



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 06 2017

OFFICE OF
SOLID WASTE AND
EMERGENCY RESPONSE

NOW THE
OFFICE OF LAND AND
EMERGENCY MANAGEMENT

MEMORANDUM

SUBJECT: Safe Handling, Storage, and Treatment of Waste Fireworks

FROM: Barnes Johnson, Director
Office of Resource Conservation and Recovery

Kathleen Salvo for

TO: RCRA Division Directors

Introduction and Purpose

This memorandum provides information regarding the safe and legal handling, storage, and treatment of waste fireworks. This includes illustrating the importance of developing specific protective permit conditions under the Resource Conservation and Recovery Act (RCRA) to ensure companies handling, storing, and/or treating waste fireworks adhere to safe and environmentally protective waste management practices.

This memorandum also responds to U.S. Chemical Safety and Hazard Investigation Board (CSB) recommendations sent to the U.S. Environmental Protection Agency (EPA) on February 19, 2013 (see Attachment I). CSB sent these recommendations to EPA after conducting an investigation of an explosion involving waste fireworks in Waipahu, Hawaii, on April 8, 2011, which killed five employees. EPA responded to the CSB recommendations by letter on September 3, 2013 (see Attachment II). This memorandum fulfills EPA's commitment in its 2013 letter to develop and disseminate information on safety concerns, best management practices, and standard operating procedures for waste fireworks in order to improve compliance with federal waste management requirements and promote safer management of explosive wastes.

Although this memorandum is directed to EPA Regions, we encourage you to share it with states and tribes, as well as firework manufacturers, law enforcement, fire marshals, and others who may become involved with handling, storing, and/or treating waste fireworks. EPA encourages EPA Regions and states to, as appropriate, provide oversight, including inspections and potential enforcement of regulations and permits applicable to waste fireworks.

Scope

The scope of this memorandum covers waste fireworks that meet the definition of hazardous waste as regulated under RCRA. However, the principles listed in this memorandum may also be considered for other explosive and pyrotechnic material meeting the definition of hazardous waste. This includes, for example, marine, roadside, and other signal flares; automobile air bag explosives; and hobbyist rocket propellants that are hazardous waste when discarded.¹

Need for Improved Management of Waste Fireworks

Accidents involving waste fireworks resulting in the loss of life underscore the importance of addressing safety concerns associated with handling waste fireworks. Historically, there have been several instances where the handling of waste fireworks led to fires/explosions resulting in deaths. For example, an accident on July 29, 1980, at Fort Rosecrans in San Diego, California, resulted in three deaths and one injury when Explosive Ordnance Disposal (EOD) employees were loading a truck with confiscated fireworks to take to Fort Irwin for treatment/destruction. On July 4, 2012, in Lansing, Kansas, a person died during the open burning of waste commercial fireworks that had failed to properly discharge during a fireworks display.

The Waipahu, Hawaii, accident mentioned in the introduction killed five workers that were handling waste fireworks which had been seized by law enforcement. This incident was investigated by the CSB.² According to the CSB, employees were dismantling fireworks in front of their storage magazine by cutting them open and separating their components to facilitate later treatment. When it started to rain, they moved these materials inside the storage area, after which an explosion and fire inside the storage area killed five workers.

The CSB, Hawaii Occupational Safety and Health Division (HIOSH), and the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) investigators identified a number of factors that likely contributed to the ignition, explosion, fire, and deaths at DEI, including:

- Failure to remove explosive dust that accumulated on the floor, which was generated by the fireworks dismantling/treatment activities.
- Presence and use of many potential spark-causing sources of ignition in the storage magazine and in close proximity to the work in progress, including several metal items which HIOSH tests showed were capable of producing a spark (and therefore being an ignition source). These items included: metal tools (scissors, pruning shears, tin snips), a push broom, a pair of miter saws, a metal hand truck, a metal chair, steel drum(s) and lid, and a battery-powered diesel pump; and, less likely, non-static proof clothing and non-static proof plastic bags. CSB also noted there were two vehicles parked out front that were not but could have been a source of a spark.

¹ Waste fireworks generated on the premises of a household are exempt from the federal RCRA hazardous waste (Subtitle C) regulations (see 40 CFR 261.4(b)(1)). Fireworks that are confiscated by law enforcement are not eligible for this exemption and thus may be subject to RCRA regulation.

² “Investigation Report: Donaldson Enterprises, Inc., Fireworks Disposal Explosion and Fire (5 Fatalities, 1 Injury),” Report No. 2011-06-I-HI, U.S. Chemical Safety and Hazard Investigation Board, January, 2013; the report as well as a video on the incident (“CSB Safety Video: Deadly Contract”) can be downloaded at: <http://www.csb.gov/investigations/detail.aspx?SID=101>.

- Disassembly work being conducted too close to the storage magazine door entry, and work-in-progress items moved just inside the doorway due to inclement weather, at least partially blocking the entrance and ready egress.
- Only one entry/exit, which was blocked by the fire, thus preventing all but one of the workers from exiting the magazine. The one worker who managed to exit died later that day.

ATF and CSB concluded that the explosion was likely triggered when loose explosive powder on the floor was ignited by friction or a metal-to-metal spark. CSB noted, for example, sparks could have been generated by moving the metal hand truck (either by knocking it over or dragging the metal lip on the floor), dropping or knocking over the removable steel drum lid onto the floor, or friction from an office chair rolling over the powder.³

Application of RCRA to Waste Fireworks

The point at which fireworks become subject to RCRA regulation depends on the site-specific circumstances. Materials are subject to RCRA when they become waste by being discarded, including when they become unfit for their intended purpose. For example, fireworks can become RCRA hazardous wastes when they fail to function, are damaged and cannot be used or reclaimed, or are otherwise discarded, for example, by having an oversupply. Additionally, fireworks that are seized by law enforcement generally become hazardous waste when a determination is made that the fireworks are no longer needed as evidence and that they will not be reused or repurposed.⁴ This includes fireworks that have deteriorated or are damaged such that they cannot be repaired, recycled, or used for their intended purpose.⁵ Discarded fireworks may be hazardous waste due to their reactivity, but may also be hazardous for their ignitability (because many contain oxidizer chemicals) and/or toxicity characteristic due to their metal content. Wastes may be classified as hazardous for more than one reason, and all applicable waste codes should be identified in any required reporting, such as a hazardous waste manifest, to ensure appropriate and compliant treatment.

Any person or entity that first causes fireworks to become hazardous waste is considered a hazardous waste generator for purposes of RCRA regulation.⁶ Generators of hazardous waste are regulated based on the amount of hazardous waste they generate in a calendar month. Hazardous waste generators are responsible for all applicable requirements in 40 Code of Federal Regulation (CFR) part 262 for large quantity generators (LQGs), small quantity generators (SQGs), or very small quantity generators

³ The waste management activities identified by the CSB as contributing to the explosion and resulting casualties at DEI include: violation of existing RCRA regulations, failure to follow DEI's standard operating procedures, and failure to obtain and operate in accordance with a RCRA permit. As a result of an EPA Criminal Investigation Division investigation, DEI and two senior employees were indicted for, among other counts, treatment and storage of hazardous waste without a RCRA permit.

