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16. Abstract (Limit: 200 words) This testimony concerns the comments of NIOSH regarding the proposed revision of the protective equipment standards by OSHA. Concerning performance versus design standards, NIOSH contends that the latest versions of the personal protective equipment (PPE) standards that OSHA proposes to adopt have fewer design restrictions and therefore represent a net benefit to workers because PPE manufacturers will have a greater opportunity to develop PPE designs that are safer and more acceptable to workers. Concerning third party certification, NIOSH suggests that many models of PPE failed to comply with OSHA standards as advertised by their manufacturer. NIOSH also recognizes that third party certification may be a necessary requirement to assure that PPEs meet minimum performance criteria. Concerning protection to front, back and sides of the head, NIOSH suggests that the OSHA rule include provisions to encourage the use of head protection devices that are more protective than those addressed in ANSI standard Z89.1-1986. NIOSH recommends that an effort be made to identify occupations that would benefit from more head protection. Other specifics addressed include women's safety footwear, more protective classes of foot protection, footwear hazards, eye protection and exposures, identification of eye protection, and PPE systems.

17. Document Analysis a. Descriptors

b. Identifiers/Open-Ended Terms NIOSH-Publication, NIOSH-Author, NIOSH-Testimony, Lemen-R-A, Eye-protection, Protective-clothing, Headgear, Safety-equipment, Safety-practices

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NIOSH Comments to DOL

COMMENTS OF THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH ON THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION'S PROPOSED RULE ON PERSONAL PROTECTIVE EQUIPMENT FOR GENERAL INDUSTRY

29 CFR Part 1910
Docket No. S-060

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
National Institute for Occupational Safety and Health

October 16, 1989

The National Institute for Occupational Safety and Health (NIOSH) has reviewed the Occupational Safety and Health Administration's (OSHA's) proposed rule on personal protective equipment (PPE) for general industry [54 FR 33832]. NIOSH commends OSHA for the proposed revision of the protective equipment standards [29 CFR Part 1910.132, .133, .135, .136] which are outdated. Presently, OSHA requires administrative action to permit the use of innovative or newly developed PPE.

OSHA proposes to adopt the latest versions of three American National Standards Institute (ANSI) standards for PPE. These standards are: ANSI Z87.1-1989, "Practice for Occupational and Educational Eye and Face Protection;" ANSI Z89.1-1986, "Requirements for Protective Headwear for Industrial Workers;" and ANSI Z41.1-1983, "Personnel Protection-Protective Footwear." These proposed standards are to replace earlier versions of these same standards that were adopted by OSHA in its initial standard setting actions in 1971. The OSHA proposal represents an improvement over current OSHA regulations.

However, currently available Bureau of Labor Statistics (BLS) surveillance data [BLS 1980a; 1980b; 1981] indicate that injuries are occurring primarily because (1) workers fail to wear appropriate PPE and (2) the level of protection required by the standard is inadequate (helmets that only protect against a blow to the top of the head; safety shoes that don't protect against the high impact energies common in the workplace; safety eyewear that allows projectiles to injure the eye by entering from the side or under the edge of the protective device). Only rarely does injury occur because a PPE device fails to comply with the OSHA PPE standard. Therefore, OSHA and PPE manufacturers should promote both the increased use of PPE and improvement in the level of protection offered by PPE.

The following items are offered as points for consideration:

1. <u>Performance vs. Design Standards</u>

The ANSI PPE standards referenced in the current regulation are a mixture of design standards (such as a requirement that spectacle lenses must be 3 mm thick) and of performance standards (such as a requirement that spectacle lens must not be fractured by a 1" steel ball dropped 50"). The design standards inhibit innovation by PPE manufacturers and restrict the ways in which manufacturers can develop PPE that would be more acceptable to workers. This is significant because surveillance studies [BLS 1980a; 1980c; 1981] have indicated that most eye, face, head, and foot injuries occur to workers who are not wearing PPE. The latest versions of the PPE standards that OSHA proposes to adopt have fewer design restrictions and, therefore, represent a net benefit to workers because PPE manufacturers will have a greater opportunity to develop PPE designs that are safer and more acceptable to workers.

In all three sections (Eye and Face Protection [1910.133], Head Protection [1910.135], and Foot Protection [1910.136]) under a subsection titled "(b) Acceptable Design," the ANSI standards are referenced and it is stated that PPE "...shall comply with the design requirements" for the appropriate ANSI standard. NIOSH recommends that the wording for these sections be modified to state that PPE "...shall comply with design and performance requirements" of ANSI Z87.1, Z89.1, and Z41.1.

2. Third-Party Certification

OSHA has requested comments on whether it should include a requirement in the PPE standards that employees only use PPE that has been certified by an independent third party to meet the applicable standards. OSHA refers to the testing of PPE that was conducted in the early 1970's by NIOSH. This NIOSH testing indicated that many models of PPE failed to comply with OSHA standards as advertised by their manufacturer [NIOSH 1975a; 1975b; 1976a; 1976b; 1976c; 1976d; 1976e; 1977a; 1977b; 1977c; 1979]. However, NIOSH did test a number of PPE items that conformed to current standards [NIOSH 1977d; 1977e]. OSHA indicates that these failures identified a possible need for third-party certification similar to the NIOSH certification of respirators and the Underwriters' Laboratory (UL) certification of electrical equipment.

