



## RESPIRATORY PROTECTION PROGRAM – APPENDIX B

# SELECTION GUIDELINES FOR AIR-PURIFYING RESPIRATORS

**WARNING! Air-purifying respirators** filter out only those substances specified on the associated filter cartridges.

**DO NOT USE an air-purifying respirator in the following circumstances:**

- the atmosphere is oxygen-deficient (<19.5 % oxygen).
- the atmosphere is immediately dangerous to life or health (IDLH<sup>3</sup>), e.g., chlorine gas at or above 10 ppm.
- the atmosphere contains a hazardous substance that has poor warning properties, e.g., carbon monoxide (odorless).
- the atmosphere contains a hazardous substance at a concentration higher than the capacity listed on available respirator filter cartridges.

***If you are unsure of any of the above conditions, contact Environmental Health & Safety at 213-740-6448.***

1. Department / Workgroup:

2. Complete the following table for each activity in Appendix A that uses a concentration at or above the PEL.

Activity	Hazardous Material(s)	Max. Conc. <sup>1</sup>	PEL <sup>2</sup>	IDLH <sup>3</sup>	Has warning properties?	Minimum APF Needed <sup>4</sup> (Conc. / PEL)	Type Respirator Needed <sup>5</sup>
Example: Lab Procedure #17, Fungicide Analysis (5 hours)	Formaldehyde	10	.75	Y / N	Y / N	12.5	H / F / S
A				Y / N	Y / N		H / F / S
B				Y / N	Y / N		H / F / S
C				Y / N	Y / N		H / F / S
D				Y / N	Y / N		H / F / S
E				Y / N	Y / N		H / F / S
F				Y / N	Y / N		H / F / S
G				Y / N	Y / N		H / F / S

<sup>1</sup> Max. Conc.: Maximum airborne concentration of the material to which employees may be exposed. This value should be determined via industrial hygiene sampling or calculation, and found on a completed Appendix A, Hazardous Materials and Control Measures Used.

<sup>2</sup> PEL: Permissible Exposure Limit. The regulatory maximum permissible exposure limit established by the Occupational Safety and Health Administration (OSHA).

<sup>3</sup> IDLH: An atmosphere immediately dangerous to life or health is one containing less than 16.5 percent oxygen or containing air contaminants whose toxicity or high concentration would endanger the life of a person breathing them even for a short period of time. See MSDS for specifics on a particular substance or mixture; for assistance call EH&S at (213) 740-6448.

<sup>4</sup> APF: Assigned Protection Factor. (Divide “Max. Conc.” from column 4, by PEL from column 5.)

<sup>5</sup> Type Respirator Needed: **H** (half-face, APF ≤ 10); **F** (full face, APF ≤ 50); **S** (supplied air, APF ≤ 100).

**RESPIRATOR SELECTION**

Select respirators according to the hazards to which employees are exposed. Review your department's completed Hazardous Materials and Control Measures forms (Appendix A). Consider each potential contaminant's chemical and physical properties, including toxicity and concentration, as well as synergistic effects. Determine the maximum concentration of each substance to which employees might be exposed; compare it against the substance's Permissible Exposure Limit (PEL<sup>2</sup>). Choose respirators that have an assigned protection factor (APF) which, when multiplied by the substances' PEL, is greater than the maximum concentration. Environmental Health and Safety is available to provide an assessment of potential exposure, and to assist with respirator selection.

For protection against **gases and vapors**, use either

- 1) An atmosphere-supplying respirator, or
- 2) An air-purifying respirator, where
  - a. The respirator or cartridge has a NIOSH certified end-of-service-life indicator (ESLI) for the contaminant; or
  - b. If no appropriate ESLI exists, a cartridge change-out schedule has been developed based on objective information or data.

Note: Each department must develop a written change-out schedule for the cartridges used in department activities, as found in Appendix I.

For protection against **particulates**, use either

- 1) An atmosphere-supplying respirator, or
- 2) An air-purifying respirator equipped with
  - a. a filter certified by NIOSH under 30 CFR part 11 as a high efficiency particulate air (HEPA) filter, or
  - b. a filter certified for particulates by NIOSH under 42 CFR part 84; or
  - c. (for particles that primarily have mass median aerodynamic diameters (MMAD)  $\geq 2$  micrometers) any NIOSH certified particulate filter.

Entry into atmospheres that may be oxygen-deficient, that contain substances having insufficient warning properties, that are immediately dangerous to life or health, or that may be at a concentration above the limit listed on available filter cartridges, requires supplied-air respirators. When no reliable data is available to identify or reasonably estimate exposure levels (e.g., spill cleanup, emergency response, confined space entries, some maintenance and repair activities), the atmosphere must be considered IDLH<sup>3</sup>, and the highest level of respiratory protection must be used. Entry into IDLH atmospheres requires one of the following: a full-facepiece, positive pressure SCBA (self-contained breathing apparatus) certified for a minimum 30-minute service life; or a combination full-facepiece, positive pressure supplied-air respirator with an auxiliary self-contained air supply. Contact Environmental Health and Safety prior to the purchase or use of self-contained breathing apparatuses or supplied-air respirators; SCBA use must follow additional regulatory requirements, including monitoring of air tank contents and periodic tank certification.

Select only respiratory equipment that is jointly approved by the National Institute for Occupational Safety and Health (NIOSH), and the Mine Safety and Health Administration (MSHA).

Any one respirator model will not provide a proper fit for every person. Make available several different respirators, including a variety of sizes, from which employees can select during fit-testing. Fit-testing is conducted in a test atmosphere and will reveal a poorly fitting respirator.

Purchase and use only filter cartridges furnished by the respirator manufacturer. Cartridges are color coded and clearly labeled with a statement of the type of protection afforded by the filter.