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**The EPA has drafted a controversial proposal that will allow the continued operation of more than 60 open burn pits across the U.S. and its territories, despite concerns over PFAS and other hazardous chemical emissions.** Community opposition emphasizes the need for stricter regulations and a complete ban on open burning, citing risks to the health of workers, service members, and residents. We are calling for urgent action to prevent further environmental contamination and promote safer treatment technologies. With environmental justice communities disproportionately affected, modernizing weapons destruction capabilities and investing in cleaner alternatives is an imperative.

At the Badger Army Ammunition Plant here in Wisconsin – **two massive burn pit sites are each the source of two major groundwater contaminant plumes** that have migrated offsite, polluting nearby rural drinking water wells and the protected Lower Wisconsin Riverway – pushing facility-wide cleanup costs to over \$250 million. Despite this expenditure, at source areas like the former Propellant Burning Grounds, groundwater remains in contact with heavily contaminated subsurface soils. As a result, in September 2020, total concentrations of the explosive DNT were detected as high as 1,286,900 ng/L – a concentration that is 25,000 times higher than the WI Groundwater Enforcement Standard of 50 ng/L.



These Badger lands are of important **historic and cultural significance** to the Ho-Chunk people as they lie within the Ho-Chunk's aboriginal territory and includes a number of historic and pre-historic sites of significance. The transfer of a portion of these lands in trust for the Nation, for restoration as prairie and bison habitat and the preservation of historic and cultural sites, enables the Nation to further its mission to enhance the quality of life of Nation members and to carry out the Bureau of Indian Affairs' responsibility to protect and improve the trust of assets of American Indian tribes.

There is a unified national call from stakeholders – representing impacted communities from around the U.S. and its territories – for a BAN on Open Burning/Open Detonation (OB/OD). For the percentage of munitions that require the development of innovative alternatives, these hazardous wastes should be **safely stockpiled** until we have the answers. We need to end all routine OB/OD of waste munitions by the DOD, DOE, NASA and private industry that **every day are polluting whole communities, onsite workers and service members** with the relentless uncontrolled release of depleted uranium, PFAS, lead, dioxins, and other highly toxic chemicals.

The 2017 National Academies of Sciences (NAS) study on Alternatives to Open Burning/Open Detonation (OB/OD) of Conventional Munitions found that most alternatives to OB/OD for disposing of conventional munitions are “mature,” many are permitted, and all of those assessed have lower environmental releases than OB/OD.

The independent NAS study also emphasizes that “without a clear directive and sufficient and stable funding from Congress, it will be impossible for the military to implement a full-scale deployment of alternative technologies to replace OB/OD.”

Environmental cleanup of the Badger Army Ammunition Plant alone is costing in excess of \$250 million while even the most massive closed detonation chamber costs only \$10 million. **Banning open burning and open detonation is not just the correct action, it is by far the most cost effective.**

Requiring air monitoring, wind directions, closure goals, trench liners and the like will NOT prevent the cumulative uncontrolled release of toxic chemicals to the environment. Given OB/OD constitutes an ongoing uncontrolled release to the environment, there simply is no safe way to conduct OB/OD – a complete ban should be made effective immediately.

**ONLY A BAN on OB/OD can achieve the following:**

- Prevent the uncontrolled release of toxic and carcinogenic emissions to the environment
- Incentivize the development of newer safer treatment technologies.
- Readily secure federal funding for the deployment of alternative technologies.
- Encourage the development and transition to “green” munitions.
- Protect the integrity and sustainability of natural systems including soil, water, air and biodiversity.
- Prevent the uncontrolled release of emerging unregulated toxic chemicals like RDX and PFAS.
- Close de facto exemptions to the Clean Air Act, the Clean Water Act, and other environmental standards and laws.

And most importantly, **only a BAN will provide fair and equitable treatment** by protecting ALL communities.

Respectfully submitted by:

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SUBMITTED BY ELECTRONIC MAIL

January 24, 2008

**RE:** Public Comment on the Administrative Order on Consent and Draft Remedial Action Plan for the Marpi Point OB/OD area

Dear Ms. Blevins,

This letter is submitted as public comment on the federal permit for proposed storage and treatment of unexploded ordnance at the Marpi Point open burning/open detonation area in Saipan.

**Summary.** While we recognize that there is an urgent need to immediately retrieve and safely treat munitions wastes found at Saipan, we believe there are readily available alternatives to open burning/open detonation (OB/OD) that do not place human health and the environment at such extraordinary risk. OB/OD is the worst possible choice as it has no pollution controls and causes the uncontrolled release and dispersal of toxic and carcinogen emissions to the surrounding environment. Many of the expected emissions are toxic bioaccumulative contaminants that pose an unacceptable risk to human health and the surrounding aquatic and terrestrial ecosystems. Other U.S. military bases have responded to concerns about OB/OD and have implemented safer alternative technologies.

**Pollution Prevention.** Preventing exposures and pollution is consistent with the intent of the Resource Conservation and Recovery Act (RCRA) which is our nation's primary law governing the disposal of solid and hazardous waste. RCRA sets national goals for protecting human health and the environment from the potential hazards of waste disposal and ensuring that wastes are managed in an environmentally-sound manner.

Detonation of energetic materials produces a wide range of air and surface pollutants, including carbon monoxide, nitrogen oxides, volatile organic compounds, acid gases, and fine particulate matter. These emissions, including undecomposed or partially decomposed energetic materials, may lead to atmospheric pollution or ground water contamination.<sup>1</sup>

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<sup>1</sup> Robert C. Brown, et al, Strategic Environmental Research & Development Program, Source Characterization Model (SCM), A Predictive Capability for the Source Terms of Residual Energetic

**Assessment of Alternatives.** The National Environmental Policy Act (NEPA) is a landmark environmental statute that has protected America's natural heritage on land and sea. For over 30 years, NEPA has provided an essential tool in helping federal managers do their jobs. When done right, it promotes sound and accepted decisions. Specifically, NEPA requires federal agencies to study and disclose the environmental effects of their actions and to include the public in their decision-making.

Pursuant to NEPA Sec. 102 [42 USC § 4332](C)(iii), the involved federal agencies must include in every recommendation for a major Federal action that may significantly affect the quality of the human environment, a detailed statement the environmental impact of the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, and – most importantly – alternatives to the proposed action.

Open detonation/open detonation (OB/OD) is a form of uncontrolled thermal treatment that is prone to accidental releases and exposures and is a process that undisputedly causes an uncontrolled release of toxic and carcinogenic contaminants to the environment. Nonetheless, OB/OD units are habitually proposed for treatment of excess munitions as they are often characterized as the “most efficient and most cost-effective”.<sup>2</sup> Direct cost, however, is only one factor in this decision-making process and must not be allowed to trump the protection of the health and well-being of soldiers, workers, on-site personnel, and the general public.

While we acknowledge that individual explosives-containing items may be found in a highly unstable condition and require treatment “in place”, this is **not** the type of waste covered by the proposed permit. Without exception, energetic waste treatment in the OB/OD unit requires retrieval, handling, and transportation to the unit therefore these are wastes deemed by the Army to be safe to move to other alternative treatment sites or installations. In other words, if munitions wastes are safe to move to a specific open burning area, they are also safe to move to an alternate treatment unit in the same locale.

In 1991, the EPA Region IV sent letters to all DOD installations in this region advising that RCRA Part B, Subpart X, regulation was not intended to perpetuate the use of open burning and open detonation (OB/OD) technologies and their associated uncontrolled releases of combustion products and residues to the environment.<sup>3</sup> The EPA said that Subpart X permit application for OB/OD operations may be denied if “adequate justification is not provided to support these technologies.”<sup>4</sup>

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Materials from Burning and/or Detonation Activities, ARI-RR-1384, April 2004.

<http://www.serdp.org/Research/upload/CP-1159-FR-01.pdf>

<sup>2</sup> SERDP, ETL/EPA Workshop on Open Burning/Open Detonation (OB/OD), Abstract, April 1996.

<sup>3</sup> Lewis D. Walker, Deputy Assistant Secretary of the Army (Environment, Safety, and Environmental Health) OASA, *Response to the U.S. Environmental Protection Agency (EPA) Notice of Deficiency (NOD) for Department of Defense (DOD) RCRA Part B, Subpart X, Permit Applications submitted in Region IV*, page 1, with cover letter to Mr. Donald J. Guinyard, Acting Director, USEPA Region 4, April 11, 1991.

<sup>4</sup> Lewis D. Walker, Deputy Assistant Secretary of the Army (Environment, Safety, and Environmental Health) OASA, *Response to the U.S. Environmental Protection Agency (EPA) Notice of Deficiency (NOD) for Department of Defense (DOD) RCRA Part B, Subpart X, Permit Applications submitted in Region IV*, page 1, with cover letter to Mr. Donald J. Guinyard, Acting Director, USEPA Region 4, April 11, 1991.

**Environmental health consequences of OB/OD.** Detonation of unexploded ordnance (UXO) releases toxins to the air, soil, surface water, sediment, and groundwater.<sup>5</sup> Potential environmental transport pathways of concern at OB/OD units include overland runoff that can contaminate surface water and sediments. Through infiltration, residues from OB/OD may also affect groundwater quality.<sup>6</sup>

Specific unanswered questions about large-scale OB/OD activities include the efficiency with which various munitions and propellants--some of which involve casings or packing materials--can be consumed by OB/OD operations. Other questions include the heat generated, radiative loss, and the remaining energy available for plume rise. The entrainment of dust and the noise and destruction levels of a blast wave for varying amounts or types of munitions are also of concern.<sup>7</sup>

The EPA's photographs of the existing open burning/open detonation unit at Marpi Point<sup>8</sup> show a substantial amount of eject that is not contained within the unit. The proposed permit does not provide provisions to assure that air emissions do not migrate offsite and ultimately load the soil surrounding the unit. In addition to transport media such as volatilization, precipitation, and particle entrainment, rainwater drainage from and through this unit has the potential to carry ash/ejecta to the surrounding environment. In fact, photographs on the EPA Region 9 website show OB/OD occurring on the bare ground.<sup>9</sup>

It is important to note that air pollution dispersion in valleys differs from dispersion over the plains. Vertical and horizontal dispersion in a valley are enhanced by the increased turbulence associated with the rough underlying terrain. The existence of local flows often keeps the air from stagnating, and better plume rise may occur in the light valley winds associated with thermally driven local circulations. These factors enhance the dispersive characteristics of the valley atmosphere relative to the plains atmosphere. On the other hand, valleys suffer from having narrow wind roses, so that pollutants are often carried up and down the same paths.<sup>10</sup>

At the Savanna Army Depot in Savanna, Illinois, an Old Burn Area is located in the central western portion of the installation, in river bottomlands approximately 2,100 feet northeast of the Mississippi River channel. Site 13 is a burn area for explosives, consisting of three gravel burn pads, which was used between approximately 1930 and 1985. In soil, the following compounds were detected above health-based Comparison Values (CVs), at the stated maxima in mg/kg: 2,4,6-TNT (720, surface soil), arsenic (16.5, surface soil), cadmium (173, subsurface soil), and lead (25,000, surface soil). The following compounds were detected below CVs: various metals, PAHs,

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<sup>5</sup> U.S. Environmental Protection Agency, Region IX, Press Release, *New RCRA Agreement to Manage Unexploded Ordnance on Pacific Island*, December 3, 2007.

<http://www.epa.gov/region09/waste/features/ordnance/index.html>

<sup>6</sup> U.S. Environmental Protection Agency, Region III, Draft Final Open Burning/Open Detonation Permitting Guidelines, February 2002.

[http://www.trainex.org/web\\_courses/subpart\\_x/TopicSearch%20pdf%20files/Region%203%20OBOD/PDF%206988-Text%20final.pdf](http://www.trainex.org/web_courses/subpart_x/TopicSearch%20pdf%20files/Region%203%20OBOD/PDF%206988-Text%20final.pdf)

<sup>7</sup> SERDP, ETL/EPA Workshop on Open Burning/Open Detonation (OB/OD), page 5, April 1996.

<sup>8</sup> U.S. Environmental Protection Agency, Region IX, Press Release, *New RCRA Agreement to Manage Unexploded Ordnance on Pacific Island*, December 3, 2007.

<http://www.epa.gov/region09/waste/features/ordnance/index.html>

<sup>9</sup> EPA Region 9, *From Bombfields to Brownfields; New RCRA Agreement to Manage Unexploded Ordnance on Pacific Islands*, <http://www.epa.gov/region09/waste/features/ordnance/index.html>

<sup>10</sup> SERDP, ETL/EPA Workshop on Open Burning/Open Detonation (OB/OD), pages 17-18, April 1996.



SVOCs, and VOCs; 2,4-DNT, and 1,3,5-TNT. The following compounds without CVs were detected at low levels: various PAHs, SVOCs, and metals.<sup>11</sup>

Groundwater contaminants at the Savanna burning grounds that were detected above CVs, at the stated maxima (µg/L): 1,3,5-TNB 6,200, 2,4,6-TNT 4,800, Royal Demolition Explosive (RDX) 150, barium 41,000, beryllium 1.82, cadmium 369, copper 7,200, lead 13,000, manganese 12,000, and zinc 16,000. The following compounds were detected below CVs: nitrite, bromacil, 2,6-DNT, cyclotetramethylenetetranitramine (HMX), toluene, and various metals. 3,5-dinitroaniline, which does not have a CV, was detected at a maximum of 100 µg/L. The lowest depth at which explosives were found was 22 ft bgs.<sup>12</sup>

Open burning of excess munitions also affected nearby surface water at the Savanna site. Cadmium, cobalt, lead, manganese, mercury, selenium, and zinc were found to be elevated above background; of these, cadmium (max 14.7 µg/L), lead (max 28.3 µg/L), and manganese (max 1590.0 µg/L) exceeded CVs. Elevated levels of beryllium, cadmium, copper, iron, lead, mercury, vanadium, and zinc were found in surface water sediments.<sup>13</sup>

Primary air emissions from OB/OD are products of combustion that typically include carbon monoxide, carbon dioxide, nitrogen and nitrogen oxides, sulfur dioxide, and methane. Other emission factors include various products of incomplete combustion such as energetics, organics, inorganics, cyanides, and sulfides. There is also a potential for the release of dioxins and furans if chlorinated energetics are treated.<sup>14</sup> Air emissions from OB/OD treatment include “inhalable size particles that can remain airborne for large travel distances”.<sup>15</sup>

An increasing number of health studies suggest a correlation between elevated blood lead levels and exposure to lead-contaminated dust at indoor firing ranges. Police trainees, competitive shooters and others who spend an hour or more a week at an indoor firing range were found to be at high risk for lead poisoning.<sup>16</sup> Blood lead levels were measured in 17 police recruits who had spent up to an hour every four days firing pistol at an indoor range. Fifteen had lead levels well beyond what is considered safe.

