

STANDARD PRACTICE INSTRUCTION

DATE: June 14, 2011

SUBJECT: Respiratory Protection Program

REGULATORY STATUTE: OSHA - 29 CFR 1910.134

BASIS: About 35 million workers are potentially exposed to one or more chemical hazards on a daily basis. There are an estimated 575,000 existing chemical products, and hundreds of new ones being introduced annually. This poses a serious problem for exposed workers and their employers. The OSHA Respiratory Protection Standard establishes uniform requirements to make sure that the respiratory hazards of all U.S. workplaces are evaluated, and that engineering controls and work practice controls are implemented, and where such controls are not feasible, a respiratory protection program instituted.

GENERAL: Connecticut College will ensure that respiratory hazards within our facilities are evaluated, and that information concerning these hazards is transmitted to all employees.

This standard practice instruction is intended to address comprehensively the issues of; evaluating the potential respiratory hazards, communicating information concerning these hazards, and establishing appropriate engineering, work practice, or respiratory protective measures for employees.

RESPONSIBILITY: The Director of Environmental Health & Safety is responsible for all facets of this program, and has full authority to make necessary decisions to ensure success of the program. The Director of EH&S will develop detailed written instructions covering each of the basic elements in this program, and is the sole person authorized to amend these instructions.

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Connecticut College Respiratory Protection Program

1. Written program.

Connecticut College will review and evaluate this standard practice instruction governing the selection and use of respirators on an annual basis, or when changes occur to 29 CFR 1910.134 that prompt revision of this document, or when facility operational changes occur that require a revision of this document. Effective implementation of this program requires support from all levels of management within the College. This written program will be communicated to all personnel that are affected by it.

2. Responsibilities.

2.1. Employer's Responsibility:

- Connecticut College shall provide respirators when they are necessary to protect employee health.
- The respirator provided shall be suitable for the intended use.
- Connecticut College is responsible for establishing and maintaining a respiratory program whenever respirators are used. A program administrator shall be appointed to oversee the program. The program administrator for Connecticut College is the Director of Environmental Health & Safety.

2.2. Employee's Responsibility.

- The employee shall use the respiratory protection in accordance with instructions and training received or contracted by Connecticut College.
- The employee shall guard against damage to the respirator, and immediately replace suspect respirators.
- The employee shall report any trouble with or malfunction of the respirator to his/her supervisor or the Director of EH&S.

3. Policy Statement.

3.1. Engineering controls. To control and or minimize the threat of occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective of this program shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used.

3.2. Respirators. Respirators shall be provided by Connecticut College, when such equipment is necessary to protect the health of the employee. Connecticut College shall:

- Provide respirators that are applicable and suitable for the purpose intended.
- Be responsible for the establishment and maintenance of a written respiratory protective program, which shall include the requirements outlined in 29 CFR

1910.134.

- The employee shall use the provided respiratory protection in accordance with instructions and training received.
- Respirators shall be selected on the basis of hazards to which the worker is exposed.
- The user shall be instructed and trained in the proper use of respirators and their limitations.
- Respirators shall be cleaned and disinfected after each use.
- Respirators used routinely shall be inspected during cleaning. Worn or deteriorated parts shall be replaced. Respirators for emergency use such as self-contained devices shall be thoroughly inspected at least once a month and after each use.
- Employees will be issued their own individual respirators. Respirators will not be shared.
- Respirators shall be stored in a convenient, clean, cool and sanitary location.
- Appropriate surveillance of work area conditions and degree of employee exposure or stress shall be maintained.
- There shall be regular inspection and evaluation to determine the continued effectiveness of the program.
- Employees will not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. A physician shall determine what health and physical conditions are pertinent.
- The respirator user's medical status will be reviewed on an annual basis.
- NIOSH approved or accepted respirators shall be used when they are available.
- The respirator furnished shall provide adequate respiratory protection against the particular hazard for which it is designed.

4. Respirator Selection Policy.

Selection of respirators shall be made according to the specific hazard involved 29 CFR 1910.1000 and will be selected in accordance with the manufacturer's instructions or other related requirements (OSHA or ANSI standards, NIOSH, etc.).

- 4.1. Connecticut College does not use supplied-air respirators or self-contained breathing apparatus (SCBA). If there is an emergency or other situation where there may be atmospheres that are "immediately dangerous to life or health" (IDLH), requiring this level of protection, properly trained and equipped contractors or emergency responders will be used.
- 4.2. Only half-face (or full face) air purifying respirators, or powered air purifying respirators (PAPR), equipped with filters appropriate for the hazard, are used at Connecticut College.
- 4.3. The correct air-purifying filter shall be specified for each job. The filter type will be specified by Director of EH&S, who supervises the respiratory protective program. (See Section 5 below.)
- 4.4. In areas where the wearer, with failure of the respirator, could be overcome by a toxic or oxygen-deficient atmosphere, at least one additional person shall be present. Communications (visual, voice, or signal line) shall be maintained between both, or all individuals present. Planning shall be such that one individual will be unaffected by any

likely incident and have the proper rescue equipment to be able to assist the other(s) in case of emergency.

