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Environment and Waste Programs

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Sasha Lucas-Gerhard
Paul Diss
U.S. Environmental Protection Agency
EPA Docket Center
1200 Pennsylvania Avenue NW
Washington, DC 20460

Subject: Comments from Triad National Security, LLC, Managing and Operating Contractor of the Los Alamos National Laboratory, on Proposed Rule: Revisions to Standards for the Open Burning/Open Detonation of Waste Explosives, 89 Fed. Reg. 19952 (March 20, 2024), Docket ID No. EPA-HQ-OLEM-2021-0397; RIN 2050-AH24

Dear Ms. Lucas-Gerhard and Mr. Diss,

Triad National Security, LLC (Triad) submits the enclosed comments in response to the Environmental Protection Agency's (EPA) proposed alterations to the regulatory standards for the open burning and open detonation (OB/OD) of waste explosives. Triad appreciates the opportunity to provide these comments for consideration.

Triad, the managing and operating contractor of the Los Alamos National Laboratory (Laboratory), safely and compliantly operates three thermal treatment units associated with the OB/OD of waste explosives. The Laboratory implements technology and processes at these thermal treatment units that result in highly controlled thermal treatment operations. The Laboratory's thermal treatment operations are safe, and efficient, effectively produce no byproducts, residuals, or emissions, and are protective of human health and the environment, including our workforce and the public.

The Los Alamos National Laboratory executes work across numerous missions, including national security and defense, science, and energy. The Laboratory has unique expertise in specialized explosives, including in specialized explosives designed to detonate in contained environments. The Laboratory performs mission-critical specialized explosives research, development, testing, evaluation, and post-manufacture work (RDT&E). Specialized explosives waste is generated in this process. The Laboratory's three thermal treatment units treat this specialized explosives waste. The Laboratory's thermal treatment units are integral to the Laboratory's national security and defense missions. There is no safe, available, or environmentally more protective alternative treatment technology for the Laboratory's specialized explosives waste.

The OB/OD of hazardous waste is generally prohibited, but existing regulations provide an exemption for waste explosives. Specifically, 40 C.F.R. § 265.382 provides that the "[o]pen burning or open detonation 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." Under the exemption, the Laboratory

thermally treats its specialized explosives waste in a manner protective of human health and the environment.

In this rulemaking, EPA proposes changes that unreasonably alter the current exemption to effectively eliminate OB/OD as a viable means of treating waste explosives. EPA does this despite there being no demonstrated safe and available alternative treatment technology to OB/OD for specialized explosives waste, and despite potential alternative treatment technologies being less protective of human health and the environment than certain controlled OB/OD processes. EPA also does this despite recognizing that RDT&E waste is particularly suited to an exemption, and despite recognizing that OB/OD will remain necessary for certain explosives waste. The proposed rule jeopardizes the Los Alamos National Laboratory's national security and defense missions, places our workforce at greater risk, and risks outcomes less protective of human health and the environment.

Rational options for reasonable revisions to the regulatory standards for the OB/OD of waste explosives, however, exist that *both* protect human health and the environment *and* facilitate national security and defense missions. A more reasoned approach would retain the existing exemption in a more tailored form for RDT&E waste and would drive contained treatment for conventional munitions and propellants. Such an outcome would be more protective of human health and the environment and would facilitate national security and defense missions.

Sincerely,

JEANNETTE HYATT (Affiliate)
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Jeannette T. Hyatt
Senior Director
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Attachment: Comments from Triad National Security, LLC, Managing and Operating Contractor of the Los Alamos National Laboratory, on EPA Proposed Rule: Revisions to Standards for the Open Burning/Open Detonation of Waste Explosives

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Submitted June 19, 2024.

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INTRODUCTION

Triad National Security, LLC (Triad) manages and operates the Los Alamos National Laboratory on behalf of the United States Department of Energy (DOE), National Nuclear Security Administration (NNSA). The Los Alamos National Laboratory (Laboratory or LANL) is a Federally Funded Research and Development Center (FFRDC) and National Security Laboratory that executes work across numerous missions, including national security, science, and energy.

The Los Alamos National Laboratory has unique expertise in explosives and executes mission critical activities related to the research, development, testing, evaluation, and post-manufacture (RDT&E) of specialized explosives. Specialized explosives work is vital to the Laboratory's global security and weapons missions, including activities associated with certification of the United States nuclear stockpile. Specialized explosives waste is generated in this process. The ability to treat specialized explosives waste is crucial to achieving the Laboratory's national security and defense missions. The Environmental Protection Agency's (EPA) proposed rule directly places at risk the Laboratory's ability to treat its specialized explosives waste.

The Laboratory safely and compliantly treats its specialized explosives waste at three thermal treatment units. The Laboratory implements technology and processes at these thermal treatment units that results in highly controlled treatment operations, and its thermal treatment operations are safe, efficient, effectively produce no byproducts, residuals, or emissions, and are protective of human health and the environment. Site studies confirm no environmental impact from the Laboratory's thermal treatment operations. There is no safe, available, or environmentally more protective alternative treatment technology for the Laboratory's specialized explosives waste.

Hazardous waste regulations provide that "[o]pen burning [OB] or open detonation [OD] of hazardous waste is prohibited *except* for the open burning and detonation of waste explosives."[1] Waste explosives exempt from the prohibition on OB/OD include "waste which has the potential to detonate." Under this exemption, the treatment by OB or OD of waste which has the potential to detonate is allowed, provided it occurs in a manner that does not threaten human health or the environment. The Laboratory's specialized explosives waste is waste which has the potential to detonate. It is treated in a manner that does not threaten human health or the environment.

In this rulemaking, EPA proposes to *fundamentally alter* the regulatory standards for the OB/OD of waste explosives. EPA is eliminating the exemption for waste explosives having the potential to detonate and imposing requirements that risk effectively eliminating OB/OD as a viable means of treating waste explosives. This is unnecessary, jeopardizes national security and defense missions, and does not facilitate more healthful and environmentally protective outcomes.

There exist, however, reasonable revisions to the OB/OD regulatory standards, including retention of the exemption in a more tailored form, that facilitate *both* greater protection of human health and the environment *and* national security and defense missions. The Laboratory's comments aim to realize such reasonable revisions. Achieving reasonable revisions requires an understanding of:

[1] 40 C.F.R. § 265.382.

(1) The Laboratory's operations, the specialized explosives waste it generates, and the thermal treatment processes by which it safely and compliantly treats specialized explosives waste;
(2) The current regulatory regime provides an exemption that allows for the OB/OD of waste explosives which have the potential to detonate;
(3) How EPA proposes to fundamentally alter the OB/OD regulatory regime to effectively eliminate OB/OD as a viable means of treating waste explosives and force certain OB/OD operations to adopt alternative treatment technologies that are less safe and less protective of human health and the environment;
(4) The immense costs of adopting alternative treatment technologies where OB/OD is already the safest and most environmentally protective form of treatment for certain wastes, and the disproportionality of those costs to any health or environmental benefit;
(5) The repercussions of adopting EPA's proposed alterations, including jeopardizing Laboratory national security and defense missions, and increasing risk to human health and the environment;
(6) The reasonable revisions to the OB/OD regulatory standards that exist that facilitate *both* greater protection of human health and the environment *and* national security and defense missions;
(7) Narrower revisions to the OB/OD regulatory standards that, while they do not address the proposed rule's systemic problems, alleviate some of its negative effects; and
(8) The Regulatory Impact Analysis's fundamental underestimation of the proposed rule's regulatory impact and costs.

The Los Alamos National Laboratory fully supports EPA's effort to curb *where appropriate* the OB/OD of waste explosives. Certain uncontrolled OB/OD operations may negatively impact human health and the environment and may have safer and more healthful and environmentally protective alternatives. For those operations the regulations should be revised.

But those operations *are nothing like* the thermal treatment processes used by the Laboratory. The Laboratory's thermal treatment processes are safe, efficient, produce no secondary hazardous waste stream, produce no measurable smoke, effectively produce no byproducts, residuals, or emissions, and are protective of human health and the environment. They are safer and more protective of human health and the environment than alternative treatment technologies. Curtailing or eliminating the use of controlled OB/OD jeopardizes national security and defense missions and does so without any corresponding benefit to human health or the environment.

EPA's proposed revisions to the regulatory standards for OB/OD of waste explosives are too broad. They rest on inaccurate assumptions regarding the OB/OD regulatory regime, including its purpose, scope, and effect; the safety, healthfulness, and environmental protectiveness of thermal treatment processes; and on the regulatory impacts and costs, including to national security and defense missions, of fundamentally altering the OB/OD regulatory regime. The proposed rule exceeds the scope of EPA's authority and is not in accordance with law. Reasonable revisions to the regulatory standards, however, facilitating *both* greater protection of human health and the environment *and* national security and defense missions, are achievable.

I. The Los Alamos National Laboratory's National Security Missions, Specialized Explosives Waste, and Thermal Treatment Processes that Safely and Compliantly Treat Specialized Explosives Waste.

A. The Los Alamos National Laboratory's National Security Missions

The Los Alamos National Laboratory (Laboratory or LANL) is a Federally Funded Research and Development Center (FFRDC) and a National Security Laboratory. LANL exists to support United States Department of Energy (DOE), National Nuclear Security Administration (NNSA) missions, which are established by law. These missions include: (1) enhancing United States national security through the military application of nuclear energy; (2) maintaining and enhancing the safety, reliability, and performance of the United States nuclear weapons stockpile, including the ability to design, produce, and test, in order to meet national security requirements; (3) promoting international nuclear safety and nonproliferation; (4) reducing global danger from weapons of mass destruction; and (5) supporting United States leadership in science and technology. Laboratory missions are carried out in a manner that is consistent with the principles of: (1) safeguarding the safety and health of the public and of the workforce; (2) protecting the environment; and (3) ensuring the security of nuclear weapons, nuclear material, and classified information.

The Laboratory is tasked with national security missions involving specialized explosives research, development, testing, evaluation, and post-manufacture (RDT&E) work. The Laboratory has unique expertise in specialized explosives, including their design, characteristics, modeling, simulation, behavior, manufacture, safety, and disposition. One crucial Laboratory mission is the manufacture of Pentaerythritol tetranitrate (PETN) Detonators. The PETN Detonator is a crucial component of the United States' nuclear weapons stockpile. Laboratory detonator research and development includes breaching or insulting the PETN Detonator with various stimuli, including electrical, chemical, mechanical, thermal, impact, shock, and laser interactions to determine if a specific breach or insult causes detonation.

LANL is also responsible for manufacturing certain precision high[2] explosives and for performing a variety of scientific experiments on energetic, hazardous, and complex explosive system and subsystem components. This includes research on explosives detection technology and improvised explosive device detection and defeat. The Laboratory also performs research and development on high explosives specifically developed for nuclear weapon system applications. LANL-designed high explosives are significantly more energetic and sensitive to insult than conventional explosives and are many orders of magnitude more violent than modern propellants.

- ***EPA's proposed rule does not address at all the national security and defense missions that generate waste explosives, nor the impact to these national security and defense missions if waste explosives cannot be treated by OB/OD.***

[2] Chemical explosives may be divided into the categories of low and high explosives. Low explosives can burn rather quickly but react subsonically (rather than supersonically) and are designed to deflagrate. High explosives have a much higher burn rate and detonate supersonically. There are significant differences, moreover, between types of high explosives and their applications.

B. The Los Alamos National Laboratory's Specialized Explosives Waste

The Los Alamos National Laboratory's national security mission critical explosives research, development, testing, evaluation, and post-manufacture (RDT&E) activities generate small volumes[3] of specialized explosives waste. This specialized explosives waste is unique, heterogenous, highly energetic, potentially unstable, and possesses properties, morphologies, or characteristics that are difficult to discern or that can be unpredictable.[4] It poses deflagration transition to detonation risks.

- ***Specialized explosives waste, derived from research, development, testing, evaluation, and post-manufacture work, is unique, heterogenous, highly energetic, potentially unstable, and possesses properties, morphologies, or characteristics that are difficult to discern or than can be unpredictable.***

The explosives materials developed at the Laboratory are often Polymer Bonded eXplosives (PBX) that are specifically formulated to meet requirements such as energy output (metal pushing ability), structural integrity, machinability, and thermal stability, as well as improved application-specific safety considerations. The development, fabrication, and testing of PBXs are the primary feeders of LANL's explosives waste streams. By design, and due to their application in nuclear weapons systems, these specific PBX explosives are highly energetic and cannot be treated safely in confined environments due to the potential for transition from deflagration to detonation if heated and confined.

- ***The properties associated with specialized explosives waste render it incapable of being treated safely in confined environments due to the potential to transition from deflagration to detonation if heated and confined.***

LANL RDT&E involves intentionally damaging or insulting high explosives with impact, electrical discharge, chemical stimuli, or high temperature. Intentionally damaging or insulting high explosives may change their morphology or expected behavior, which may increase the sensitivity and alter other characteristics of the explosives material. While the characteristics of an explosives material may be understood prior to damage or insult, once the material has been subjected to insult, it may not be possible to reliably predict the behavior of that material. LANL research and development work also involves the development of new explosives, possessing unique formulations, physical properties, or characteristics.

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[3] Although in any given year LANL may treat up to 15,000 lbs of NEW, and treatment volumes are on an increasing trend, treating an average of 3,350 lbs of NEW per year is consistent with current LANL operations.

[4] Specialized explosives waste has the potential to detonate and is characteristic for reactivity (D003 waste). Reference to indiscernible or difficult to determine characteristics of the specialized explosives waste does not change this. While the specialized explosives waste has the potential to detonate and is characteristic for reactivity, how, when, and under what conditions the specialized explosives waste will detonate can be unpredictable which is the basis for its unique safety risks and the challenges associated with application of alternative technologies designed to treat conventional munitions.

LANL's responsibilities with respect to the United States nuclear weapons stockpile involve both the surveillance of high explosives in deployed systems and the development of new high explosives, formulations, and precursor materials with improved physical properties. Improvements in the characteristics of high explosives may change the way the explosives behave, such as an improvement to the resilience of the high explosive when exposed to insults like temperature, mechanical impulse, or electrical discharge.

- ***Assumptions reflected in EPA's proposed rule regarding the applicability and availability of alternative treatment technologies based on studies performed on conventional munitions and waste explosives, such as the reports published by EPA and the National Academies of Sciences, Engineering, and Medicine (NASEM) in 2019 and the EPA Compendium published in 2023, do not inform alternative treatment decisions for the intentionally altered, insulted, or unique specialized explosives waste LANL generates.***

- ***Conclusions reflected in EPA's proposed rule regarding the applicability and availability of alternative treatment technologies based on studies performed on conventional munitions and waste explosives are not applicable to the specialized explosives waste LANL generates.***

- ***EPA's intimation in its proposed rule that alternative treatment technologies are widely available to treat waste explosives is not accurate with respect to specialized explosives waste.***

C. The Los Alamos National Laboratory's Thermal Treatment Units Safely and Compliantly Treat Specialized Explosives Waste.

The Los Alamos National Laboratory's thermal treatment processes are safe, efficient, highly controlled, and protective of human health and the environment. LANL implements technology and processes at its thermal treatment units that controls the burning and detonation processes, and its thermal treatment units are safe, efficient, produce no secondary hazardous waste stream, produce no measurable smoke, effectively produce no byproducts or residuals, and are protective of human health and the environment. Site studies confirm no environmental impact from the Laboratory's thermal treatment operations. There is no safe, available, *or* environmentally more protective alternative treatment for the Laboratory's specialized explosives waste.