According to a May 18, 1992 letter from Jay Goldring, Ph.D., Wisconsin Division of Public Health, concerning proposed open burning of waste propellants at Badger Army Ammunition Plant, if all of the material burned were AA2 (consisting of 1.5% lead), the facility “would emit

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<sup>11</sup> U.S. Agency for Toxic Substances and Disease Registry, Public Health Assessment, Savanna Army Depot, Savanna, Illinois, Table 1, December 29, 1999.

<sup>12</sup> U.S. Agency for Toxic Substances and Disease Registry, Public Health Assessment, Savanna Army Depot, Savanna, Illinois, Table 1, December 29, 1999.

<sup>13</sup> U.S. Agency for Toxic Substances and Disease Registry, Public Health Assessment, Savanna Army Depot, Savanna, Illinois, Table 1, December 29, 1999.

<sup>14</sup> U.S. Environmental Protection Agency, Region III, Draft Final Open Burning/Open Detonation Permitting Guidelines, February 2002.

[http://www.trainex.org/web\\_courses/subpart\\_x/TopicSearch%20pdf%20files/Region%203%20OBOD/PDF%206988-Text%20final.pdf](http://www.trainex.org/web_courses/subpart_x/TopicSearch%20pdf%20files/Region%203%20OBOD/PDF%206988-Text%20final.pdf)

<sup>15</sup> U.S. Environmental Protection Agency, Region III, Draft Final Open Burning/Open Detonation Permitting Guidelines, February 2002.

[http://www.trainex.org/web\\_courses/subpart\\_x/TopicSearch%20pdf%20files/Region%203%20OBOD/PDF%206988-Text%20final.pdf](http://www.trainex.org/web_courses/subpart_x/TopicSearch%20pdf%20files/Region%203%20OBOD/PDF%206988-Text%20final.pdf)

<sup>16</sup> *Gunning for Lead*, Continuum, Omni 12/3:44, December 1989.

approximately 13,688 pounds/year of lead. According to the 1990 Toxic Release Inventory data, this emission rate would make Badger the second-highest emitter of lead in Wisconsin.”

In 1992, the Commonwealth of Massachusetts commissioned Boston University Professor David Ozonoff to perform an epidemiological study to determine whether local environmental contamination was a factor in the elevated cancer rates found in the community. A significant finding of this report was a dose response relationship between residence proximity to the nearby artillery training area, where propellant bags were burned, and the risk of lung and breast cancer. The identified contaminant of concern was 2,4-Dinitrotoluene, a suspected human carcinogen.

In April 1997, EPA ordered the National Guard to halt the use of live munitions and open detonation activities at the 22,000-acre Massachusetts Military Reservation due to environmental impacts to soil and groundwater.<sup>17</sup>

Over the years, open detonation and burning has been used for the disposal of military propellants, explosives and pyrotechnics at Tooele Army Depot in Utah. Although the Utah Cancer Report, a publication of the Utah Cancer Registry, reports the state of Utah has some of the lowest cancer rates in the U.S., a comparison of cancer rates shows the incidence of lung cancers in Tooele County, home of the Tooele Army Depot, was well above the State average from 1966 to 1990.<sup>18</sup>

In an attempt to measure and identify emissions from the burning of propellants, Sandia National Lab conducted the so-called “Bang Box” tests. Emission factors from these tests included toxic and carcinogenic substances such as aluminum, iron, barium, carbon monoxide, methane, benzene, 2,4 dinitrotoluene, 2,6 dinitrotoluene, 2,4,6-Trinitrotoluene, 2-nitronaphthalene, N-Nitrosodiphenylamine, 4-Nitrophenol, Phenol, Dibenzofuran, and nitrogen oxides.<sup>19</sup> These tests, however, do not take into account the cumulative impact of continued testing. Over a period of years, even small toxic releases from individual events will create large potential exposures. Moreover, the Army viewed each toxic substance independently, ignoring the potential for both combined and synergistic effects.<sup>20</sup>

The environmental legacy of years of open burning of energetic wastes is seen at the Propellant Burning Ground, located at the south end of the Badger Army Ammunition Plant in Wisconsin, was used between 1942 and 1983 for open burning of waste explosives, propellants, and waste process chemicals. During active production years, these burnings took place almost daily, producing a “ball of fire” visible from several miles away. Surface soils at the propellant burning ground area contained hazardous amounts of lead as high as 3,300 mg/kg. Copper was detected in surface soils as high as 2,700 mg/kg, mercury was found as high as 7.7 mg/kg, and zinc was detected at concentrations as high as 5,200 mg/kg.<sup>21</sup>

At the Massachusetts Military Reservation (MMR) on Cape Cod, decades of munitions firing and disposal contaminated the sole source drinking water aquifer for half a million permanent and seasonal residents of the Upper Cape. A January, 2000 EPA letter to the DoD notes that: “There is now ample evidence that military munitions used and disposed of during training at Camp Edwards

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<sup>17</sup> EPA New England Press Releases, EPA ISSUES DECISION PROHIBITING OPEN DETONATION OF MUNITIONS ON CAPE COD, March 10, 1998. <http://www.epa.gov/boston/pr/1998/031198a.html>

<sup>18</sup> Utah Cancer Registry, *Cancer Incidence in Utah by County*, March 1990.

<sup>19</sup> James Teo, Pacific Studies Center, Army Tests of Munitions Burning and Detonation, August 1993.

<sup>20</sup> James Teo, Pacific Studies Center, Army Tests of Munitions Burning and Detonation, August 1993.

<sup>21</sup> U.S. Army Environmental Center, Draft Final Feasibility Study for Badger Army Ammunition Plant, Table 3-6, July 1993.

have contaminated parts of the Sagamore Lens with RDX and other toxic compounds – evidence that DoD, in its objection to EPA’s April 1997 SDWA order restricting training at Camp Edwards, asserted would not be found. In fact, 10 percent of the monitoring wells installed as part of the groundwater study conducted pursuant to the February 1997 SDWA order show RDX concentrations above EPA’s health advisory.”<sup>22</sup>

More recently, perchlorate was found in drinking water supply wells in the town of Bourne, Massachusetts, forcing the shutdown of several wells. To date, explosives contamination has been found in about half of the 200 monitoring wells installed on Camp Edwards (one part of MMR); contamination in 53 exceeds EPA’s health advisory levels. Because of pollution from MMR, the Upper Cape could face a drinking water shortfall of 11 million gallons a day by 2020.<sup>23</sup>

**Cultural and Economic Implications.** Munitions chemical contamination is insidious. It can work its way into water supplies and into the food chain, poisoning people who eat contaminated plants and animals, drink contaminated water, or even eat plants from gardens watered with contaminated water. Individuals and communities that eat fish that they catch, game that they hunt, and plants that they gather or grow may also be exposed to munitions toxins.<sup>24</sup> Certain environmental toxins accumulate in plant and animal flesh and move up the food chain until they reach human bodies. These substances tend to persist in animal and human tissue for long periods, accumulating to harmful levels over months and years. Indigenous communities and other populations that eat large amounts of fish and other local plants and wildlife are most exposed. Many Indigenous communities depend on wild fish, plants, and game for subsistence and also for the preservation of traditional ways of life. The end of subsistence fishing, hunting, and gathering means the end of these communities and their culture.<sup>25</sup>

Makua Valley in Hawai’i is home to over 40 endangered species, including one found nowhere else on earth. Forty years of Army training and disposal operations at Makua have wreaked havoc on these species. Native forest has been destroyed by over 270 fires caused by military activities.<sup>26</sup>

**Alternative Technologies.** Concerns for potential human health risk created by OB/OD at Army installations as well as environmental impacts on the air, soil, and water are forcing the Army to identify and develop alternatives to OB/OD treatment.<sup>27</sup> As early as 1998, the U.S. Army Construction Engineering Research Laboratories (CERL) identified several “third generation” pretreatment and treatment technologies for energetic material (EM) wastes and EM contaminated wastes (EMCW), including cryogenic cutting, supercritical CO<sub>2</sub> extraction and hydrothermal

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<sup>22</sup> Military Toxics Project, *Environmental, Economic, and Cultural Impacts of Military Munitions and Ranges*, undated.

<sup>23</sup> Military Toxics Project, *Environmental, Economic, and Cultural Impacts of Military Munitions and Ranges*, undated.

<sup>24</sup> Military Toxics Project, *Environmental, Economic, and Cultural Impacts of Military Munitions and Ranges*, undated.

<sup>25</sup> Military Toxics Project, *Environmental, Economic, and Cultural Impacts of Military Munitions and Ranges*, undated.

<sup>26</sup> Military Toxics Project, *Environmental, Economic, and Cultural Impacts of Military Munitions and Ranges*, undated.

<sup>27</sup> US Army Corps of Engineers Construction Engineering Research Laboratories, *Alternatives to Open Burning/Open Detonation of Energetic Materials, A Summary of Current Technologies*, cover, August 1998.



oxidation, hydromilling, wet air oxidation, hydrothermal oxidation, biodegradation, and electrochemical treatment.<sup>28</sup>

In recent years, DOD has encouraged the use of controlled thermal treatment units for the destruction of pyrotechnics, small arms ammunition and fireworks. Examples of enclosed thermal treatment units include the Donovan Blast Chamber, the Blast Containment Structure and the Hurd Burn Units.<sup>29</sup> While we are not proponents of thermal treatment, the alternatives are presented as alternatives that, unlike OB/OD, have emissions controls.

Because most energetic materials are synthesized in acidic media (or salts of acids), they are vulnerable to hydrolysis. More environmentally acceptable alternative technologies such as hydrolysis have been proposed because OB/OD of energetic materials “has become increasingly unpopular.”<sup>30</sup>

At the sprawling Hawthorne Ammunition Depot, Nevada, site of the U.S. military's largest munitions demilitarization stockpile, the Army undertook a large-scale demilitarization of small caliber pyrotechnic ordnance using a new technology, plasma arc thermal treatment.<sup>31</sup> National Defense magazine reported: “This approach to demilitarization will enable the Army to reduce pyrotechnic, training, and munitions devices containing small amounts of energetic materials to a benign, non-leachable slag product. The organic content of the munitions will be converted to an environmentally safe offgas.... Plasma arc will allow for demilitarization without the environmental issues associated with conventional incineration methods, open burning, or open detonation”.<sup>32</sup>

**Prohibition of Chemical, Incendiary, and other Munitions Wastes.** And finally, of particular concern, the proposed permit does not specifically prohibit treatment of certain munitions wastes in the OB/OD unit. The Department of Defense readily acknowledges that OB/OD is “not acceptable” for certain munitions wastes such as smoke filled and incendiary items and improved conventional munitions.<sup>33</sup>

White phosphorus (used for signaling, screening, and incendiary purposes) and other toxic munitions constituents contaminated the fragile estuarine salt marsh of Eagle River Flats at Fort Richardson, Alaska. As noted above, subsistence fishing grounds have been rendered unusable by the Native Alaskans who have historically used these resources. Munitions contamination also

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<sup>28</sup> US Army Corps of Engineers Construction Engineering Research Laboratories, *Alternatives to Open Burning/Open Detonation of Energetic Materials, A Summary of Current Technologies*, cover, August 1998.

<sup>29</sup> U.S. Environmental Protection Agency, Region 4’s RCRA Information Resources Site, *Enclosed Treatment Units*,

[http://www.trainex.org/web\\_courses/subpart\\_x/EPA%20CD%20Content/SubpartXUnits.htm](http://www.trainex.org/web_courses/subpart_x/EPA%20CD%20Content/SubpartXUnits.htm)

<sup>30</sup> Commission on Engineering and Technical Systems (CETS) *Review and Evaluation of Alternative Technologies for Demilitarization of Assembled Chemical Weapons*, Appendix E, page 213, 1999. Commission on Engineering and Technical Systems (CETS)

<sup>31</sup> Lenny Siegel, CPEO, Plasma Arc Technology Replaces Open Burning/Open Detonation, April 20, 1998.

<sup>32</sup> Lenny Siegel, CPEO, Plasma Arc Technology Replaces Open Burning/Open Detonation, April 20, 1998.

<sup>33</sup> Lewis D. Walker, Deputy Assistant Secretary of the Army (Environment, Safety, and Environmental Health) OASA, *Response to the U.S. Environmental Protection Agency (EPA) Notice of Deficiency (NOD) for Department of Defense (DOD) RCRA Part B, Subpart X, Permit Applications submitted in Region IV*, page 1, with cover letter to Mr. Donald J. Guinyard, Acting Director, USEPA Region 4, April 11, 1991.

killed thousands of waterfowl every year for two decades before the Army released even a draft cleanup plan.<sup>34</sup>

The proposed permit for Saipan also does not specifically prohibit the open burning and open detonation of chemical weapons and other non-conventional munitions wastes.

According to EPA Region 9, since Guam and CNMI were once active battle sites during World War II and were storage sites for OE (Ordnance and Explosives) planned for use in the invasion of Japan (and following the conclusion of WW II, the sites for immediate disposal of this OE – dumped into the ocean, buried on land and in caves), there remains a significant risk even today that one may encounter OE whenever there is an excavation or other disturbance of the environment. OE continues to wash up on the shores and to be found on land; as a routine occurrence public safety officials respond to 911 calls from people finding the material, and the USN EOD unit is asked to pick up and dispose of the material.<sup>35</sup>

There has been offshore dumping of **chemical munitions** and other OE throughout the Pacific in the areas which are part of the jurisdiction of the Oceania Regional Response Team (ORRT). There have been reports of dredge personnel, working in waters more than 1000 feet deep, being injured by releases from **chemical munitions** brought to the surface by the dredging, EPA said.<sup>36</sup>

Other organizations report that containers of Agent Orange were buried in Northern Saipan after the Vietnam War and that the US government wants to determine whether the chemical has migrated into the groundwater.<sup>37</sup>

**Cumulative and Additive Risks to Human Health and Sensitive Populations.** Several health studies show that certain populations in Saipan have already been exposed to military toxins due to historical releases to the environment and may be especially susceptible to the risks associated with exposure to direct and indirect exposure to contaminants from OB/OD. According to the U.S. Agency for Toxic Substances and Disease Registry, releases of polychlorinated biphenyls (PCBs), a hazardous substance, from damaged electrical equipment resulted in widespread environmental contamination in Tanapag village. This electrical equipment was owned by the military in the 1960s, but how exactly this equipment came to Tanapag is unclear.

As a result of the PCB releases, people living in Tanapag were concerned about the health and the safety of their families. During investigations, surface soil, biota (animals and plants), surface water and sediment, and groundwater samples were collected and analyzed for PCBs. PCBs were

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<sup>34</sup> Military Toxics Project, *Environmental, Economic, and Cultural Impacts of Military Munitions and Ranges*, undated.

