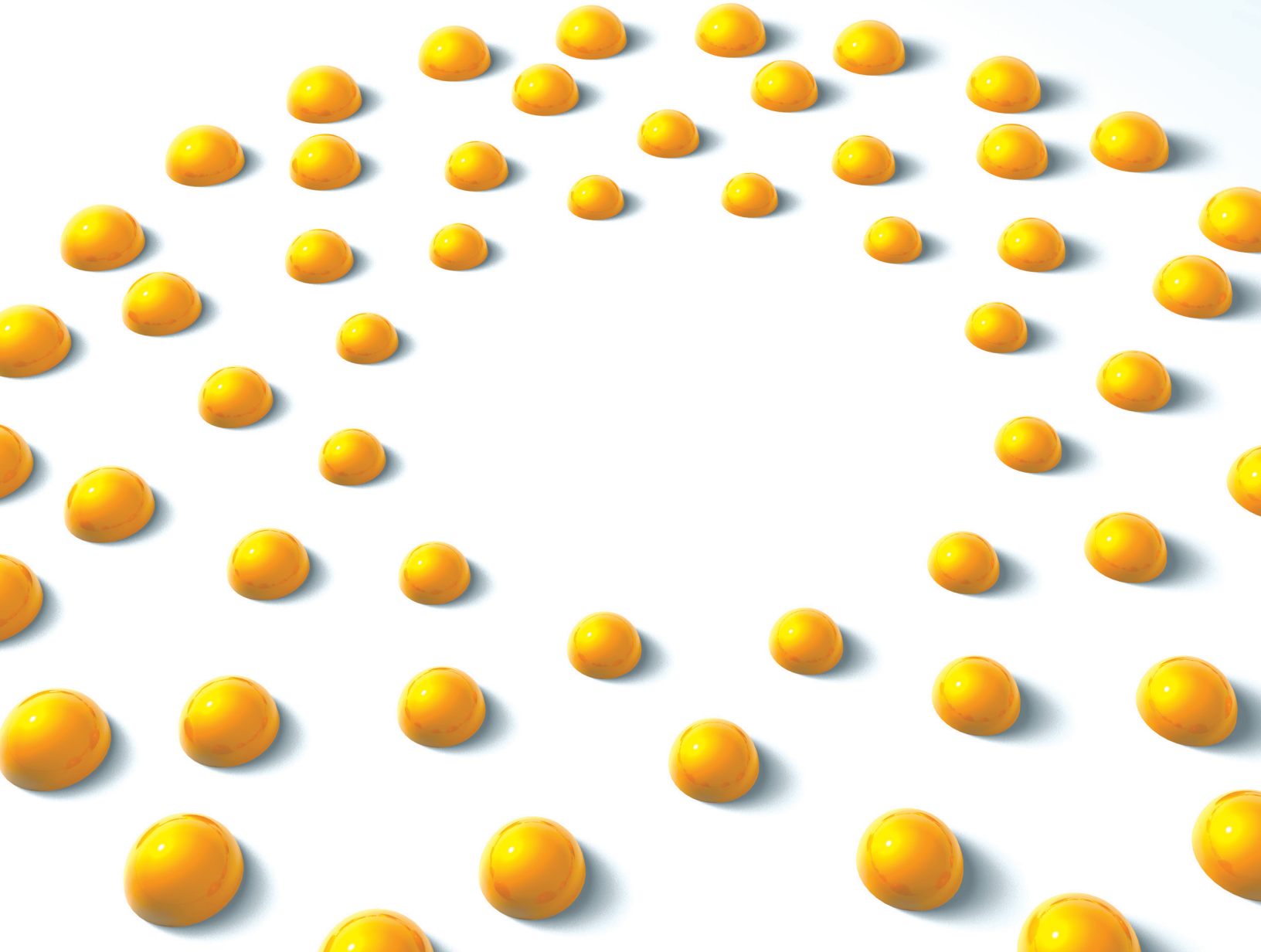
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ANSI / ISEA Z358.1-2009 COMPLIANCE CHECKLIST



INTRODUCTION

The selection of emergency eyewash and shower equipment is often a complicated process. In addition to addressing design and engineering issues, specifiers must be aware of regulatory requirements and compliance standards. A common reference point when specifying emergency equipment is ANSI/ISEA Z358.1, "Emergency Eyewash and Shower Equipment." This standard is a widely accepted guideline for the proper selection, installation and maintenance of emergency equipment.

To assist specifiers in understanding the provisions of this standard, Guardian Equipment has prepared this ANSI Compliance Checklist. In this Checklist, we have summarized and graphically presented the provisions of the standard. This Checklist can serve as a starting point for designing emergency eyewash and shower systems.

LEGAL REQUIREMENTS

The Occupational Safety and Health Act of 1970 was enacted to assure that workers are provided with "safe and healthful working conditions." Under this law, the Occupational Safety and Heath Administration (OSHA) was created and authorized to adopt safety standards and regulations to fulfill the mandate of improving worker safety.

OSHA has adopted several regulations that refer to the use of emergency eyewash and shower equipment. The primary regulation is contained in 29 CFR 1910.151, which requires that...

"...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."

ANSI Z358.1

The OSHA regulation regarding emergency equipment is quite vague, in that it does not define what constitutes "suitable facilities" for drenching the eyes or body. In order to provide additional guidance to employers, the American National Standards Institute (ANSI) has established a standard covering emergency eyewash and shower equipment. This standard—ANSI Z358.1—is intended to serve as a guideline for the proper design, certification, performance, installation, use and maintenance of emergency equipment. As the most comprehensive guide to emergency showers and eyewashes, it has been adopted by many governmental health and safety organizations within and outside the U.S., as well as the International Plumbing Code. The standard is part of the building code in locations which have adopted the International Plumbing Code. (IPC-Sec. 411)

ANSI Z358.1 was originally adopted in 1981. It was revised in 1990, 1998, 2004 and again in 2009. This Compliance Checklist summarizes and graphically presents the provisions of the 2009 version of the standard.



