provide a discussion and detailed characterization of the thermal decomposition products of wastes containing PFAS and their corresponding fate and transport.

Thank you for your consideration of our petition. We look forward to your reply.

Sincerely,



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Mark & Connie Toohey

signed with written permission

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Attached: Addendum and References (2 pages)

Attachment #1

ADDENDUM

to Citizen Petition to prohibit OB/OD of PFAS and require a PFAS Site Assessment at HSAAP, Correspondence from CSWAB.org to EPA Region 4 Administrator, July 16, 2019

Other Precedents supporting our petition include the following:

Naval Weapons Station Yorktown, Virginia

The U.S. Navy Pentagon has identified the former Explosive Ordnance Burning and Disposal area (SWMU 2) and Burn Pad (Site 22) at the Naval Weapons Station in Yorktown as potential source of per- and polyfluoroalkyl substances (PFAS) contamination.¹⁴

The Burn Pad site at the Yorktown is a 9-acre area that once contained a circular array of steel burning pads that were used for burning waste explosives and spent solvents generated from loading operations. Contamination of groundwater is likely due to releases of chemicals that occurred during these waste handling and burning activities on the ground surface. The Burn Pad area was operational from the early 1940s until 1995.¹⁵

The remedy at the Yorktown Burn Pad Area has not yet been implemented. A pre-design investigation identified the need to delineate solvent plumes and to define the extent of 1,4-dioxane at the site. **The investigation also determined that sampling for PFAS and perchlorate in groundwater is needed.**¹⁶ As the potential use of Aqueous Film Forming Foam (AFFF) in controlling the individual burn pads could not be ruled out, the Navy will be conducting analysis for PFAS.

Seal Beach Naval Weapons Station, California

The Explosives Burning Ground, which operated from 1945-1971¹⁷ at Seal Beach Naval Weapons Station has been identified by the military as a **potential source of PFAS contamination**. The Explosives Burning Ground was an open area of approximately 15 acres that was used for open burning of ordnance-contaminated wastes. Burned wastes included Explosive-D, Explosive-D sludge from the primary settling basin, waste black powder, waste smokeless powder, black powder, smoke pots containing fog oil, and miscellaneous wastes. Limited burning of the following were also reported through 1972: waste Otto Fuel contaminated with Agitene and solids, damaged smoke signals, underwater explosives demolition charges, and firefighting exercise materials (waste lumber and a few tires, Aqueous Fire Fighting Foam or protein-based foam additive mixed with extinguishing water).¹⁸

Letterkenny Army Depot, Pennsylvania

At the request of Pennsylvania Department of Environmental Protection, the U.S. Army will conduct groundwater sampling at Letterkenny's Open Burning/Open Detonation (OB/OD) Areas for PFAS.¹⁹ The open burning areas consist of burning cages, burn pans, and rocket static firing tubes used for demilitarization of propellants and rocket motors. The detonation areas consist of open areas where munitions are demilitarized via detonation. **Pending groundwater analysis will include 12 PFAS compounds** using U.S. EPA SW-846 Method 537.

Attachment #2

REFERENCES

for Citizen Petition to prohibit OB/OD of PFAS and require a PFAS Site Assessment at HSAAP, Correspondence from CSWAB.org to EPA Region 4 Administrator, July 16, 2019

- ¹ ITRC, Environmental Fate and Transport for Per- and Polyfluoroalkyl Substances, Fact Sheet, March 2018.
- ² Minnesota Department of Health, *Perfluoroalkyl Substances and Health*, Fact Sheet, March 2019.
- ³ Akhavan, Jacqueline (2011). *The Chemistry of Explosives* (3rd ed.). Cambridge: Royal Society of Chemistry. p. 14. ISBN 978-1-84973-330-4.
- ⁴ BAE Systems Ordnance Systems Inc., Holston Army Ammunition Plant, Kingsport TN, USA, Insensitive Munitions & Energetic Material Technology Symposium presentation, 2015.
- ⁵ Elizabeth G. Francois et al, Los Alamos National Laboratory, "Front curvature and rate stick data on formulations containing DAAF, TATB, RDX and HMX including diameter and temperature effects," 17th Biennial International Conference of the APS Topical Group on Shock Compression of Condensed Matter June 26-July 1, 2011.
- ⁶ Elizabeth G. Francois et al, Los Alamos National Laboratory, "Front curvature and rate stick data on formulations containing DAAF, TATB, RDX and HMX including diameter and temperature effects," 17th Biennial International Conference of the APS Topical Group on Shock Compression of Condensed Matter June 26-July 1, 2011.
- ⁷ US Army Corps of Engineers Engineer Research and Development Center, Alternative Treatment Options for Open Burning of Explosive Waste at Holston Army Ammunition Plant, ERDC/EL TR-12-8, March 2012.
- ⁸ Hazardous Waste Open Burn Treatment Permit, TNHW-148 issued to Holston Army Ammunition Plant, Kingsport, Tennessee on March 31, 2011.
- ⁹ U.S. Environmental Protection Agency, Region III, Draft Final Open Burning/Open Detonation Permitting Guidelines, February 2002.
- ¹⁰ Hawley, Elizabeth L. et al, Archadis White Sheet, *Remediation Technologies for PFCs Including PFOS and PFOA*, May 2012.
- ¹¹ U.S. Environmental Protection Agency, Region III, Draft Final Open Burning/Open Detonation Permitting Guidelines, February 2002.
- ¹² Endpoint Consulting. 2016. Bench-Scale VEG Research and Development Study: Implementation Memorandum for Ex-Situ Thermal Desorption of Perfluoroalkyl Compounds (PFCs) in Soils. <http://www.endpoint-inc.com/wp-content/uploads/2016/05/VEG-Bench-Scale-PFCs-Soil.pdf>
- ¹³ Kentucky Department for Environmental Protection, Division of Waste Management Response to Comments on the Draft Open Burning/Open Detonation (OB/OD) Permit, Blue Grass Army Depot, November 13, 2018.
- ¹⁴ U.S. Department of Navy, Office of the Assistant Secretary (Energy, Installations and Environment), Navy Pentagon, Memorandum Subject: Perfluorinated Compounds/Perfluoroalkyl Substances (PFC/PFAS) – Identification of Potential Areas of Concern and ENCLOSURE 2 – DERP Sites with Potential PFC/PFAS Contamination and Potential PFC/PFAS AOCs, June 20, 2016.
- ¹⁵ U.S. Department of Navy, Final Fourth Five-Year Review Report for the Naval Weapons Station Yorktown, Section 10.2 Site Background, March 2018.
- ¹⁶ U.S. Department of Navy, Final Fourth Five-Year Review Report for the Naval Weapons Station Yorktown, Section 10.3.4, Status of Implementation, March 2018.
- ¹⁷ U.S. Department of Navy, Naval Weapons Station Seal Beach, Newsletter of the Environmental Investigation and Cleanup Program, October 2007.
- ¹⁸ California Department of Health Services, Federal Facility Site Remediation Agreement for Seal Beach Naval Weapons Station, page 71, 24 September 1991.
- ¹⁹ U.S. Department of Army, RCRA Subpart X Part B Permit Application for Open Burning/Open Detonation (OB/OD) Areas, Ammonium Perchlorate Rocket Motor Destruction Facility, and Flashing Furnace, Letterkenny Army Depot, April 2018.