

# CEASE FIRE Campaign

August 20, 2018

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RE: Public Comment - Draft Hazardous Waste Facility Permit, Open Burning/Open Detonation (OB/OD) Section, Blue Grass Army Depot, KY8-213-820-105, AI #2805 Activity: APE20040007

## SENT BY ELECTRONIC MAIL

Dear Ms. Webb,

The Cease Fire Campaign is a national coalition of more than 60 environmental, labor, veterans service and social justice organizations. Our campaign seeks to protect human health and the environment by calling for the immediate implementation of safer alternatives to open air burning, detonation and non-closed loop incineration/combustion of military munitions. These alternatives must incentivize waste prevention and recycling; prevent, to the greatest possible extent, the release of toxic emissions and pollutants; and advance the principles of environmental justice by assuring that all people enjoy the same degree of protection and access to the decision-making process.

**By this letter, the Cease Fire Campaign objects to the continued open air burning and detonation of hazardous and mixed wastes at Blue Grass Army Depot** based on the availability of safer advanced alternatives, the excessive risk to human health and the environment, and noncompliance with federal and state law requiring the implementation of available safer advanced treatment methods.

By definition, open burning and detonation result in the uncontrolled release of toxic pollutants to the environment. These toxic emissions endanger public health by contaminating air, groundwater and soils near these operations. Onsite men and women are often the most exposed to these toxic pollutants, along with nearby communities. Across the country, hundreds of communities and thousands of military personnel have felt the adverse effects of these toxic pollutants.

According to the provided documents, open burning at the Blue Grass Army Depot will result in the uncontrolled release of persistent toxic pollutants such as **perchlorate** to the surrounding environment. As the State is aware, perchlorate is highly soluble in water, and relatively stable and mobile in surface and subsurface aqueous systems. As a result, perchlorate plumes in groundwater can be extensive (ITRC, 2005). For example, the perchlorate plume at a former safety flare manufacturing site (the Olin Flare Facility) in Morgan Hill, California, extends 10 miles (Cal/EPA, 2016). Moreover, perchlorate released directly to the atmosphere is expected to readily settle through wet or dry deposition (ATSDR, 2008).

The thyroid gland is the primary target of perchlorate toxicity in humans. Thyroid hormones play an important role in regulating metabolism and are **critical for normal growth and development in fetuses, infants and young children**. Perchlorate can interfere with iodide uptake into the thyroid gland at high enough exposures, disrupting the functions of the thyroid and potentially leading to a reduction in the production of thyroid hormones (ATSDR, 2008).

Like perchlorate, **lead emissions** pose a serious health risk particularly to children. Recent research has shown that lead is toxic in children at extremely low levels (10-15 µg/dl). The routes of entry of lead into the body are ingestion (eating paint chips or soil) or inhalation of lead dust (LDEQ, 2003).

Even at lower levels of exposure, lead is now known to produce a spectrum of injury across multiple body systems. In particular lead can affect children's brain development resulting in reduced intelligence quotient, behavioral changes such as reduced attention span and increased antisocial behavior, and reduced educational attainment. Lead exposure also causes anemia, hypertension, renal impairment, immunotoxicity and toxicity to the reproductive organs. The neurological and behavioral effects of lead are believed to be irreversible. **In fact, there is no known safe blood lead concentration.** (WHO, 2018).

### **But here is the good news...**

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In the past 25 years, alternatives to the incineration of hazardous waste have emerged due to the work of communities, EPA, and the Department of Defense (DOD). These technologies are being used by the DOD to destroy energetics and chemical warfare agents and could be readily applied to conventional munitions and other types of hazardous waste.

Examples of these technologies include Gas Phase Chemical Reduction which uses hydrogen and heat to break down toxic chemicals into their basic components. Because hydrogen is used for the reduction reaction and no oxygen is present, no harmful chlorinated byproducts can be formed. This technology was used to destroy PCBs and obsolete pesticides in Australia. It was specifically developed for the Assembled Chemicals Weapons Destruction program.

Supercritical Water Oxidation uses the unique forces of supercritical fluids to breakdown the chemical bonds which form munitions, propellants, and energetics. Supercritical Water Oxidation uses super pressurized, heated water to tear apart the chemical bonds in toxic organic compounds, breaking them down into basic components such as water, carbon dioxide, and nitrogen gas. The lower temperature (compared to combustion) and the high pressure of the water keep harmful byproducts from being formed.

