HIOSH DIRECTIVE

DIRECTIVE NO.: CPL 02-01-053	EFFECTIVE DATE: November 28, 2011
SUBJECT: Compliance Policy for Manufacture, Storage, Sale, Handling, use and Display of Pyrotechnics	

This CPL is adopted by HIOSH in its entirety.

OSHA INSTRUCTION

U.S. DEPARTMENT OF LABOR — Occupational Safety and Health Administration

DIRECTIVE NUMBER: CPL 02-01-053 | **EFFECTIVE DATE:** October 27, 2011

SUBJECT: Compliance Policy for Manufacture, Storage, Sale, Handling, Use and Display of Pyrotechnics

ABSTRACT

Purpose: To provide a comprehensive compliance policy for the inspection of the workplaces involved in the manufacturing, storage, sale, handling, use and display of pyrotechnics.

Scope: This instruction applies OSHA-wide.

References:

A. CPL 02-01-037 - Compliance Directive for Emergency Action Plans and Fire Prevention Plans.

B. CPL 02-02-045 (REVISED) - Process Safety Management of Highly Hazardous Chemicals - Compliance Guidelines and Enforcement Procedures.

C. CPL 02-02-038 - Inspection Procedures for the Hazard Communication Standard.

D. CPL 02-02-072 - Rules of Agency Practice and Procedure Concerning OSHA Access to Employee Medical Records.

E. CPL 02-00-120 - Inspection Procedures for the Respiratory Protection Standard.

F. TED 01-00-015 - OSHA Technical Manual (OTM).

G. 16 CFR 1500 and 1507 - U.S. Consumer Product Safety Commission.

H. 27 CFR 555 - U.S. Department of Justice, The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF).

I. 49 CFR 171-180 - U.S. Department of Transportation.

J. National Fire Protection Association (NFPA) 499 - Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas.

K. NFPA 1123 - Code for Fireworks Display (2010 Edition).

L. NFPA 1124 - Code for the Manufacture, Transportation, Storage, and Retail Sales of Fireworks and Pyrotechnic Articles (2006 Edition).

M. NFPA 1126 - Standard for the Use of Pyrotechnics Before a Proximate Audience (2011 Edition).

N. NFPA 2113 - Standard on Selection, Care, Use, and Maintenance of Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire (2007 Edition).

O. The American Pyrotechnics Association (APA) Standard 87-1, Standard for Construction and Approval for Transportation of Fireworks, Novelties, and Theatrical Pyrotechnics (2001 Edition).

Cancellations: Cancels OSHA Instruction CPL 02-00-073 2.73 - Fireworks Manufacturer: Compliance Policy, February 3, 1986.

State Impact: Notice of Intent and Equivalency required. See paragraph VI.

Action Offices: National, Regional, and Area and State Plan Offices

Originating Office: Directorate of Enforcement Programs

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By and Under the Authority of

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Executive Summary

In 1986, OSHA issued a Compliance Policy Instruction, CPL 02-00-073 - CPL 2.73 - Fireworks Manufacturer: Compliance Policy, which provided guidelines for inspecting fireworks manufacturing facilities under a National Emphasis Program. At that time, OSHA did not have a standard that specifically addressed the manufacturing of pyrotechnics. The term "pyrotechnics" used in this directive includes, but is not limited to fireworks (consumer and display) and articles pyrotechnic. However, in 1992, OSHA published the Process Safety Management (PSM) standard, 29 CFR 1910.119, which established requirements for preventing the consequences of catastrophic releases of specified Highly Hazardous Chemicals (that are above certain threshold quantities), including fires and explosions that may result during the manufacturing of pyrotechnics. Additionally, OSHA standard 29 CFR 1910.109, Explosives and blasting agents, includes storage and handling requirements relevant to explosives and pyrotechnics. Moreover, OSHA has several other general industry safety and health standards that may apply to the pyrotechnics industry.

The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) has storage regulations for explosives that may preempt OSHA standards. Section 4(b)(1) of the Occupational Safety and Health Act (OSH Act) precludes OSHA from any enforcement activity over a working condition if another federal agency exercises its statutory authority over that working condition. Therefore, OSHA's authority may be preempted if ATF exercises its statutory authority over a particular working condition. This directive clarifies situations in which OSHA may issue citations for hazards related to pyrotechnics. This directive also clarifies conditions during which § 5(a)(1) of the OSH Act (General Duty Clause) can be applied to address hazards that are not specifically covered by OSHA standards.