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GENERAL CONSIDERATIONS

ANSI Z358.1- 2009 contains provisions regarding the design, certification, performance, installation, use and maintenance of various types of emergency equipment (showers, eyewashes, drench hoses, etc.). In addition to these provisions, there are some general provisions that apply to all emergency equipment. In addition to these general provisions of the standard, there are also considerations that are not addressed by the standard. We believe that these considerations should also be addressed when considering emergency equipment. These include the following:

1. FIRST AID DEVICES

Emergency eyewash and shower units are designed to deliver water to rinse contaminants from a user's eyes, face or body. As such, they are a form of first aid equipment to be used in the event of an accident. However, they are not a substitute for primary protective devices (including eye and face protection and protective clothing) or for safe procedures for handling hazardous materials.

2. LOCATION OF EMERGENCY EQUIPMENT

In general, the ANSI standard provides that emergency equipment be installed within 10 seconds walking time from the location of a hazard (approximately 55 feet). The equipment must be installed on the same level as the hazard (i.e. accessing the equipment should not require going up or down stairs or ramps). The path of travel from the hazard to the equipment should be free of obstructions and as straight as possible.

However, there are certain circumstances where these guidelines may not be adequate. For example, where workers are handling particularly strong acids, caustics or other materials where the consequences of a spill would be very serious, emergency equipment should be installed immediately adjacent to the hazard.

Laboratory environments may also require special consideration. It has been common in many laboratory buildings to install emergency equipment in a corridor or hallway outside of the lab room. Since a door is now considered an obstruction, this no longer satisfies the provisions of the standard. For laboratory environments, we recommend installing (i) recessed laboratory eyewash/shower cabinets inside the lab room and (ii) dual purpose eyewash/drench hose units at lab sinks (see page 8). The recessed cabinet units are a space saving design that satisfy the standard's requirements for both a shower and an eye/face wash, and are handicapped accessible, while the eyewash/drench hoses provide immediate protection for the eyes, face or body when a spill involves a relatively small amount of hazardous material.

3. WATER TEMPERATURE

The 2009 version of the standard states that the water temperature delivered by emergency equipment should be "tepid" (60- 100°F). However, where it is possible that a chemical reaction might be accelerated by warm water, a medical professional should be consulted to determine what the optimum water temperature would be.

The delivery of tepid water to emergency equipment may raise complicated engineering issues. At a minimum, it generally involves providing both hot and cold water to the unit, and then installing a blending valve to mix the water to the desired temperature. Guardian offers a variety of mixing valves and turn-key, recirculating tempering systems to temper water. Please contact our office for further information.

4. SHUT OFF VALVES

Plumbed emergency equipment must be connected to a potable water supply line. It may be advisable to install a shut off valve on the water line, upstream of the unit, to facilitate maintenance of the equipment. If a shut off valve is installed, provision must be made to prevent unauthorized closure of the shut off valve. (Sections 4.1.2, 4.5.5, 5.1.6, 5.4.5, 6.1.6, 6.4.5, 8.2.3.3) Such provision can include removing the handle of the shut off valve or locking the valve in the open position. Only maintenance personnel should be authorized to place a handle on or unlock the valve.

5. CORROSION RESISTANCE

Once connected to a water supply line, water will enter the emergency equipment up to the valve(s). Therefore, the unit must be constructed of materials that will not corrode when exposed to water for extended periods of time. (Sections 4.1.5, 5.1.5, 6.1.5). In addition to this general provision, the standard specifically requires that valves be resistant to corrosion. (Sections 4.2, 5.2, 6.2, 8.2.2) Emergency equipment should therefore be constructed of materials that will resist rusting and corrosion. Materials that are considered acceptable for this purpose include galvanized steel and many types of plastic (ABS, nylon, etc.). However, these materials may not provide durable

service when exposed to harsh industrial conditions, may deteriorate in direct sunlight or be subject to other limitations. Therefore, for maximum durability, the following materials should also be considered:

- Epoxy coated galvanized steel
- Chrome plated brass
- Stainless steel
- PVC

6. FREEZING

There are many applications where emergency equipment must be installed in areas that are subject to freezing conditions. Such areas may include any type of outdoor area (bulk material handling facility, tank farm, etc.), as well as some interior areas (loading docks, low temperature facilities, etc.). In these cases, the emergency equipment must be protected against freezing. (Sections 4.5.5, 5.4.5, 6.4.5, 7.4.4, 8.2.3.3) Alternatively, equipment that is designed and manufactured to be freeze-resistant should be installed. There are a number of different types of freeze-resistant equipment, including:

- Units that have a temperature actuated bleed valve that permits water to flow through the unit when the temperature drops below freezing. These units are generally used only where the possibility of freezing is very infrequent.
- Units on which the valve is mounted behind a wall or buried below the frost line and is remote-activated.
- Combination units that are electrically heated (heat traced) and insulated.
- Units that have a heated enclosure to fully contain and protect both the equipment and the user.

7. DISPOSAL OF WATER

The standard does not include any provisions regarding the disposal of waste water. However, designers must give consideration to where waste water will go. In particular, care must be taken that waste water not create a hazard (i.e. by creating a pool in which someone might slip) or freeze.