Furthermore, NIOSH recognizes that third-party certification may be a necessary requirement to assure that PPE meet minimum performance criteria. NIOSH recommends that PPE manufacturers be required to state that their equipment meets or exceeds the requirements of the ANSI standards. This statement should be available for, or placed on, every item sold to the public. NIOSH supports third-party certification to help ensure the adequate performance of PPE. NIOSH strongly recommends that the PPE manufacturer--not the PPE consumer--be responsible for the PPE testing.

3. Protection to Front, Back, and Sides of Head [1910.135]

A BLS study of head injuries [1980c] indicated that 83% of workers suffering a head injury were not wearing head protection. Of those who were wearing head protection, approximately 9% were struck on the top of the hard hat. The remaining 91% received blows to the back, side, or front brim of the hard hat, or to an unprotected part of the head. The ANSI Z89.1-1986 standard that OSHA proposes to adopt only provides for protection to the top of the head.

Currently, helmets are being marketed that provide impact protection to most parts of the head. OSHA standards should not inhibit the use of these more protective helmets. The OSHA rule should have provisions to encourage the use of head protection devices that are more protective

than those addressed in the ANSI Z89.1-1986 standard. An effort should be made to identify occupations that would benefit from more protective head protection.

4. Women's Safety Footwear [1910.136]

The proposed footwear standard includes criteria for women's protective footwear. On the surface this seems to be an improvement over the existing standard, but the women's standard appears to be less protective than that for men. In the impact test, men's shoes are required to provide a minimum clearance of 12.7 mm, while women's shoes need only provide a minimum clearance of 11.9 mm. Women's shoes should not be less protective than men's shoes [NIOSH 1976c]. NIOSH recommends that, unless OSHA has an objective explanation for this different clearance, the same minimum clearance should be required for both men's and women's shoes.

5. More Protective Classes of Foot Protection [1910.136]

The ANSI Z41.1 standard for foot protection provides for only three levels of protection corresponding to impact energies of 30, 50, and 75 ft.-lb. (75 ft.-lb. corresponds, for example, to a 25-lb. object dropped 3 ft.). A study by BLS [1981] found that nearly three-fifths of the 1,251 accidents studied resulted from falling objects striking the foot. About half of the falling objects were estimated to weigh at least 65 lbs. The objects fell from heights in excess of 4 ft. in approximately one out of six cases. A 65-lb. object dropped 4 ft. would have an impact energy of 260 ft.-lb.—far in excess of the 75 ft.-lb. provided for in the OSHA proposed rule. OSHA should not inhibit the marketing of safety footwear that provides protection greater than the highest ANSI Z41.1 class. Toward that end, OSHA's rule should include provisions to stimulate the production of more protective footwear.

6. Footwear Hazards [1910.136]

The ANSI Z46-1983 does not address footwear requirements to guard against hazards involving chemical or slipping hazards. In some work environments, the standard safety shoe will not provide adequate protection against chemicals. Chemicals such as acids and caustics will quickly destroy the shoe material while other chemicals may penetrate the shoe material and cause skin irritation. In reference to slipping, provisions should be made to provide coverage of shoes that are skid resistant to protect workers from slips and falls.

7. Eye Protection and Exposures [1910.133]

In section "(a) General Requirements (1)," the normal eye protection does not provide protection from chemical gases or vapors. Although goggles provide better protection, the use of goggles can cause other

problems such as fogging, trapping of gases or vapors inside the goggles, or creating areas for potential irritation where the goggles contact the skin. Where chemical gases or vapors are normally present, other PPE should be considered by the safety personnel evaluating the hazards.

8. Identification of Eye Protection [1910.133]

OSHA is proposing to delete the requirement that manufacturer identification be placed on eye and face protection (page 33836). OSHA's position is that this marking does not add or detract from the safety afforded by the protector.

NIOSH agrees with OSHA's position that the manufacturer's identification on the PPE does not help to assure a safe product. However, if third-party certification is required, NIOSH recommends that this certification be identified on the product. This identification would alert the consumer that the PPE meets minimum safety requirements. For example, the Underwriters' Laboratory (UL) marking on electrical components does not add to the safety of the product either; however, with the UL marking on the electrical component, there is some assurance that the product meets certain test procedures required by UL.

9. PPE Systems

An issue not addressed in the proposed OSHA rule is the difficulties workers encounter when wearing multiple items of PPE. For example, wearing protective eyewear and face shields for protection against certain types of hazards may interfere with the use of other types of PPE for reducing other risks (e.g., ear muffs for noise reduction or respiratory protection for airborne contaminants) [NIOSH 1987b]. Other areas of concern while wearing PPE are interferences with work-task performance, accelerated worker fatigue, and diminished senses which may increase safety hazards [NIOSH 1987a]. These are important factors to be considered in PPE design and use, and in OSHA's development of the final rule.

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