Significant Changes

This directive cancels OSHA Instruction CPL 2.73 – Fireworks Manufacturer: Compliance Policy, February 3, 1986.

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I. Purpose. To provide a comprehensive compliance policy for the inspection of the workplaces involved in the manufacturing, storage, sale, handling, use and display of pyrotechnics.

II. Scope. This instruction applies OSHA-wide.

III. References.

1. CPL 02-01-037 - Compliance Directive for Emergency Action Plans and Fire Prevention Plans.

2. CPL 02-02-045 - Process Safety Management of Highly Hazardous Chemicals -- Compliance Guidelines and Enforcement Procedures.

3. CPL 02-02-038 - Inspection Procedures for the Hazard Communication Standard.

4. CPL 02-02-072 - Rules of Agency Practice and Procedure Concerning OSHA Access to Employee Medical Records.

5. CPL 02-00-120 - Inspection Procedures for the Respiratory Protection Standard.

6. TED 01-00-015 - OSHA Technical Manual (OTM).

7. 16 CFR 1500 and 1507 - U.S. Consumer Product Safety Commission.

8. 27 CFR 555 - U.S. Department of Justice, The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF).

9. 49 CFR 171-180 - U.S. Department of Transportation.

10. National Fire Protection Association (NFPA) 499 - Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas (2008 Edition).

11. NFPA 1123 - Code for Fireworks Display (2010 Edition).

12. NFPA 1124 - Code for the Manufacture, Transportation, Storage, and Retail Sales of Fireworks and Pyrotechnic Articles (2006 Edition).

13. NFPA 1126 - Standard for the Use of Pyrotechnics Before a Proximate Audience (2011 Edition).

14. NFPA 2113 - Standard on Selection, Care, Use, and Maintenance of Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire (2007 Edition).

15. APA Standard 87-1, Standard for Construction and Approval for Transportation of Fireworks, Novelties, and Theatrical Pyrotechnics (2001 Edition).

IV. Cancellations. OSHA Instruction CPL 02-00-073 [CPL 2.73] - Fireworks Manufacturer: Compliance Policy, February 3, 1986.

V. Action Offices.

A. Responsible Office. Directorate of Enforcement Programs

B. Action Offices. National, Regional, Area and State Plan Offices

C. Information Offices. State Plan States, OSHA Training Institute, Consultation Project Managers, VPP Managers, Partnership Coordinators/Managers, Compliance Assistance Coordinators, Compliance Assistance Specialists, and Regional Severe Violator Enforcement Program (SVEP) Coordinators.

VI. Federal Program Change. Notice of Intent and Equivalency Required. This Instruction describes a Federal program change which establishes policies and procedures necessary for the enforcement of standards applicable to the manufacturing, storage, sale, handling, use and display of pyrotechnics. State plans are required to establish implementing enforcement policies and procedures which are at least as effective as those in this Instruction.

State plans must enforce their comparable standards at least to the limits of Federal OSHA's jurisdiction as set out in paragraph X of this Instruction. State plans with jurisdictional limitations that differ from those in section 4(b)(1) of the OSH Act are not required to follow the Federal restrictions, but must be prepared to litigate their authority. State plans should make appropriate referrals to the local ATF office for hazards found during inspection that are within ATF's authority.

State plans are required to notify OSHA within 60 days whether they intend to adopt enforcement policies and procedures identical to those in this Instruction or adopt or maintain different policies and procedures.

If a State adopts or maintains policies and procedures that differ from those of Federal OSHA, the State must identify the differences and may either post its new or existing policies and procedures on its website and provide the link to OSHA or submit an electronic copy to OSHA with information on how the public may obtain a copy. If the State plan adopts identical policies and procedures, it must provide the date of adoption to OSHA. State adoption must be accomplished within 6 months, with posting or submission of documentation within 60 days of adoption. OSHA will post summary information on the State responses to this Instruction on its Website.

VII. Significant Changes. This directive cancels OSHA Instruction CPL 02-00-073 [CPL 2.73] – Fireworks Manufacturer: Compliance Policy, February 3, 1986.

VIII. Definitions. The definitions below are taken from ATF's 27 CFR part 555 regulations. (Note: NFPA definitions should be used when its provisions are used.)