<sup>35</sup> U.S. Environmental Protection Agency, Region 9, Kathleen Shimmin, FUDS Program Manager, *FUDS and OE Contamination in Guam, CNMI, and Off-Shore Pacific Waters: Potential Impact on an Oil-Hazmat Response & How To Get Assistance*, April 24, 2007.  
[http://www.nrt.org/Production/NRT/RRTHome.nsf/resources/oceana1/\\$File/ORRTFUDSOEContaminationinGuam.pdf](http://www.nrt.org/Production/NRT/RRTHome.nsf/resources/oceana1/$File/ORRTFUDSOEContaminationinGuam.pdf)

<sup>36</sup> U.S. Environmental Protection Agency, Region 9, Kathleen Shimmin, FUDS Program Manager, *FUDS and OE Contamination in Guam, CNMI, and Off-Shore Pacific Waters: Potential Impact on an Oil-Hazmat Response & How To Get Assistance*, April 24, 2007.  
[http://www.nrt.org/Production/NRT/RRTHome.nsf/resources/oceana1/\\$File/ORRTFUDSOEContaminationinGuam.pdf](http://www.nrt.org/Production/NRT/RRTHome.nsf/resources/oceana1/$File/ORRTFUDSOEContaminationinGuam.pdf)

<sup>37</sup> Nic Maclellan, Pacific News Bulletin, PCRC, Suva, Fiji, *Toxic bases in the Pacific*, undated.  
<http://rmit.nautilus.org/forum-reports/ToxicbasesinthePacific.doc>

detected primarily in surface soil, and to a lesser extent in sediment and locally harvested foods.<sup>38</sup> Slightly elevated levels of PCBs, iron, aluminum, and manganese were found in the sampled land crabs<sup>39</sup> – a local food source. While detected levels were found below health guidelines, it is possible additional environmental insults from OB/OD and other uncontrolled sources could push contaminant levels beyond these thresholds.

For all these reasons, we strongly urge the EPA to (1) require an assessment and implementation of alternative technologies and/or treatment trains that will avoid the clear and expected environmental health risks associated with OB/OD of the millions of pounds<sup>40</sup> of unexploded munitions on the Mariana Islands in the Pacific, and (2) prohibit the OB/OD of chemical, biological, radiological, smoke-filled, incendiary, improved conventional munitions, and other similar munitions wastes.

Sincerely,

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We, the undersigned, while not experts in the technical, health, or environmental ramifications of ordnance disposal, believe that the history and evidence cited by Citizens for Safe Water Around Badger above, merit urgent consideration by the EPA prior to deciding policy in the CNMI. We add our names to this document as local residents of Saipan who support the promotion and protection of human and environmental health and are concerned about the hazards of OB/OD.

[REDACTED], Papago, Saipan  
[REDACTED], Tapochau, Saipan  
[REDACTED], Saipan  
[REDACTED], Papago, Saipan  
[REDACTED], Papago, Saipan  
[REDACTED], Papago, Saipan

*(Names deleted at the request of the signators as a matter of privacy for posting on the internet.)*

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<sup>38</sup> U.S. Agency for Toxic Substances and Disease Registry, PUBLIC HEALTH ASSESSMENT Saipan Capacitors, (a/k/a Tanapag Village (Saipan)), Tanapag Village, Saipan, Commonwealth of the Northern Marianas Island, Summary, August 31, 2004. <http://www.atsdr.cdc.gov/HAC/PHA/saipan083104-CM/saipan083104-CM-p1.html#wherevillage>

<sup>39</sup> U.S. Agency for Toxic Substances and Disease Registry, Comprehensive Health Consultation Evaluation of Land Crab Contamination, Tanapag Village, Saipan, Commonwealth of the Northern Mariana Islands, 2001. <http://www.atsdr.cdc.gov/NEWS/2001-08-22ga.html>

<sup>40</sup> U.S. Environmental Protect Agency, Region 9, From Bombfields to Brownfields – New RCRA Agreement to Manage Unexploded Ordnance on Pacific Islands, Press Release, December 3, 2007. <http://www.epa.gov/region09/waste/features/ordnance/index.html>

# Hexavalent Chromium Contamination at U.S. Army Ammunition Facilities

Prepared by  
Citizens for Safe Water Around Badger (CSWAB)  
January 9, 2013

Chromium is a naturally-occurring element found in rocks, animals, plants, and soil, where it exists in combination with other elements to form various compounds. The three main forms of chromium are chromium (0), chromium (III), and chromium (VI). Chromium can change from one form to another in water and soil, depending on the conditions present. Very small amounts of chromium (III) are needed for human health. However, hexavalent chromium (Chromium VI) is a known human carcinogen and mutagen.

The metal chromium, which is the chromium (0) form, is used for making steel. Chromium (VI) and chromium (III) are used for chrome plating, dyes and pigments, leather tanning, and wood preserving. At the U.S. Army Ammunition facilities surveyed for this report, chromium (VI) was associated with a variety of other sources and activities including: evaporation/percolation ponds, open burning of military propellants, live firing, explosives wash-out wastewater facilities, TNT leaching beds and production, thermal treatment of small arms munitions, and open burning/open detonation of explosives.



At the majority of sites surveyed, the U.S. Army utilized environmental test methods capable of detecting and quantifying chromium (III) and chromium (VI). At Army facilities where testing for chromium was not speciated (reporting only total chromium), federal health officials, the U.S. Environmental Protection Agency and state regulators consistently required that risk-based cleanup goals and screening levels be based on the most toxic form of chromium which is chromium (VI). The one exception is **Badger Army Ammunition Plant (WI)** where the U.S. Army has calculated risk based on total chromium. State health officials have been asked to review and comment on the Army's methodology at this site.

*(Please note that the following is only a partial list of Army ammunition facilities with known or potential chromium VI contamination.)*

Name of Facility	Chromium VI Detected in Environment	Contaminated Media	Reported Chromium VI Concentrations	Source (manufacturing process, spill, etc.)	Reference/s
<b>Anniston Army Depot, Ammunition Storage Area, AL</b>	YES	Groundwater	Not found	Explosives wash-out wastewater/TNT washout facility Solid Waste Management Unit (SWMU) 10. Leaching soils and sediment contamination identified as source of groundwater contaminants	U.S. EPA Superfund Record of Decision: Anniston Army Depot, September 18, 2006

<b>Anniston Army Depot (continued)</b>	YES	Groundwater	Not found	TNT leaching beds which received slurries of explosive waste from munitions. Site designation: SWMU 11	U.S. EPA Superfund Record of Decision: Anniston Army Depot, September 18, 2006
	YES	Groundwater	Concentrations ranged from 0.87 to 551 ug/l	Decontamination oven used to deactivate small arms munitions by burning. Site designation: SWMU 35	U.S. EPA Superfund Record of Decision: Anniston Army Depot, September 18, 2006
<b>Badger Army Ammunition Plant, WI</b>	No record of environmental testing for chromium VI found  Proposed soil remediation goals are based on <u>total</u> chromium	Surface soil/sediments (total chromium only – testing not speciated)	Maximum concentration total chromium: 110 mg/kg. The Army has proposed a remedial goal of 35.5 mg/kg for total chromium based on historical mean background concentrations. Wisconsin Administrative Code NR 720 Residual Contaminant Levels are 14 mg/kg for chromium VI and 16,000 mg/kg for chromium III	Final Creek, Settling Ponds and Spoils Disposal Area which received industrial and sanitary wastewater during active production years.  “Acids used at BAAAP could have dissolved (chromium) from machinery. These dissolved metals then could have been discharged via wastewater to the Settling Ponds Area. The background concentration for total chromium was derived by calculating the mean concentration of five soil samples.” (U.S. Army, 2012)	U.S. Army, Alternative Feasibility Study Final Creek, Settling Ponds, and Spoils Disposal Areas, Badger Army Ammunition Plant, August 2012
<b>Iowa Army Ammunition Plant, IA</b>	PRESUMED  Soil remediation goals for human ingestion/dermal contact are based on chromium VI	Surface Soil	Total Chromium was detected as high as 2,110 mg/kg  (Chromium testing was not speciated)	At the West Burn Pads, RDX was the explosive with the highest reported value, and chromium was the metal with the highest reported value. Chromium was also detected at the East Burn Pads and Firing Site. (Site IAAP-032)	Draft Final Five-Year Review Report, Iowa Army Ammunition Plant, Middletown, Iowa, February 2006



<b>Isla de Vieques Bombing Range, Vieques, Puerto Rico</b>	PRESUMED  “Although some or all of the chromium detected on Vieques could be chromium III, an essential nutrient; as a conservative approach to the health evaluation, ATSDR assumed that all of the chromium was the more harmful chromium VI.” (ASTDR, 2003)	Soil	700 parts per million (maximum concentration)	Live firing, open detonation and disposal of munitions. Ordnance casings and high explosives components were identified as an expected source of Chromium VI	U.S. Agency for Toxic Substances and Disease Registry (ATSDR), Petitioned Public Health Assessment, Soil Pathway Evaluation, Isla de Vieques Bombing Range, Vieques, Puerto Rico, February 7, 2003.
		Air	Estimated Annual Average Ambient Air Concentration in Residential Areas: 3.62e-07 µg/m3		
<b>Louisiana Army Ammunition Plant</b>	YES	Surface Soil (0-6 inches)	1.48 to 13.9 ug/g	Y-Line Metal Parts Manufacturing Area. The facility housed an assembly line for forging, machining, and painting 155-mm shells. From the early 1960s until 1994, shells were etched in a chromium etching bath at the west end of Building 2600 and then rinsed with a chromic acid solution	Final Record of Decision for the Y-Line Soils, Louisiana AAP, February 2002, U.S. EPA website  Public Health Assessment, U.S. Agency for Toxic Substances and Disease Registry, June 11, 2003
<b>Radford Army Ammunition Plant, VA</b>	PRESUMED  Both USEPA and the Virginia Department of Environmental Quality requested that risk-based goals for chromium be based on chromium VI	Soil	Total chromium detections ranged from 18.6 to 51.5 mg/kg, exceeding the Chromium VI Residential Risk-Based Concentration of 23 mg/kg	SWMU 6: Acid Wastewater Lagoon located in the Main Manufacturing Area	United States Army Corps of Engineers, Radford Army Ammunition Plant, Virginia, SWMU 6 Decision Document, Final, October 2002

<b>Radford AAP (continued)</b>	Soil	Concentrations of total chromium were detected as high as 53.4 mg/kg, exceeding the adjusted residential soil screening level of 23.5 mg/kg for chromium VI. Both USEPA and the Virginia Department of Environmental Quality requested that risk-based goals for chromium be based on chromium VI	SWMU 13: Open burning of waste and off-specification energetics beginning in 1941. Material burned at the open burning ground has consisted of waste explosives, propellants, and laboratory waste. Three types of propellant wastes have been burned including single base (nitrocellulose), double base (nitrocellulose and nitroglycerin), and triple base (nitrocellulose, nitroglycerin, and nitroguanidine)	Radford Army Ammunition Plant, Work Plan Addendum, Work Plan Addendum, RCRA Facility Investigation at Solid Waste Management Unit 13, Final, July 2008	
	Surface Water	Concentrations of total chromium detected as high as 78.8 ug/l, exceeding the USEPA Region III Biological Technical Assistance Group Screening Level of 2 ug/l for chromium VI			
	Subsurface Soil	Total chromium detected as high as 38.8 ug/g in subsurface soils. Residential Risk-Based goals were based on Chromium VI	SWMU 31: Coal Ash Settling Lagoons		U.S. Army Corps of Engineers, Work Plan Addendum 009 – SWMU 31 and Horseshoe Area Groundwater Study, Radford Army Ammunition Plant, September 2002
	Sediment	Total chromium was detected as high as 34.2 ug/g in sediments. USEPA Region III requested that the screening value be based on chromium VI			

<b>Ravenna Army Ammunition Plant, OH</b>	YES	Soil	25 mg/kg (exceeded the National Guard Trainee risk-based soil cleanup goal of 16 mg/kg)	Central Burn Pits	Final Action Memorandum for Central Burn Pits (RVAAP-49) Ravenna Army Ammunition Plant, Ravenna, Ohio, June 2007
	YES	Soil	Chromium VI detections ranged from 1 to 81.9 mg/kg, exceeding the EPA Region 9 Residential Preliminary Remediation Goal of 22 mg/kg	Source not noted	Draft Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio, September 2008
		Groundwater	Maximum detection: 10 ug/l		
		Sediments	Maximum detection: 33 mg/kg		
<b>Riverbank Army Ammunition Plant, CA</b>	YES	Surface sediments	up to 1.5 mg/kg	Evaporation/percolation ponds that contain wastewater from the plant	Public Health Assessment, Riverbank Army Ammunition plant, California, Federal Facilities Assessment Branch Division of Health Assessment and Consultation, U.S. Agency for Toxic Substances and Disease Registry, September 30, 1997
	YES	Sediments in stormwater reservoir	"three times background levels"	Stormwater from "main plant area"	U.S. Army, Riverbank Installation Action Plan, 2001
	YES	Groundwater	Levels of chromium VI in three nearby residential groundwater wells were consistently detected above the 50 ug/l	The former redwood tanks represent the location of a past release of wastewater containing hexavalent chromium, which resulted in contamination of groundwater at Riverbank and the surrounding area. The	Final Site Investigation Report, Riverbank Army Ammunition Plant, Riverbank, California Prepared for U.S. Army Corps of Engineers, March 2008  U.S. EPA Region 9/U.S. Army Federal Facilities Agreement, Riverbank Army Ammunition

<b>Riverbank AAP (continued)</b>				redwood tanks were replaced in 1972 with a concrete tank	Plant, April 1990
<b>Sacramento Army Depot, CA</b>	YES	Soil and Groundwater	Not quantified	Contaminated soils and debris at the South Post Burn Pits. Metals, including Cr, detected to a depth of approximately 20 feet below surface. Buried materials included plating shop wastes and paint sludges containing lead chromate, chrome, green zinc chromate, cobalt, titanate and red oxide	U.S. Army Corps of Engineers, Five Year Review, Former Sacramento Army Depot, Sacramento, California, December 2001
<b>Sierra Army Depot, CA</b>	YES (Chromium trivalent and Chromium hexavalent)	Air	Not quantified. (Greater than 10 pounds of air emissions per year)	Open burning/open detonation of explosives, propellants and other munitions wastes	U.S. Agency for Toxic Substances and Disease Registry, Health Consultation – Air Pathway Evaluation, Sierra Army Depot, California, November 7, 2003
<b>Sunflower Army Ammunition Plant, KS</b>	YES	Surface water	Not found	Historical discharge of wastewater from the North Acid. An Army risk assessment identified hexavalent chromium as the primary contaminant of concern in surface water	U.S. Army, Installation Action Plan, Sunflower Army Ammunition Plant, 2001
<b>Volunteer Army Ammunition Plant, TN</b>	PRESUMED “Because no information about the form of chromium detected was available, ATSDR assumed that all the chromium found at VAAP was present in its more toxic form – chromium VI.” (ATSDR, 2004.	Sediment	12,000 mg/kg (maximum concentration)	Emissions and discharges associated with production of trinitrotoluene (TNT) and the acids required for TNT production.	U.S. Agency for Toxic Substances and Disease Registry, Public Health Assessment, Volunteer Army Ammunition Plant, Chattanooga, TN, September 7, 2004
		Surface Water	0.054 mg/l (maximum concentration)		
		Surface Soil	12,000 mg/kg (maximum concentration)		



## EPA Set to Defer Cleanup of Alaska Burn Pits for Decades, Again

**Anchorage, ALASKA** -- For more than 40 years, the U.S. Environmental Protection Agency (EPA) has deferred cleanup and closure of a former hazardous waste burning area at Joint Base Elmendorf-Richardson in Alaska. If approved, a pending EPA permit will leave this **wound open for generations to come**.

