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HEALTH & SAFETY MANUFACTURING & TECHNICAL				
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SUBJECT: RESPIRATORY PROTECTION PROGRAMS

Safety and Industrial Hygiene issued a Respiratory Protection Manual in 1981, intended to assist functions and locations establish respiratory protection programs. Section II of that manual was Shell's "Respiratory Protection Program Guidelines", setting forth those elements that must be addressed in a workplace respiratory protection program. Incorporation of these elements will ensure that a location's respiratory protection program meets OSHA's requirements and is effective.

Compliance reviews among the functions in 1983-84 have indicated that many respiratory protection programs need to be strengthened to ensure compliance and efficacy. This was reported in our annual compliance review summary (Attachment 2). Further, the advent of additional OSHA regulations (e.g, benzene) along with hazard communication will tend to require strong respiratory protection programs. Therefore, Industrial Hygiene Services plans to look closely at respiratory protection programs during planned IH reviews in Manufacturing.

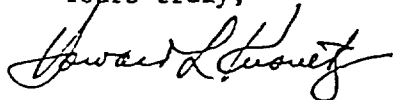
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In view of the above, it is timely to reemphasize the existence and purpose of Shell's Respiratory Protection Program guideline. A copy is attached. We suggest that you distribute as appropriate.

Yours truly,



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Attachments

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RESPIRATORY PROTECTION PROGRAM GUIDELINES

A respiratory protection program must address the following regulatory requirement:

A. Written Program

"Written standard operating procedures governing the selection and use of respirators shall be established" [Reference OSHA 1910.134 (b)(1)].

A written program addressing the different types of respiratory equipment, selection for specific tasks, personal limitations, maintenance of respiratory equipment, and training must be established. This written program, in the form of a safety order or equivalent, is the primary element of a successful respiratory protection program. Each location should develop its own program, meeting its unique needs. Examples of existing written programs are included in Appendix E.

B. Respirator Selection

"Respirators shall be selected on the basis of the hazards to which the worker is exposed" [Reference OSHA 1910.134 (b)(2)].

Respirator selection is divided into two parts; first, which respirators shall be provided in or for a particular location or workplace; and second, for a particular task, the selection of a particular respirator from among those provided. Both aspects of respirator selection are important, and both must be addressed in the written program.

1. Selection of Respirators Provided

Selection of respirators to be provided must be administered by a competent individual. Respirator selection is based on the nature and extent of the hazards involved. Some factors to be considered are whether the atmospheres may be immediately dangerous to life or health, whether the atmospheres are toxic and/or oxygen deficient, whether the contaminant can cause eye or respiratory irritation, and whether the contaminant has good warning properties (i.e., odor, taste, or irritation effects that are detectable and persistent at concentrations at or below the PEL, TLV, or Shell internal standard; and not subject to olfactory fatigue). Protection factors must also be considered during the selection process.

Section V of this manual, Respiratory Selection, has reference materials.

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The written plan for the location shall designate the person or department responsible for selecting equipment to be purchased, from among equipment with appropriate certification.

Approved equipment is NIOSH/MSHA certified. All component and replacement parts must also have NIOSH/MSHA approval. Respirators are approved as a system. Cartridges, cannisters, filters, air lines, and regulators cannot be interchanged between equipment of different manufacturers or even between equipment of a given manufacturer unless specifically approved.

2. Selection of Respirators Used

It is likely that field personnel will have several types of respirators available for use. The right respirator must be selected for each task. The best way to ensure proper selection is by training those supervisory and field personnel who use respirators. Training is covered in the next section. The written program for each location should designate those tasks (or substances) which require a specific respirator, under all circumstances. If appropriate, this designation can be performed on a departmental (or unit) basis.

Examples of substances which may merit specifically designated respirators include asbestos, silica (sand blasting), lead burning operations, vinyl chloride, ECH, EO, or similar materials with low PEL's or internal standards.

Examples of tasks which may merit specifically designated respirators include catalyst handling, extensive welding repairs in confined spaces, repetitive sampling or tank gauging tasks, confined space entry, and interior structural fire fighting.

Respirators may also be necessary for non-recurring or incidental tasks, where exposure to vapors, gases, dust, or particulates may be above the occupational exposure limits listed in the Material Safety Data Sheets. In each case, the proper selection may be an airline, or a self-contained breathing apparatus, an appropriate cartridge or a canister respirator, or a dust mask, depending upon the substance, task duration level of exposure, and the need to protect the eyes. Workers should use their respirator training, the written plan, and MSDS information for respirator selection. Competent assistance should be available.

Where Shell or contract maintenance personnel are involved, the respiratory protection requirement and type of respirator must be communicated thoroughly. The use of a safe work permit to accomplish this is encouraged.