⁴ All over the country, especially around holidays such as the Fourth of July, local and state law enforcement officials seize tons of fireworks each year in jurisdictions where sale or consumption of fireworks is illegal. Fireworks may also be seized if they fail to meet the U.S. Consumer Product Safety Commission (CPSC) regulations for consumer fireworks or are non-compliant imports.

⁵ Seized fireworks may be repurposed under specific circumstances. For example, fireworks seized because they were commercial grade fireworks labeled as or being illegally sold as consumer grade may, in some jurisdictions, if in useable condition, be repurposed to a licensed commercial vender for use in a commercial display.

⁶ As noted previously, waste fireworks generated on the premises of a household are excluded from RCRA hazardous waste requirements under 40 CFR 261.4(b)(1). However, EPA encourages use of community household hazardous waste collection programs that are capable of handling household hazardous waste fireworks.

(VSQGs).⁷ In particular, large and small quantity generators are subject to accumulation time limits (90/180 days respectively), personnel training, and emergency procedures.⁸ Generators may conduct hazardous waste treatment without a RCRA permit only if it is non-thermal treatment in tanks or containers occurring on-site. EPA notes that, for generators who do not wish to treat waste fireworks, there are several commercial treatment, storage, and disposal facilities that are permitted to accept energetic wastes and can provide further assistance.⁹

Except as described in the previous paragraph, any person that treats (including open burning and open detonation of) waste fireworks, or accumulates waste fireworks greater than 90/180 days, is required to apply for, and obtain, a RCRA permit. RCRA permits contain specific enforceable conditions that implement the RCRA regulations for the facility. EPA believes that conditions specified in a RCRA permit should be written in a way to prevent accidents involving waste fireworks. For example, a RCRA hazardous waste permit would prohibit use of spark-producing metal objects in proximity to the reactive wastes and would require that explosive dust be kept off the floor.

Existing RCRA regulatory requirements that address the safe handling and management of waste fireworks are described in the following section and excerpted in Attachment III. EPA encourages EPA Regions and states to clearly spell out requirements in permits to address specific safety risks posed by handling, storing, and treating waste fireworks, rather than simply referencing the applicable regulatory citations, whether in a standard RCRA permit or an emergency permit. Clearly setting forth how the regulations apply to each waste stream and operation covered by the permit enables the permittee to more readily see and understand their specific compliance obligations, and enhances enforceability. By the same token, permitting agencies should ensure that commercial treatment, storage, and disposal facilities permitted to accept waste fireworks are implementing safe handling procedures as specified in their permits.

Example RCRA Regulations and Other Best Management Practices for Storage and Handling of Energetic Wastes

The following list of regulations, best management practices, and standard operating procedures for safe handling, storage, and treatment of waste explosives is drawn from EPA's RCRA regulations as well as regulations, best practices, and guidelines from other federal agencies and private sector organizations, including ATF, the Occupational Safety and Health Administration (OSHA), the Department of Transportation (DOT), the Consumer Product Safety Commission (CPSC), Department of Defense (DOD), the DOD Explosives Safety Board (DDESB), and the Institute of the Makers of Explosives (IME).

The following is a list of specific RCRA requirements that address safe handling of waste fireworks. These requirements should be included in a RCRA permit, as applicable (see also Attachment III).

Example RCRA Regulations for Small Quantity and Large Quantity Generators

⁷ EPA recently revised the RCRA regulations to rename "Conditionally Exempt Small Quantity Generators" to "Very Small Quantity Generators" and to move regulations for these generators into 40 CFR part 262.

⁸ A summary table of generator requirements can be found at: <https://www.epa.gov/hwgenerators/hazardous-waste-generator-regulatory-summary>.

⁹ For assistance in identifying the locations of commercial treatment, disposal, and storage facilities permitted to accept waste fireworks, please contact your EPA Regional office or state agency.

- Waste fireworks must be compatible with the container and the container must be in good condition [40 CFR 262.16(b)(2) and 262.17(a)(1)(ii)-(iii)].
- Accumulation areas must be inspected weekly [40 CFR 262.16(b)(2)(iv) and 262.17(a)(1)(v)].
- Facility must be maintained and operated to minimize possibility of a fire, explosion, or release. [40 CFR 262.16(b)(8) and 262.251].
- Communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment must be tested and maintained [40 CFR 262.16(b)(8)(iii) and 262.253].
- Immediate access to an internal alarm or emergency communication device must be provided to personnel handling waste fireworks [40 CFR 262.16(b)(8)(iv) and 262.254].
- Aisle space must be maintained to allow unobstructed movement in an emergency [40 CFR 262.16(b)(8)(v) and 262.255].
- Generators must attempt to make arrangements with the local authorities, taking into account the types and quantities of hazardous wastes handled at the facility [40 CFR 262.16(b)(8)(vi) and 262.256].
- Small quantity generators must ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures [40 CFR 262.16 (b)(9)(iii)].
- Large quantity generators must provide training to facility personnel and maintain associated documents and records at the facility [40 CFR 262.17(a)(7)].
- Large quantity generators must have a contingency plan which must be designed to minimize hazards to human health or the environment [40 CFR 262.260].

Example RCRA Regulations for Treatment, Storage, or Disposal Facilities

- Annual safety training, including training specific to explosives, must be required for all employees [40 CFR 264.16].
- Access to waste fireworks storage areas must be controlled (for security as well as safety reasons) [40 CFR 264.14].
- Waste fireworks must be separated and protected from sources of ignition and reaction, including but not limited to: open flames, smoking, cutting and welding, hot surfaces, and frictional heat [40 CFR 261.17(a)].
- Waste fireworks must be protected from sparks (static, electrical, or mechanical) that may originate from, for example:
 - Wrenches, hammers, knives, dollies or carts, drums or other containers, or chairs;
 - Clothing, plastic bags, and other materials that are not static-proof; and
 - Cell phones or other potential spark-producing electronic devices [40 CFR 264.17(a)].
- Precautions must be taken to segregate or prohibit incompatible materials in order to prevent reactions which generate extreme heat or pressure, fire or explosions, or violent reactions [40 CFR 264.17(b)].
- Explosive dust on the floor must be kept swept up and reactive/ignitable waste must be protected from frictional heat [40 CFR 264.17(a)].
- All units must have an inspection plan and be inspected and remedied to assure compliance with the above [40 CFR 264.15 and 264.1201(f)].
- The facility must be designed and operated to minimize the possibility of a fire or explosion, and to minimize hazards should a fire or explosion occur (e.g., fire suppression system) [40 CFR 264.31 and 264.51].

- All process changes must be implemented in accordance with the RCRA permit modification procedures in 40 CFR 270.42.