According to the draft federal hazardous waste permit, open for public comment until September 7, EPA will only require cleanup and closure of a former burning grounds when the military decides use of a nearby active firing range ceases or when the base itself closes – **something that EPA Region 10 acknowledges may not happen for years or even decades.**<sup>1</sup>

In formal comments to EPA this week, Citizens for Safe Water Around Badger (CSWAB) together with Alaska Community Action on Toxics (ACAT) object to any further delays in the cleanup of former burn pits at Joint Base Elmendorf-Richardson, emphasizing the consequences of deferred cleanup at military sites like Wisconsin's Badger Army Ammunition Plant where former burn pits are the source of widespread groundwater **contamination that has migrated miles beyond the plant boundary** – contaminating drinking water wells and discharging into the Lower Wisconsin Riverway.

**Open burning and open detonation (OB/OD)** of explosives at Alaska's Fort Richardson has occurred since at least 1956, according to aerial photography.<sup>2</sup> Disposal through burning was performed either on the ground surface or in an excavated pit. Energetic materials that were treated by OB/OD included fuses, high explosive projectiles, smoke pots, mortar rounds, star clusters, flares, mines, rocket motors, shape charges, detonation cord, dynamite, and some flammable solids.<sup>3</sup>

Waste explosives, when burned or detonated in the open air, have the potential to release heavy metals, perchlorate, particulate matter, per- and polyfluoroalkyl substances (**PFAS**), dioxins/furans, explosive compounds,

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<sup>1</sup> U.S. EPA Region 10, Memo re: Endangered Species Act (ESA) Effects Determination for the Joint Base Elmendorf-Richardson RCRA Permit Renewal, July 2023 draft.

<sup>2</sup> Department of the Army, U.S. Army Engineer District, Alaska, RECORD OF DECISION for OPERABLE UNIT C, FORT RICHARDSON, ANCHORAGE, ALASKA, September 1998.

<sup>3</sup> Department of the Army, U.S. Army Engineer District, Alaska, RECORD OF DECISION for OPERABLE UNIT C, FORT RICHARDSON, ANCHORAGE, ALASKA, September 1998.



and other toxic and hazardous contaminants to the environment, according to EPA Headquarters.<sup>4</sup> (See attached tables from the current draft permit for additional examples.)

**PFAS** are added to improve the performance and stability of certain military explosives and munitions. Infrared countermeasure flares, for example, are designed to protect rotary- and fixed-wing aircraft from infrared guided (heat seeking) missiles. Pyrotechnic compositions of magnesium/Teflon/Viton (MTV) are widely used in military flares and for igniting the solid propellant of a rocket motor. Often referred to as “decoy” flares, countermeasure flares are comprised of as much as **45% PFAS** (fluoropolymers).<sup>5</sup>

**PFAS, dioxins, perchlorate, lead, mercury and other persistent, bioaccumulative, and toxic chemicals** are a class of chemicals that resist degradation and persist in the environment for extensive periods. As a result of their persistence, when these chemicals are consumed, they bioaccumulate in the fat tissues, bones, and brain of living organisms. Many of these same contaminants are also highly mobile in the environment, readily migrating from soil to surface water and groundwater.

The OB/OD pad is a graded upland gravel clearing adjacent to the Eagle River Flats (ERF) wetlands and adjacent to the ERF impact area. **The 16-acre pad borders an estuarine salt marsh on the south side of Knik Arm in upper Tikahtnu (Cook Inlet).**<sup>6</sup>

Joint Base Elmendorf-Richardson lies within traditional lands of the **Dena’ina northern Athabascan tribes of Cook Inlet** and both tribal members and tribal governments have an enduring interest in the management of these lands. Agreement documents between JBER and the **Native Village of Eklutna** and **Chickaloon Native Village** formally acknowledge the government-to-government relationship and mutual areas of concern and support. Three federally recognized native tribes, Native Village of Eklutna, Chickaloon Native Village, and **Knik Tribe** are primary points of contact for Alaska Native consultation, Air Force officials wrote.<sup>7</sup>

According to U.S. EPA Region 10, the active use of the OB/OD area is not currently authorized and hasn’t been since the 1980s. The unit is unused and not authorized for any open burning or open detonation activities, EPA affirmed. No waste treatment is allowed at the OB/OD. The draft permit addresses the OB/OD only insofar as it requires federal RCRA closure of the OB/OD **when use of the active firing range ceases or when Joint Base Elmendorf-Richardson (JBER) itself closes**, EPA officials said.<sup>8</sup>

The draft EPA permit proposes that any potential harmful effects of OB/OD will be addressed after the military decides to initiate closure activities, acknowledging that the Agency understands that **“JBER does not expect to make such a decision for many years, if not decades”** (emphasis added).<sup>9,10</sup>

Groundwater beneath the OB/OD Pad is found at depths of about 4 to 10 meters (13 to 32 feet) below ground surface. Previous studies indicate that the groundwater movement patterns are **strongly influenced by both the tides and the river.**<sup>11</sup>

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<sup>4</sup> U.S. EPA Headquarters, Open Burning and Open Detonation (OB/OD) of Waste Explosives Under the Resource Conservation and Recovery Act (RCRA), Office of Resource Conservation and Recovery, Director C. Hoskinson, 7 June 2022.

<sup>5</sup> Citizens for Safe Water Around Badger, *Demilitarization of Military Flares as an Uncontrolled Source of PFAS*, <https://cswab.org/demilitarization-of-military-flares-as-an-uncontrolled-source-of-pfas/>

<sup>6</sup> Closure Plan, OB/OD PAD, Joint Base Elmendorf-Richardson, Alaska, Final, (draft permit Attachment 7), November 2022.

<sup>7</sup> U. S. Air Force, *Integrated Natural Resources Management Plan Joint Base Elmendorf-Richardson*, 29 January 2020.

<sup>8</sup> U.S. EPA Region 10, email communication, B. Feldhahn to Laura Olah, CSWAB, 3 August 2023.

<sup>9</sup> U.S. EPA Region 10, Memo re: Endangered Species Act (ESA) Effects Determination for the Joint Base Elmendorf-Richardson RCRA Permit Renewal, July 2023 draft.

<sup>10</sup> U.S. EPA Region 10, Memo re: Endangered Species Act (ESA) Effects Determination for the Joint Base Elmendorf-Richardson RCRA Permit Renewal, July 2023 draft.

<sup>11</sup> Closure Plan, OB/OD PAD, Joint Base Elmendorf-Richardson, Alaska, Final, (draft permit Attachment 7), Section 3.4.2, November 2022.

**Water is known to recharge the groundwater system** of JBER in several ways: groundwater seeps from bedrock fractures into the sediments along the Chugach Mountains to the east; snowmelt and rainfall infiltrate to the groundwater; and streams feed groundwater in areas where the elevation of the stream is above the water table. Discharge of the aquifer is either by groundwater flow to Knik Arm or into streams (e.g., Ship Creek, Eagle River) that ultimately discharge into Knik Arm.<sup>12</sup>

The 1989 *RCRA Facility Assessment and Visual Site Inspection* for JBER concluded that the site provides a **high potential** for release of hazardous constituents to **surface water and groundwater**.<sup>13</sup>

**Nearly a decade later, EPA deferred cleanup again.** The 1998 *Operable Unit C Record of Decision* documents that EPA determined it would be prudent to allow final RCRA closure of the OB/OD Pad concurrently with future final clearance of the operating Eagle River Flats (ERF) range.<sup>14</sup>

The OB/OD Pad and the ERF impact area are frequented by a variety of **wildlife** typical of South central Alaska. Big game animals include moose and black bear. Other wildlife in the area include; wolves, foxes, coyotes, beaver, muskrat, mink, weasel, wolverine, lynx, hare, and numerous rodents. The ERF provide prime habitat for waterfowl and several species of raptors are found in the area, primarily in the ERF.<sup>15</sup>

**The Cook Inlet beluga** is known to occur in the marine environment offshore of the Eagle River Flats (ERF), where JBER's Open Burning /Open Detonation (OB/OD) unit is located.

**In total, cleanup and closure of the OB/OD hazardous waste unit at Joint Base Elmendorf-Richardson has already been deferred by EPA for more than 40 years. If approved, the current draft EPA permit will leave this wound open for generations to come.**

The pending 2023 draft EPA permit states that JBER is delaying RCRA closure of the burning pad area until after the adjacent operating ERF firing range is closed and cleared.<sup>16</sup> This delay in closure has been approved in accordance with 40 CFR 265.113(b)(1)(i), EPA officials said.<sup>17</sup> (*EPA's public notice cited Part 261 which is incorrect, EPA said.*)

**40 CFR 265.113 (b)** *The owner or operator must complete partial and final closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of hazardous wastes, or the final volume of nonhazardous wastes if the owner or operator complies with all applicable requirements in paragraphs (d) and (e) of this section, at the hazardous waste management unit or facility, or 180 days after approval of the closure plan, if that is later. The Regional Administrator may approve an extension to the closure period if the owner or operator demonstrates that: (1)(i) The partial or final closure activities will, of necessity, take longer than 180 days to complete;*

**This is not the first time** that the use and disposal of munitions at Joint Base Elmendorf-Richardson has been challenged. White phosphorus particles released from range firing concentrated in the sediments of Eagle River

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<sup>12</sup> FACT SHEET, DRAFT HAZARDOUS WASTE MANAGEMENT FACILITY AND CORRECTIVE ACTION PERMIT, JOINT BASE ELMENDORF-RICHARDSON, ANCHORAGE, ALASKA, EPA NO. AK8 57002 8649, July 2023 draft.

<sup>13</sup> Closure Plan, OB/OD PAD, Joint Base Elmendorf-Richardson, Alaska, Final, (draft permit Attachment 7), Section 2.3, November 2022.

<sup>14</sup> Closure Plan, OB/OD PAD, Joint Base Elmendorf-Richardson, Alaska, Final, (draft permit Attachment 7), Section 2.3, November 2022.

<sup>15</sup> Closure Plan, OB/OD PAD, Joint Base Elmendorf-Richardson, Alaska, Final, (draft permit Attachment 7), Section 3.5.2, November 2022.

<sup>16</sup> Closure Plan, OB/OD PAD, Joint Base Elmendorf-Richardson, Alaska, Final, (draft permit Attachment 7), Section 4.1, November 2022.

<sup>17</sup> Closure Plan, OB/OD PAD, Joint Base Elmendorf-Richardson, Alaska, Final, (draft permit Attachment 7), Section 4.1, November 2022.

Flats (ERF) causing a high mortality rate in waterfowl populations. ERF is an 865-hectare estuarine salt marsh that is completely within the boundaries of Fort Richardson Army Base. **The U.S. Army suspended the use of ERF as an active Army impact area in 1989.**<sup>18</sup>

Fort Richardson was joint-based with Elmendorf Air Force Base in 2010 to form Joint Base Elmendorf-Richardson (JBER). JBER is an active Army/Air Force installation that spans **74,297 acres north of Anchorage**, Alaska. Fort Richardson is listed on the National Priorities List. As specified in the Fort Richardson Federal Facility Compliance Agreement (FFCA), EPA considers the OB/OD Pad to be a RCRA-regulated SWMU (Solid Waste Management Unit) subject to interim status standards codified in 40 CFR 265.<sup>19</sup>

**The longer cleanup and closure of the OB/OD areas at Joint Base Elmendorf-Richardson are deferred, the greater the RISK to human health and the environment and the greater the CERTAINTY that the military will argue that restoration and cleanup are technically and economically infeasible – leaving this toxic legacy for generations to come.**

**For all these reasons, we strongly object to any further deferral or delay of cleanup and closure at Joint Base Elmendorf-Richardson.**

Sincerely,

Laura Olah, Executive Director, Citizens for Safe Water Around Badger (CSWAB) [Laura@CSWAB.org](mailto:Laura@CSWAB.org)

Pamela Miller, Executive Director, Alaska Community Action on Toxics (ACAT) Pamela Miller [pamela@akaction.org](mailto:pamela@akaction.org)