Generally, Guardian eyewash, eye/face wash and safety station units are designed with waste connections for connection to drain piping. **WE RECOMMEND THAT EMERGENCY EYEWASH AND SHOWER UNITS BE CONNECTED TO DRAIN PIPING. FOR EMERGENCY SHOWERS AND FOR OTHER UNITS WITHOUT WASTE CONNECTIONS, FLOOR DRAINS SHOULD BE PROVIDED.** After an emergency eyewash or shower has been used, the waste water may contain hazardous materials that cannot or should not be introduced into a sanitary sewer. It may be necessary to connect the drain piping from the emergency equipment or floor drain to the building's acid waste disposal system or to a neutralizing tank.

8. EMERGENCY RESPONSE

Simply installing emergency equipment is not a sufficient means of assuring worker safety. Employees must be trained in the location of emergency equipment and in its proper use. Emergency equipment must be regularly maintained (including weekly activation of the equipment) to assure that it is in working order and inspected at least annually for compliance with the standard. Most importantly, employers should develop a response plan to be used in the event that an accident does occur. The focus of the response plan should be to provide assistance to the injured worker as quickly as possible. We offer a variety of alarm systems which may be installed in conjunction with our emergency equipment. They serve to alert personnel and summon assistance if an eyewash or shower is activated. **WE RECOMMEND INSTALLING AN ALARM UNIT WITH ANY EMERGENCY EYEWASH OR SHOWER UNIT.**

9. O&M INFORMATION

The manufacturer of the emergency equipment must provide detailed instructions on the proper operation, inspection and maintenance of the emergency equipment. (Sections 4.6.1, 5.5.1, 6.5.1, 7.5.1, 8.2.4.1) This information should be accessible to maintenance personnel. Guardian offers detailed installation, operation and maintenance guides for its equipment. These guides are available on the Guardian website (gesafety.com) and from our sales representatives.

Note: This ANSI Compliance Checklist is intended to assist design personnel, facility owners and others in selecting, specifying, installing and maintaining emergency equipment. We have tried to assure that it is comprehensive and accurate. However, please refer to the complete ANSI/ISEA Z358.1-2009 standard before purchasing or installing emergency equipment. Guardian Equipment cannot be responsible for any errors or omissions from this Checklist, and cannot assure that any particular product will perform satisfactorily in any particular application.

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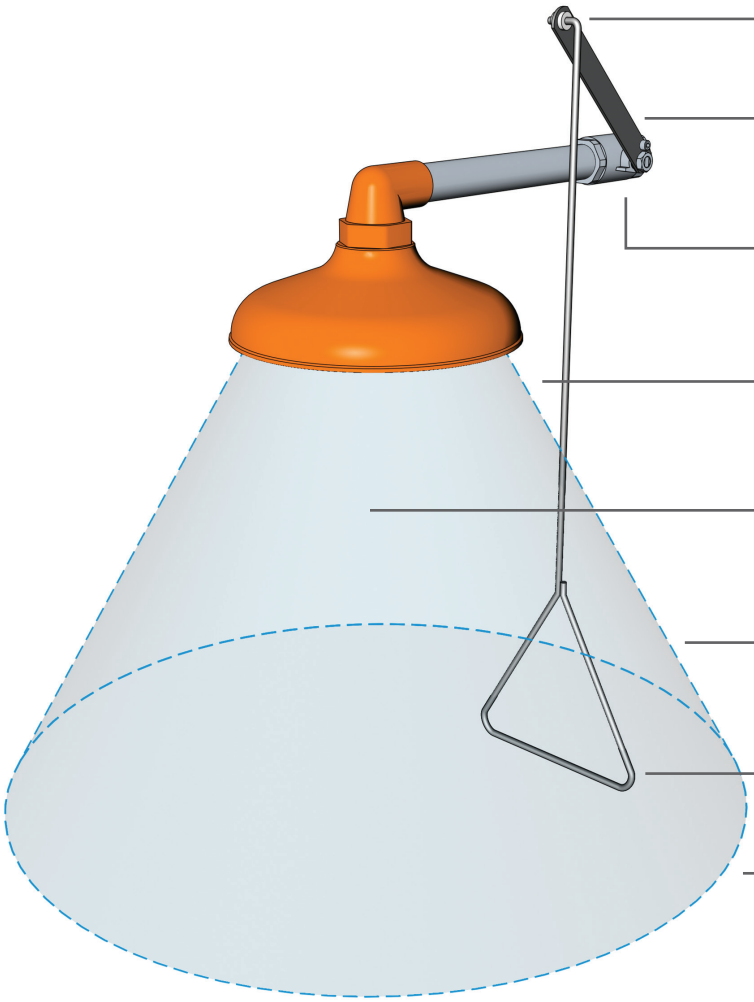
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Emergency Showers

This checklist is a summary of the provisions of ANSI Z358.1-2009 relating to emergency showers. Please refer to the standard for a complete listing of these provisions.

All Guardian emergency showers are third-party certified to meet or exceed the provisions of ANSI Z358.1-2009.