This is not intended to be a comprehensive, all-inclusive discussion of RCRA permit requirements to protect human health and the environment. For example, this list does not include provisions covering the design of waste management units, the need for soil sampling, potential groundwater monitoring, and the need to address kick-out¹⁰ and contaminated soils upon closure at open burning and open detonation treatment sites.

Other federal regulations, best practices, or guidelines

A permit writer may determine, on a case-by-case basis, that other permit conditions are needed at a specific site. Below is a list of other federal regulations, best practices, or guidelines that may be considered (see also Attachment IV). These practices can be included as requirements in a RCRA permit where necessary to protect human health and the environment under 40 CFR 264.601 for miscellaneous units or 40 CFR 270.32(b)(2) for any treatment, storage, or disposal unit.

- Owner/operators should have oral safety briefings prior to each shift, covering tasks to be performed and associated safety precautions [U.S. Army Corps of Engineers Engineering Manual 385-1-97].
- Disassembly and treatment inside or within 50 feet of an area used to store explosive waste should be prohibited. An explosives/pyrotechnic storage area should solely be used for the purpose of storage [27 CFR 555; International Fire Code 5604.7.5 and 5604.7.7].
- Smoking, matches, open flames, and spark producing devices are not permitted in or within 50 feet or any outdoor explosives storage unit [27 CFR 555.212].
- No more than 500 pounds (227 kg) of pyrotechnic compositions or explosives are permitted at one time in fireworks mixing, assembly, or disassembly areas [27 CFR 555.221(b)].
- All pyrotechnic compositions or explosives not in immediate use will be stored in covered, non-ferrous containers [27 CFR 555.221(b)].
- Fireworks waste storage units should be inspected at least every seven days to determine if there has been unauthorized entry or unauthorized removal of storage contents [27 CFR 555.204].
- All explosives should be kept in locked storage units [27 CFR 555.205].
- No sparking material (metal) is to be in contact with stored explosives [27 CFR 555.207(a)(11)].
- Explosive materials within a storage unit should not be placed directly against interior walls nor stored so as to interfere with ventilation [27 CFR 555.214(a)].
- Containers of explosive materials should not be unpacked or repacked inside or within 50 feet of an explosives storage unit, except with respect to fiberboard or other nonmetal containers [27 CFR 555.214(c)].
- Containers of explosive materials should be closed while being stored [27 CFR 555.214(c)].
- Tools (for opening and closing containers) and cleaning utensils must have no spark-producing metal parts; metal tools are not to be stored in explosives storage units [27 CFR 555.214(d) and 555.215].
- All storage units should have sufficient and unobstructed means of entry/exit [Safety Library Publication (SLP) #3, Institute of Makers of Explosives (IME)].

¹⁰ Kick-out is when chunks of explosives, fragments, unexploded items, and other debris that are not consumed in the fireball of an OB/OD unit and get propelled by the blast outside of the unit.

Emergency Responses and RCRA Permitting

The emergency response permit provisions in RCRA were developed to ensure emergency situations are addressed in a timely manner, which is of particular concern when dealing with explosives. The RCRA regulations contain two key permit provisions for emergencies:

- 1) Exemption from the requirements to obtain a RCRA permit for: (a) an immediate response to a discharge of hazardous waste; (b) an immediate response to an imminent and substantial threat of a discharge of hazardous waste; or (c) an immediate response to an immediate threat to human health, public safety, property, or the environment, from military munitions or other explosive devices or material, as determined by an “explosives or munitions emergency response specialist” (as defined in 40 CFR 260.10) [emergency exemption provision].¹¹
- 2) A separate provision allows EPA to issue a temporary emergency permit covering the emergency response, not to exceed 90 days, in response to an “imminent and substantial endangerment to human health or the environment” [emergency permit provision].¹²

Emergency determinations regarding explosives and pyrotechnics are site-specific (case-by-case). Emergency exemption decisions are generally made by explosives experts/responders while emergency permit decisions are made by regulators. Emergency exemptions may be critical in responding to situations that require immediate responses to protect human health, property, and the environment. Delays to an immediate response may be called for by such practical considerations as nightfall, inclement weather, or travel time for emergency crews and experts to arrive and set up. These examples imply delays of hours, or perhaps days, not weeks or months. If an immediate response is not needed, i.e., there is time to discuss whether a RCRA emergency permit is needed, then responders should consult with the permitting authority as to how to proceed. If it is determined that an immediate response is not needed (i.e., a response can be delayed) and it is not a potential imminent and substantial endangerment situation, then a full RCRA permit, a RCRA compliance order, or a CERCLA action may be appropriate.¹³

Emergency permits may be oral (followed by a written permit within five days) or written, may not exceed 90 days, and must be accompanied by a public notice [40 CFR 270.61]. These permits “shall incorporate, to the extent possible and not inconsistent with the emergency situation, all applicable requirements of parts 264, 265, and 270.” Because these permits need to be developed in a short time-frame, the permit writer should consider incorporating the requirements and best management practices listed above, as appropriate, in emergency permits that involve explosive waste, to prevent accidental ignition.

State Regulations

Please note that the preceding is an explanation of federal regulations. EPA authorizes states to implement the hazardous waste management program. In authorized states, the states’ regulations operate in lieu of the federal regulations. States may also adopt regulations that are more stringent than the federal regulations. Thus, anyone involved in the management of waste fireworks should contact

¹¹ 40 CFR 264.1(g)(8)(i)(A), (B), and (D), and (g)(8)(iv); §§ 265.1(c)(11)(i)(A), (B), and (D), and (c)(11)(iv); and 270.1(c)(3)(i)(A), (B), and (D), and (c)(3)(iii). Note: a number of states have more stringent requirements in which responders must report to the state and, in some cases, get permission before proceeding.

¹² 40 CFR 270.61 *Emergency permits*.

¹³ The preambles to the proposed and final military munitions rule discuss these situations in more detail [60 FR 56468-56493, Nov. 8, 1995 (proposal); 62 FR 6622-6657, Feb. 12, 1997 (final rule)].

their state implementing agency to determine how waste fireworks are handled under the state hazardous waste program.

If you have any questions or need further information, please contact Ken Shuster at (703) 308-8759.

cc: Vanessa Allen Sutherland, Chairperson
U.S. Chemical Safety Board

Attachments

- I. CSB Letter Recommendations to EPA, Feb 19, 2013
- II. EPA Letter Response to the CSB, Sept 3, 2013
- III. Relevant RCRA Regulations
- IV. Other References

Attachment I: CSB Letter Recommendations to EPA, Feb 19, 2013

U.S. Chemical Safety and Hazard Investigation Board

Rafael Moure-Eraso, Ph.D.
Chairperson

Mark Griffon
Board Member

Beth J. Rosenberg, ScD, MPH
Board Member

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In reply, please refer to:
2011-06-I-HI-R9 through R11

The Honorable Bob Perciasepe
Acting Administrator & Deputy Administrator
Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Ave
Mail Code 1101A
Washington DC 20460

FEB 19 2013

Dear Mr. Perciasepe:

On January 17, 2013, the United States Chemical Safety and Hazard Investigation Board (CSB) released its final report on the April 8, 2011 explosion and fire inside a storage magazine leased by Donaldson Enterprises, Inc. (DEI) at Waikele Self Storage in Waipahu, Hawaii. DEI used the magazine for seized fireworks storage and disposal-related activities. As a result of the explosion and fire, five DEI personnel inside the magazine were fatally injured and a sixth sustained minor injuries.

