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August 4, 2006

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KY OSH PROGRAM INSTRUCTION 01-2004, Emergency Eyewash and Shower Equipment

REFERENCED STANDARD(S):

- 803 KAR 2:310, Medical services and first aid
- 29 CFR 1926.50, Medical services and first aid, adopted by 803 KAR 2:403
- 29 CFR 1910.124, General requirements for dipping and coating operations, adopted by 803 KAR 2:307
- 29 CFR 1910.1003, 13 Carcinogens, adopted by 803 KAR 2:320
- 29 CFR 1910.1048, Formaldehyde, adopted by 803 KAR 2:320
- 29 CFR 1910.1052, Methylene chloride, adopted by 803 KAR 2:320

SUBJECT

Emergency eyewash and shower equipment

PURPOSE

Clarification of Office of Occupational Safety and Health policy regarding emergency eyewash and shower equipment

SCOPE

General industry and construction activities which fall under the jurisdiction of the Office of Occupational Safety and Health

EFFECTIVE DATE

This INSTRUCTION is effective immediately and will remain in effect until cancelled or superseded.

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Kentucky Occupational Safety and Health Program

Instruction 01-2004 Emergency Eyewash & Shower Equipment

I. General Industry: 803 KAR 2:310; Medical Services and First Aid

Section 4. Where the eyes or body of any person may be exposed to injurious corrosive material, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use. Beginning October 15, 1993, such facilities shall comply with the provisions of the American National Standards Institute (ANSI) Z358.1-1990, "Standard for Emergency Eyewash and Shower Equipment," which is incorporated by reference, with the following exceptions:

(1) In remote areas where a person is visibly and audibly separated from co-workers, an audible or visible alarm shall activate to alert appropriate personnel when the unit is in use; or in the alternative, a two-way communication device shall be used. The alarm shall continue until the unit is no longer in use.

(2) The requirement that such facilities be tested according to the standard shall be changed from weekly to monthly.

II. Construction: 29 CFR 1926.50; Medical Services and First Aid, adopted by 803 KAR 2:403

(g) Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.

III. KY OSH Program Policy

1. Division of Compliance

a. General Industry: As required by 803 KAR 2:310, the ANSI standard Z358.1-1990, along with its two exceptions, must be met.

b. Construction: Because 1926.50(g) does not incorporate by ANSI by reference, the determination of "suitable facilities" should be based on ANSI Z358.1-1990. However, ANSI Z358.1-1990 should not be specifically referenced in the citation.

c. Citations

I. Classification: Citations should be classified as serious for failure to provide suitable eyewash/shower facilities, if travel to such facilities is in some way hindered, or the equipment does not meet the specifications set by ANSI Z-358.1-1990 when employees are potentially or actually exposed to injurious corrosives.

II. Severity: Determinations of severity depend on the type of injury or illness which could reasonably be expected to result from an exposure. Factors which may determine severity include the type of the corrosive used and the nature of its use.

III. Probability: Whether appropriate PPE was used, if the exposure was actual or potential, the occurrence of previous exposures, work practices and site conditions are among the factors which should be considered when assessing probability.

IV. Non-Corrosive Hazardous Chemicals: The provision of emergency eyewash/shower equipment for employees exposed to hazardous chemicals other than corrosives should also be assessed. In such cases, citation under KRS 338.031 (general duty) may be deemed appropriate following review by the program manager.

d. Legal Aspects: Little case law exists which addresses this topic. Some cases have involved the determination that a chemical is a “corrosive” based on Material Safety Data Sheet (MSDS) information as well as by direct measurement of pH. The determination of “adequate flow” for emergency eyewash/shower equipment has been based on field testing of the equipment’s flow.

2. Division of Education and Training

- a. General Industry: ANSI Z-358.1-1990, along with its two exceptions, must be met. Recommendations should be made for employers to follow the requirements of ANSI Z358.1-2004 and other recognized best practices.
- b. Construction: Because 1926.50(g) does not incorporate by ANSI by reference, the determination of “suitable facilities” should be based on ANSI Z358.1-1990. Recommendations should be made for employers to follow the requirements of ANSI Z358.1-2004 and other recognized best practices.
- c. Hazard Classification: Hazards should be classified as Serious for actual or potential exposure to injurious corrosive chemicals.
- d. Non-Corrosive Hazardous Chemicals: Recommendations should be made to follow ANSI Z138.1-2004 or other recognized best practices where employees are exposed to injurious chemicals other than corrosives. These may include, but are not limited to: solvents, particulates, and toxic chemicals.