- ***Thermal treatment processes can be conducted in a manner that is safe, controlled, produces no secondary waste stream, produces negligible emissions, byproducts, or residuals, and is protective of human health and the environment.***

- ***The assumption reflected in EPA's proposed rule that OB/OD cannot be protective of human health and the environment is not accurate.***

- ***The assumption reflected in EPA's proposed rule that alternatives to OB/OD must be safer and more protective of human health and the environment is not accurate.***

The Laboratory currently conducts thermal treatment at the Flash Pad located at Technical Area (TA) 16-388 (Flash Pad), the OD unit at TA-36-8 (Minie Site), and the OD unit at TA-39-6 (Point 6). LANL's thermal treatment units provide specifically designed and highly controlled processing for limited and discrete quantities of specialized explosives waste that LANL generates to fulfill its national security RDT&E missions. The units do not treat other types of wastes, such as large-scale munitions. The units are geographically isolated, access restricted, and are not continuously operated. The units are designed to enhance safety and to protect human health and the environment.

The Laboratory's Flash Pad is designed and operated to achieve the complete combustion of explosives waste materials without measurable or modeled toxic byproducts.

Figure 1: Los Alamos National Laboratory Flash Pad

The Flash Pad uses propane enhanced controlled burning that, by design, achieves complete combustion and prevents potential air emissions and constituent migration to groundwater (*e.g.*

advanced liner, secondary containment, and storm water controls). Analyses show that the temperatures attained at the Flash Pad exceed 1500°F within 60 seconds of the start of the burn, and temperatures above 1500°F (>2000°F routinely) are maintained continuously for the duration of the burn (typically 60 minutes). These temperatures result in the complete decomposition of the explosives waste stream and byproducts, including dioxins and furan congeners, which are destroyed at temperatures above 1400°F. The specialized explosives waste is fully treated in the Flash Pad, which provides the right-sized treatment unit for LANL's specialized explosives waste streams.

- ***Appropriately designed and operated OB units can achieve complete combustion of waste explosives without measurable byproducts and can prevent air emissions and constituent migration.***

- ***Appropriately designed and operated OB units can produce no secondary hazardous waste streams.***

- ***Appropriately designed and operated OB units are safe and protective of human health and the environment.***

The Laboratory's OD units have been designed to achieve complete consumption of the waste material and to prevent potential air emissions and groundwater contamination. The OD units produce no secondary waste or hazardous waste stream. PBX explosives, like those used at LANL, fully detonate leaving little or no residual constituents when initiated with correct shock inputs. When performing an OD treatment of specialized explosives waste, the high explosive is configured to ensure shock transmission from an in-contact initiation system. Such a system involves a detonator and a pristine high explosive that is applied to the specialized explosives waste. *Controlled initiation ensures complete consumption of the waste material*.

- ***Appropriately designed and operated OD units can achieve complete consumption of waste explosives and can prevent air emissions and constituent migration.***

- ***Appropriately designed and operated OD units can produce no secondary hazardous waste streams, and, in fact, can produce no secondary waste.***

- ***Appropriately designed and operated OD units are safe and protective of human health and the environment.***

The Laboratory's thermal treatment processes are highly regulated, including by DOE's technical standards for explosives safety.[5]

- ***EPA's proposed rule does not address at all these requirements that already govern OB/OD operations, or whether these***

[5] *See e.g.* DOE Technical Standard Explosives Safety (DOE-STD-1212-2019) (Nov. 2019).

requirements are already sufficient to protect human health and the environment.

- ***EPA's proposed rule is unnecessary. It seeks to regulate OB/OD processes already subject to appropriate requirements that both protect human health and the environment and facilitate national security and defense missions.***

LANL's thermal processes are *nothing like* uncontrolled "open burning pits," where various types of hazardous and non-hazardous wastes, such as spent and unused munitions, old chemicals, propellants, and everyday trash are comingled and burned, generating copious smoke, toxic byproducts, and widely dispersed residuals. While Triad agrees these practices must be eliminated, this uncontrolled OB (or similarly uncontrolled OD) has nothing in common with the Laboratory's proven safe and environmentally protective thermal treatment processes.

- ***Not all OB/OD processes are alike. It is not appropriate to suggest that the unhealthful and environmentally unprotective attributes of some OB/OD processes are characteristic or indicative of all OB/OD processes.***

- ***EPA's proposed rule is overly broad. Not only does it endeavor to curtail or eliminate those OB/OD operations that are <u>not</u> protective of human health and the environment (or that are harmful to human health and the environment), but it also endeavors to curtail or eliminate those OB/OD operations that <u>are</u> protective of human health and the environment.***

The Laboratory's thermal treatment processes are safe, efficient, produce no secondary hazardous waste stream, produce no measurable smoke, effectively produce no byproducts, residuals, or emissions, and are protective of human health and the environment. They are safer and more protective of human health and the environment than alternative treatment technologies. Alternative treatment technologies can produce secondary waste streams or toxic byproducts not produced by controlled thermal treatment processes.

- ***The proposed rule assumes that alternative treatment technologies are more protective of human health and the environment than OB/OD. This is not an accurate assumption, as certain thermal treatment processes are safer and more protective of human health and the environment than alternative treatment technologies.***

- ***The proposed rule is not protective of human health and the environment where it forces the consideration or adoption of alternative treatment technologies that are less protective of human health and the environment than certain thermal treatment processes.***

- ***An alternative treatment technology must not only be safe and available, it must also be more protective of human health and the environment than OB/OD before the alternative treatment technology must be considered or implemented.***

The Laboratory's thermal treatment processes, moreover, do not fit within the definition of OB or OD, which are the processes EPA seeks to proscribe.

- ***The proposed rule's definition of OB is not clear and does not encompass thermal treatment processes such as those performed by LANL.***

The proposed rule defines "open burning (OB)" as "the combustion of any material *without* the following:

(1) Control of combustion air to maintain adequate temperature for efficient combustion,
(2) Containment of the combustion-reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion, *and*
(3) Control of emission of the combustion products."

With respect to LANL's Flash Pad thermal treatment process: (1) adequate temperature is maintained for efficient combustion; (2) sufficient residence time achieves complete combustion; and (3) no measurable or modeled toxic byproducts are produced and the process is designed to prevent air emissions and constituent migration. Accordingly, the Flash Pad satisfies none, much less all three, of the elements required to meet the proposed rule's definition of OB. To facilitate compliance and to ensure its thermal treatment process is protective of human health and the environment, LANL has presumed its thermal treatment process constitutes OB. However, as written, the proposed rule excludes from the definition of OB thermal treatment processes such as those performed by LANL.

- ***The proposed rule's definition of OD is not clear and does not encompass thermal treatment processes such as those performed by LANL.***

The proposed rule defines "open detonation (OD)" as "the detonation of any material without containment in an enclosed device and control of the emission products, causing any unreacted material to be dispersed into the environment." With respect to LANL's OD units, there is complete consumption of the explosives waste material and no unreacted material is dispersed to the environment. To facilitate compliance and to ensure its thermal treatment processes are protective of human health and the environment, LANL has presumed its thermal treatment processes constitute OD. But, as written, the proposed rule excludes from the definition of OD thermal treatment processes such as those performed by LANL.

Similarly, LANL's thermal treatment processes do not fall within the definition of "open burning/open detonation (OB/OD) unit." They are not used in "the OB or OD treatment of waste explosives" as those terms are defined.

- ***EPA must clarify the definitions of OB, OD, and OB/OD unit and make clear that thermal treatment processes that do not satisfy the definitional requirements are not prohibited from thermally treating waste explosives.***

LANL's thermal treatment processes are *themselves* safe, available, and more protective of human health and the environment *alternatives* to the OB/OD processes that EPA seeks to proscribe.

- ***Where a thermal treatment process is safe, available, and protective of human health and the environment, the thermal treatment process should be considered as an alternative to the OB/OD that EPA seeks to regulate.***

D. The Los Alamos National Laboratory's Thermal Treatment Processes Do Not Pose A Threat to Human Health or the Environment

The Los Alamos National Laboratory performs environmental monitoring specific to each of its thermal treatment units.

- ***Monitoring results demonstrate that LANL's thermal treatment units do not pose a threat to human health or the environment.***

LANL collects high quality, reliable data to understand the impact of its operations, including data specific to the impacts of its thermal treatment operations. Risk assessment calculations support the conclusion that there is no adverse risk or affects to human health or the environment from these operations. These studies, including modeled and measured data, combined with the scientific understanding that controlled OB/OD operations produce predominantly gaseous combustion products such as carbon, nitrogen, and water, directly contradict assumptions reflected in the proposed rule that controlled OB/OD operations, regardless of the type of explosives wastes that are treated, have adverse environmental impacts.

Small mammal and avian studies at LANL's thermal treatment units show little to no adverse environmental impacts. For small mammals, almost all constituents of concern are detected at levels *below* regional statistical reference levels, biota dose screening levels, and soil ecological screening levels. Avian population studies also indicate that operations at thermal treatment sites do not adversely impact the populations and that inorganic and organic element concentrations are not of ecological concern. These studies include ongoing monitoring of nest eggs, specifically for impacts from dioxins and furans, among other metals. Over approximately a decade, no adverse impacts from operating the thermal treatment units have been found.

Soil samples and risk assessments show that neither residents proximate to LANL, nor workers at LANL, are at risk due to exposure to soils at the site, and that even onsite impacts to plants and

animals (ecological receptors) near LANL's thermal treatment units are unlikely. Ongoing LANL soil sampling shows that constituent concentrations in soils are not changing (*i.e*. not increasing) over time despite ongoing thermal treatment. Risk assessments for LANL's thermal treatment units indicate no risk to residents and workers from exposure to soils. Avian and mammalian population information indicates that neither birds nor mammals are adversely affected.

Air modeling for LANL's thermal treatment units, using conservative parameters, indicates that no air screening levels are exceeded for both acute and chronic scenarios. Air monitoring during LANL thermal treatment events at and around the units demonstrates that dioxin and furan compounds are not present at detectible levels and that metals detections are below acute inhalation-exposure screening levels.

Institutional monitoring is conducted at LANL for storm water, surface and groundwater, and air. Monitoring networks are located across the Laboratory and are designed to inform the conditions of water and air. Results of all site monitoring indicate that there is no adverse effect to human health or the environment due to operation of the thermal treatment units.

- ***The assumption in the proposed rule that controlled OB/OD operations have adverse health and environmental impacts is not accurate and contradicted by the data.***

Furthermore, Department of Energy thermal treatment operations are estimated to be less than 1% of all thermal treatment or OB/OD operations nationally. Therefore, even if assumptions about impacts to human health and the environment were true (even though there is no evidence to support such assumptions), the overall impacts from DOE OB/OD operations would be imperceptible.

- ***Any regulatory change must continue to exempt from the prohibition on OB/OD and the requirements of the proposed rule thermal treatment processes that are safe and protective of human health and the environment and that are associated with research, development, testing, evaluation, and post-manufacture activities integral to national security and defense.***

E. There Are No Alternative Treatment Technologies Available to Safely Treat the Los Alamos National Laboratory's Specialized Explosives Wastes

The Los Alamos National Laboratory continually works to identify, evaluate, and document whether safe alternative technologies are available to treat its specialized explosives waste streams. LANL regularly prepares and submits evaluations of alternatives for OB/OD treatment activities, which evaluate potentially available alternative treatment technologies and the applicability of those technologies to LANL's specialized explosives wastes.

The specialized explosives waste generated by LANL is highly energetic and unstable, requiring it to be treated promptly onsite at LANL's thermal treatment units. There are no alternative treatment technologies, or combination of technologies, available that are proven to safely treat

the Laboratory's specialized explosives waste streams. The conclusion that there are no safe and available alternatives also reflects site-specific safety and operational factors, and considerations related to LANL's national security missions.

- ***EPA's assumption that an alternative treatment technology can treat a waste stream based on implementation of that technology at a non-RDT&E facility does not support the conclusion that the same technology can safely and effectively treat the specialized explosives waste generated at an RDT&E facility.***

- ***Any alternative treatment technology evaluation should weigh heavily site-specific factors in determining whether there is a safe and available alternative that is protective of human health and the environment.***

Significant consideration must be given to the storage and handling of explosives waste, and their impact on safety, health, and the environment. Given the highly energetic, potentially unstable, and heterogenous nature of specialized explosives waste, the potential for degradation of explosives materials and unanticipated detonation exists during storage and handling. Therefore, any treatment technology that requires additional storage, stockpiling, or handling to meet minimum treatment or transportation quantity requirements *is necessarily unsafe*. It introduces significant and unnecessary additional health and safety risks to workers, the public, and facilities, and to the environment from unanticipated, and uncontrolled, detonation.

- ***The proposed rule fails to demonstrate how increased storage or handling of waste capable of detonation is protective of human health and the environment.***

- ***The proposed rule fails to demonstrate how it is consistent with the Cardinal Rule of Explosives Safety: Limit exposure to a minimum number of persons, for a minimum time, to the minimum amount of ammunition and explosives consistent with safe and efficient operations.***

Transportation of the Laboratory's specialized explosives waste offsite on public roadways is not allowed or authorized under federal law (*see* 49 C.F.R. § 173.53), would pose a significant risk to safety, public health, and the environment, and could present a national security risk.

- ***The proposed rule fails to demonstrate how prohibitions on transportation, which are designed to enhance public safety and environmental and infrastructure protection, could (or even should) be overcome efficiently and in a manner protective of human health and the environment.***

- ***The proposed rule fails to address the increased risks to human health and the environment arising from the increase in the***

transportation of wastes capable of detonation, including to communities in the vicinity of, or along the transportation routes of, waste explosives leaving the facilities identified by EPA as still using OB/OD and traveling to some alternative treatment facility.

DOE sites, such as the Los Alamos National Laboratory, additionally have unique requirements that affect whether alternative treatment technologies are available. Before an alternative treatment technology could be considered available, the technology would need to comply with DOE-related site requirements and comport with procurement standards related to national security considerations. Unlike commercial facilities that can use alternative treatment technologies for certain types of waste munitions, these alternative treatment technologies may not be available to a national laboratory, like LANL, when the technology cannot meet American Society for Testing and Materials (ASTM) procurement standards.

II. The Current Regulatory Regime Allows for the Open Burning or Open Detonation of Waste Explosives that Have the Potential to Detonate Where the Treatment Does Not Threaten Human Health or the Environment.

Hazardous waste regulations provide that the "[o]pen burning [OB] or open detonation [OD] of hazardous waste is prohibited *except for* the open burning and detonation of waste explosives." 40 CFR § 265.382. "Waste explosives" include "waste which has the potential to detonate." Under this exemption, all OB/OD waste treatment activities must occur in a manner meeting certain minimum distance to property requirements and "in a manner that does not threaten human health or the environment." 40 CFR § 265.382.

- ***OB/OD is allowed for wastes which have the potential to detonate where the OB/OD treatment meets minimum distance requirements and does not threaten human health or the environment.***

The exemption states:

> 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…. Owners or operators choosing to open burn or detonate waste explosives must do so in accordance with the following table [minimum distance from OB/OD to property of others] and in a manner that does not threaten human health or the environment.

40 CFR § 265.382.

A plain reading of the exemption is that OB/OD is not prohibited for waste explosives, and waste explosives include *either*: (a) "waste which has the potential to detonate"; or (2) "bulk military propellants which cannot be disposed of through other modes of treatment." Therefore, under the current regulation, a demonstration that other safe modes of treatment are available is only required

to treat bulk military propellants via OB/OD. Treatment of waste with the potential to detonate has always been allowed via OB/OD.[6, 7]

- ***Under the exemption, an analysis of other safe modes of treatment is not required for the OB/OD of waste explosives which have the potential to detonate.***

III. The Proposed Rule Would Fundamentally Alter the Regulatory Regime by Eliminating the Exemption Allowing for the Open Burning or Open Detonation of Waste Explosives Having the Potential to Detonate Where Not a Threat to Human Health or the Environment and by Imposing Significant New Regulatory Requirements on Open Burning and Open Detonation Operations.

