

INDUSTRIAL HYGIENE RULES

RULE NUMBER:	IH-002	DATE:	1994 May 09	REPLACES RULE NUMBER:	IH-002	OF DATE(S):	92-01-01
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RE: ROCKDALE OPERATIONS RESPIRATORY PROTECTION POLICY

STATEMENT OF POLICY

The goal of the Rockdale Operations Respiratory Protection Program is to insure adequate protection to the health of the employee. Respiratory protection is for use in exposure areas where engineering controls of respiratory hazards are not feasible, while engineering controls are being installed, or for emergency situations.

There are disposable respirators that are Mine Safety and Health Administration/National Institute for Occupational Safety and Health approved for protection against certain contaminants. These respirators cannot be quantitatively fit tested. It is preferred that an elastomeric face piece respirator be used to obtain quantifiable protection. Disposable respirators can be used where the contamination levels are at a nuisance level, a level below the exposure guideline.

All persons who may be exposed to an atmosphere contaminated with a substance beyond established exposure limits must wear approved respiratory protection. If an employee enters a space where the concentration of contaminants is unknown, an oxygen deficiency could exist; or if air purifying equipment is inadequate, a positive pressure supplied air respirator is required.

All employees who use respirators during the course of the job must be medically examined to determine the employee's ability to perform their job task while wearing respiratory protection.

RESPONSIBILITIES

To insure the effective management of the Respiratory Protection Program, the following responsibilities are outlined:

- Area Managers are responsible for the administrative control of the Respiratory Protection Program of their area.



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- Supervisors of all areas are responsible for notifying the Operations Industrial Hygienist of respiratory protection concerns and for becoming familiar with the type of respiratory protection required in their areas. The supervisor must insure that all users of respiratory protection are trained in the selection and use of respiratory protection. The supervisor shall enforce the proper use of respirators.
- The respirator user has the responsibility for proper use of respiratory protection. The user is also required to clean and properly store respiratory protection. The user must inspect respirators prior to use. Any damaged or malfunctioning piece of equipment must be taken out of service and repaired or replaced.
- Industrial Hygiene/Safety is responsible for the management and auditing of the Respiratory Protection Program. Any changes to the Respiratory Protection Policy must be approved by the Safety and Industrial Hygiene Manager. Development or identification of training on the use of respirators is the responsibility of Industrial Hygiene/Safety. Where area trainers are used, a Train-the-Trainers training session must be given by Industrial Hygiene or Safety. This training should be repeated bi-annually.

Qualitative and quantitative exposure assessments must be undertaken on a periodic basis by Industrial Hygiene. Determination of the type and degree of respiratory protection requires quantitative exposure assessments. The respirator selection is then based upon the concentration and toxicity of the material. Those chemicals that have poor warning properties (lack of or poor detection by odor, little or no irritation) require the use of positive pressure demand respirators.

- Purchaser, Scheduler-Planner, Industrial Hygiene, Department - Introduction of a chemical into the Operations requires that a MSDS be on site, preferably prior to introduction of the material to the Operations. A review of the toxicity of the material and an evaluation of respiratory protection requirements by Industrial Hygiene is required prior to use of the new material. Industrial Hygiene and Safety consultation are required during the evaluation. The initiation of the evaluation process is the supervisor's responsibility.
- Security is responsible for the administration of the Self-Contained Breathing Apparatus (SCBA) program. Security will facilitate training on the use of SCBA, scheduling monthly inspections of SCBA equipment and filling of SCBA cylinders.

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- **The Medical Department** is responsible for the evaluation of the workers ability to wear respiratory protection. Respirators place physiological burdens on the wearer with major effects on the pulmonary and cardiac functions . The major effect of increased resistance to air flow and increase ventilation is of significant impact to the respiratory system. Therefore, the medical evaluations should be through and focused on the pulmonary and cardiac systems. Medical evaluation is required prior to using any respirator. This includes disposable respirators.

Medical evaluation for respirator use shall be entered into the employee's medical record. The employee will be informed as to the results of the medical evaluation and the determination of their ability or inability to wear a respirator. The Medical Department will inform the department of the results of the evaluation to wear respiratory protection.

Spirometry results are one criteria used to determine if an individual is physically capable of wearing a respirator. The following criteria are to be used to judge the ability to use respiratory protection:

Respiratory Clearance Exams Include Spirometry

Category	FVC% Predicted	FEV1% Predicted	Abnormality	Respirator Use
1	> 70	> 70	Insignificant	Unlimited
2	60 - 70	60 - 70	Mild	Limited
3	50 - 60	40 - 60	Moderate	Rare (Emergency Only)
4	< 60	< 40	Severe	Never

Employees in Categories 2 or 3 should not be placed in high risk environments or use respirators for prolonged periods or for heavy exertion.

