PORTLAND CEMENT CHECKLIST

Person Making the Inspection: _____ Jobsite _____

Contractor _____

Weather Conditions: _____

Date: _____ Time: _____ a.m. / p.m.

INSPECTION POINTS	Good	Bad	N/A
Sanitation Standard			
Is clean water readily accessible?	☐	☐	☐
Is the amount of clean water adequate for the jobsite and number of exposed employees?	☐	☐	☐
Is non-alkaline soap readily accessible?	☐	☐	☐
Is the amount of non-alkaline soap adequate for the jobsite and number of exposed employees?	☐	☐	☐
Are clean towels readily accessible?	☐	☐	☐
Are the amount of clean towels adequate for the jobsite and number of exposed employees?	☐	☐	☐
Has housekeeping been addressed for Storage, Use, and Disposal of above items?	☐	☐	☐
Personal Protective Equipment (PPE)			
Are boots and gloves provided during operations involving wet portland cement?	☐	☐	☐
Can employees clean or exchange equipment if it becomes ineffective or contaminated on the inside with portland cement while in use?	☐	☐	☐
Have provisions been made to ensure that equipment is maintained in a sanitary and reliable condition when not in use (Proper Storage of PPE)?	☐	☐	☐
Hazard Communication (employer duties)			
Are all products containing portland cement properly labeled?	☐	☐	☐
Are the proper MSDS sheets immediately available to employees in the field?	☐	☐	☐
Training			
Have all employees exposed to portland cement been trained on the hazards associated with exposure to portland cement including hazards associated with the cement's Cr(VI) content?	☐	☐	☐
Have all employees exposed to portland cement been trained on the preventive measures, including the proper use and care of PPE?	☐	☐	☐
Have all employees exposed to portland cement been trained on the importance of proper hygiene practices?	☐	☐	☐
Have all employees exposed to portland cement been trained on how to report their work-related illnesses and injuries?	☐	☐	☐
Recordkeeping			
Has each work-related case of occupational dermatitis that meets the recordability criteria in 29 C.F.R. 1904.4 been recorded in the illness and injury logs (OSHA 300)?	☐	☐	☐
Airborne Exposures			
Has sampling been performed or is data available to show that the 8-hour TWA exposure to portland cement or particles not otherwise regulated (PNOR) do not exceed 15 mg/m3 PEL as total dust?	☐	☐	☐
Where exposures exceed the PEL, has an appropriate respiratory protection program been implemented and are employees provided respirators?	☐	☐	☐

COMMENTS: _____

_____

_____

_____ _____

SIGNATURE DATE

The Building and Construction Trades Department (BCTD), AFL-CIO, and two labor unions reached a settlement April 6 with the Occupational Safety and Health Administration (OSHA) that will require OSHA to inspect U.S. construction sites for safety procedures to reduce worker exposure to portland cement. Portland cement contains hexavalent chromium, or “hex chrome,” a known carcinogen and toxin hazardous to skin, eyes and lungs. Skin exposure to cement containing hex chrome can lead to a career-ending disease called allergic contact dermatitis.

The agreement requires OSHA compliance officers to ensure that employers using portland cement are following regulations for safe working procedures. Compliance officers will evaluate whether proper washing facilities and supplies, personal protective equipment, access to material safety data sheets, adequate worker training, and accurate injury and illness recordkeeping are in place.

The settlement agreement also requires OSHA compliance officers throughout the nation to indicate clearly on their reports whenever they inspect a construction site where portland cement is being used. This will allow OSHA and the BCTD to determine how well OSHA is complying with the terms of the settlement agreement in the coming years and permit monitoring of employer compliance with the applicable regulations.

OSHA will incorporate the following terms into a document entitled "Portland Cement Inspection Procedures," Which will apply to construction work sites where employees are exposed to portland cement. OSHA will instruct CSHOs to follow the following protocol set forth for conducting construction inspections where portland cement exposures are present.

The Cr(VI) directive will direct CSHOs to report information that will enable OSHA and the public to determine the number of inspections conducted with respect to portland cement exposures and the outcome of those inspections.