- ***The proposed rule would effect a significant regulatory shift, fundamentally altering the OB/OD regulatory regime.***

- ***The proposed rule would eliminate the important and unqualified exemption for waste explosives having the potential to detonate and would impose significant new and costly regulatory requirements on OB/OD operations.***

A. The Proposed Rule Eliminates the Exemption for the OB/OD of Waste Explosives Which Have the Potential to Detonate.

- ***The proposed rule would eliminate the important and unqualified exemption allowing for the OB/OD treatment of waste explosives having the potential to detonate where not a threat to human health or the environment.***

The proposed rule would provide that "[o]pen burning and open detonation of hazardous waste is prohibited except for the open burning and/or open detonation of waste explosives (as those terms are defined in § 260.10) *that cannot be safely treated or disposed of through other modes*." Proposed Rule §§ 264.704, 265.704. Waste explosives are then defined as "hazardous wastes that exhibit the reactivity characteristic (D003) and are capable of detonation or explosive chemical reaction as defined in 40 CFR § 261.23(a)(6) through (8) of this chapter and include propellants, explosives, pyrotechnics, munitions, military munitions as defined in this section, and unexploded ordnance." Proposed Rule § 260.10.

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[6] This reading is supported by the rest of the regulation, which states that "Owners or operators choosing to open burn or detonate waste explosives must do so in accordance with the following table and in a manner that does not threaten human health and the environment." 43 C.F.R. § 265.382. If the regulations prevented OB/OD for all waste explosives for which there was a safe alternative treatment technology, as EPA asserts, then there would never be a situation in which an owner or operator could "choose" to conduct OB/OD in a manner that did not threaten human health and the environment.

[7] To the extent alternative treatment technologies to OB/OD are safe and available and produce fewer environmental impacts, federal entities, and affiliates such as LANL, would be required to pursue implementation of those technologies independent of EPA's rules on OB/OD based on other statutory and contractual requirements that impose obligations to conduct operations consistent with protection of the environment.

In other words, the proposed rule would eliminate the existing important and unqualified exemption from the prohibition on OB/OD treatment for waste explosives which have the potential to detonate. The proposed rule would end the bifurcation between (1) "waste which has the potential to detonate"; and (2) "bulk military propellants which cannot safely be disposed of through other modes of treatment."[8]

- ***The elimination of this important and unqualified exemption for waste which has the potential to detonate would be a seismic regulatory shift, fundamentally altering the OB/OD regulatory regime.***

B. The Proposed Rule Would Impose Significant New Regulatory Requirements on OB/OD Operations

1. Certain Waste Explosives Must be Thermally Treated and Their Treatment Must Already be Protective of Human Health and the Environment

What is paradoxical about the fundamental regulatory shift contemplated by the proposed rule is that the proposed rule *recognizes that OB/OD would remain necessary for certain explosives waste*. As EPA recognizes, "[f]or waste explosives that are documented to be unstable and/or potentially shock sensitive and have been determined to be unsafe by an explosives specialist,[] there may be no other choice but to treat these wastes by OB/OD."[9] These waste explosives requiring OB/OD treatment are not difficult to identify. They arise from RDT&E work and possess instability or shock sensitivity. This necessary OB/OD treatment, moreover, must already be conducted in a manner protective of human health and the environment.

- ***EPA recognizes that OB/OD will remain necessary for certain waste explosives.***

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[8] Prior to 2022, EPA did not include the present gloss concerning an "implicit" requirement for alternative treatment technology evaluations. The requirement for a demonstration was taken out between the original proposed draft rule and the final rule. Until recently, EPA accepted this adjustment between the original draft rule language and the final rule language. For example: (1) EPA Office of Solid Waste and Emergency Response, OSWER Directive, Regulatory Requirements for Five Training Pits, 1987 WL 417298, *1, Faxback 11267 ("1. Open burning: Under 40 CFR § 265.382, open burning of hazardous waste (*except for detonating waste explosives*) is prohibited); (2) Hazardous Waste Miscellaneous Units; Standard; Applicable to Owners and Operators, 52 Fed. Reg. 46,946-01 ("b. Open Burning of Nonexplosive Hazardous Waste. Although by its terms Subpart X applies to all units not covered under Part 264, including open burning and open detonation of nonexplosive hazardous waste, *the Agency has concluded that open burning of such non-explosive waste cannot be conducted in a manner that is protective of human health and the environment.* The Agency made this finding in 1980 in promulgating the general ban on open burning of nonexplosive hazardous waste (40 CFR 265.382) and has no new information to suggest this conclusion should be revised. The Agency; therefore, intends to deny any permit applications it receives under Subpart X for such activities.").

[9] EPA also recognizes that the "NASEM report acknowledges in several instances that OB/OD may be the only safe option for munitions that may detonate or deflagrate when disturbed," and that "EPA does not believe a complete ban on OB or OD is possible given that there are waste explosives that cannot be treated by an alternative technology due to the instability and potential shock sensitivity of those wastes, as discussed in the NASEM report…, or the unique properties of certain waste explosives that result in unpredictable reactions."

For those waste explosives where OB/OD remains necessary, and where those OB/OD processes are already conducted in a manner protective of human health and the environment, there is no need for EPA's proposed rule. EPA should identify those discrete waste explosives that are known to require treatment by OB/OD, such as RDT&E wastes, and exempt them *a priori* from the requirements of the proposed rule.

- ***EPA should identify those waste explosives that are known to require treatment by OB/OD, such as RDT&E wastes, and exempt them* a priori *from the requirements of the proposed rule.***

2. The Proposed Rule Would Impose Significant and, In Some Cases, Unworkable New Alternative Treatment Technology Evaluations, Technical Operating and Performance Standards, and Monitoring Requirements.

Despite recognizing that OB/OD remains necessary for certain explosives waste and that certain thermal treatment processes are protective of human health and the environment, the proposed rule imposes significant and, in some cases, unworkable requirements on entities that must treat this type of waste by OB/OD.

- ***The proposed rule would require the conduct of alternative treatment technology evaluations.***

The proposed rule would require OB/OD facility owners/operators to: (1) conduct an initial evaluation, and periodic reevaluations, of alternative treatment technologies and demonstrate that there are no safe and available alternative treatment technologies to treat explosives waste; and (2) comply with new technical operating and performance, monitoring, and waste analysis requirements.

With respect to conducting an initial evaluation, and periodic reevaluation, of alternative treatment technologies, this is not an insignificant undertaking. Such analyses are time and resource intensive. Conducting an alternatives analysis can cost up to $2 million[10] and can consume considerable technical expert time and resources. These resources, moreover, would be diverted from the Laboratory's national security, science, and energy missions.

- ***Significant costs and resources are required to conduct alternative treatment technology evaluations.***

These alternative treatment technology evaluations, moreover, are unsuited to RDT&E explosives waste. Specialized explosives waste is already known to require thermal treatment because of its instability, sensitivity, unpredictability, and propensity for detonation in the confined conditions of an alternative treatment technology. Yet the complexity, costs, and resources required to conduct an alternatives evaluation increase in proportion to the instability, sensitivity, and unpredictability of the explosives waste being evaluated. Thus, one is conducting a more complex,

[10] EPA estimates alternative treatment technology evaluations can cost up to $2,000,000 for the largest and most complex cases. *See* Regulatory Impact Analysis (Feb. 2024).

costly, and resource intensive evaluation only to demonstrate what is already known—*that thermal treatment is necessary for specialized explosives waste.*

- ***Alternative treatment technology evaluations are unsuited to specialized explosives waste.***

The proposed rule imposes significant new technical operating and performance standards and monitoring requirements, including: (1) removal of excess waste material; (2) security plan; (3) public notice and outreach plan; and (4) plans for groundwater, soil and residues, air, kickout, stormwater, and surface water and sediments as appropriate to monitor for releases. Costs to satisfy these requirements could exceed approximately $200,000 annually in monitoring, after infrastructure and installation costs potentially exceeding $42,000,000.

- ***The proposed rule would impose significant new technical operating and performance standards and monitoring requirements.***

Any final rule must recognize the site-specific nature of any monitoring requirements. It must not impose arbitrary monitoring requirements. As EPA recognizes in its Regulatory Impact Analysis (RIA), there is "potential wide variability across facilities in terms of their expected monitoring frequency requirements contained in permits," and "groundwater and stormwater monitoring, the most expensive monitoring requirements, may not be required for a specific site." The Los Alamos National Laboratory already conducts robust monitoring of its thermal treatment operations that fully characterize the units' environmental condition.

- ***Monitoring requirements must be site-specific and tailored to the particular OB/OD unit's operations and setting.***

To avoid implementation of arbitrary monitoring requirements, proposed §§ 264.710(a) and 265.710(a) should be revised to provide:

> For all media types, monitoring frequencies or other monitoring requirements ~~may~~must be reduced or eliminated from the minimum monitoring outlined in paragraphs (a)(1) through (7) of this section, if the permit limits the OB/OD treatment activity in the unit to ensure that the unit is not used frequently enough to warrant the monitoring frequency outlined in paragraphs (a)(1) through (7) of this section or if there is no pathway for constituents to enter the particular environmental media from OB/OD~~, and the Director makes the determination that a reduced monitoring plan is acceptable for the site~~.

EPA proposes adding § 264.706 Waste Analysis under the new proposed Subpart Y for OB/OD units and § 265.706 Waste Analysis for interim status OB/OD units.

- ***The proposed rule would impose new waste analysis requirements specific to OB/OD that are unnecessary, unworkable, and lack any reasoned basis for their imposition.***

Under the proposed rule, an owner/operator would be required to conduct a detailed waste analysis for each individual explosives waste stream. In addition, the owner/operator would be required to review and update the waste analysis whenever there is a change in the waste generated and at the time of permit application or renewal. For each individual explosives waste stream, the waste analysis includes: 1) a physical description; 2) a chemical constituent analysis and breakdown to the percent composition of each chemical in the waste stream; and 3) a chemical properties analysis of properties such as insensitivity, flash point, pH, and free liquid determination.

EPA has not demonstrated that the existing waste analysis requirements are inadequate to regulate the OB/OD treatment of waste explosives. *See* 43 C.F.R. § 264.13. Existing waste analysis provisions already require "all the information which must be known to treat, store, or dispose of the waste in accordance with" regulations, and EPA provides no explanation for why these existing requirements are inadequate.

- ***EPA has not adequately demonstrated why existing waste analysis requirements are inadequate to regulate the OB/OD treatment of waste explosives.***

Additionally, EPA has not demonstrated any reasonable basis for the new waste analysis requirements specific to OB/OD. EPA notes that "[w]aste streams currently treated by OB/OD are varied and potentially dangerous to handle, making waste testing more challenging," and that "waste analysis for operating OB/OD units currently varies in detail and quality," and "[t]hus EPA is proposing requirements specific to waste explosives that would clarify how waste analyses must be conducted to determine whether a safe alternative treatment is available for that explosive waste and, if not, whether the waste is eligible for treatment by OB/OD."

EPA fails to explain why imposing *more* waste analysis requirements would be appropriate where the waste streams are already "potentially dangerous to handle." Similarly, EPA fails to explain how the additional waste analysis requirements would facilitate, if at all (and any more than the existing requirements), the identification of safe and available alternatives.

- ***EPA has not adequately demonstrated the basis for imposing additional waste analysis requirements to regulate the OB/OD treatment of waste explosives.***

EPA has not shown how increasing waste analysis information would in any way improve safety, human health, or environmental outcomes. There is no demonstration that the information provided now is insufficient to identify safe and available alternative technologies, or to evaluate whether any alternative treatment technology would be any more (or less) protective of human health and the environment than treatment by OB/OD.

- ***There is no demonstration that the additional waste analysis requirements would facilitate improved safety or human health or environmental outcomes.***

Existing waste analysis requirements are adequate to assess safe and available alternatives, and to otherwise characterize explosives waste. Adding additional waste analysis requirements is unnecessary and no reasoned basis exists for their implementation.

Additional waste analysis requirements are also unworkable. Compliance with the proposed rule's chemical and physical analysis requirements may be infeasible due to safety concerns. Chemical analysis of LANL's specialized explosives waste would be required to determine the chemical constituents and the estimated percent composition of each chemical in the waste stream. Due to the potentially unstable and unpredictable nature of specialized explosives waste, such chemical analyses would present significant safety risks through increased waste handling and would violate the Cardinal Rule of Explosives Safety, which is to limit exposure to a minimum number of personnel, to a minimum quantity of explosives, for a minimum amount of time, consistent with safe and efficient operations.

- ***The proposed new waste analysis requirements would present significant safety concerns.***

The proposed new waste analysis requirements would also entail the potential release of sensitive or classified information, which could impair national security and the nuclear weapons program. Requiring the disclosure of a complete chemical description is inappropriate for classified items or wastes otherwise related to national security. The dissemination of classified information is generally limited to only those who need it to support the mission of the weapons program. EPA's proposed rule may require the further dissemination of sensitive/classified information to parties that would only have a need for this information based upon the proposed rule, rather than an actual need to know based upon mission need for the weapons program. Weapons data are special and unique; their dissemination must be limited—even to cleared individuals—absent a demonstrable and articulated interest overriding the established national security interests.

- ***EPA has not demonstrated why dissemination of potentially sensitive or classified information related to national security and the nuclear weapons program is necessary.***

If classified information were provided based on the proposed rule's expansion of information requirements, EPA and/or States would need to be capable of providing for the proper handling, storage, and protection of nuclear weapons program information. The costs of maintaining classified Restricted Data (RD) information can be substantial, and it is possible that even existing measures EPA has to handle classified national security information may be inadequate for RD. The proposed rule has not demonstrated the public health, safety, or environmental benefits of expanding information collection in this area, particularly as it relates to balancing these interests with the significant national security interests.

C. The Proposed Rule Inappropriately Transfers Technical and Safety Determinations, Including Technical and Safety Determinations Impacting National Security and Defense Missions, Away from Explosives Experts and to Environmental Regulators.

The Los Alamos National Laboratory possesses specialized, unique, and preeminent expertise in explosives, including in explosives design, formulation, morphology, characteristics, and behavior, and also in the safe storage, handling, and disposition of explosives and specialized explosives waste. DOE explosives experts possess similar expertise. The proposed rule would improperly shift technical and safety determinations away from explosives experts and to environmental regulators that lack the required expertise.

- ***The proposed rule would improperly shift determinations regarding the safety of explosives waste treatment methodologies away from explosives experts and to environmental regulators that lack the requisite expertise for making such determinations.***

The proposed rule would authorize the permitting and operation of OB/OD units only upon either: (1) the regulator's determination that the permittee made an adequate demonstration that no "safe" alternative mode of treatment is available for a given explosives waste stream; or (2) the regulator's determination that the generator has demonstrated it qualifies for the rule's proposed "*de minimis* exemption." This exemption requires a demonstration that, among other things, the proposed OB/OD treatment would contribute negligible contamination and potential for exposure, and that certain other treatment is not "safe" and available.

Under the proposed rule, the term "safe" means "that a technology must be designed, constructed, and operated in a manner that is safe for the wastes to be treated and that appropriate procedures and technologies are used to ensure safe handling and treatment and appropriate safeguards for worker safety as determined by explosives specialists." EPA further recognizes that explosives specialists "are the authority on explosives safety." If the EPA agrees in its proposed rule that explosives specialists are the appropriate authority on explosives safety, then why should the responsibility for technical and safety determinations be shifted to environmental regulators?

While EPA recognizes that explosives specialists are the authority on explosives safety, *the practical effect of the proposed rule would be* that EPA and authorized State regulators would have the final say over whether a permittee has adequately evaluated and documented the safety and availability of explosives waste treatment methodologies. *See e.g*. Proposed Rule § 264.704(e)(2) ("The Director shall deny the request for [a] de minimis exemption when the demonstrations required . . . cannot be satisfactorily met."). EPA does not foreclose the possibility of the regulator second-guessing the explosives expert's conclusions, noting only that "the approval *would not necessarily* be conditioned on the results, but rather on the completeness of the evaluation—that is, whether the evaluation provides the required content *and rationale*." EPA additionally tilts the scale on the content and rationale, "expect[ing] it to result in increased use of alternative technologies and reduced use of OB/OD."

