

LCM Concrete Repair Syllabus

Time: 40 hours

Maximum Class Size: 12

Prerequisites: Participant must be clean-shaven. Participant must have successfully completed a Pulmonary Function Test (PFT) within one year of the first day of class and be able to provide documentation.

Course Description: This course is designed to introduce the participant to the basic skills needed to be successful on the jobsite. It is also designed to empower the participant with the skills and knowledge to work safely, effectively, and efficiently with respirators. Using real-life scenarios combined with technical details, participants will be ready for any situation they may encounter while working on the job site and using respiratory protection. They will be required to participate in and pass a “fit-test”.

The participant will be introduced to the factors that cause concrete damage and surface defects, ways to prevent the damage, and the materials and tools needed to repair it. Methods of repairing concrete such as Epoxy Resin, Overlay, Remove and Replace and Sack and Patch are presented. Ample time is reserved for hands-on training in flatwork, sub-floor preparation, mixing and application of material and sealing concrete as well as addressing the tools, materials and techniques necessary to repair vertical concrete walls.

Goals/Objectives/Student Learning Outcomes:

Respiratory Training Portion:

- List and explain the five forms of airborne contaminants
- Identify the two types of hazardous atmospheres related to respirator use
- Define the meaning of oxygen-deficient atmosphere
- Indicate the most common route of entry by which toxic chemicals enter the body
- List the six physical warning signs of chemical exposure
- Identify the three exposure guides used to inform workers about chemical exposure limits
- State the goal of a respirator
- Identify the three types of air-purifying respirators (APRs)
- Identify the two basic types of filtering devices used with APRs
- List the three-filter series and efficiency ratings for filters
- List the limitations of an APR
- List the two limitations of a PAPR
- List the two types of atmosphere supplying respirators and the limitations of each
- List three types of regulators used with atmosphere supplying respirators
- Explain the term “assigned protection factor”
- State the formula to calculate maximum use concentration
- Properly don a FFAPR

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- Work through a performance checklist for the inspection and donning of a FFAPR
- Participate in the demonstration of a quantitative or qualitative fit test for a half-face respirator
- Demonstrate the correct procedure for inspecting, donning, and doffing a SCBA
- Demonstrate the positive and negative-fit checks required after donning the SCBA
- Describe the OSHA requirements for cleaning and disinfecting respirators
- Participate in and pass a “Fit-test”

Concrete Repair Portion:

- Identify at least two situations where concrete damage can be repaired.
- Identify the tools and materials used for typical concrete repair and/or patching.
- Given several situations involving concrete repair:
 - Describe and demonstrate the best method for preparing the area for patching and/or repairing each situation.
 - Demonstrate patching and/or repair methods in each situation according to the guidelines in LIUNA’s Concrete Repair Guide.
- Demonstrate the process involved in repairing damaged concrete using Epoxy Resin/Injection, and self-leveling Overlay.
- Remove and replace a damaged area with new concrete.
- Demonstrate the method of Skim Patching, Sack and Patch, and Rubbing.
- Name at least 5 of the concrete surface defects.
- Identify common finishing practices to eliminate concrete defects.
- Successfully complete Exercise 5 (Concrete Repair Hands-On Epoxy Resins and Bonded Overlay) with a score of 7/8 or above.
- Complete an Exit Exam (A or B) with a score of 80% or above to pass.

Standards

- California Code of Regulations, Title 8, Section 1720 (4)(29) for the placement of concrete.
- OSHA 29 CFR 1926 Construction Safety Regulations
- OSHA 29 CFR 1926.700 Subpart Q Concrete & Masonry Construction
- OSHA 29 CFR 1926.1153 Respirable Crystalline Silica
- OSHA 29 CFR 1910.134 Respiratory Protection Standard

Classroom Rules and Procedures

- All classes begin at 6:30 am and end at 3:00 pm
- Upon entering classroom, all participants must sign in and be seated by 6:30 am
- Class will consist of a combination of lecture, video, demonstration, coached group exercises, individual exercises and assessment.
- Students are required to report to class ready to work and maintain the provided PPE

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Textbooks/Readings/Materials

- LIUNA: *Respiratory Protection IG*
- LIUNA: *Hazardous Waste Worker PG*
- LIUNA: *Respiratory Awareness PowerPoint*
- LIUNA: *Respiratory Training 25-question Exam A or B*
- LIUNA: *Respiratory Training AS & Keys*
- LIUNA: *Respiratory Training Handout Packet*
- *Concrete Repair-LIUNA Training (Instructor & Participant Guides)*
- *Concrete Repair Exercise 5 Exit Exam-Hands-On*
- *Concrete Placement 10 Question Exit Exam*
- *Concrete Repair Power Point*
- *Concrete Repair Instructor Materials DVD*
- *How to Use Crack Pac DVD*
- *How to Use Crack Pac User Manual*
- *Surface Defects PowerPoint*
- *Concrete Information Handout (Portland Cement)*
- *Cadman Handouts*
- *Ardex CD, CD Fine, K301, CP & TWP handouts*
- *Crack Pac Handouts*
- *OSHA Silica Standard 1926.1153 Fact Sheet*

Tools/Equipment/Other Materials:

Respiratory Training

- NIOSH *Pocket Guide to Chemical Hazards*
- Filtering face pieces
- Half-pieces APRs
- Full-face APRs
- PAPRs
- Airline (SAR)
- SAR with escape bottle
- SCBA
- Filters (various types)
- 1 FFAPR and 2-P-100 filter cartridges per participant
- 1 probed FFAPR and 2 P-100 filter cartridges
- Wall-mounted mirror
- Sanitizing supplies:
 - -2 or 3 tubs
 - -Sanitizer solution
 - -Soft sponge
 - -Soft towels for drying
- For Quantitative Fit Test:

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- Porta count
- 1 probed full-face APR with P-100 filter per participant (chosen from several sizes and brands)
- For Qualitative Fit Test:
 - Any of the following:
 - Irritant smoke
 - Isoamyl acetate
 - Bitrex
 - Saccharin
 - For administering the test agents:
 - Nebulizers
 - Paper napkins
 - Water
- 1 half-face APR with P-100 filters per participant (chosen from several sizes and brands)
- Sanitizing supplies:
 - 2-3 tubs
 - Sanitizer solution
 - Soft sponges
 - Soft towels for drying
- SCBA and a size-appropriate face piece for each team of two
- Wall-mounted mirror
- Cleaning and disinfection supplies

Concrete Repair

- Mixing buckets
- Margin trowel
- Steel trowel
- Fine to medium broom
- Chip brushes
- Squeegee
- Hopper gun with compressor
- Mixing paddle
- ½" heavy duty drill

Personal Protective Equipment

- 12 pairs of gloves
- 12 pairs of safety glasses
- 20 pairs of ear plugs
- 12 hard hats
- 12 pairs of rubber boots

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Course Requirements

To receive credit for the course, participants must:

- Be present for full 40 hours
- Participate in all classroom exercises
- Pass two written exams
- Pass three hands-on exams

Course Policies

- Participants must be on-time and ready to work.
- Participants must return from breaks on-time.
- Participants must participate in each exercise and assignment
- Participants who are on “light duty” are not allowed to take this course due to the physically demanding requirements.

Assessment and Grading

Participants will be assessed on the following:

- All written exams must be passed with a score of 80% or above.
- All hands-on exercises are graded on performance and participation. They are pass/fail and must be passed with a score of 80% or above.

Safety

Failure to maintain and use PPE may result in dismissal from the course.