Articles pyrotechnic. Pyrotechnic devices for professional use similar to consumer fireworks in chemical composition and construction but not intended for consumer use. Such articles meeting the weight limits for consumer fireworks but not labeled as such and classified by U.S. Department of Transportation regulations in 49 CFR 172.101 as UN0431 or UN0432.

Bulk salutes. Salute components prior to final assembly into aerial shells, and finished salute shells held separately prior to being packed with other types of display fireworks.

Note: At present, the above definition could be problematic because a carton containing even 99% salute shells and only one percent non-salute shell would not be considered bulk salutes. Unfortunately, a carton packed in this manner would a likely mass-detonate in the same fashion as a case containing 100% salute shells. Therefore, ATF has initiated rulemaking to amend this definition. The threshold proportion of salute shells to non-salute shells was proposed to be 50%, which is in line with industry standards.

Consumer fireworks. Any small firework device designed to produce visible effects by combustion and which must comply with the construction, chemical composition, and labeling regulations of the U.S. Consumer Product Safety Commission, as set forth in title 16, Code of Federal Regulations, parts 1500 and 1507. Some small devices designed to produce audible effects are included, such as whistling devices, ground devices containing 50 mg or less of explosive materials, and aerial devices containing 130 mg or less of explosive materials. Consumer fireworks are classified as fireworks UN0336 and UN0337 by the U.S. Department of Transportation at 49 CFR 172.101. This term does not include fused set pieces containing components which together exceed 50 mg of salute powder.

Note: ATF considers explosive materials in the above definition to be flash powder.

Display fireworks. Large fireworks designed primarily to produce visible or audible effects by combustion, deflagration, or detonation. This term includes, but is not limited to, salutes containing more than 2 grains (130 mg) of explosive materials, aerial shells containing more than 40 grams of pyrotechnic compositions, and other display pieces which exceed the limits of explosive materials for classification as "consumer fireworks." Display fireworks are classified as fireworks UN0333, UN0334 or UN0335 by the U.S. Department of Transportation at 49 CFR 172.101. This term also includes fused set pieces containing components which together exceed 50 mg of salute powder.

Note: ATF considers explosive materials in the above definition to be flash powder.

Explosive materials. Explosives, blasting agents, water gels and detonators. Explosive materials include, but are not limited to, all items in the List of Explosive Materials provided for in 27 CFR 555.23.

Fireworks. Any composition or device designed to produce a visible or an audible effect by combustion, deflagration, or detonation, and which meets the definition of ''consumer fireworks'' or ''display fireworks'' as defined by this section.

Fireworks mixing building. Any building or area used for mixing and blending pyrotechnic compositions except wet sparkler mix.

Fireworks nonprocess building. Any office building or other building or area in a fireworks plant where no fireworks, pyrotechnic compositions or explosive materials are processed or stored.

Fireworks plant. All land and buildings thereon used for or in connection with the assembly or processing of fireworks, including warehouses used with or in connection with fireworks plant operations.

Fireworks plant warehouse. Any building or structure used exclusively for the storage of materials which are neither explosive materials nor pyrotechnic compositions used to manufacture or assemble fireworks.

Fireworks process building. Any mixing building; any building in which pyrotechnic compositions or explosive materials are pressed or otherwise prepared for finishing and assembly; or any finishing or assembly building.

Fireworks shipping building. A building used for the packing of assorted display fireworks into shipping cartons for individual public displays and for the loading of packaged displays for shipment to purchasers.

Flash powder. An explosive material intended to produce an audible report and a flash of light when ignited which includes but is not limited to oxidizers such as potassium chlorate or potassium perchlorate, and fuels such as sulfur or aluminum powder.

High explosives. Explosive materials which can be caused to detonate by means of a blasting cap when unconfined, (for example, dynamite, flash powders, and bulk salutes).

Low explosives. Explosive materials which can be caused to deflagrate when confined (for example, black powder, safety fuses, igniters, igniter cords, fuse lighters, and ''display fireworks'' classified as UN0333, UN0334, or UN0335 by the U.S. Department of Transportation regulations at 49 CFR 172.101, except for bulk salutes).

Magazine. Any building or structure, other than an explosives manufacturing building,

used for storage of explosive materials.

Pyrotechnic composition. A chemical mixture which, upon burning and without explosion, produces visible, brilliant displays, bright lights, or sounds.

Salute. An aerial shell, classified as a display firework that contains a charge of flash powder and is designed to produce a flash of light and a loud report as the pyrotechnic effect.