**Enclosures (4 pages):**

Map of OB/OD pad at JBER

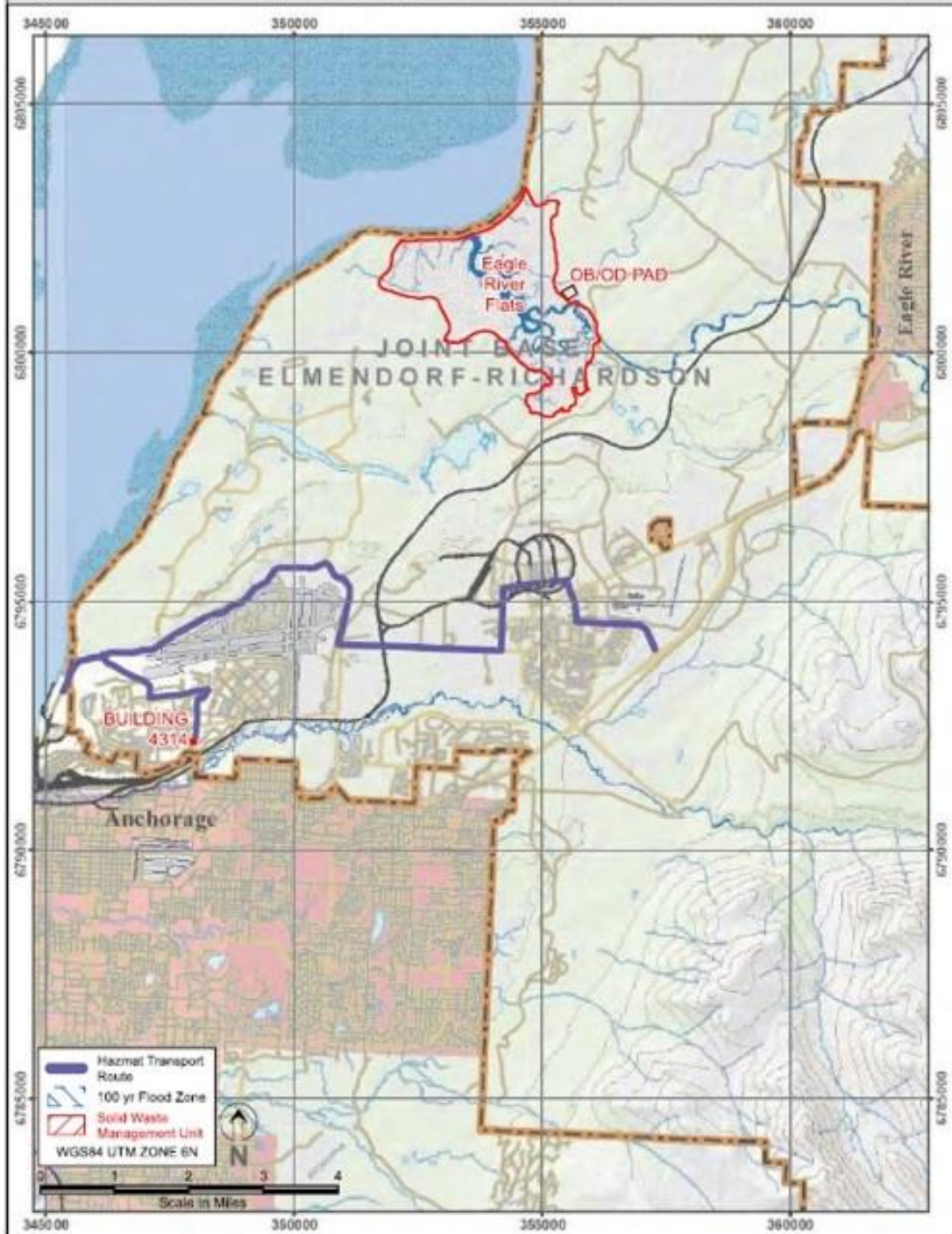
Tables 7a through 7c below for a detailed list of known and likely contaminants associated with the JBER

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<sup>18</sup> U.S. EPA, Water Quality Restored at Eagle River Flats to Revive Bird Population, 2008. [https://www.epa.gov/sites/default/files/2015-11/documents/ak\\_eagleriver.pdf](https://www.epa.gov/sites/default/files/2015-11/documents/ak_eagleriver.pdf)

<sup>19</sup> Closure Plan, OB/OD PAD, Joint Base Elmendorf-Richardson, Alaska, Final, (draft permit Attachment 7), November 2022.

Figure 1: JBER Locator Map with Transportation Route and 100-Year Flood Plain 1:100,000



MAP: Joint Base Elmendorf-Richardson near Anchorage, Alaska. The former open burning/open detonation (OB/OD) pad in the Eagle River Flats has been inactive since the 1980s.



Source for the following tables: U.S. EPA, Draft Hazardous Waste Management Facility Permit, Joint Base Elmendorf-Richardson, Alaska, Attachment 7 Interim Closure Plan for OB/OD Area, Section 2.3, November 2022.

**Table 7a. Energetic Chemicals Found In Military Explosives and Propellants in Munitions That May Have Been Disposed at the OB/OD Pad**

Compound	Uses	Chemicals of concern
Propellant formulations		
Single base	Artillery	NC, 2,4-DNT
Double base	Small arms, mortar, Artillery	NC, NG
Triple base	155 mm howitzer	NC, NG, NQ
Explosive formulations		
Composition B Artillery	mortar	60% RDX, 39% TNT
Composition C4	Demolition explosive	91% Military-grade RDX
Composition A4	40-mm grenades	RDX
TNT	Artillery	TNT
Octol	Anti-tank rockets	HMX and TNT

Notes:

Military grade RDX contains ~ 10% HMX and military-grade TNT contains ~ 1% other TNT isomers and DNTs.

DNT = Dinitrotoluene

HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine

NC = Nitrocellulose

NG = Nitroglycerin

NQ = Nitroguanidine

RDX = Hexahydro-1,3,5-tetranitro-1,3,5-triazine

TNT = Trinitrotoluene

**Table 7b. Potential Chemical Compounds in Munitions Disposed at the OB/OD Pad**

Chemical Compound	RCRA Status
Ammonium nitrate	Ignitable hazardous waste (D001)
Ammonium picrate	Reactive hazardous waste (D003)
Arsenic	Listed as RCRA hazardous constituent in RCRA 40 CFR 261 Appendix VIII and 40 CFR 264 Appendix IX
Barium	Potential TCLP (D005) waste; listed as RCRA hazardous constituent in RCRA 40 CFR 261 Appendix VIII and 40 CFR 264 Appendix IX
Barium nitrate	Ignitable characteristic hazardous waste (D001) Potential TCLP (D005) waste due to barium Barium listed as RCRA hazardous constituent in 40 CFR 261 Appendix VIII and in 40 CFR 264 Appendix IX
Chromium (total)	Potential TCLP (D007) waste; listed as RCRA hazardous constituent in RCRA 40 CFR 261 Appendix VIII and 40 CFR 264 Appendix IX
Cadmium (total)	Potential TCLP (D006) waste; listed as RCRA hazardous constituent in RCRA 40 CFR 261 Appendix VIII and 40 CFR 264 Appendix IX
Carbon tetrachloride	Potential TCLP (D019) waste; listed as RCRA hazardous constituent in 40 CFR 261 Appendix VIII and in 40 CFR 264 Appendix IX
Cyanide	Listed as RCRA hazardous constituent in RCRA 40 CFR 261 Appendix VIII and 40 CFR 264 Appendix IX



Chemical Compound	RCRA Status
Hexahydro-1,3,5-tetranitro-1,3,5-triazine (RDX)	Reactive characteristic hazardous waste (D003)
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	Reactive characteristic hazardous waste (D003)
Dibutylphthalate	Listed as RCRA hazardous constituent in RCRA 40 CFR 261 Appendix VIII and 40 CFR 264 Appendix IX
Diethylphthalate	Listed as RCRA hazardous constituent I 40 CFR 261 Appendix VIII and in 40 CFR 264 Appendix IX
3,5-Dinitroaniline	Not listed as RCRA hazardous and Not regulated by the state of Alaska
1,3-Dinitrobenzene	Listed as RCRA hazardous constituent in 40 CFR 261 Appendix VIII and in 40 CFR 264 Appendix IX
2,4-Dinitrotoluene (2,4-DNT)	Potential TCLP (D030) waste; listed as RCRA hazardous constituent in 40 CFR 261 Appendix VIII and in 40 CFR 264 Appendix IX
2,6-Dinitrotoluene (2,6-DNT)	Listed as RCRA hazardous constituent in 40 CFR 261 Appendix VIII and in 40 CFR 264 Appendix IX
2-Amino-4,6-DNT	Regulated under State of Alaska Administrative Code 18 AAC 75
4-Amino-2,6-DNT	Regulated under State of Alaska Administrative Code 18 AAC 75
Diphenylamine	Listed as RCRA hazardous constituent in 40 CFR 261
Hexachlorobenzene	Potential TCLP (D032) waste; listed as RCRA hazardous constituent in 40 CFR 261 appendix VIII and in 40 CFR 264 Appendix IX
Hexachloroethane	Potential TCLP (D034) waste; listed as RCRA hazardous constituent in 40 CFR 261 Appendix VIII and in 40 CFR 264 Appendix IX
Lead	Potential TCLP (D008) waste; listed as RCRA hazardous constituent in 40 CFR 261
Lead azide	Reactive characteristic hazardous waste (D003) Potential TCLP (D008) waste; Lead listed as RCRA hazardous constituent in 40 CFR 261 Appendix VIII and in 40 CFR 264 Appendix IX
Lead styphnate (Lead trinitro-resorcinat)	Reactive characteristic hazardous waste (D003); Potential TCLP (D008) waste; Lead listed as RCRA hazardous constituent in 40 CFR 261 Appendix VIII and in 40 CFR Appendix IX
Mercury	Potential TCLP (D009) waste; listed as RCRA hazardous constituent in 40 CFR 261
Mercury fulminate	Reactive characteristic hazardous waste (D003); Potential TCLP (D009) waste; Mercury listed as RCRA hazardous constituent in 40 CFR 261 Appendix VIII and in 40 CFR 264 Appendix IX
Monoethylamine	Ignitable characteristic hazardous waste (D001)
Nitrate	Not RCRA regulated waste or hazardous constituent
Nitrobenzene	Potential TCLP (D036) waste; listed as RCRA hazardous constituent in 40 CFR 261 Appendix VIII and in 40 CFR 264 Appendix IX
Nitrocellulose	Ignitable characteristic hazardous waste (D001)
Nitroglycerine	Reactive characteristic hazardous waste (D003)
Nitromethane	Ignitable characteristic hazardous waste (D001)

Chemical Compound	RCRA Status
n-Nitrosodiphenylamine	Listed as RCRA hazardous constituent in 40 CFR 261 Appendix VIII and in 40 CFR 264 Appendix IX
2-Nitrotoluene	Regulated under State of Alaska Administrative Code 18 AAC 75
3-Nitrotoluene	Regulated under State of Alaska Administrative Code 18 AAC 75
4-Nitrotoluene	Regulated under State of Alaska Administrative Code 18 AAC 75
Pentaerythritol tetranitrate (PETN)	Reactive characteristic hazardous waste (D003)
Perchlorates	Reactive characteristic hazardous waste (D003)
Phosgene	Reactive characteristic hazardous waste (D003); listed as RCRA hazardous constituent in 40 CFR 261 Appendix VIII
Phosphorous	Not RCRA regulated waste or hazardous constituent
Picric acid	Reactive characteristic hazardous waste (D003)
Polystyrene	Not RCRA regulated waste or hazardous constituent
Potassium nitrate	Ignitable characteristic hazardous waste (D001) Reactive characteristic hazardous waste (D003)
Sodium nitrate	Ignitable characteristic hazardous waste (D001) Reactive characteristic hazardous waste (D003)
Sulphur	Ignitable characteristic hazardous waste (D001) Reactive characteristic hazardous waste (D003)
1,3,5-Trinitrobenzene	Listed as RCRA hazardous constituent in 40 CFR 261 Appendix VIII and in 40 CFR 264 Appendix IX
2,4,6-Trinitrotoluene (2,4,6-TNT)	Reactive characteristic hazardous waste (D003)
Trinitrophenylmethylnitramine (Tetryl)	Reactive characteristic hazardous waste (D003)
White Phosphorus	Ignitable characteristic hazardous waste (D001)
Zinc chloride	Not RCRA regulated waste or hazardous constituent

**Table 7c. Chemicals Found On Other OB/OD Military Sites That May Be Present at the OB/OD Pad**

Compounds by Groups	Reference
<i>Degradation Products and Metabolites of RDX</i>	
Hexahydro-1,3-dinitroso-5-nitro-1,3,5- triazine (DNX)	Sheremata T.W. et.al. (2001)
Hexahydro-1,3,5-trinitroso-1,3,5-triazine (TNX)	Sheremata T.W. et.al. (2001)
Hexahydro-1-nitroso-3,5- dinitro-1,3,5-triazine (MNX)	Sheremata T.W. et.al. (2001)
<i>Fuels</i>	
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	ADEC, 2019
Polycyclic aromatic hydrocarbons (PAHs)	ADEC, 2019
<i>Burning Constituents</i>	
Dioxins	EPA, 2012
Furans	EPA, 2012
Per- and Poly-Fluorinated Alkyl Substances (PFAS)	EPA comments on draft Closure Plan



# Military is Open Burning PFAS, with EPA’s Permission

**In communities across the U.S. and its territories**, the Departments of Defense and Energy routinely open burn and open detonate (OB/OD) countless tons of hazardous munitions wastes in the open air. It continues to be the “standard method for disposal because it is a technically simple method of disposal that is frequently the least expensive and easiest to perform.” Despite the commercial availability of safer technologies, this devastating practice continues.

In addition to PFAS, toxic emissions from OB/OD include explosives, elemental metals (e.g., arsenic, cadmium, chromium, cobalt, lead and mercury), volatile and semi-volatile organics, polycyclic aromatic hydrocarbons, chlorinated dioxins and furans, and perchlorate. (Source: National Academy of Sciences, *Alternatives for the Demilitarization of Conventional Munitions*, 2019)

## What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that includes PFOA, PFOS, GenX, and many other chemicals. PFAS are used to make fluoropolymer coatings and products that resist heat, oil, stains, grease, and water. The best-known fluoropolymer is polytetrafluoroethylene or Teflon.

## Why do some military munitions contain PFAS?

PFAS are added to improve the performance and stability of military explosives and munitions.

## What happens to PFAS when subjected to open air burning?

PFAS are not destroyed in an open fire and are therefore dispersed to the air and the surrounding environment where they accumulate in people, as well as fish and wildlife. At higher temperatures, poisonous hydrogen fluoride gas may be generated. Hydrogen fluoride is a listed hazardous air pollutant subject to regulation by U.S. EPA and authorized states under the Clean Air Act.

## What health risks are associated with exposure to PFAS?

PFAS have been shown to affect growth and development, reproduction, thyroid function, the immune system, injure the liver and increase risk for certain cancers.



EPA and Tennessee state regulators are both permitting the military to open burn munitions wastes containing as much as 15% PFAS at Holston Army Ammunition Plant.

## CASE STUDY: Open Burning PFAS in Kingsport, Tennessee

Every year, Tennessee’s Holston Army Ammunition Plant is permitted to open burn **1,250,000 pounds** of munitions wastes that may contain as much as **15% PFAS** by weight.

### Why is the Army allowed to open burn PFAS and other toxic waste at Holston?

Both the U.S. EPA and Tennessee regulators recently re-issued permits allowing open air burning of wastes that contain PFAS and other toxic compounds. This burning has been going on for decades.

### Can regulators prohibit the burning of PFAS and highly toxic wastes?

**YES!** At other military sites like the Blue Grass Army Depot in Kentucky, the military is prohibited from burning PFAS and dozens of other toxic wastes. Both Blue Grass and Holston are in EPA Region 4.

