

U.S. CONCRETE, INC.
I. SAFETY POLICY and PROCEDURE MANUAL

FUNCTION	Safety
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TOPIC	Respiratory Protection Program
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OBJECTIVE(S): To provide a work atmosphere that is conducive to attaining a high work standard and as free as possible from safety and health hazards. To that end, U.S. Concrete has devised this Standard Operating Procedure, which establishes a respiratory protection program to ensure that employees are protected from airborne materials that may result in adverse health effects. This procedure has been developed to fulfill the requirements of CAL OSHA Standards TITLE 8 and ANSI Standard Z88.2 (1980).

GENERAL POLICY: (Defined below)

APPLICATION: U.S. Concrete, Inc.

RESPONSIBILITY: President/General Manager

(1) STATEMENT OF POLICY

This standard operating procedure details those measures to be taken to ensure employee safety when exposure to concentrations of airborne toxic materials, are above the allowable standards established by the Occupational Health and Safety Administration (OSHA) or the American Conference of Governmental Industrial Hygienist (ACGIH).

When implementation of effective engineering or administrative controls is not feasible, appropriate respiratory protection will be utilized. U.S. Concrete, Inc. will provide the appropriate respirators, which are most applicable and suited for the purposes intended. All employees shall utilize the respiratory protection in accordance with the instructions and training received.

(2) PROGRAM ADMINISTRATION

The designated Safety Manager shall serve as the program administrator and shall be responsible for the coordination and administration of the respiratory protection program. The duties of the program administrator(s) shall include:

1. Establishment and maintenance of the written respiratory protection program;
2. Selection of NIOSH or MSHA approved respiratory protection against the appropriate hazard(s);
3. Employee instruction and training in the proper use of respirators and their limitation;
4. Regular inspection and maintenance evaluation of respirators.
5. Inventory control of spare parts, new respirators, and respirators ready for reuse after maintenance;
6. Surveillance of exposure levels;
7. Establishment of a medical surveillance program;
8. Annual evaluation to determine the continued effectiveness of the program.

All employees who participate in the respiratory protection program are required to use the provided equipment in accordance with all instructions and training received.

Office employees who do not enter areas with potential respiratory hazards may not be subject to this program.

(3) MEDICAL MONITORING

Only those employees deemed capable, by a licensed physician, sufficiently trained in the diagnosis and treatment of occupational diseases, of utilizing respiratory protection, shall be issued such equipment. No employee shall be fit-tested or issued respiratory protection prior to the receipt of a written consent from the attending physician.

All medical examinations related to respiratory usage shall be conducted on an initial employment, annual and termination basis. In addition, examinations may be required when the company is notified of signs or symptoms of overexposure, when an emergency situation occurs or on a more frequent basis as deemed necessary by the medical consultant.

All medical examinations shall encompass the standard U.S. Concrete, Inc. Section II examination requirements, plus an evaluation for respiratory use. This program includes but is not limited to health history surveys, medical questionnaires, and physical examinations. (See Appendix I for U.S. Concrete, Inc. medical evaluation requirements).

Note: The licensed physician who conducts the medical examination(s) shall be well versed in regards to the particular industry. This person shall also have a sufficient knowledge of the occupational and physiological requirements of personal protective equipment utilized and the conditions under which they are used.

Compliance with the medical monitoring requirements is mandatory for all employees who are included in the respiratory protection program.

(4) **SELECTION AND USE OF RESPIRATORY PROTECTIVE EQUIPMENT**

Respirators used shall be selected from those approved by the National Institute for Occupational Safety and Health (NIOSH) or the Mine Safety and Health Administration (MSHA). The selection criteria shall include, at a minimum, the following items:

1. The nature of the hazardous operation or process;
2. The type of respiratory hazard (i.e. contaminant identity, physical state, exposure level);
3. The location of the hazardous area in relation to available fresh air;
4. The period of time for which respiratory protection must be worn;
5. The work activity (i.e. metabolic work rate) in the hazardous area;
6. The physical characteristics, limitations, and capabilities of various types of respirators; and
7. Respirator protection factors.

The two basic types of respirators available are:

1. Atmosphere supplying
2. Air purifying or filtering

Atmosphere Supplied

Atmosphere (air) supplying respirators must be worn in situations that are Immediately Dangerous to Life and Health (IDLH). IDLH situations would include insufficient oxygen atmospheres (19.5% or less), concentrations of hazardous gas, vapor, or particles in the air that can't be safely filtered out by an air purifying filter system. Atmosphere supplying respirators would also be utilized in any situation that involves a material with an IDLH concentration that is below its odor threshold or is possible in normal or expected concentrations (through vaporization). Such situations would include tank or tanker entry and response to an emergency (fire or large spill).