As part of its investigation, the CSB reviewed the hazardous solid waste disposal regulations promulgated under the Resource Conservation and Recovery Act (RCRA) pertaining to the disposal of fireworks and the issuance of emergency permits for these disposal activities. Based on the findings of the investigation, the Board voted on January 17, 2013 to recommend the following three recommendations to the Environmental Protection Agency (EPA):

CSB Recommendation No. 2011-06-I-HI-R9:

Revise the Resource Conservation and Recovery Act (RCRA) Subtitle C regulations to require a permitting process with rigorous safety reviews to replace the use of emergency permits under 40 CFR §270.61 for the disposal of explosive hazardous materials, including fireworks. At a minimum, the new process should require the use of best available technology, safe disposal methodologies, as well as safety management practices, such as those required by OSHA's Process Safety Management Standard (PSM), 29 CFR §1910.119 (e.g., hazard analysis and control, management of change).

CSB Recommendation No. 2011-06-I-HI-R10:

Until recommendation 2011-06-I-HI-R9 can be implemented, develop and issue a policy guidance document to provide a regulatory process with rigorous safety reviews to replace the use of emergency permits under 40 CFR §270.61 for the disposal of

U.S. Chemical Safety and Hazard Investigation Board

explosive hazardous materials, including fireworks. At a minimum, the new process should require the use of best available technology, safe disposal methodologies, as well as safety management practices, such as those required by OSHA's Process Safety Management Standard (PSM), 29 CFR §1910.119 (e.g., hazard analysis and control, management of change). Ensure its effective communication to all EPA regional administrators, state environmental agencies, and organizations within the fireworks industry.

CSB Recommendation No. 2011-06-I-HI-R11

Effectively participate in the National Fire Protection Association's standard development process to develop guidance on the safe and environmentally sound disposal of fireworks, as recommended under recommendation 2011-06-I-HI-R7¹.

A more detailed rationale for these recommendations and all recommendations issued pursuant to this investigation can be found in the enclosed investigation report and video, which can also be downloaded from our website (www.csb.gov).

The CSB assigns a status to its recommendations depending on the action(s) proposed and taken by recipients. Briefly, the status designates the recommendation as either open or closed. The status may also include a special designation for instances when the Board concludes that a recipient not only meets but exceeds the proposed action(s). The status of all recommendations is posted on the CSB website (www.csb.gov), where more information on the Recommendations process is also available (see "Frequently Asked Questions" under the Recommendations tab on the webpage).

The Board would appreciate a response regarding the actions your agency has taken (or is contemplating taking) concerning these recommendations within **60 days (but no later than 180 days)** after receipt of this letter. We are aware of the initiatives that EPA has ongoing regarding the safe disposal of fireworks; please include a discussion of your most recent activities in your response. In order to close recommendations, the CSB requires evidence of actions taken. Therefore, upon review of your initial response, Mr. Mark Kaszniak, Senior Chemical Safety Recommendations Specialist, will need to be in touch with you to obtain adequate documentation that these recommendations have been implemented. Kindly indicate the person on your staff who can serve as your point of contact.

¹ CSB Recommendation 2011-06-I-HI-R7 reads as follows:

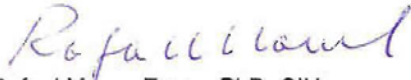
Develop a new standard, or incorporate within an existing standard, best practice for the safe disposal of waste fireworks that are consistent with environmental requirements. At a minimum this guidance or standard should:

- *Discourage the disassembly of waste fireworks as a step in the disposal process;*
- *Minimize the accumulation of waste explosive materials, and encourage practices that reduce, recycle, reuse, or repurpose fireworks; and*
- *Incorporate input from ATF, EPA, and other agencies, experts, and available resources on fireworks disposal methodologies.*

**U.S. Chemical Safety and
Hazard Investigation Board**

If you have any questions or need further information, please have your staff contact Mr. Kaszniak at (202) 261-7654 or his e-mail: mark.kaszniak@csb.gov. In all future correspondence pertaining to these recommendations, please refer to recommendation numbers **2011-06-I-HI-R9** through **R11**, and copy Mr. Kaszniak.

Sincerely,



Rafael Moure-Eraso, PhD, CIH
Chairperson

Enclosures (2).

cc: The Honorable Mathy Stanislaus, Assistant Administrator, Office of Solid Waste and
Emergency Response, EPA, Mail Code 5101T
Sonya Sasseville, Associate Director, Program Implementation and Information Division,
Office of Resource Conservation and Recovery, EPA, Mail Code 5303P
Ken Shuster, Office of Resource Conservation and Recovery, EPA, Mail Code 5303P
Manuel Gomez, Director, Office of Recommendations, CSB
Daniel Tillema, Team Lead, Western Regional Office of Investigations, CSB
Mark Kaszniak, Senior Chemical Safety Recommendations Specialist, CSB

Attachment II: EPA Letter Response to the CSB, Sept 3, 2013



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 3 2013

OFFICE OF
SOLID WASTE AND
EMERGENCY RESPONSE

The Honorable Rafael Moure-Eraso, Ph.D., CIH
Chairperson and CEO
U.S. Chemical Safety and Hazard Investigation Board
2175 K Street, NW, Suite 650
Washington, DC 20037-1809

Dear Dr. Moure-Eraso:

Thank you for your letter of February 19, 2013, to the U.S. Environmental Protection Agency (EPA) transmitting three U.S. Chemical Safety and Hazard Investigation Board (CSB) recommendations resulting from the CSB investigation and assessment of the April 8, 2011, explosion and fire inside a storage magazine leased by Donaldson Enterprises, Inc. (DEI) at Waikele Self Storage in Waipahu, Hawaii. This explosion and fire resulted in five DEI personnel fatalities inside the magazine; one employee sustained minor injuries. We have reviewed these recommendations, CSB's January 17, 2013, final report of the investigation, the CSB video of the accident and statements by CSB staff at the January 17 public meeting.

The EPA shares CSB's concern regarding the safe management of explosive waste and has a regulatory framework under the Resource Conservation and Recovery Act (RCRA) to address it. Under the regulations, DEI was required to have a RCRA permit containing conditions that prohibited the circumstances and activities that the CSB and the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) investigations identified as possible causes of the accident and deaths. Accordingly, after the EPA Criminal Investigation Division investigation, DEI and two senior DEI employees were indicted on September 27, 2012, for treatment of hazardous waste without the requisite permit.