Attached

- Overview of the new “Portland Cement Inspection Procedures” as it will be implemented by OSHA Compliance Officers starting April 20, 2007.
- “Portland Cement – Hazard Training” document that can be used as a Tool Box Talk or training meeting guide to meet the requirements of the Portland Cement Inspection Procedures.
- Portland Cement Checklist for jobsite verification of compliance.

The Portland Cement Inspection Procedures will direct CSHOs to follow these interpretations when enforcing these standards at sites where employees are exposed to portland cement:

SANITATION STANDARD

1926.51(f)(1) requires employers to "provide adequate washing facilities for employees engaged in . . . operations where contaminants may be harmful to the employees. Such facilities shall be in **near proximity** to the worksite and shall be so equipped as to enable employees to remove such substances." (Emphasis added.)

Due to the caustic and sensitizing properties of portland cement, and consistent with the record of evidence presented at the Cr(VI) Rulemaking Hearings, this provision requires employers whose employees are exposed to portland cement to provide employees with:

- clean water;
- non-alkaline soap; and
- clean towels.
- These hygiene facilities must be readily accessible to exposed employees.
- These hygiene facilities must be adequate for the number of exposed employees and the size of the job.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

1926.95(a) - "personal protective equipment . . . shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of. . . chemical hazards , . , encountered in a manner capable of causing injury or impairment of any part of the body through absorption or physical contact." This provision applies to portland cement exposures as follows:

- Boots and gloves shall be provided as necessary and appropriate for the job.
- Provisions must be made to enable employees to clean or exchange equipment if it becomes ineffective or contaminated on the inside with portland cement while in use.
- Provisions must be made to ensure that equipment is maintained in a sanitary and reliable condition when not in use.

HAZARD COMMUNICATION (EMPLOYER DUTIES)

1910.1200 - "The employer shall maintain in the workplace copies of the required material safety data sheets for each hazardous chemical, and shall ensure that they are readily accessible during each work shift."

Employers are required to obtain, maintain and make available to employees MSDSs and labels for portland cement.

> **Note:** Another provision of the standard, ~ 1910.1200(g)(2)(i)(C)(2), addresses the content of MSDSs for mixtures. For a mixture that has not been tested as a whole, each MSDS must include: "The chemical and common name(s) of all ingredients which have been determined to be health hazards' and which comprise less than 1% . . . of the mixture, if there is evidence that the ingredients(s) could be released . . . in concentrations which, . . could present a health risk to employees." There is evidence that exposure to the Cr(VI) in portland cement could cause sensitization and allergic dermatitis in employees. Therefore MSDSs for portland cement contaminated by Cr(VI) are expected to indicate the presence of Cr(VI) and to address this hazard. OSHA will address deficiencies in MSDSs in accordance Edith CPL 02-02-038, Inspection Procedures for the Hazard Communication Standard.

TRAINING

1926.21(b), 1910.1200(h)

1926.21(b)(3) – “Employees required to handle or use poisons, caustics, and other harmful substances shall be instructed regarding the safe handling and use, and be made aware of the potential hazards, personal hygiene, and personal protective measures required."

1910.1200(h)(3) – “Employee training shall include at least . . . the physical and health hazards of the chemicals in the work area; the measures employees can take to protect themselves from these hazards, . . . such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and, the details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information."

Training for employees exposed to portland cement must include the following:

- Hazards associated with exposure to portland cements including hazards associated with the cement's Cr(VI) content;
- Preventive measures, including
    - proper use and care of PPE;
    - importance of proper hygiene practices; and
- Employee access to hygiene facilities, PPE, and information (including MSDSs).

RECORDKEEPING

1904.4 and 1904.7 – “Each employer . . . must record each fatality, injury and illness that (1) is work-related; and (2) is a new case; and (3) meets one or more of the general recording criteria of 1904.7.”

Each construction employer subject to Part 1904 must record each work- related case of occupational dermatitis that meets the recordability criteria in 29 C.F.R. 1904.4 in its illness and injury logs.

1904.35(a)(1) – “Each employer must inform employees of how to report their work-related illnesses and injuries.”

