DO I NEED THIS EYEWASH STATION?

Eyewash Regulations are you in compliance?
AGENDA

- History
- Current regulations
- Inspections
- What is considered hazardous, caustic and corrosive
- Review of SDS sheets
- Examples
OSHA FINES

For Emergency Response Equipment

According to the Occupational Safety & Health Administration (OSHA), the agency visited over 20,000 organizations in one year. Over 17,000 of those inspections were labeled as “programmed” or unexpected safety audits.

OSHA has stepped up enforcement, particularly for employers who have a history of serious or repeated violations.

OSHA fines increased by more than 100% by 2016. This went into effect August 1, 2014. One example of the increase is the penalty for an out-of-date eyewash station. The fine went from $12,300 to $125,000.
BRIEF HISTORY AND FACTS

- A 1920 Clear-Glass-8- Panel-Eyewash-Cup glass appears to be the oldest form of an eyewash.

- Eyewash equipment has changed over time.

- In 1970 OSHA was created, and authorized to adopt safety standards and regulations to fulfill the mandate of improving worker safety.
In the early 1900s, it was said that a well-known energy company created the first emergency eyewash by taking two bubbler heads from drinking fountains and mounting them on opposite sides of a sink facing each other with plumbing running to both of the heads. When activated, the water streams formed a double arch that directed water from the outer perimeter of the sink to the center. An injured victim would place their face into the double streams and irrigate both eyes simultaneously. It was a great concept, and one that took the safety industry to a new level over the subsequent years.
LOW COST PPE
OSHA has adopted several regulations that refer to the use of emergency eyewash and shower equipment. The primary regulation contained in the 29 CFR 1910.151. (c) states 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.

In addition, adopted in 1981 with additional versions produced in 1990, 1998 and 2004, it is essential to reference the American National Standard Institute (ANSI) Z358.1-2009 for “Emergency Eyewash and Shower Equipment” which outlines the specific requirements for emergency eyewash and shower equipment, installation, testing, performance, maintenance, training and use. This standard is referenced in the International Plumbing Code (IPC) for conformance with this code.

Newer versions of ANSI are available in use today, 2014 and potentially 2019.
What is the design and operational criteria for eyewash stations and emergency showers?

- The Joint Commission references ANSI Z358-1 as a basis for evaluating eyewash station and emergency shower design configurations and functionality.

- The need is based on the corrosive level noted for the material being handled, and the risk of exposure.

- A proactive, defensible documented risk assessment process that may deviate from Z358.1 is acceptable provided OSHA criteria is not compromised.

- Eyewash bottles are acceptable as supplemental devices to eyewash stations (cannot replace), and should be employed through the risk assessment process for applicability.
A **corrosive substance** is one that will damage or destroy other substances with which it comes into contact by means of a chemical reaction.

**Etymology**

The word *corrosive* is derived from the Latin verb *corrodere*, which means to *gnaw*, indicating how these substances seem to "gnaw" *their way through flesh or other materials*.

**Chemical Term**

The word *corrosive* refers to any chemical that will dissolve the structure of an object. They can be acids, oxidizers, or bases. When they come in contact with a surface, the surface deteriorates. The deterioration can happen in minutes, e.g. concentrated muriatic acid spilled on skin; or slowly over days or years, e.g. the rusting of iron in a bridge.
• Sometimes the word *caustic* is used as a synonym for *corrosive*, but *caustic* refers only to strong bases, particularly alkalis, and not to acids, oxidizers, or other non-alkaline corrosives.

• At low concentrations, a corrosive substance is called an *irritant*, and its effect on living tissue is called irritation. At high concentrations, a corrosive substance causes a *chemical burn*, a distinct type of tissue damage.

• Corrosives are different from *poisons* in that corrosives are immediately dangerous to the tissues they contact, whereas poisons may have systemic toxic effects that require time to become evident. Colloquially, corrosives may be called *poisons* but the concepts are technically distinct. However, there is nothing which precludes a corrosive from being a poison; there are substances that are both corrosives and poisons.
OSHA regulates U.S. safety standards and laws, while the American National Standards Institute (ANSI) develops product performance standards for safety equipment.

It’s important to note that OSHA has developed a vague safety standard for eyewash equipment needs, but commonly adopts the ANSI Z358.1-2014 Eyewash standard for the enforcement of safety laws.
American National Standard for Emergency Eyewash and Shower Equipment

Secretariat
International Safety Equipment Association

Approved January 5, 2015
American National Standards Institute, Inc.
Approval of an American National Standard requires verification by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer. Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution. The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he/she has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards. The American National Standards Institute does not develop standards and will in no circumstance give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretation should be addressed to the secretarial or sponsor whose name appears on the title page of this standard.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken to reaffirm, revise, or withdraw this standard no later than five years from the date of publication. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.

Foreword

This revision updates ANSI Z58-1999 and was prepared by the Emergency Eyewash and Shower Group of the International Safety Equipment Association, whose members are thoroughly knowledgeable in the design, installation, and use of this important safety equipment. The following companies were members of the group at the time of the approval of the standard: Besidesy Corporation, Enco Safety Products, FSI International, Guardian Equipment, Honeywell Safety Products, Hughes Safety Showers, Prevco, Inc., Selstrom Manufacturing, Speakman Company, and Vikan Industries.

Updates to the 2009 version of the standard are reflected in this document, including improvement in language to emphasize that the location of the fluid flow and pattern delivery for emergency eyewashers and face/face washers is the critical aspect in designing and installing these devices, rather than the positioning of the nozzles themselves. Additionally, illustrations have been updated to reflect contemporary design configurations that are known to meet the criteria in standard.

Suggestions for the improvement of this standard are welcome. They should be sent to the ISEA, 1901 N. Moore St., Suite 808, Arlington, VA 22209 or info@iesa.org.

This standard was processed and approved using consensus procedures prescribed by the American National Standards Institute. The following organizations were contacted prior to the approval of this standard. Inclusion in this list does not necessarily imply that the organization concurred with the substance of the proposed standard to ANSI.

Acme Safety
APCA, Leadership in Educational Facilities
Alabama Power Company
Art’s Crafts & Theater Safety Inc.
Atlantic Health
Atlantic Industrial Contractors, LLC
BASF Corporation
Baylor Scott & White Health
Cal/OSHA
Cardinal Health
County of Sacramento
Crimrox
Green Conversion Systems
Haws Corporation
International Safety Equipment Association
Intertek
Lawler Manufacturing
Leather Research Council
Lexington, KY
North Carolina Department of Labor
Saftey Equipment Institute
Special Graphic Imaging Association
State of Ohio Public Employment Risk Reduction Program
Synucyte Industries
UL LLC
University of Georgia
University of Michigan
US Department of the Army
US Department of the Navy
Williams Energy

(End of Foreword)
Private Non-Profit Organization

The American National Standards Institute is a private non-profit organization that oversees the development of voluntary consensus standards for products, services, processes, systems, and personnel in the United States. The organization also coordinates U.S. standards with international standards so that American products can be used worldwide.