5. Respirator Cartridges.

The primary means of identifying what hazard a respirator cartridge protects against, is the cartridge label. The cartridge is also color coded. All cartridges purchased or used by Connecticut College will be properly labeled and/or colored coded in accordance with 29 CFR 1910.134.

5.1. The labels and colors will be properly maintained at all times until disposal.

5.2. Cartridges having labels and color code that are not identifiable, will not be used, and will be properly disposed of.

Connecticut College uses only 3M Brand 7000 Series full and half face respirators with cartridges, selected from the charts found in Appendix A:

6. Respirator Cartridge Life Expectancy.

Respirator cartridges have a limit as to the amount of contaminants they can absorb before “breakthrough” occurs, allowing contaminants to be inhaled by the user. There are several factors that affect how long a cartridge is effective; the specific cartridge used, the airborne concentration of the contaminant(s), the temperature and humidity in the workplace, and the degree of exertion (breathing rate) by the user. Under normal circumstances and exposures, cartridges can expect to last for at least 8 hours, but can be as few as 2 hours under hot, humid conditions, with heavy airborne concentrations of solvents.

6.1. Because of the variability of these factors, the “Rule of Thumb” method of establishing the cartridge service life will be used at Connecticut College. For particulate (P95 or P100) cartridges, the cartridge should be used for a maximum of 8 hours, and then discarded. Cartridges used for all other contaminants (formaldehyde, organic vapors, etc.), the cartridges should be replaced after 6 hours of use.

7. Respirator Training.

For safe use of any respirator, it is essential that employees be properly instructed in its use and maintenance. Both supervisors and employees shall be so instructed by the Director of EH&S. Training shall provide employees the opportunity to handle the respirator, have it fitted properly, test its face-piece seal, wear it in normal air for a long familiarity period, and finally, to wear it in a test atmosphere. Connecticut College shall develop a standardized training format to meet the requirement for a respiratory protection training program.

7.1. Training shall be provided to each affected employee:

- Before the employee is first assigned duties that require respiratory protection.
- Before there is a change in assigned duties.
- Whenever there is a change in operations that present a hazard for which an employee

has not previously been trained.

- Whenever this employer has reason to believe that there are deviations from established respiratory procedures required by this instruction or inadequacies in the employee's knowledge or use of these procedures.

7.2. The training shall establish employee proficiency in the duties required by this instruction and shall introduce new or revised procedures, as necessary for compliance with this instruction, or when future revisions occur.

7.3. Connecticut College shall certify that the training required by this section has been accomplished. The certification shall include both the trainer's and employee's name and signature, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

7.4. Training Content. Each respirator user will receive instruction in the following:

- Health effects of respiratory hazards
- Uses and limitations of respirators of the various types of respirators, with a focus on the half-face negative air respirator.
- Donning instructions, including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly.
- User seal checks
- Fit Testing
- Respirator maintenance procedures
- Physical conditions or symptoms that may preclude respirator usage.

8. Respirator Fit Testing.

Connecticut College shall ensure that the respirator issued to the employee exhibits the least possible facepiece leakage and that the respirator is fitted properly. For each employee wearing a negative pressure respirator, the Director of EH&S shall perform (or have performed) either quantitative or qualitative face fit tests at the time of initial fitting and at least annually thereafter. The qualitative fit tests may be used only for testing the fit of half mask respirators.

8.1. Half-mask respirators. The College shall perform (or have performed) qualitative fit test protocols in accordance with the specific standard listed in the "Z" table, to 29 CFR 1910.1000-1101. Where a specific OSHA standard protocol does not exist. The "NIOSH guide to Industrial Respiratory Protection, "Publication No. 87-116 (or subsequent versions) will be used.

8.2. Respirators shall not be worn when conditions prevent a good face seal. Examples of such a condition include a growth of beard, sideburns, or temple pieces on eyeglasses. Also, the absence of one or both dentures can seriously affect the fit of a respirator.

8.3. Fit Evaluation (wearer). The wearer shall check the respirator fit each time he/she dons the respirator, to ensure an airtight seal around the facepiece.

