

**Mixing Concrete**

**Standard Operating Procedure (SOP)**

Name:

Date:

Revision Number:

Date of Revision:

1. **Hazards Associated with Materials Being Used:**

Portland Cement: skin corrosion, irritation/ serious eye damage, eye irritation, skin sensitization, and respiratory tract irritation. May cause cancer. (There is less than 3 % concentration of quartz which causes silicosis in the mixture of Portland Cement and trace amounts of hexavalent chromium which causes cancer.)

A key to using this product safely is recognizing that Portland cement, when mixed with water, produces calcium hydroxide which can cause severe chemical burns.

**2.0 Controls:**

**2.1 Engineering Controls:**

* Use slot hoods in Falmouth Annex

**2.2 Administrative Controls:**

* Do not work alone in the lab. Implement the buddy system.
* Attend baseline laboratory safety training (required annually). The training schedule is located at the following link - [website](https://www.uml.edu/EEM/EHS/ehs-training/).
* Attend laboratory-specific training on handling Portland cement.
  + Document this training in section 8 of the Chemical Hygiene Plan Notebook.
* Take the EHS online training on silica hazard awareness. See link above.
* Know the location of the emergency shower and eyewash station.
* Review this SOP and applicable safety data sheets as part of your laboratory-specific training on handling corrosives.
* Keep a hard copy of the safety data sheet (SDS) for Portland Cement in the lab in section 6 of the CHP Notebook.
* Purchase only enough material needed to complete an experiment.
* Wash hands thoroughly with soap and water after removing gloves.
* Housekeeping: Use wet methods to clean up area after work is completed. Isolate area where mixing will occur from other areas using plastic sheets. See Gary Howe, CEE Laboratory Director, for instruction. There is also a HEPA vacuum that can be used.

**2.3 Personal Protective Equipment (PPE):**

* Safety glasses
* Safety goggles if splash hazard to the eyes
* Face shield if splash hazard to the face
* Laboratory coat
* Dishwasher Gloves/Disposable nitrile gloves are sufficient when using tools to mix the cement.
* Closed toe shoes and pants
* See Gary Howe to obtain coveralls (if you prefer this over a lab coat) to prevent cement particulates from getting on your clothing.
* N95 or N100 disposable particulate mask

1. **Precautions:** Wear PPE. People with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not breathe dust. Do not get in eyes or on skin or clothing. If ventilation is inadequate, wear N95 or N100 particulate mask.

**4.0 Storage:**

* Store in a cool, dry, well-ventilated area in tightly sealed containers that are properly labeled.

**5.0 Disposal: See Gary Howe for specific information if disposal needed. Usually, all Portland cement is used up in the process of mixing.**

**6.0 Emergency Procedures:**

**6.1 Spills**

Spills of Portland cement mixture would be highly unlikely. The powdered cement mixture is scooped from a bin and placed on a mixing pan to mix with gravel, sand and water.

**6.2 First Aid**

For eyes

* Irrigate the eyes for 15 minutes, holding eyelids apart.
* Buddy must call extension 44911 to seek medical assistance and then can keep track of the length of time eyes are being irrigated.
* Give MSDS for HF to medical personnel when they arrive on scene.

For skin

* For full body exposure, remove contaminated clothing and go under the emergency shower for 15 minutes. If bare hands and/or arms are contaminated, rinse area with water for 15 minutes. Remove clothing and rinse contaminated area for 15 minutes.
* Buddy must call extension 44911 immediately to seek medical assistance.
* Give SDS for corrosive liquid to medical personnel when they arrive on scene.

For inhalation

* Remove to fresh air. Seek medical attention immediately (call extension 44911). NOTE: Even small amounts of vapor can cause irreversible damage to the mucous membranes.
* Give SDS for corrosive liquid to medical personnel when they arrive on scene.

**6.3 Fire:**

* Evacuate the lab, pull the nearest fire alarm pull station and then go to a safe area and call extension 44911. Follow the fire safety evacuation plan.

(Toxic gases and vapors such as fluorine may be released in a fire involving hydrogen fluoride.)

**NOTE:** All work-related injuries must be reported immediately to Human Resources (HR) by calling extension 43560. An Incident/Injury Report Form must be filled out and faxed to EEM-EHS at 934-4018. [The Incident/Injury Report Form is available on-line at [website](http://www.uml.edu/ehs). Please double click on the link at the end of this web page entitled [UMass Lowell Emergency Accident / Incident Report Form (PDF).]](http://www.uml.edu/ehs/Documents/UMass_Lowell_Emergency_Accident-%20Incident_%20Report_%20Form.pdf) The original Incident/Injury Report Form must be turned in to HR.

*\*The buddy, supervisor, or Principal Investigator may fill out the Incident/Injury Report Form while the injured employee follows first aid procedures and seeks medical attention.*