ANSI accredits standards that are developed by representatives of other standards organizations, government agencies, consumer groups, companies, and others. These standards ensure that the characteristics and performance of products are consistent, that people use the same definitions and terms, and that products are tested the same way. ANSI also accredits organizations that carry out product or personnel certification in accordance with requirements defined in international standards.[4]

*ISEA International Safety Equipment Association – Updated every 5 years
OSHA EMERGENCY EYEWASH AND SHOWERS
29 CFR PART 1910.151 (C)

This General Regulation Is As Follows:

"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.”
1910.151(a)

The employer shall ensure the ready availability of medical personnel for advice and consultation on matters of plant health.

1910.151(b)

In the absence of an infirmary, clinic, or hospital in near proximity to the workplace which is used for the treatment of all injured employees, a person or persons shall be adequately trained to render first aid. Adequate first aid supplies shall be readily available.

1910.151(c)

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.

[63 FR 33450, June 18, 1998]
# Standard Interpretations

<table>
<thead>
<tr>
<th>#</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2013 - 03/04/2013</td>
<td>Controlling Employee Exposure To Caustic Battery Acid In Battery Charging Areas</td>
</tr>
<tr>
<td>2</td>
<td>2009 - 06/01/2009</td>
<td>Requirements for eyewash and shower facilities.</td>
</tr>
<tr>
<td>3</td>
<td>2007 - 02/27/2007</td>
<td>Requirement to provide accessible quick drenching and flushing facilities where there is exposure to corrosive materials.</td>
</tr>
<tr>
<td>4</td>
<td>2004 - 05/05/2004</td>
<td>Requirements for providing eyewashes/showers near spray finishing operations.</td>
</tr>
<tr>
<td>5</td>
<td>2002 - 11/01/2002</td>
<td>Additional clarification of using ANSI Z358.1 as guidance to comply with 1910.151(c).</td>
</tr>
<tr>
<td>6</td>
<td>2002 - 04/18/2002</td>
<td>ANSI Z358.1 guidance for complying with 1910.151(c) citation policy for eyewashes and showers.</td>
</tr>
<tr>
<td>7</td>
<td>2002 - 03/28/2002</td>
<td>Using ANSI Z358.1 as guidance to comply with 1910.151(c).</td>
</tr>
<tr>
<td>8</td>
<td>2002 - 03/08/2002</td>
<td>Clarification of PPS requirements covering fall protection and safety platforms, seatbelts, LP-gas storage, smoking, and eye wash stations.</td>
</tr>
<tr>
<td>12</td>
<td>1982 - 08/08/1982</td>
<td>Eyewash equipment is not an acceptable substitute for protective eyewear.</td>
</tr>
</tbody>
</table>
INTERPRETATION #2

**Question 1:** Is there a requirement for an emergency eyewash in the immediate work area for anything other than injurious corrosive chemicals (including chemicals which the SDS clearly indicates that the product is a severe irritant, but not corrosive to eyes or skin) under 1910.151(c)?

Are there any other Federal OSHA regulations that would require provision of eye flushing facilities for use of chemicals other than corrosives?
While not having the force of a regulation under the OSH Act, the current ANSI standard addressing emergency eyewash and shower equipment (ANSI [Z]358.1-2004) provides for eyewash and shower equipment in appropriate situations when employees are exposed to hazardous materials.

ANSI's definition of a "hazardous material" would include caustics, as well as additional substances and compounds that have the capability of producing adverse effects on the health and safety of humans.

ANSI's standard also provides detail with respect to the location, installation, nature and maintenance of eyewash and shower equipment.

You also may wish to consult additional recognized references such as W. Morton Grant's *Toxicology of the Eye* (Charles C Thomas Pub. Ltd., 4th edition, August 1993) when considering potential chemical exposures to the eye and the appropriateness of installing eyewash facilities to protect employees against hazards associated with particular chemicals and substances.
TOXICOLOGY
OF THE EYE

By
W. MORTON GRANT, M.D.

Associate Professor of Ophthalmology
Massachusetts Eye and Ear Infirmary

Contents
Preface ........................................... v
Acknowledgments ................................ vii

Chapter
1. Description of Toxic Substances and Their Effects on the Eyes ........ 3
2. Treatment of Chemical Burns of the Eyes .................................. 381
3. Bibliography of References Referred to Repeatedly ............ 505
4. Index of Substances, Signs, Symptoms, and Sources .............. 599
CONTINUATION OF THE REPLY 1A FROM OSHA

- The employer must determine if employees can or will be exposed during the course of their duties to hazardous materials in such a way that the protections of an eyewash or emergency shower would be necessary.

- If hazardous materials are present at a worksite in such a way that exposure could not occur (for example, in sealed containers that will not be opened, or caustic materials in building piping), then an eyewash or emergency shower would not be necessary.

- However, if the building piping containing caustic materials has, at certain locations, a spigot or tap from which the contents are to be sampled or withdrawn and employees are expected to perform such tasks, then, certainly, an eyewash and/or emergency shower would be needed where this task is to occur.
Question 5: Is there a quantity of corrosive chemical that triggers the requirements of 29 CFR 1910.151(c)?

Response: No, there is no threshold quantity of corrosive material that triggers the requirement. The determining factor for the application of the standard is the possible exposure of an employee to injury from contact with a corrosive material.

For example - think about the quantity of formalin used in surgery or LDR!
PH SCALE

• pH stands for the “power of hydrogen” or “potential of hydrogen,” and is the measurement of how concentrated hydrogen ions are in a solution. In simpler terms, it measures how “acidic” or “basic” a substance is in comparison to distilled water which has a “neutral” pH of 7.0. (1)

• Anything below a pH of 7.0 is considered an acid, and anything above a pH of 7.0 is considered an alkaline or “basic.” Generally speaking, acids taste sour and bases taste bitter.
**PH SCALE**

The **pH scale** is a way of expressing the strength of acids and bases. Instead of using very small numbers, we just use the **NEGATIVE** power of 10 on the Molarity of the H⁺ (or OH⁻) ion.

- **Under 7 = acid**
- **7 = neutral**
- **Over 7 = base**
POTENTIAL FOR HYDROGEN IS A SCALE USED TO SPECIFY HOW ACIDIC OR BASIC A WATER-BASED SOLUTION IS. ACIDIC SOLUTIONS HAVE A LOWER pH, WHILE BASIC SOLUTIONS HAVE A HIGHER pH. AT ROOM TEMPERATURE (25° C), PURE WATER IS NEITHER ACIDIC NOR BASIC AND HAS A pH OF 7.
WHY DOES PH MATTER FOR SKINCARE? A CONNECTION

- Because the pH of skin influences several factors contributing to its overall health. It’s been demonstrated that skin with pH values below 5.0 are healthier, more hydrated, and have a stronger barrier function than those above 5.0. (2)

- Our skin is protected by something called the “acid mantle.” It is a small film on the surface of the stratum corneum composed of fatty acids, lactic acid, pyrrolidine carboxylic acid, amino acids, and a bunch of other sciencey terms and stuff that can be a little overwhelming. Let me translate that to English for normal people.

- We have an acid mantle and it kicks BOOTY. Acid mantle = protective barrier on surface of skin composed of sweat, skin oils, and dead skin cells.

- This acid mantle is what gives our skin its pH, and ranges anywhere from 4.0 to 7.0, with the average being 4.7. (3) It protects our skin from bacteria, fungi, viruses, environmental pollutants, makes skin soft and supple — it does everything!