Employees in Category 4 are probably fully disabled due to lung disease and should not work in any job requiring respiratory protection.

Any employee assigned to a job that requires the use of respirator must be offered a yearly exam.

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PROGRAM ELEMENTS

Respirator selection is based upon the hazard(s) encountered. Industrial Hygiene must evaluate the hazards present in the work environment to determine the degree of respiratory protection required. This selection is based upon the warning properties of the contaminant as well as the concentration of the contaminant. The employee has the right to request a respirator that will afford a greater degree of protection. To be used in the Operations, respirators must have Mine Safety and Health Administration/National Institute of Safety and Health approval.

An individual must have medical approval prior to using a respirator. The individual using supplied air respirators and SCBA are required to participate in yearly physicals. This requirement is based on the materials that are typically encountered at the IDLH (Immediately Dangerous to Life and Health) level, physical demands placed on the user, physiological demands placed on the respiratory system and respiratory disease having a rapid onset.

Should an employee be deemed unable to wear a respirator (supplied air, SCBA or air purifying) due to pulmonary function testing or by any other medical finding, the employee's department will be informed of the restriction. The department will not allow the employee to be assigned to a job function that requires the use of a respirator. A record of the restriction will be placed in the employee's medical file.

The individual also must have completed training that covers the following; the proper use, care, selection and limitation of respirators. Training will also include hazard communications pertaining to the materials that require the use of respirators. Individuals who use respiratory protection must attend a yearly refresher course on respiratory protection. The immediate supervisors of individuals using respirators shall also attend these training sessions. The training will include instruction on the following:

1. Fitting the respirator
2. Demonstration of use
3. Inspection of the respirator
4. Donning the respirator
5. Testing the seal, negative and positive pressure test
6. Cleaning and storage of respirators
7. Factors that influence fit (hair, glasses, facial features, etc.)

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Fit testing of the respirator will include seal evaluation. Either quantitative or qualitative fit testing will be performed on at least an annual basis. Qualitative fit testing is one method of face seal evaluation. This evaluation is done in an atmosphere of irritant smoke or vapors. Saccharin may be substituted for irritant smoke. Quantitative fit testing is the preferred method to test the seal of a respirator. Industrial Hygiene, Safety or Vallen can provide quantitative fit testing services (Only those individuals trained in qualitative fit testing will provide this service).

Any condition that does not permit a good seal must be addressed. Examples are:

- Beards or sideburns
- Welding caps placed under the sealing surface
- Temple pieces on glasses
- Missing dentures
- Facial scars, ingrown facial hair (bumps), deformities, or unusual facial features

Several different type of respirators are available to facilitate those individuals who may fail the fit testing with a given respirator.

The respirator seal must be evaluated prior to use. If any condition exists that does not allow a seal, respiratory protection may be compromised. Employees required to wear a respirator that depends upon the face to seal the respirator will not wear facial hair or long sideburns that interfere with the respirator to face seal.

In areas where respirators are required and the use is frequent, respirators will be assigned to individuals for their exclusive use. The individual is responsible for the maintenance and cleaning of the respirator assigned to them. Personal respirators should be cleaned daily and respirators not assigned to an individual shall be cleaned and disinfected after each use or more frequently if required. Cartridges will be replaced when restriction to breathing, odor breakthrough or irritation under the respirator occurs. The employee must be instructed in the warning properties of the materials for which the respirator is in use. Do not leave the respirator in the work area, contamination of the respirator or cartridges may occur.

Cleaned respirators will be stored in a sealed bag. These bags must be 100% cotton or flame retardant in areas when exposure to molten metal may occur.

Industrial Hygiene will develop written procedures for the use of respirators. Industrial Hygiene will inform the worker of the nature of the respiratory hazard, the proper respirator to use based upon exposure assessments and what the effects of improper respirator use would be. Industrial Hygiene will facilitate the selection of respirators that are applicable for the hazard(s) encountered. The NIOSH Decision Logic will serve as a guide.

