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| **INSTRUCTION NUMBER:** 24-2 | **EFFECTIVE DATE:** January 26, 2024 |
| **SUBJECT:** Revised Combustible DustNational Emphasis Program (NEP) | **ISSUANCE DATE:**  January 26, 2024 |
| **CANCELLATION:** MOSH Instruction 08-5 | **EXPIRATION:** Effective until canceled or superseded |

# MOSH INSTRUCTION:

**Purpose:**

# This instruction provides Operations, Regional Office, and Consultation personnel with policies and procedures for inspecting workplaces that generate or handle combustible dusts, and for determining whether such workplaces have addressed fire, flash fire, deflagration, and explosion hazards associated with combustible dusts. These dusts include, but are not limited to: metal dust such as aluminum, magnesium, and some forms of iron dusts; wood dust; coal and other carbon dusts, including carbon black; plastic dust, phenolic resins, and additives; rubber dust; biosolids; other organic dust, such as sugar, flour, paper, soap, and dried blood; certain textile materials.

**Scope:**  MOSH-wide

# Reference:

# Current MOSH Field Operations Manual (FOM)

1. National Fire Protection Association (NFPA) 654 (2020 Edition), Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids.
2. General Industry Standard Part 77. Grain Handling Facilities.
3. Occupational Safety and Health Administration (OSHA) Field Operations Manual [(OSHA FOM), as amended](https://www.osha.gov/enforcement/directives/cpl-02-00-164).
4. OSHA Instruction CPL 03-00-008, January 23, 2023,Revised Combustible Dust National Emphasis Program.
5. OSHA Memorandum, April 21, 2015, Evaluating Hazardous Levels of Accumulation Depth for Combustible Dusts.
6. OSHA Instruction TED 01-00-015 [TED 1-0.15A], February 10, 2020, OSHA Technical Manual – Section IV, Chapter 6, Combustible Dusts.

# Contact: Chief of MOSH Compliance Services.

# See MOSH Website for Current Information <https://www.labor.md.gov/labor/mosh>

This MOSH Instruction, Revised Combustible Dust National Emphasis Program, revisesestablished procedures to be used by all MOSH Compliance and Consultation staff to identify and reduce or eliminate combustible dust hazards in workplaces.

**Background:**

In 2007, federal OSHA implemented a national emphasis program (NEP) to identify and reduce exposures to combustible dust in selected manufacturing facilities. The NEP was in response to a combustible dust hazard study conducted by the U.S. Chemical Safety and Hazard Investigation Board (CSB) which found that nearly 280 dust fires and explosions had occurred in U.S. industrial facilities over the previous 25 years, resulting in 119 fatalities and over 700 injuries. In 2008, the General Industry Safety and Health Division issued a division instruction on combustible dust and that instruction has been renewed several times.

Most recently, on January 23, 2023, OSHA revised its NEP in CPL 03-00-008, Revised Combustible Dust National Emphasis Program. The significant changes to CPL 03-00- 008 were: technical information on combustible dust was moved from the directive to the OSHA Technical Manual; guidance was added for the Safety Officer/Industrial Hygienist (CSHO) to pay particular attention to combustible dust hazards and to verify if these have been addressed by the employer; and the list of targeted industries in Appendix B was updated to reflect more recent inspection history for combustible dust hazards and with an emphasis on those that have caused fatalities and catastrophes.

CPL 03-00-008 is not intended for inspections of grain handling facilities covered by General Industry Standard Part 77. Grain Handling Facilities. CPL 03-00-008 is also not intended for inspections of explosives and pyrotechnics manufacturing facilities covered by the process safety management (PSM) regulations. However, CPL 03-00-008 can be used for inspections of facilities that manufacture or handle other types of combustible dusts (such as ammonium perchlorate) that are covered under the PSM regulations.

**Action:**

1. With this instruction, MOSH adopts the revised CPL 03-00-008. The adoption is with the understanding that the federal programs and procedures referenced in the federal directive will be interpreted according to the corresponding MOSH programs and procedures.
2. In any circumstance where OSHA Directive CPL 03-00-008 may conflict with the current MOSH FOM or this MOSH Instruction, the guidance in the MOSH FOM or Instruction shall prevail.
3. The MOSH Assistant Commissioner shall ensure that operations, compliance, outreach, and consultation personnel utilize this MOSH Instruction.
4. Supervisors shall ensure that this instruction is reviewed with all operations staff, compliance officers, outreach, and consultation staff involved in enforcement or outreach of the NEP.

