ASSESSING HAZARDS AND PPE SELECTION

By Debbie L. Vilar, MBA and Chuck Roberts

Each year, thousands of American workers suffer injuries, illnesses, or death on the job. To assist employers and employees in implementing regulatory compliance requirements aimed at reducing such occurrences, OSHA has published Non-mandatory Compliance Guidelines for Hazard Assessment and Personal Protective Equipment (PPE) Selection (29 CFR 1910 Subpart I Appendix B). Although these guidelines are helpful, they should not be used as a substitute for a thorough knowledge of the environmental, health, and safety aspects of PPE selection, as there are nuances not fully explained in the guidelines. Additionally, PPE should be used in conjunction with an appropriately designed Health and Safety Program or Plan. It should also be noted that employers are required to first utilize engineering controls to reduce worker exposure to hazards to the extent technically and economically feasible (e.g., shielding workers with sound insulation as opposed to requiring workers to wear hearing protection). Appropriate PPE is then selected to mitigate remaining hazards.

In selecting PPE, it is very important to match the particular characteristics of various types of PPE to the specific hazard (e.g., different types of gloves are required to mitigate cut or chemical exposure hazards, and different materials of construction are required to provide protection from different chemicals). Thus, proper PPE selection requires a combination of identifying and understanding the hazards, knowledge of PPE performance characteristics, and a good degree of common sense.

To adequately identify and characterize the hazards to which a worker may be exposed, both the environment and the worker's assigned tasks must be considered. Where feasible, a site walk-through can be very helpful in making such determinations; however, a site walk-through may not be possible without first specifying PPE. All three exposure routes for potential chemical exposure should be considered (i.e., inhalation, dermal exposure, and ingestion), as well as physical hazards (e.g., impact, penetration, compression, heat, and electrical energy), with specific attention to protection of the foot, head, eye, face, and other specific body parts that could be injured in performing the assigned job duties.

Respirator

Consideration should also be given to the possibility of simultaneous exposure to multiple hazards, and how this may influence the selection of appropriate PPE (e.g., conditions of extreme heat may make some approaches to reducing chemical exposure infeasible, or necessitate additional mitigation measures such as frequent breaks). In selecting PPE, adequate protection against the highest level of each identified hazard should be provided, and specific thresholds should be established for upgrading the level of PPE if conditions encountered on the job differ from those that are anticipated (e.g., transitioning from a cartridge respirator to a self-contained breathing apparatus if the presence of hazardous chemical vapors exceed a specified concentration at which the cartridge respirator is no longer adequate).

In order for PPE to provide the intended protection, it is also important that the PPE properly fit the employee, and that the employee understand how to properly wear and use the PPE, as well as understand its limitations. Certain types of PPE, such as respirators, may not be used without proper training and fit testing, and require considerable maintenance.

In many cases, the use of PPE can adversely impact a worker's dexterity, field of vision, and other abilities to sense hazards and move about effectively, as well as place additional physical stress on the employee (e.g., the use of a respirator can make breathing more laborious). Thus, consideration must also be given to managing work assignments in a manner that accounts for these collateral risk factors.

In summary, PPE can be very effective at reducing potential risks to worker health and safety. Guidelines are available to assist in assessing job hazards and selecting appropriate PPE, but care must be taken to consider a wide range of factors to properly mitigate the identified hazards

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