- Disrupting this lovely skin protector can have adverse effects and lead to stuff like inflammation, atopic dermatitis, dehydrated skin (skin that is both dry and oily at the same time), dry skin, skin sensitivity, acne, malassezia folliculitis etc. (4)

- Of equal importance, is the acid mantle’s ability to maintain the integrity of our skin’s moisture barrier and microbiome (i.e. the healthy bacteria that live on our skin).

- Just like the bacteria and yeast in our gut that keep us safe from stuff like crohn’s, food sensitivities, autoimmune diseases etc., our skin flora keeps us safe from diseases like acne, rosacea, psoriasis, and dermatitis. (5, 6, 7) Research has shown there is a very close relationship between the pH of skin and having healthy skin bacterium. (8, 9)
WHAT DISRUPTS OUR SKIN’S PH & ACID MANTLE?

- Pollutants, pathogens, excessive occlusion, detergents, soaps, cleansers, heck — even water! I can hear you already, “what WATER?!” Now that you’re utterly terrified, let me calm you down and explain.

- Here’s a general rule of thumb: the higher the pH of something, the more disrupting it is to the acid mantle and therefore moisture barrier. So while water isn’t bad per se, “hard water” is. Hard water is simply tap water with a high mineral content causing it to have a pH of 8.5 or more.

- **Fun-fact:** this is why micellar water was invented! Back in the 90s, France was notorious for having “hard water,” so an awesome chemist formulated micellar water so poor French women could clean their faces without nuking their acid mantle.

- If you have no idea what micellar water is or want to know how it works, check out this awesome article by the lovely LabMuffin. Cute illustrations included! Let’s continue….

- The biggest acid mantle overkill you need to be worrying about is cleanser. You know that super squeaky feeling you get after using one? Yeah, that isn’t good! It’s an indication that your acid mantle has been disrupted. You should be avoiding that super squeaky feeling at all costs!

- Baking soda has a pH of 9! Far too alkalizing. Contrary to popular belief, it is often the extremely alkaline substances that cause “chemical burns.” Well, that wasn’t an acid: it’s lye (a.k.a. sodium hydroxide). Lye has a pH of 14! It isn’t an acid at all, but a compound on the highest end of the alkalinity scale.
**CORROSIVE WASTES**

**Corrosive wastes** are acidic or alkaline (basic) wastes that can readily corrode or dissolve materials they come into contact with.

We measure corrosivity by either pH or the rate of steel corrosion:

**pH**

When aqueous solution has a pH less than or equal to 2, or more than or equal to 12.5 it is considered corrosive.

**Corrosive pH levels**

When a non-aqueous solution mixed with an equal weight of water has a pH of less than 2 or greater than 12.
Corrosive refers to a substance that has the power to cause irreversible damage or destroy another substance by contact. A corrosive substance may attack a wide variety of materials, but the term is usually applied to chemicals that can cause chemical burns upon contact with living tissue. A corrosive substance may be a solid, liquid, or gas.

The term "corrosive" comes from the Latin verb *corrodere*, which means "to gnaw".

At low concentrations, corrosive chemicals are typically irritants.

The hazard symbol used to identify either a chemical capable of metal corrosion or skin corrosion shows a chemical poured onto a material and a hand, eating into the surface.

Also Known As: Corrosive chemicals may also be referred to as "caustic", although the term caustic usually applies to strong bases and not acids or oxidizers.
EXAMPLES OF CORROSIVE SUBSTANCES

Strong acids and bases are commonly corrosive, although there are some acids (e.g., the carborane acids) that are very powerful, yet not corrosive. Weak acids and bases may be corrosive if they are concentrated. Classes of corrosive substances include:

- strong acids - Examples include nitric acid, sulfuric acid, and hydrochloric acid
- concentrated weak acids - Examples include concentrated acetic acid and formic acid.
- strong Lewis acids - These include boron trifluoride and aluminum chloride
- strong bases - These are also known as alkalis. Examples include potassium hydroxide, sodium hydroxide, and calcium hydroxide.
- alkali metals - These metals and the hydrides of the alkali and alkaline earth metals act as strong bases. Examples include sodium and potassium metal.
- dehydrating agents - Examples include calcium oxide and phosphorus pentoxide.
- strong oxidizers - A good example is hydrogen peroxide.
- halogens - Examples include elemental fluorine and chlorine. The halide ions are not corrosive, except for fluoride.
- organic halides - An example is acetyl chloride.
- alkylating agents - An example is dimethyl sulfate.
- certain organics - An example is phenol or carbolic acid.
HOW CORROSION WORKS

- Usually a corrosive chemical that attacks human skin denatures proteins or performs amide hydrolysis or ester hydrolysis. Amide hydrolysis damages proteins, which contain amide bonds. Lipids contain ester bonds and are attacked by ester hydrolysis.

- A corrosive agent may participate in chemical reactions that dehydrate skin and/or produce heat. For example, sulfuric acid dehydrates carbohydrates in skin and releases heat, sometimes sufficient to cause a thermal burn in addition to the chemical burn.

- Corrosive substances that attack other materials, such as metals, may produce rapid oxidation of the surface.
Protein breaking down

- **Hydrolysis** (/haɪˈdrɒlɪsɪs/; from Ancient Greek *hydro-*, meaning 'water', and *lysis*, meaning 'to unbind') is any chemical reaction in which a molecule of water ruptures one or more chemical bonds.

- Amide and ester are both organic compounds where hydrogen.

- Ester-a compound produced by the reaction between an acid and an alcohol with the elimination of a molecule of water, as ethyl acetate, C4H8O2, or dimethyl sulfate, C2H6SO4.
Liquid corrosive chemicals are those with a pH of 4.0 or lower, or a pH of 9 or higher. Solid chemicals are considered corrosive when in solution; they fall in the above pH range.

A highly corrosive chemical has a pH of 2 or lower or a pH of 12.5 or higher.

Corrosive chemicals are substances that cause visible destruction or permanent changes in human skin tissue at the site of contact, or are highly corrosive to steel. Corrosive chemicals can be liquids, solids, or gases and can affect the eyes, skin, and respiratory tract. The major classes of corrosives include strong acids, bases, and dehydrating agents.

Liquid corrosive chemicals are those with a pH of 4.0 or lower or a pH of 9 or higher. Solid chemicals are considered corrosive when in solution; they fall in the above pH range.

A highly corrosive chemical has a pH of 2 or lower or a pH of 12.5 or higher. Injurious chemicals cause tissue destruction at the site of contact.
CLEANING PRODUCTS

· The basics of pH
  pH is a measure of how acidic or basic a solution is. Water based solutions range from a pH of zero to a pH of 14. The mid point of the pH scale, 7.0, is considered neutral. Pure water is neutral.