Atmosphere supplying respirators provide air from a tank or compressor through a hose. The first type, self-contained breathing apparatus (SCBA), allows more freedom of movement, but only has a limited amount of air in the tank. When air is getting low, these respirators provide a warning signal to provide the proper notification to affected personnel and allow egress from the contaminated area.

When self-contained breathing apparatus are used in atmosphere immediately dangerous to life or health, standby men must be present with suitable rescue equipment.

The second type, air line respirators supply air from a compressor or a large tank of compressed air. These types of respirators have an unlimited air supply, but the hoses (maximum of 300 feet) limit movement due to hose restrictions or entanglement.

Persons using air line respirator in atmospheres immediately hazardous to life or health shall be equipped with safety harnesses and safety lines for lifting or removing persons from hazardous atmospheres. A standby man or men with suitable self-contained breathing apparatus shall be at the nearest fresh air base for emergency rescue. In addition to the safety harnesses and lines, each individual using an air line respirator shall also be equipped with an auxiliary air supplied escape bottle (normally 5 minutes). Air Purifying/Filtered

Air Purifying or Filtering

Air purifying respirators are used when there is sufficient oxygen present, but the atmosphere contains potentially harmful gas, vapor, or particulates. This type filters or absorbs the contaminants as you breathe existing air. These types of respirators allow for the greatest mobility and in most instances vision. However, they are limited not only by oxygen parameters but also by the level of airborne contaminants. They range in type from full-face pieces to disposable dust filters.

Note: Precautions must be taken when entering unknown atmospheres due to the composition of unknown chemicals and compounds, and the poor detection properties of various products. Prior to entry into any unknown space, the atmosphere must be tested or documented to ensure that the airborne contaminant concentrations do not exceed the protection factor for the equipment utilized.

(5) ISSUANCE OF RESPIRATORS

As specified in Section III, Medical Monitoring, only those individuals determined by a physician as medically fit to wear respiratory protective equipment shall be issued a respirator.

Each employee, who has been medically deemed physically fit, will be issued an air purifying/filtered half-face or full-face respirator for his or her personal use. It is the employees' responsibility to maintain his/her respirator. That includes inspection for defects (including leak checks), cleaning, disinfection, repairs, and storage. For full-face respirators, it is the user's responsibility to inspect, clean, and disinfect after each use and to provide notification if repair is needed. See Section 9, Respirator Inspection and Maintenance, for those procedures to be utilized during respirator maintenance activities.

The table below lists the various types of air purifying respirator cartridges for use. Each employee is required to ensure that the cartridges utilized will provide sufficient protection for the hazards present.

**Table I
Respiratory Cartridge Selection Guide**

Atmospheric Contaminants to be Protected Against	Colors Assigned ¹
Acid gases	White.
Hydro cyanic acid gas	White with 1/2-inch green stripe completely around the canister near the bottom.
Chlorine gas	White with 1/2-inch yellow stripe completely around the canister near the bottom.
Organic vapors	Black.
Ammonia gas	Green.
Acid gases and ammonia gas	Green with 1/2-inch white stripe completely around the canister near the bottom.
Carbon monoxide	Blue.
Acid gases and organic vapors	Yellow.
Hydro cyanic acid gas and chloropicrin vapor	Yellow with 1/2-inch blue stripe completely around the canister near the bottom.
Acid gases, organic vapors and ammonia gases	Brown.
Radioactive material, excepting tritium and noble gases	Purple (Magenta)
Particulates (dusts, fumes, mists, fogs, or smokes) in combination with any of the above gases or vapors	Canister color for contaminant, as designated above, with 1/2-inch gray stripe completely around the canister near the top.
All of the above atmospheric contaminants	Red with 1/2-inch gray stripe completely around the canister near the top.

¹ Gray shall not be assigned as the main color for a canister designed to remove acids or vapors. NOTE: Orange shall be used as a complete body, or stripe color to represent gases not included in this table. The user must refer to the canister label to determine the degree of protection the canister will afford.

Employees are also required to wear personal respirators when instructed to do so by any manager, or supervisor relative to the site being visited. Personnel should also wear a respiratory whenever they suspect a respiratory hazard based on their own sense of judgment.