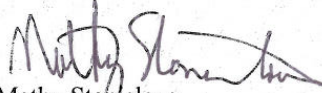
While we believe the regulations are protective and should have prevented the explosion and fire that occurred if DEI had been in compliance in this case, we are committed to enhancing the effectiveness of our program. Specifically, the EPA plans to develop a memorandum to address safety concerns relating to explosive wastes under the Resource Conservation and Recovery Act (RCRA). Through this memorandum and other outreach activities, the EPA will convey best management practices and standard operating procedures with a goal towards enhancing compliance and promoting safer management of explosive waste under RCRA.

In addition, the EPA will continue its ongoing effort in conjunction with the Federal Interagency Committee on Explosives to assess broader safety, security, environmental, practical, regulatory and compliance issues relating to the management of explosive waste. The enclosure to this letter provides an update on this effort, as well as specific responses to each of the CSB's recommendations.

The EPA looks forward to collaborating with the CSB and other federal departments and agencies to continue to improve safeguards to avoid improper management of waste fireworks and other explosive waste.

If you have any questions or need further information, please feel free to contact me or have your staff contact Ken Shuster at (703) 308-8759.

Sincerely,

A handwritten signature in black ink, appearing to read "Mathy Stanislaus". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Mathy Stanislaus
Assistant Administrator

Enclosure

EPA Responses to CSB Recommendations

EPA will take the following actions in response to the Board's recommendations:

CSB Recommendation No. 2011-06-I-HI-R9:

Revise the Resource Conservation and Recovery Act (RCRA) Subtitle C regulations to require a permitting process with rigorous safety reviews to replace the use of emergency permits under 40 CFR §270.61 for the disposal of explosive hazardous materials, including fireworks. At a minimum, the new process should require the use of best available technology, safe disposal methodologies, as well as safety management practices, such as those required by OSHA's Process Safety Management Standard (PSM), 29 CFR §1910.119 (e.g., hazard analysis and control, management of change).

EPA Response:

After careful review of the CSB report and the circumstances surrounding the accident, EPA has determined that regulatory changes are not necessary since adequate RCRA Subtitle C regulations already exist; and had they been followed (e.g., no metal spark-producing tools and no other metal objects allowed, and explosive dust kept swept off the floor), would have prevented the accident's probable causes as identified by the CSB.

We also note that other applicable regulations and guidance (e.g., ATF, Occupational Safety and Health Administration (OSHA), Institute of Makers of Explosives (IME), and Department of Defense (DOD)) exist that, had they been followed, would also have prevented the accident's probable causes as identified by the CSB.

In short, EPA believes that the issue is not with the regulations, but with their implementation.

To address the rules implementation, EPA agrees that dissemination of additional information on the safe management of explosive waste under RCRA is appropriate and we have set forth below concrete steps we will take.

CSB Recommendation No. 2011-06-I-HI-R10:

Until recommendation 2011-06-I-HI-R9 can be implemented, develop and issue a policy guidance document to provide a regulatory process with rigorous safety reviews to replace the use of emergency permits under 40 CFR §270.61 for the disposal of explosive hazardous materials, including fireworks. At a minimum, the new process should require the use of best available technology, safe disposal methodologies, as well as safety management practices, such as those required by OSHA's Process Safety Management Standard (PSM), 29 CFR §1910.119 (e.g., hazard analysis and control, management of change). Ensure its effective communication to all EPA regional administrators, state environmental agencies, and organizations within the fireworks industry.

EPA Response:

EPA agrees that dissemination of information on best available technologies (BATs), best management practices (BMPs), and standard operating procedures (SOPs), including safe handling and treatment methodologies and

safety management practices, would help ensure the use of more rigorous safety procedures in fireworks disposal. To that end, EPA plans to develop a memorandum that addresses the safety concerns during storage, handling, transportation, and treatment of explosive waste under RCRA. This memorandum will cite existing regulations, guidance, and manuals from EPA, ATF, OSHA, IME, the American Pyrotechnics Association (APA), the Department of Transportation (DOT), and DOD, including the DOD Explosives Safety Board (DDESB).

EPA notes that the PSM requirements are similar to those of the EPA Risk Management Program (RMP), developed under Clean Air Act (CAA) authority. EPA has reviewed the RMP and PSM requirements and will likely incorporate aspects of these processes into its memorandum.

Regarding the recommendation to replace the use of emergency permits for these materials, the emergency permit provision was developed using the Administrative Procedure Act rulemaking process, carefully considering public comments, to address emergency situations in a timely manner. EPA believes that replacing emergency permits would put the public at greater risk by delaying responses to “imminent and substantial endangerment to human health or the environment.” To address CSB’s concerns, EPA plans (in either the memorandum or a separate document) to: 1) clarify the purpose, intent, and limitations on the use of emergency permits, and 2) develop standardized explosive waste safety language for use in emergency permits.

As CSB recommends, EPA will continue to communicate effective safety, security, environmentally protective, regulatory compliant and other management practices regarding waste fireworks and explosive waste, including the memoranda outlined above. This will be accomplished through outreach to EPA regional offices, state environmental agencies, tribes, and organizations in the fireworks and explosives industries.

CSB Recommendation No. 2011-06-I-HI-R11:

Effectively participate in the National Fire Protection Association's (NFPA) standard development process to develop guidance on the safe and environmentally sound disposal of fireworks, as recommended under recommendation 2011-06-I-HI-R7.

EPA Response:

EPA has contacted the NFPA, as well as the APA, and is prepared to participate in any NFPA standard development process to develop guidance on the safe and environmentally sound disposal of fireworks.

EPA Activities Update

CSB Request:

We are aware of the initiatives that EPA has ongoing regarding the safe disposal of fireworks; please include a discussion of your most recent activities in your response.

EPA Response:

EPA's initiative is a long-term effort that addresses broader issues (e.g., security, environmental, transportation) than those that will be encompassed by the memorandum discussed above, since it includes some research and demonstrations. EPA is working with the Federal Interagency Committee on Explosives (ICE) to identify, develop and demonstrate treatment technologies to desensitize (e.g., by soaking) or otherwise neutralize or remove the explosive characteristics (e.g., by chemical, biological, or thermal treatment), or to safely destroy the explosive waste (e.g., by incineration or detonation chamber) for wastes EPA has identified. These include waste consumer and commercial fireworks; marine, road, and signal flares; auto air bag explosives; rocket hobbyist propellants; and, potentially, motion picture special effects and construction and demolition explosives, propellants, and pyrotechnics. ICE members actively involved in this effort represent DOT, ATF, OSHA, the Department of Homeland Security (DHS), the U.S. Coast Guard (USCG), the Consumer Product Safety Commission (CPSC), DDESB and other DOD agencies, as well as the CSB and EPA. EPA believes that the outcome of this overall effort will further address CSB's concerns identified in the final report.

Attachment III - Relevant RCRA Regulations

The relevant RCRA hazardous waste regulations are in 40 CFR parts 260-270. The below regulations should be specifically considered for Generators of waste fireworks, as well as for RCRA permits, including emergency permits, pertaining to waste fireworks and other explosives:

Part 262 – Standards Applicable to Generators of Hazardous Waste

Subpart A – General

§ 262.10 Purpose, scope, and applicability.

