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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,

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

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>