- "Hands-free" stay-open valve activates in one second or less. (Section 4.2)
- Water supply shall be sufficient to supply at least 20 GPM in the required pattern for 15 minutes.(Sections 4.1.2, 4.5.5)
- Shower shall provide 20 gallons (75.7 liters) of water per minute for 15 minutes. (Section 4.1.2, 4.5.5)
- Height of water column shall be between 82" (208.3 cm) and 96" (243.8 cm) above floor. (Section 4.1.3, 4.5.4)
- Center of the water pattern shall be at least 16" (40.6 cm) from any obstructions. (Section 4.1.4, 4.5.4)
- At 60" (152.4 cm) above floor, the water pattern must be at least 20" (50.8cm) in diameter. (Section 4.1.4)
- Easily located, accessible actuator no higher than 69" (173.3 cm) above floor. (Section 4.2)
- If provided, shower enclosure shall be minimum diameter of 34" (86.4cm). (Section 4.3)

LOCATION	Install shower within 10 seconds (approximately 55 feet) of hazard, on the same level as hazard and with unobstructed travel path. (Section 4.5.2; B5)
IDENTIFICATION	Identify shower location with highly visible sign. Area around shower shall be well lighted. (Section 4.5.3)
WATER TEMPERATURE	Water delivered by shower shall be tepid (60-100°F). (Section 4.5.6)
TRAINING	Instruct all employees in the location and proper use of emergency showers. (Section 4.6.4)
MAINTENANCE/INSPECTION	Activate shower at least weekly. (Section 4.6.2) Inspect annually for compliance with standard. (Section 4.6.5)

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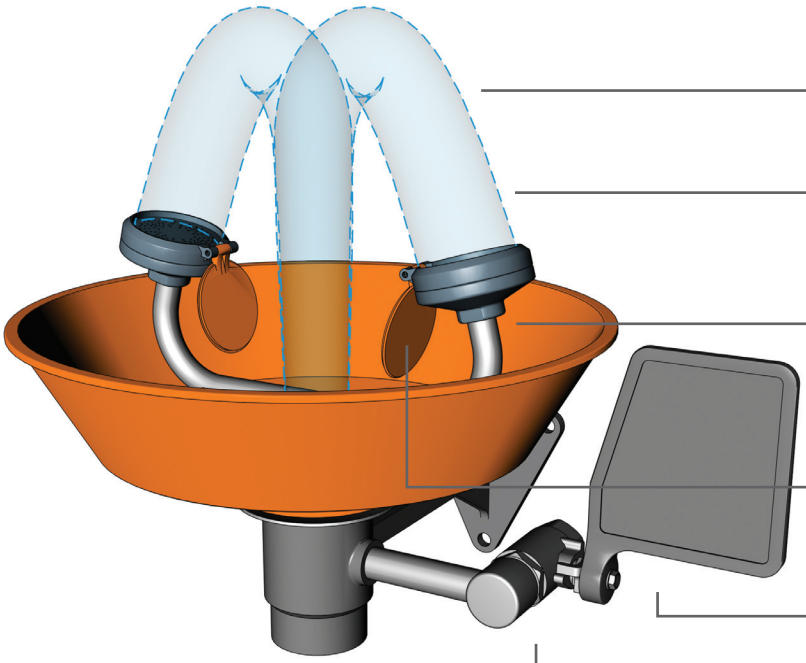
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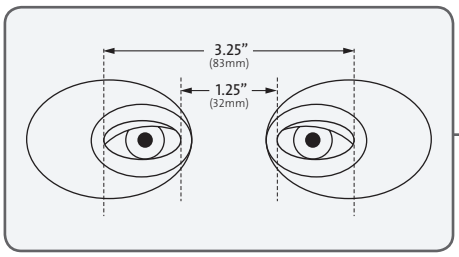
Eye/Face Washes

This checklist is a summary of the provisions of ANSI Z358.1-2009 relating to emergency eye/face washes. Please refer to the standard for a complete listing of these provisions.

All Guardian eye/face wash units are third-party certified to meet or exceed the provisions of ANSI Z358.1-2009.



- Controlled, low velocity flow completely rinses eyes and face and is not injurious to user. (Section 6.1.1)
- Water flow is sufficiently high to allow user to hold eyes open while operating (Section 6.1.7)
- Unit must deliver at least 3.0 gallons (11.4 liters) of water per minute for 15 minutes. (Section 6.1.6, 6.4.5)
- Outlet heads shall be positioned between 33" (83.8 cm) and 45" (114.3 cm) from the floor and at least 6" (15.3 cm) from the wall or nearest obstruction. (Section 6.4.4)
- Protect spray heads from airborne contaminants. Covers shall be removed by water flow. (Section 6.1.3)
- Valve actuator shall be easy to locate and readily accessible to user. (Section 6.2)
- "Hands-free" stay-open valve shall activate in one second or less. (Section 6.1.4, 6.2)



- Unit washes both eyes simultaneously. Water flow covers area indicated on Guardian test gauge. (Section 6.1.8)

LOCATION	Install eye/face wash unit within 10 seconds (approximately 55 feet) of hazard, on the same level as hazard and with unobstructed travel path. Where strong acids or caustics are being handled, the eye/face wash shall be located immediately adjacent to the hazard. (Section 6.4.2; B5)
IDENTIFICATION	Identify eye/face wash with highly visible sign. Area around eye/face wash shall be well lighted. (Section 6.4.3)
WATER TEMPERATURE	Water delivered by eye/face wash shall be tepid (60-100°F). (Section 6.4.6)
TRAINING	Instruct all employees in the location and proper use of eye/face washes. (Section 6.5.4)
MAINTENANCE/INSPECTION	Activate eye/face wash at least weekly. (Section 6.5.2) Inspect annually for compliance with standard. (Section 6.5.5)