- (a)(1) A person who generates a hazardous waste as defined by 40 CFR part 261 is subject to all the applicable independent requirements in the subparts and sections listed below...
- (2) A generator that accumulates hazardous waste on site is a person that stores hazardous waste; such generator is subject to the applicable requirements...unless it is one of the following:
 - (i) A very small quantity generator that meets the conditions for exemption in §262.14;
 - (ii) A small quantity generator that meets the conditions for exemption in §§262.15 and 262.16; or
 - (iii) A large quantity generator that meets the conditions for exemption in §§262.15 and 262.17.

§262.16 Conditions for exemption for a small quantity generator that accumulates hazardous waste.

- (b)(2) *Accumulation of hazardous waste in containers—*
 - (i) *Condition of containers.* If a container holding hazardous waste is not in good condition, or if it begins to leak, the small quantity generator must immediately transfer...to a container...in good condition, or immediately manage the waste in some other way...
 - (iv) *Inspections.* At least weekly, the small quantity generator must inspect central accumulation areas...
- (8) *Preparedness and prevention—*
 - (i) *Maintenance and operation of facility.* A small quantity generator must maintain and operate its facility to minimize the possibility of a fire, explosion, or any unplanned sudden...release of hazardous waste or hazardous waste constituents to air...which could threaten human health or the environment.
 - (ii) *Required equipment.* All areas where hazardous waste is either generated or accumulated must be equipped...*unless* none of the hazards posed by waste handled at the facility could require a particular kind of equipment...or the actual waste generation or accumulation area does not lend itself for safety reasons to have a particular kind of equipment specified below.
 - (C) Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment; and

- (D) Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.
 - (iii) *Testing and maintenance of equipment.* All communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, must be tested and maintained as necessary to assure its proper operation in time of emergency.
 - (iv) *Access to communications or alarm system.* Whenever hazardous waste is being poured...all personnel involved...must have immediate access...to an internal alarm or emergency communication device...unless such a device is not required...
 - (v) *Required aisle space.* The small quantity generator must maintain aisle space to allow the unobstructed movement of personnel...to any area of facility operation in an emergency...
 - (vi) *Arrangements with local authorities.*
 - (A) The small quantity generator must attempt to make arrangements with the local police department...taking into account the types and quantities of hazardous wastes handled at the facility...
 - (B) A small quantity generator shall maintain records documenting the arrangements with the local fire department...necessary to respond to an emergency...
- (9) *Emergency procedures.* The small quantity generator complies with the following conditions for those areas...where hazardous waste is generated and accumulated:
- (iii) The small quantity generator must ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures...

§ 262.17 Conditions for exemption for a large quantity generator that accumulates hazardous waste.

- (a)(1) *Accumulation of hazardous waste in containers.* If the hazardous waste is placed in containers, the large quantity generator must comply with the following:
- (ii) *Condition of containers.* If a container holding hazardous waste is not in good condition, or if it begins to leak, the large quantity generator must immediately transfer...to a container...in good condition, or immediately manage the waste in some other way...
 - (v) *Inspections.* At least weekly, the large quantity generator must inspect central accumulation areas...
 - (vi) *Special conditions for accumulation of ignitable and reactive wastes.*
 - (A) Containers holding ignitable or reactive waste must be located at least 15 meters (50 feet) from the facility's property line unless a written approval is obtained... A record of the written approval must be maintained...
 - (B) The large quantity generator must take precautions to prevent accidental ignition or reaction of ignitable or reactive waste. This waste must be separated and protected from sources of ignition or reaction including but not limited to the following: Open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (*e.g.*, from heat-producing chemical reactions), and radiant heat. While ignitable or reactive waste is being handled, the large quantity generator must confine smoking and open flame to specially designated locations. "No Smoking" signs must be

conspicuously placed wherever there is a hazard from ignitable or reactive waste.

(6) *Emergency procedures.* The large quantity generator complies with the standards in subpart M of this part, Preparedness, Prevention and Emergency Procedures for Large Quantity Generators.

(7) *Personnel training.*

- (i)(A) Facility personnel must successfully complete a program of classroom instruction, online training (*e.g.*, computer-based or electronic), or on-the-job training that teaches them to perform their duties in a way that ensures compliance with this part. The large quantity generator must ensure that this program includes all the elements described in the document required under paragraph (a)(7)(iv) of this section.
- (B) This program must be directed by a person trained in hazardous waste management procedures, and must include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed.
- (iv) The large quantity generator must maintain the following documents and records at the facility...
 - (B) A written job description for each position... This description may be consistent in its degree of specificity...for other similar positions in the same company...but must include the requisite skill, education, or other qualifications, and duties of facility personnel assigned to each position;
 - (C) A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position...

Subpart M – Preparedness, Prevention, and Emergency Procedures for Large Quantity Generators

§ 262.251 Maintenance and operation of facility.

A large quantity generator must maintain and operate its facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

§ 262.252 Required equipment

All areas deemed applicable...must be equipped...(unless none of the hazards posed by waste handled at the facility could require a particular kind of equipment...or the actual hazardous waste generation or accumulation area does not lend itself for safety reasons to have a particular kind of equipment specified below).

(c) Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment; and

(d) Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.

§ 262.253 Testing and maintenance of equipment.

All communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, must be tested and maintained as necessary to assure its proper operation in time of emergency.

§ 262.254 Access to communications or alarm system.

(a) Whenever hazardous waste is being poured..., all personnel...must have immediate access (*e.g.*, direct or unimpeded access) to an internal alarm or emergency communication device...unless such a device is not required...

§ 262.255 Required aisle space.

The large quantity generator must maintain aisle space to allow the unobstructed movement of personnel...to any area of facility operation in an emergency...

§ 262.256 Arrangements with local authorities.

(a) The large quantity generator must attempt to make arrangements with the local police department, fire department...taking into account the types and quantities of hazardous wastes handled at the facility ...

(b) The large quantity generator shall maintain records documenting the arrangements with the local fire department...necessary to respond to an emergency...

§ 262.260 Purpose and implementation of contingency plan.

(a) A large quantity generator must have a contingency plan for the facility. The contingency plan must be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste...

(b) The provisions of the plan must be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste...

Part 264 – Standards for Owners and Operators of Hazardous Waste Treatment, Disposal, and Storage Facilities

Subpart B – General Facility Standards

§ 264.14 Security.

(a) The owner or operator must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons...onto the active portion of his facility...

Sections (b) and (c) require: 24-hour surveillance; artificial (*e.g.*, a fence) or natural barrier to entry; means to control entry (*e.g.*, gate, locked entrance); and warning signs.

§ 264.15 General inspection requirements.

(a) The owner or operator must conduct inspections often enough to identify problems in time to correct them before they harm human health or the environment.

(b) The owner or operator must:

- (1) develop and follow a written schedule...
- (2) ... keep this schedule at the facility.
- (3) the schedule must identify the types of problems which are to be looked for during the inspection...
- (4) ... the frequency of inspections should be based on the rate of deterioration of the equipment and the probability of an environmental or human health incident if the deterioration, malfunction, or operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, must be inspected daily when in use...

