

ASBESTOS WORKERS MUST DRESS FOR SUCCESS

If your asbestos workers don't make the best-dressed list for personal protection, the government might make a federal case

Whether an asbestos-abatement contractor follows the OSHA asbestos standard or the EPA guideline for asbestos workers, a thorough knowledge of respiratory protection equipment and protective clothing will be crucial to designing a proper industrial hygiene program.

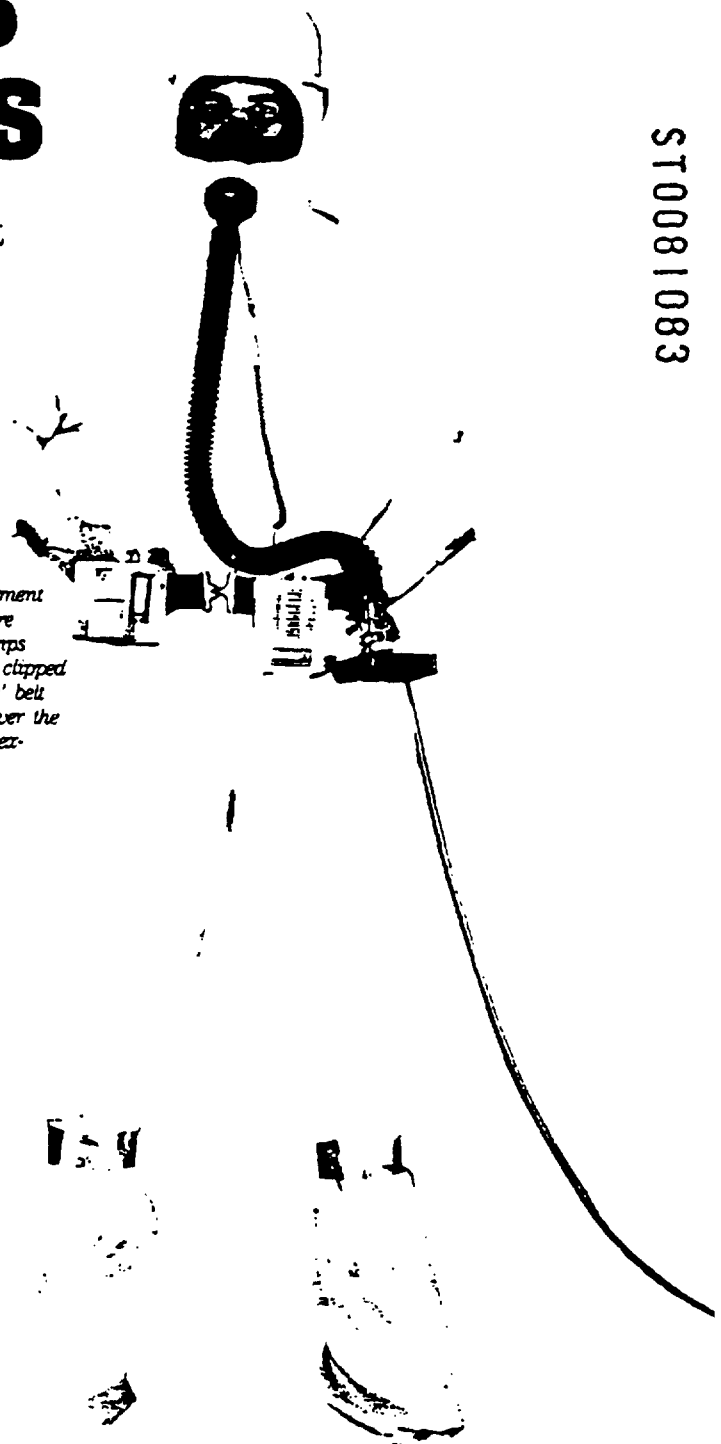
Respiratory Protection

Most asbestos-related diseases, such as asbestosis and mesothelioma, attack the respiratory system. For an industrial hygiene program geared for asbestos, proper respiratory protection equipment, therefore, should be a prime consideration.

The EPA/NIOSH guideline meets or exceeds the highest respiratory protection requirements cited in the OSHA standards. EPA/NIOSH recommends that workers in contact with asbestos at any level use either pressure-demand self-contained breathing apparatus (SCBA) or pressure-demand combination respirators.

Pressure-demand respirators are designed to maintain slight positive air pressure inside the facepiece whether the wearer is inhaling or exhaling. This helps prevent contami-

Asbestos-abatement workers require sampling pumps which can be clipped to the workers' belt and operate over the entire 8-hour exposure period.



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Protection Over OSHA Exposure Range

In contrast to NIOSH, OSHA allows a wide range of minimal respiratory protection equipment over a range of exposure levels. Here's how the exposure levels and required respiratory protection equipment break down:

