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OFFICE OF INSPECTION AND ENFORCEMENT

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PROTECTION AFFORDED BY AIR-LINE RESPIRATORS AND SUPPLIED-AIR HOODS

Description of Circumstances:

When the Nuclear Regulatory Commission (NRC) established its current regulations and guidance on acceptable programs for respiratory protection (10 CFR Part 20, 20.103(c) and Regulatory Guide 8.15), it announced its intention to revise the guidance as better information could be obtained and made available. The Los Alamos Scientific Laboratory (LASL) has been developing pertinent information under NRC contract and has submitted a Progress Report on protection factors for air-line supplied-air respirators, LA-7098-PR, and an Informal Report on supplied-air hoods, LA-NUREG-6612-MS.

A. Air-line supplied-air respirators

The report on air-line respirators indicates that the protection provided (protection factor) by certain full facepiece and half-mask facepiece, demand-mode-operated, air-line, supplied-air respirators is significantly less than was previously estimated from the limited information that was available when the protection factors in the current NRC guidance were published (Regulatory Guide 8.15, Table 1). Specifically, the current guidance lists protection factors of 10 for half-mask facepieces and 50 for full facepieces that are used with air-line equipment that is operated in the demand mode. The information in the LASL report indicates that much of the equipment of this type, even though NIOSH-MESA* tested and certified, does not achieve a protection factor greater than 5. The report recommends that such equipment no longer be certified by NIOSH nor approved by NRC for use.

B. Supplied-air hoods

The report on supplied-air hoods emphasizes the importance of maintaining a minimum air flow of 6 cubic feet per minute (approximately 170 lpm), and recommends a protection factor of 1,000 at this air flow if calibrated

* National Institute for Occupational Safety and Health-Mining Enforcement and Safety Administration, responsible for respirator certification. MESA is now designated MSHA, Mining Safety and Health Administration.

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air-line pressure gauges or flow measuring equipment are used. A protection factor of 2,000, as given in the current NRC guidance, is recommended for supplied-air hoods only when air flows are maintained at the manufacturer's recommended maximum rate.

The NRC will further evaluate the information in these reports and other pertinent information and will revise its guidance as appropriate, e.g., by reducing the protection factors permitted, or by eliminating the approvals for or specifying particular conditions for the use of such equipment.

It is recommended that the following actions be considered by all licensees who have respiratory protection programs:

1. A protection factor of no more than 5 should be utilized for half-mask and full facepieces that are used with approved air-line equipment operated in the demand mode.
2. A protection factor of no more than 1,000 should be utilized for approved supplied-air hoods when the air flow is maintained at 6 cubic feet per minute and calibrated air-line pressure gauges or flow measuring equipment is used.
3. A protection factor of 2,000 should be utilized for approved supplied-air hoods only when the air flow is maintained at the manufacturer's recommended maximum rate, this rate is greater than 6 cfm, and calibrated air-line pressure gauges or flow measuring equipment is used.

Actions To Be Taken By Licensees:

For all power reactor facilities with an operating license, all research reactors with an operating license, all fuel cycle facilities with an operating license and all material licensees receiving this Bulletin:

1. If your respiratory protection program includes the use of air-line supplied-air respirators operated in the demand mode (not respirators operated in continuous-flow or pressure-demand modes) or supplied-air hoods, describe the actions you plan to take to assure proper protection of personnel in consideration of the information provided by this Bulletin.

2. If your respiratory protection program includes the use of air-line supplied-air respirators operated in the demand mode (not respirators operated in continuous-flow or pressure-demand modes), determine the manufacturer, model and number of half-mask and full facepiece equipment used in this mode.
3. Report in writing within 60 days the information required in items 1 and 2, if applicable. Reports are to be submitted to the Director of the appropriate NRC Regional Office listed in Appendix D of 10 CFR Part 20 and a copy forwarded to the Director, Division of Fuel Facilities and Materials Safety Inspection, U.S. NRC, Office of Inspection and Enforcement, Washington, D.C. 20555.

Approval by GAO, B180225(R0072); clearance expires 7/31/80. Approval was given under a blanket clearance specifically for identified generic problems.