(c) The owner or operator must remedy any [problem]...which the inspection reveals...

§ 264.16 Personnel training.

(a)(1) Facility personnel must successfully complete...training...to perform in a way that ensures the facility's compliance with the requirements of this part.

- (2) This [training] program must be directed by a person trained in hazardous waste management procedures, and must include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed.

(d) The owner or operator must maintain...

- (2) a written job description for each position... [which] must include the requisite skill, education, or other qualifications, and duties of employees assigned to each position;
- (3) a written description of the type and amount of both introductory and continuing training that will be given to each person filling [each] position...

§ 264.17 General requirements for ignitable, reactive, or incompatible wastes.

(a) The owner or operator must take precautions to prevent accidental ignition or reaction of ignitable or reactive waste. This waste must be separated and protected from sources of ignition or reaction including but not limited to: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat-producing chemical reactions), and radiant heat. While ignitable or reactive waste is being handled, the owner or operator must confine smoking and open flame to specifically designated locations. "No Smoking" signs must be conspicuously placed wherever there is a hazard from ignitable or reactive waste.

(b) ...the owner or operator of a facility that treats, stores or disposes ignitable or reactive waste...must take precautions to prevent reactions which:

- (1) Generate...fire or explosions, or violent reactions;

- (3) Produce uncontrolled fumes or gases in sufficient quantities to pose a risk of fire or explosions; ... and
- (5) Through other like means threaten human health or the environment.

(c) ...the owner or operator must document compliance. This documentation may be based on references to published scientific or engineering literature, data from trial tests (e.g., bench scale or pilot scale tests), waste analyses (as specified in §264.13), or the results of the treatment of similar wastes by similar treatment processes and under similar operating conditions.

Subpart C – Preparedness and Prevention

§ 264.31 Design and operation of facility.

Facilities must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden...release of hazardous waste or hazardous waste constituents to air...which could threaten human health or the environment.

§ 264.32 Required equipment.

All facilities must be equipped with the following, *unless* it can be demonstrated to the Regional Administrator that none of the hazards posed by waste handled at the facility could require a particular kind of equipment specified below:

(c) Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment; and

(d) Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.

§ 264.33 Testing and maintenance of equipment.

All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, must be tested and maintained as necessary to assure its proper operation in time of emergency.

§ 264.35 Required aisle space.

The owner or operator must maintain aisle space to allow the unobstructed movement of personnel...to any area of facility operation in an emergency...

Subpart D – Contingency Plan and Emergency Procedures

§ 264.51 Purpose and implementation of contingency plan.

(a) Each owner or operator must have a contingency plan...designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned...release of hazardous waste or hazardous waste constituents to air...

Subpart I - Use and Management of Containers

§ 264.174 Inspections.

At least weekly, the owner or operator must inspect areas where containers are stored...

§ 264.176 Special requirements for ignitable or reactive waste.

Containers holding ignitable or reactive waste must be located at least 15 meters (50 feet) from the facility's property line.

Subpart X – Miscellaneous Units

§ 264.601 Environmental performance standards.

A miscellaneous [treatment] unit must be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment. Permits for miscellaneous units are to contain such terms and provisions as necessary to protect human health and the environment, including, but not limited to, as appropriate, design and operating requirements, detection and monitoring requirements, and requirements for responses to releases of hazardous waste or hazardous constituents from the unit. ... Protection of human health and the environment includes, but is not limited to:

(c) Prevention of any release that may have adverse effects on human health or the environment due to migration of waste constituents in the air ...

§ 264.602 Monitoring, analysis, inspection, response, reporting, and corrective action.

Monitoring, testing, analytical data, inspections, response, and reporting procedures and frequencies must ensure compliance with ... as well as meet any additional requirements needed to protect human health and the environment as specified in the permit.

Subpart EE – Hazardous Waste Munitions and Explosives Storage

§ 264.1200 Applicability.

The requirements of this subpart apply to owners or operators who store munitions and explosive hazardous wastes...

§ 264.1201 Design and operating standards.

(a) Hazardous waste munitions and explosives storage units must be designed and operated with containment systems, controls, and monitoring, that:

- (1) Minimize the potential for detonation...
- (2) Provide a primary barrier, which may be a container (including a shell) or tank, designed to contain the hazardous waste;

(b) Hazardous waste munitions and explosives stored under this subpart ...

(2) ... must be located and designed so as to minimize the propagation of an explosion to adjacent units and to minimize other effects of any explosion.

(c) Hazardous waste munitions and explosives must be stored in accordance with a Standard Operating Procedure specifying procedures to ensure safety, security, and environmental protection.

(d) Hazardous waste munitions and explosives must be packaged to ensure safety in handling and storage.

(e) Hazardous waste munitions and explosives must be inventoried at least annually.

(f) Hazardous waste munitions and explosives and their storage units must be inspected and monitored as necessary to ensure explosives safety...

Part 270 – EPA Administered Permit Programs: The Hazardous Waste Permit Program

Subpart B – Permit Application

§ 270.10 General application requirements.

(k) The Director may require a permittee or an applicant to submit information in order to establish permit conditions under §§270.32(b)(2) and 270.50(d) of this chapter.

§ 270.14 Contents of part B: General requirements.

(b) *General information requirements.* The following information is required for all HWM facilities: ...

(9) A description of precautions to prevent accidental ignition or reaction of ignitable, reactive, or incompatible wastes as required to demonstrate compliance with §264.17 including documentation demonstrating compliance with §264.17(c).

Subpart C - Permit Conditions

§ 270.32 Establishing permit conditions.

(b)(1) Each RCRA permit shall include permit conditions necessary to achieve compliance with the Act and regulations, including each of the applicable requirements specified in parts 264 and 266 through 268 of this chapter. In satisfying this provision, the Administrator may incorporate applicable requirements of parts 264 and 266 through 268 of this chapter directly into the permit or establish other permit conditions that are based on these parts.

(2) Each permit ... shall contain terms and conditions as the Administrator or State Director determines necessary to protect human health and the environment.

§ 270.42 Permit modification at the request of the permittee.

[Note – treatment process changes, as discussed in the *Example RCRA Regulations* section of the memo, are not explicitly identified in the codified list of permit modification categories. These types of permit modifications can therefore be processed as described in paragraph d below. Note that class 2 and 3 (as well as some class 1) permit modifications generally cannot be made without prior Agency approval.]

(d) *Other modifications.*

- (1) In the case of modifications not explicitly listed in appendix I of this section, the permittee may submit a Class 3 modification request to the Agency, or he or she may request a determination by the Director that the modification should be reviewed and approved as a Class 1 or Class 2 modification. If the permittee requests that the modification be classified as a Class 1 or 2 modification, he or she must provide the Agency with the necessary information to support the requested classification.

§ 270.61 Emergency permits.

