

**North Carolina Department of Labor  
Occupational Safety and Health Division**

**Raleigh, North Carolina**

Field Information System

Operational Procedure Notice 135J

***Subject:*** Special Emphasis Program for Exposures to Health Hazards

A. **Purpose and Scope.**

This Operational Procedure Notice (OPN) establishes and implements the North Carolina Department of Labor (NCDOL) Occupational Safety and Health (OSH) Division's Special Emphasis Program (SEP) in accordance with North Carolina General Statute (NCGS) 95-136.1(b)(3) for health inspections where employees may be exposed to chemical health hazards that present high risk for serious or fatal work-related illnesses. The current SEP is intended to reduce levels of occupational exposures to beryllium, respirable crystalline silica, hexavalent chromium (chromium VI), isocyanates, and lead. This instruction applies statewide to establishments under OSH Division jurisdiction.

This OPN provides guidance to compliance safety and health officers (CSHOs) for conducting initial and follow-up health hazard SEP inspections. This document supplements procedures beyond standard inspection protocol set forth in the N.C. Field Operations Manual (FOM).

Bureau chiefs and district supervisors will ensure that procedures established in this OPN are adhered to when scheduling and conducting inspections related to occupational exposures to the listed chemical specific health hazards.

B. **Special Emphasis Program History.**

In 2000, NCDOL's Strategic Management Plan included goals and two SEPs that focused on preventing occupational exposure to lead and silica. In 2006, the lead and silica SEPs were combined and expanded to include asbestos, isocyanates and styrene. This combined SEP was called the Health Hazards Special Emphasis Program and was revised in 2008 for the Strategic Management Plan years 2009-2013, to eliminate styrene and add hexavalent chromium. In January 2011 and January 2013, additional North American Industry Classification System (NAICS) codes were added to the isocyanates tables to better target industry groups using these chemicals. In 2023, asbestos was removed from the SEP and beryllium was added.

C. **Background.**

1. **Respirable Crystalline Silica.**

Respirable Crystalline silica (RCS) is a common mineral found in many naturally occurring materials and used in many industrial products and at construction sites. Materials including sand, concrete, stone, and mortar contain crystalline silica. RCS consists of very small silica particles, typically at least 100 times smaller than ordinary sand found on beaches or playgrounds. It is generated by high energy operations like cutting, sawing, grinding, drilling and crushing stone, rock, concrete, brick, block, and mortar; and when abrasive blasting with sand. Exposure to RCS can also occur during manufacture of products such as glass,

pottery, ceramics, bricks, concrete, countertops, and artificial stone. In particular, silica exposure during the fabrication of artificial stone countertops is an emerging hazard that has been associated with several recent outbreaks of severe accelerated silicosis in young workers in the U.S. Additionally, fine industrial sand used in industry can also be a source of RCS exposure, such as in certain foundry operations and, increasingly in recent years, during hydraulic fracturing (fracking).

Inhalation of elevated levels of RCS particles poses a health hazard and can cause multiple diseases, including silicosis, an incurable lung disease that can lead to disability and death. Exposure to RCS can also cause lung cancer, chronic obstructive pulmonary disease (COPD), and kidney disease. Simply being near sand or other silica-containing materials is not hazardous. The hazard is created when specific activities generate respirable dust that is released into the air.

Silicosis is one of the world's oldest known occupational diseases. Although silicosis is preventable, silicosis continues to be a major health threat in the workplace. Annually, more than 250 silica-related deaths occur and greater than one million workers are exposed to silica nationwide. An analysis of OSHA enforcement data from January 2003 to December 2009 showed considerable noncompliance with the OSHA permissible exposure limits (PELs). The data indicated that 30 percent of the silica samples obtained during inspections in general industry, and 25 percent of the samples collected in construction, were above the applicable PEL (i.e., OSHA found just 70 percent compliance in general industry and 75 percent in construction).

2. Hexavalent Chromium.

Hexavalent chromium is chromium with a valence state of positive six, in any form or chemical compound in which it occurs. This term includes hexavalent chromium in all states of matter, in any solution or other mixture, even if encapsulated by other substances. OSHA considers all hexavalent chromium compounds to be carcinogenic. The primary intent of the OSHA standard is to protect employees from lung cancer resulting from inhalation of hexavalent chromium.

In addition to lung cancer, hexavalent chromium is also capable of causing airway sensitization or asthma, nasal ulcerations and septum perforations, skin sensitization or allergic contact dermatitis, irritant contact dermatitis and skin ulcerations, and eye irritation.

Typical industries/operations with potential hexavalent chromium exposures include electroplating, manufacturing of pigments and dyes, welding, foundry operations, spray painting, and paint removal (abrasive blasting, grinding, needle gun, etc.). As chromium compounds were used in dyes and paints, and in the tanning of leather (although hexavalent chromium is no longer typically used in the leather tanning industry), these compounds are often found in soil and groundwater at former or abandoned industrial sites and may be targeted contaminants for environmental remediation at Brownfield and Superfund sites. Primer paint containing hexavalent chromium is still widely used for aerospace and automobile refinishing applications.

In welding, a welder's exposure to hexavalent chromium may occur from inhalation of fumes when performing "hot work" such as welding, brazing, or torch cutting stainless steel or other chromium-containing metals. In these

situations, the chromium is not originally hexavalent, but the high temperatures involved in the process result in oxidation that converts the chromium to a hexavalent state in the fume. Stainless steels, in general, have 12-30% chromium content.

3. Isocyanates.

Diisocyanates, commonly referred to as isocyanates, are a group of low molecular weight aromatic and aliphatic compounds. The most common of these are toluene diisocyanate (TDI), methylene biphenyl isocyanate (MDI), and hexamethylene diisocyanate (HDI). Isocyanates are widely used in the manufacture of flexible and rigid foams, elastomers, and fiber coatings, such as paints and varnishes. The compounds are increasingly used in the automotive industry, autobody repair, and building insulation materials.