· Low pH = Acidic
  If a solution has a pH that is lower than 7, that solution is considered acidic. Acids are usually sour or bitter – coffee, cola, and lemon juice all have an acidic pH. When used in cleaning products, acids help to break down difficult stains like rust or mineral deposits.
Some common cleaning products that have an acidic pH are:

- Hard water/mineral deposit removers
- Toilet bowl cleaners
- Rust stain removers
- Tub and tile cleaners
- Mold removers

Acidic cleaners attack and dissolve these types of stains, breaking them down and making them easier to remove.
• High pH = Basic (alkaline)

• A solution with a pH that is higher than 7 is **basic** (sometimes referred to as **alkaline**). Products with basic pH values are useful for removing fatty and oily soils from surfaces – including your hands! Your average bottle of hand soap has a pH of 9 or 10. Bleach, which is useful for cleaning and disinfecting surfaces in your home, has a pH of 12.5.

• Oven cleaner

• All purpose cleaners

• Laundry detergents
<table>
<thead>
<tr>
<th>Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery Charging Stations</td>
</tr>
<tr>
<td>Blood Bank</td>
</tr>
<tr>
<td>Boiler Room</td>
</tr>
<tr>
<td>Buildings &amp; Grounds</td>
</tr>
<tr>
<td>Carpenter's Shop/Maintenance Shop</td>
</tr>
<tr>
<td>Chemotherapy</td>
</tr>
<tr>
<td>Cytology</td>
</tr>
<tr>
<td>Dialysis Patient Areas/Prep Room</td>
</tr>
<tr>
<td>Dialysis Wastewater Treatment</td>
</tr>
<tr>
<td>Endoscopy</td>
</tr>
<tr>
<td>Emergency Room</td>
</tr>
<tr>
<td>Hematology</td>
</tr>
<tr>
<td>Histology</td>
</tr>
<tr>
<td>HVAC Shop</td>
</tr>
<tr>
<td>ICU</td>
</tr>
<tr>
<td>Janitors/Houskeeping Closets</td>
</tr>
<tr>
<td>Kitchen</td>
</tr>
<tr>
<td>Laboratory</td>
</tr>
<tr>
<td>Laundry</td>
</tr>
<tr>
<td>Loading Dock</td>
</tr>
<tr>
<td>Machine Shop</td>
</tr>
<tr>
<td>Microbiology</td>
</tr>
<tr>
<td>Morgue</td>
</tr>
<tr>
<td>Nuclear Med</td>
</tr>
<tr>
<td>Nurses Station-1 Per Floor/Wing</td>
</tr>
<tr>
<td>Paint Shop</td>
</tr>
<tr>
<td>Pathology</td>
</tr>
<tr>
<td>Pharmacy</td>
</tr>
<tr>
<td>Radiology-Film Processing</td>
</tr>
<tr>
<td>Soiled Utility Areas</td>
</tr>
<tr>
<td>Sterile Processing</td>
</tr>
</tbody>
</table>
COMMON HAZARDS

- Particulates such as dust, dirt, wood chips, sand, powder, salt and Cardboard
- Metal shavings, concrete, cement chips, filings
- Smoke, flammable or poisonous gasses
- Pesticides, insecticides, herbicides, fumigants
- Solvents, stains, paints, paint thinner, acetone
- Bloodborne pathogens, blood, bodily fluids, remains
- Caustic water treatment chemicals
- Gasoline, diesel fuel, cleaning solvents, anti-freeze
- Laboratory chemicals
- Bleach, chlorine, ammonia
- Battery acid, starter fluid, oils, hydraulic fluid
- Bacteria, germs, biohazards
- Glass
- Acids, bases, solvents, lime
- Flammable liquids
As medical advancements continued to evolve, the eye irrigation process in emergency situations did not follow suite.

By irrigating with water streams that contact the eye at its outer corner, or canthus, and flow inward toward the nose is diametrically opposed to the way medical professionals irrigate eyes.

Think about how you use eye drops, general practice is to tilt the head back and place the dropper near the inner corner for the drops to drain to the outside of the eye and down the outside of your cheek, thus following medical protocols.
THE LACRIMAL SYSTEM

To comprehend the logic behind how the medical community treats eye contamination situations you should first understand the eye’s lacrimal system.
The human eye is equipped with an automatic lubricating and cleansing mechanism called the lacrimal system. It consists of the lacrimal gland which produces tears, the ducts that channel tears from the lacrimal gland to the ocular surface, and the lacrimal puncta which are drains that channel excess fluids out of the ocular surface. Importantly, the lacrimal puncta drain excess fluids directly into the nasal cavity. This process is the reason why your nose runs when you cry.

The eyelid also plays a key role. As we blink, the eyelid wipes the cornea pushing contaminants and excess fluids toward the lacrimal puncta – or the ocular surface’s drains. If a hazardous substance is introduced into the eye, nature’s own cleansing mechanism can serve to force the contaminant into the nasal cavity, where it can be breathed into the lungs or swallowed.
Accordingly, the medical profession teaches and practices irrigating eyes by introducing the flushing fluid at the inner corner of the eye – adjacent to the nose – and letting it run across the eye to the outer edge. In effect, irrigation is performed by moving the fluid away from the lacrimal puncta. This is opposite the flow direction of traditional eyewash products that flow water from the outside-in, pushing contaminants toward the inner corners of the eyes where these susceptible tear ducts, glands and canals are located. Pushing contaminants toward the nose not only risks introducing them into the nasal cavity, but also can allow the same contaminant to be introduced into the other eye.
The ideal method of irrigating eyes is by using products that mirror approved medical protocols. Eyewash streams that are inverted contact the eyes at the inner canthus, or corner, adjacent to the bridge of the nose. Contaminants are thus swept away from the lacrimal system to the outside of the eye where gravity takes over and runs them into the eyewash bowl. This irrigation method aids in protection to valuable internal organs and can help reduce unnecessary exacerbation of injuries.
If an employee gets foreign particles or chemicals in his/her eyes, then an emergency eye wash station or deluge shower is the first step of first aid treatment. If it is an actual chemical burn to the eye, then your emergency will be much more urgent. The employee should be immediately escorted to an eye wash station or deluge shower if:

1. The Safety Data Sheet (SDS) identifies the chemical being used is toxic, caustic, or corrosive.
2. The SDS indicates that serious eye injuries will result if the condition is not treated immediately.
3. Container labels have warnings such as "Causes Chemical Burns" or "Causes Permanent Eye Damage."
SAFETY DATA SHEETS - SDS
SDS SECTIONS

- Section 1 – Identification identifies the chemical on the SDS as well as the recommended uses. It also provides the essential contact information of the supplier.

- Section 2 – Hazard(s) identification includes the hazards of the chemical and the appropriate warning information associated with those hazards.

- Section 3 – Composition/information on ingredients identifies the ingredient(s) contained in the product indicated on the SDS, including impurities and stabilizing additives. This section includes information on substances, mixtures, and all chemicals where a trade secret is claimed.

- Section 4 – First-aid measures describes the initial care that should be given by untrained responders to an individual who has been exposed to the chemical.
**SDS SECTIONS**

- Section 5 – Fire-fighting measures lists recommendations for fighting a fire caused by the chemical, including suitable extinguishing techniques, equipment, and chemical hazards from fire.

- Section 6 – Accidental release measures provides recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices to prevent or minimize exposure to people, properties, or the environment. It may also include recommendations distinguishing between responses for large and small spills where the spill volume has a significant impact on the hazard.

- Section 7 – Handling and storage provides guidance on the safe handling practices and conditions for safe storage of chemicals, including incompatibilities.