C. Education and Training

"The user shall be instructed and trained in the proper use of respirators and their limitations" [Reference OSHA 1910.134 (b)(3)].

All those who use respiratory protection equipment will be educated and trained in the selection, use, and maintenance of the equipment.

Education must be structured and documented. It need not be formal, or in a classroom, and may be done in the workplace. Education includes:

- ° An explanation of the respiratory hazard.
- ° Discussion of why respiratory protection is needed, which respirators are suitable, and why.
- ° Discussion of the functions, capabilities, and limitations of the equipment.
- ° Discussion of the proper care and maintenance of equipment.
- ° Explanation of the effects of such personal factors as eyewear, facial hair, and physical capabilities.

Training includes "hands-on" use of the equipment, specifically:

- ° How to put on the respirator properly, and check its fit and operation. This very important training should include the opportunity to handle the device, have it fitted properly, test the face-piece-to-face seal, wear it in a safe atmosphere during a familiarity period, and finally, to wear it in a test situation. These requirements may be satisfied by either qualitative or quantitative testing. These methods are described in Section VI, Respirator Fit Testing.
- ° Instruction in recognizing and reacting to emergency situations.

Education and training shall be provided to all new employees who will need to use respirators. New employee education and training must be documented. Repeat training must be often enough to ensure that employees have the proper understanding and skills. Annual repeat training is suggested. Records should be maintained of all initial and repeat training.

The written program for each location should outline its education and training plan for that particular location.

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D. Maintenance of Respiratory Protection Equipment

The written program for each location should address the maintenance, cleaning, inspection, and storage of respiratory protection equipment, and assign responsibilities for these tasks.

Applicable OSHA regulations include: 1910.134 (b)(5), "respirators shall be regularly cleaned and disinfected. Those issued for the exclusive use of one worker should be cleaned after each day's use or more often if necessary. Those used by more than one worker shall be thoroughly cleaned and disinfected after each use".

Also, 1910.134 (b)(6), "respirators shall be stored in a convenient, clean, and sanitary location".

Also, 1910.134 (b)(7), "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".

Maintenance, cleaning, inspection, and storage of respiratory protective equipment is discussed in Section VII, Maintenance Storage and Inspection.

E. Personal Factors

Certain personal factors may affect the individual's use of respirators. These factors include facial features, facial hair, corrective eye wear, and physical capability. Any of the first three factors can affect the seal between the facepiece and the face and reduce the ability of the respirator to provide the intended protection. Physical capability factors may make the use of a respirator inadvisable.

Recognizing the above factors, it will be necessary for each location to develop a written plan specifically addressing the following considerations:

- a. Application of the guidelines - requirements may differ for regular assigned Company personnel, regular and specialty contractors, temporary personnel from other locations and casual visitors. The need for respiratory protection versus administrative control (i.e., evacuation procedures) should be considered.
- b. The education/training programs (Section C) should include information on effects of personal factors on use of respiratory protection.

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- c. Fit testing method(s) - criteria should be established to define a satisfactory fit considering potential exposure conditions for specific assignments.
- d. Administration - consideration should be made of how policy will be implemented, audited, and enforced (i.e., particularly if there are different plan guidelines for different groups of employees).
- e. Legal consideration - (reference - Aurelius memo, Appendix B)

Because of the potentially sensitive nature of policies relating to personal factors the need for early communication and education for employees and community becomes significant.

1. Facial Features

Normal variations in size and shape, as well as disfigurement, may affect the ability of some employees to obtain a respirator seal. The respirator fit testing program, conducted as part of the training, should result in an appropriate resolution of such problems, by choice of proper respirator, and practice until fit can be achieved repetitively.

2. Facial Hair

Established facial hair in the area of the respirator seal will reduce the protection provided by the respirator. Leakage can occur between the respirator and the established facial hair. Quantitatively, this effect is much greater with negative pressure respirators than with positive pressure devices. This relationship has been demonstrated by quantitative fit testing. It is management's responsibility to ensure protection for our employees and provide specific guidelines in this potentially sensitive area.

The following key issues should be addressed in establishing a facial hair policy:

- The effect facial hair can have on the ability of the respirator to provide intended protection.
- Determination of significant risk if the seal fails.
- The qualitative/quantitative fit criteria to be used.
- The methods and resources required to audit and ensure compliance with the policy.