Exposure to isocyanates can have adverse health effects for workers. TDI and other isocyanates are powerful irritants to the mucous membranes of the eyes, gastrointestinal and respiratory tracts. Direct skin contact with TDI can also cause marked inflammation. Respiratory irritation may progress to a chemical bronchitis with severe bronchospasm. Hypersensitivity pneumonitis has been reported in isocyanate-exposed workers. Symptoms are known to continue for months or years after exposure has ceased and there are reports of deaths due to isocyanate induced hypersensitivity pneumonitis. Respiratory disease among workers exposed to isocyanate compounds has been recognized since the 1950's.

Isocyanates are also allergic sensitizers and are known to cause respiratory sensitization, an allergic, asthma-type reaction. There is evidence of cross-sensitization in which a worker is exposed to one isocyanate but reacts adversely to others as well. There is also evidence that dermal exposures are a primary cause of respiratory sensitization. Workers may have skin contact with isocyanates, which causes their immune systems to become sensitized, making them susceptible to respiratory sensitivity reactions upon future exposures. Dermal sensitization may result in rash, itching, hives and swelling of the extremities. Because they are not water soluble, they cannot be easily washed off skin or clothing.

4. Lead.

Lead is a naturally occurring metal found in the earth's crust and can be found in many occupations. Workers can be exposed to lead through inhalation of fumes and dusts, as well as through ingestion as a result of lead-contaminated hands, food, drinks, cosmetics, tobacco products, and clothing. Furthermore, workers can take lead home on their clothes, skin, hair, tools, and in their vehicles, potentially exposing their families.

Workers may be exposed to lead from a variety of work activities. In general industry, lead can be found in the following types of businesses: radiator repair shops, battery manufacturing, battery recycling, auto body shops, scrap metal, handling brass, foundries, fishing weight production, ceramic shops (lead glazes), lead soldering, bullet manufacturing, and firing ranges. In construction, lead exposure can occur in the following jobs or tasks: commercial building or residential paint removal, demolition and renovation of buildings, steel bridge maintenance and repair, maintenance or repair of other painted steel structures, and welding, torch cutting, scraping, grinding, or sandblasting painted metal

objects.

Overexposure to lead can adversely affect the central nervous system, cardiovascular system, reproductive system, hematological system, and the kidneys. It can also harm children when lead is brought home on worker's clothing, skin, hair and in their vehicles. Lead poisoning often goes undetected since many of the symptoms, such as stomach pain, headaches, anxiety, irritability, and poor appetite, are nonspecific and may not be recognized as symptoms of lead poisoning.

5. Beryllium.

Approximately 62,000 workers are potentially exposed to beryllium in approximately 7,300 establishments in the United States, including approximately 12,000 workers in the construction and shipyard industries. While the highest exposures occur in the workplace, family members of workers who work with beryllium also have potential exposure from contaminated work clothing and vehicles. Worker exposures to beryllium can occur in settings such as foundry and smelting operations; fabricating, machining, and grinding beryllium metal and alloys; beryllium oxide ceramics manufacturing; and dental lab work.

The element beryllium is a grey metal that is stronger than steel and lighter than aluminum. Its physical properties of great strength-to-weight, high melting point, excellent thermal stability and conductivity, reflectivity, and transparency to X-rays make it an essential material in the aerospace, telecommunications, information technology, defense, medical, and nuclear industries.

Beryllium is used industrially in three forms: as a pure metal, as beryllium oxide, and most commonly, as an alloy with copper, aluminum, magnesium, or nickel. Beryllium oxide (called beryllia) is known for its high heat capacity and is an important component of certain sensitive electronic equipment. Beryllium alloys are classified into two types: high beryllium content (up to 30% beryllium) and low beryllium content (2 - 3% beryllium). Copper-beryllium alloy is commonly used to make bushings, bearings, and springs. Fly ash (a byproduct of coal-fired power plants) and various abrasive blasting materials, such as slags, garnet, silica sand, and crushed glass, may also contain trace amounts of beryllium (considerably <0.1% by weight).

Exposure to beryllium via inhalation of airborne beryllium or skin contact with beryllium-containing dust, fume, mist, or solutions can cause health effects. The most common health effects associated with overexposure to beryllium in the workplace include beryllium sensitization, chronic beryllium disease (CBD), and lung cancer.

D. Inspection Programming.

Health Hazards SEP inspections will be generated through accidents, complaints, referrals, and general programmed criteria in both construction and general industry. The assignments will have priority based upon instructions in the FOM. Employee air exposure sampling will be conducted whenever possible to evaluate exposure levels.

1. Programmed Inspections.

- a. Programmed planned inspections are generated from the Class I and

Class II group general schedule lists (FOM Chapter II – Compliance Programming). For general industry safety, the priority is based on the Lost Workday Injury and Illness Rate by industry. For General Industry, the priority is based on number of serious health violations per health inspection by industry. The Planning, Statistics and Information Management Bureau (PSIM) will filter this list creating a Health Hazards specific list of programmed planned inspections. PSIM will ensure that the lists are proportioned so that the majority of the programmed planned inspections are selected from the Class I group and are among the NAICS codes that likely have beryllium, crystalline silica, hexavalent chromium, isocyanate, and/or lead related activities. As new sites are added, they should be randomized for inspection.

- b. The NAICS codes for this SEP may include, but are not limited to, the NAICS codes listed in Appendix A. Further, Appendix B provides a cross-reference table of health hazards by NAICS code.
- c. PSIM will review the generated lists to remove inactive and duplicate sites. PSIM will also review the lists to determine and remove those sites that have received a comprehensive health inspection within the last three years. Employers that have received a comprehensive safety inspection within the last three years may still be included on the lists. The health general industry programmed lists and safety general industry programmed lists will identify employers meeting the Health Hazards SEP criteria. The district supervisor will then assign the Health Hazard SEP inspections first and by the highest hazard sites.

