

# *Just the Facts...*

## ***OSHA's Final Rule on Assigned Protection Factors for Respirators***

**WHAT'S NEW??** On August 26, 2006, the Federal Occupational Safety and Health Administration (OSHA) revised its existing Respiratory Protection Standard (29 CFR 1910.134) to add definitions and requirements for Assigned Protection Factors (APFs) and Maximum Use Concentrations (MUCs). These revisions also supersede the respirator selection provisions of existing substance-specific standards, with the exception of the 1,3-Butadiene standard. The final rule becomes effective November 22, 2006.

### **OSHA Assigned Protection Factors <sup>5</sup>**

Type of Respirator	Quarter mask	Half mask	Full facepiece	Helmet / hood	Loose-fitting facepiece
1. Air Purifying Respirator (APR) <sup>1,2</sup>	5	10 <sup>3</sup>	50	-----	-----
2. Powered Air Purifying Respirator (PAPR)	-----	50	1000	25 / 1000 <sup>4</sup>	25
3. Supplied Air Respirator (SAR) or Airline Respirator					
• Demand mode	-----	10	50	-----	-----
• Continuous flow mode	-----	50	1000	25 / 1000 <sup>4</sup>	25
• Pressure demand or other positive pressure mode	-----	50	1000	-----	-----
4. Self-Contained Breathing Apparatus (SCBA)					
• Demand mode	-----	10	50	50	-----
• Pressure-demand or other positive pressure mode	-----	-----	10,000	10,000	-----

<sup>1</sup> Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.

<sup>2</sup> The assigned protection factors are only effective when the employer implements a continuing, effective respirator program as required by 29 CFR 1910.134, including training, fit testing, maintenance, and use requirements.

<sup>3</sup> This APF category includes filtering facepieces, and half masks with elastomeric facepieces.

<sup>4</sup> The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1000 or greater to receive an APF of 1000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.

<sup>5</sup> These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).

**THE HISTORY...** On January 8, 1998, OSHA issued its current standard on Respiratory Protection, replacing the old 29 CFR 1910.134 which dated back to 1971. In the 1998 revision, OSHA decided to postpone their rulemaking on APFs and MUCs to a later date. In the interim, OSHA expected employers to use the best available information when selecting respirators, including the use of the NIOSH and ANSI APFs. At that time,

the most relevant APFs included those published in the 1987 NIOSH Respirator Decision Logic, and the 1992 ANSI Z88.2 Standard on Respiratory Protection. In 2004, NIOSH revised their APFs and published them in their Respirator Selection Logic. The ANSI Z88.2-1992 Respiratory Protection standard was withdrawn by ANSI in 2003. While a revised ANSI Z88.2 standard has been written, the final ANSI standard has yet to be published (as of November 2006) since it is currently under appeal.

### A Comparison of Past and Present APFs

Type of Respirator	OSHA 29 CFR 1910.134 (2006)	NIOSH Decision Logic (2004)	ANSI Z88.2 (1992) <sup>e</sup>	ANSI Z88.2 (draft revision)
APR - quarter mask	5	5	10	5
APR - filtering facepiece	10	10	10	5
APR - tight fitting half mask	10	10	10	10
APR - tight fitting full face (if part. filter ≠ N-P-R 100)	50	10	100	50 <sup>d</sup>
APR - tight fitting full face (if part. filter = N-P-R 100)	50	50	100	50 <sup>d</sup>
PAPR - tight fitting half mask	50	50	50	50
PAPR - tight fitting full facepiece	1000	50	1000 <sup>b</sup>	1000
PAPR - helmet/hood	25/1000 <sup>a</sup>	25	1000 <sup>b</sup>	1000
PAPR - loose fitting	25	25	25	25
SAR - demand mode - half mask	10	10	10	----
SAR - demand mode - full facepiece	50	50	100	----
SAR - continuous flow - half mask	50	50	50	250
SAR - continuous flow - full facepiece	1000	50	1000	1000
SAR - continuous flow - helmet/hood	25/1000 <sup>a</sup>	25	1000	1000
SAR - continuous flow - loose fitting	25	25	25	25
SAR - pressure demand - half mask	50	1000	50	250
SAR - pressure demand - full facepiece	1000	2000	1000	1000
Combo SAR/SCBA - pressure demand full facepiece	----	10000	----	----
SCBA - demand mode - half mask	10	----	10	----
SCBA - demand mode - full facepiece	50	50	100	----
SCBA - demand mode - helmet/hood	50	----	----	----
SCBA - pressure demand - full facepiece	10000	10000	10000 <sup>c</sup>	10000 <sup>c</sup>
SCBA - pressure demand - helmet/hood	10000	----	----	10000 <sup>c</sup>

<sup>a</sup> Employer must have evidence provided by manufacturer that testing of these devices demonstrates performance at a level of protection of 1000 or greater

<sup>b</sup> For HEPA filter if used for particulate protection; if less than HEPA, APF = 100

<sup>c</sup> For emergency planning purposes only

<sup>d</sup> For QNFT, otherwise APF = 10 for QLFT

<sup>e</sup> Rescinded in 2003

**HOW DOES THIS AFFECT THE ARMY??** There should be little impact on the Army and its respiratory protection program, but please be aware of the following:

- For PAPRS with tight-fitting facepieces, the OSHA APF is 1000 while the NIOSH APF is only 50. The reason for this discrepancy is unknown. However, OSHA based their APF on studies conducted with properly functioning units. One could surmise that the NIOSH APF is extremely conservative and assumes a worst-case scenario of blower or battery failure.
- For PAPRS with a hood or helmet, OSHA assigns an APF of 1000, but only if the manufacturer can produce evidence that testing of these devices has demonstrated performance at a level of protection of 1000 or greater (e.g.: the air inside the facepiece is 1000 times cleaner than the outside ambient air). Personnel involved with their installation/unit respiratory protection programs need to be aware of this requirement if they plan to use hooded/helmeted PAPRS at the 1000 APF. Otherwise, the default APF is 25.
- OSHA now has a definition for “maximum use concentration” (MUC), which is virtually identical to the NIOSH definition in their 2004 Respirator Selection Logic. However, in the absence of an OSHA permissible exposure limit (PEL), OSHA does require an employer to “determine a MUC on the basis of relevant available information and informed professional judgment.” This can include the use of ACGIH Threshold Limit Values (TLVs), NIOSH Recommended Exposure Limits (RELs), AIHA Workplace Environmental Exposure Levels (WEELs), etc.
- Assigned protection factors relate to the assumed calculated protection afforded the wearer by the facepiece type. Actual use of a respirator in a contaminated environment must include other limiting factors such as canister and cartridge use limits, or dermal exposure.