Respiratory Protection
A GUIDE TO EVALUATION OF EXPOSURES AND PROGRAM DEVELOPMENT
RESPIRATORY PROTECTION
A Guide to Evaluation of Exposures and Program Development

GUIDE SUBHEADINGS

- Purpose: Page 1
- Guidelines: Page 1
- Program Requirements: Page 1
- Program Administration: Page 3
- Health Evaluation: Page 3
- Training: Page 3
- Respirator Fit: Page 4
- Respirator Issue: Page 5
- Respirator Inspection: Page 5
- Respirator Use: Page 6
- Work Area Surveillance: Page 7
- Program Evaluation: Page 7
- Respirable Air: Page 8
- References: Page 8

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Sample Product – This program may not be in compliance with current standards and is provided solely as a tool for developing and implementing a Respiratory Protection Program at your facility.
RESPIRATORY PROTECTION

I. PURPOSE

Our clients should intend that all personnel exposures to danger from inhalation of harmful airborne contaminants and from oxygen deficient atmospheres wear an appropriate respirator. This should be after all avenues have been explored for engineering controls, such as local exhaust ventilation, etc. The purpose is to prevent respiratory related injuries, illnesses and deaths.

II. GUIDELINES

The following guidelines set forth minimal requirements for a complete respiratory protection program and are designed to assist our clients to protect their personnel against the inhalation of harmful air contaminants and against oxygen deficient atmospheres in the workplace. However, these guidelines do not apply to:

- Underwater Breathing Devices;
- Aircraft Oxygen Systems; and
- Medical Inhalators and Resuscitators.

In the control of those occupational diseases caused by breathing air contaminated with harmful dust, fumes, mist, gases, smoke, sprays or vapors the primary objective should be to prevent atmospheric contamination, as far as feasible, through implementation of accepted engineering control measures. Appropriate respirators should be used when effective engineering controls are not feasible, while controls are being instituted or evaluated or during emergency situations with high exposure.

Respirators, which are applicable and suitable for the purpose intended, should be provided by employers, when such equipment is necessary to protect the health and ensure the safety of the employee. Employees are responsible for guarding against respirator damage and should use the respirator in accordance with instructions and training provided.

III. PROGRAM REQUIREMENTS

Written standard operating procedures covering a complete Respiratory Protection Program should be established and implemented to include:
• Hazard Monitoring;
• Respirator Selection;
• Program Administration;
• Health Evaluation;
• Training;
• Respirator Fit;
• Respirator Issue;
• Respirator Inspection;
• Respirator Use;
• Work Area Surveillance;
• Respirator Maintenance; and
• Program Evaluation.

The selection of the proper respirator should be based upon:

• The nature of the hazardous operation or process;
• The type of the respiratory hazard;
• The location of the hazardous area in relation to the nearest area having safe breathing air;
• The period of time for which respiratory protection must be provided;
• The activities of the workers in the hazardous area;
• The physical characteristics, the functional capabilities and the performance limitations of the various types of respirators; and
• Respirator protection factors and respirator fit, only approved respirators should be selected.
IV. PROGRAM ADMINISTRATION

The respiratory protection program should be administered by a qualified person, who by reason of training and experience, is knowledgeable about respiratory protection principles applicable to inherent hazards in the work environment.

Our clients’ Environmental, Safety and Regulatory group personnel should oversee the administration of the respiratory protection program and they should be available to assist in the training necessary to implement the program.

V. HEALTH EVALUATION

No person should be assigned a task requiring the use of a respirator until it has been determined by a physician that he/she is physically and psychologically able to perform such work. This determination should be reviewed periodically. When applicable, medical surveillance, including bioassay, should be performed periodically by a physician to determine if respirator wearers are receiving adequate respiratory protection.

VI. TRAINING

Supervisory personnel who oversee the work activities of one or more employees who must wear respirators should be adequately trained to ensure the proper use of respirators. **Such training should include:**

- Basic respiratory protection practices;
- The nature and extent of respiratory hazards to which their employees may be exposed;
- The principles and criteria of selecting respirators;
- The training of respirator wearers;
- The issuance of respirators;
- The inspection of respirators, including monitoring of use;
- The maintenance, care and storage of respirators; and
- The regulations concerning respirator use.
Persons issuing respirators should be adequately trained to ensure that the proper respirator is used for each application in accordance with the manufacturer’s operating procedures.

Persons who wear respirators should be adequately trained to ensure proper and safe use of respirators. Such Training should include:

- The reasons for respiratory protection;
- The nature, extent and effects of respiratory hazards to which the person may be exposed;
- An explanation of the operation, the capabilities and the limitations of the respirator selected;
- Instruction in inspecting, donning, checking the fit of and wearing the respirator;
- Opportunity for each respirator wearer to handle the respirator, learn how to don and wear it properly, check it’s seals, wear it in a safe atmosphere and wear it in a test atmosphere;
- An explanation of how maintenance, care and storage of the respirator is carried out;
- Instructions in how to recognize and how to cope with emergency situations;
- Instructions, as needed, for special respirator use; and
- Regulations concerning respirator use.

Each respirator wearer should be retrained annually.