(6) TRAINING

All employees designated to use a respiratory shall be properly trained in the use, limitations and maintenance of the equipment assigned to them. All employees will be properly trained in the use of respiratory equipment prior to the issuance of said equipment. Retraining in the use of the equipment will be performed at least annually, thereafter.

All training information is based upon the following sources:

1. NIOSH Guide to Industrial Respiratory Protection.
2. CAL OSHA TITLE 8 and Subpart Z.
3. ANSI Standard Z88.2 (1980).
4. Product specific instruction materials.
5. All other pertinent regulations, documents and/or audio-visual presentations.

(7) **TRAINING PROGRAM CONTENTS**

Training provided to each employee shall constitute the following at a minimum:

1. A discussion of the nature, extent, and effects of potential respiratory hazards.
2. The reasons for the need of respiratory protection.
3. A discussion of engineering controls and their limitations.
4. An explanation of the selection of respirators for specific hazards.
5. Instruction on inspecting, donning, fit-testing, and wearing respirators.
6. Opportunities to handle, inspect, don and wear respirators in safe and test atmospheres.
7. A discussion on maintenance and storage.
8. Instructions on how to identify and cope with emergencies.
9. Regulations governing respiratory use.
10. Instructions on special respirator use.
11. Cartridge life and breakthrough detection.
12. Review of the Respiratory Protection Program.

(8) **NEGATIVE PRESSURE RESPIRATOR FIT TESTING**

Each employee that is required to wear, and assigned a respirator, will be instructed in and required to demonstrate understanding of the methods for conducting negative and positive fit tests for the respirator. A negative and positive pressure test is required every time an employee uses his/her respirator.

A qualitative respirator-fitting test shall be used to determine the ability of each individual respirator wearer to obtain a satisfactory fit with a negative pressure respirator. The testing will be carried out for each wearer of a negative pressure respirator at least annually.

The initial assignment and annual qualitative fit testing shall incorporate the following items:

1. Positive pressure face fit check.
2. Negative pressure face fit check
3. Isoamyl acetate vapor detection test
4. Irritant smoke detection test

To ensure that the proper face to respirator seal is obtained and maintained during the detection test, the wearer shall perform the following functions:

3. Normal breathing
4. Deep breathing using a deep and regular pattern
5. Turning the head side to side, inhaling when the head is at either side

6. Nodding the head up and down, inhaling when the head is in the full up position
7. Talking aloud and slowly for several minutes. Facial movement can be accentuated by reading the following:

(1) Rainbow Passage

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

Note: Counting backward from 100 may be substituted for the "Rainbow Passage" during the irritant smoke detection procedures.

In the event that a proper seal cannot be obtained or maintained, the wearer shall exit the test area for 5 minutes. During this time, the respirator may be adjusted to obtain the proper seal. In the event that a seal cannot be obtained, the issuance of a different size or brand of respirator may be instituted.

(9) **RESPIRATORY SEALING AND EYEWEAR**

Employees assigned a respirator shall not utilize such equipment when conditions prevent a good face seal. Such conditions include beard growth, sideburns or a skullcap that projects under the face piece.

In addition, corrective or protective eyewear must not affect the face-respirator seal. Contact lenses are also prohibited in contaminated atmospheres where respirators are required.

(10) **RESPIRATOR INSPECTION AND MAINTENANCE**

Employees must inspect the respirator(s) assigned to them prior to each use and during cleaning. The primary defects to note in the inspection of the respirator and the corrective actions to be taken are itemized below:

1. Air purifying respirators (disposable dust masks)
 - a. Face piece - check for:
 - distortion or folding of the edges (replace mask)
 - cracks, tears or holes (replace mask)
 - b. Head Straps - check for:
 - breaks or tears (replace mask)
 - loss of elasticity (replace mask)

2. Air purifying respirators (half-mask and full face pieces)

- a. Rubber face piece - check for:
 - excessive dirt (clean all dirt from face piece)
 - cracks, tears, or holes (obtain new face piece)
 - distortion (allow face piece to "sit" free from any constraints and see if distortion disappears; if not, obtain new face piece), and
 - cracked, scratched, or loose fitting lenses (contact respirator manufacturer to see if replacement is possible; otherwise obtain new face piece)
- b. Head straps - check for:
 - breaks or tears (replace head straps)
 - loss or elasticity (replace head straps)
 - broken or malfunctioning buckles or attachments (obtain new buckles), and
 - allow the face piece to slip (replace head strap)
- c. Inhalation valve, exhalation valve - check for:
 - detergent residue, dust particles, or dirt on valve or valve seat (clean residue with soap and water)
 - cracks, tears or distortion in the valve material or valve seat (contact manufacturer for instructions), and
 - missing or defective valve cover (obtain valve cover from manufacturer)
- d. Filter element(s) - check for:
 - proper filter for the hazard
 - approval designation
 - missing or worn gaskets (contact manufacturer for replacement)
 - worn threads - both filter threads and face piece threads (replace filter or face piece, whichever is applicable)
 - cracks or dents in filter housing (replace filter), and
 - missing or loose hose clamps (obtain new clamps)