IX. Background. This compliance directive provides guidance to Compliance Safety and Health Officers (CSHOs) on how to conduct safety and health inspections of pyrotechnics facilities and operations. The facilities and operations would include employers engaged in the manufacture, storage, sale, handling, use and display of pyrotechnics. In 1986, OSHA issued a Compliance Policy Instruction, CPL 02-00-073 - CPL 2.73 - Fireworks Manufacturer: Compliance Policy, which provided guidelines to inspect fireworks manufacturing facilities under a National Emphasis Program. At that time, OSHA did not have a standard that specifically addressed the manufacturing of pyrotechnics. In 1992, OSHA published the Process Safety Management (PSM) standard, 29 CFR 1910.119, which established requirements to prevent catastrophic consequences from the release of certain Highly Hazardous Chemicals, including fires and explosions that may result during pyrotechnics manufacturing. Additionally, OSHA's standard at 29 CFR 1910.109, Explosives and blasting agents, which outlines requirements for explosives, applies to the manufacture, keeping, having, storage, sale, transportation, and use of explosives, blasting agents, and pyrotechnics, but does not apply to the sale and public display of fireworks. The term "pyrotechnics" used in this directive includes but is not limited to, fireworks (consumer and display) and articles pyrotechnic. Although OSHA does not have specific standards covering the hazards associated with the display of fireworks (both before public and proximate audience), §5(a)(1) of the OSH Act, the General Duty Clause, requires employers to keep their workplaces free from serious recognized hazards.

The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) has storage regulations that may preempt OSHA standards. Section 4(b)(1) of the OSH Act precludes OSHA from any enforcement activity over a working condition if another federal agency exercises its statutory authority over the working condition. This directive clarifies situations in which OSHA may issue citations for hazards related to pyrotechnics. This directive also clarifies conditions under which the General Duty Clause may be cited to address hazards that are not specifically covered by OSHA standards.

X. OSHA's vs. ATF's Jurisdiction.

OSHA currently regulates working conditions in the storage, sale, transportation, manufacture, and use of explosives (29 CFR §§1910.109 and .119, and Part 1926 Subpart U). 29 CFR 1910.109(k)(1) states, "[t]his section applies to the manufacture, keeping, having, storage, sale, transportation, and use of explosives, blasting agents, and

pyrotechnics. This section does not apply to the sale and use (public display) of pyrotechnics, commonly known as fireworks, nor to the use of explosives in the form prescribed by the official U.S. Pharmacopeia."

ATF covers the import, manufacture, distribution, and storage of explosives (27 CFR Part 555). Its regulations require all manufacturers, importers, and dealers in explosives to obtain a federal license from ATF and require anybody transporting and/or receiving explosives to obtain a federal permit from ATF. The Agency also regulates the storage of explosives.

Because ATF's regulations at 27 CFR 555 specifically address working conditions associated with the storage of explosives, OSHA's storage requirements for explosives at §1910.109(c) are preempted under section 4(b)(1) of the OSH Act by ATF's regulations at 27 CFR 555 Subpart K. ATF's explosives regulations require all persons or companies to store display fireworks and other pyrotechnic materials (used in the manufacturing or assembly process) in conformity with 27 CFR 555, Subpart K – Storage. Those finished explosives classified as consumer fireworks (UN0336 & UN0337) and articles pyrotechnic (UN0431 &UN0432) are not required to be stored in ATF-compliant storage magazines. As a result, storage of consumer fireworks or articles pyrotechnic (in finished state) which are labeled as 1.4 explosives (formerly "Class C"), fall under OSHA's authority.

ATF's explosives regulations also require individuals or companies manufacturing or assembling display fireworks, consumer fireworks, or articles pyrotechnic to comply with the requirements set forth in 27 CFR 555.221 through 555.223. These requirements, in part, designate the net explosive weight that is permitted in a process building or area, as well as establish distance requirements from the process building or area to surrounding exposed sites.

Explosive materials that are staged for active use in the manufacturing or assembly process are not considered to be in "storage," and may be covered by OSHA's PSM standard. However, prior to issuing citations for any violations associated with the staging areas, CSHOs should consult with the local ATF office to clarify any ambiguities on whether or not a specific staging area falls under ATF's authority.