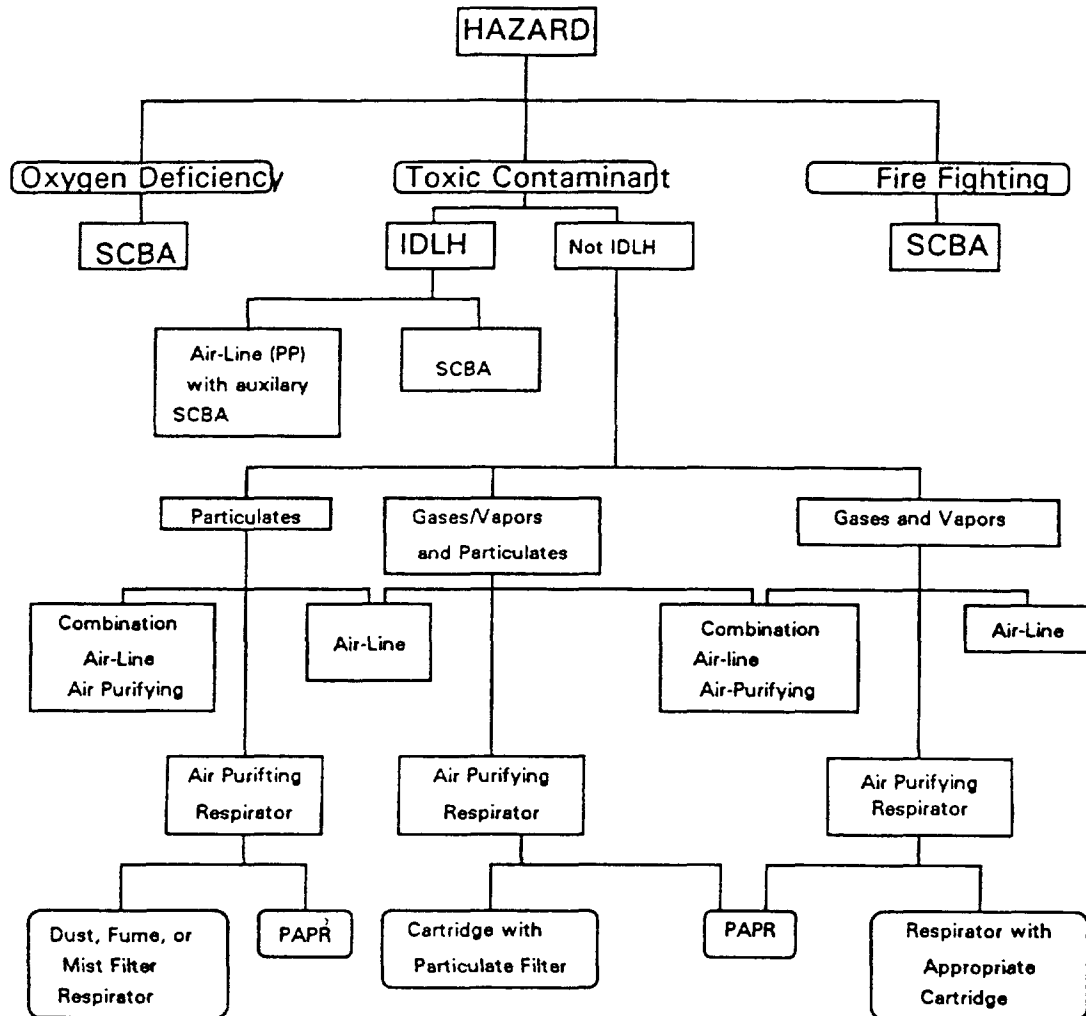
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NIOSH Decision Logic For Respiratory Protection



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AIR PURIFYING RESPIRATORS

Air purifying respirators cannot be used in atmospheres that have an IDLH or oxygen deficient environment. Proper respirator and cartridge or filter selection must include consideration of the following criteria:

- 1) Oxygen level (oxygen level is not acceptable if less than 19.5% and greater than 23.5 %)
- 2) What is the maximum use concentration for the contaminant present?
- 3) What level of use is the respirator approved for in relation to the contaminant present?
- 4) Are eye irritants present that indicate the use of a full face respirator?
- 5) Is an OSHA specific standard involved in regard to respiratory protection (i.e., lead)?

SUPPLIED AIR RESPIRATORS

When the concentration is unknown, industrial hygiene sampling is not available or the concentration is at the Immediately Dangerous to Life or Health level, supplied air with an escape pack is required. Forced ventilation will be established to supply respirable air to the area of respirator use. An IDLH condition warrants immediate action by Industrial Hygiene, sampling will be undertaken to establish exposure levels. Upon receipt of monitoring results, the level of respiratory protection will be reevaluated to determine if continued use of positive supplied air is indicated. If an IDLH condition is indicated by the exposure assessments, Engineering and Industrial Hygiene will implement engineering controls where feasible.

The compressed air supplied to the respirator must meet the requirements of the Compressed Gas Association Specification G-7.1-1989, Grade D air. This requires that carbon monoxide levels not exceed 10 ppm and condensed hydrocarbons not exceed 5 mg/M3. Oxygen shall never be used in air-line systems.