2. Unprogrammed Inspections.

- a. Unprogrammed inspections are partial scope inspections focused on the health hazard specifically identified and any other identified hazardous conditions, to include safety hazards, per the FOM Chapter IX - Complaints, Referrals, and Accidents.
- b. Referrals.
  - i. North Carolina Department of Health and Human Services (NCDHHS).
    - A. NCGS, Article 20 of Chapter 130A – Occupational Health, requires physicians, medical facilities, and laboratories to report occupational diseases and illnesses, specifically, silicosis, elevated blood lead levels, and carbon monoxide poisoning to the NCDHHS, Occupational and Environmental Epidemiology Branch and Health Hazards Control Unit (HHCU). NCDHHS evaluates each report for its potential indication of an exposure to a health hazard, and if deemed necessary, a referral will be made to NCDOL. NCDHHS and NCDOL have a Memorandum of Understanding (MOU) which clarifies the responsibilities regarding the exchange of information between the two departments. The MOU is located on the One Stop Shop.

B. Lead.

1. NCDHHS, along with the NIOSH Adult Blood Lead Epidemiology and Surveillance (ABLES), maintains a list of adults (age 16+) with elevated Blood Lead Levels (BLLs).
2. Inspections or investigations will be conducted in establishments where reported employee blood lead levels (submitted to NCDOL by referral from NCDHHS) were at or above 25 µg/dL following the National Emphasis Program for Lead (CPL 03-00-009).
3. The SEP chair, co-chair, and bureau chiefs will discuss the elevated blood level list received from NCDHHS and decide which cases will become referrals.
4. Supervisors will then determine how to handle the referral either via an inspection or investigation by letter. If handled via a letter, the supervisor will enter their own referral when the assignment is received.
5. CSHOs assigned an inspection will enter their own referral based on information received on the assignment sheet. The date/time received will be the date the generation notification was provided to the supervisor. The referral action date will be the date the CSHO was assigned the referral. The contact's name and information will be that of the designated liaison from the NCDHHS (contact SEP chair for this information).

ii. North Carolina Department of Environmental Quality (DEQ).

- A. The OSH Division will periodically review a list of permits for renovation of elevated water tanks from the DEQ, Division of Water Resources, Public Water Supply Section. Because of the high potential exposure to lead and silica during paint removal and prepping operations on elevated tanks, the sites listed on the permits may be targeted for inspection.

iii. Compliance Safety and Health Officers.

- A. Safety Compliance Officers will follow the guidance for making referrals to Health Compliance Officers per the FOM Chapter IX – Complaints, Referrals, and Accidents.

E. Inspection Procedures.

1. General.

- a. Programmed comprehensive inspections will generally be limited to the general industry schedule assigned from the OSH Division Targeting System.
- b. If a complaint, referral, or accident inspection is conducted in an establishment covered by this OPN, CSHOs will follow guidance listed below and in FOM Chapter IX – Complaints, Referrals and Accidents.
- c. If a fatality or catastrophe investigation is conducted in an establishment covered by this OPN, CSHOs will follow guidance listed below and in FOM Chapter VIII – Fatality and Catastrophe Investigations.

2. Pre-Inspection Preparation.

- a. CSHOs assigned to conduct a programmed planned, comprehensive inspection must review the site listing on the OSH Division Targeting System to determine if a deferral has been issued for the employer/site per the Consultative Services Bureau (CSB), the Education, Training and Technical Assistance (ETTA) Bureau (Carolina Star program) or through an OSH partnership. If the site has an exemption, the CSHO will follow the guidance listed in FOM Chapter III – Inspection Procedures, paragraph D.3.h., Exemptions from Compliance Programmed Planned Inspections.
- b. CSHOs assigned to conduct site inspection under this SEP will familiarize themselves with the following documents as appropriate:
  - i. N.C. Field Operations Manual.
  - ii. OSHA Instruction TED 01-00-015, Occupational Safety and Health Administration Technical Manual.
  - iii. OSHA Instruction CPL 02-02-058 (2-2.58), December 13, 1993, 29 CFR 1926.62, Lead Exposure in Construction: Interim Final Rule - Inspection and Compliance Procedures.
  - iv. OSHA Instruction STD 3-8.1, October 30, 1978, Welding, Cutting, or Heating of Metals Coated with Lead-bearing Paint.
  - v. OSHA Instruction CPL 02-02-067, September 4, 1998, Lead-Brass and Bronze Ingot Manufacturing.
  - vi. OSHA Instruction CPL 03-00-018, February 12, 2015, National Emphasis Program: Primary Metal Industries.
  - vii. OSHA Instruction STD 1-12.6, October 30, 1978, Forging Machines (Use of lead).
  - viii. OSHA Instruction CPL 03-00-009, August 14, 2008, National Emphasis Program: Lead.
  - ix. OSHA Instruction CPL 02-02-074, January 24, 2008, Inspection Procedures for Chromium (VI) standards.

- x. OSHA Instruction CPL 02-02-076, February 3, 2010, National Emphasis Program: Hexavalent Chromium.
- xi. OSHA Instruction CPL 03-00-017, June 20, 2013, National Emphasis Program: Isocyanates.
- xii. OSHA Interim Enforcement Guidance for Respirable Crystalline Silica in Construction standard, 29 CFR 1926.1153.
- xiii. OSHA Interim Enforcement Guidance for Respirable Crystalline Silica in General Industry/Maritime standard, 29 CFR 1910.1053.
- xiv. OSHA Interim Enforcement Guidance for the 2020 Final Beryllium Standards, 29 CFR 1910.1024 and 29 CFR 1926.1124.