**PFAS Content of Munitions Permitted for Open Burning**  
at Holston Army Ammunition Plant – Partial List

Munitions Item	PFAS (Fluoropolymer)	Percentage by weight	Principal Explosive Ingredient
HDX-106	Teflon®	1.4	RDX
LX-04	Viton-A®	15	HMX
LX-07	Viton-A®	10	HMX
LX-10-2	Viton-A®	5.4	HMX
LX-17	Kel-F®	7.5	TATB
PBX-9502	Kel-F®	5	TATB
PBXN-7	Viton-A®	5	TATB/RDX
PBXN-5	Viton-A®	5	HMX
PBXN-6	Viton-A®	5	RDX
PBXW-14	Viton-A®	5	HMX/TATB
<i>unspecified</i>	OXY-461®	<i>unspecified</i>	<i>unspecified</i>

Kel-F® is also called Neoflon®. RDX = Royal Demolition eXplosive. HMX = High Melting eXplosive. TATB = 1,3,5-Triamino-2,4,6-trinitrobenzene. OXY-461™= vinyl chloride-chlorofluoroethylene copolymer.



April 25, 2023

**SUBMITTED BY ELECTRONIC MAIL**  
[DEQ.PUBLICNOTICES@LA.GOV](mailto:DEQ.PUBLICNOTICES@LA.GOV)

Michael S. Regan, Administrator, U.S. EPA, Washington DC [Regan.Michael@epa.gov](mailto:Regan.Michael@epa.gov)  
Roger W. Gingles, Secretary, Louisiana Dept of Environmental Quality, Baton Rouge, LA [officesec@la.gov](mailto:officesec@la.gov)

**RE:** Public Comment to the Louisiana DEQ and U.S. EPA on the Revised Draft Hazardous Waste Operating Permit and Proposed Minor Source Air Permit Modification for Clean Harbors Colfax AI Number 32096, Permit Number LAD 981 055 791-OP-RN-2, Activity Number PER20170002 and AI Number 32096, Permit Number LAD 1120-00010-07, and Activity Number PER20220002

Dear Administrator Regan and Secretary Gingles,

**This joint national letter**, signed by **81 environmental and social justice organizations** from across the U.S. and its territories, calls on the Louisiana Department of Environmental Quality and U.S. EPA to immediately halt all open burning and open detonation (OB/OD) of reactive, ignitable and explosive hazardous waste at the Clean Harbors Colfax facility in Louisiana. The facility has had literally decades to transition to commercially-available advanced alternative technologies that capture and treat toxic emissions – this tragedy must end.

We concurrently call for an immediate **halt to all receipt** of additional onsite hazardous waste to protect public health and the environment and to prevent suddenly accelerated open burning by the facility.

Residents in the small enclave of mostly Black residents just outside of Colfax have reported a deep slate of medical issues, ranging from asthma and allergies to cancer. Many of their illnesses are on the list of presumptive conditions the Department of Defense provided to veterans exposed to **burn pit** victims.

We support the requirement proposed by Louisiana Department of Environmental Quality (DEQ) that a Notification of Closure of OB/OD be submitted within 30 days after cessation of OB/OD. The facility must be required to immediately achieve **CLEAN closure** including the removal of all wastes, equipment, structures and remediation of soils, sediments, impoundments, storm water, groundwater and surface water.

Separately, if the proposed Contained Burn Chamber System alternative is approved, operating conditions must require that concentrations of the chemicals in stack emissions are constantly monitored and that real time access to the results is readily available to regulators and the public.

The draft emission thresholds for the proposed closed burn system are not protective and in some cases are actually higher after than those currently permitted for OB/OD. These thresholds need to be much lower and **far more protective** of health and the environment than proposed.

The list of prohibited wastes must also be expanded to include those specified in Section 2.2.5 Permitting and Prohibited Wastes in this [EPA Region III report](#).

Additionally, as Depleted Uranium is not formally classified as a “radioactive” waste, it should be specified that the prohibition on radioactive/nuclear waste includes depleted uranium. PFAS should also be specified as a prohibited waste – flares and incendiaries, for example, may contain as much as **45% PFAS**. To date, thermal destruction of PFAS has not been demonstrated nor achieved.

It is important to note that the expanded list of prohibited wastes is not without precedent and is found in the current EPA [RCRA permit for the Bluegrass Army Depot](#) in Kentucky. See Section P.III.A.(3) Prohibited Waste.

Finally, we ask that the permit include clear and specific language regarding **Environmental Justice Considerations** to assure the meaningful involvement of all people regardless of race, color, national origin or income. Populations at risk must be guaranteed earnest opportunities to actively participate in decisions that may affect their health and their environment.

Sincerely,

Laura Olah, Citizens for Safe Water Around Badger (CSWAB)

Brenda Vallee, Central Louisiana Coalition for a Clean & Healthy Environment

350 Bay Area Action

350Hawaii

7 Directions of Service

Action Now (a California Environmental Justice non-profit)

Alaska Community Action on Toxics

Animals Sentient Beings, Inc

ARTivism Virginia

Buxmont Coalition for Safer Water

California Communities Against Toxics

California Environmental Voters

CALIFORNIA SAFE SCHOOLS

Cease Fire Campaign

Center for Public Environmental Oversight

Clean Energy Action

Clean Water Partnership-Cannon

CleanAirNow



CO Dem. Party - Energy & Environment Initiative  
Common Ground Rising  
Concerned citizen of Campbell, WI  
Don't Waste Arizona  
Don't Waste Arizona  
Downwinders at Risk  
Echo Valley Hope  
Empower Our Future  
Family Farm Defenders  
Freyou Farms  
GAIA (Global Alliance for Incinerator Alternatives)  
Green Cross International  
Greenaction for Health and Environmental Justice  
Grey Nuns of the Sacred Heart  
Guam Youth Climate Strike  
Highland Dairy Art Schapp  
HunterSeven Foundation  
Immaculate Heart Community Commission on the Environment  
Inland Ocean Coalition  
Interdisciplinary Institute for Sciences  
Kentucky Environmental Foundation  
Kickapoo Peace Circle  
Long Island Progressive Coalition  
Micah Six Eight Mission  
Midwest Environmental Justice Organization  
Military Poisons  
Milwaukee Riverkeeper  
Ministry for Earth of First Unitarian Universalist of New Orleans  
MoveOn.org Hoboken RESIST  
New Mexico Climate Justice  
North American Climate, Conservation and Environment(NACCE)  
NUKEWATCH  
Office of Senator Perez  
Physicians for Social Responsibility Wisconsin

Progressives for Climate  
Protect All Children's Environment  
Protect All Children's Environment  
Prutehi Litekyan Save Ritidian  
Rise Up WV  
River Alliance of Wisconsin  
River Valley Organizing  
Save Our Water  
Sayain Circle of Grandmothers  
Sierra Club Delta Chapter (Louisiana)  
SOH2O  
Stand.earth  
Subra Company  
Terra Advocati  
Texas Campaign for the Environment  
The Enviro Show  
The People's Justice Council  
Thrive at Life: Working Solutions  
Toxic Free NC  
Tribal Environmental Watch Alliance  
Turtle Island Restoration Network  
Unitarian Universalists for Social Justice  
Unite North Metro Denver  
Valley Watch  
Veterans for Peace Madison, Wisconsin Clarence Kailin Chapter 25  
Vidas Viequenses Valen  
Vote Climate  
Western Broome Environmental Stakeholder Coalition  
Zero Waste Ithaca



September 26, 2017

Mr. Todd Kimmell, Chair  
Mr. Douglas Medville, Vice Chair  
Committee on Alternatives for the Demilitarization of Conventional Munitions  
Board on Army Science and Technology  
The National Academies of Sciences, Engineering, and Medicine  
500 5th Street, NW, Keck 940  
Washington, DC 20001  
[cmdcommittee@nas.edu](mailto:cmdcommittee@nas.edu)

**SENT BY ELECTRONIC MAIL**

**RE:** Dunnage, supplemental fuels in the OB/OD waste stream

Dear Chairperson Kimmel, Vice-Chairperson Medville and Members of the National Academies Committee on Alternatives for the Demilitarization of Conventional Munitions,

Thank you for the opportunity to submit information that we hope will be useful to the Committee. The following provides general references, together with several site-specific examples, concerning the frequent addition of dunnage and supplemental fuels to the open burning/open detonation (OB/OD) waste stream. We have bolded certain text to aid in review.

General references:

- EPA's 2002 Draft Final Open Burning Open Burning/Open Detonation Permitting Guidelines state: "Waste propellants to be treated by OB are often contained in **bags** that are placed directly into the unit. **Dunnage** (such as wood) and supplemental fuels (such as **fuel oil or kerosene**) have been used to aid the burning in certain circumstances. For example, dunnage can be used for the treatment of wet energetic wastes that may be generated during certain energetic manufacture operations. Burn cages and burn pans have been used for burns with dunnage."<sup>1</sup>
- According to the Federal Remediation Technologies Roundtable, typical open burn operations, energetics or munitions are destroyed by self-sustained combustion, which is ignited by an external source, such as flame, heat, or a detonation wave. In some cases **auxiliary fuel** may be added to initiate and sustain the combustion of materials.<sup>2</sup>

- A 1996 SERDP report on the characterization of emissions produced by the open burning/open detonation of complex munitions includes a full chapter on emissions from **diesel fuel** and **dunnage**.<sup>3</sup>

Site-specific examples:

- **HOLSTON ARMY AMMUNITION PLANT, Tennessee:**

There are three main types of wastes that are burned at Holston Army Ammunition Plant.<sup>4</sup> The first is bulk raw explosives that have become contaminated through contact with the manufacturing floor or out-of-spec product unsuitable for use or reprocessing. This waste is burned normally each week in open burn pans.

The second type of waste consists of explosives-contaminated small articles such as plastic bags, paper towels, filters, personal protective equipment, and dewatering filter socks. This material is placed in a steel cage and is generally burned once a week even though it is permitted daily.<sup>5</sup>

The third type of waste is large articles that may be contaminated with explosives and includes various materials, piping from buildings, process vessels, building demolition material including concrete, and possibly soil surrounding these areas. This material is placed in large piles at the burning ground.<sup>6</sup>

Since many of the materials that are required to be thermally decontaminated are not combustible, large amounts of clean **wood** are used along with small quantities of **kerosene or diesel** to facilitate the burning of pile material.<sup>7</sup>

- **RADFORD ARMY AMMUNITION PLANT, Open Burning Area, Virginia**

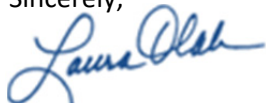
The 2001 Corrective Action and Treatment of Hazardous Waste permit for Radford allows up to 2,920,000 lbs/yr (propellant burns), 730,000 lbs/yr skid (**wood pallet burns**) and **9,125 gallons/yr of diesel fuel**.<sup>8</sup> From this same document: "TPH-DRO (Total petroleum Hydrocarbons-Diesel Range Organics) analyses will be collected and conducted at Pads 1, 4 and 7 as **diesel and kerosene** is (*sic*) occasionally used as an accelerant at those locations."

- **EGLIN AIR FORCE BASE, Thermal Treatment Unit, Florida**

According to the 2001 permit for storage and thermal treatment of hazardous waste, Eglin is allowed to thermally treat military munitions and explosives contaminated items by open burning. "The OB operation may be initiated by placing **dunnage** (wood and fiber board) in the OB Unit and igniting it along with the explosives with **50-100 gallons of virgin diesel fuel**."<sup>9</sup>

Thank you for your consideration of our submittal.

Sincerely,



Laura Olah, Executive Director

CC: U.S. Senator Tammy Baldwin

---

<sup>1</sup> [https://trainex.org/web\\_courses/subpart\\_x/TopicSearch%20pdf%20files/Region%203%20OBOD/PDF%206988-Text%20final.pdf](https://trainex.org/web_courses/subpart_x/TopicSearch%20pdf%20files/Region%203%20OBOD/PDF%206988-Text%20final.pdf)

<sup>2</sup> <https://frtr.gov/matrix2/section4/4-24.html>

<sup>3</sup> <http://www.dtic.mil/dtic/tr/fulltext/u2/a349149.pdf>

<sup>4</sup> BAE Systems Ordnance Systems Inc., Reviewed by HSAAP Staff, Correspondence to Tennessee Department of Environment and Conservation, Division of Air Pollution, Subject: BAE Systems Ordnance Systems Inc., Holston Army Ammunition Plant, Information Requested by TDEC for Open Burning Ground Sources 37-0028-10 and 37-0028-53, July 13, 2012.

<sup>5</sup> BAE Systems Ordnance Systems Inc., Reviewed by HSAAP Staff, Correspondence to Tennessee Department of Environment and Conservation, Division of Air Pollution, Subject: BAE Systems Ordnance Systems Inc., Holston Army Ammunition Plant, Information Requested by TDEC for Open Burning Ground Sources 37-0028-10 and 37-0028-53, July 13, 2012.

<sup>6</sup> BAE Systems Ordnance Systems Inc., Reviewed by HSAAP Staff, Correspondence to Tennessee Department of Environment and Conservation, Division of Air Pollution, Subject: BAE Systems Ordnance Systems Inc., Holston Army Ammunition Plant, Information Requested by TDEC for Open Burning Ground Sources 37-0028-10 and 37-0028-53, July 13, 2012.

<sup>7</sup> BAE Systems Ordnance Systems Inc., Reviewed by HSAAP Staff, Correspondence to Tennessee Department of Environment and Conservation, Division of Air Pollution, Subject: BAE Systems Ordnance Systems Inc., Holston Army Ammunition Plant, Information Requested by TDEC for Open Burning Ground Sources 37-0028-10 and 37-0028-53, July 13, 2012.

<sup>8</sup> <http://cswab.org/safewater/wp-content/uploads/2015/10/Radford-AAP-Open-Burning-2013-Permit.pdf>

<sup>9</sup> <http://cswab.org/safewater/wp-content/uploads/2015/10/Eglin-Air-Force-Base-2001-Storage-and-Thermal-Treatment-of-Haz-Waste.pdf>

January 16, 2021

Travis Blake  
Division of Air Pollution Control  
Tennessee Department of Environment and Conservation  
[air.pollution.control@tn.gov](mailto:air.pollution.control@tn.gov)

Regional Administrator Mary Walker  
ATTN: César A. Zapata, Director  
Land, Chemicals and Redevelopment Division  
United States Environmental Protection Agency, Region 4  
[Zapata.Cesar@epa.gov](mailto:Zapata.Cesar@epa.gov)

SENT BY ELECTRONIC MAIL



**RE:** Public comment opposing burning of PFAS and other highly toxic munitions wastes at Holston Army Ammunition Plant in Tennessee

Dear Mr. Blake and Administrator Walker,

The Tennessee Department of Environment and Conservation, Division of Air Pollution Control is reopening two existing major source operating permits issued to BAE Systems Ordnance Systems Inc. (BAE) at Holston Army Ammunition Plant, subject to provisions of the Tennessee Air Pollution Control Regulations. A major source operating permit is required by both the Federal Clean Air Act and the Tennessee Air Pollution Control Regulations. EPA will perform a 45-day review concurrently with the state public comment period. Both agencies are accepting public comment on draft conditions and permit modifications.