Similarly, proposed new § 264.706(b) would require that detailed waste analyses for explosives waste streams be demonstrated to the regulator's satisfaction "to determine whether a safe alternative treatment is available for that [particular] explosive waste and, if not, whether the waste is eligible for treatment by OB/OD." In this manner as well, the proposed rule allows the regulator to overrule, without the requisite scientific expertise, the conclusions of explosives experts.

While EPA acknowledges that its questioning of a safety decision made by an explosives expert "should not be viewed as a challenge to the specialists' decisions, but rather as information needed to better understand and to build a record for the regulatory authority's decision," the proposed rule remains unworkably vague as to what level of "understanding" is necessary to "build a record" for the use of OB/OD treatments.

- ***The proposed rule is unworkably vague as to the level of understanding needed or the extent of a record required to ensure that regulators do not question the safety or technical determinations of explosives experts.***

While LANL appreciates EPA's recognition that "[a]ny acute risks from explosion due to increased handling and storage associated with alternate technologies must be evaluated by an explosives safety expert *as part of* the 'safe' technology determination," this recognition does not obviate the proposed rule's fundamental flaw: a regulator, without the requisite expertise, makes the final determination as to whether the permittee and its explosives expert have adequately evaluated whether an alternative technology is safe and available.

Not only does this risk jeopardizing safety and rendering unworkable the permitting process, but it assigns operational decision-making authority over the Los Alamos National Laboratory's national security and defense missions to EPA and States operating authorized RCRA hazardous waste programs. This reassignment of responsibilities is not tenable.

- ***Any final rule must specify that explosives experts have final authority in deciding what waste explosives treatment technologies are safe and available.***

- ***Any final rule must eliminate "to the Director's satisfaction," "satisfactorily met," "reasonable belief that the continued treatment…would present a threat to human health and the environment [] and request additional information," and similar language that affords the regulator discretion to override the determinations made by explosives experts.***

EPA and State hazardous waste regulators are not safety regulators (*e.g.* OSHA, DOE) and do not possess expertise in explosives safety. It is not proper for the proposed rule to establish a framework that allows EPA or State regulators to question or overrule the safety determinations of explosives experts. An explosives expert's opinion, based on their education, training, experience, and analysis representative of that generally undertaken by explosives experts, that a treatment technology is, or is not, safe should end the inquiry.

D. The Proposed Rule's *de minimis* Exemption is No Exemption at All

Under the proposed rule, facilities generating up to 15,000 pounds Net Explosive Weight (NEW) of waste explosives annually may treat by OB/OD without complying with the requirement to

conduct alternative treatment technology evaluations provided that the facility makes, to the regulator's satisfaction, the following demonstrations: (a) the proposed *de minimis* treatment by OB/OD would contribute negligible contamination and potential for exposure; (b) treatment by a mobile treatment unit (MTU), treatment off-site by an alternative technology, and treatment by an existing on-site alternative technology, if applicable, are not safe and available; and (c) the facility does not have any unresolved compliance or enforcement actions and does not have a history of significant noncompliance. *See* Proposed Rule §§ 264.704(d)(1) and 265.704(e)(1).

While the Los Alamos National Laboratory generally supports the adoption of a *de minimis* exemption, particularly for RDT&E explosives waste, the proposed *de minimis* exemption is *no* exemption at all.

- ***Qualification for the* de minimis *exemption would require an onerous demonstration with discretionary and uncertain application.***

- ***Nearly every requirement of the proposed rule would still apply if one qualified for the* de minimis *exemption.***

Whether in qualifying for the *de minimis* exemption or in its application, nearly every requirement of the proposed rule would still apply to research, development, testing, evaluation, and post-manufacture sites such as the Los Alamos National Laboratory. Qualification for the *de minimis* exemption, moreover, would require onerous demonstrations and discretionary and uncertain application. The proposed *de minimis* exemption affords no utility.

To qualify for the *de minimis* exemption would require three demonstrations, with the first demonstration having four components.[11] Application of the *de minimis* exemption would then still be subject to the Secretary's discretion and would be set against presumptions that, for certain wastes, the exemption would be "particularly difficult" to establish. Its application would be discretionary and highly uncertain.

- ***The proposed* de minimis *exemption purports to eliminate the evaluation of alternative treatment technologies, but then requires the conduct of an evaluation of alternative treatment technologies.***

The proposed *de minimis* exemption is illusory. To exempt oneself from an alternative treatment technology evaluation one must perform an evaluation of alternative treatment technologies. *See* Proposed Rule §§ 264.704(e)(1)(ii) and 265.704(e)(1)(ii). EPA should not make a demonstration that alternative treatment technologies are not safe and available a requirement to qualify for an

[11] The Regulatory Impact Analysis states that "EPA is requesting public comment on the potential costs of preparing the *five* demonstrations to qualify for the *de minimis* exemption." It is not clear how the Regulatory Impact Analysis determines that there are "five demonstrations." According to the proposed rule, "the owners/operators would have to make three demonstrations, the first of which includes four components."

exemption from the requirement to demonstrate that alternative treatment technologies are not safe and available. This circular approach defeats the utility of the exemption.

- ***To have any utility, a* de minimis *exemption should not require an evaluation of alternative treatment technologies.***

While EPA claims the alternative treatment technology evaluation *de minimis* demonstration would "entail evaluating a limited suite of alternative technologies," it is not clear how the analysis would in fact be limited.

- ***If a* de minimis *exemption were to require an evaluation of alternative treatment technologies, the evaluation must be clearly and materially limited.***

- ***EPA must clarify how the proposed* de minimis *exemption does in fact limit the alternative treatment technology analysis.***

The proposed rule still requires "[a] demonstration that treatment by an MTU, treatment off-site by an alternative technology, and treatment by an existing on-site alternative technology, if applicable, are not safe and available." While there does appear to be some difference in scope, the lack of clarity in explaining how the alternative treatment technology evaluation required to qualify for the *de minimis* exemption actually differs from the comprehensive alternative treatment technology evaluation to demonstrate no safe and available alternative treatment technology risks causing regulatory confusion as to the satisfaction, or not, of the *de minimis* exemption demonstration and risks inconsistent application of the *de minimis* exemption.

Furthermore, under the proposed rule, generators would be required to demonstrate their qualification for the *de minimis* exemption every 5 years; the same schedule as proposed for alternative treatment technology reevaluations. *See* §§ 264.704(d)(3); 265.704(e)(3); 264.707(d).

- ***The proposed* de minimis *exemption likely would be inapplicable to most explosives waste streams.***

As proposed, the *de minimis* exemption likely would not apply to most explosives waste streams. The proposed rule provides that the exemption applies to NEW, but it also maintains that personal protective equipment (PPE) and other combustible materials contaminated with explosives are "poorly suited for OB, which could make a *de minimis* demonstration particularly difficult for these wastes."

RDT&E waste encompasses PPE and other combustible materials contaminated with explosives waste such that it is explosives waste. PPE and other combustible materials are integral to RDT&E operations, and its excision from the waste explosive is not feasible. Even endeavoring to excise it risks creation of additional waste streams and diminishing human health and environmental protections.

- ***Any final rule must permit the thermal treatment of explosives wastes and those materials integral to explosives operations that cannot be reasonably excised from the waste explosive.***

PPE and other combustible materials contaminated with explosives waste can be, and are, thermally treated in a manner protective of human health and the environment. It is unreasonable to presumptively exclude such wastes from OB/OD treatment. The presumed inapplicability of the *de minimis* exemption to these wastes would render the *de minimis* exemption of little utility and would significantly impact national security and defense missions.

- ***Any limitation on the quantity eligible for the* de minimis *exemption must be calculated based solely on the amount of explosives waste.***

The proposed maximum quantity eligible for the *de minimis* exemption must be clarified. EPA questions whether 15,000 pounds NEW annually is an appropriate maximum limit that could potentially qualify under the proposed *de minimis* exemption. Although 15,000 pounds may be a potentially workable illustrative amount for a meaningful *de minimis* exemption, to be effective, any amount limitation would need to cover both NEW and integrated combustible items, would need to vary based on the type of explosives waste being treated, and would need to be based on an amount of explosives waste determined reasonable by an explosives expert. To artificially limit the amount of explosives waste that could be treated by the *de minimis* exemption would risk explosives waste exceeding that amount being treated by methods less safe or less protective of human health or the environment.

Descriptions of the maximum quantity indicate that it is EPA's interpretation that the 15,000 pounds of waste explosives qualifying under the *de minimis* exemption is to be determined by explosives weight alone. While quantities of other components of the waste stream *may* be considered, they need not add to the quantity of annually treated waste explosives, such as in the case of large components associated with explosives manufacturing. The weight of items that are not combustible, such as large metal machinery that is treated prior to being recycled, *cannot* be included within any maximum quantity threshold. Including the non-combustible portion of the weight in the calculation would obviate the utility of any *de minimis* exemption and would fail to provide any corresponding benefit to human health or the environment.

- ***Any amount limitation should vary across the explosives waste spectrum, should be based on standard modeling and risk assessments, should be based on analysis from explosives experts, and should not be artificially capped, otherwise certain explosives waste may be arbitrarily excluded from a treatment method that is more protective of human health and the environment.***

A *de minimis* exemption must be available for those quantities of explosives waste that do not threaten human health or the environment. A strict 15,000-pound ceiling fails to recognize that such determinations may be different for different types of explosives waste and fails to recognize that any such threshold should be based on analysis from explosives experts.

If 15,000 pounds were to be established as the limit, there must be no discretion to ratchet that downward. 15,000 pounds is, if calculated based solely on the amount of explosives waste and if an exemption possessing utility were adopted, potentially workable, but it would significantly hinder the ability to change or expand specialized explosives research, development, testing, evaluation, and post-manufacture operations.

A reasonable requirement, and one more conducive to protection of human health and the environment and that facilitates mission achievement, would be an exemption of those amounts of explosives waste that do not threaten human health and the environment as demonstrated through standard modeling and risk assessment approaches.

- ***The proposed* de minimis *exemption inappropriately transfers decisions regarding explosives waste to non-explosives experts.***

The proposed *de minimis* exemption inappropriately provides EPA and State regulators with the opportunity to second-guess safety determinations made by explosives experts. *See e.g.* Proposed Rule § 264.704(d)(2) ("The Director shall deny the request for [a] de minimis exemption when the demonstrations required…cannot be satisfactorily met."). Any final rule must clarify that the determinations of explosives experts, including whether treatment by OB/OD would contribute negligible potential for exposure, and whether MTU, off-site, or existing on-site alternative treatment technologies are safe and available, are not subject to review or oversight by EPA or State regulators.

- ***The proposed* de minimis *exemption's requirement to demonstrate that OB/OD treatment will result in "negligible contamination or potential for exposure" is vague, confusing, potentially duplicative of the existing regulatory standard, and not justified as a qualification for a* de minimis *exemption.***

Under the existing regulations, permitted and interim status OB/OD units already must be designed and operated in a manner that does not present a threat to human health and the environment. *See* 40 C.F.R. §§ 264.708; 265.708. The demonstration criteria required to qualify for the proposed *de minimis* exemption, that OB/OD treatment will result in "negligible contamination or potential for exposure," are either unnecessary and duplicative of these existing design and operating standards, or impose a vague and confusing standard not countenanced by the law. *See* Proposed Rule §§ 264.704(d)(1)(i), 265.704(e)(1)(i).

At its essence, RCRA requires actions protective of human health and the environment. It does not require actions to result in "negligible contamination or potential exposure," whatever that may mean. Furthermore, EPA has failed to justify its proposed inclusion of the negligible contribution standard required to qualify for the proposed *de minimis* exemption. EPA states "[t]his demonstration is essential because it is well established that a *de minimis* exemption is only appropriate in situations where the regulated activity represents only a 'trivial' or de minimis deviation from the prescribed standard," citing various cases. However, the cases cited by EPA do not relate to or restrict the promulgation of a regulatory *de minimis* exemption. The cases

concern situations in which courts have excused slight deviations from an existing standard in the absence of an express *de minimis* exemption in the applicable statute or regulation. The cases do not justify requiring a demonstration that the proposed OB/OD treatment will result in "negligible contamination or potential for exposure," however that demonstration will be defined, as a qualification for the *de minimis* exemption.

- ***Even if an owner/operator were to qualify for the* de minimis *exemption, the exemption does not exempt the "*de minimis*" owner/operator from anything.***

- ***The proposed* de minimis *exemption does not exempt a qualifying entity from any of the waste analysis, technical operating and performance standards, or monitoring requirements for OB/OD operations.***

Even if one were to qualify for the *de minimis* exemption, *the exemption does not exempt anything*. The proposed *de minimis* exemption would still impose the proposed new technical operating and performance standards and monitoring requirements, including imposing the new OB/OD waste analysis requirements. As stated by EPA, "the OB/OD unit used to treat *de minimis* quantities would still need to meet *all of the proposed and existing standards* applicable to OB/OD units including the RCRA permitting and closure requirements." What utility results from an "exemption" that exempts nothing?

This imposition of onerous requirements on "*de minimis*" operators, and on operators who have demonstrably shown to be operating in a manner that does not threaten human health or the environment, or that demonstrably result in negligible contamination or potential for exposure, defeats the utility of the exemption.

- ***If an entity has demonstrated its operations are protective of human health and the environment, or result in negligible contamination or potential for exposure, then it should be exempt from all other requirements of the proposed rule.***

If one has demonstrated that its operations do not threaten human health and the environment and/or result in negligible contamination or potential for exposure, then why must one also demonstrate that there is no safe or available alternative treatment technology *and* comply with the waste analysis, technical operating and performance standards, and monitoring requirements of the proposed rule? The *de minimis* exemption is no exemption at all.

E. The Proposed Rule Risks Eliminating Controlled OB/OD as a Safe, Healthful, and Environmentally Protective Means of Treating Waste Explosives

If adopted without change, the proposed rule would substantially increase the likelihood that OB/OD of waste explosives would not be available at the Los Alamos National Laboratory. The proposed rule's imposition of alternative treatment technologies, its onerous and inapplicable new regulatory requirements, and its proposed *de minimis* exemption that does not actually afford any

relief risks eliminating any utility in utilizing OB/OD, even if there is no safe and available alternative and even if OB/OD was the safer and more healthful and environmentally protective means of treating explosives waste.

- ***The proposed rule risks eliminating OB/OD as a viable means of treating waste explosives, even where it is the safest and most healthful and environmentally protective form of treatment.***

IV. EPA's Proposed Rule Imposes an Improper Standard and Exceeds EPA's Authority Under the Resource Conservation and Recovery Act.

The proposed rule requires regulated entities to implement an alternative treatment technology where that treatment is: (1) safe; and (2) available. This standard has no basis in law. At its essence, RCRA requires actions protective of human health and the environment. The proposed standard could work contrary to this essential requirement. Certain controlled OB/OD or thermal treatment processes, such as those performed at research, development, testing, evaluation, and post-manufacture facilities like the Los Alamos National Laboratory, produce no secondary hazardous waste stream, effectively no byproducts, residuals, or emissions, and have been proven to have no environmental impact. This cannot be said for certain potentially safe and available alternatives. Yet the standard could force adoption of *less* healthful and *less* environmentally protective alternative treatment technologies. Such a standard is arbitrary, capricious, and not in accordance with law.

- ***The proposed rule imposes an improper standard (safe and available) that could force the adoption of alternative treatment technologies less protective of human health and the environment.***

EPA asserts that its authority for the proposed rule is derived from Resource Conservation and Recovery Act section 3004(n). That provision authorizes the promulgation of "regulations *for the monitoring and control of air emissions* at hazardous waste treatment, storage, and disposal facilities…*as may be necessary to protect human health and the environment*." 42 U.S.C. § 6924(n).