3. Inspection Process.

- a. Opening conference.
  - i. CSHOs will indicate during the opening conference as to why the inspection is being conducted along with the fact that there may be potential exposure to beryllium, crystalline silica, hexavalent chromium, isocyanate, and/or lead, covered under the SEP for Health Hazards.
  - ii. CSHOs will attempt to establish the presence of, crystalline silica, hexavalent chromium, isocyanates and/or lead. Examples of methods to establish the presence of contaminants could include using safety data sheets, material inventories, material purchase orders regarding materials used during the process, interviews with management officials and employees, etc.
- b. Walk-around/exposure assessment.
  - i. Workplace exposure assessments are not limited to beryllium, crystalline silica, hexavalent chromium, isocyanate, and/or lead. Other health hazards shall be addressed when applicable such as noise, metals, chemicals, etc.
  - ii. Determine the processes and/or tasks for potential exposure to contaminants. Document and describe the process and/or tasks including equipment, procedures, engineering and/or administrative controls, personal protective equipment (PPE), routine versus non-routine tasks, maintenance, work shifts, worst case versus typical day, environmental conditions (indoors/outdoors), etc.
  - iii. Determine if the employer has performed an exposure assessment. Obtain copies of the employer's initial exposure monitoring, any subsequent air monitoring results, and/or any other records used for their exposure assessment. Evaluate these



records in accordance with the appropriate standard to determine compliance.

- iv. The CSHO will determine whether sampling is required by using the information collected during the inspection preparation, opening conference and walkaround.
  - A. If sampling is necessary, the CSHO will develop a sampling strategy and will refer to the FOM Chapter XV – Industrial Hygiene Compliance and the OSHA Technical Manual (TED 01-00-015) when conducting personal monitoring and/or wipe sampling.
    - 1. Sampling should be conducted for all complaints and referrals alleging exposure to contaminants.
    - 2. Sampling should be conducted if the employer did not perform an initial determination for an exposure assessment as required by either the beryllium, crystalline silica, hexavalent chromium, and/or lead standard.
    - 3. If sampling is unable to be conducted, the CSHO will discuss this with their supervisor and will document the circumstances surrounding the situation within the case file.
    - 4. If the costs for sampling, including shipping, are to exceed \$500, the CSHO must receive their bureau chief's approval for their submitted sampling plan.
  - B. CSHOs must use appropriate PPE for potential hazardous exposures. They must not enter a regulated area, or other area where exposures are likely to exceed the PEL, unless it is absolutely necessary.
  - C. If a CSHO determines that entering a regulated area is necessary, CSHO will confer with their supervisor and bureau chief for authorization to enter the restricted area. Only CSHOs who have an up to date respirator fit test (if applicable), proper PPE, and hazard specific training will be allowed to enter a restricted area.
  - D. For inspection and air sampling activities, CSHOs should use remote operations when practical. CSHOs should be conservative about time spent in areas where high concentrations may exist or are suspected. CSHOs may conduct personal air monitoring on themselves to be entered in their personnel file per internal Safety and Health policies.
  - E. If sampling is not necessary, the CSHO will discuss this determination with their supervisor prior to conducting a closing conference. If, after discussing it with the

supervisor, sampling is still determined to not be necessary, the CSHO will document the reasoning within the case file.

- v. Beryllium (1910.1024 and 1926.1124).
  - A. Sample collection procedures.
    - 1. Collection of air samples. When necessary, the CSHO will develop a sampling strategy for personnel working within the containment area, which will include procedures for decontamination of sampling equipment.
    - 2. CSHOs shall normally conduct full-shift personal air monitoring. OSHA Method 1023 (June 2018) Beryllium and Compounds (as Be) describes collection and analysis of airborne beryllium, surface wipe and bulk sampling by inductively coupled plasma optical emission spectrometry (ICP-OES) instrumentation.
- vi. Hexavalent Chromium (1910.1026 and 1926.1126).
  - A. While evaluating worker exposures to hexavalent chromium, CSHOs need to be aware of other potential exposure to metals, including, but not limited to, arsenic, manganese, cadmium, copper, and magnesium. When necessary, the CSHO will perform sampling to evaluate other potential exposure to metals.
- vii. Lead (1910.1025 and 1926.62).
  - A. While evaluating worker exposures to lead, CSHOs need to be aware of other potential exposure to metals, including, but not limited to, arsenic, manganese, cadmium, copper, and magnesium. When necessary, the CSHO will perform sampling to evaluate other potential exposure to metals.
- c. Citation Guidance.
  - i. Refer to the FOM and other appropriate OSHA reference documents (such as CPLs) prior to proceeding with citation issuance.
  - ii. Where employees are exposed to an isocyanate not regulated by OSHA, but there is an occupational exposure limit (OEL) that is recommended by another agency such as, but not limited to, the American Conference of Governmental Industrial Hygienists (ACGIH) or the National Institute of Occupational Safety and Health (NIOSH), a citation may be considered under the General Duty Clause for exceeding the recommended OEL. The CSHO must follow the guidance in FOM Chapter XV – Industrial

Hygiene Compliance for unregulated substances.

- d. Follow-up Inspections.
  - i. CSHO will follow guidance listed in FOM Chapter III – Inspection Procedures.

F. **Recording and Tracking.**

- 1. For all enforcement activity covered under this SEP, the following codes must be marked in OSHA Express (OE) accordingly.
  - a. Program improvement. Select “S-12 Health Hazards PROG IMPROVEMENT” under Optional Information, item 42, when any citation is issued that directly relates to beryllium, crystalline silica, hexavalent chromium, isocyanate, and/or lead exposure or a deficient exposure control program. Below are examples of when to code an inspection using this code:
    - i. Citation(s) issued from 29 CFR 1910.1024 – Beryllium or 29 CFR 1926.1124 – Beryllium.
    - ii. Citation(s) issued from 29 CFR 1910.1026 – Chromium (VI) or 29 CFR 1926.1126 – Chromium (VI).
    - iii. Citation(s) issued from 29 CFR 1910.1053 – Respirable Crystalline Silica or 29 CFR 1926.1153 – Respirable Crystalline Silica.
    - iv. Citation(s) issued from 29 CFR 1910.1025 – Lead or 29 CFR 1926.62 – Lead.
    - v. Citation(s) issued from 29 CFR 1910.134 – Respiratory Protection, relating to exposure to any of the health hazards listed in this OPN.
    - vi. Citation(s) issued from 29 CFR 1910.132 – PPE Hazard Assessment (including specific PPE standards), relating to exposure to any of the health hazards listed in this OPN.
    - vii. Citation(s) issued from 29 CFR 1910.1200 – Hazard Communication, relating to exposure to any of the health hazards listed in this OPN.
    - viii. Citation(s) issued from 29 CFR 1910.107 – Spray Finishing Using Flammable and Combustible Materials, relating to exposure to any of the health hazards listed in this OPN.
  - b. Beryllium enforcement activity (inspections, complaints and referrals).
    - i. Select “Beryllium Exposure” under Strategic Plan Activity.
  - c. Crystalline Silica enforcement activity (inspections, complaints and referrals).