- Section 8 – Exposure controls/personal protection indicates the exposure limits, engineering controls, and personal protective equipment (PPE) measures that can be used to minimize worker exposure.
• Section 9 – Physical and chemical properties identifies physical and chemical properties associated with the substance or mixture.

• Section 10 – Stability and reactivity describes the reactivity hazards of the chemical and the chemical stability information. This section is broken into 3 parts: reactivity, chemical stability, and other.

• Section 11 – Toxicological information identifies toxicological and health effects information or indicates that such data are not available. This includes routes of exposure, related symptoms, acute and chronic effects, and numerical measures of toxicity.

• Section 12 – Ecological information provides information to evaluate the environmental impact of the chemical(s) if it were released to the environment.
SDS SECTIONS

- Section 13 – Disposal considerations provides guidance on proper disposal practices, recycling or reclamation of the chemical(s) or its container, and safe handling practices. To minimize exposure, this section should also refer the reader to Section 8 (Exposure Controls/Personal Protection) of the SDS.

- Section 14 – Transport information includes guidance on classification information for shipping and transporting of hazardous chemical(s) by road, air, rail, or sea.

- Section 15 – Regulatory information identifies the safety, health, and environmental regulations specific for the product that is not indicated anywhere else on the SDS.

- Section 16 – Other information indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version. You may wish to contact the supplier for an explanation of the changes. Other useful information also may be included here.
GHS Pictogram Guide

GHS pictograms are symbols with red diamond borders that are designed to provide hazard information to handlers of chemicals universally at a glance. There are 9 different pictograms that identify risks in three different categories including chemical/physical, health or environmental.

- Chemical / Physical Risk
- Health Risk
- Environmental Risk
CORROSIVE

Corrosive

(Corrosion Pictogram)

Identifies chemicals with the following hazards:
- Skin corrosion
- Eye damage
- Corrosive metals

Shop Corrosive Labels

Substances and preparations which, may on contact with living tissues, destroy them.

1. Wear suitable gloves and eye / face protection.
2. Take off all contaminated clothing immediately.
3. In case of contact with skin, wash immediately with plenty of water.
4. In case of contact with eyes, rinse immediately (for 15 minutes) with plenty of water and seek medical advice.
EXCLAMATION MARK

Acute Toxic
(Exclamation Mark Pictogram)

Identifies chemicals with the following hazards:
- Irritant (skin & eye)
- Skin sensitizer
- Acute toxicity (harmful)
- Narcotic effects
- Respiratory tract infection
- Hazardous ozone layer (non mandatory)

Shop Acute Toxic Labels
<table>
<thead>
<tr>
<th><strong>Irritant</strong></th>
<th>May cause inflammation of the skin or mucous membrane through immediate, prolonged or repeated contact.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Toxic</strong></td>
<td>Cause death or acute or chronic damage to health when inhaled, swallowed or absorbed via the skin.</td>
</tr>
<tr>
<td>Acute (Cat 1-3)</td>
<td>Acute (Cat 4)</td>
</tr>
<tr>
<td><strong>Harmful</strong></td>
<td>May cause death or acute or chronic damage to health when inhaled, swallowed or absorbed via the skin.</td>
</tr>
<tr>
<td>Acute (Cat 1-3)</td>
<td>Acute (Cat 4)</td>
</tr>
<tr>
<td><strong>Sensitising</strong></td>
<td>Substances and preparations which, if they are inhaled or if they penetrate the skin, are capable of eliciting a reaction by hyper-sensitisation such that on further exposure to the substance or preparation characteristic adverse effects are produced.</td>
</tr>
<tr>
<td><strong>Respiratory</strong></td>
<td><strong>Dermal</strong></td>
</tr>
</tbody>
</table>

**Irritant**
1. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
2. In case of contact with skin, wash immediately with plenty of water.
3. Do not breathe vapour / spray / dust.
4. Avoid contact with skin.

**Toxic**
1. Wear suitable protective clothing, gloves and eye / face protection.
2. After contact with skin wash immediately with plenty of water.
3. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
4. In case of accident or you feel unwell, seek medical advice immediately.

**Harmful**
1. Do not breathe vapour / spray / dust.
2. Avoid contact with skin.
3. Wash thoroughly before you eat, drink or smoke.
4. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

**Sensitising**
1. Wear suitable protective clothing, gloves and eye / face protection.
2. Avoid contact with skin. In case of contact with skin, wash immediately with plenty of water.
3. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
4. In case of accident or you feel unwell, seek medical advice immediately.
Health Hazard
(Health Hazard Pictogram)

Identifies chemicals with the following hazards:
- Carcinogen
- Mutagenicity
- Reproductive toxicity
- Respiratory sensitizer
- Target organ toxicity
- Aspiration toxicity

Shop Health Hazard Labels
**HEALTH HAZARD**

**Carcinogenic**
- May induce cancer or increase its incidence if inhaled, ingested or if it penetrates the skin.
1. Wear suitable protective clothing, gloves and eye / face protection.
2. Avoid contact with skin. In case of contact with skin, wash immediately with plenty of water.
3. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
4. In case of accident or you feel unwell, seek medical advice immediately.

**Mutagenic**
- May induce heritable genetic defects or increase their incidence if inhaled, ingested or if it penetrates the skin.
1. Wear suitable protective clothing, gloves and eye / face protection.
2. Avoid contact with skin. In case of contact with skin, wash immediately with plenty of water.
3. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
4. In case of accident or you feel unwell, seek medical advice immediately.

**Toxic for Reproduction**
- Substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may produce or increase the incidence of non-heritable adverse effects in the progeny and/or an impairment of male or female reproductive functions or capacity.
1. Wear suitable protective clothing, gloves and eye / face protection.
2. Avoid contact with skin. In case of contact with skin, wash immediately with plenty of water.
3. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
4. In case of accident or you feel unwell, seek medical advice immediately.

**Sensitising**
- Substances and preparations which, if they are inhaled or if they penetrate the skin, are capable of eliciting a reaction by hyper-sensitisation such that on further exposure to the substance or preparation characteristic adverse effects are produced.
1. Wear suitable protective clothing, gloves and eye / face protection.
2. Avoid contact with skin. In case of contact with skin, wash immediately with plenty of water.
3. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
4. In case of accident or you feel unwell, seek medical advice immediately.
SEVERE TOXIC

Severe Toxic
(Skull & Cross Bones Pictogram)
Identifies chemicals with the following hazards:
- Acute toxicity (fatal or toxic)*

Shop Severe Toxic Labels
*GHS Acute Toxic symbol is used for less severe toxicity

Toxic

Cause death or acute or chronic damage to health when inhaled, swallowed or absorbed via the skin.

Acute (Cat 1-3) Acute (Cat 4)

Harmful

May cause death or acute or chronic damage to health when inhaled, swallowed or absorbed via the skin.