AIRBORNE EXPOSURES

1926.55 (a) Exposure of employees to inhalation, ingestion, skin absorption, or contact with any material or substance at a concentration above those specified in the "Threshold Limit Values of Airborne Contaminants for 1970" of the American Conference of Governmental Industrial Hygienists, shall be avoided.

- 8-hour TWA exposure to portland cement or particules not otherwise regulated (PNOR) do not exceed 15 mg/m^3 PEL as total dust.
- Construction operations with potential inhalation exposures include, but are not limited to, **Terrazzo work, mixing mortar,** and **mixing concrete**.
- Where exposures exceed the PEL, employees are provided respirators and employer has implemented an effective Respiratory Program in compliance with 29 CFR 1910.134.

PORTLAND CEMENT - HAZARD TRAINING

Portland cement is a light gray or white powder. When in contact with moisture in eyes or on skin, or when mixed with water, portland cement becomes highly caustic (pH > 12) and will damage or burn (as severely as third-degree) the eyes or skin. Inhalation may cause irritation to the moist mucous membranes of the nose, throat and upper respiratory system or may cause or may aggravate certain lung diseases or conditions.

EYE CONTACT

(Acute/Chronic) Exposure to airborne dust may cause immediate or delayed irritation or inflammation of the cornea. Eye contact by larger amounts of dry powder or splashes of wet portland cement may cause effects ranging from moderate eye irritation to chemical burns and blindness.

METHODS OF PROTECTION:

When engaged in activities where portland cement dust or wet portland cement or concrete could contact the eye, wear goggles or safety glasses with side-shields. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contact lenses should not be worn when working with portland cement or wet portland cement products.

FIRST AID

Immediately flush eye thoroughly with water. Continue flushing eye for at least 15 minutes, including under lids, to remove all particles. Call physician immediately.

SKIN CONTACT

(Acute) Exposure to dry portland cement may cause drying of the skin with consequent mild irritation or more significant effects attributable to aggravation of other conditions. Discomfort or pain cannot be relied upon to alert a person to a hazardous skin exposure.

(Chronic) Dry portland cement coming in contact with wet skin or exposure to wet portland cement may cause more severe skin effects, including thickening, cracking or fissuring of the skin. Prolonged exposure can cause severe skin damage in the form of chemical (caustic) burns.

(Acute/Chronic) Some individuals may exhibit an allergic response upon exposure to portland cement. The response may appear in a variety of forms ranging from a mild rash to severe skin ulcers.

METHODS OF PROTECTION:

Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened (wet) portland cement products. If contact occurs, promptly wash affected area with soap and water.

DO NOT ALLOW WET PORTLAND CEMENT TO GET INSIDE BOOTS, SHOES, OR GLOVES AND DO NOT ALLOW WET, SATURATED CLOTHING TO REMAIN AGAINST THE SKIN.

Do not rely on barrier creams; barrier creams should not be used in place of gloves. Use impervious, abrasion- and alkali-resistant gloves, boots and protective clothing to protect the skin from prolonged contact with wet portland cement in plastic concrete, mortar or slurries.

Provisions must be made to enable employees to clean or exchange equipment if it becomes ineffective or contaminated on the inside with portland cement while in use and to ensure that equipment is maintained in a sanitary and reliable condition when not in use.

FIRST AID

Wash skin with cool water and pH-neutral soap or a mild detergent. Seek medical treatment if irritation or inflammation develops or persists. Seek immediate medical treatment in the event of burns.

INHALATION

(Acute) Exposure to portland cement may cause irritation to the moist mucous membranes of the nose, throat and upper respiratory system. Pre-existing upper respiratory and lung diseases may be aggravated by inhalation of portland cement.

(Chronic) Inhalation exposure to free crystalline silica may cause delayed lung injury including silicosis, a disabling and potentially fatal lung disease, and/or cause or aggravate other lung diseases or conditions.

METHODS OF PROTECTION:

Local exhaust can be used to control airborne dust levels.

Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. Implementation of an effective Respiratory Program as required by 29 CFR 1910.134.