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- i. Select “Silica Exposure” under Strategic Plan Activity.
    - ii. Select “RCS-NEP” under National Emphasis.
  - d. Hexavalent chromium enforcement activity (inspections, complaints and referrals).
    - i. Select “Chrome6” under National Emphasis.
    - ii. Select “Chromium Exposure” under Strategic Plan Activity.
  - e. Isocyanate enforcement activity (inspections, complaints and referrals).
    - i. Select “Isocyanate Exposure” under Strategic Plan Activity.
  - f. Lead enforcement activity (inspections, complaints and referrals).
    - i. Select “Lead” under Local Emphasis if the enforcement activity was referred by NCDHHS.
    - ii. Select “Lead” under National Emphasis.
    - iii. Select “Lead Exposure” under Strategic Plan Activity.
2. Entering Silica Sampling Data.
- a. Entering silica sampling information, CSHO will use the code “9000 – Silica, Respirable Quartz” and for unit of measurement “N – micrograms per cubic meter”.

**G. Other Division Activity.**

As outlined in the Strategic Management Plan, the Education, Training and Technical Assistance Bureau and Consultative Services Bureau will provide outreach programs to support the enforcement effort.

**H. Effective Date.**

OPN 135I is canceled. This OPN is effective on the date of signature. It will remain in effect until revised or canceled by the director.

Signed on original  
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Matt Gruber  
SEP Team Leader

Signed on original  
\_\_\_\_\_  
Jennifer Haigwood  
OSH Director  
  
12/12/23  
\_\_\_\_\_  
Date of Signature

**Appendix A: Tables for Health Hazards by NAICS and Industry Type****LEAD INSPECTIONS**

<b>NAICS</b>	<b>Industry Type</b>
237310	Highway, Street, and Bridge Construction
237990	Other Heavy and Civil Engineering Construction
237110	Water and Sewer Line and Related Structures Construction
236210	Industrial Building Construction
238320	Painting and Wall Covering Contractors
238120	Structural Steel and Precast Concrete Contractors
237130	Power and Communication Line and Related Structures Construction
238910	Site Preparation Contractors
238150	Glass and Glazing Contractors
325182	Carbon Black Manufacturing
325131	Inorganic Dye and Pigment Manufacturing
325510	Paint and Coating Manufacturing
325320	Pesticide and Other Agricultural Chemical Manufacturing
327211	Flat Glass Manufacturing
327212	Other Pressed and Blown Glass and Glassware Manufacturing
327215	Glass Product Manufacturing Made of Purchased Glass
212325	Clay and Ceramic and Refractory Minerals Mining
327992	Ground or Treated Mineral and Earth Manufacturing
331419	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)
331314	Secondary Smelting and Alloying of Aluminum
331423	Secondary Smelting, Refining, and Alloying of Copper
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)
331491	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding
331522	Nonferrous (except Aluminum) Die-Casting Foundries
331525	Copper Foundries (except Die-Casting)
332992	Small Arms Ammunition Manufacturing
332993	Ammunition (except Small Arms) Manufacturing
332994	Small Arms Manufacturing
322225	Laminated Aluminum Foil Manufacturing for Flexible Packaging Uses
332999	All Other Miscellaneous Fabricated Metal Product Manufacturing
334412	Bare Printed Circuit Board Manufacturing
334413	Semiconductor and Related Device Manufacturing
334414	Electronic Capacitor Manufacturing
334416	Electronic Coil, Transformer, and Other Inductor Manufacturing
334220	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing
334310	Audio and Video Equipment Manufacturing
334418	Printed Circuit Assembly (Electronic Assembly) Manufacturing

<b>NAICS</b>	<b>Industry Type</b>
334419	Other Electronic Component Manufacturing
335911	Storage Battery Manufacturing
335912	Primary Battery Manufacturing
336322	Other Motor Vehicle Electrical and Electronic Equipment Manufacturing
339942	Lead Pencil and Art Good Manufacturing
221111	Hydroelectric Power Generation
221112	Fossil Fuel Electric Power Generation
221121	Electric Bulk Power Transmission and Control
221122	Electric Power Distribution
423930	Recyclable Material Merchant Wholesalers
425110	Business to Business Electronic Markets
561611	Investigation Services
561612	Security Guards and Patrol Services
561613	Armored Car Services
443111	Household Appliance Stores
811211	Consumer Electronics Repair and Maintenance
811212	Computer and Office Machine Repair and Maintenance
811213	Communication Equipment Repair and Maintenance
811219	Other Electronic and Precision Equipment Repair and Maintenance
713990	All Other Amusement and Recreation Industries
922120	Police Protection

**SILICA INSPECTIONS**

<b>NAICS</b>	<b>Industry Type</b>
213112	Support Activities for Oil and Gas Operations
221100	Electric Power Generation, Transmission and Distribution 221111 Hydroelectric Power Generation 221112 Fossil Fuel Electric Power Generation 221113 Nuclear Electric Power Generation 221114 Solar Electric Power Generation 221115 Wind Electric Power Generation 221116 Geothermal Electric Power Generation 221117 Biomass Electric Power Generation 221118 Other Electric Power Generation 221121 Electric Bulk Power Transmission and Control 221122 Electric Power Distribution
237310	Highway, Street, and Bridge Construction
237990	Other Heavy and Civil Engineering Construction
236210	Industrial Building Construction
237130	Power and Communication Line and Related Structures Construction
237110	Water and Sewer Line and Related Structures Construction
238190	Other Foundation, Structure, and Building Exterior Contractors
238910	Site Preparation Contractors
324122	Asphalt Shingle and Coating Materials Manufacturing
325510	Paint and Coating Manufacturing
327110	Pottery, Ceramics, and Plumbing Fixture Manufacturing
327120	Clay Building Material and Refractories Manufacturing
327123	Other Structural Clay Product Manufacturing