Acute (Cat 1-3) Acute (Cat 4)

1. Wear suitable protective clothing, gloves and eye / face protection.
2. After contact with skin wash immediately with plenty of water.
3. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
4. In case of accident or you feel unwell, seek medical advice immediately.
# HEALTH HAZARD CATEGORIES

<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>Associated Hazard Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>Categories 1-4 (w/ 1 being the most dangerous)</td>
</tr>
<tr>
<td>Skin corrosion</td>
<td>Categories 1A, 1B, 1C and 2</td>
</tr>
<tr>
<td>Skin irritation</td>
<td>Categories 1A, 1B, 1C and 2</td>
</tr>
<tr>
<td>Eye effects</td>
<td>Categories 1, 2A and 2B</td>
</tr>
<tr>
<td>Sensitization (skin or eye)</td>
<td>Category 1A and 1B</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Categories 1A, 1B and 2</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Categories 1A, 1B and 2</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Categories 1A, 1B, 2 and additional category for effects on or via lactation</td>
</tr>
</tbody>
</table>
| Target organ systemic toxicity: single and repeated exposure | Single: Categories 1-3  
Repeated: Categories 1 and 2 |
| Aspiration toxicity                            | Category 1 and 2                                                     |
3.2.2 Skin Corrosion

Skin corrosion means the production of irreversible damage to the skin following the application of a test substance for up to 4 hours. Substances and mixtures in this hazard class are assigned to a single harmonized corrosion category. For Competent Authorities, such as transport packing groups, needing more than one designation for corrosivity, up to three subcategories are provided within the corrosive category. See the Skin Corrosion/Irritation Table 3.9.

Several factors should be considered in determining the corrosion potential before testing is initiated:

- Human experience showing irreversible damage to the skin;
- Structure/activity or structure property relationship to a substance or mixture already classified as corrosive;
- pH extremes of \( \leq 2 \) and \( \geq 11.5 \) including acid/alkali reserve capacity.
3.2.3 Skin Irritation

Skin irritation means the production of reversible damage to the skin following the application of a test substance for up to 4 hours. Substances and mixtures in this hazard class are assigned to a single irritant category. For those authorities, such as pesticide regulators, wanting more than one designation for skin irritation, an additional mild irritant category is provided. See the Skin Corrosion/Irritation Table 3.9.

Several factors should be considered in determining the irritation potential before testing is initiated:

- Human experience or data showing reversible damage to the skin following exposure of up to 4 hours;
- Structure/activity or structure property relationship to a substance or mixture already classified as an irritant.
3.2.4 Eye Effects

Several factors should be considered in determining the serious eye damage or eye irritation potential before testing is initiated:

- Accumulated human and animal experience;
- Structure/activity or structure property relationship to a substance or mixture already classified;
- pH extremes like \( \leq 2 \) and \( \geq 11.5 \) that may produce serious eye damage.

**Serious eye damage** means the production of tissue damage in the eye, or serious physical decay of vision, following application of a test substance to the front surface of the eye, which is not fully reversible within 21 days of application. Substances and mixtures in this hazard class are assigned to a single harmonized category.
Eye irritation means changes in the eye following the application of a test substance to the front surface of the eye, which are fully reversible within 21 days of application. Substances and mixtures in this hazard class are assigned to a single harmonized hazard category. For authorities, such as pesticide regulators, wanting more than one designation for eye irritation, one of two subcategories can be selected, depending on whether the effects are reversible in 21 or 7 days.

3.2.5 Sensitization

Respiratory sensitizer means a substance that induces hypersensitivity of the airways following inhalation of the substance. Substances and mixtures in this hazard class are assigned to one hazard category.

Skin sensitizer means a substance that will induce an allergic response following skin contact.

The definition for “skin sensitizer” is equivalent to “contact sensitizer”. Substances and mixtures in this hazard class are assigned to one hazard category. Consideration should be given to classifying substances which cause immunological contact urticaria (an allergic disorder) as contact sensitizers.
# Eyewash Station Risk Assessment

## Risk Scoring Guideline

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Risk Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No risk</td>
<td>0</td>
<td>Product, process, procedure provides no risk</td>
</tr>
<tr>
<td>Low risk</td>
<td>1</td>
<td>*Minimal risk if process and procedures are followed</td>
</tr>
<tr>
<td>Medium risk</td>
<td>3</td>
<td>*Slightly elevated risk even if procedures, and processes are followed</td>
</tr>
<tr>
<td>High risk</td>
<td>5</td>
<td>*Product, procedure or process is susceptible</td>
</tr>
</tbody>
</table>

*Proper PPE must always be utilized*

Eyewash must be readily available within 55’ or 10 seconds, and travel path to eyewash cannot be impeded by an additional door. Weekly testing will be required. All other ANSI Z358.1-2014 requirements will apply.

---

<table>
<thead>
<tr>
<th>Risk of splashing, or other accidental spills</th>
<th>History of accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport of product</td>
<td>0</td>
</tr>
<tr>
<td>Install of product into equipment, if applicable</td>
<td>0</td>
</tr>
<tr>
<td>Use of product, by operation of equip or manual</td>
<td>1</td>
</tr>
<tr>
<td>Removal of product from equipment, if applicable</td>
<td>1</td>
</tr>
<tr>
<td>Removal and disposal of product</td>
<td>0</td>
</tr>
<tr>
<td>Sub-totals</td>
<td>2</td>
</tr>
</tbody>
</table>

Greater than a "5" risk score requires a eyewash station

No products are outside of the pH threshold.

**If the product has a pH level of <2 or 11.5> a eyewash station is required**
**EYWASH LOCATION RISK ASSESSMENT**

Location: Rehab

Reviewer(s): Ron Henley

Date: 7/20/2016

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are hazardous chemicals (corrosive, acids, alkalis, toxins, flammables, or poisons) poured or handled in an open system?</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Are biohazardous liquids (blood or other body fluid) poured or handled in large quantities?</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Is there a significant risk of splashing blood, body fluids, or chemical materials during disposal or elimination?</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Have eye injuries been reported from this area in the past?</td>
<td></td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

If any of the above questions are answered "Yes", then proceed to the table below in order to find the score. If all questions are answered "No" or "N/A", then no eyewash is required.

**Probability Estimate**

- **Estimate A**: Likely to occur immediately.
- **Estimate B**: Probably will occur in time.
- **Estimate C**: May occur in time.
- **Estimate D**: Unlikely to occur.

**Severity Classification**

- **Class I**: Catastrophic (may cause death or permanently disabling injury).
- **Class II**: Critical (may cause severe injury or severe occupational illness).
- **Class III**: Marginal (may cause minor occupational injury or illness).
- **Class IV**: Negligible (probably would not affect personnel safety or health).

<table>
<thead>
<tr>
<th>Severity Class</th>
<th>Probability Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>I</td>
<td>1</td>
</tr>
<tr>
<td>II</td>
<td>1</td>
</tr>
<tr>
<td>III</td>
<td>2</td>
</tr>
<tr>
<td>IV</td>
<td>3</td>
</tr>
</tbody>
</table>

If the results of the evaluation determine that the risk assessment code is one (1) or two (2), an eyewash is required. If the results of the evaluation determine that the risk assessment code is four (4), five (5), or six (6), an eyewash is not required. A risk assessment code of three (3) indicates that the eyewash is optional.

**Score**

- **Eyewash Needed (Yes/No)?**

Note: 29 CFR 1910.151(c) states: 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.