VII. RESPIRATOR FIT

A respirator equipped with a face piece should not be worn when conditions prevent a seal between the respirator and the wearer. When a respirator user must wear corrective lenses, protective spectacles or goggles, a face shield, a welding helmet or other eye and face protective device, the item should be fitted to provide good vision and should be worn in such a manner as not to interfere with the seal of the respirator requiring a full face piece.
A person with facial hair, which interferes with the seal of the respirator should not be allowed to perform work requiring the use of a respirator until such facial hair has been trimmed or removed to enable a proper seal. To ensure proper protection, the wearer of a respirator with a face piece should check the seal of the face piece prior to each entry into a hazardous atmosphere.

Records of respirator fitting test, if applicable, should be kept for each respirator wearer for the duration of employment. **The records should include:**

- Type of respirator fitting test used;
- Specific make and model of respirator tested;
- Name of person tested;
- Name of test operator;
- Date of test; and
- Results of respirator fitting test (success or failure of a person to obtain satisfactory fit if a qualitative fitting test was carried out or respirator protection factor is a quantitative respirator fitting test was carried out).

**VIII. RESPIRATOR ISSUE**

Only persons trained to ensure that proper respirators are issued should be permitted to issue respirators to persons who need them. The proper respirator should be specified for each application and should be listed in the manufacturer’s operating procedures.

**VIX. RESPIRATOR INSPECTION**

Each person issued a respirator should inspect the respirator prior to and after its use to ensure that it is in good operating condition. **Respirator inspection should include a check for:**

- Tightness of connections;
- Condition of the respirator inlet covering;
- Head harness;
• Valves;
• Connecting tubes;
• Harness assemblies;
• Filters;
• Cartridges;
• Canisters;
• End of service life indicator (shelf life date/s);
• Proper function of regulators (and other warning systems);
• Each rubber or elastomeric part should be inspected for pliability and signs of deterioration; and
• Each air cylinder to ensure that it is fully charged according to the manufacturer’s recommendations.

Any defect of malfunction of the respirator should be reported to the employee’s supervisor.

Each respirator stored for emergency or rescue use will be inspected monthly and a record of inspection dates, findings and remedial actions will be maintained.

X. RESPIRATOR USE

All persons who wear respirators should be given adequate information concerning plans covering these respirators uses to ensure the safe use of respirators. A respirator wearer will be required to exit hazardous areas for any respirator related cause. **Such causes include:**

• Failure of the respirator to provide adequate protection.
• Malfunction of the respirator.
• Detection of leakage of air contaminant into the respirator.
• Increase in resistance of respirator to breathing, and

• Illness of the respirator user (including sensation of dizziness, nausea, weakness, breathing difficulty, coughing, sneezing, vomiting, fever and chills).

When respirators are required for entry into atmospheres immediately dangerous to life or health, at least one standby person should be present in a safe area. The standby person will have the proper equipment available to assist the respirator wearer(s) in case of emergency. Communications will be maintained between the standby person and the respirator wearer(s). Respirator wearer(s) in atmospheres immediately dangerous to life or health should be equipped with safety harnesses and safety lines to permit them to be removed from the dangerous atmospheres to safe areas, if necessary.

Emergency and rescue use respirators that are placed in work areas should be quickly accessible at all times and the storage cabinet or container in which they are stored should be clearly marked.

XI. WORK AREA SURVEILLANCE

Respirator maintenance should be performed regularly. Maintenance should be carried out on a schedule, which ensures that each respirator wearer is provided with a respirator that is clean, and in good operating condition. **Maintenance should include:**

• Washing, sanitizing, rinsing and drying.

• Inspection for defects.

• Replacement of worn or deteriorated parts.

• Repair if necessary, and

• Storage to protect against dust, sunlight, excessive heat, extreme cold, excessive moisture, damaging chemicals and physical damage.

XII. PROGRAM EVALUATION

An evaluation of the effectiveness of the respirator program should be carried out at least annually. This should be the responsibility of our client’s Environmental, Safety and Regulatory Compliance group. **The evaluation should include:**
• Investigation of respirator wearer acceptance.

• Inspection of respirator program operation, and

• Appraisal of the protection provided by respirators.

Actions should be taken to correct any defects found in the respirator program.

**XIII. RESPIRABLE AIR**

Only compressed gaseous air meeting or exceeding the minimal requirements for Type I - Grade D breathing air (ANSI Z86.1 1973) should be used.

Breathing air may be supplied to respirators from cylinders or air compressors. Cylinders should be tested and maintained in accordance with applicable DOT specifications.

Air compressors should be constructed and situated so as to avoid entry of contaminated air into the air supply system and should be equipped with a suitable in-line air purifying sorbent bed and filter to further ensure breathing air quality. If an oil-lubricated air compressor is used, it should be equipped with a high temperature alarm and a carbon monoxide alarm.

Breathing air couplings should be incompatible with outlets for non-respirable plant air or other gas systems to prevent inadvertent servicing of air-line respirators with non-respirable gases or oxygen.

**REFERENCES**

OSHA 29 CFR 1910.134 (Respiratory Protection)

OSHA 29 CFR 1910.1000 (Hazardous Materials)

ANSI Z88.2 - 1980