The proposed rule's requirement to perform alternative treatment technology evaluations is not authorized anywhere by section 3004(n). The proposed rule would impose broad technology-forcing mandates based on selection criteria that do not consider whether an alternative treatment technology actually reduces air emissions or is necessary to protect human health and the environment. Neither the proposed rule's "safe" nor its "available" criterion account for whether an alternative treatment technology actually *reduces* air emissions or is necessary to protect human health and the environment compared to an existing OB/OD unit. The proposed rule's broad technology-forcing mandates would generally prohibit the continued use of OB/OD treatment units, regardless of whether the existing unit already effectively controls air emissions and is protective of human health and the environment. EPA cannot show that its proposed rule is *necessary* to protect human health and the environment, as RCRA section 3004(n) requires.

The proposed rule, moreover, goes beyond developing standards to monitor and control air emissions. The proposed rule would impose extensive monitoring requirements for soil, sediment, and groundwater, when section 3004(n) only authorizes EPA to promulgate regulations for the monitoring and control of *air emissions*.

Furthermore, the rule would appoint EPA and State regulatory authorities as the final arbiters over whether a given alternative treatment technology is considered "safe," supplanting the authority and expertise of actual safety experts and safety regulators. There is nothing in RCRA section 3004(n) that grants EPA authority over workplace safety. EPA is an environmental regulator, not a safety regulator (*e.g.* OSHA, DOE), and a proposed rule that purports to establish a framework to allow EPA and State regulators to question safety determinations made by explosives safety experts exceeds the agency's statutory authority.

- ***The proposed rule exceeds EPA's statutory authority.***

- ***The proposed rule would impose extensive technical and operating performance standards and monitoring requirements unnecessary to protect human health and the environment.***

- ***RCRA grants EPA no authority to make EPA and State regulators the final arbiters over the safety determinations of explosives experts.***

V. EPA Mischaracterizes the Purpose, Scope, and Effect of the Proposed Rule.

F. EPA Mischaracterizes the Existing OB/OD Regulatory Regime and the Impact of the Proposed Rule

EPA characterizes the proposed rule as merely "proposing revisions to the RCRA regulations to clarify and add specificity to existing requirements for owners/operators of OB/OD units, including how and when to apply and implement the requirements in the permitting process."[12] EPA's characterization *is not accurate* and *impedes* the public's and the regulated community's ability assess the proposed rule.

- ***EPA mischaracterizes the purpose, scope, and effect of the proposed rule. The proposed rule does not describe or clarify existing requirements. The proposed rule fundamentally alters the OB/OD regulatory regime.***

- ***EPA's failure to accurately characterize the proposed rule***

[12] Despite EPA's efforts to characterize the proposed rule as merely clarifying existing requirements, EPA acknowledges that that the proposed rule imposes significant new burdens and requirements. For example, EPA states that it "proposes new provisions that would specify how and when owners and operators and permit authorities are to evaluate alternative treatment technologies for OB/OD, including specific information that would be required for

impedes the public's and the regulated community's ability to assess: (1) the proposed rule's purpose, scope and effect; (2) whether the proposed rule is contemplated by RCRA; (3) whether the proposed rule is protective of human health and the environment; and (4) the proposed rule's regulatory and fiscal impact.

EPA characterizes the proposed rule as merely describing or clarifying "specified procedures for the existing requirements to evaluate and implement alternative treatment technologies." This characterization, constantly repeated in various permutations throughout the proposed rule, is not accurate.[13] EPA is not merely describing or clarifying; it is fundamentally altering. It is eliminating an unqualified exemption for the OB/OD treatment of waste explosives which have the potential to detonate and is imposing significant new requirements on OB/OD operations.

EPA must be transparent in what it is doing. Failure to do so impedes the public's and the regulated community's ability to assess: (1) the proposed rule's purpose, scope and effect; (2) whether the proposed rule is contemplated by RCRA; (3) whether the proposed rule is protective of human health and the environment; and (4) the proposed rule's regulatory and fiscal impact.

G. The Proposed Rule is Premised Upon Studies Regarding the Availability of Alternative Treatment Technologies That Are Not Applicable to Specialized Explosives Waste.

The proposed rule is driven by recent studies regarding the availability of alternative treatment technologies to treat certain explosives waste streams currently being treated through OB/OD, including reports published in 2019 by EPA[14] and NASEM.[15] However, the 2019 EPA and NASEM reports focused on the availability of "alternative technologies to open burning and open detonation (OB/OD) of *conventional munitions*."[16] Neither report broadly studied other explosives waste treated by OB/OD or appropriately evaluated the availability of alternative

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facilities to demonstrate whether safe modes of treatment are available for specific waste streams. This rule also proposes new and revised regulatory provisions on timelines for implementing alternative technologies, permitting for alternative technologies, waste analysis/characterization, wastes prohibited/restricted from OB/OD, technical standards for OB/OD units, delay of closure applicability to OB/OD units, clarifications to emergency provisions, and procedures for permitting MTUs."

[13] As EPA recognizes, only "24 facilities out of 67 operating facilities have conducted an evaluation of alternative treatment technologies." In the Regulatory Impact Analysis, EPA notes "facility owner/operators have conducted 24 alternative technology evaluations." Thus, it is not clear if 24 alternative technology evaluations have been conducted, or if 24 facilities have conducted alternative technology evaluations. Regardless, not only does the existing rule not require evaluations of alternative treatment technologies by those treating waste explosives with the potential to detonate, but facility practice does *not* evidence a *requirement* to evaluate alternative treatment technologies.

[14] Alternative Treatment Technologies to Open Burning and Open Detonation of Energetic Hazardous Wastes, US EPA, December 2019 https://www.epa.gov/sites/production/files/2019-12/documents/final_obod_alttechreport_for_publication_dec2019_508_v2.pdf. (EPA 2019)

[15] Alternatives for the Demilitarization of Conventional Munitions, NASEM, January 2019. https://www.nap.edu/catalog/25140/alternatives-for-the-demilitarization-of-conventional-munitions. (NASEM 2019)

[16] *See* NASEM, News Release, Most Alternative Technologies to Open Burning and Open Detonation of Conventional Waste Munitions Are Mature, Says New Report (Dec. 6, 2018), *https://www.nationalacademies.org/news/2018/12/most-alternative-technologies-to-open-burning-and-open-detonation-of-conventional-waste-munitions-are-mature-says-new-report*.

treatment technologies for such other explosives waste. Explosives used in other operations are not the same as explosives used in conventional munitions or other bulk explosives or propellants. Therefore, it is not possible to extrapolate from the EPA and NASEM reports broad conclusions regarding the availability of alternative treatment technologies for OB/OD.[17]

- ***Broad conclusions or extrapolations regarding the availability, or not, of alternative technologies to treat waste explosives cannot be made from studies addressing conventional munitions, explosives, or propellants.***

The 2019 EPA and NASEM reports do not consider the specialized explosives waste generated at the Los Alamos National Laboratory. LANL's specialized explosives, and specialized explosives waste, are specific to explosives used in nuclear weapons applications and associated research, development, testing, evaluation, and post-manufacture activities. These specialized explosives are different from explosives used in conventional munitions, explosives, or propellants in important ways. LANL's research and development of high explosives have led to a unique, specialized assortment of very high-performance explosives with very high detonation velocities, high energy content, and efficient energy conversion and release. LANL's research and development work also involves performing tests and experiments that change the fundamental chemical and physical characteristics of the energetic material, which may increase the material's sensitivity and propensity for detonation in the confined conditions of an alternative treatment technology.

As a result, safe treatment of LANL's discrete volumes of specialized explosives waste requires the use of LANL's on-site thermal treatment units. Studies performed on conventional munitions, explosives, or propellant wastes, such as the 2019 EPA and NASEM reports, do not inform whether alternative treatment technologies exist that can safely treat LANL's specialized explosives wastes.

- ***In any final rule, EPA should not imply broadly that the 2019 EPA and NASEM reports are the "type of information" upon which a regulator could decide to "modify or revoke and reissue a permit based on 'information [that] was not available at the time of permit issuance…and would have justified the application of different permit conditions at the time of permit issuance.'"***

The 2019 EPA and NASEM reports did not consider the treatment of specialized explosives waste. The reports do not contain the "type of information" that could justify the modification or revocation of a permit for the OB/OD treatment of non-conventional, specialized explosives waste.

[17] The Proposed Rule also references the International Ammunition Technical Guidelines (IATG) for *Demilitarization, Destruction and Logistic Disposal of Conventional Ammunition* as "another resource on alternative technologies," but the IATG report, as its name implies, is also limited in scope to the treatment of conventional ammunitions.

In fact, the 2019 EPA and NASEM reports acknowledge that OB/OD will remain the only safe mode of treatment for certain types of explosives waste. The NASEM report recognizes that for certain wastes, based on site-specific factors, "[t]he capability of OB/OD will always be needed." Similarly, EPA's report acknowledges that "even though there are many alternative treatment technologies today…OB/OD will remain as the only option for certain energetic hazardous wastes until additional viable alternatives are developed or existing technologies are modified or improved upon."

- ***The EPA and NASEM reports acknowledge that OB/OD will remain the only safe mode of treatment for certain types of waste explosives.***

H. The Proposed Rule's Broad Statements Regarding the Environmental Impacts of OB/OD Are Not Supported.

The proposed rule largely predicates "Potential Environmental Impacts and Health Effects of Contaminants Released During OB/OD" on "*[i]ncomplete treatment of waste explosives* during OB/OD operations" and the resulting "residuals including explosive kickout…that are hazardous waste and/or explosive waste or contain hazardous constituents and contaminants which may pose a threat to human health and the environment."

Certain thermal treatment processes, such as those performed by research, development, testing, evaluation, and post-manufacture facilities like the Los Alamos National Laboratory, are highly controlled and result in *complete combustion or consumption* of the explosives waste, minimal to no residuals, byproducts, or emissions, and no hazardous constituents.[18] Thus, the necessary predicate for the proposed rule's potential health and environmental impacts, "[i]ncomplete treatment of waste explosives,"[19] is missing for these thermal treatment processes. EPA's assumptions, moreover, that all OB/OD operations result in incomplete treatment of explosives waste, and thus that all OB/OD operations result in potential health or environmental impacts, is not accurate.

- ***Not all thermal treatment processes result in incomplete treatment of waste explosives, meaning the predicate for the potential health and environmental impacts assumed by the proposed rule is missing for these thermal treatment processes.***

The proposed rule assumes that "safe alternative technologies in general represent[] a greater level of control and more complete treatment, and therefore better protection of human health and the

[18] Characterizing studies, EPA noted "[t]he detonation reactions were very efficient, averaging 99.9993%, which means that very little explosive residue was generated (*i.e.*, only 0.0007% of the C4 was unreacted)." And characterizing another study, EPA noted "[t]he results from detonation of Comp B compare well with the more recent sampling conducted during detonations of C4 noted above such that a very small fraction was found in air emissions."

[19] How did EPA confirm that metal fragments "often contain unreacted explosives"? Please provide reference material supporting this assertion, along with detail of how much "unreacted explosives" EPA understands the metal fragments to contain.

environment," and that "capturing and controlling emissions and releases to the environment is more protective compared to treatment open to the environment." Alternative treatment technologies exhibit varying levels of control and can produce secondary waste streams or toxic byproducts not produced by controlled thermal treatment processes. As EPA recognizes, alternative treatment technologies may result in "treated material and byproducts," "emissions and effluents," "toxic by-products," "new waste stream," and "dioxin/furan formation."

- ***The assumption that alternative treatment technologies represent a greater level of control and are more protective of human health and the environment than certain OB/OD treatment is not accurate.***

Throughout the proposed rule, EPA overstates sources that have studied conventional munitions waste to support broad conclusions about all explosives waste.[20] Studies on the effects of OB/OD operations for specialized explosives wastes (as distinct from conventional munitions or propellants wastes) contradict EPA's extrapolations. Studies at the Los Alamos National Laboratory show no adverse environmental impact from controlled thermal treatment activities on soil, air, stormwater, groundwater, mammals, and avian populations.
LANL is aware of no studies that demonstrate or provide any evidence of measurable impacts to the environment from modern, controlled thermal treatment activities. Modern and controlled thermal treatment processes, which do not appear to be addressed in the proposed rule or evaluated by EPA in any cited references, use cleaner and more efficient fuels, and support a more complete treatment process.

VI. The Immense Costs of Adopting Alternative Treatment Technologies Where Open Burning and Open Detonation is Already the Safest and Most Protective Form of Treatment are Significantly Disproportionate to Any Human Health or Environmental Benefit.

- ***EPA significantly underestimates the costs associated with the proposed rule.***

[20] For example: (1) EPA states that is has "documented specific contaminants that exceed action levels in environmental media at OB/OD units that have undergone RCRA closure including [long list of contaminants]." (citing to 2019 NASEM report (which is specific to conventional waste munitions) and 2023 *OB/OD Closure Case Studies* report (which includes cleanup of a consolidated site encompassing a waste pile and an open burning unit conducted at a legacy site that was not modernized, reengineered, or monitored previously in any manner, and thus is not representative of cleanup of moder OB/OD operations, nor particular controlled OB/OD operations), and also citing the CompTox database at https://comptox.epa/gov/dashboard (which does not address OB/OD); (2) EPA cites to *a study of Chinese military ranges* (not OB/OD thermal treatment activities) for the proposition that "Incomplete treatment of waste explosives during OB/OD operations can result in the release of waste residuals including explosive kickout" and that "hazardous waste and/or explosive waste or contain hazardous constituents and contaminants which may pose a threat to human health and the environment, especially if not removed in a timely manner" (citing to Zhang *et al*. 2022); and (3) EPA states that the 2019 EPA report identifies alternative technologies that are in use "at various locations because they are mature, maintainable, reliable, and have been demonstrated to be effective and safe *for a variety of explosive waste streams*," which is not accurate because the report is specific to only conventional munitions wastes.

EPA significantly underestimates the costs associated with the proposed rule. EPA estimates that the proposed rule would result in quantifiable annual costs of approximately $6.3 million to $28.0 million. But this estimate only includes costs associated with what EPA characterizes to be "new requirements" contained within the proposed rule. As EPA explains, the estimate "do[es] not include costs for the existing requirements to evaluate and implement safe alternative technologies, since they were already part of the regulatory framework."

However, EPA has mischaracterized the purpose, scope, and effect of the proposed rule as merely "proposing revisions to the RCRA regulations to clarify and add specificity to existing requirements for owners/operators of OB/OD units." In fact, the proposed rule imposes significant new requirements on owners and operators of OB/OD units and removes the current, unqualified exemption allowing OB/OD for treatment of all waste explosives "with the potential to detonate."

- ***EPA's mischaracterization of the proposed rule's purpose, scope, and effect has resulted in an unfair and distorted estimate of the costs associated with the proposed rule.***

For the Los Alamos National Laboratory *alone*, and presuming a safe and available alternative treatment technology existed to treat LANL's specialized explosives waste, the cost of implementing a single alternative treatment technology for not all explosives waste streams generated would be, in current dollars and based on the current state of technology, approximately $78,453,190.00. Even under this scenario, current LANL thermal treatment operations would be decreased, but would still be required. As even EPA recognizes, "[t]he process of evaluating and implementing alternative technologies may require significant investment in resources and time, depending on the site-specific requirements." No safe and available alternative treatment technology presently exists to treat the Laboratory's specialized explosives waste, however, requiring the Laboratory to comply with the new regulatory requirements for OB/OD operations, which would cost approximately $200,000 on an annual basis after approximately $42,000,000 in infrastructure and installation costs.

None of this expenditure would result in improved human health or environmental outcomes. The Los Alamos National Laboratory already safely and compliantly thermally treats its specialized explosives waste. Its thermal treatment processes are highly controlled, efficient, and effectively produce no byproducts, residuals, or emissions. Site studies confirm no environmental impact from Laboratory operations.