There are several types of detonation chambers that can be used to safely destroy waste munitions. These detonation chambers are much safer than open burning or incineration because they hold and test the gases to ensure all the toxic components have been destroyed before releasing them. One kind of detonation chamber, the DAVINCH chamber, detonates explosives in a vacuum. Without the presence of oxygen, harmful products of incomplete combustion cannot be formed.

Moreover, over the past 15 years the Department of Defense Explosives Safety Board has certified a number of technologies as safe for the destruction of hazardous wastes which are explosive. Those technologies are now in use by the Department of Defense and the private sector for the destruction of explosive hazardous waste.

Not only do safer advanced technologies exist, their implementation is required by federal law. The operating language on open burning/open detonation of hazardous wastes which are waste explosives is contained in Title 40, Section 266.382. "Open burning of hazardous waste is prohibited except for the open burning and detonation of waste explosives. Waste explosives include waste which has the

potential to detonate and bulk military propellants which cannot safely be disposed of **through other modes of treatment.**" (Emphasis added.)

In fact, the State of **Kentucky** has a similar mandate. Restrictions pertaining to open burning (401 KAR 63:005) allow for disposal of dangerous materials only if "no safe alternative is available".

**Therefore, we urge you to immediately end the indefensible practice of continued open air burning of hazardous waste in Kentucky in favor of safer non-thermal alternatives.**

Sincerely,



Laura Olah

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#### Enclosures:

- **CEASE FIRE Campaign Supplemental Comments** (*below as part of this same document*)
- **CEASE FIRE Campaign Fact Sheets** on (1) Alternatives to Burning, (2) Health Effects of Air Emissions (3) Deployed/Approved Alternatives, and (4) OB/OD Sites as Potential Sources of PFAS – all as .pdf files.

#### References:

- Agency for Toxic Substances and Disease Registry (ATSDR), 2008. "Toxicological Profile for Perchlorates." [www.atsdr.cdc.gov/toxprofiles/tp162.pdf](http://www.atsdr.cdc.gov/toxprofiles/tp162.pdf)
- Cal/EPA, 2016. "Olin Perchlorate Site." [www.waterboards.ca.gov/rwqcb3/water\\_issues/programs/olin\\_corp/index.shtml](http://www.waterboards.ca.gov/rwqcb3/water_issues/programs/olin_corp/index.shtml)
- Interstate Technology Regulatory Council (ITRC), 2005. "Perchlorate: Overview of Issues, Status, and Remedial Options." [www.itrcweb.org/GuidanceDocuments/PERC-1.pdf](http://www.itrcweb.org/GuidanceDocuments/PERC-1.pdf)
- World Health Organization (WHO), 2018. "Lead Poisoning and Health." <http://www.who.int/news-room/fact-sheets/detail/lead-poisoning-and-health>

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## CEASE FIRE Campaign: Supplemental Comments

In the unfortunate event that the proposed Kentucky Energy and Environment Cabinet permit for open air burning and detonation of hazardous waste at Blue Grass Army Depot is approved, we provide these additional comments for consideration as this may be our last opportunity to influence the permit conditions.

### General Comments

- The provided lists of known and potential munitions constituents and formulas by percentage are **incomplete** and should be amended. The applicant provides only generalized tables providing an abbreviated list of examples of “typical” or “common” munitions making it impossible to predict the full potential risks to human health and the environment.

### Prohibited Wastes (Page D-2, C-12 and others)

- The list of **prohibited** wastes for treatment by OB/OD should include: (1) **asbestos** and (2) munitions wastes that are a potential source of **PFAS emissions** such as those containing fluoropolymers. For example, the draft permit lists Viton™ (page C-12) and Teflon™ (page C-15) which both contain PFAS. Moreover, there is no discussion or characterization of the thermal decomposition products of wastes containing PFAS and their corresponding fate and transport. The amount of PFAS may be significant. For example, LX-04 explosive contains 85% HMX and 15% Viton™.
- For these reasons, baseline and ongoing analysis should include comprehensive environmental testing (soils, groundwater, surface water, sediments, fish, etc.) for PFAS, many of which are persistent bioaccumulative toxins that are highly mobile in the environment.

### Groundwater Analytes

- Groundwater should be monitored for all six (6) isomers of DNT. In Wisconsin, the Groundwater Enforcement Standard for the summed total concentration of all six isomers of DNT is 0.05 ug/l. The significance of this approach (ie addressing DNT as a mixture) quickly became evident when a DNT groundwater contaminant plume emanating from a former Deterrent Burning Grounds at Badger Army Ammunition Plant was found to contain elevated levels of the four lesser DNT isomers **in the absence** of 2,4- and 2,6-DNT.
- As groundwater monitoring for chlorinated solvents TCE is recommended, 1,4-Dioxane should also be included in baseline and ongoing monitoring protocols.