**References:**

- 29 CFR 1910.151(c)
# Emergency Eyewash and Safety Shower Hazard Assessment Form

## Building Information

<table>
<thead>
<tr>
<th>Building</th>
<th>Location/Department</th>
<th>Manager/Director</th>
<th>ASSESSMENT DATE</th>
<th>Primary Investigator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## A. Investigation

### 1. Chemicals Stored in Area:

### 2. Conditions of Use and Distance to Nearest Station:

## B. Risk Assessment Code (RAC)

### 1. Severity Classification:

- Class I: Catastrophic - Marginal (may cause death or permanent disabling injury).
- Class II: Critical - (may cause severe injury or serious occupational illness).
- Class III: Marginal - (may cause minor occupational injury or illness).
- Class IV: Negligible - (probably would not affect personal safety or health).

### 2. Probability Estimate:

- Estimate A - Likely to occur immediately.
- Estimate B - Probably will occur in time.
- Estimate C - May occur in time.
- Estimate D - Unlikely to occur.

## C. Finding

### RAC Determination

<table>
<thead>
<tr>
<th>Probability Estimate</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Severity</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>II</td>
</tr>
<tr>
<td>III</td>
<td>III</td>
</tr>
<tr>
<td>IV</td>
<td>IV</td>
</tr>
</tbody>
</table>

If the result of the evaluation determines that the RAC is II or III, an eyewash or shower is required. If the result of the evaluation determines that the RAC is II or III, an eyewash or shower is not required. A RAC of I indicates that an eyewash or shower is optional.

### Assessment Criteria:

- OSHA 1910.149(a)(3) - If there is any possibility that an employee's eye may be splashed with solutions containing 0.1 percent or greater formaldehyde, the employer shall provide acceptable equipment for use within the immediate work area for emergency use.
- OSHA 29 CFR 1910.1451 - Where the eyes or body of kg persons may be exposed to injurious corrosive materials, suitable facilities for washing of the eyes and body shall be provided within the work area for immediate emergency use.
- ANSI Z358.1-2014

Surveyor Signature:

[Checklist or assessment criteria]

[Signature]
EXCEPTION WITH AN EXCEPTION

B5. Placement of Emergency Eyewash and Shower Equipment

Emergency eyewash and shower equipment should be available for immediate use, but in no instance should it take an individual longer than 10 seconds to reach the nearest facility. There are several factors that might influence the location of emergency facilities. It is recognized that the average person covers a distance of approximately 55 ft. (16.8 m) in 10 seconds when walking at a normal pace. The physical and emotional state of a potential victim (visually impaired, with some level of discomfort/pain, and possibly in a state of panic) should be considered along with the likelihood of personnel in the immediate area to assist. The installer should also consider other potential hazards that may be adjacent to the path of travel that might cause further injury. A single step up into an enclosure where the equipment can be accessed is not considered to be an obstruction. Additionally, installers should allow for adequate overhead clearance to accommodate the presence of cabinets over counter- or faucet-mounted emergency eyewashes, so as not to create an additional hazard that could been countered when using the device.

A door is considered to be an obstruction. Where the hazard is not corrosive, one intervening door can be present so long as it opens in the same direction of travel as the person attempting to reach the emergency eyewash and shower equipment and the door is equipped with a closing mechanism that cannot be locked to impede access to the equipment.
SDS REVIEW OF REVITAL-OX 2XCONCENTRATE ENZYMATIC DETERGENT
Revital-Ox™ 2X Concentrate Enzymatic Detergent

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
- Product name: Revital-Ox™ 2X Concentrate Enzymatic Detergent
- Product code: JD66

1.2. Relevant identified uses of the substance or mixture and uses advised against
- Use of the substance/mixture: Enzymatic Detergent

1.3. Details of the supplier of the safety data sheet
- Manufacturer: STERIS Corporation
- Address: 180 E. Rexford Drive, Mentor, OH 44060, USA
- Telephone Number: 800-810-7800 (Customer Service: Scientific Products)
- Emergency Telephone: 1-888-200-2437 (ETP/STERIS) 1-800-424-0090 (CHEMTREC)

1.4. Emergency telephone number
- Emergency number: 1-866-622-8388

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
- GHS-US classification
  - Skin Irrit. 2: H315
  - Eye Irrit. 2: H319
  - Acute Tox. 3: H332
  - Acute Tox. 4: H335

2.2. Label elements
- Signal word: Danger
- Hazard statements
  - H303: May be harmful if swallowed
  - H315: May be harmful if in contact with skin
  - H319: Causes skin irritation
  - H332: May be harmful if inhaled
  - H335: May cause respiratory irritation

- Precautionary statements
  - P261: Avoid breathing dust, mist, fume, vapors.
  - P264: Wash hands thoroughly after handling.
  - P317: Use in a well-ventilated area.
  - P320: Wear protective gloves/protective clothing and eye/face protection.
  - P334: Wear respiratory protection.
  - P362/P364: IF ON SKIN: Wash with plenty of soap and water.
  - P362/P364: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
  - P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - P312: Call a POISON CENTER (doctor) if you feel unwell.
  - P332+P313: If skin irritation occurs: Get medical advice/attention.
  - P337+P313: If irritation persists: Get medical advice/attention.
  - P305+P304: Take off contaminated clothing and wash it before reuse.
  - P401: Dispose of contents/container to comply with applicable local, national and international regulations.

2.3. Hazard pictograms (GHS-US):
Revita-Ox™ 2X Concentrate Enzymatic Detergent
Safety Data Sheet
according to the European hazard communication revised on 2012 (HSiChem 2012)

2.3. Other hazards
No additional information available

SECTION 3: Composition/Information on ingredients

3.1. Substance
Not applicable
Full text of Hyphrases: see section 10

3.2. Mixture

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cetyl methyloxysulfonate</td>
<td>(CAS No) 77-92-9</td>
<td>1-5</td>
<td>Eye Irrit. 2A, H315</td>
</tr>
<tr>
<td>Tridecyl trimethylammonium</td>
<td>(CAS No) 102-71-0</td>
<td>1-5</td>
<td>Eye Irrit. 2A, H315</td>
</tr>
</tbody>
</table>
| Ethanolamine             | (CAS No) 141-43-5 | 1-5| Acute Tox. 4 (Oral), H302;
                        |                   |    | Acute Tox. 4 (Inhalation), H332|
| Ethanoladapted coconut of alkylic stearins| (CAS No) 01791-14-8| 1-5| Eye Dam. 1, H318 |
| NN-Dimethylhexadecaminoamide| (CAS No) 2571-88-2| 1-2| Skin Irrit. 2, H315 |
| Substances (polyethylene oxides) | (CAS No) 9014-01-1| 0.1-1| Skin Irrit. 2, H315 |
| Glycerine                | (CAS No) 56-81-5  | 1-5| Not classified         |

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : Remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. Get medical attention.

First-aid measures after skin contact : Immediately flush skin with plenty of water for at least 15 minutes. Remove/ Take off immediately all contaminated clothing. Rinse skin with water/shower. Get medical advice/advice.

First-aid measures after eye contact : In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately get medical attention.

First-aid measures after ingestion : If victim completely conscious/Alert. Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician. Give water or milk if the person is fully conscious.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/symptoms after inhalation : Causes eye irritation. May be harmful if inhaled

Symptoms/symptoms after skin contact : May cause eye or skin irritation. May cause respiratory irritation.