3. Atmosphere supplying respirators

- a. Check face piece, head straps, valves, and breathing tube, as for air purifying respirators.
- b. Hood helmet, blouse, or full suit, if applicable - check for:
 - headgear suspension (adjust properly for you)
 - cracks or breaks in face shield (replace face shield), and
 - protective screen to see that it is intact and fits correctly over the face shield, abrasive blasting hoods, and blouses (obtain new screen)

- c. Air supply system - check for:
- breathing air quality
 - breaks or kinks in air supply hoses and end fitting attachments (replace hose and/or fitting)
 - tightness of connections
 - proper setting of regulators and valves (consult manufacturer's recommendations), and
 - correct operation of air purifying elements and carbon monoxide or high temperature alarms

Respirators must be cleaned and disinfected regularly. As a minimum, each employee should clean his/her respirator after each use. The cleaning procedure is described as follows:

1. Before leaving the work area, each user must "wipe down" the respirator with a wet cloth to remove any contamination, which may have settled on the equipment.
2. Respirator equipment shall be washed with detergent in warm water using a brush. If possible, detergents containing a bactericide should be used. Organic solvents should not be used, as they deteriorate the rubber face piece. If bactericide detergent is not available, the detergent wash should be followed with a disinfecting rinse. Two types of disinfectants may be made from readily available household solutions. A hypochlorite solution (50 ppm) can be made by adding two tablespoons of chlorine bleach to one gallon of water. An aqueous solution of iodine (50 ppm) can be made by adding one teaspoon tincture of iodine to one gallon of water. A two-minute immersion of the respirator into either solution would be sufficient for disinfection.
3. Respiratory equipment shall be thoroughly rinsed in warm, clean water (120(F maximum) to remove all traces of detergent, cleaner and sanitizer and disinfectant.
4. Respiratory equipment shall be allowed to air dry on a clean surface or hung from a horizontal wire.

Atmosphere supplied respirators shall be cleaned after every use, or if used infrequently, on at least a monthly basis. Due to the intricate nature of the valves and regulators associated with this type of equipment, only trained personnel are authorized to perform cleaning and maintenance activities.

Each time an atmosphere-supplied respirator undergoes maintenance or cleaning activities, a record shall be kept of said activities. The record shall include, but not be limited to, the date of maintenance, repairs name, equipment I.D. number, the list of defects found, if any, and all repair activities. This information shall be maintained as part of the overall respiratory protection program.

(11) RESPIRATOR STORAGE

After inspection, cleaning and necessary repair, respirators shall be protected against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals.

Respirators should be packed or stored so that the face piece and exhalation valve will rest in a normal position and function will not be impaired by the elastomer setting in an abnormal position.

All respirators, when not in use, shall be placed in heat-sealed or reusable plastic bags. These bags shall then be stored in a rigid container of sufficient strength to protect the device from mechanical or physical damage.

(12) MONITORING

The use respirators by terminal employees shall be monitored by the designated Safety Manager to ensure that respirators are being used; that the respirators in use are appropriate for the work conditions; that the respirators are being properly worn; and that the respirators are in good working condition.

(13) PROGRAM EVALUATION

This respirator program shall be evaluated at least annually to determine the overall effectiveness of the program in assuring the proper selection and use of respiratory protection equipment. The designated Safety Manager shall conduct this evaluation. Compliance with all program elements will be reviewed and where deficiencies are notes, appropriate action shall be taken to correct them. Special attention shall be given to record keeping as related to training, fit-testing, and medical records.

(14) PERSONNEL DOCUMENTATION

Each employee will be required to validate the documentation showing that they have successfully completed all aspects of the medical evaluation necessary to wear a respirator

Approved by:	1. Original at US Concrete Houston
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Effective Date:	1/1/03
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Signature:	Original at US Concrete Houston
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