

## BILLING CODE 4510-26-C

*C. Compliance Costs*

The proposal does not raise issues of technological feasibility because it requires only that employers use respirators already on the market. However, costs of the proposed APFs result from requiring some users to switch to more protective respirators than they currently use. When the proposed APF is lower than the baseline (current) APF, respirator users must upgrade to a more protective model. Both the 1992 ANSI Z88.2 Respiratory Protection Standard and the 1987 NIOSH RDL specify APFs for certain classes of respirators. The Agency assumed that employers currently use the ANSI or NIOSH APFs, or the APFs in the OSHA substance-specific standards, as applicable, to select respirators. While the Agency currently refers to the NIOSH RDL as its primary reference for APFs, in the absence of an applicable OSHA standard, this analysis assumes that, in most cases, adhering to the existing ANSI APFs fulfills employers' legal obligation for proper respirator selection under the existing Respiratory Protection Standard. However, in the case of full facepiece negative pressure respirators, the Agency has established that an APF of 50, as opposed to ANSI's APF of 100, is currently acceptable. In this regard, all but one of the substance-specific standards with APFs for full facepiece negative pressure respirators set an APF of 50. In addition, the existing respirator rule and its supporting preamble require that quantitative fit testing of full facepiece negative pressure respirators must achieve a fit factor of 500 when employees use them in atmospheres in excess of 10 times the PEL; this requirement assumes a safety factor of 10. Therefore, based on a fit factor of 500, such respirators would be safe to wear in atmospheres up to 50 times the PEL, consistent with similar requirements regarding respirator use found in existing standards for section 6(b)(5) chemicals.

For each respirator type, OSHA compared the proposed and current APF requirements, including existing APFs for section 6(b)(5) substances, and identified an incrementally more protective respirator model. To be adequate, the more protective respirator must have a proposed APF greater than the current APF.

#### 1. Number of Users Required To Upgrade Respirator Models

For a given respirator type, the number of users required to shift to a more protective respirator depends on

two factors: The total number of users of that type, and the percentage of those users for whom the ambient exposure level is greater than the proposed APF. While survey data are available to estimate the number of users, virtually no information is available in the literature that provides a basis for estimating the percentage of users required to upgrade respirators. The percentage of workers switching respirators would depend on the profile or frequency distribution of users' exposure to contaminants relative to the PEL. For example, the Agency proposed to lower the APF for full facepiece respirators used to protect against cotton dust from 100 to 50; accordingly, when workers have ambient exposures that are greater than 50 times the PEL, employers must upgrade the respirator from a full facepiece negative pressure respirator to a more protective respirator (e.g., a PAPR).

Because of the absence of data on this issue, OSHA made several assumptions regarding the requirement to upgrade respirators. First, OSHA assumed that employers use respirators only when their employees have exposures above the PEL. Second, OSHA assumed employers use the most inexpensive respirator permitted. These assumptions most likely overestimate the cost of compliance because many employers require their employees to use respirators when OSHA does not require such use, or they require respirators with higher APFs than OSHA currently requires. As a result, this analysis assumes shifts in respirators that employers may have implemented already.

The Agency estimated distributions of exposures above the PELs based on reports from its Integrated Management Information System describing workplace monitoring of section 6(b)(5) toxic substances performed during OSHA health inspections. Of the 9,095 samples reported above the PELs, 68.0 percent reported exposures between 1 and 5 times the PEL, 13.1 percent found exposures between 5 and 10 times the PEL, and 9.5 percent documented exposures between 10 and 25 times the PEL. Exposures for the remaining 9.4 percent of the samples were greater than 25 times the PEL. Based on these data, OSHA modeled the current exposure distribution for each respirator type.

#### 2. Incremental Costs of Upgrading Respirator Models

OSHA also analyzed the costs of upgrading from the current respirator to a more protective alternative. In doing so, OSHA estimated the annualized unit costs for each respirator type, including

equipment and accessory costs, and the costs for training and fit testing. OSHA then calculated the incremental cost for each combination of upgrades from an existing model to a more protective one, taking into account the effect of replacement before the end of the respirator's useful life. These annualized costs range from \$49.98 (for upgrading from a supplied-air, demand mode, full facepiece respirator to a supplied-air, continuous flow, half-mask respirator) to \$963.73 (for upgrading from a nonpowered, air-purifying full facepiece respirator to a full facepiece PAPR).

In certain instances, workers who use respirators under the substance-specific standards may have to upgrade to a SAR with an auxiliary escape SCBA. Several substance-specific standards currently specify SARs for exposures that exceed 1,000 times the PEL.<sup>3</sup> OSHA believes that workers are unlikely to regularly use respirators at such extreme exposure levels, *i.e.*, they are most likely to use them only in exceptional, possibly emergency-related situations. Furthermore, exposures at levels more than 1,000 times the PEL would generally be at or above levels deemed immediately dangerous to life or health (IDLH), so employers already are required by the Respiratory Protection Standard to provide each worker with a respirator that has SCBA capability. For these reasons, this PERISA estimated no impacts for these situations.<sup>4</sup>

#### 3. Aggregate Compliance Costs

For each respirator type affected by the proposed regulation, OSHA combined the incremental costs of upgrading to a more protective respirator, the estimated share of users forecast to upgrade, and the number of users involved to estimate the compliance costs associated with each respirator type. Table VI-4 shows estimated compliance costs for OSHA's proposed APF rule of \$4.6 million. The proposed rule would require 1,918 users of nonpowered air-purifying respirators to upgrade to some respirator more expensive than they are now using at a cost of \$1.8 million. The Agency estimates that 22,848 PAPR users would upgrade their respirators at a cost of \$2.3 million. A relatively small number of SAR users (5,110) would upgrade to more expensive respirators at a cost of

<sup>3</sup> These standards regulate cotton dust, coke oven emissions, acrylonitrile, arsenic, DBCP, ethylene oxide, and lead.

<sup>4</sup> Paragraph (d)(2) of the Respiratory Protection Standard requires employers to provide either a pressure demand SCBA or a pressure demand SAR with auxiliary SCBA to any employee who works in IDLH atmospheres.