8.4. Fit Evaluation (Connecticut College). Annually, the Director of EH&S will meet with the

employee to check the condition and fit of the respirator, to ensure that the wearer continues to be protected

- 8.5. Hair/apparel. Fit testing shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface. If hair growth or apparel interfere with a satisfactory fit, then the employee shall be required to alter or remove the interference, so as to allow a satisfactory fit. If a satisfactory fit is still not attained, the employee must use a positive-pressure respirator such as a powered air-purifying respirator (PAPR) supplied air respirator, or be disqualified from respirator use.
- 8.6. Corrective vision requirements (full-face respirators). Full-face respirators have provisions for optical inserts. If the employee wears eyeglasses, and is required to use a full-face respirator, Connecticut College will provide optical insert lenses, produced and fitted by qualified optometrist.
- Eyeglasses will not be used with full-face respirators, because the temple bars of the glasses will prevent a proper seal as they extend through the sealing edge of the full facepiece.
 - Contact lenses will not be used with full-face respirators. Wearing of contact lenses in contaminated atmospheres with a respirator shall not be allowed.
 - If corrective spectacles or goggles are required, they shall be worn so as not to affect the fit of the facepiece.
- 8.7. Minimum fit factor. Employees shall not be permitted to wear a half mask or full facepiece mask if a minimum fit factor of 100 or 1000 respectively, cannot be obtained.
- 8.8. Respiratory difficulty during tests. If an employee exhibits difficulty in breathing during the tests, she or he shall be referred to a physician trained in respiratory diseases or pulmonary medicine to determine whether the test subject can wear a respirator while performing her or his duties.
- 8.9. Respirator use determination. The test subject shall be given the opportunity to wear the assigned respirator for one week. If the respirator does not provide a satisfactory fit during actual use, the test subject may request another fit test, which shall be performed immediately.
- 8.10. Filter replacement. Filters used for qualitative or quantitative fit testing shall be replaced weekly, whenever increased breathing resistance is encountered, or when the test agent has altered the integrity of the filter media.
- 8.11. Re-Testing (Quantitative fit test) requirements. Because the sealing of the respirator may be affected, quantitative fit testing shall be repeated immediately when the test subject has a:
- Weight change of 20 pounds or more.
 - Significant facial scarring in the area of the facepiece seal.
 - Significant dental changes; i.e. multiple extractions without prosthesis, or acquiring dentures.
 - Reconstructive or cosmetic surgery.

- Any other condition that may interfere with facepiece sealing.
- 8.12. Fit test Recordkeeping requirements. A summary of all test results shall be maintained for 3 years. The summary shall as minimum include:
- Name of test subject.
 - Date of testing.
 - Name of the test conductor.
 - Fit factors obtained from every respirator tested (indicate manufacturer, model, size and approval number).

9. Inspection, Maintenance, and Care of Respirators.

Equipment shall be properly maintained to retain its original state of effectiveness. Respirator inspections shall include, but is not limited to the following:

- A check of the tightness of connections.
 - Condition of the facepiece, headbands and valves.
 - Inspection of the rubber or elastomer parts for pliability and signs of deterioration.
- 9.1. Stretching and manipulating rubber or elastomeric parts with a massaging action, will keep them pliable and flexible and prevent them from taking a set during storage.
- 9.2. Specific procedures for disassembly, cleaning and maintenance of respirators will be done according the manufacturers written guidelines.
- 9.3. Respirators shall be inspected before and after each use. The respirator manufacturers inspection criteria will be used as the basis for the inspection.
- 9.4. Respirators shall be cleaned with tepid (not hot) water and a mild detergent (dish soap), rinsed, and allowed to air dry after every use.
- 9.5. Storage requirements. After inspection, cleaning and any necessary repairs, respirators shall be carefully stored to protect against dust, sunlight, heat, extreme cold, excessive moisture or damaging chemicals. Respirators should not be stored in such places as lockers or toolboxes, unless they are in carrying cases or cartons. Storage of respirators in vehicles is specifically prohibited.
- 9.6. Respirator cartridges should be removed prior to storage.
- 9.7. Respirators should be packed or stored in a protective pouch or plastic bag, in a position that allows the facepiece and exhalation valve to rest in a normal position. This will prevent the elastomeric material of the facepiece and valves from setting in an abnormal position, rendering the respirator ineffective.

APPENDIX A Respirator Cartridge Selection Chart

3M™ Cartridges

Product Code		Description
3MR 6001		Organic Vapor
3MR 6002		Acid Gas
3MR 6003		Organic Vapor/Acid Gas
3MR 6004		Ammonia/Methylamine
3MR 6005		Formaldehyde/Organic Vapor
3MR 6009		Mercury Vapor/Chlorine Gas
3MR 6006		Multi Gas/Vapor
3MR 60921		Organic Vapor/P100
3MR 60922		P100 / Acid Gas
3MR 60923		Organic Vapor/Acid Gas/P100
3MR 60924		P100/Ammonia Methylamine
3MR 60925		P100 Formaldehyde/Organic Vapor
3MR 60926		Multi Gas/Vapor P100
3MR 60929		P100/Mercury Vapor/Chlorine Gas

3M™ Filters

Product Code	Description
3MR 2071	P95
3MR 2078	P95 Nuisance OV/AG
3MR 2091	P100
3MR 2096	P100 Nuisance/AG
3MR 2097	P100 Nuisance/ OV
3MR 7093	P100 Filter

3M Particulate filters are “magenta” in color.