NIOSH Policy Statement

NIOSH Respirator Use Policy for Protection Against Carcinogens

In September 1995, NIOSH issued a new policy for developing recommended exposure limits (RELs) for substances, including carcinogens. This policy states:

For the past 20 plus years, NIOSH has subscribed to a carcinogen policy that was published in 1976 by Edward J. Fairchild II, Associate Director for Cincinnati Operations (Ann. N. Y. Acad. Sci. 271:200-207), which called for "no detectable exposure levels for proven carcinogenic substances." This was in response to a generic OSHA rulemaking on carcinogens. Because of advances in science and in approaches to risk assessment and risk management, NIOSH is here adopting a more inclusive policy. NIOSH-recommended exposure limits (REL) will be based on risk evaluations using human or animal health effects data, and on an assessment of what levels can be feasibly achieved by engineering controls and measured by analytical techniques. To the extent feasible, NIOSH will project not only a no-effect exposure, but also exposure levels at which there may be residual risks. This policy applies to all workplace hazards, including carcinogens, and is responsive to Section 20(a)(3) of the Occupational Safety and Health Act of 1970, which charges NIOSH to "... describe exposure levels that are safe for various periods of employment, including but not limited to the exposure levels at which no employee will suffer impaired health or functional capacities or diminished life expectancy as a result of his work experience." September 1995.

The effect of this new policy will be the development, whenever possible, of quantitative RELs that are based on human and/or animal data, as well as on the consideration of technologic feasibility for controlling workplace exposures to the REL. Under the old policy, NIOSH developed RELs for most carcinogens were non-quantitative values labeled "lowest feasible concentration (LFC)." [Note: There are a few exceptions to LFC RELs for carcinogens; e.g., RELs for asbestos, formaldehyde, benzene, ethylene oxide, and radon daughters are quantitative values based primarily on analytic limits of detection or technologic feasibility. Also, in 1989, NIOSH adopted several quantitative RELs for carcinogens from OSHA as part of their permissible exposure limit (PEL) update.]

Under the old policy, NIOSH recommended only the "most protective respirators" whenever exposure to carcinogens exceeded: (1) the REL (when a quantitative REL existed), or (2) the analytic limit of detection (LOD) for LFC RELs. The old policy created an impractical dichotomy in respiratory protection for carcinogens; i.e., no respirator was recommended for exposures less than the REL or LOD, whereas only the most protective respirators were recommended whenever these values were exceeded. Under the new policy, NIOSH will recommend the complete range of respirators (as determined by the NIOSH Respirator Decision Logic) for carcinogens with quantitative RELs. In this way, respirators will be consistently recommended regardless of whether a substance is a carcinogen or a non-carcinogen. It will also reduce worker exposure to carcinogens because workers for whom the use of the most protective respirator would not be practical will now have other respirator options.

One hundred thirty-five substances in the current NIOSH Pocket Guide are labeled as carcinogens. Seventy-five of these 135 substances have quantitative RELs. Of the 60 substances without an REL, 41 have OSHA PELs and 19 have no PEL. For carcinogens and noncarcinogens with no REL, the respirator selection should be based on other applicable exposure limits or on available scientific information.

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In summary, respirator recommendations for all substances (carcinogens and non-carcinogens) will be governed by the following selection criterion:

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\text{APF} > \left( \frac{\text{Workplace Airborne Concentration}}{\text{NIOSH REL}} \right),
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where the APF is the Assigned Protection Factor, a measure of the protection provided by a class of respirators and where the REL is the NIOSH Recommended Exposure Limit. In the absence of an REL, NIOSH recommends the user apply another appropriate exposure limit.

This selection criterion only applies to respirators used in a proper respirator program under the supervision of a properly trained respirator program administrator. Respirators used without such a program with all its essential elements can not be relied upon to protect workers.

It is emphasized that the APF in the above criterion is the minimum recommended by NIOSH. The use of respirator types with higher APFs is preferred. Specifically, NIOSH recommends always selecting the respirator type with the highest APF that is compatible with the conditions of each particular workplace. This is particularly true for workplace exposures to carcinogens since there may be no exposure level below which there is no risk of disease. When respirators are used to reduce exposure to carcinogens, the risk of disease will decrease as respirators with higher APFs are selected. It is further emphasized that the use of respirators in no way eliminates the need to reduce ambient workplace exposures to the lowest feasible level through the use of process changes and engineering controls.