IV. Technical Aspects

1. The Definition of “Injurious Corrosive.”

- 803 KAR 2:310, Section 4 and 29 CFR 1926.50(g) are limited to potential or actual exposure to “injurious corrosive” chemicals. Chemicals which cause only irritation are **not** included within the scope of these standards and do not require the provision of emergency eyewash/shower facilities.
- Corrosive: A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. Corrosives may be present as particulates, mists, vapors, or gases.
- Irritant: A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.
- Information provided by a chemical’s MSDS may provide assistance in making the determination as to whether or not the chemical is a corrosive.

2. Eyewash/Shower Terminology

- Plumbed: Connected to a constant fresh water supply line.
- Self-contained: Water or solution is stored in the unit, with no water line.
- Control Valve: Turns unit on, providing water or solution flow.

- Thermostatic Mixing Valve: Equipment installed in water supply lines which keeps water temperature within a set range, primarily so that it's not too hot.

4. Water or Solution Quality

- Water or rinse solution temperatures in excess of 100°F are harmful and can accelerate the damaging effects of some hazardous chemicals.
- Water and solution should be kept within a comfortable range (60° - 95°F).
- Recommendations should be made that plumbed units not be connected to hot water supply lines unless equipped with an effective thermostatic mixing valve.
- Eyewash/shower equipment may also require protection from freezing.
- Water delivered at high pressure can be harmful or contribute to tissue damage. See Appendix A of ANSI Z358.1-1990 regarding water capacity.

5. Accessibility and Location

- Consideration should be given to how an employee would safely and easily travel to, locate, and operate the unit after being exposed to the corrosive with which they work.
- The eyewash/shower is to be accessible within 10 seconds travel time from the location of exposure to the unit.
- When assessing eyewash/shower accessibility, special attention should be given to travel which requires passage through doorways, up or down stairs or ladders, and similar pathways.
- Assess any slip, trip, or fall hazards located in the path of travel to the eyewash/shower.
- Nearby electrical service should be appropriate for wet locations.

6. More Vertical General Industry Standards

- Other standards exist which may require the provision of suitable facilities for the quick drenching or flushing of the eyes and body but do not reference ANSI Z358.1 include the following:

1910.124(g)(2) – Dipping and Coating
 1910.124(g)(3) – Dipping and Coating
 1910.1003(d)(2)(vi) – Carcinogens

1910.1048(i)(3) – Formaldehyde
 1910.1052(i)(2) – Methylene Chloride
 803 KAR 2:015 Section(1) – Batteries

- For such standards, the determination of “suitable facilities” should be based on ANSI Z358.1-1990.
- ANSI Z358.1-1990 should not be specifically referenced in the SAVE of citations.
- Note that under 1910.124(g)(2), a drench hose does not have to meet ANSI Z358.1-1990.

Table 1
Emergency Showers
 Plumbed and Self-contained

From:
 Section 4 of ANSI Z358.1-1990.

Control Valve

- Actuates in 1 second or less.
- Once actuated, will remain in operation without requiring the use of the operator's hands.
- Easily located and accessible.

Performance

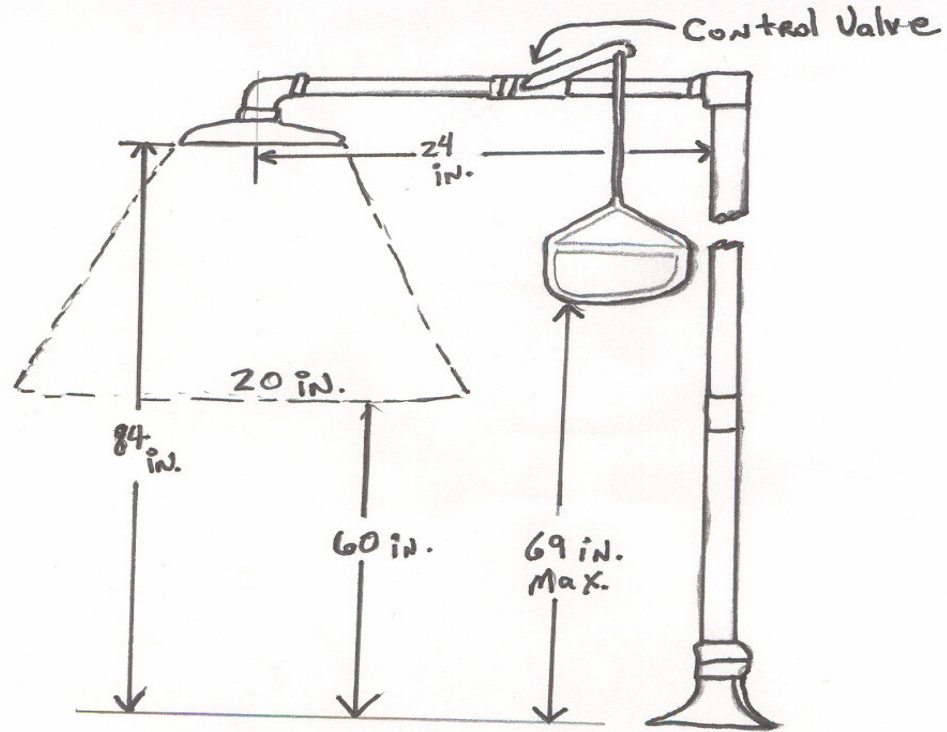
- 30 gal/min. for plumbed units
- 20 gal/min. for self-contained units.
- Spray pattern meets ANSI Z358.1-1990.