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There are a number of alternate approaches to satisfy employee protection needs and regulatory requirements; some possible approaches, include:

- a. Prohibit established facial hair in the respirator seal area that could interfere with obtaining a satisfactory seal.
- b. Prohibit established facial hair in the respirator seal area except for those employees using air-supplied respirators with positive pressure (i.e., pressure-demand mode or continuous flow).^{*} The significantly reduced service time of the equipment must be considered when exercising this option.
- c. Conduct quantitative fit testing to insure that a satisfactory minimum protection factor is provided by the respirator. (It must be recognized that fit test results will change with facial hair growth/trim conditions.)^{*}

^{*}Note: Programs "b" and "c" should include encouraging employees to alter established facial hair such that there is no interference with the respirator seal.

Other approaches may be appropriate for some locations; but consideration must be given to all key issues noted in this section and to the management commitment required to insure compliance with some programs. Each location must determine the correct approach for its own operations.

If respirators are made available to employees, at their request (i.e., for subjective comfort reasons) and are not deemed necessary for protection against significant risks, then these personal factor guidelines are not pertinent.

3. Corrective eyewear

Eyeglasses also cause leakage where the respirator seal passes over the temple bar. For this reason, plano safety glasses should always be removed when using a full-face piece respirator.

Some employees require corrective eye wear to perform work safely when using a respirator. For tasks where the respiratory hazard does not affect the eyes, a half-face piece respirator (which does not interfere with standard corrective eyewear) may be used.

Locations are encouraged to provide specially framed corrective lenses, which fit inside the respirator, for those employees who need them.

Wearing of contact lenses with respirators is not permitted.

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4. Physical Capabilities

There are several physical conditions that could possibly interfere with respirator usage. These include decreased pulmonary function and cardiovascular disease. Careful consideration should be given to people with emphysema, chronic obstructive lung disease, bronchial asthma, hypertension, hypertensive cardiovascular disease, coronary artery disease or prior myocardial infarction and other conditions.

The OSHA reference [1910.134 (b)(10)] states:

"Persons should 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. The local physician shall determine what health and physical conditions are pertinent. The respirator user's medical status should be reviewed periodically (for instance, annually)."

Physical capability questions pertaining to the use of respirators should be managed similarly to any other physical capability situation. The following guidelines are suggested:

- a. Each location where employees use respirators should provide its physician with information regarding the types of respirators used, the general extent of usage, and typical examples of tasks which require respirator usage. This information should include a copy of the written respirator plan, plus sufficient detail and review of training activities so that the physician understands the conditions which may be encountered. Where feasible, actual "training" of the physician is encouraged.
- b. All who use respirators should be instructed regarding the physical capability concerns as a part of the initial and repeat respiratory training. The pertinent medical conditions should be reviewed by the trainer (see first paragraph) who should then give each employee written material listing these conditions. The written material should instruct the employee to contact a named physician if the employee is aware of such conditions, or has concerns. Example written material is in Appendix A.
- c. At each location where employees use respirators, the physician should ensure that as a part of each medical surveillance examination a judgment is made regarding physical capability to use respirators. Where a medical condition is found which affects the employee's ability

to use a respirator, the physician should establish appropriate restrictions, similar to restrictions established for any physical limitation. An appropriate entry should be made in the employee's confidential medical record.

- d. All who use respirators should be encouraged to take advantage of the Shell voluntary physical examination program. These voluntary examinations are handled on a confidential physician/patient relationship. If the physician discovers a condition affecting the employees' capability to wear a respirator, the physician shall advise the employee, and make an appropriate entry in the employee's confidential medical record.

These guidelines (as adapted by each location) could be appended to the written plan, or otherwise made available to the employees.

These guidelines are intended to assure a basic program, using existing medical examinations to assess physical capability. Some locations may have alternative approaches that go beyond the basic program envisioned by the guideline. Alternative approaches that result in greater assurance of physical capability may also be used.

A special medical condition which may be encountered occasionally is a mental condition (e.g. phobia) which may affect the individual's use of a respirator. Some of these conditions may be overcome by sensitive education and training. Severe cases should be handled on a case-by-case basis, by referral to an appropriate physician.

F. Periodic Evaluation

The respirator program must be evaluated periodically for continued effectiveness. This evaluation includes a review of procedures for respirator selection and use, adequacy of training and fitting programs, respirator cleaning, maintenance, and storage procedures, as well as adherence to established procedures by management and workers alike.

The following basic references provide information and guidance.

- a. A Guide To Industrial Respiratory Protection, John A. Pritchard, NIOSH, 76-189, June 1976.
- b. Respiratory Protection, A Manual and Guideline, American Industrial Hygiene Association, 1980.

- c. Practices for Respiratory Protection, ANSI 288.2-1980 (Appendix C)
- d. NIOSH Certified Equipment List as of June 1, 1980
NIOSH 80-144, October, 1980.

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