### Thresholds for Prohibited Wastes

- The permit should establish thresholds for the amount of **prohibited wastes** that may be treated per annum on an “**emergency**” basis. Unfortunately, “emergency” OB/OD activities at some facilities have become routine in nature, resulting in significant unauthorized releases to the environment. A measurable threshold is recommended to discourage potential abuse of this privilege and minimize potential exposures and risks to workers, soldiers and the environment.

### **Waste minimization**

- The proposed number of OB/OD events per day, number of burn pans, etc. have not been shown to be necessary or even realistic given the required pre- and post-activities. Without further justification, these numbers can and should be significantly reduced.

### **Available but not operational alternatives (Page K-1 and others)**

- Army states: “Although no longer operational, BGAD’s explosives washout facility is one example of the application of R3 principals to reduce both the volume and toxicity of hazardous waste associated with the conventional munitions demilitarization operation. When operating, the washout facility was used to remove energetic materials from metal munitions casings. Millions of pounds of metal was recovered and recycled from the effort.”
- Revitalization of the washout facility, enclosed blast chamber and other waste reduction facilities and activities that are present on-site and/or are otherwise available to the Department of Defense should be prioritized and deployed.

### **The selected OD site is problematic (Figure E2-A, Open Detonation Area.)**

- According to the provided map, surface water borders almost all sides of the OD area, making surface water runoff a likely route for contaminant transport and shallow groundwater moves from the OD area in multiple directions presumably discharging to adjacent surface water. This is of great concern given the existing and predicted release of highly mobile contaminants such as perchlorate. It also suggests that active remediation of groundwater will be difficult, if not impossible, as part of site closure.
- The proclivity of perchlorate salts to be soluble in water makes it very mobile in the subsurface and can form extensive plumes in groundwater. For example, there is a perchlorate plume from an Olin plant in California that is more than 10 miles long. Such direct and indirect discharges via deposition of particulates, surface water run-off and via groundwater may be expected to constitute a discharge of pollutants to surface waters pursuant to the Clean Water Act.

### **“Non-RCRA” Activities**

- The permit should specify that “non-RCRA” activities at the OB/OD areas shall comply with permit conditions such as hours of operation, prohibited wastes, proximity to surface water, site inspections, etc. that are intended to protect the health of workers and soldiers and mitigate environmental impacts. The draft permit on page D-3 describes these “non-RCRA” activities as including training of personnel in the conduct of OB and OD/BD demilitarization techniques and procedures, emergency responses, and the conduct of Research, Development, Test and Evaluation activities. These constitute many of the same activities as OB/OD and therefore pose the same risks to human health and the environment.

### **OB/OD of Non-Explosive Wastes**

- Certain items listed as “Demolition Material” in the draft permit do not appear to meet the definition of “waste explosives” having the potential to detonate (40 CFR 265.382) and therefore may NOT be treated by OB/OD. The category of Demolition Material is described as including “miscellaneous standard and non-standard items used as donor material” which

effectively allows the facility to burn just about anything that is flammable. This and the corresponding category should be deleted altogether.

### **Dunnage and Fuel**

- Smoke is made up of a complex mixture of gases and fine, microscopic particles produced when wood and other organic matter burn. The biggest health threat from wood smoke comes from fine particles (particulate matter). They are small enough to enter the lungs where they can cause bronchitis, pneumonia, asthma, or other serious respiratory diseases. Fine particles can also aggravate chronic heart and lung diseases, and are linked to premature deaths in people with these chronic conditions. In addition to fine particles, open burning of both wood and diesel fuel may also be expected to release dioxins.
- If the Army is introducing dunnage (such as wood or demolition materials) and fuels to facilitate OB/OD of waste munitions, the permit must place a clear threshold on the both the amount and type of dunnage and fuel that may be added. For example, added dunnage and fuels must be both clean and free of lead, asbestos, PCBs, dried-applied paint, wood-preservatives, and all prohibited OB/OD wastes and constituents.
- A permit condition should be added that NO amount (zero) of liquids or semi-liquids, including fuels, solvents, oils, lubricants, grease, etc. shall be allowed to come into direct or indirect contact with soils.

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