XI. Enforcement Guidelines. CSHOs should become familiar with ATF requirements contained in 27 CFR 555, Subpart K – Storage, which contain provisions for storage of display fireworks, pyrotechnic compositions and explosive materials used in assembling fireworks. If apparent violations of ATF requirements are found during an inspection, referrals should be made to the local ATF office (www.atf.gov/field) as soon as practicable.

A. Enforcement of 29 CFR 1910.119, the Process Safety Management (PSM) standard.

The PSM standard is the primary OSHA standard addressing the hazards associated with pyrotechnics at pyrotechnics manufacturing facilities. The PSM standard applies to manufacturing of pyrotechnics regardless of their quantities and citations may be issued for any violations of this standard.

ATF's regulations require explosive materials to be stored in a magazine unless in the process of manufacture, being handled in the operating process, being used, or being transported. This exception includes those explosive materials staged within a process building or area such that they are being actively used in the manufacturing or assembly process. CSHOs should contact ATF on a case-by-case basis if questions arise regarding ATF's authority over the manufacturing or assembly process.

B. Enforcement of 29 CFR 1910.109.

1. Display Fireworks. Any potential violations associated with the storage of display fireworks, pyrotechnic compositions, and explosive materials used in assembling fireworks and articles pyrotechnic fall under ATF's authority, and, therefore, should be referred to ATF.

2. Consumer Fireworks and Articles Pyrotechnic. Since ATF does not regulate consumer fireworks or articles pyrotechnic (UN0336, UN0337, UN0431, or UN0432) in their finished state, OSHA has the authority to enforce the 29 CFR 1910.109 standard on these finished products. Hazards associated with storage of consumer fireworks and articles pyrotechnic in their finished state may be cited under 1910.109(b)(1). While issuing citations under 29 CFR 1910.109(b)(1), Chapter 6 of NFPA 1124, 2006 edition or a later version may be one source (not the only source) as a basis for documenting the industry practice and in addressing the hazards associated with storage of finished articles pyrotechnic and/or consumer fireworks at manufacturing and distribution facilities.

3. Hazards (such as hazards from ignition sources including static charges) associated with storage and handling of explosive materials and pyrotechnic compositions not covered by ATF may be cited under 1910.109(b)(1), whenever possible. NFPA 1124, 2006 edition or a later version may be used while documenting the industry practice and in addressing hazards associated with the storage and handling of pyrotechnics and explosive and while issuing citations under 29 CFR 1910.109(b)(1).

C. Enforcement of Housekeeping Violations.

1. OSHA's housekeeping standards, 1910.22(a)(1), (2) and (3) may be cited whenever accumulation of dusts (such as explosives or pyrotechnic composition) in the process buildings, due to poor housekeeping can be documented. These standards may be grouped, when cited.

2. Only those CSHOs who are trained in proper collection techniques and in storage of samples may collect these dust samples. Additionally, CSHOs may consult with the Salt Lake Technical Center (SLTC) for shipping instructions.

3. The employer may be asked to immediately clean up and remove any spills of explosives or pyrotechnic compositions, and to take corrective measures in destroying such material in accordance with its manufacturers instructions.

D. Enforcement of Electrical Violations.

1. OSHA's electrical standard at 29 CFR 1910.307(c) requires that equipment, wiring methods, and installations of equipment in hazardous (classified) locations must be: (1) intrinsically safe, (2) approved for the hazardous (classified) location, or (3) safe for the hazardous (classified) location.

   Note: ATF has requirements pertaining to lighting in magazines (27 CFR 555.217).

2. CSHOs should verify that equipment, wiring methods, and installations of equipment in the process buildings are suitable for use in Class II, Division 1 or Division 2 locations, as may be applicable. (See note below.)

3. CSHOs should enforce the requirements of 29 CFR 1910.307 whenever explosive or pyrotechnic dusts are present in a building, and citations under 1910.307(c) can be issued if equipment in buildings is not approved or safe for Class II Division 1 or Division 2 locations.

4. Citations issued for electrical violations must be adequately documented in the case file. Such documentation should include the location and type of electric equipment, the type of building, and information indicating that the equipment is not approved or safe for the location. Additionally, the PSM standard requires, at 29 CFR 1910.119(d)(3)(i)(C), that the employer must have process safety information related to the electrical classification of the manufacturing process. This electrical classification information will designate the approved types of electric equipment which can be

utilized based on the materials and the locations within the process building. If employers use electric equipment which is not approved for use, as per their electrical classification process safety information, they would not be in compliance with the recognized and generally accepted good engineering practices required by 29 CFR 1910.119(d)(3)(ii). In addition to citing under 29 CFR 1910.307(c), CSHOs may also cite 29 CFR 1910.119(d) requirements when electrical violations associated with the PSM covered process are noted.