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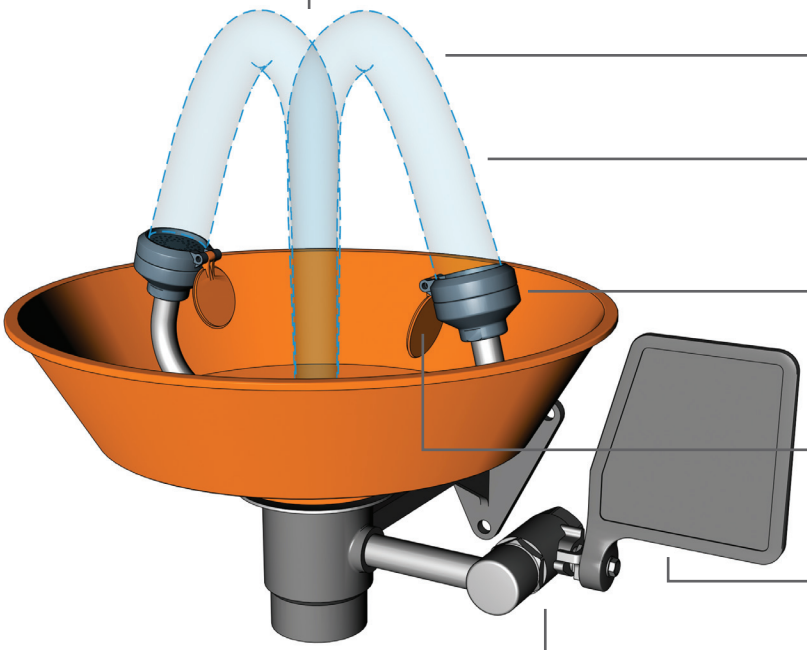
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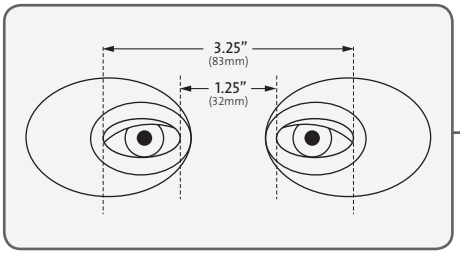
Eyewashes

This checklist is a summary of the provisions of ANSI Z358.1-2009 relating to emergency eyewashes. Please refer to the standard for a complete listing of these provisions.

All Guardian eyewash units are third-party certified to meet or exceed the provisions of ANSI Z358.1-2009.



- Controlled, low velocity flow rinses both eyes and is not injurious to user. (Section 5.1.1)
- Water flow is sufficiently high to allow user to hold eyes open while rinsing. (Section 5.1.7)
- Unit must deliver at least 0.4 gallons (1.5 liters) of water per minute for 15 minutes. (Section 5.1.6)
- Outlet heads shall be positioned between 33" (83.8 cm) and 45" (114.3 cm) from the floor and at least 6" (15.3 cm) from the wall or nearest obstruction. (Section 5.4.4)
- Protect spray heads from airborne contaminants. Covers shall be removed by water flow. (Section 5.1.3)
- Valve actuator shall be easy to locate and readily accessible to user. (Section 5.2)
- "Hands-free" stay-open valve activates in one second or less. (Section 5.1.4, 5.2)
- Unit washes both eyes simultaneously. Water flow covers area indicated on Guardian test gauge. (Section 5.1.8)



LOCATION	Install eyewash wash unit within 10 seconds (approximately 55 feet) of hazard, on the same level as hazard and with unobstructed travel path. Where strong acids or caustics are being handled, the eye/face wash shall be located immediately adjacent to the hazard. (Section 5.4.2; B5)
IDENTIFICATION	Identify eyewash with highly visible sign. Area around eyewash shall be well lighted. (Section 5.4.3)
WATER TEMPERATURE	Water delivered by eyewash shall be tepid (60-100°F). (Section 5.4.6)
TRAINING	Instruct all employees in the location and proper use of eyewashes. (Section 5.5.4)
MAINTENANCE/INSPECTION	Activate eyewash at least weekly. (Section 5.5.2) Inspect annually for compliance with standard. (Section 5.5.5)

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Eyewash/Drench Hose Units

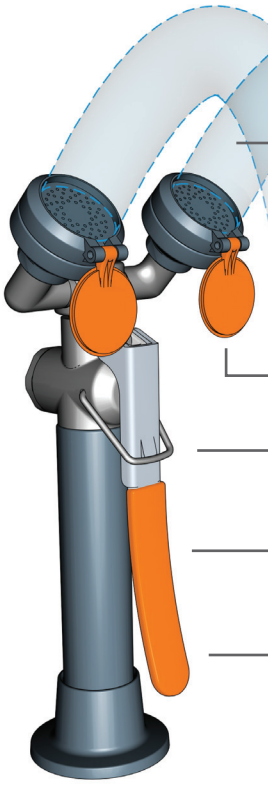
ANSI Standard Z358.1-2009 states that drench hose units may supplement, but may not be used in place of, dedicated eyewash units. Guardian offers a series of units that meet the provisions of the ANSI standard as both an eyewash and a drench hose. These dual purpose units can be used to combine an eyewash and a drench hose into a single versatile, economic unit.

To use the unit as a fixed eyewash, simply leave the unit in the holder. The dual spray heads will deliver water to both eyes simultaneously. To function as a drench hose, remove the unit from the holder and rinse any part of the eyes, face or body.

These units are particularly useful in areas (such as laboratories) where workers are handling relatively small quantities of injurious materials. However, should a spill occur, it might affect any part of the worker's eyes, face or body. Eyewash/drench hose units offer a degree of versatility not found with other types of emergency equipment.

This checklist summarizes the provisions of ANSI Z358.1-2009 for both eyewashes and drench hoses. Please refer to the standard for a complete listing of these provisions.

All Guardian eyewash/drench hose units are third-party certified to meet or exceed the provisions of ANSI Z358.1-2009.