- ***EPA must fairly convey to the public and regulated community what it is doing in the proposed rule, including accurately conveying the impacts, including the regulatory and fiscal (cost) impacts, of the proposed rule.***

- ***EPA must explain how the significant costs imposed by the proposed rule result in improved health and environmental outcomes, accounting for the fact that significant costs will be imposed on certain thermal treatment operations already treating waste explosives in a manner protective of human health and the***

environment.

All regulated private and public sector OB/OD facilities must operate within financial and budgetary constraints. It should not be required of facilities to implement alternative treatment technologies or technical operating and performance standards or monitoring requirements at a cost of potentially tens of missions of dollars just to reduce emissions by a small fraction.

VII. The Proposed Rule Jeopardizes Los Alamos National Laboratory National Security and Defense Missions.

Curtailing or eliminating controlled thermal treatment processes jeopardizes Los Alamos National Laboratory national security and defense missions.

- ***The proposed rule jeopardizes national security and defense missions.***

The proposed rule would eliminate the exemption for OB/OD of waste explosives having the potential to detonate and would impose significant new regulatory requirements that could impair or eliminate the Laboratory's ability to treat the small volume of specialized explosives waste that it generates in performing its national security and defense missions, including its research development, testing, evaluation, and post-manufacture work. Without the ability to thermally treat its specialized explosives waste, the Laboratory's national security and defense missions would be directly at risk.

Impacted missions would include nuclear weapons stockpile research, technology, and engineering, stockpile management and certification, and production modernization. Impacted capabilities would include main charge explosive material synthesis and formulation, PETN explosive pressing and machining, and explosives research and development. Workforce safety would be impacted through increased storage, handling, and processing of explosives waste capable of detonation. Funding would be diverted from necessary infrastructure projects and national security, science, and energy missions. Permitting thermal treatment units would become highly uncertain, complex and resource intensive, and permitting decisions would be and subject to challenge.

- ***The proposed rule fails to analyze the risks to national security and defense missions, or the diversion of funding from national security, science, or energy missions.***

- ***The proposed rule fails to analyze the risks to workforce safety.***

- ***The proposed rule fails to analyze the impacts caused by the increased complexity and uncertainty of the OB/OD permitting process.***

These significant impacts, including to national security and defense missions, would arise without any increased protection of, or reduced threat to, human health or the environment.

- ***The proposed rule's significant impacts, including to national security and defense missions, disproportionately outweigh any health or environmental benefit realized in curtailing or eliminating the controlled OB/OD of specialized explosives waste.***

The Department of Energy, which is responsible for *less than 1%* of the OB/OD waste treatment that occurs nationally, relies on the exemption to safely dispose of specialized explosives waste generated in support of national security and defense missions (including explosives waste associated with research development, testing, evaluation, and post-manufacture activities). LANL also relies on the exemption. Curtailing or eliminating this exemption jeopardizes national security and defense and does so without any corresponding benefit to human health or the environment.

- ***The proposed rule is overly broad, sweeping in a minimal and discrete class of OB/OD or thermal treatment operations that are safely, healthfully, and environmentally protectively treating small volumes of specialized explosives waste generated in research development, testing, evaluation, and post-manufacture activities in furtherance of national security and defense missions.***

While narrowing the current exemption may be in the national interest for 99% of OB/OD treatment operations, it is crucial that the proposed rule continue to exempt the 1% that constitutes the necessary, safe, healthful, and environmentally protective thermal treatment processes associated with research, development, testing, evaluation, and post-manufacture activities that are integral to national security and defense missions.

- ***Any proposed rule must continue to exempt the OB/OD or thermal treatment operations that constitute the safe and protective of human health and the environment thermal treatment processes integral to national security and defense missions.***

VIII. Reasonable Revisions to the OB/OD Regulatory Standards Exist that *Both* Protect Human Health and the Environment *and* Facilitate National Security and Defense Missions.

EPA recognizes that research, development, testing, evaluation, and post-manufacture work wastes are prime candidates for the proposed *de minimis* exemption. As recognized by EPA, "there are certain waste streams that may be more appropriate candidates for a *de minimis* exemption," and "[o]ne such waste stream is research, development, testing & evaluation (RDT&E) waste."[21]

[21] EPA further recognizes that facilities engaged in RDT&E work "produce explosive waste streams that vary widely and may be difficult to characterize due to changes in stability resulting from testing and evaluation," and that "some RDT&E explosive waste streams consist of novel chemical formulations and physical features that are intended to change the fundamental chemical and physical characteristics of the energetic material, which imparts uncertainty

Unfortunately, even if RDT&E waste is particularly appropriate for an exemption, the proposed *de minimis* exemption is of no utility, does not protect human health and the environment, and jeopardizes national security and defense missions.

An exemption can be adopted, however, that has utility, protects human health and the environment, and facilitates national security and defense missions.

- ***In any final rule, EPA must categorically exempt RDT&E waste from the prohibition on OB/OD.***

Categorically exempting RDT&E waste from the prohibition on OB/OD is, both, protective of human health and the environment and facilitates national security and defense missions. As the Los Alamos National Laboratory's experience demonstrates, specialized explosives waste (RDT&E waste) can be thermally treated in a manner that is protective of human health and the environment, and the use of controlled thermal treatment processes to do so avoids the forced adoption of alternative treatment technologies that may be less safe and less protective of human health and the environment. The use of these controlled thermal treatment processes to treat RDT&E waste, moreover, is already performed in a manner that facilitates achievement of national security and defense missions.

It is not complicated to accomplish both protection of human health and facilitation of national security and defense missions. One way is to recognize that certain controlled thermal treatment processes, such as those used by LANL, do not fall within the definitions of "open burning (OB)," "open detonation (OD)," or "open burning/open detonation (OB/OD) unit."

- ***Certain thermal treatment processes should not be defined as OB or OD prohibited from treating hazardous waste.***

These thermal treatment processes are safe, highly controlled, efficient, achieve complete combustion/consumption of waste materials, effectively produce no byproducts, residuals, or emissions, treat limited and discrete volumes of specialized explosives waste, and are protective of human health and the environment. They do not fit within the definition of OB/OD, are better viewed as alternatives to OB/OD, and are not the type of OB/OD that the proposed rule seeks to curtail or eliminate.

A second way would be to add a definition to § 260.10 that effects a meaningful exemption:

> *Exempted Thermal Treatment Process* means the open burning or open detonation of waste explosives associated with research, development, testing, and post-manufacture activities associated with national security and defense at Department of Energy (DOE) and Department of Defense (DOD) laboratories and DOE sites. Such processes do not constitute open burning or open detonation under Parts 260, 264, 265, 270, or 271. Such processes must be managed according to the highest

regarding how they will behave when treated in the confined conditions of an alternative technology." RDT&E waste is a particularly appropriate candidate for an exemption because these wastes tend to be highly variable and produced in small quantities.

degree of environmental protection required by the federal agency responsible for the process.

- ***Certain thermal treatment processes should be meaningfully exempted from the prohibition on OB/OD.***

The Los Almos National Laboratory *fully supports* EPA's effort to curb *where appropriate* the OB/OD of waste explosives. Certain uncontrolled OB/OD operations *do* negatively impact human health and the environment and *do* have safer and more healthful and environmentally protective alternatives. For those operations, the regulations should be revised. But the proposed rule should not, and need not, sweep so broadly as to risk negative health and environmental outcomes and jeopardize national security and defense missions. Reasonable revisions to the regulatory standards for the OB/OD of waste explosives exist that *both* protect human health and the environment *and* facilitate national security and defense missions.

IX. Narrower Revisions to the Proposed Rule Also Exist That Would Soften Some of its Negative Effects But That Do Not Address Its Systemic Problems.

While a final rule should categorically exempt RDT&E waste from the prohibition on OB/OD, there are also narrower revisions to the proposed rule that would soften some of the proposed rule's negative effects, without addressing its systemic problems.

A. An Alternative Treatment Technology Must Be More Protective of Human Health and the Environment Than the Existing OB/OD or Thermal Treatment Process.

The proposed rule could force the adoption of *less* healthful and *less* environmentally protective alternative treatment technologies. The proposed rule requires regulated entities to implement an alternative treatment technology where that treatment is: (1) safe; and (2) available. The proposed rule says nothing, however, about the relative health and environmental protectiveness of the alternative treatment technology.[22] Certain controlled OB/OD or thermal treatment processes produce no secondary hazardous waste stream and effectively no byproducts, residuals, or emissions, and have been proven to have no environmental impact. They may be more protective of human health and the environment than alternative treatment technologies, which could produce secondary waste streams or toxic byproducts.

The proposed rule should not require analysis or implementation of less healthful or less environmentally protective alternative treatment technologies.

- ***An alternative treatment technology must be more protective of human health and the environment than the existing***

[22] EPA states obliquely that "a safe technology accounts for…potential risk to health and the environment from treatment of munition constituents, byproducts, and wastes associated with OB/OD," and "[s]afe can also refer to 'protection' of human health and the environment when considering a technology's treatment byproducts; however, protectiveness in this sense would be evaluated during the permitting process when appropriate standards are developed."

OB/OD treatment before requiring its analysis or implementation.

Accordingly, LANL respectfully requests that §§ 264.704(a) and 265.704(a) be revised to read:

> (a) Open burning and open detonation of hazardous waste is prohibited except for the open burning and/or open detonation of waste explosives (as those terms are defined in § 260.10 of this chapter) that cannot be safely treated or disposed of in a manner more protective of human health and the environment through other modes.

Additionally, an evaluation of an alternative treatment technology's protectiveness of human health and the environment should be added as an additional criteria in §§ 264.707(a)(1) and 265.707(a)(1):

> (iii). Protective of Human Health and the Environment. Technology must be determined to be more protective of human health and the environment than the OB/OD treatment currently performed at the OB/OD unit.

B. In Assessing Potential Alternative Treatment Technologies, the Viability of the Technology for Treating the Permittee's Specific Explosives Waste Stream Must be Considered, Including Consideration of Site-Specific Safety, Operational, and Effectiveness Factors.

In the proposed rule, EPA takes the position that if an alternative treatment technology is "safe and available" then OB and OD are not acceptable means of treatment in most cases. It is imperative, therefore, that EPA clarify that a treatment technology is not an "available" alternative to OB/OD unless and until the technology has been proven to be viable. Whether a technology is viable must include consideration of site-specific safety and operational factors and proven effectiveness.

This clarification is critical for research, development, testing, evaluation, and post-manufacture operations, such as LANL, whose specialized explosives waste is unique, heterogenous, highly energetic, potentially unstable, and possesses properties, morphologies, or characteristics that are difficult to discern or that can be unpredictable. At LANL, site-specific considerations, such as prohibitions on the transport of certain specialized explosives waste and national security considerations associated with off-site treatment, restrict the viability, and therefore the availability, of alternative treatment technologies. An alternative technology's mere existence does not necessarily mean it is available. If it is not viable, it is not available.

- ***The viability of an alternative treatment technology must be a component of the alternative's availability, otherwise an ineffective remedy could be imposed upon an operator.***

EPA should consider amending the definition of "available" within proposed §§ 264.707(b)(1)(ii) and 265.707(b)(1)(ii) as shown below:

> Available. Technology is available when (a) it can be used on-site or off-site, rented, leased, or purchased from a qualified vendor or entity, or custom designed and constructed by a qualified vendor or entity; (b) it has been determined through a technical evaluation to consistently perform the functions necessary to be an effective means for treating a given waste explosive; and (c) it has been determined by an explosives specialist to be a viable means of treating a given waste explosive, considering site-specific safety, operational, and effectiveness factors.

EPA dismisses consideration of viability as a cost-centric criteria that relates to "a business's determination of a technology's suitability for its waste streams." Viability is *not* a cost centric business calculation. Rather, viability reflects site-specific safety, operational, and effectiveness factors that may render an alternative treatment technology inappropriate to implement.

For example, with respect to LANL, most, if not all, of the alternative treatment technologies identified in the 2019 EPA and NASEM reports would necessitate increased waste storage periods or waste handling, which would introduce significant and unnecessary additional health and safety risks to workers, the public, facilities, and the environment. Such alternative technologies are not viable, and thus not available.

Furthermore, in determining whether a waste treatment option is viable, permittees must be able to use reasonable criteria to screen out alternative technologies, including the reliability, proven effectiveness, and overall maturity of the technology. A waste explosives treatment method should be routine, reliable, and predictable; otherwise, how could the treatment standards under the Land Disposal Act be reliably met without re-treatment provisions for each waste treatment technology? Additionally, if a treatment technology is not reliable, effective, or mature (*i.e.* there has not been a thorough proof of concept), such technology could (and must be assumed likely would) pose unidentified and serious dangers to worker health and safety. The proposed rule's use of the "safe" and "available" factors is not workable, shifts determinations *away* from explosives experts and to regulators that lack the required expertise, and risks implementation of alternatives that are not proven effective.

Additionally, rather than being able to dismiss a technology that is not mature or has not been proven effective, the proposed rule encourages facilities to conduct further evaluation and testing of the technologies. In effect, the proposed rule appears to impose a requirement to conduct "Treatability Studies" to determine the effectiveness of alternative treatment technologies.[23] These types of studies would be infeasible for the specialized explosives waste generated at sites such as LANL. Given that LANL's specialized explosives waste streams generally consist of

[23] The proposed rule appears to envision that operators would conduct treatability studies to determine if an emerging, but unproven technology could treat a specific waste stream. The proposed rule states: "[T]reatability studies and [Research, Development, and Demonstration] RD&D permits offer owners/operators additional options for determining and confirming which technology or technologies can treat their waste streams before committing to implementation. Much like the TRA process, treatability studies and RD&D permits may be appealing options, for example, when a new waste stream has unique characteristics that impart uncertainty regarding the capability of a proven technology (*e.g.*, a confined burn chamber treating similar waste types at another facility) to treat it effectively and safely; or, if there is an emerging technology that has been successfully demonstrated at the pilot scale and appears to be promising for the waste stream in question."

explosives that have been insulted and as a result may have unknown properties, a requirement to conduct pilot studies for technologies could require LANL to conduct such studies for each new explosives waste material that LANL generates. That would not be possible. This effort also appears to fall under the alternative treatment technology evaluation phase of the permitting process, which, if interpreted by regulators to be a pre-application requirement, could delay permitting of thermal treatment units already in use at a facility.

C. Lifecycle Costs for Alternative Treatment Technologies should be a Consideration for any Final Rule.

The proposed rule does not allow for consideration of lifecycle costs when evaluating the availability of alternative treatment technologies. EPA recognizes that cost-related criteria "relate to a business's determination of a technology's suitability for its waste streams," but asserts that cost cannot be used as a criteria for screening out potential alternative technologies. The proposed rule prohibits permittees from considering any aspect of cost—including, but not limited to, purchasing, implementation, operation, cleaning, repair, replacement, or refurbishment of equipment—when assessing whether a given alternative treatment technology may be an alternative to OB/OD treatment.

In reality, all permittees have finite budgets, and while an alternative treatment technology may technically meet EPA's criteria as "safe" and "available," if a permittee lacks the funds to construct, maintain, and repair the technology—or even the ability to consider whether it could conceivably afford to construct, operate, and maintain the technology as part of its evaluation of alternative treatment technologies—then such an alternative should not be considered "available" to that permittee.

- ***A cost-prohibitive alternative treatment technology should not be considered "available."***

LANL understands that the experience at DOE facilities that have implemented alternative treatment technologies for certain waste streams is that operation and maintenance costs, under normal operations, are significant and can be indefinitely more costly if a treatment upset occurs (and treatment upsets are more likely with alternative treatment technologies). To disregard and dismiss a significant factor—cost—in determining whether an alternative treatment technology is available is unreasonable. Moreover, where upsets may occur, and where maintenance and repair costs may become prohibitive, health and environmental outcomes may decline.[24]

The proposed rule's criteria for "availability" currently includes "custom designed and constructed" units. *See* Proposed Rule §§ 264.707(b)(1)(ii), 265.707(b)(1)(ii). Without the ability to consider lifecycle costs, would a permittee be required to invent and construct a novel treatment technology to treat its explosives waste, regardless of the cost or anticipated health or environmental benefit? If the only safe alternative to OB/OD for a given explosives waste stream

[24] EPA recognizes that "if an explosives manufacturing facility's alternative technology is down for prolonged repairs, production could also be impacted if the wastes associated with the manufacturing process cannot be treated. Customers dependent on explosive ingredients and materials could be impacted in such a way that national security needs could not be met."

was to construct a stadium-sized custom facility within which to conduct "enclosed" burning and detonation activities, would the permittee be required to construct that facility to treat its explosives waste stream? The proposed rule's prohibition on considering lifecycle costs for alternative treatment technologies invites such extreme interpretations.