FIRST AID

Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. Seek medical help if coughing and other symptoms do not subside. Inhalation of large amounts of portland cement requires immediate medical attention.

INGESTION

(Acute/Chronic) Internal discomfort or ill effects are possible if large quantities are swallowed.

METHODS OF PROTECTION:

Portland cement *should not* be eaten.

FIRST AID

Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

WORK/HYGIENIC PRACTICES

Periodically wash areas contacted by dry portland cement or by wet portland cement or concrete fluids with a pH neutral soap and clean, uncontaminated water. Wash again at the end of the work shift. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet portland cement or concrete, it should be removed and replaced with clean dry clothing. Follow listed precautions as appropriate during repair or maintenance work on contaminated equipment.

POTENTIAL HEALTH EFFECTS

Medical conditions which may be aggravated by inhalation or dermal exposure are pre-existing upper respiratory and lung diseases and unusual (hyper) sensitivity to hexavalent chromium (CrIV) salts.

CARCINOGENIC POTENTIAL

Portland cement is not recognized as a carcinogen by National Toxicology Program (**NTP**), Occupational Safety and Health Administration (**OSHA**), or the International Agency For Research on Cancer (**IARC**). However, it may contain trace amounts of heavy metals recognized as carcinogens by these organizations. In addition, IARC classifies crystalline silica, a trace constituent, as a known human carcinogen (Group I). NTP has characterized respirable silica as "reasonably anticipated to be a carcinogen."

ACCIDENTIAL RELEASE MEASURES

Clean up spilled material without causing it to become airborne or mixed with water to limit potential harm. Wear appropriate personal protective equipment. Dispose of waste material according to local, state or federal regulations.

HAZARDOUS INGREDIENTS

These components are from various manufacturer MSDS's and may vary with specific manufacturers.

COMPONENT	OSHA PEL (8-Hour TWA)	ACGIH TLV-TWA (1995-1996)
Portland Cement (CAS #65997-15-1) 50 to 95% by weight	5 mg /m^3 respirable dust 15 mg /m^3 total dust	10 mg /m^3 total dust
Calcium sulfate (CAS #7778-18-9) [Gypsum (CAS #13397-24-5)] 0 to 10% by weight	5 mg /m^3 respirable dust 15 mg /m^3 total dust	10 mg /m^3 total dust
Iron oxide (CAS #1309-37-1) 0 to 15% by weight	10 mg/m^3	5 mg/m^3
Calcium carbonate (CAS #1317-65-3) 0 to 5% by weight	5 mg /m^3 respirable dust 15 mg /m^3 total dust	10 mg /m^3 total dust
Magnesium oxide (CAS #1309-48-4) 0 to 5% by weight	15 mg /m^3 total dust	10 mg /m^3 total dust
Calcium oxide (CAS #1305-78-8) 0 to 5%1 by weight	5 mg/m^3	2 mg/m^3
Crystalline silica (CAS #14808-60-7) 0 to 5% by weight	10 mg of respirable dust/m^3 % SiO2 + 2 30 mg of total dust/m^3 % SiO2 + 2 250 million particles/ft3 % SiO2 + 5	0.05 mg /m^3 respirable quartz
Chromates (CA S Various) approximately 0 - 0.005% by weight	OSHA PEL (8-hour TWA) 0.1 mg /m^3 (CrO3)	ACGIH TLV -TWA (1996) 0.05 mg (Cr)/m^3
Nuisance dust	OSHA PEL (8-hour TWA) 15 mg /m^3 total dust OSHA PEL (8-hour TWA) 5 mg /m^3 respirable dust	ACGIH TLV -TWA (1996) 10 mg /m^3 total dust ACGIH TLV -TWA (1996) 5 mg /m^3 respirable dust

TRACE INGREDIENTS

Due to the use of substances mined from the earth's crust, trace amounts of naturally occurring, potentially harmful constituents may be detected during chemical analysis. Portland cement may contain up to 0.75% insoluble residue. A small amount of this residue includes free crystalline silica. Portland cement also may contain trace (<0.05%) amounts of potassium and sodium sulfate compounds.