- Controlled, low velocity flow rinses both eyes and is not injurious to user. (Sections 5.1.1 and 8.2.1)
- Water flow is sufficiently high to allow user to hold eyes open while rinsing. (Section 5.1.7)
- Outlet heads shall be positioned between 33" (83.8 cm) and 45" (114.3 cm) from the floor and at least 6" (15.3 cm) from the wall or nearest obstruction. (Section 5.4.4)
- Protect spray heads from airborne contaminants. (Section 5.1.3)
- "Hands-free" stay-open valve shall activate in one second or less. (Sections 5.2 and 8.2.2)
- Unit must deliver at least 0.4 gallons (1.5 liters) of water per minute for 15 minutes. (Section 5.1.6)
- Valve actuator shall be easy to locate and readily accessible to the user. (Sections 5.2 and 8.2.2)
- Unit washes both eyes simultaneously. Water flow covers area indicated on Guardian test gauge. (Section 5.1.8)

LOCATION	Install eyewash/drench hose unit within 10 seconds (approximately 55 feet) of hazard, on same level as hazard and with unobstructed travel path. (Section 5.4.2; B5)
IDENTIFICATION	Identify eyewash/drench hose unit with highly visible sign. Area around unit shall be well lighted. (Sections 5.4.3 and 8.2.3.2)
WATER TEMPERATURE	Water delivered by eyewash/drench hose units shall be tepid (60-100°F). (Sections 5.4.6 and 8.2.3.4)
TRAINING	Instruct all employees in the location and proper use of eyewash/drench hose units. (Sections 5.5.4 and 8.2.4.4)
MAINTENANCE/INSPECTION	Activate eyewash/drench hose units at least weekly. (Sections 5.5.2 and 8.2.4.2) Inspect annually for compliance with standard. (Section 5.5.5 and 8.2.4.5)

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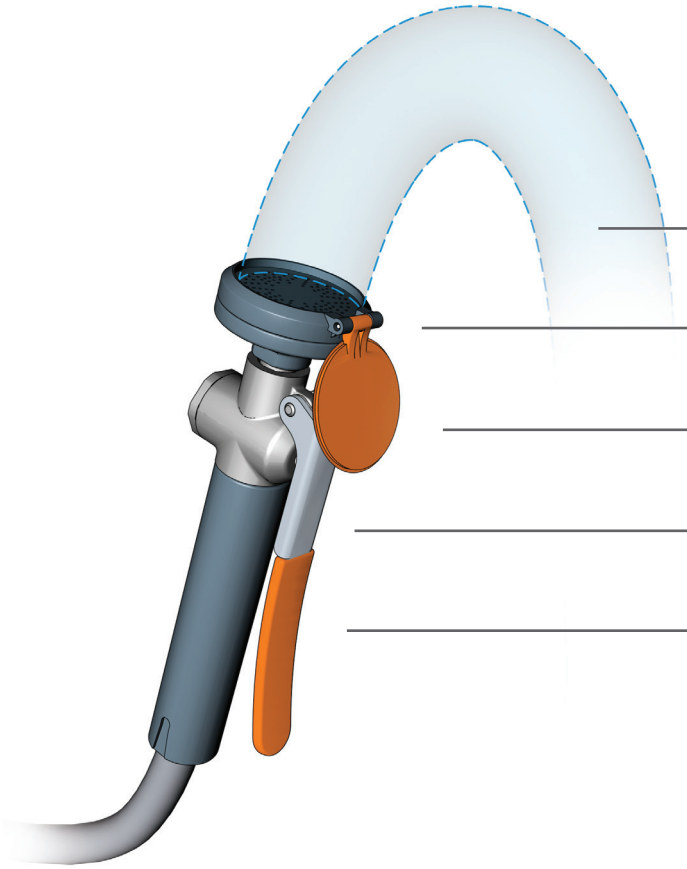
Drench Hose Units

Under ANSI Z358.1-2009, drench hose units support plumbed and self-contained emergency eyewash and shower stations, but cannot replace them. In other words, drench hoses are intended solely as supplemental units providing additional protection to personnel.

Drench hoses are useful in cases where the user is in a prone position or where it is necessary to reach areas of the face and body inaccessible to the fixed stream of a shower or eyewash unit. They are also advantageous in areas (such as laboratories) where they can be installed close to where accidents might occur.

This checklist summarizes the provisions of ANSI Z358.1-2009 relating to drench hoses. Please refer to the standard for a complete listing of these provisions.

All Guardian drench hose units are third-party certified to meet or exceed the provisions of ANSI Z358.1-2009.



- Controlled, low velocity flow is not injurious to user. (Section 8.2.1)
- Drench hose unit supplements shower and eyewash units installed in vicinity. (Section 8)
- Valve shall go from “off” to “on” in one second or less. (Section 8.2.2)
- Valve actuator shall be easy to locate and readily accessible to the user. (Section 8.2.2)
- If providing shutoff valves, allowance shall be made to prevent unauthorized shutoff. (Section 8.2.3.3)

LOCATION	Install drench hose unit in area free of debris or obstructions. (Section 8.2.3.2)
IDENTIFICATION	Identify drench hose unit with highly visible sign. Area around drench hose shall be well lighted. (Section 8.2.3.2)
WATER TEMPERATURE	Water delivered by drench hose shall be tepid (60-100°F). (Section 8.2.3.4)
TRAINING	Instruct all employees in the location and proper use of drench hoses.(Section 8.2.4.4)
MAINTENANCE/INSPECTION	Activate drench hoses at least weekly. (Section 8.2.4.2) Inspect annually for compliance with standard. (Section 8.2.4.5)