**Inspection Procedures:**

1. The CSHO will address the combustible dust hazard on the following types of inspections:
   1. Programmed inspections when the NAICS (North American Industry Classification System) code is listed in Appendix A of this instruction, which is Appendix B of CPL 03-00-008.
   2. A complaint or referral alleging combustible dust hazards.
   3. A fatality due to combustible dust hazards.
   4. An investigation of an explosion or fire due to combustible dust.
   5. Any other inspection where combustible dust poses a serious hazard.
2. During the opening conference or the walk around of the facility, if the CSHO determines that the employer's operation may have a serious combustible dust hazard, a separate inspection for combustible dust will be conducted. Paragraphs 3, 4, 5, and 6 of this section can be used by the CSHO to determine if there is a combustible dust hazard. The combustible dust inspection will adhere to the guidelines in CPL 03-00-008; OSHA Technical Manual – Section IV, Chapter 6, Combustible Dusts; and OSHA Memorandum, Evaluating Hazardous Levels of Accumulation Depth for Combustible Dusts.
3. CSHOs should recognize that the following criteria must be met before a deflagration can occur:
   1. The dust has to be combustible.
   2. The dust has to be dispersed in the air or another oxidant, and the concentration of this dispersed dust has to be at or above the minimum exposable concentration (MEC).
   3. There is an ignition source, such as an electrostatic discharge, spark, glowing ember, hot surface, friction heat, or a flame that can ignite the dispersed combustible mixture that is at or above the MEC.
4. CSHOs should recognize that the following criteria must be met before an explosion can occur:
   1. The above criteria in paragraph 3 for deflagration must be present.
   2. The combustible mixture is dispersed within a confined enclosure and the confined enclosure does not contain sufficient deflagration venting capacity to safely release the pressures. The confined enclosure can be a vessel, storage bin, ductwork, room, or building. It must be noted that a small deflagration can disturb and suspend settled combustible dust, which could then serve as the fuel for a secondary (and often more damaging) deflagration or explosion.
5. CSHOs should be able to recognize that the following conditions indicate a fire or explosion hazard from combustible dust:
   1. History of Fires: The facility has a history of fires involving combustible dusts.
   2. Safety Data Sheets (SDS): The SDS may indicate that a particular dust is combustible and can cause explosions, deflagrations, or other fires. However, do not use SDSs as a sole source of this information because it is often excluded from SDSs.
   3. Dust Accumulations: Section 7.2 of NFPA 654 contains a hazard assessment for combustible dust. It indicates that a dust explosion hazard or dust flash-fire hazard exists in any building or room where a dust layer of 1/32-inch thickness accumulates over a surface area of at least 5% or 1,000 ft2 of the floor area, whichever is lesser, for dusts with a bulk density of 75 lb/ft3. Section 7.2 and Annex D of NFPA 654 provide a hazard assessment when the bulk density of the dust is less than 75 lb/ft3.

Accumulations on overhead beams, joists, ducts, the tops of equipment, and other surfaces should be included when determining the dust coverage area. Even vertical surfaces should be included if the dust is adhering to them.

OSHA Memorandum, Evaluating Hazardous Levels of Accumulation Depth for Combustible Dusts, provides guidance similar to NFPA 654 in calculating the levels of dust accumulations that may be allowed at workplaces for combustible dusts. The guidance provided in the memorandum supplements the dust accumulation guidance provided in several sections of CPL 03-00-008.

1. CSHOs should observe areas of the facility for dust accumulations of greater than 1/32 of an inch (approximately equal to the thickness of a typical paper clip). Likely areas of dust accumulations within a facility are:
   1. Structural members.
   2. Conduit and pipe racks.
   3. Cable trays.
   4. Floors.
   5. Above ceiling.
   6. On and around equipment (leaks around dust collectors and ductwork).
2. If the CSHO finds that there is a combustible dust hazard, the CSHO will safely collect dust samples. The CSHO shall use means of access to upper levels of a facility only when this can be done safely. As combustible dust poses a fire and explosion hazard to the CSHO also, the CSHO will use the utmost caution during the walk around and especially during any dust sample collection to avoid dust disturbances or creating an ignition source (spark, heat). Metal dusts are known to be particularly combustible. The CSHO must follow the personal safety guidance and protocols in CPL 03-00-008 and OSHA Technical Manual – Section IV, Chapter 6, Combustible Dusts.
3. Coding in OSHA Information System (OIS).
   1. Enforcement: Per CPL 03-00-008, the programmed inspection for combustible dust and the original inspection discovering the combustible dust hazard will both be coded DUSTEXPL under NEP on the OIS “Inspection” tab in the “Inspection Data” section.
   2. Consultation: When an initial visit addresses combustible dust hazards, select “DUSTEXPL” as the NEP on the Visit Emphasis tab in OIS.