Note: Since fireworks manufacturing facilities normally handle metal (conductive) dusts, including aluminum, magnesium, and their commercial alloys, such conductive dusts are classified as Group E dusts, and electric equipment in areas handling Group E dusts must be classified for Class II, Division 1, Group E locations. (See NEC Article 502 and NFPA 499.)

E. Enforcement of PPE violations.

1. Citations under 29 CFR 1910.132(a) may be issued if employees working at or supervising mixing, pressing and loading operations areas are not wearing cotton or similar protective clothing.

2. In addition, citations under 29 CFR 1910.132(a) may be issued if worker exposure to potential burn injuries can be documented due to lack of flame resistant clothing. This also applies to pyrotechnics display operations. (See note below for additional information).

   Note: It has been recognized as industry practice to require flame-resistant clothing when workers may be exposed to flash fire hazards. NFPA 2113 -- Standard on Selection, Care, Use and Maintenance of Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire is a national consensus standard which applies to, among others, chemical, refining, and terminal facilities with flash fire hazards. Among other standards, NFPA 2113 has requirements for when flame-resistant garments/flame-resistant clothing must be used by industrial personnel exposed to flash fire hazards. See Chapter 4 of NFPA 2113 for discussion on selection of flame-resistant clothing.

F. Display and Retail Sale of Pyrotechnics: General Duty Clause 5(a)(1) Violations.

1. 29 CFR 1910.109 does not apply to the sale and use (public display) of pyrotechnics, commonly known as fireworks, nor to the use of explosives in the form prescribed by the official U.S. Pharmacopeia

2. Citations under section 5(a)(1) may be issued for worker exposure to fire and explosion hazards that could result from handling and use of the pyrotechnics for display before a public or proximate audience. NFPA 1123 - Code for Fireworks Display, 2010 edition or a later version, and NFPA 1126 - Standard for the Use of Pyrotechnics Before a Proximate Audience, 2011 edition or a later version, may be referenced to support the General Duty Clause citations.

3. Hazards associated with the retail sales of consumer fireworks may be cited under the General Duty Clause. Chapter 7 of NFPA 1124, 2006 edition or a later version may be referenced to support the General Duty Clause citations.

4. CSHOs should ensure they follow all policies outlined in the Field Operations Manual when citing 5(a)(1) violations.

G. Enforcement of Health-Related Violations.

The potential health hazards to which workers may be exposed range from nuisance dust to highly toxic dusts and fumes in pyrotechnics manufacturing plants, to hazardous noise for pyrotechnics display workers. The basic component of pyrotechnics is black powder -- a mix of 75 percent potassium nitrate, 15 percent charcoal, and 10 percent sulfur. Several metal salts can be added to cause colorful luminescence upon combustion. In general, barium is used to obtain a green colored flame, strontium for red, copper for blue, and sodium for yellow. Many other chemicals are added as fuels and oxidizers, such as the highly reactive chemicals, ammonium perchlorate and red phosphorous; potassium dichromate, which is a hexavalent chromium compound (29 CFR 1910.1026); and aluminum powder, which has been linked to pulmonary fibrosis among workers in pyrotechnics plants. Appendix A to this Instruction contains a list of standard pyrotechnics chemicals.

1. The Hazard Communication Standard (HCS), 29 CFR 1910.1200, covers employees exposed to hazardous chemicals, including airborne exposures to gases, dusts, vapors, and fumes, or who are potentially exposed to skin or eye contact with hazardous chemicals. Paragraph (e)(1) of the HCS requires employers to develop and implement a written hazard communication program that provides for employee training, and paragraph (h)(1) requires employers to provide training regarding the hazards of chemicals present at the worksite at the time of initial assignment. Paragraph (f)(1) requires the chemical manufacturer, importer, or distributor to ensure containers of hazardous chemicals are labeled with appropriate hazard warnings, and paragraph (g)(1) requires the manufacturer and importer to obtain or develop a material safety data sheet (MSDS) for each hazardous chemical they produce or import.

a. In the absence of required information on an MSDS regarding the content hazardous ingredients of a chemical used at the facility, the CSHO may collect a representative bulk or wipe sample, and send it for analysis to the Salt Lake Technical Center (SLTC). Depending upon the nature of the sample, special shipping and labeling requirements may need to be employed. CSHOs should consult with the SLTC prior to the collection and shipment of the sample and before shipment.