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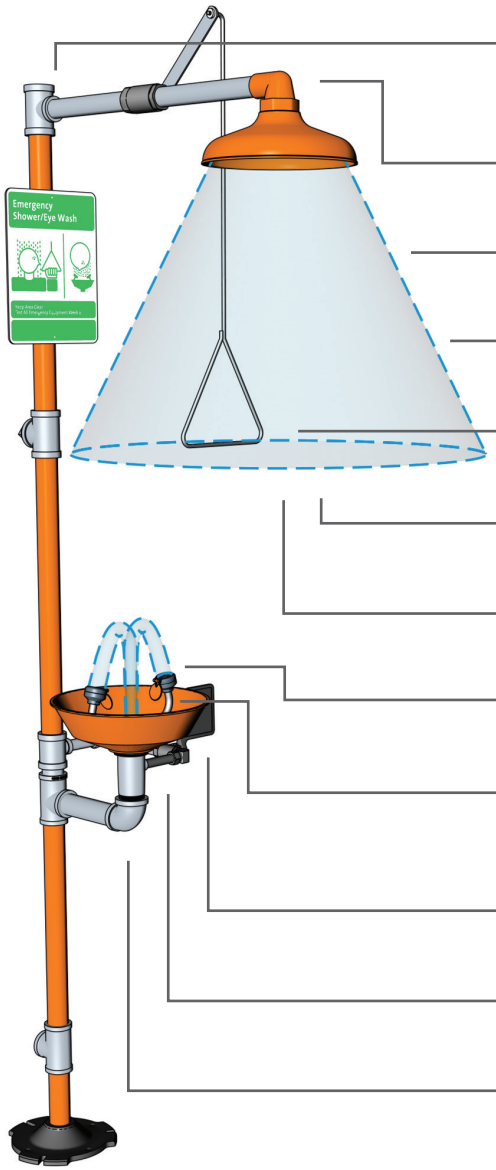
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Safety Stations

This checklist is a summary of the provisions of ANSI Z358.1-2009 relating to eye or eye/face wash and shower combination stations. Please refer to the standard for a complete listing of these provisions.

All Guardian safety stations are third-party certified to meet or exceed the provisions of ANSI Z358.1-2009.



- Connect unit to water supply capable of delivering required flow when all components are operated simultaneously. (Section 4.5.5, 7.4.4)
- "Hands-free" stay-open valve activates in one second or less. (Section 4.2)
- Height of water column shall be between 82" (208.3 cm) and 96" (248.3 cm) above floor. (Section 4.1.3, 4.5.4)
- Shower shall provide 20 gallons (75.7 liters) of water per minute for 15 minutes. (Section 4.1.2, 4.5.5)
- Easily located, accessible actuator no higher than 69" (173.3 cm) above floor. (Section 4.2)
- At 60" (152.4 cm) above floor, the water pattern must be at least 20" (50.8 cm) in diameter. (Section 4.1.4)
- Center of water pattern shall be at least 16" from any obstructions. (section 4.1.4, 4.5.4)
- Outlet heads shall be positioned between 33" (83.8 cm) and 45" (114.3 cm) from the floor. (Section 5.4.4, 6.4.4)
- Protect outlet heads from airborne contaminants. Covers shall be removed by water flow. (Section 5.1.3, 6.1.3)
- Valve actuator shall be easy to locate and readily accessible to user. (Section 5.2, 6.2)
- "Hands-free" stay-open valve activates in one second or less. (Section 5.2, 6.1.4, 6.2)
- Unit must deliver at least 3.0 GPM (11.4 liters) (for eye/face wash) or 0.4 GPM (1.5 liters) (for eyewash) for 15 minutes. (Sections 5.1.6, 6.1.6, 6.4.5)