- ***To disregard costs in assessing alternative treatment technologies is arbitrary and unreasonable.***

Similarly, the Regulatory Impact Analysis for the proposed rule ignores that most facilities that currently use OB/OD for waste treatment will likely need to continue to treat some portion of their explosives wastes by OB/OD *and* implement an alternative treatment technology (or multiple alternative treatment technologies) for any portions of waste that can be treated by methods other than OB/OD.[25] As a result, regulated facilities may experience an exponential increase in the cost of waste treatment, which could be cost prohibitive and jeopardize the facility's other operations and missions.

- ***In any final rule, EPA must allow for the consideration of lifecycle costs when assessing the availability and viability of alternative treatment technologies.***

Not all OB/OD units are constructed, designed, and operated in the same manner. Because of the varied nature and operation of OB/OD units, they are not all likely to result in excessive closure or long-term monitoring costs.

- ***Not all OB/OD units result in excessive closure or long-term monitoring costs.***

For example, modern thermal treatment processes, such as the Flash Pad operated at the Los Alamos National Laboratory, consist of secondary containment, liners, and emissions and effluent controls (run-on and run-off structures and covers) that prevent releases to the environment. These thermal treatment processes are unlikely to result in the exaggerated closure costs or long-term care that the proposed rule claims inevitably coincide with OB/OD units.

D. Definition of "Waste Explosives" (§ 260.10)

LANL recommends that EPA clarify the definition of "waste explosives" in § 260.10. While the definition of waste explosives is, appropriately, broad, and includes "hazardous wastes that exhibit the reactivity characteristic (D003) and are capable of detonation or explosive chemical reaction," its illustrative examples suggest an artificial similarity between waste explosives that confuses their ability, or not, to be safely treated by alternative treatment technologies. For instance,

[25] EPA recognizes that "[f]or waste explosives that are documented to be unstable and/or potentially shock sensitive and have been determined to be unsafe by an explosives specialist,[] there may be no other choice but to treat these wastes by OB/OD" and "one facility may have several heterogenous wastes streams requiring treatment by multiple alternatives while another facility may have more limited homogeneous waste streams that may be handled by one alternative."

specialized explosives waste, or research, development, testing, evaluation, and post-manufacture explosives waste, have very different properties or characteristics, and susceptibilities to alternative treatment technologies, than conventional munitions.

- ***Rather than providing illustrative examples, the "waste explosives" definition should indicate that waste explosives may vary on a spectrum with respect to their energetics, heterogeneity, stability, properties, morphologies, characteristics, or predictability, and also their susceptibility to treatment by alternative treatment technologies.***

Explosives include "any substance or article, including a device, which is designed to function by explosion (*i.e*. an extremely rapid release of gas and heat) or which, by chemical reaction within itself, is able to function in a similar manner even if not designed to function by explosion." 49 C.F.R. § 173.50.[26] There are, moreover, different types of explosives materials, including: high explosives (*e.g.* dynamite, flash powders, and bulk salutes); low explosives (*e.g.* black powder, safety fuses, igniters, igniter cords, fuse lights, and "display fireworks", except for bulk salutes); and blacking agents (*e.g.* ammonium nitrate-fuel oil and certain water gels). *See* 27 C.F.R. § 555.202. In addition, both the Department of Transportation and the Occupational Health and Safety Administration define explosives into class types including Class A explosives (possessing, detonating, or otherwise maximum hazard), Class B explosives (possessing flammable hazard, such as propellant explosives), Class C (certain types of manufactured articles), and forbidden explosives (those explosives so dangerous that they are forbidden from transportation under Department of Transportation regulations). *See* 29 C.F.R. § 1910.109(a).

- ***While the "waste explosives" definition should capture, as appropriate, all the different types of waste explosives, it should not suggest, or perpetuate the inaccurate assumption, that all waste explosives are similar or susceptible to the same treatments.***

Additionally, EPA should clarify that waste explosives include explosives-contaminated debris, such as towels, liners, containers, gloves, socks, personal protective equipment, pipes, and soils, regardless of whether the debris itself meets the definition of explosives in 40 C.F.R. § 261.23(a)(6)-(8). Research, development, testing, evaluation, and post-manufacture waste encompasses additional materials contaminated with explosives waste, and these materials are integral to research, development, testing, evaluation, and post-manufacture operations and the excision of these materials from explosives waste is not feasible. Even endeavoring to do so risks creation of additional waste streams and diminishing environmental and human health protections.

[26] DOE defines an explosive as any "chemical compound or mechanical mixture that is designed to function as an explosive, or chemical compound that functions through self-reaction as an explosive, and that when subjected to heat, impact, friction, shock, or other suitable initiation stimulus, undergoes a very rapid chemical change with the evolution of large volumes of highly heated gases that exert pressures in the surrounding medium. The term applies to materials that detonate or deflagrate." DOE-STD-1212-1219.

- ***Any final rule must permit the thermal treatment of explosives wastes and those materials integral to explosives operations that cannot be reasonably excised from the explosives waste.***

Accordingly, LANL recommends the following revisions to the definition of "waste explosives":

> *Waste explosives* are hazardous wastes that exhibit the reactivity characteristic (D003) and are capable of detonation or explosive chemical reaction as defined in § 261.23(a)(6) through (8) of this chapter and include propellants, explosives, pyrotechnics, munitions, military munitions as defined in this section, and unexploded ordnance. Waste explosives may vary with respect to their properties, morphologies, characteristics, or susceptibility to treatment by various technologies. Waste explosives include explosives-contaminated debris that cannot be reasonably excised from the waste explosives.

Additionally, §§ 264.715(b)(4) and 265.715(b)(4) should be revised as follows:

> (4) Treatment by OB/OD must cease if and when alternative technology is selected and implemented for all waste explosives generated at the facility.

Certain alternative treatment technologies may be safe and available to treat certain explosives waste streams, but not all explosives waste streams. OB/OD treatment must continue until alternative treatment technology is selected and implemented for all waste explosives generated at a facility.

E. Monitoring Requirements (§§ 264.710 & 265.710)

LANL recommends that EPA clarify the groundwater monitoring requirements in any final rule by adding the sentence shown below to §§ 264.710(a)(1) and 265.710(a)(1):

> Groundwater monitoring to detect any potential releases from the OB/OD units. Groundwater monitoring must include at least one upgradient background well in addition to downgradient wells…. If, based on site-specific conditions, there is no pathway for constituents to enter groundwater from OB/OD, the Director may determine that groundwater monitoring is not necessary. Additionally, if groundwater monitoring is an established component of a facility-wide groundwater monitoring network, additional monitoring is not necessary.

This revision is necessary because it would ensure that the groundwater monitoring requirements discussed in §§ 264.710(a)(1) and 265.710(a)(1) are not duplicative of existing groundwater monitoring networks that may already be established at a facility.

LANL also recommends that EPA clarify the stormwater monitoring requirements in any final rule by adding the language shown below to §§ 264.710(a)(2) and 265.710(a)(2):

> Stormwater monitoring to detect any potential releases. Stormwater monitoring must be conducted in accordance with an approved RCRA stormwater monitoring

plan or as a separate federal or state issued permit that addresses stormwater issues at the facility until the unit completes RCRA closure and is under a post-closure permit as applicable.

This revision will ensure that the stormwater monitoring requirements under these sections are not duplicative of, and are consistent with, stormwater monitoring requirements imposed by a federal or state permit that already addresses stormwater issues at the facility.

Similarly, LANL recommends that EPA clarify the surface water monitoring requirements in any final rule by adding the language shown below to §§ 264.710(a)(3) and 265.710(a)(3):

> Surface water monitoring of nearby surface water bodies to detect potential releases from the OB/OD unit. Surface water monitoring must be conducted in accordance with an approved RCRA surface water monitoring plan or as a separate federal or state issued permit that addresses surface water monitoring at the facility until the unit completes RCRA closure and is under a post-closure permit as applicable.

This revision will ensure that surface water monitoring requirements under these sections are not duplicative of, and are consistent with, surface water monitoring requirements imposed by a federal or state permit that already addresses surface water monitoring issues at the facility.

With respect to soil monitoring, LANL recommends that EPA revise the monitoring requirements reflected in §§ 264.710(a)(4) and 265.710(a)(4) as follows:

> Soil must be monitored ~~monthly~~ around the unit (e.g., burn pans, cages, piles, and detonation sites) to detect potential releases into the environment at a frequency that is established to be appropriate for the specific operations at the facility. This soil does not include any soil or environmental media used as engineering control such as soil cover for detonation events.

Facilities, such as LANL, may conduct OB/OD operations at infrequent intervals such that monthly monitoring would not be justified and would not provide any benefit to human health or the environment. The revisions shown above would reflect this fact and allow the frequency of soil monitoring to be established as appropriate for the operations at the OB/OD unit.

LANL recommends that EPA revise the monitoring requirements reflected in §§ 264.710(a)(5) and 265.710(a)(5) as follows:

> Air monitoring to detect potential releases from the OB/OD unit. Air monitoring is required downwind of the OB/OD unit and at or near the facility boundary. Downwind monitoring must be located in the direction most likely to be downwind at the time of OB/OD. If there is no single most likely direction, multiple downwind monitoring locations may be needed. The direction must be determined in accordance with § 264.708(b)(1) of this subpart. ~~At least one air monitoring station must be located downwind of the OB/OD unit and as close to the unit as possible, in accordance with an approved air monitoring plan. Air monitoring must be conducted upwind of the facility, where they would not be impacted by facility operations including any other open burning or open detonation (e.g., OB/OD~~

~~conducted related to product testing or training or explosives or munitions activities), to establish background or ambient concentrations unless the owner/operator makes the assumption there is zero background contamination.~~ If, based on site-specific conditions, the owner/operator can demonstrate that air monitoring is not necessary to protect human health and the environment, including where an air monitoring network is already established, the Director may determine that air monitoring is not necessary.

This revision is necessary because it would ensure that the air monitoring requirements discussed in §§ 264.710(a)(5) and 265.710(a)(5) are not duplicative of existing air monitoring networks that may already be established at a facility.

- ***Monitoring requirements should reflect the operations of the OB/OD unit, representative monitoring already conducted at the facility, and monitoring required by other permits.***

F. Compliance History (§§ 264.704(e)(1)(iii) and 265.704(e)(1)(iii))

Triad, the managing and operating contractor of the Los Alamos National Laboratory, safely and compliantly operates three thermal treatment units located at the facility, which is the "Los Alamos National Laboratory site." The facility, or LANL site, is broader than the Los Alamos National Laboratory, and is where the collective execution by separate entities of separate missions, including Triad's (LANL's) national security, science, and energy missions, and the legacy environmental remediation mission of others, occurs. Although there is one facility, there are separate and distinct operators responsible for separate and distinct hazardous waste management units at the facility. The operators of particular hazardous waste management units are not responsible for the actions or inactions of the other operators in operating their particular hazardous waste management units. EPA recognizes that assessing compliance requires "a demonstrated track record of complying with *applicable* permit conditions and regulations."

- ***Looking at the compliance history of a "facility" does not necessarily reflect the compliance history of the particular operator responsible for operation of the OB/OD unit.***

Accordingly, LANL recommends revising §§ 264.704(e)(1)(iii) and 265.704(e)(1)(iii) to read:

> (iii) A demonstration that the ~~facility~~OB/OD unit does not have any unresolved compliance or enforcement actions and that the OB/OD unit does not have a history of significant noncompliance.

Additionally, the term "~~non-conformance~~" in §§ 264.712(a)(4) and 265.712(a)(4) should be changed to "unexpected." "Non-conformance" suggests a non-conformity with either the permit or OB/OD regulations. While these events may be unexpected, they may not, necessarily, be non-conformities and the regulatory text should not presume non-conformance.

G. *De Minimis* Exemption (§§ 264.704(e) & 265.704(e))

EPA should provide the *de minimis* exemption up to 15,000 lbs NEW without any demonstration beyond quantity, provided the waste is not prohibited according to § 264.708(b)(11). Owners and operators of facilities that qualify for the *de minimis* exemption should not be required to comply with the monitoring requirements discussed in §§ 264.710 and 265.710. Compliance with these monitoring requirements is unnecessary when: (a) permitting of OB/OD units requires a demonstration that the OB/OD treatment will not adversely affect human health and the environment; and (b) qualification for the *de minimis* exemption would require a demonstration that the proposed *de minimis* treatment by OB/OD would contribute negligible contamination and potential for exposure.

- ***The proposed* de minimis *exemption should exempt a qualifying entity from monitoring requirements where it has been demonstrated that the OB/OD operation would contribute negligible contamination and potential for exposure.***

Exempting qualified owners and operators from the monitoring requirements in §§ 264.710 and 265.710 would provide the *de minimis* exemption at least some utility. To effectuate this change, LANL recommends revisions to the regulatory language within §§ 264.704(e)(1) and 265.704(e)(1) as follows:

> Owners and operators of a facility that generates up to 15,000 lbs NEW of waste explosives annually may treat by OB/OD up to the amount of waste explosives generated without complying with §§ 264.707 and 264.710 [§§ 265.707 and 265.710] and provided that they make, to the Director's satisfaction, the demonstrations in paragraphs (e)(1)(i)-(iii) of this section.

Consistent with the above, EPA should also add a reference in §§ 264.704(e)(3) and 265.704(e)(3) to the monitoring requirements of §§ 264.710 and 265.710 as follows:

> To remain eligible for the exemption from the requirements of §§ 265.707 and 264.710 [§§ 265.707 and 265.710], the owner/operator must submit this demonstration on the same schedule as they would have submitted alternative technology evaluations for the subject wastes under § 265.707(c) and (d).

In the proposed rule, EPA also specifically requested comment on whether EPA should consider requirements for public notification and/or community engagement in situations where the proposed *de minimis* exemption is exercised. LANL is flexible with respect to additional public notification requirements associated with a *de minimis* exemption, provided that notification requirements are implemented per agreed upon methods and such notifications do not impair LANL's ability to conduct necessary thermal treatment operations.

H. Minimum Safe Distances for Treatment of Waste Explosives (§ 265.382)

EPA requested comment on the minimum safe distances for OB/OD treatment that are currently located at 40 C.F.R. § 265.382, and indicated that the agency may make regulatory changes in any final rule. LANL's OB/OD operations comply with DOE-STD-1212-2019, *Explosives Safety*,

which requires preparation and implementation of explosives safety site plans. Explosives safety site plans ensure that explosives facilities are appropriately located to ensure that no blast, fragment, or firebrand hazards are posed to workers or members of the public. These distance values are well defined in both Department of Defense (DOD) and DOE regulations and are calculated, documented, and approved by DOE federal oversight prior to the start of any thermal treatment operation.

I. Public Outreach

The Los Alamos National Laboratory understands the importance of public outreach and that both regulated entities and regulators communicate to the public accurate information about thermal treatment processes. EPA notes that it "encourages facilities and regulators to consider engaging the public early during the alternative technology evaluation," and that "[i]n this way, public comment and input during the permitting process may be less likely to require submission of a revised permit application later in the permitting process." While the Laboratory understands the importance of public outreach (and existing rules already require outreach), the Laboratory questions how EPA's *extra*-regulatory request could result in any tangible permitting action, such as a deficiency in a permit application.