Where portable compressors are used, care must be taken to insure that the source of the air is not contaminated. Particular care must be given to avoid exhaust gases from internal combustion engines, solvents and paints. When a compressor is driven by an internal combustion engine, the exhaust must be elevated to a point at least six feet above the intake of the compressor. A filtration system must be installed on the line supplying the respirator with air. The filter must be capable of removing oil, water, scale, odor, and taste. A pressure reducing valve must be installed that reduces the inlet pressure to meet respirator hose inlet pressure requirements. An automatic alarm must be installed to sound in the event of compressor shutdown, overheating or Carbon Monoxide levels in excess of 10 ppm.

COMPRESSED AIR CYLINDERS

Where portable compressors cannot be utilized, compressed air cylinders may be used. The compressed air must meet the previously delineated Grade D specifications. The respirators used must be positive pressure demand. Pressure demand respirators are not approved for use. To insure that an adequate supply of air is available, consideration must be given to the total volume of air required based on working conditions, temperature and pressure. Stand-by cylinders are typically required to insure that air supplies are not depleted. This system requires the use of an alarm to indicate when air supply reaches a low pressure.

Specific Requirements - Continuous Flow Respirators

The air supply for continuous flow respirators must be capable of supplying all tight fitting respirators connected to the system with at least 4 cubic feet per minute (cfm), loose fitting respirators must be supplied with at least 6 cfm. The airflow rate must not exceed 15 cfm.

Air lines to respirators cannot exceed 300 feet in length and the maximum inlet pressure is 125 pounds per square inch gauge. Where respirators are used in conjunction with a vortex cooling unit, the minimum air pressure is 90 psig and 20 cfm. NIOSH/MSHA approval for respirators includes the airline. Only use airlines approved for respirator use. Using one brand of airline with a different brand respirator will constitute an unapproved system.

Air-Line Respirator Selection

Four factors must be considered in the selection of an air-line respirator system:

1. The face piece can be influenced by obstructions to fit (glasses, beards, scars), work rate, and work activity. Special glasses that do not interfere with the respirator fit are available for individuals requiring prescription glasses.
2. Airflow mode (continuous, pressure demand) can be influenced by work rate, type of face covering, and capacity of the compressed air tanks or compressor.
3. Length of hose required can be influenced by the necessary amount of movement.
4. Air supply depends on the number of users and the need to maintain the required pressure at the inlet to the hoses under use conditions.

Self-Contained Breathing Apparatus (SCBA)

Only SCBA units capable of operating with positive pressure inside the respirator will be used. The SCBA units are typically for use in emergency situations and in those instances where an IDLH atmosphere is present and an air line respirator cannot be used. SCBAs provide the wearer with the highest degree of protection and are the most complex respirators in use. Training specific to the SCBA is required prior to use and retraining must be on a yearly basis.

Equipment selection will be based upon the condition of use. The following are some considerations:

1. Does the atmosphere have the potential for being IDLH?
2. Is the atmosphere oxygen deficient?
3. Is the atmosphere below normal atmospheric pressure?
4. What length of time is required to complete the assigned task?
5. What type of emergency condition are expected?

Once the need is established to use SCBA, premature removal of the SCBA must be avoided at all times. SCBA may be removed only when the atmosphere has been declared free of contaminants. If doubt exists about respiratory protection, SCBA use will be maintained until atmospheric testing indicates a safe atmosphere is present. The testing of the atmosphere is the responsibility of the Safety and Industrial Hygiene Department.

Monthly inspection of SCBAs is required. The monthly inspection will include a visual inspection of all hardware and air pressure check. Any malfunctioning or damaged equipment will be removed from service and red tagged "OUT OF SERVICE - DO NOT USE". All out of service equipment will be sent out for repairs. The out of service equipment must be sent in as a complete unit, face piece and regulator. The metal inspection tag must be punched and inspection records are maintained by Security. A yearly check is required. This service will be provided by an outside inspection firm. The yearly inspections include, flow test of the regulator, replacement of worn parts, cleaning inspection and replacement of needed face piece components, cleaning inspection and replacement of harness components, reassembly and testing of the entire SCBA.

Cylinder Air Quality

A cascade system is used to fill SCBA cylinders. The compressed air received must be Grade "D", breathing air quality or higher. Cylinders must be checked periodically to determine the quality of the compressed air. Draeger detector tubes can determine the CO and oil content of the air and oxygen meters can be used to determine the percentage of oxygen.

Recordkeeping

Records must be maintained that will substantiate compliance with OSHA 29 CFR 1910.134. The records include the following:

- 1) Respiratory protection training and fit testing. These records will be signed by the employee.
- 2) Records of respirator inspection and maintenance.
- 3) Record of any disciplinary action regarding misuse or failure to use a respirator will be maintained by the Personnel Department.
- 4) A copy of the Respiratory Protection Program is included in each department's copy of the Rockdale Operations Safety Manual.