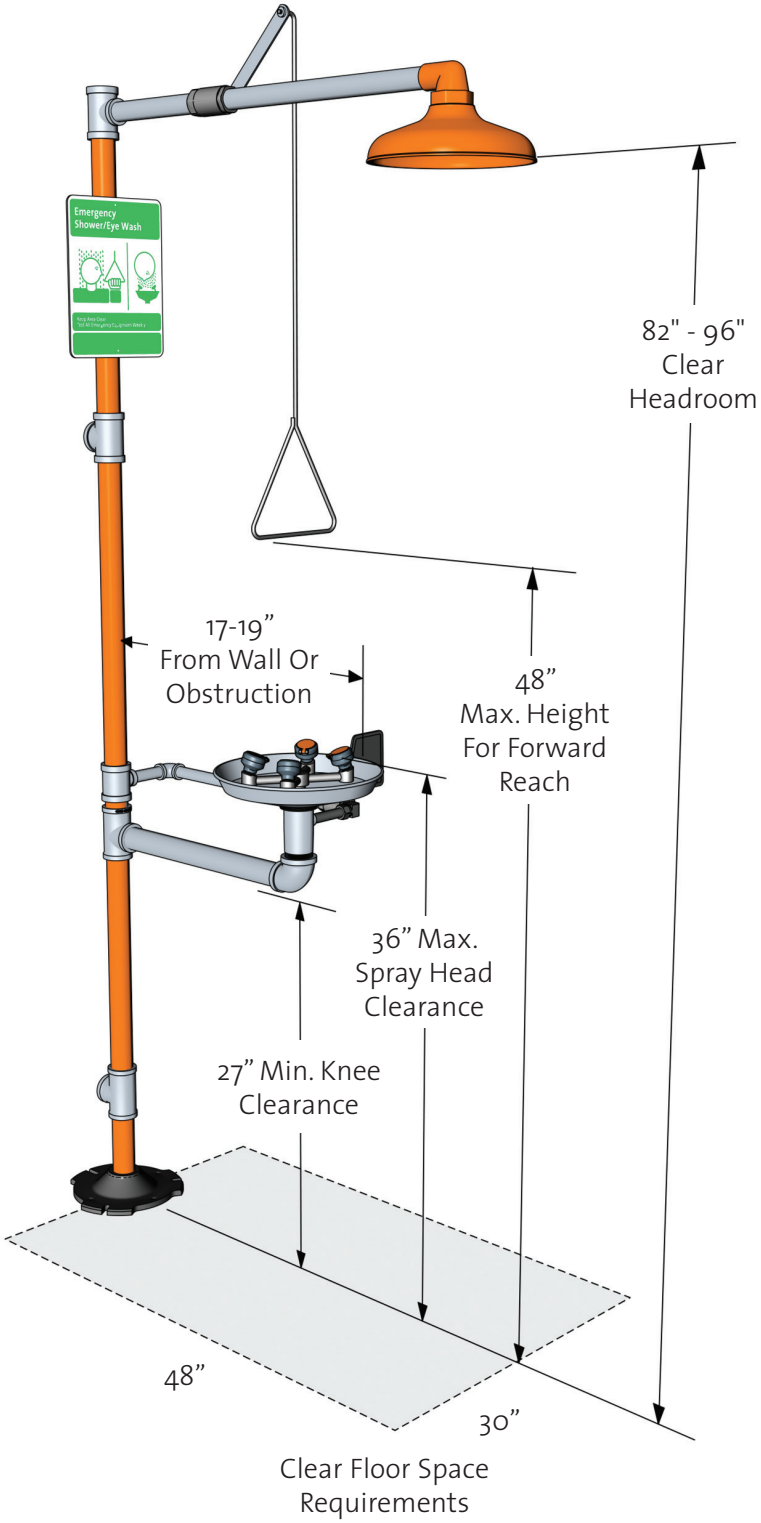
LOCATION	Install safety station within 10 seconds (approximately 55 feet) of hazard, on the same level as hazard and with unobstructed travel path. (Section 7.4.2; B5)
IDENTIFICATION	Identify safety station with highly visible sign. Area around safety station shall be well lighted. (Section 7.4.3)
WATER TEMPERATURE	Water delivered by safety station shall be tepid (60-100°F). (Section 7.4.5)
TRAINING	Instruct all employees in the location and proper use of safety station. (Section 7.5.4)
MAINTENANCE/INSPECTION	Activate safety station at least weekly. (Section 7.5.2) Inspect annually for compliance with standard. (Section 7.5.5)

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Barrier-Free Equipment



Clear Floor Space Requirements

The Americans with Disabilities Act (ADA) requires that employers provide accessible workplaces for all employees. These workplaces may therefore require emergency eyewash and shower equipment that is specially constructed to provide access to handicapped persons.

Barrier-free emergency equipment must comply with the provisions of ANSI 117.1-1998 ("Accessible and Usable Buildings and Facilities"). These provisions include dimensions for minimum knee clearance, maximum height and reach, and minimum distance from obstructions.

Guardian offers an array of eyewash and shower units designed for barrier-free applications. These units meet the provisions of ANSI Z358.1-2009 for emergency equipment and the provisions of ANSI A117.1-1998 for accessibility. The provisions of ANSI Z358.1-2009 are summarized on pages 2-9. The additional provisions of ANSI A117.1-1998 for accessibility are shown here. Please refer to these standards for a complete description of these provisions.

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ETL Listed 101496.
Units have been tested to and comply with ANSI Z358.1 - 2009

Guardian Emergency Eyewash and Shower Technology:
Engineered for today's industrial environments.

Today's safe workplaces demand advanced emergency eyewash and shower equipment. Guardian Equipment is proud to offer the most complete selection of emergency equipment designed for industrial applications. These products are characterized by enhanced performance and superior durability.

All Guardian eyewash, eye/face wash and safety station units utilize the unique GS-Plus and FS-Plus spray heads. These spray heads represent a truly important innovation in eyewash technology.

GS-Plus™ and FS-Plus™ spray heads deliver water in a soft, wide spray rather than a solid, narrow stream. The user receives more water over a wider area than with any other type of outlet head. In an emergency, contaminants are rinsed away quickly, gently and completely.



These heads incorporate a variety of unique and important features:

"FLIP TOP" DUST COVER. Each spray head is protected against dust and dirt by a "flip top" cover. Water flow swings the cover off the head. The cover is permanently attached to the spray head by a stainless steel pin; the cover cannot be removed or lost. The cover nests into the top of the outlet head, assuring that the cover always stays on the head when the unit is not in use. An optional stainless steel cover is also available.

CONSISTENT, BALANCED FLOW. An engineered flow control located inside the spray head is calibrated to deliver 1.8 (GS-Plus) or 3.2 (FS-Plus) gallons per minute, at pressures from 20 to 100 PSI. The flow is consistent, regardless of line pressure. Since each head contains an individual flow control, the flow is evenly balanced between the heads.

FILTERED WATER. Each spray head contains an internal filter to remove particles and debris from the water flow. During rinsing, the user's eyes and face are protected against any foreign matter which may be in the water or the plumbing lines.

DURABILITY. The body and spray cover are molded from tough impact-resistant and corrosion-resistant polypropylene. The dust cover is molded nylon. They will stand up to even the harshest laboratory environments.

EASE OF MAINTENANCE. Water often contains dissolved minerals and foreign matter which over time can clog up any outlet head. The GS-Plus and FS-Plus spray heads are designed so that all working components are contained in the head itself. All components are readily accessible for cleaning and maintenance. The unit itself should never need disassembly.