<b>NAICS</b>	<b>Industry Type</b>
327124	Clay Refractory Manufacturing
327212	Other Pressed and Blown Glass and Glassware Manufacturing
327213	Glass Container Manufacturing
327320	Ready-Mix Concrete Manufacturing
327331	Concrete Block and Brick Manufacturing
327332	Concrete Pipe Manufacturing
327390	Other Concrete Product Manufacturing
327910	Abrasive Product Manufacturing
327991	Cut Stone and Stone Product Manufacturing
327991	Cut Stone and Stone Product Manufacturing
327992	Ground or Treated Mineral and Earth Manufacturing
327993	Mineral Wool Manufacturing
327999	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing
212325	Clay and Ceramic and Refractory Minerals Mining
212399	All Other Nonmetallic Mineral Mining
327112	Vitreous China, Fine Earthenware, and Other Pottery Product Manufacturing
331511	Iron Foundries
331512	Steel Investment Foundries
331513	Steel Foundries (except Investment)
331521	Aluminum Die-Casting Foundries
331522	Nonferrous (except Aluminum) Die-Casting Foundries
331524	Aluminum Foundries (except Die-Casting)
331525	Aluminum Foundries (except Die-Casting)
331529	Other Nonferrous Metal Foundries (except Die-Casting)
332312	Fabricated Structural Metal Manufacturing
332313	Plate Work Manufacturing
332410	Power Boiler and Heat Exchanger Manufacturing
332420	Metal Tank (Heavy Gauge) Manufacturing
333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing
332710	Machine Shops
332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers
332997	Industrial Pattern Manufacturing
336611	Ship Building and Repairing
336612	Boat Building
337110	Wood Kitchen Cabinet and Countertop Manufacturing
339114	Dental Equipment and Supplies Manufacturing
339910	Jewelry and Silverware Manufacturing
339950	Sign Manufacturing
423320	Brick, Stone, and Related Construction Material Merchant Wholesalers
423840	Industrial Supplies Merchant Wholesalers

**BERYLLIUM INSPECTIONS**

<b>NAICS</b>	<b>Industry Type</b>
326122	Plastics Pipe and Pipe Fitting Manufacturing
327910	Abrasive Product Manufacturing
331111	Iron and Steel Mills and Ferroalloy Manufacturing
331112	Electrometallurgical Products Except Steel
331210	Steel Pipe and Tubes
331221	Rolled Steel Shape Manufacturing
331312	Primary Production of Aluminum
331316	Aluminum Extruded Products
331411	Primary Smelting and Refining of Copper
331419	Primary Smelting and Refining of Nonferrous Metals, Except Copper and Aluminum
331421	Rolling, Drawing and Extruding of Copper
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)
331511	Iron Foundries
331512	Steel Investment Foundries
331513	Steel Foundries, Not Elsewhere Classified
331523	Nonferrous Metal Die-Casting Foundries
331524	Aluminum Foundries (except Die-Casting)
331525	Copper Foundries
331528	Nonferrous Foundries Except Aluminum and Copper
332311	Prefabricated Metal Building and Component Manufacturing
332312	Fabricated Structural Metal Manufacturing
332323	Ornamental and Architectural Metal Work Manufacturing
332710	Machine Shops
332721	Precision Turned Product Manufacturing
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
333131	Mining Machinery and Equipment Manufacturing
335999	All Other Miscellaneous Electrical Equipment and Component Manufacturing
336211	Motor Vehicle Body Manufacturing
339950	Sign Manufacturing
237120	Oil and Gas Pipeline and Related Structures Construction
238320	Painting and Wall Covering Contractors



**ISOCYANATE INSPECTIONS**

<b>NAICS</b>	<b>Industry Type</b>
221119	Other Electric Power Generation
221210	Natural Gas Distribution
238150	Glass and Glazing Contractors
238210	Electrical Contractors
238230	Painting and Wall Covering Contractors
238310	Drywall and Insulation Contractors
238330	Flooring Contractors
313230	Nonwoven Fabric Mills
314992	Tire Cord and Tire Fabric Mills
321211	Hardwood Veneer and Plywood Manufacturing
321212	Softwood Veneer and Plywood Manufacturing
321219	Reconstituted Wood product Manufacturing
321911	Wood Window and Door Manufacturing
323112	Commercial Flexographic Printing
325212	Synthetic Rubber Manufacturing
325510	Paint and Coating Manufacturing
326130	Laminated Plastics Plate, Sheet and Shape Manufacturing
326140	Polystyrene Foam Product Manufacturing
326150	Urethane and Other Foam Product Manufacturing
326191	Plastics Plumbing Fixture Manufacturing
326199	All Other Plastics Product Manufacturing
326220	Rubber and Plastic Hoses and Belting Manufacturing
326291	Rubber Product Manufacturing for Mechanical Use
326299	All Other Rubber Manufacturing
327991	Cut Stone and Stone Product Manufacturing
331511	Iron Foundries
331525	Copper Foundries (except Die-Casting)
332812	Metal Coating Engraving (except Jewelry and Silverware) and Allied Services to Mfrs.
332911	Industrial Valve Manufacturing
332999	All Other Misc. Fabricated Metal Product Manufacturing
333415	A/C and Heating Equipment and Commercial and Industrial Refrigeration Equipment
333618	Other Engine Equipment Manufacturing
334416	Electronic Coil, Transformer and Other Inductor Manufacturing
335222	Household Refrigerator and Home Freezer Manufacturing
336214	Travel Trailer and Camper Manufacturing
336322	Other Motor Vehicle Electrical and Electronic Equipment Manufacturing
336360	Motor Vehicle Seating and Interior Trim Manufacturing
336399	All Other Motor Vehicle Parts Manufacturing
336411	Aircraft Manufacturing
33661*	Boat Building
337215	Showcase, Partition, Shelving and Locker Manufacturing
337920	Blind and Shade Manufacturing
339911	Jewelry (except Costume) Manufacturing
339950	Sign Manufacturing
339999	Other Misc. Manufacturing
483211	Inland Water Freight Transportation
488410	Motor Vehicle Towing
488999	All Other Activities for Transportation
811111	General Automotive Repair