By and Under the Authority of:



Michael A. Penn CSP, SMS

Acting Assistant Commissioner

**Appendix A - Industries with Heightened Potential for Combustible Dust Hazards**

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| **NAICS** | **Industry** |
| 115111 | Cotton Ginning |
| 115114 | Postharvest Crop Activities (except Cotton Ginning) |
| 221320 | Sewage Treatment Facilities |
| 311111 | Dog and Cat Food Manufacturing |
| 311119 | Other Animal Food Manufacturing |
| 311211 | Flour Milling |
| 311212 | Rice Milling |
| 311221 | Wet Corn Milling |
| 311230 | Breakfast Cereal Manufacturing |
| 311314 | Cane Sugar Manufacturing |
| 311313 | Beet Sugar Manufacturing |
| 311812 | Commercial Bakeries |
| 311930 | Flavoring Syrup and Concentrate Manufacturing |
| 311942 | Spice and Extract Manufacturing |
| 312120 | Broadwoven Fabric Finishing Mills |
| 316110 | Leather and Hide Tanning and Finishing |
| 321113 | Sawmills |
| 321212 | Softwood Veneer and Plywood Manufacturing |
| 321214 | Truss Manufacturing |
| 321219 | Reconstituted Wood Product Manufacturing |
| 321911 | Wood Window and Door Manufacturing |
| 321912 | Cut Stock, Resawing Lumber, and Planing |
| 321918 | Other Millwork (including Flooring) |
| 321920 | Wood Container and Pallet Manufacturing |
| 321992 | Prefabricated Wood Building Manufacturing |
| 321999 | All Other Miscellaneous Wood Product Manufacturing |
| 322110 | Pulp Mills |
| 322121 | Paper (except Newsprint) Mills |
| 322291 | Sanitary Paper Product Manufacturing |
| 322299 | All Other Converted Paper Product Manufacturing |
| 324199 | All Other Petroleum and Coal Products Manufacturing |
| 325130 | Synthetic Dye Pigment Manufacturing |
| 325194 | Cyclic Crude Intermediate, Gum and Wood Chemical Manufacturing |
| 325193 | Ethyl Alcohol Manufacturing |
| 325211 | Plastics Material and Resin Manufacturing |
| 325212 | Synthetic Rubber Manufacturing |
| 325221 | Cellulosic Organic Fiber Manufacturing |
| 325510 | Paint and Coating Manufacturing |
| 325611 | Soap and Other Detergent Manufacturing |

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| **NAICS** | **Industry** |
| 325910 | Printing Ink Manufacturing |
| 325991 | Custom Compounding of Purchased Resins |
| 325998 | All Other Miscellaneous Chemical Product and Preparation Manufacturing |
| 326113 | Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing |
| 326140 | Polystyrene Foam Product Manufacturing |
| 326150 | Urethane and Other Foam Product (except Polystyrene) Manufacturing |
| 326199 | All Other Plastics Product Manufacturing |
| 326211 | Tire Manufacturing (except Retreading) |
| 326291 | Rubber Product Manufacturing for Mechanical Use |
| 326299 | All Other Rubber Product Manufacturing |
| 327910 | Abrasive Product Manufacturing |
| 331221 | Rolled Steel Shape Manufacturing |
| 331313 | Alumina Refining and Primary Aluminum Production |
| 331314 | Secondary Smelting and Alloying of Aluminum |
| 331318 | Other Aluminum Rolling, Drawing, Extruding |
| 331410 | Copper Rolling, Drawing, Extruding, and Alloying |
| 331523 | Nonferrous Metal Die-Casting Foundries |
| 331524 | Aluminum Foundries (except Die-Casting) |
| 331529 | Other Nonferrous Foundries (except Die-Casting) |
| 332117 | Powder Metallurgy Part Manufacturing |
| 332312 | Fabricated Structural Metal Manufacturing |
| 332321 | Metal Window and Door Manufacturing |
| 332322 | Sheet Metal Work Manufacturing |
| 332618 | Other Fabricated Wire Product Manufacturing |
| 332710 | Machine Shops |
| 332812 | Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers |
| 332813 | Electroplating, Plating, Polishing, Anodizing, and Coloring |
| 332999 | All Other Miscellaneous Fabricated Metal Product Manufacturing |
| 333514 | Special Die and Tool, Die Set, Jig, and Fixture Manufacturing |
| 333992 | Welding and Soldering Equipment Manufacturing |
| 336320 | Motor Vehicle Electrical and Electronic Equipment Manufacturing |
| 337110 | Wood Kitchen Cabinet and Countertop Manufacturing |
| 337121 | Upholstered Household Furniture Manufacturing |
| 337122 | Nonupholstered Wood Household Furniture Manufacturing |
| 337127 | Institutional Furniture Manufacturing |
| 337212 | Custom Architectural Woodwork and Millwork Manufacturing |
| 337215 | Showcase, Partition, Shelving, and Locker Manufacturing |
| 339950 | Sign Manufacturing |
| 339995 | Burial Casket Manufacturing |
| 339999 | All Other Miscellaneous Manufacturing |

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| **NAICS** | **Industry** |
| 423310 | Lumber, Plywood, Millwork, and Wood Panel Merchant Wholesalers |
| 423930 | Recyclable Material Merchant Wholesalers |
| 424510 | Grain and Field Bean Merchant Wholesalers |
| 424910 | Farm Supplies Merchant Wholesalers |
| 493130 | Farm Product Warehousing and Storage |
| 562920 | Materials Recovery Facilities |
| 811420 | Reupholstery and Furniture Repair |