LEVEL ONE (10xPEL)	LEVEL TWO (50xPEL)	LEVEL THREE (100xPEL)	LEVEL FOUR (1000xPEL)	LEVEL FIVE (More than 1000xPEL)
Exposure Level Zero to 2 f/cc	Exposure Level 2 to 10 f/cc	Exposure Level 10 to 20 f/cc	Exposure Level 20 to 200 f/cc	Exposure Level More than 200 f/cc
Minimum Protection Half-mask air-purifying respirator with high-efficiency filter.	Minimum Protection Full-facepiece air-purifying respirator with high-efficiency filter.	Minimum Protection Powered air-purifying respirator equipped with high-efficiency filters or supplied-air respirator operated in the pressure-demand mode.	Minimum Protection Full-facepiece supplied-air respirator operated in the pressure-demand mode.	Minimum Protection Full-facepiece supplied-air respirator operated in pressure-demand mode equipped with an auxiliary positive-pressure self-contained breathing apparatus (SCBA).
Explanation Air-purifying respirators remove contaminants by filtering inhaled air. Faceplates are generally equipped with a disposable air-purifying element. Filter-type respirators give respiratory protection from asbestos fibers. If half-mask respirators are worn, optional eye protection may be desired. Filters are particulate strainers made of fibrous material that traps harmful particles as air is inhaled. Asbestos workers should use high-efficiency (Type-H) cartridge filters, which usually have a magenta ring around the cartridge.	Explanation Same as Level One	Explanation Workers may use either a positive air pressure respirator (PAPR), a constant-flow air line, or a combination constant-flow air line/air purifying device. PAPRs are positive-pressure HEPA filtered respirators with a motor blower assembly that draws air through the filtering element to the facepiece. Because PAPRs are not tethered to an air line, workers are more mobile; also, continuous air flow cools workers' faces for greater comfort in many instances. Half-mask and full-facepiece designs are available. Constant-flow air-line respirators and their hybrid combination units differ from supplied-air devices in two main ways: First, a continuous air flow is delivered; and second, because air flow is constant, a compressor is generally used as the air source since tanks would be quickly depleted.	Explanation Full-facepiece supplied-air respirator operated in the pressure-demand mode.	Explanation Full-facepiece supplied-air respirator operated in pressure-demand mode, equipped with an auxiliary positive-pressure self-contained breathing apparatus (SCBA).



OSHA permits using at least a Powered Air-Purifying Respirator equipped with a high-efficiency filter when asbestos exposures range from 10 f/cc to 20 f/cc.



Continuous-flow air-lines equipped with air-purifying elements like this also meet OSHA's minimum respiratory protection requirements for mid-range asbestos exposure levels (10 f/cc to 20 f/cc).



The OSHA standards require that employers equip workers with a minimum of filter-type respirators with high-efficiency filters for low levels of exposure (2 f/cc to 10 f/cc).

tion of engineering controls — where practical — and work procedures to reduce exposure to within the PEL.

Both standards call for the use of respirators where engineering controls and work practices cannot feasibly reduce exposure to the PEL.

The adapted table from the new standards on page 39 shows the types of respirators required under the new standards vis-a-vis airborne concentrations of asbestos fibers.

While the table shows required respirators for various levels of asbestos exposure, only those intimately familiar with the requirements of the old standard can recognize immediately the major changes in respirator selection imposed by the new standard. Two of the key differences are these:

- Respirators approved by NIOSH/MSHA for dusts and mists and asbestos-containing dusts and mists (that is, approved for dusts and mists having a TWA not less than 0.05 mg/m^3) are no longer legally acceptable for use against asbestos since 0.2 f/cc converts to a concentration lower than 0.05 mg/m^3 .

LOWEST PROTECTION. Now the lowest level of acceptable protection is the half-mask air-purifying respirator with high efficiency filter (approved for dusts, fumes and mists having a TWA less than 0.05 mg/m^3). This change makes filters and disposable respirators of the "non-high efficiency type" unacceptable to OSHA for asbestos protection.

- New levels of protection have been established for certain categories of respirators. From 10 to 50 times the PEL, full facepiece, negative-pressure respirators with high efficiency filters are the minimum protection accepted. Between 50 and 100 times the PEL, either powered air-purifying respirators with high efficiency filters or continuous flow airline respirators are the minimum accepted.

This represents a reduction in the protection factors for continuous flow airline respirators. Now, only fullface pressure demand airline respirators (or presumably self-contained breathing apparatus) are acceptable for concentrations more than 100 times the PEL.

Whether OSHA's asbestos standards—as written—will survive the various court challenges now in progress remains to be seen. Some observers anticipate at least one revision—the addition of a short-term exposure limit (STEL) to the standard.

A STEL would specify procedures and appropriate respiratory protection for workers exposed to potentially high levels of asbestos in jobs of short duration. Meanwhile, EPA, with NIOSH-written guidelines, is recommending standards for respiratory protection that are even more stringent than the OSHA standards.

FEDERAL RECOMMENDATIONS. In the newly published *A Guide to Respiratory Protection for the Asbestos Abatement Industry*, NIOSH and EPA recommend a full facepiece, pressure-demand type "C" airline respirator with either emergency egress bottle or high efficiency backup filter for exposures above 0.1 f/cc.

This emergency egress bottle type of respiratory system already is available from a number of major respirator manufacturers. The high efficiency backup filter type, designed specifically for asbestos abatement work, is under accelerated development by a number of major respirator manufacturers. One model already has received NIOSH approval.

The new OSHA standards specify higher levels of respiratory protection for workers than did the previous standard. However, the new standards still are noticeably less stringent than the joint NIOSH/EPA respiratory guidance document.

While both sources continue to stimulate improvements in respirator technology and programs, it seems obvious that there will not be a unified OSHA, NIOSH and EPA position on respirators in the near future.

Thus, professionals within the asbestos detection and control industry still will be faced with some tough decisions concerning respirator selection and use. ■

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