Location

- Identified with highly visible sign.
- Area has good lighting & visibility.
- Maximum of 10 seconds travel time to unit.

Maintenance and Training

- Monthly testing & line flushing (803 KAR 2:310).
- Self-contained tested per manufacturer's instructions
- Potentially exposed employees instructed in proper use.



Typical Emergency Shower

Table 2 Eyewash Equipment Plumbed and Self-contained From: Section 5 of ANSI Z358.1-1990.	Control Valve <ul style="list-style-type: none"> ○ Actuates in 1 second or less. ○ Once actuated, will remain in operation without requiring the use of the operator's hands. ○ Easily located & accessible.
	Nozzles <ul style="list-style-type: none"> ○ Nozzles are protected from contaminants by caps. ○ Caps do not require a separate operation to be removed.
	Performance <ul style="list-style-type: none"> ○ Minimum of 0.4 gal/min. for 15 minutes. ○ Spray pattern meets ANSI Z358.1-1990.
	Location <ul style="list-style-type: none"> ○ Identified with highly visible sign. ○ Area has good lighting & visibility. ○ Maximum of 10 seconds travel time to unit.
	Maintenance and Training <ul style="list-style-type: none"> ○ Monthly testing & line flushing (803 KAR 2:310). ○ Self-contained tested per manufacturer's instructions ○ Potentially exposed employees instructed in proper use.

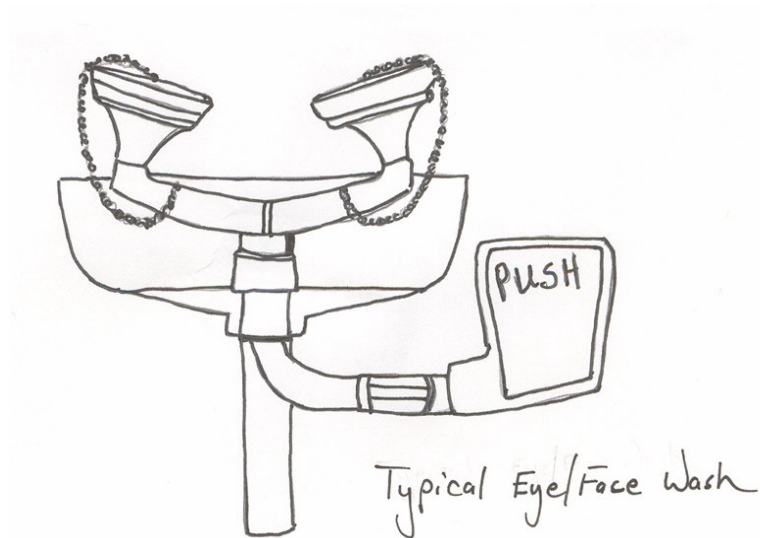


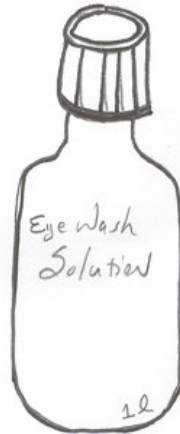
Table 3
Personal Eyewash Equipment

From:
Section 5 of ANSI Z358.1-1990.

NOTE:
These units used alone do *NOT* meet ANSI Z358.1-1990, but may be used in conjunction with other emergency equipment.

Maintenance and Training

- Per manufacturer's instructions.
- Potentially exposed employees instructed in proper use.



Typical Personal Eyewash Unit.

Table 4
Eye/Face Wash Equipment

From:
Section 7 of ANSI Z358.1-1990.

Control Valve

- Actuates in 1 second or less.
- Once actuated, will remain in operation without requiring the use of the operator's hands.
- Easily located & accessible.

Nozzles

- Nozzles are protected from contaminants by caps.
- Caps do not require a separate operation to be removed.