(a) ... in the event the Director finds an imminent and substantial endangerment to human health or the environment the Director may issue a temporary emergency permit: (1) To a non-permitted facility to allow treatment, storage, or disposal of hazardous waste or (2) to a permitted facility to allow treatment, storage, or disposal of a hazardous waste not covered by an effective permit.

(b) This emergency permit:

- (2) Shall not exceed 90 days in duration;
- (3) Shall clearly specify the hazardous wastes to be received, and the manner and location of their treatment, storage, or disposal;
- (4) May be terminated by the Director at any time without process if he or she determines that termination is appropriate to protect human health and the environment;
- (6) Shall incorporate, to the extent possible and not inconsistent with the emergency situation, all applicable requirements of this part and 40 CFR parts 264 and 266.

Attachment IV - Other References

U.S. Environmental Protection Agency

60 FR 56468-56493, Nov. 8, 1995 (proposal); 62 FR 6622-6657, Feb. 12, 1997 (final rule): the proposed and final RCRA Military Munitions Rule.

Bureau of Alcohol, Tobacco, Firearms and Explosives

27 CFR part 555 subpart K – Storage

- §§ 555.201 - 555.224
 - §555.212 “...spark producing devices (e.g., spark plug, grinding wheel, or welding torch) are not permitted: (a) In any magazine; [or] (b) Within 50 feet of any outdoor magazine.”
 - § 555.215 Housekeeping
“Magazines are to be kept clean...Floors are to be regularly swept. Brooms and other utensils used in ...magazines must have no spark-producing metal parts.”
 - §§ 555.218 - .220, .222 - .224 Tables of distances for explosives and fireworks.

Occupational Safety and Health Administration

29 CFR 1910.109¹⁴ Explosives and blasting agents: requires manufacturers of explosives and pyrotechnics to comply with section 1910.119

29 CFR 1910.119 Process safety management (PSM) of highly hazardous chemicals.

“Process Safety Management for Explosives and Pyrotechnics Manufacturing,” OSHA 3912-03 2017, <https://www.osha.gov/Publications/OSHA3912.pdf>.

HAZWOPER

The Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) applies to ... operations ... at facilities regulated by 40 CFR Parts 264 and 265.

- See “Frequently Asked Questions – HAZWOPER” at <https://www.osha.gov/html/faq-hazwoper.html>. Also see 29 CFR 1910.120 and 1926.65.
- Some HAZWOPER provisions specific to safety require facilities to have:
 - written, readily-accessible safety and health program that identifies, evaluates and controls safety and health hazards and provides for emergency response;
 - preliminary site evaluation conducted by a qualified person to identify potential site hazards and to aid in the selection of appropriate employee protection methods;
 - at a minimum, the site control program must include ... safe work practices;
 - employee training for everyone working on a hazardous waste site;
 - a written hazard communication program (see 29 CFR 1910.1200) which is intended to address classifying the potential hazards of chemicals, and communicating information concerning hazards and appropriate protective measures to employees; and
 - facilities must also create safer environments by developing and implementing effective new technologies.

¹⁴As of the date of this memo, OSHA was considering to expand the 1910.109 requirements to also include “dismantling and disposal of explosives, blasting agents, and pyrotechnics.” See Request for Information, 78 FR 73756 (Dec 9, 2013).

Department of Transportation

49 CFR 172.101

49 CFR 173.50 – 173.56

U.S. Consumer Product Safety Commission

These are safety standards for consumer fireworks, that specify, for example, required warning or caution labels for the listed fireworks; maximum pyrotechnic weight or grain limits; prohibited chemical ingredients (e.g., arsenic sulfide, arsenates, arsenites, boron, mercury salts, picric acid, or thiocyanates); a requirement that the fuse must burn at least 3 seconds and no more than 9 seconds; and the minimum size of the base of the firework.

- 16 CFR 1500.14 Products requiring special labeling under section 3(b) of the act.
- 16 CFR 1500.17 Banned hazardous substances.
- 16 CFR 1500.83 Exemptions for small packages, minor hazards, and special circumstances.
- 16 CFR 1500.85 Exemptions from classification as banned hazardous substances.
- 16 CFR 1507 – FIREWORKS DEVICES
 - § 1507.2 Prohibited chemicals.
 - § 1507.3 Fuses.
 - § 1507.3 Bases.
 - § 1507.5 Pyrotechnic leakage.

U.S. Department of Defense

- “DOD Ammunition and Explosives Safety Standards,” DOD 6055.9-STD, DDESB, 5 Oct 2004.
- “Technical Manual: Explosive Ordnance Disposal Procedures—General EOD Safety Precautions,” 60A-1-1-22, Revision 5, 06 May 1998.
- “Ammunition and Explosives Safety Standards,” Dept of the Army Pamphlet 385-64, 10 Oct 2013, 331 pgs.
- “Contractors Safety Manual,” DOD 4145.26, March 13, 2008.
- ACOE red book “Explosives Safety and Health Requirements Manual,” U.S. Army Corps of Engineers, EM 385-1-97, 15 Sept 2008.
 - All workers are required to complete a daily safety briefing before beginning work.
 - Workers are to be trained to competently execute the tasks required. The training must address safety and health hazards present at the project and the related procedures and controls necessary for worker protection. [See 29 CFR 1910.120, 1910.134, and 1926.65: required 40-hour HAZWOPER and 8-hour annual refresher courses.]
 - DOD and Army policy to 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 [DOD 6055.09-STD (DDESB) and Army DA Pamphlet 385-64].
 - MEC (Munitions and Explosives of Concern) site operations require an Accident Prevention Plan and a Site Safety and Health Plan, including Emergency Response and Contingency Procedures, descriptions of work zones and exclusion zones and access points, on/off site communication system, site access controls and security procedures (physical and procedural).

- Personnel handling MEC will not wear outer or inner garments having static electricity generation characteristics. Materials made of 100% polyester, nylon, silk, and wool are highly static producing [see DA Pamphlet 385-64].
- MEC operations conducted only during daylight hours.

The Institute of Makers of Explosives

The Safety Library Publications (SLP) listed below are available as free downloads to government regulators. Go to <https://www.ime.org/products/download/23>.

SLP 2: American Table of Distances June 1991 - incorporates changes through October 2011).

SLP 3: Suggested Code of Regulations for the Manufacture, Transportation, Storage, Sale, Possession and Use of Explosive Materials (Oct 2015).

SLP 4: Warnings and Instructions for Consumers in Transporting, Storing, Handling, and Using Explosive Materials (Oct 2009).

SLP 12: Glossary of Commercial Explosives Industry Terms (Oct 2015)

SLP 17: Safety in the Transportation, Storage, Handling and Use of Explosive Materials (Oct 2015).

SLP 25: Explosives Manufacturing & Processing Guideline to Safety Training (May 2011).

American Pyrotechnics Association

APA Standard 87-1

National Fire Protection Association

NFPA 1124 Code for...Fireworks and Pyrotechnics Articles: “[m]etal tools other than nonferrous conveyors shall not be stored in magazines.” [Section 5.4.8.1]