

OSHA Clarifies Respirator Selection For Diisocyanates

Air-purifying respirators can be used safely and effectively to reduce exposures to common diisocyanates.

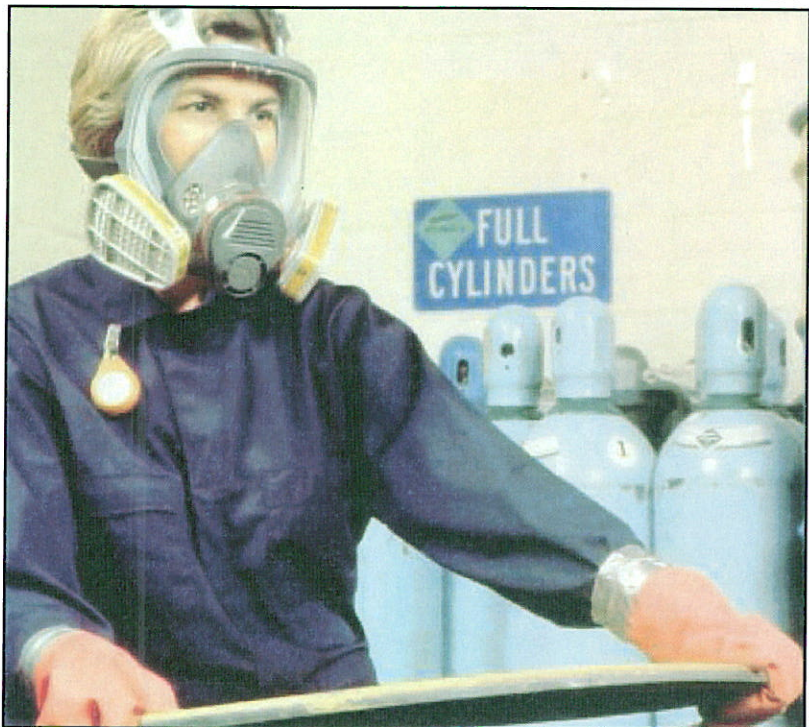
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When OSHA revised its respiratory protection regulation (29 CFR 1910.134) in 1998, one of the most significant provisions requires most employers who use gas or vapor air-purifying respirators to develop cartridge change schedules based on objective information or data. This provision applies whether or not the contaminant has adequate warning properties:

“Where an effective change schedule is implemented, air-purifying gas and vapor respirators may be used for hazardous chemicals, including those with few or no warning properties.”

While no chemicals are excepted by the regulation or the compliance directive, some users were still uncertain whether air-purifying respirators can be used for common diisocyanates such as toluene-2,4-diisocyanate, hexamethylene-1,6-diisocyanate and methylene bisphenyl isocyanate. OSHA has clarified its position on this issue in a letter dated July 18, 2000, indicating that air-purifying respirators may be used if all requirements of 1910.134 are met and other potential hazards are addressed. The letter is available at www.3M.com/occsafety/html/fregulations.html.

Historically, supplied-air respirators have been used for exposures to common diisocyanates. This was expected because OSHA's original respiratory protection regulation used a decision logic that did not allow air-purifying respirators to be used for protection against gases or vapors with poor warning properties. A contaminant is said to have adequate warning properties if it has persistent odor or irritation effects at concentrations at or below the exposure limit. Reported odor thresholds for



OSHA permits air-purifying respirators for protection against common diisocyanates if all requirements of respirator standard 1910.134 are met and other potential hazards are addressed.

diisocyanates range from two to more than 10 times their exposure limits. Therefore, diisocyanates have poor warning properties.

Misconceptions

If the revised respiratory protection regulation requires cartridge change schedules to be used instead of reliance on warning properties, why have some been concerned about the suitability of air-purifying respirators for diisocyanates? It seems that their concerns are based on one or more of four misconceptions:

Misconception No. 1: Air-purifying respirators should not be used because diisocyanates have poor warning properties.

Although OSHA specifically permits change schedules *in lieu of* sensory warning properties, some health and safety professionals argue this is not a safe practice. They believe diisocyanates could enter a facepiece through a spent cartridge or defect (e.g., a torn exhalation valve), and the user would be unaware, risking prolonged exposure. In reality, this potential exists for any gas or vapor with poor warning properties and for all par-