Performance

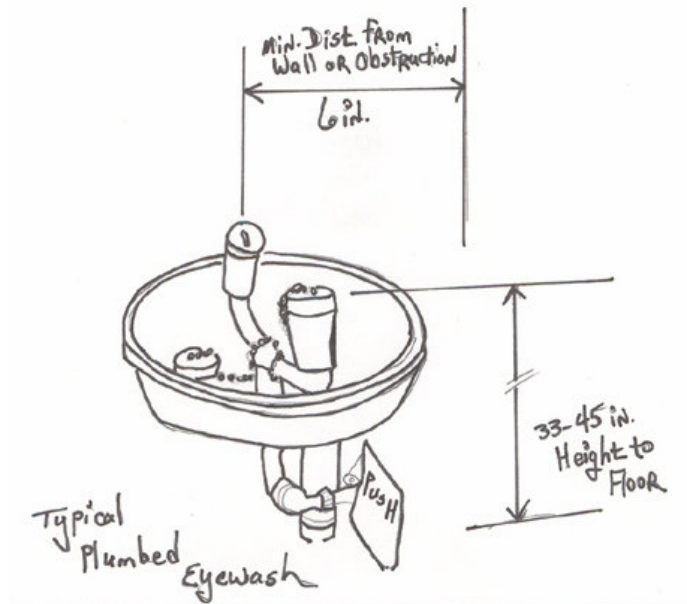
- Minimum of 3.0 gal/min. for 15 minutes.
- Spray pattern meets ANSI Z358.1-1990.

Location

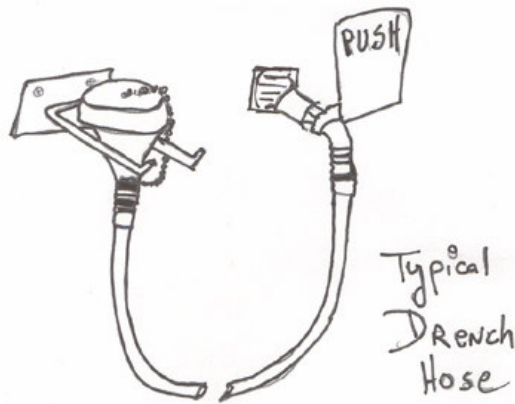
- Identified with highly visible sign.
- Area has good lighting & visibility.
- Maximum of 10 seconds travel time to unit.

Maintenance and Training

- Monthly testing & line flushing (803 KAR 2:310).
- Self-contained tested per manufacturer's instructions
- Potentially exposed employees instructed in proper use.



<p>Table 5 Hand-Held Drench Hoses</p> <p>From: Section 8 of ANSI Z358.1-1990</p> <p>NOTE: Unit alone does <i>NOT</i> meet ANSI Z358.1-1990, but may be used in conjunction with other emergency equipment.</p>	<p>Control Valve</p> <ul style="list-style-type: none"> ○ Actuates in 1 second or less. ○ Once actuated, will remain in operation without requiring the use of the operator's hands. ○ Easily located & accessible.
	<p>Nozzles</p> <ul style="list-style-type: none"> ○ Nozzles are protected from contaminants by caps. ○ Caps do not require a separate operation to be removed.
	<p>Performance</p> <ul style="list-style-type: none"> ○ Minimum of 3.0 gal/min. for 15 minutes. ○ Spray pattern meets ANSI Z358.1-1990.
	<p>Location</p> <ul style="list-style-type: none"> ○ Identified with highly visible sign. ○ Area has good lighting & visibility. ○ Maximum of 10 seconds travel time to unit.
	<p>Maintenance and Training</p> <ul style="list-style-type: none"> ○ Monthly testing & line flushing (803 KAR 2:310). ○ Self-contained tested per manufacturer's instructions ○ Potentially exposed employees instructed in proper use.



**Table 6
Combination Units**

From:
Section 9 of ANSI Z358.1-1990.

Control Valves

- Each valve meets the requirements of ANSI Z358.1-1990, Sections 4, 5, 7, and/or 8, depending on which components are included in the unit.

Performance

- Designed so components operate separately of each other.
- Eyewash components meet the requirements of ANSI Z358.1-1990, Section 4.
- Shower components meet the requirements of ANSI Z358.1-1990, Section 5.
- Eye/Face components meet the requirements of ANSI Z358.1-1990, Section 7.
- Drench hose components meet the requirements of ANSI Z358.1-1990, Section 8.

Location

- Identified with highly visible sign.
- Area has good lighting & visibility.
- Maximum of 10 seconds travel time to unit.

Maintenance and Training

- Monthly testing & line flushing (803 KAR 2:310).
- Self-contained tested per manufacturer's instructions
- Potentially exposed employees instructed in proper use.