The proposed permit modifications include a condition that expressly prohibits open burning of asbestos, which we support, but the condition fails to address other highly toxic waste constituents in this same waste treatment stream, particularly PFAS. Exposure to PFAS has been shown to affect growth

and development, reproduction, thyroid function, the immune system, injure the liver and increase risk for certain cancers.

The current permit conditions allow Holston Army Ammunition Plant to annually open burn as much as 1,250,000 pounds of munitions wastes that may contain as much as 15% PFAS by weight. PFAS are not destroyed in an open fire and are therefore widely dispersed to the air and the surrounding environment where they accumulate in people, as well as fish, wildlife and food crops. At higher temperatures, poisonous hydrogen fluoride gas may be generated. Hydrogen fluoride is a listed hazardous air pollutant subject to regulation by U.S. EPA and authorized states under the Clean Air Act, as are other air emissions from open burning at Holston.

At other Department of Defense sites like the Blue Grass Army Depot in Kentucky, the military is expressly prohibited from open burning PFAS and dozens of other toxic wastes. Both Blue Grass and Holston are located in EPA Region 4. And we are adamant that Tennessee residents, workers and environment are afforded the same level of protection as their Kentucky neighbors.

Therefore, we request that the permit condition prohibiting open burning of asbestos (or other appropriate condition) be EXPANDED to include the following which are gleaned from the Blue Grass permit:

Specifically, the Permittee shall not treat, by either open burning or open detonation, munitions or wastes that contain any of the items or substances listed below:

- Hazardous waste from offsite sources
- Ammunition that is 0.50 caliber or smaller
- Municipal waste
- Dunnage
- Containerized gases
- Oil
- Pesticides
- Herbicides
- Ammonium perchlorates
- Dioxins or furans
- Titanium tetrachloride
- Polychlorinated biphenyls (PCBs)
- Flechettes
- Rounds containing submunitions
- White phosphorus
- Red phosphorous
- Colored smoke
- Hexachloroethane (HC) smoke
- Napalm
- Riot control agents
- Biological agents
- Choking agents
- Nerve agents
- Blood agents
- Blister agents
- Incapacitating agents
- Chemical warfare materiel



- Components of liquid filled rounds or chemical warfare materiel
- Nuclear components or devices
- Naturally occurring radioactive materials
- Depleted uranium (DU)
- Any liquids or items containing free liquids
- Asbestos
- Munitions wastes that are a potential source of Per- and polyfluoroalkyl substances (PFAS), including Teflon, Viton, and Viton-A. This also includes both short and long chain PFAS
- Waste Military Munitions with a different chemical composition from those already being treated at Holston

Source document: Hazardous Waste Facility Permit, Open Burning and Open/Buried Detonation (OB/OD) Section, Blue Grass Army Depot, KY8-213-820-105 AI: 2805 Activity: APE20040007, November 2018. Online at <https://cswab.org/wp-content/uploads/2018/12/Bluegrass-Army-Depot-OBOD-Final-Permit-Nov-2018.pdf>

**IMPORTANT NOTE:**

These public comments are not to be construed as supporting ANY open burning at Holston – the public notice specifies that regulators are only accepting comment on proposed conditions and permit modifications and our comments are submitted in this specific context.

Thank you for your careful consideration of our comments and recommendations.

Sincerely,

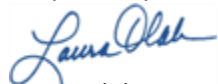
The complete list of nearly 300 co-signers, including representatives of 72 civic, environmental, veterans and health organizations, is enclosed as the following 9 pages of this .pdf document. As these comments are an open public record, we have not submitted street addresses to protect the privacy of individuals.

This national effort was coordinated by Citizens for Safe Water Around Badger – a grassroots organization that has been actively monitoring military cleanups for 30 years – in collaboration with Volunteers for Environmental Health and Justice in Tennessee.

**OTHER SUBMITTALS:**

Reference documents were too large and numerous to email as attachments so we have downloaded them on the following public webpage <https://cswab.org/action-alert-u-s-military-is-open-burning-pfas/>

Respectfully submitted by:



Laura Olah, Executive Director  
Citizens for Safe Water Around Badger (CSWAB.org)  
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Web: [www.CSWAB.org](http://www.CSWAB.org)

# CEASE FIRE Campaign

August 20, 2018

April Webb  
Kentucky Energy and Environment Cabinet  
Division of Waste Management  
300 Sower Boulevard, Second Floor  
Frankfort, Kentucky 40601  
(502)782-6470.  
[april.webb@ky.gov](mailto:april.webb@ky.gov)

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...**

---

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.

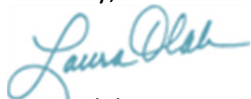
Not only do safer advanced technologies exist, their implementation is required by federal law. The operating language on open burning/open detonation of hazardous wastes which are waste explosives is contained in Title 40, Section 266.382. "Open burning of hazardous waste is prohibited except for the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

National Coordinator, CEASE FIRE Campaign

Executive Director, Citizens for Safe Water Around Badger (CSWAB)

E12629 Weigand's Bay S, Merrimac, WI 53561

(608)643-3124

info@cswab.org

#### 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>

August 20, 2018

## 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.

-end-



## LIST OF ITEMS OPEN BURNED BY HOLSTON ARMY AMMUNITION PLANT (TN)

*Prepared by Volunteers for Environmental Health and Justice  
November 28, 2017*

### PILE BURNS:

Concrete, wood, piping, plastics and other construction materials from demolished buildings. Process vessels, vehicle and machinery waste oil and potentially explosive contaminated soil. Given the nature of the facility and the age of the buildings, these materials may contain lead and asbestos. Large amounts of untreated wood, including felled trees and untreated lumber are used as fuel for the fires. Diesel fuel or kerosene is used to light the fires. Note: The permit does not require the facility to characterize, document or record materials burned in this waste stream. Items listed are a compilation of items contained in documents acquired from the Department of Defense, the Environmental Protection Agency and the Tennessee Department of Environment and Conservation.



### CAGE BURNS:

Plastic bags, coiled paper wicks, paper towels, false bottom filters from recrystallization tanks, dewatering filter socks, personal protective equipment, rubber items. Note: The permit does not require the facility to characterize, document or record materials burned in this waste stream. Items listed are a compilation of items contained in documents acquired from the Department of Defense, the Environmental Protection Agency and the Tennessee Department of Environment and Conservation.



### PAN BURNS:

HSAAP manufactures explosives and explosive formulations. The principal explosives manufactured at HSAAP are cyclotrimethylene trinitramine (RDX) cyclotetramethylene tetranitramine (HMX), NTO (3-nitro-1,2,4 triazol-5 one) and DNAN (2,4-dinitroanisole). TNT, Triamino-trinitrobenzene (TATB), and nitrocellulose (NC) are examples of explosives brought from off-site which are used to produce other explosive compounds. Table 2-1 of Holston-OBOD-Permit-TNHW-148 (2011) includes a listing of the representative range of



explosives compounds that HSAAP manufactures or incorporates into products along with the chemical formulas of these compounds. This table also includes materials such as propellants (e.g., nitrocellulose [NC]), which are not manufactured by HSAAP but are part of product formulations that may be treated in the burn pans. These energetics (explosives/propellants) are manufactured as either final products or as an intermediate phase to the final product. The final products are packaged and shipped off site or stored temporarily in the storage magazines.

The end-products manufactured and formulated at HSAAP may contain nonexplosive additives such as waxes and lecithin. Table 2-2 of Holston-OBOD-Permit-TNHW-148 (2011) provides a listing of such additives and their chemical formulas. Table 2-3 of Holston-OBOD-Permit-TNHW-148 (2011) provides a representative listing of the items manufactured and potentially treated at the Burn Pan Unit by HSAAP along with their explosive and nonexplosive constituents. HSAAP does not utilize any RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) in the manufacturing of the explosives. These metals are not present in the primary raw ingredients (e.g., acetic acid, nitric acid, hexamine) or in the various additives (e.g., wax, lecithin) that are added as binders for many products.

---

## SOURCE DOCUMENTS:

Hazardous Waste Open Burn Treatment Permit, TNHW-148 issued to Holston Army Ammunition Plant, Kingsport, Tennessee on March 31, 2011.

January 22, 2013 letter from Joseph R. Kennedy, Commander's Representative at Holston Army Ammunition Plant's Environmental Office to Judge Mark H. Toohey.

July 13, 2012 letter from R.E. Winstead, Environmental Manager of BAE Systems Ordnance Systems, Inc. to Barry Stephens, Director, Tennessee Department of Environment and Conservation, Division of Air Pollution Control.

Title V Major Source Operating Permit, Number 558406, issued to Holston Army Ammunition Plant, June 30, 2009 (expired June 29, 2014; the facility is currently operating under a permit shield, awaiting approval of a renewal permit by the Tennessee Department of Environment and Conservation)

U.S. 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, redacted version issued by U.S. Department of Army on 16 November 2016 to the Tennessee Department of Environment and Conservation.

U.S. Environmental Protection Agency, Comments on Title V Draft Permit, Electronic Communication, Eva Land (EPA Region IV) to Moe Baghernejad (Tennessee Department of Environment and Conservation-Air Pollution Control), September 25, 2017.



**Volunteers for Environmental Health and Justice**

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March 20, 2020

Public Participation Group  
P.O. Box 4313  
Baton Rouge, LA 70821-4313  
Email: [deq.publicnotices@la.gov](mailto:deq.publicnotices@la.gov)

**SUBMITTED VIA ELECTRONIC MAIL by:**

Laura Olah, Executive Director  
Citizens for Safe Water Around Badger  
E12629 Weigand's Bay South, Merrimac, WI 53561  
P: 608 643 3124 | E: [info@cswab.org](mailto:info@cswab.org)

**Regarding:**

AI 32096  
Activity PER20170002  
Permit Number LAD 981 055 791 – RN–OP-1  
Subject INTENT TO DENY HAZARDOUS WASTE OPERATING PERMIT RENEWAL APPLICATION



Dear Louisiana Department of Environmental Quality,

**By this letter, the undersigned 51 organizations** voice our **support** for the Department's intent to deny a Hazardous Waste Operating Permit Renewal Application for Clean Harbors Colfax (Colfax) and **object** to the relentless open air burning and detonation of hazardous and mixed wastes at this site 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 documents submitted by Colfax, open burning 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, extended 10 miles. 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. 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).

Open air burning at Colfax includes the addition of dunnage such as wood or other organic waste and diesel 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**.

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

In the past 30 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 **Louisiana** has the same mandate. Louisiana Environmental Regulatory Code concerning the control of air pollution from outdoor burning [LAC 33:III.1109 (9)(a)] specifies that outdoor burning of explosives, pyrophoric, or any other materials may only be exempted "**where there is no practicable or safe method of disposal.**" (Emphasis added.)

Further, Louisiana Environmental Regulatory Code (LAC33 part V 4533) prohibits the open burning of hazardous waste except for the open burning and detonation of waste explosives which have the "potential to detonate and bulk military propellants **which cannot safely be disposed of through other modes of treatment.**" (Emphasis added.)

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

Sincerely,

A Call to Actions

Alaska Community Action on Toxics

American Environmental Health Studies Project, Inc (AEHSP)

California Communities Against Toxics

California Safe Schools

Cease Fire Campaign

Central Louisiana Coalition for a Clean & Healthy Environment

Chester Residents Concerned for Quality Living

Citizen Action New Mexico

Citizens' Environmental Coalition

Citizens for Safe Water Around Badger (CSWAB)

Clean Water Action

Clean Water Action Council of Northeast WI  
Community Research  
Concerned Citizens for Nuclear Safety  
Crawford Stewardship Project  
Downwinders at Risk  
Earth Action, Inc.  
Environmentalists Against War  
Fluoride Action Network  
Friends United for a Safe Environment (FUSE, Inc.)  
Global Alliance for Incinerator Alternatives  
Global Justice Ecology Project  
Greenaction for Health and Environmental Justice  
GreenFaith  
Kentucky Environmental Foundation  
Louisiana Environmental Action Network  
Midwest Environmental Justice Organization  
Mother Earth Foundation  
National Nuclear Workers for Justice (NNWJ)  
Neighbors Against the Burner  
NY/NJ Environmental Watch  
Physicians for Social Responsibility Wisconsin  
Portsmouth/Piketon Residents for Environmental Safety and Security (PRESS)  
RootsAction.org  
Sound Resource Management Group, Inc.  
Taos Environmental Film Festival  
Tewa Women United  
Texas Campaign for the Environment  
Toxics Action Center  
Tri-Valley CAREs  
Valley Watch, Inc  
Veterans for Common Sense  
Veterans For Peace  
Vidas Viequenses Valen  
Volunteers for Environmental Health and Justice  
Waukesha County Environmental Action League  
Wellington Association Against the Incinerator  
Wisconsin Environmental Health Network  
Wisconsin Resources Protection Council  
World BEYOND War



## 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)
- 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)
- Louisiana Department of Environmental Quality (LDEQ), Air Permits Division, Department of Environmental Quality, 2019 update.  
[https://deq.louisiana.gov/assets/docs/About\\_LDEQ/enviroschool/BurningPresentation\\_2019\\_Update.pdf](https://deq.louisiana.gov/assets/docs/About_LDEQ/enviroschool/BurningPresentation_2019_Update.pdf)
- World Health Organization (WHO), 2018. "Lead Poisoning and Health."  
<http://www.who.int/news-room/fact-sheets/detail/lead-poisoning-and-health>

**“One bubble off level...”**



Badger History Group, Inc. Digital Photo Archive

U. S. Army Photo









Badger History Group, Inc. Digital Photo Archive: BHG.1999.001.0992

U.S. Army Photo











Volunteers for Environmental Health & Justice









Central Louisiana Coalition for A Safe and Healthy Environment



Justice for Vieques Now

# Open Burning/Open Detonation

[Crane Naval Surface Warfare Center \(IN\)](#)

**109,364,800** lbs/yr NET

[Letterkenny Army Depot \(PA\)](#)

**5,611,875** lbs/yr NET

[Anniston Army Ammunition \(AL\)](#)

**13,227,600** lbs/yr NET

By 2025, the conventional munitions demilitarization stockpile could exceed 1.1 million tons.



**Over 100 hazardous chemicals** are released from open air burning and detonation of waste explosives including lead, arsenic, chromium, dinitrotoluene, perchlorate and dioxins.

**Military personnel** are often the most exposed to these toxic emissions, along with nearby communities.



But there's more...



