Note: Before bulk sampling for *explosibility* analysis, refer to TED 01-00-015, OSHA Technical Manual (OTM). Specifically, see OTM, Section II, Chapter 4, Sample Shipping and Handling, paragraph II.G.

b. For complete inspection procedures on the HCS, refer to CPL 02-02-038d (March 20, 1998), Inspection Procedures for the Hazard Communication Standard.

2. Air sampling should only be performed if there is a reasonable presumption that a significant inhalation hazard exists to workers and no other information regarding employee exposure is available. CSHO must carefully examine MSDSs, DOT sample analysis records, or any other information available from the employer to determine if the manufacturing process contains hazardous chemicals.

a. The CSHO should ask the employer for any existing air sampling records. The employer may use empirical or historical data if such data adequately demonstrates that no airborne hazard exists.

b. The CSHO should ask employees if they have experienced any health effects or symptoms of hazardous exposures. The employer must provide appropriate employees with medical surveillance, when required. The CSHO should also ask employees if they were offered medical examinations by their employer. The CSHO may need to ask the employer for copies of written medical records. Whenever reviewing medical records, the compliance officer should follow CPL 02-02-072 - Rules of Agency Practice and Procedure Concerning OSHA Access to Employee Medical Records.

c. Within a manufacturing facility, only intrinsically safe sampling pumps must be used, and grounding and bonding of all components of the sampling train including the tubing and sample

cassette must be ensured. Bonding of the sampling train including the pump to the worker must also be established. An ohmmeter can be used to verify that an effective ground and bond has been established. Use of wristlets and conductors that do not interfere with worker duties can be used to bond the pump and the worker. The CSHO must coordinate any sampling protocol with the facility's safety representative. SLTC should also be contacted for further guidance.

d. In areas of visible airborne dust levels within a manufacturing facility, the CSHO must immediately exit the area to a safe location and advise the employer of the visible levels.

e. Where employees in manufacturing facilities are required to wear respiratory protection, CSHOs should follow the Instruction, CPL 02-00-120 - Inspection Procedures for the Respiratory Protection Standard.

3. For workers involved in displaying pyrotechnics, the Occupational Noise Exposure Standard, 29 CFR 1910.95, may be cited for excessive noise levels. Only intrinsically safe sampling equipment must be used.

XII. Inspection Procedures.

A. Pre-inspection Preparation. Area Directors should make arrangements with local ATF office for a joint site inspection, if possible. ATF generally inspects facilities once every three years, and the inspection is typically within a year of renewal. Additionally, Area Directors should work with local ATF offices in cross-training CSHOs on ATF requirements. CSHOs who have received PSM training, specific training in hazards of pyrotechnics (including in sampling techniques, grounding, bonding, etc.,) and who have knowledge of NFPA 1123, NFPA 1124, NFPA 1126, and 27 CFR 555 Subpart K requirements should be assigned to inspect workplaces that are engaged in the manufacturing, storage, sale, handling, use and display of pyrotechnics.

B. Previous Case Files. CSHOs should review any previous case files on the facility to be inspected prior to going to the site. In addition, CSHOs should discuss, if possible, conditions at the site with the local ATF officers and State or local enforcement authorities having knowledge of the particular site scheduled for inspection. Any such authorities contacted must be discreetly reminded of OSHA's statutory restrictions on advance notice.

C. Clothing and Equipment for Site Visit. In addition to the normally required personal protective equipment, CSHOs must wear clothing and use equipment as

follows:

1. All-cotton outer garments; e.g., coveralls with nonferrous snaps, buttons or zippers;
2. Flame-resistant clothing, as may be appropriate;
3. Intrinsically safe flashlight;
4. Electrostatic dissipative footwear;
5. Nonsparking measuring tape; and
6. Wooden ruler.

D. Prohibited Clothing and Equipment. The CSHOs must take particular care to neither wear improper clothing, nor to carry inappropriate equipment during the inspection of a pyrotechnics facility. Prohibited clothing and equipment include:

1. Wool, silk, nylon or synthetic blend outer and inner garments;
2. Cell phones and Pagers;
3. Lighters;
4. Laptops;
5. Spark-producing jewelry;
6. Matches;
7. Metal pens and pencils; and
8. Leather-soled shoes, and metal tapes or exposed nails in or on shoes.