NAICS	Industry Type
811118	Other Automotive Mechanical and Electrical Repair and Maintenance
811121	Automotive Body, Paint, and Interior Repair and Maintenance
811122	Automotive Glass Replacement Shops
811191	Automotive Oil Change and Lubrication Shops
811198	All Other Automotive Repair and Maintenance

*\* In some cases, this NAICS code may fall under federal jurisdiction if the facility is on or adjacent to the navigable waters.*

### HEXAVALENT CHROMIUM INSPECTIONS

NAICS	Industry Type
316110	Leather and Hide Tanning and Finishing
325131	Inorganic Dye and Pigment Manufacturing
325188	Industrial Inorganic Chemicals, NOC.
325211	Plastics Materials and Resin Manufacturing
325510	Truck Trailer Manufacturing
327125	Non-clay Refractory Manufacturing
327213	Glass Container Manufacturing
331111	Iron and Steel Mills
331112	Electrometallurgical Ferroalloy Product Manufacturing
331210	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except copper and aluminum)
331510	Ferrous Metal Foundries
332111	Iron and Steel Forging
332117	Powder Metallurgy Part Manufacturing
332313	Welding and Soldering Equipment Manufacturing
332322	Sheet Metal Work Manufacturing
332420	Welding Repair
332439	Other Metal Container Manufacturing
332813	Electroplating, Plating, Polishing, Anodizing, and Coloring
333319	Other Commercial and Service Industry Machinery Manufacturing
336211	Motor Vehicle Body Manufacturing
336411	Aircraft Manufacturing
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing
336510	Railroad Rolling Stock Manufacturing
336611	Ship Building and Repairing
336612*	Boat Building
336991	Motorcycle, Bicycle, and Parts Manufacturing
339112	Surgical and Medical Instrument Manufacturing
339113	Surgical Appliance and Supplies Manufacturing

*\* In some cases, this NAICS code may fall under federal jurisdiction if the facility is on or adjacent to the navigable waters.*

**Appendix B: Cross-reference Table for Health Hazards and NAICS Code**

NAICS	Industry Type	Beryllium	Chromium VI	Isocyanates	Lead	Silica
212325	Clay and Ceramic and Refractory Minerals Mining				X	X
212399	All Other Nonmetallic Mineral Mining					X
213112	Support Activities for Oil and Gas Operations					X
221100	Electrical Power Generation, Transmission and Distribution					X
221111	Hydroelectric Power Generation				X	
221112	Fossil Fuel Electric Power Generation				X	
221119	Other Electric Power Generation			X		
221121	Electric Bulk Power Transmission and Control				X	
221122	Electric Power Distribution				X	
221210	Natural Gas Distribution			X		
236100	Residential Building Construction					X
236200	Non-residential Building Construction					X
236210	Industrial Building Construction				X	X
237110	Water and Sewer Line and Related Structures Construction				X	X
237130	Power and Communication Line and Related Structures Construction				X	X
237310	Highway, Street, and Bridge Construction				X	X
237990	Other Heavy and Civil Engineering Construction				X	X
238100	Foundation, Structure and Building Exterior Contractors					X
238120	Structural Steel and Precast Concrete Contractors				X	

NAICS	Industry Type	Beryllium	Chromium VI	Isocyanates	Lead	Silica
238150	Glass and Glazing Contractors			X	X	
238190	Other Foundation, Structure, and Building Exterior Contractors					X
238210	Electrical Contractors			X		
238230	Painting and Wall Covering Contractors			X		
238300	Building Finishing Contractors					X
238310	Drywall and Insulation Contractors			X		
238320	Painting and Wall Covering Contractors	X			X	
238330	Flooring Contractors			X		
238900	Other Specialty Trade Contractors					X
238910	Site Preparation Contractors				X	X
313230	Nonwoven Fabric Mills			X		
314992	Tire Cord and Tire Fabric Mills			X		
321211	Hardwood Veneer and Plywood Manufacturing			X		
321212	Softwood Veneer and Plywood Manufacturing			X		
321219	Reconstituted Wood product Manufacturing			X		
321911	Wood Window and Door Manufacturing			X		
322225	Laminated Aluminum Foil Manufacturing for Flexible Packaging Uses				X	
323112	Commercial Flexographic Printing			X		
324122	Asphalt Shingle and Coating Materials Manufacturing					X
325131	Inorganic Dye and Pigment Manufacturing				X	
325182	Carbon Black Manufacturing				X	
325212	Synthetic Rubber Manufacturing			X		
325320	Pesticide and Other Agricultural Chemical Manufacturing				X	

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NAICS	Industry Type	Beryllium	Chromium VI	Isocyanates	Lead	Silica
325510	Paint and Coating Manufacturing			X	X	X
326130	Laminated Plastics Plate, Sheet and Shape Manufacturing			X		
326140	Polystyrene Foam Product Manufacturing			X		
326150	Urethane and Other Foam Product Manufacturing			X		
326191	Plastics Plumbing Fixture Manufacturing			X		
326199	All Other Plastics Product Manufacturing			X		
326220	Rubber and Plastic Hoses and Belting Manufacturing			X		
326291	Rubber Product Manufacturing for Mechanical Use			X		
326299	All Other Rubber Manufacturing			X		
327110	Pottery, Ceramics and Plumbing Manufacturing					X
327112	Vitreous China, Fine Earthenware, and Other Pottery Product Manufacturing					X
327120	Clay Building Materials and Refractory Manufacturing					X
327123	Other Structural Clay Product Manufacturing					X
327124	Clay Refractory Manufacturing					X
327211	Flat Glass Manufacturing				X	
327212	Other Pressed and Blown Glass and Glassware Manufacturing				X	X
327213	Glass Container Manufacturing					X
327215	Glass Product Manufacturing Made of Purchased Glass				X	
327320	Ready-Mix Concrete Manufacturing					X
327331	Concrete Block and Brick Manufacturing					X
327332	Concrete Pipe Manufacturing					X