PCB bulk waste > 50 ppm. Dried applied paint as high as 22,000 ppm.

**The safest solution...**





Indiana AAP, lead exceeded fed air quality standard. Feb-Mar 2004, 64 buildings.



Kansas, Sunflower AAP. 1995-2005 1,490 buildings, 142 events. Debris, including asbestos , was carried up to 3-miles offsite to residential areas.



AP /Gerik Pa rmele

Nebraska, Cornhusker AAP. In 2002, three-quarter-mile-long Load Line 1.



Cornhusker AAP (Nebraska)

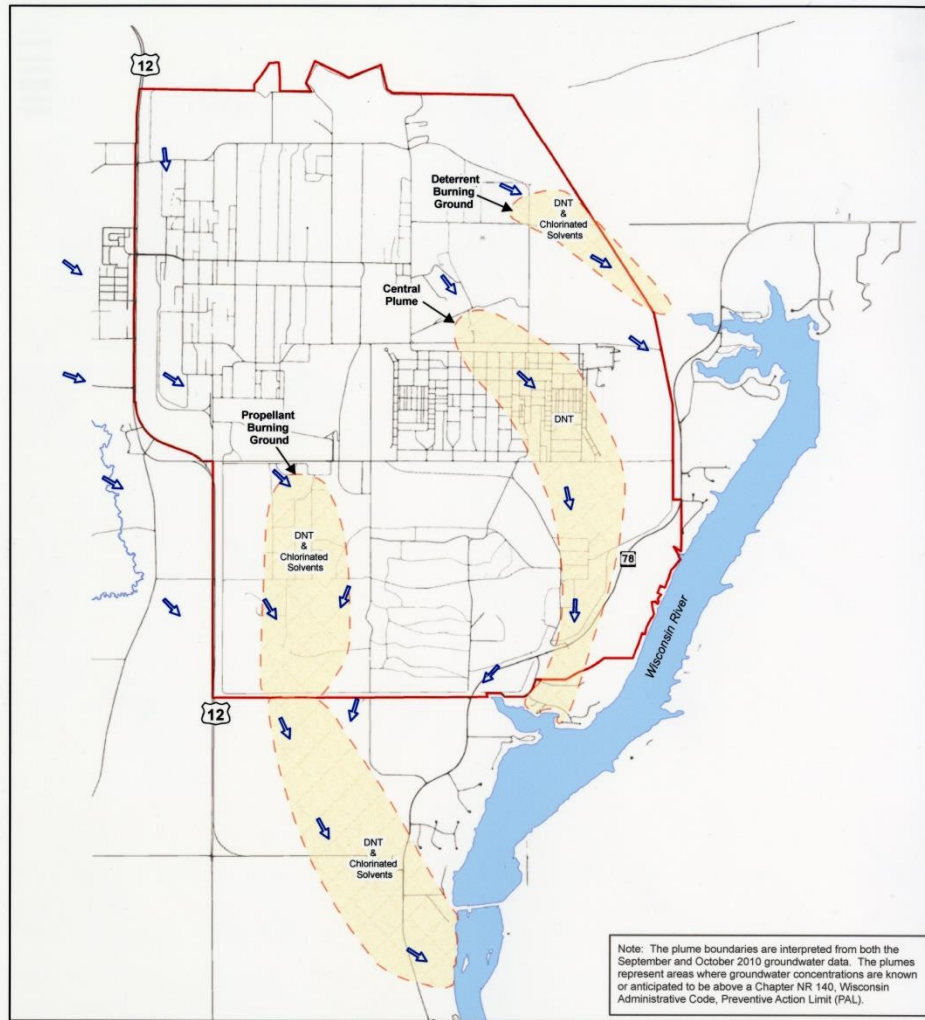




Other examples: Joliet Arsenal (IL), Indiana AAP, Picatinny Arsenal (NJ) and the Ravenna Arsenal (OH).





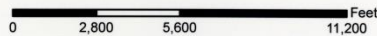


**Legend**

- Badger Army Ammunition Plant Boundary
- Paved Road
- Groundwater Flow
- Groundwater Plume
- Wisconsin River
- DNT Dinitrotoluene

**Figure 6**  
 Groundwater Plumes  
 Alternative Feasibility Study  
 Groundwater Remedial Strategy  
 Badger Army Ammunition Plant

1 inch = 3,750 feet



D:\GIS\_Projects\GIS\Fig\_6\_Plume\_Areas  
 AFS\_FC\_SP\_SDA\ssd\fig\_6\_Plume\_Areas







CSWAB.org

Operations costs > \$1 million/year. Groundwater monitoring > \$1 million/year.

# RDX - Groundwater

EPA Drinking Water Advisory Level

**2 µg/l**

Massachusetts Military Reservation

**370 µg/l**

Bangor Ordnance Disposal, Washington

**10,000 µg/l**      **5,000 X**

Nebraska Ordnance Plant

**534 µg/l**

# TNT - Groundwater

EPA Drinking Water Advisory Level

**2 µg/l**

Nebraska Ordnance Plant

**39 µg/l**

Bangor Ordnance Disposal, Washington

**40 µg/l**

**20 x**

*(stormwater)*

# Perchlorate - Groundwater

EPA Drinking Water Advisory Level

**15  $\mu\text{g}/\text{l}$**

Massachusetts Military Reservation

**500  $\mu\text{g}/\text{l}$     33 x**





THURSDAY

AUGUST 24, 2006

BARABOO

# NEWS REPUBLIC

WISNEWS.COM/BNR

50 CENTS



SCOTT DE LARUELLE / NEWS REPUBLIC

In this June photo, workers dismantle a power plant at the Badger Army Ammunition Plant — the largest building visible from Highway 12. Workers at the plant will have to continue using conventional demolition methods to take down buildings at the decommissioned plant after Environmental Protection Agency officials did not grant the Army permission to burn buildings or materials containing regulated levels of PCBs.

## BURNING IS OFF

Environmental Protection Agency says no to Badger Army Ammunition Plant disposal method.

By Scott De Laruelle  
News Republic

In what local environmentalists are calling a victory for residents, last week Environmental Protection Agency officials denied an Army request to burn buildings containing high levels of polychlorinated biphenyls, or PCBs.

“As far as we’re concerned, unless something totally new comes up, this closes the door on burning regulated levels of PCBs,” said Tony Martig of the EPA.

While tearing down the thousands of structures at the decommissioned

plant, workers found PCBs in paint in some buildings a few years ago. Martig said in fall 2003 Army officials sought approval of a provision in EPA regulations that allow certain disposal methods if they do not present an unreasonable risk. EPA officials disagreed.

“Burning (is) prohibited from regulations, therefore the option of issuing an approval was not available,” Martig said.

Badger Installation Director Joan Kenney said while plant officials waited for the decision, they pursued alternatives to open burning. She said they have used methods like “wet” demolition, where workers keep materials wet to avoid sparks, and said officials will continue to look for alternative demolition

See BURNING, Page 16





Water fountain or bubbler? CSWAB – Tg-DNT, Wisconsin only fed or state health-based standard.



Former Louisiana AAP, Camp Minden. Military contractor illegally stockpiled >15 million pounds of M6 propellant. 2014, EPA issued order to open air burn all of it.





Concerned Citizens of the Camp Minden M6 Burn, Photo by Chris Broussard

These are the heroes. The world has changed because of them.





# Cease Fire Campaign

## Participating organizations

- [Alaska Community Action on Toxics](#)
- [Blue Ridge Environmental Defense League](#)
- [California Communities Against Toxics](#)
- [California Safe Schools](#)
- [Camp Lejeune Community Assistance Panel](#)
- [Center for Health, Environment & Justice](#)
- [Center for Public Environmental Oversight](#)
- [Central Trades & Labor Council of Shreveport and Vicinity, AFL-CIO](#)
- [Citizen Action New Mexico](#)
- [Citizens for Safe Water Around Badger](#)
- [Citizens Task Force](#)
- [Concerned Citizens for Nuclear Safety](#)
- [CORALations](#)
- [Crawford Stewardship Project](#)
- [Defense Depot Memphis Tennessee Concerned Citizen Committee](#)
- [Echo Valley Hope](#)
- [Environmental Patriots of the New River Valley](#)
- [Environmentalists Against War](#)
- [Florida Veterans for Common Sense](#)
- [Food and Water Watch](#)
- [Fort Ord Community Advisory Group \(FOCAG\)](#)
- [Frederick Citizens for Bio-lab Safety](#)
- [Friends United for a Safe Environment \(FUSE, Inc.\)](#)
- [GAIA \(Global Alliance for Incinerator Alternatives\)](#)
- [Gasp](#)
- [Greenaction for Health and Environmental Justice](#)
- [Hoosier Chapter of the Sierra Club](#)
- [Institute for Science & Interdisciplinary Studies](#)
- [International Dialogue on Underwater Munitions](#)
- [Kentucky Environmental Foundation](#)
- [Louisiana Bucket Brigade](#)
- [Louisiana Environmental Action Network](#)
- [Louisiana Progress Action](#)
- [Lower Mississippi Riverkeeper](#)
- [Midwest Environmental Advocates](#)
- [Midwest Environmental Justice Organization](#)
- [Moms Clean Air Force \(National\)](#)
- [Moms Clean Air Force Tennessee](#)
- [Moms Clean Air Force Virginia](#)
- [Nukewatch/The Progressive Foundation](#)
- [Peaceful Skies Coalition](#)
- [Philadelphia Right To Know Committee](#)
- [Physicians for Social Responsibility – Wisconsin](#)
- [Protect All Children's Environment](#)
- [Sierra Club \(national\)](#)
- [Tennessee AFL-CIO Labor Council](#)
- [Tennessee Clean Water Network](#)
- [Tewa Women United](#)
- [Texas Campaign for the Environment](#)
- [Tribal Environmental Watch Alliance](#)
- [Veterans for Common Sense](#)
- [Vidas Viequenses Valen](#)
- [Virginia Chapter Sierra Club](#)
- [Valley Watch](#)
- [Voluntary Cleanup Advisory Board](#)
- [Volunteers for Environmental Health and Justice](#)
- [Watauga Group of the Tennessee Chapter Sierra Club](#)
- [Waukesha County Environmental Action League](#)
- [Wisconsin Environmental Health Network](#)
- [Wisconsin Network for Peace and Justice](#)
- *still posting...*

# It's time to raise a stink...

Every day, in hundreds of communities across the U.S. the Department of Defense is open air burning hazardous waste.



Be a stinker. Sign the petition to EPA.

[www.cswab.org/get-involved/alerts](http://www.cswab.org/get-involved/alerts)



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Since 1980, federal law has prohibited the open burning of hazardous munitions wastes when safer alternatives exist.

# Thank you U.S. Senator Baldwin

for your successful amendment to the Defense bill which will require the military to pursue safe disposal of our nation's conventional munitions stockpile. The provision will benefit hundreds of communities across the country where open air burning of hazardous waste places the health of workers, veterans and families at risk.

CSWAB.org



EPA HQ has a working group on OB/OD. State regulators and Regions are invited and encouraged to participate.

The Agency is currently working on two reports on impacts of OB/OD. The first is scheduled for release this spring.

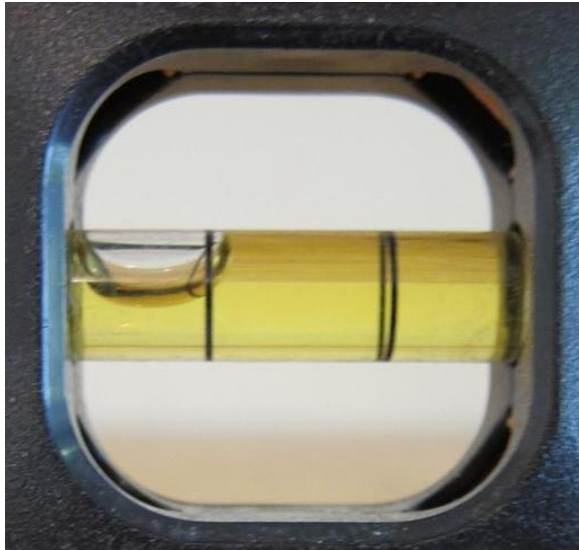
# CEASE FIRE Campaign

## Objectives:

Community members, workers, tribal members and veterans will be empowered in the decision-making process.

Open air burning, detonation and incineration of military munitions will be discontinued in favor of safer alternatives that protect human health and the environment.







# CEASE FIRE Campaign

National office \* 608.643.3124 \* info@cswab.org

## MAIN MESSAGE: **ONLY A BAN on OB/OD can achieve the following:**

- **Prevent** the uncontrolled release of toxic and carcinogenic emissions to the environment
- **Incentivize** the development of newer safer treatment technologies.
- **Readily secure federal funding** for the deployment of alternative technologies.
- **Encourage the development** and transition to “green” munitions.
- **Protect the integrity and sustainability** of natural systems including soil, water, air and biodiversity.
- **Prevent** the uncontrolled release of emerging unregulated toxic chemicals like RDX and PFAS.
- **Close de facto exemptions** to the Clean Air Act, the Clean Water Act, and other environmental standards and laws.

## And most importantly, only a BAN will

- **Provide fair and equitable treatment** for all communities by protecting **ALL** communities.

### Topic #1: Alternative Treatment Technologies

- The Cease Fire Campaign developed [Technology Criteria](#) for the National Academies of Sciences study on alternatives to OB/OD. **Feel free to copy and use as a reference.**
- Comprehensive and prescriptive waste characterization is imperative.
- The current Congressional ban on incineration of PFAS should extend to OB/OD. Some munitions like military flares may contain as much as 45% PFAS.
- The design of selected alternative technologies should not be determined by contractors and/or engineers having a conflict of interest.
- The capacity and design of selected alternative technologies should be suitable and adequate for the projected volumes of waste.

### Topic #2: Scope of Applicability

- The ban on OB/OD should apply to all OB/OD activities including currently exempted activities such as research & development and training.

### Topic #3: Timing for Rule Compliance

- Why do facilities need to be “prioritized”?
- Given OB/OD constitutes an ongoing uncontrolled release to the environment, there is no safe way to conduct OB/OD – a complete ban should be made effective immediately.
- All active facilities should be required to conduct a comprehensive alternatives assessment immediately and retroactively.
- Regarding flexibility, communities have no tolerance for it. The DOD, DOE and industry have had 50 years to address OB/OD and it continues today because regulators have been flexible.

### Topic #4: Technical Standards for OB/OD units

- Requiring air monitoring, wind directions, closure goals, trench liners and the like will NOT prevent the cumulative uncontrolled release of toxic chemicals to the environment.
- Given OB/OD constitutes an ongoing uncontrolled release to the environment, **there is no safe way to conduct OB/OD** – a complete ban should be made effective immediately.