E. The Use of Cameras and Video Cameras. Prior to taking pictures, CSHOs must consult with the employer regarding their policy on taking pictures and videos at their facility. Photographs and videos may be taken only in the absence of suspended dust. If there are exposed explosive materials or pyrotechnic powders, CSHOs must not take photographs. In such situations, a camera or a video camera with a telephoto lens should be used to take pictures and videos from a safe distance. If additional light is needed, intrinsically safe light must be used.

F. Pre-Site Visit Precautions. CSHOs must observe the following precautions before beginning the opening conference:

1. Recheck personal safety procedures; e.g., clothing, shoes, and safety equipment;

2. Remove all spark producing equipment/tools or potential sources of ignition; e.g., lighters, cell phones, pagers, laptops, cigarettes, matches, metal clipboards, metal pens and pencils, spark-producing jewelry; and

3. In the event that an electrical storm appears to be imminent, terminate the inspection until weather conditions improve.

G. Opening Conference. CSHOs should explain the inspection procedure fully to employers during the opening conference. Before beginning the walkaround inspection, the CSHO must:

1. Review a diagram of the plant layout, if any;
2. Determine what operations are currently ongoing;
3. Gather information regarding the presence of static/spark/shock-sensitive materials and areas;
4. Review documentation pertaining to the facility's PSM program; and
5. Review MSDSs of the chemicals used at the facility.

H. Walkaround Inspection. During the walkaround, the CSHOs should examine the areas for any unsafe conditions, such as residue powders on the floor, spillage, deteriorated explosive materials, or suspended dust. In areas where airborne dust levels are visible, or when the CSHO observes unsafe conditions, he or she must immediately exit the area to a safe location.

I. Closing Conference. In addition to the usual elements of the closing conference, CSHOs must discuss and recommend that the employer follow the safe practices specified in NFPA 1124 - Code for the Manufacture, Transportation, and Storage of Fireworks, 2006 edition or a later version. CSHOs should also refer employers to other appropriate NFPA standards, such as NFPA 77 - Recommended Practice on Static Electricity; NFPA 780 - Standard for the Installation of Lightning Protection Systems; and other NFPA standards as applicable.

Appendix A -- Standard Pyrotechnics Chemicals

Chemical	**Typical Use**
Aluminum	Fuel
Ammonium Perchlorate	Oxygen Donor
Antimony	Fuel
Antimony Sulfide	Fuel
Barium Carbonate	Neutralizer
Barium Nitrate	Oxygen Donor
Barium Sulfate	Oxygen Donor
Bismuth Oxide	Oxygen Donor
Boric Acid	Neutralizer
Calcium Carbonate	Neutralizer
Calcium Sulfate	Oxygen Donor
Carbon or Charcoal	Fuel
Copper Metal	Color Agent
Copper Oxide	Oxygen Donor/Color Agent
Copper Salts (except Copper Chlorate)	Color Agent
Dextrine	Fuel/Binder
Hexamine	Fuel
Iron and Iron Alloys	Fuel
Iron Oxide	Oxygen Donor
Magnalium (Magnesium/Aluminum)	Fuel
Magnesium (in display fireworks and theatrical pyrotechnics only)	Fuel
Magnesium Carbonate	Neutralizer
Magnesium Sulfate	Oxygen Donor
Nitrocellulose	Binder
Nitrocellulose Based Lacquers	Binder
Phosphorus, Red	Fuel
Potassium or Sodium Benzoate	Whistle
Potassium Bichromate (not to exceed 5% of formulation)	Oxygen Donor
Potassium Chlorate	Oxygen Donor
Potassium Hydrogen Phthalate	Whistle
Potassium Nitrate	Oxygen Donor
Potassium Perchlorate	Oxygen Donor
Potassium Sulfate	Oxygen Donor
Silicon	Fuel
Sodium Bicarbonate	Neutralizer
Sodium Nitrate	Oxygen Donor
Sodium Salicylate	Whistle
Strontium Salts (except Strontium Chlorate)	Color Agent

Chemical	Typical Use
Strontium Sulphate	Oxygen Donor
Strontium Carbonate	Color Agent
Strontium Nitrate	Oxygen donor
Strontium Salts (except Strontium Chlorate)	Color Agent
Strontium Sulfate	Oxygen Donor
Sulfur	Fuel