- ***A regulator cannot take tangible permitting action based on the satisfaction, or not, of a discretionary or non-regulatory provision.***

- ***If a tangible permitting action is expected, due process requires that EPA clearly provide, in regulations, what additional outreach is required and what impact that outreach may have on the permitting action.***

- ***The Laboratory requests that EPA clarify its purpose in discussing this extra-regulatory outreach with respect to the proposed rule, and that EPA clarify what or how this public outreach may impact OB/OD permitting.***

J. Liability/Responsibility for Treatment Performed by Others That Is Less Protective of Human Health and the Environment

EPA "considers the original generator of hazardous waste and the owner/operator of the mobile treatment unit to be co-generators of the treatment residuals and both parties are subject to the RCRA generator requirements in part 262." Further, "EPA reserves the right to enforce against any and all persons who fit the definition of 'generator' in a particular case if the requirements of part 262 are not adequately met." And, EPA's proposed § 270.336 contemplates an original generator also being responsible for "hazardous waste generated by the MTU's operations."

EPA must clarify whether it is *only* an MTU who would be considered a "co-generator" with the original generator, or otherwise responsible for the hazardous waste, or whether an off-site alternative treatment technology generator would also be considered a "co-generator," or

otherwise responsible for the hazardous waste, with the original generator. For example, if an owner/operator generates explosives waste and is required to implement a safe and available alternative treatment technology performed off-site by a separate entity, would the owner/operator who originally generated the explosives waste also be responsible for the alternative treatment technology's compliance with part 262, or be generally liable or responsible for the repercussions of its treatment of the explosives waste, or be otherwise responsible for the hazardous waste generated by the alternative treatment technology?

- ***Is the original explosives waste generator responsible for the actions, or inactions, or for the permitting or health or environmental repercussions, of an alternative treatment technology, where that alternative treatment technology is either an MTU or where that alternative treatment technology is conducted offsite by an entity separate and distinct from the original generator?***

Where an original generator's thermal treatment or OB/OD process is safer and/or more protective of human health and the environment than an alternative treatment technology, moreover, how can the original generator be held responsible/liable for an alternative treatment technology that may produce waste stream(s), residuals, byproducts, emissions, *etc*., or that otherwise might result in a non-compliance or liability, that would not have been produced or resulted if the original generator's thermal treatment or OB/OD process was used?

- ***How is it fair to hold an owner/operator responsible/liable for an alternative treatment technology that may be less safe and/or less protective of human health and the environment?***

EPA asserts that "it will be important for the owner/operator of the MTU and the original generator to work out who will take responsibility for compliance with these part 262 requirements." Again, will it also be necessary for the original generator to work out with an off-site alternative treatment technology owner/operator who will take similar responsibility? But more, where an original generator owner/operator is required to implement a safe and available alternative treatment technology, how will the original generator owner/operator have any ability to shift responsibility to the alternative treatment technology owner/operator?

- ***Does EPA envision any scenario where an alternative treatment technology owner/operator would assume full (or even meaningful) responsibly for its alternative treatment technology operation/process, including for part 262 requirements?***

- ***How is the adoption of alternative treatment technologies facilitated where the original owner/operator generator remains responsible for an alternative treatment technology not owned or operated by it?***

- ***Any final rule should make clear that only the entity owning/operating the treatment facility is responsible for it, and that an original owner/operator generator is not a co-generator with an alternative treatment technology generator not owned or operated by it.***

At minimum, § 270.336(a)(7) should be revised to read:

> Evidence ~~of an arrangement between the original generator of the waste explosives and~~demonstrating the MTU ~~owner/operator as to who~~ will take the actions required to comply with the applicable part 262 of this chapter regulations related to any hazardous waste generated by the MTU's operations.

The original generator of explosives waste should not be in anyway responsible for the treatment residuals generated from an MTU or other unrelated alternative treatment technology. Residuals are a new waste stream and not associated with the original waste generator.

X. The Regulatory Impact Analysis is Fundamentally Flawed

A. The Regulatory Impact Analysis's Assessment of the Proposed Rule's Regulatory Impact and Costs is Fundamentally Flawed.

- ***The RIA's assessment of the proposed rule's regulatory impact and costs is fundamentally flawed.***

The Regulatory Impact Analysis's assessment of costs is premised on a false predicate. It assumes the proposed rule is merely "clarify[ing] existing requirements." It is not. It is, among other things: (1) eliminating an important and unqualified exemption for the OB/OD treatment of waste explosives which have the potential to detonate; (2) requiring an evaluation (and reevaluation) of alternative treatment technologies for waste explosives having the potential to detonate; (3) mandating the adoption of safe and available alternative treatment technologies, even if less protective of human health and the environment; and (4) imposing upon OB/OD owner/operators, including "*de minimis*" operators, significant new technical operating and performance standards and monitoring requirements.

- ***EPA must reevaluate the regulatory impacts and recalculate the costs of the proposed rule based on an accurate appraisal of the proposed rule's purpose, scope, and effect.***

B. The Regulatory Impact Analysis Significantly Underestimates the Costs to Evaluate (and to Reevaluate) Alternative Treatment Technologies.

- ***The RIA significantly underestimates the costs to evaluate (and to reevaluate) alternative treatment technologies.***

To conduct an alternative technology is costly and can consume considerable technical expert time and resources. This considerable investment in time and resources, moreover, provides little

return. Specialized explosives waste is already treated at the Los Alamos National Laboratory safely and in a manner protective of human health and the environment.

EPA estimates alternative treatment technology evaluations can cost up to $2,000,000 for the largest and most complex cases. However, EPA estimates the costs of an alternative treatment technology evaluation at between approximately $30,000 and $100,000 (and estimated annualized cost per facility ranges from only $2,846 to $9,818).

- ***The Laboratory requests clarification on how EPA arrived at its estimated costs for alternative treatment technology evaluations.***

- ***If alternative treatment technology evaluations can be satisfactorily completed for significantly less costs, in the range of $30,000 to $100,000, please clarify the contents and level of analysis expected in the alternative treatment technology evaluation, and how this content and level of analysis correlates to expenditures only in the $30,000 to $100,000 range.***

C. The Regulatory Impact Analysis Fails to Estimate the Costs to Facilities Operating Under the Current Exemption for Waste Explosives Which Have the Potential to Detonate to Implement an Alternative Treatment Technology

- ***The RIA fails to estimate the costs to facilities operating under the current exemption for waste explosives which have the potential to detonate to implement an alternative treatment technology.***

For the Los Alamos National Laboratory, and assuming a safe and available alternative technology existed to treat LANL's specialized explosives waste (one does not), the cost of implementing an alternative treatment technology would be, in current dollars and based on the current state of technology, approximately $78,453,190.00. As even EPA recognizes, "[t]he process of evaluating and implementing alternative technologies may require significant investment in resources and time, depending on the site-specific requirements."

- ***EPA must consider in its RIA the costs to facilities operating under the current exemption to implement an alternative treatment technology.***

D. The Regulatory Impact Analysis Significantly Underestimates Monitoring Costs

- ***The RIA significantly underestimates monitoring costs.***

Despite the Los Alamos National Laboratory being a research, development, testing, evaluation, and post-manufacture facility that conducts thermal treatment on a *de minimis* scale and in a

manner protective of human health and the environment, it would not be exempt from any of the proposed technical operating and performance standards or monitoring requirements.

The RIA significantly underestimates monitoring costs. The costs of monitoring to the Los Alamos National Laboratory would be approximately $200,000 on an annual basis, after installation and infrastructure costs of approximately $42,000,000.

- ***The Laboratory requests clarification on how EPA arrived at its estimated costs for the various requirements, including monitoring requirements, reflected in RIA Exhibit ES – Total Cost Per Facility of the Proposed Rule by Requirement.***

E. EPA Fails to Estimate Costs for Expanded Waste Analysis

EPA proposes adding § 264.706 Waste Analysis under the new proposed Subpart Y for OB/OD units and § 265.706 Waste Analysis for interim status OB/OD units. Under the proposed requirements, an owner/operator would be required to conduct a detailed waste analysis for each individual explosives waste stream. In addition, the owner/operator would be required to review and update the waste analysis whenever there is a change in the waste generated and at the time of permit application or renewal. The waste analysis would include, for each unique explosives waste stream, a physical description, chemical constituent analysis and breakdown to the percent composition of each chemical in the waste stream, and chemical properties analysis of properties such as insensitivity, flash point, pH, and free liquid determination.

- ***EPA does not estimate costs for this expanded waste analysis.***

F. The Costs to try to Establish the Proposed *De Minimis* Exemption Far Exceed Any Benefit of the *De Minimis* Exemption.

EPA does not estimate the potential costs of preparing the demonstrations[27] required to qualify for the *de minimis* exemption. It is not possible to weigh any benefits of this *de minimis* exemption against its estimated costs where there are no estimated costs.

The first demonstration requires a showing that "treatment by OB/OD would contribute negligible contamination and potential for exposure." While the proposed rule goes on to identify four criteria to consider in making this demonstration, it is not at all clear how the criteria would correlate to, or what level of proof would be required to, demonstrate "negligible contamination and potential for exposure." "Negligible contamination and potential for exposure" is, absent clarification from EPA on what this means, an elusive concept, and this uncertainty risks a

[27] There is uncertainty over the contemplated demonstrations. The proposed rule indicates EPA would require three demonstrations, with the first demonstration having four components. The RIA, however, suggests there are "five demonstrations" to qualify for the *de minimis* exemption. EPA must clarify this inconsistency, as it introduces confusion over both what is required to satisfy the *de minimis* exemption and what it would cost to do so. For instance, proposed §§ 264.704(e)(1)(i) and 264.705(e)(1)(i) both note "[t]his demonstration must consider, at a minimum, the following criteria." Are there additional demonstrations or criteria contemplated in the RIA that are not reflected in the proposed rule?

regulator constantly requiring *more* to satisfy the demonstration, with corresponding *ad infinitum* cost increases.

The second demonstration is an ostensibly lesser included alternative treatment technology evaluation. But it is not clear how the alternative treatment technology evaluation required to qualify for the *de minimis* exemption would differ from the comprehensive alternative treatment technology evaluation required to demonstrate no safe and available alternative technology. Absent clarification, it would be reasonable to assume this *de minimis* alternative treatment technology evaluation would cost a significant portion of the alternative treatment technology evaluation to demonstrate no safe and available alternative technology.

With respect to the third demonstration, costs will unnecessarily increase where the issue of compliance is complicated by the concept of "facility" and responsible operator. If EPA revises proposed rules §§ 264.704(e)(1)(iii) and 265.704(e)(1)(iii) to read "[a] demonstration that the ~~facility~~OB/OD unit does not have any unresolved compliance or enforcement actions and that the OB/OD unit does not have a history of significant noncompliance," these uncertainty costs will be reduced.

Even if one were to qualify for this *de minimis* exemption, there is no utility, nor any cost savings, derived from its application.

- ***The costs to try to establish the proposed* de minimis *exemption far exceed any benefit of the* de minimis *exemption.***

G. The Regulatory Impact Analysis Does Not Include Any Analysis of the Proposed Rule's Impact to National Security and Defense Missions

The proposed rule is a significant regulatory action. It adversely affects in a material way the national security and defense sectors of the economy and interferes with national security and defense missions. Nowhere does EPA analyze these impacts.

H. If the Proposed Rule Requires Facilities to Adopt Alternative Treatment Technologies Less Protective of Human Health and the Environment, it Would Significantly Reduce the Proposed Rule's Benefits.

EPA's "main purpose" for or "main benefit" of the proposed rule "is to increase protection of human health and the environment." EPA's presumed benefits, however, are based on a false predicate: that "use of safe alternative technologies to OB/OD in general represents a greater level of control and more complete treatment than does OB/OD, and therefore provides better protection of human health and the environment." Similarly, EPA assumes that the use of OB/OD has "associated harmful impacts on human health and the environment."

Certain thermal treatment processes, such as those performed at research, development, testing, evaluation, and post-manufacture work facilities, are safe, compliant, not harmful to human health and the environment, and more protective of human health and the environment than alternative treatment technologies.

If EPA forces these research, development, testing, evaluation, and post-manufacture facilities to adopt alternative treatment technologies less protective of human health and the environment, then the "main purpose" for the proposed rule would not be achieved and the "main benefit" of the proposed rule would be significantly reduced.

- ***To achieve the proposed rule's main purpose and to prevent the significant reduction of the proposed rule's benefits, research, development, testing, evaluation, and post-manufacture work operations should be meaningfully exempted from the prohibition on OB/OD.***

- ***To require the implementation of an alternative treatment technology, that alternative treatment technology must not only be safe and available, it must also be more protective of human health and the environment than the currently used thermal treatment process.***

CONCLUSION

The proposed rule fundamentally alters the regulatory standards governing the open burning or open detonation of waste explosives. The proposed rule:

- ***Eliminates the significant and unqualified exemption for the OB/OD of waste explosives having the potential to detonate; and***

- ***Imposes significant and unnecessary regulatory requirements on OB/OD operations, including on "*de minimis*" operations.***

The proposed rule's fundamental alteration of the regulatory standards governing the OB/OD of waste explosives jeopardizes national security and defense missions. The proposed rule would:

- ***Impair or foreclose the Los Alamos National Laboratory's ability to thermally treat small volumes of specialized explosives waste; and***
- ***Put the Laboratory's national security and defense missions, including missions associated with certification of the United States nuclear stockpile, and key capabilities related to explosives research, development, testing, evaluation, and post-manufacture work, directly at risk.***

The proposed rule risks these significant impacts despite:

- ***The Laboratory's demonstration that its specialized explosives waste can be thermally treated in a manner that is protective of human health and the environment; and***

- ***Can be treated in a manner that is more protective of human health and the environment than certain alternative treatment technologies that produce secondary waste streams or toxic byproducts.***

The proposed rule's *de minimis* exemption, moreover, is illusory. Nearly every requirement of the proposed rule would still apply to research, development, testing, evaluation, and post-manufacture sites such as the Los Alamos National Laboratory even if the de minimis exemption's onerous requirements could be satisfied.

The Los Alamos National Laboratory *fully supports* EPA's effort to curb *where appropriate* the OB/OD of waste explosives. Certain uncontrolled OB/OD operations *do* negatively impact human health and the environment and *do* have safer and more healthful and environmentally protective alternatives. For those operations the regulations should be revised.

But the Los Alamos National Laboratory's thermal treatment processes are *nothing like* those operations. The Laboratory's thermal treatment operations are safe, highly controlled, efficient, completely combust or consume the explosives waste, produce no secondary hazardous waste stream, effectively produce no byproducts, residuals, or emissions, and are protective of human health and the environment. In endeavoring to regulate these types of research, development, testing, evaluation, and post-manufacture operations, EPA is trying to address a problem that does not exist.

EPA's proposed revisions to the standards for the OB/OD of waste explosives sweep too broad. They risk jeopardizing national security and defense missions and risk forcing the adoption of alternative treatment technologies that are less safe and less protective of human health and the environment. EPA's proposed revisions rest on inaccurate assumptions regarding the purpose, scope, and effect of the current regulatory regime and on EPA's alteration of the regulatory regime, on inaccurate assumptions regarding the safety, healthfulness, and environmental protectiveness of thermal treatment processes, and on inaccurate assumptions regarding the costs of fundamentally altering the regulatory regime. The proposed revisions exceed the scope of EPA's authority and are not in accordance with law.

Reasonable revisions, however, facilitating *both* more healthful and environmentally protective outcomes *and* national security and defense missions are achievable. These revisions include:

- ***A categorical exemption for RDT&E wastes, which are produced in small volumes, possess physical and chemical characteristics suited to thermal treatment, are produced in furtherance of national security and defense missions, and can be thermally treated in a manner protective of human health and the environment.***

The Los Alamos National Laboratory respectfully requests EPA's consideration of these comments and adoption of reasonable revisions to the regulatory standards governing the open burning or open detonation of waste explosives.

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