NAICS	Industry Type	Beryllium	Chromium VI	Isocyanates	Lead	Silica
327390	Other Concrete Product Manufacturing					X
327910	Abrasive Product Manufacturing	X				X
327991	Cut Stone and Stone Product Manufacturing					X
327991	Cut Stone and Stone Product Manufacturing			X		
327992	Ground or Treated Mineral and Earth Manufacturing				X	
327992	Ground or Treated Material and Earth Manufacturing					X
327993	Mineral Wool Manufacturing					X
327999	All Other Miscellaneous Nonmetallic Mineral Production Manufacturing					X
331314	Secondary Smelting and Alloying of Aluminum				X	
331419	Primary Smelting and Refining of Nonferrous Metal (except Copper and Aluminum)	X			X	
331423	Secondary Smelting, Refining, and Alloying of Copper				X	
331491	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding				X	
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	X	X		X	
331511	Iron Foundries	X		X		X
331513	Steel Foundries (except Investment)	X				X
331521	Aluminum Die-Casting Foundries					X
331522	Nonferrous (except Aluminum) Die-Casting Foundries				X	X
331524	Aluminum Foundries (except Die-Casting)	X				X
331525	Copper Foundries (except Die-Casting)	X		X	X	X

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NAICS	Industry Type	Beryllium	Chromium VI	Isocyanates	Lead	Silica
331528	Other Nonferrous Foundries (except Die-Casting)	X				X
332312	Fabricated Structural Metal Manufacturing	X				X
332313	Plate Work Manufacturing					X
332410	Power Boiler and Heat Exchanger Manufacturing					X
332420	Metal Tank (Heavy Gauge) Manufacturing					X
332710	Machine Shops	X				X
332812	Metal Coating Engraving (except Jewelry and Silverware) and Allied Services to Mfrs.	X		X		X
332911	Industrial Valve Manufacturing			X		
332992	Small Arms Ammunition Manufacturing				X	
332993	Ammunition (except Small Arms) Manufacturing				X	
332994	Small Arms Manufacturing				X	
332997	Industrial Pattern Manufacturing					X
332999	All Other Misc. Fabricated Metal Product Manufacturing	X		X	X	
333415	A/C and Heating Equipment and Commercial and Industrial Refrigeration Equipment			X		X
333618	Other Engine Equipment Manufacturing			X		
334220	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing				X	
334310	Audio and Video Equipment Manufacturing				X	
334412	Bare Printed Circuit Board Manufacturing				X	
334413	Semiconductor and Related Device Manufacturing				X	
334414	Electronic Capacitor Manufacturing				X	

NAICS	Industry Type	Beryllium	Chromium VI	Isocyanates	Lead	Silica
334416	Electronic Coil, Transformer, and Other Inductor Manufacturing				X	
334416	Electronic Coil, Transformer and Other Inductor Manufacturing			X		
334418	Printed Circuit Assembly (Electronic Assembly) Manufacturing				X	
334419	Other Electronic Component Manufacturing				X	
335222	Household Refrigerator and Home Freezer Manufacturing			X		
335911	Storage Battery Manufacturing				X	
335912	Primary Battery Manufacturing				X	
336214	Travel Trailer and Camper Manufacturing			X		
336322	Other Motor Vehicle Electrical and Electronic Equipment Manufacturing			X	X	
336360	Motor Vehicle Seating and Interior Trim Manufacturing			X		
336399	All Other Motor Vehicle Parts Manufacturing			X		
336411	Aircraft Manufacturing			X		
336611	Ship Building and Repairing					X
336612	Boat Building			X		X
337110	Wood Kitchen Cabinet and Countertop Manufacturing					X
337215	Showcase, Partition, Shelving and Locker Manufacturing			X		
337920	Blind and Shade Manufacturing			X		
339114	Dental Equipment and Supplies Manufacturing					
339911	Jewelry (except Costume) Manufacturing			X		



NAICS	Industry Type	Beryllium	Chromium VI	Isocyanates	Lead	Silica
339942	Lead Pencil and Art Good Manufacturing				X	
339950	Sign Manufacturing	X		X		X
339999	Other Misc. Manufacturing			X		
423840	Industrial Supplier Merchant Wholesalers					X
423930	Recyclable Material Merchant Wholesalers				X	
425110	Business to Business Electronic Markets				X	
443111	Household Appliance Stores				X	
483211	Inland Water Freight Transportation			X		
488410	Motor Vehicle Towing			X		
488999	All Other Activities for Transportation			X		
561611	Investigation Services				X	
561612	Security Guards and Patrol Services				X	
561613	Armored Car Services				X	
561730	Landscaping Services					X
713990	All Other Amusement and Recreation Industries				X	
811111	General Automotive Repair			X		
811118	Other Automotive Mechanical and Electrical Repair and Maintenance			X		
811121	Automotive Body, Paint, and Interior Repair and Maintenance			X		
811122	Automotive Glass Replacement Shops			X		
811191	Automotive Oil Change and Lubrication Shops			X		
811198	All Other Automotive Repair and Maintenance			X		
811211	Consumer Electronics Repair and Maintenance				X	
811212	Computer and Office Machine Repair and Maintenance				X	

OPN 135J cont'd.

NAICS	Industry Type	Beryllium	Chromium VI	Isocyanates	Lead	Silica
811213	Communication Equipment Repair and Maintenance				X	
811219	Other Electronic and Precision Equipment Repair and Maintenance				X	
922120	Police Protection				X	
999200	State Governments					X
999300	Local Governments					X