Symptoms/symptoms after ingestion : May cause abdominal pain. May cause gastrointestinal symptoms. May cause allergic or asthma symptoms or breathing difficulties. If inhaled, may cause respiratory irritation.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

Firefighting instruction : Exercise caution when fighting any chemical fire.

Protective equipment for firefighters : Use self-contained breathing apparatus. Do not enter fire area without proper protective equipment. Including respiratory protection. Wear a self-contained breathing apparatus.

Other information : Hazardous decomposition products may be released during prolonged heating like smoke, carbon monoxide and dioxide, nitrogen oxides (NOx).
Revital-Ox™ 2X Concentrate Enzymatic Detergent
Safety Data Sheet
according to the Federal Hazard Communication revised on 2012 (HazCom 2012)

SECTION 5: Accidental release measures
5.1 Personal precautions, protective equipment and emergency procedures
General measures: Do not breathe fumes, vapors. Avoid contact with skin, eyes and clothes
5.1.1 For non-emergency personnel
Protective equipment: Wear protective gloves and eye/face protection. For further information refer to section 8: "Exposure controls/personal protection"
Emergency procedures: Stop leak if safe to do so. Evacuate unnecessary personnel
5.1.2 For emergency responders
Protective equipment: Equip cleanup crew with proper protection
Emergency procedures: Ventilate area
5.2 Environmental precautions
Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters

5.3. Methods and material for containment and cleaning up
Methods for cleaning up: Comply with applicable local, national and international regulation. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials. Residue may be washed down with water. Product may be flushed to a sanitary sewer with copious amounts of water. If in accordance with local, state or national legislation

5.4. Reference to other sections
See Heading 5: Exposure controls and personal protection

SECTION 7: Handling and storage
7.1. Precautions for safe handling
Precautions for safe handling: Product for hospital and professional use only. Read label before use. Provide good ventilation in process area to prevent formation of vapour. Avoid all eye and skin contact and do not breathe vapour and mist. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work
Hygiene measures: Take care for general good hygiene and housekeeping. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product
7.2. Conditions for safe storage, including any incompatibilities
Technical measures: Provide adequate ventilation. A washing facility/water for eye and skin cleaning purposes should be present
Storage conditions: Keep only in the original container in a cool, well ventilated place. Keep container closed when not in use
Incompatible materials: Strong oxidising agents
Storage temperature: < 32 °C (< 90 °F)
Storage area: Store in dry, cool, well-ventilated area
Special rules on packaging: Correctly labelled
7.3. Specific end uses:
No additional Information available

SECTION 8: Exposure controls/personal protection
8.1. Control parameters

<table>
<thead>
<tr>
<th>Substance (102-71-5)</th>
<th>USA ACGIH</th>
<th>ACGIH TWA (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACBH</td>
<td>5 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance (141-43-5)</th>
<th>USA ACGIH</th>
<th>ACGIH TWA (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACBH</td>
<td>2 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance</th>
<th>USA OSPHA</th>
<th>GOSHA STEL (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSPHA</td>
<td>5 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance</th>
<th>USA OSPHA</th>
<th>GOSHA PEL (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSPHA</td>
<td>6 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance (proteolytic enzymes)</th>
<th>USA ACGIH</th>
<th>ACGIH Ceiling (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACBH</td>
<td>0.00000 mg/m³</td>
</tr>
</tbody>
</table>

8.2. Exposure controls
Appropriate engineering controls: Ensure adequate ventilation. Emergency eye wash facilities and safety showers should be available in the immediate vicinity of any potential exposure
# Revital-Ox™ 2X Concentrate Enzymatic Detergent

## Safety Data Sheet

According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

<table>
<thead>
<tr>
<th>Personal protective equipment</th>
<th>Avoid all unnecessary exposure. Personal protective equipment should be selected based upon the conditions under which this product is handled or used. Protective clothing, Gloves, Protective goggles.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand protection</td>
<td>Wear rubber gloves or latex-free gloves</td>
</tr>
<tr>
<td>Eye protection</td>
<td>Safety glasses</td>
</tr>
<tr>
<td>Skin and body protection</td>
<td>Wear suitable protective clothing</td>
</tr>
<tr>
<td>Respiratory protection</td>
<td>Work in well-ventilated areas or use proper respiratory protection.</td>
</tr>
<tr>
<td>Other information</td>
<td>Do not eat, drink or smoke during use</td>
</tr>
</tbody>
</table>

## SECTION 9: Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical state</strong></td>
<td>Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Slightly hazy</td>
</tr>
<tr>
<td>Colour</td>
<td>Yellow to amber</td>
</tr>
<tr>
<td>Odour</td>
<td>Floral odor</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>7.5 - 8.1</td>
</tr>
<tr>
<td>pH solution</td>
<td>7 - 9 (1% Solution)</td>
</tr>
<tr>
<td>Relative density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td>1.059 g/ml Specific Gravity</td>
</tr>
<tr>
<td>Solubility</td>
<td>Water completely soluble</td>
</tr>
<tr>
<td>Log P ow</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Kow</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive limits</td>
<td>No data available</td>
</tr>
</tbody>
</table>

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No additional information available

### 10.2. Chemical stability

Stable under normal conditions of use

### 10.3. Possibility of hazardous reactions

No additional information available

### 10.4. Conditions to avoid

Heat, Light
## Revital-Ox™ 2X Concentrate Enzymatic Detergent

### Safety Data Sheet

According to the Federal Insecticide, Rodenticide, and Fungicide Act (FIFRA), Section 3(a)(1)(A) (7 U.S.C. 136a), the registrant must make information available to the public on the hazardous properties of the pesticide, including: toxicological effects, physical and chemical properties, and appropriate precautions for handling the pesticide. This information is provided for the Revital-Ox™ 2X Concentrate Enzymatic Detergent.

### 19.6. Incompatible materials

- Do not mix with products that contain chlorine or bleach.

### 19.7. Hazardous decomposition products

- Hazardous decomposition products may be released during prolonged heating like smokes, carbon monoxide, and oxides of nitrogen (NOx).

### 11.1. Information on toxicological effects

#### Acute toxicity

- **Revital-Ox™ 2X Concentrate Enzymatic Detergent**
  - LD₅₀ oral rat: > 5000, mg/kg
  - LD₅₀ dermal rat: > 5000, mg/kg

- **Triethanolamine (102-71-6)**
  - LD₅₀ oral rat: 4190, mg/kg
  - LD₅₀ dermal rabbit: > 20, mg/kg
  - ATE (oral): 4190,000, mg/kg/ bodyweight

- **Ethoxylooctated coconut oil alkylamine (61751-14-8)**
  - ATE (oral): 5000, mg/kg bodyweight

- **Ethanolamine (141-43-5)**
  - LD₅₀ oral rat: 1720, mg/kg
  - LD₅₀ dermal rabbit: 1.1 mg/kg
  - ATE (oral): 5000, mg/kg bodyweight
  - ATE (dermal): 1160,000, mg/kg bodyweight
  - ATE (dust, rat): 1,500, mg/kg/4h

- **Tolyltriazole, sodium salt (64665-07-2)**
  - ATE (oral): 5000, mg/kg bodyweight

- **1-Octadecanolamine, N,N-dimethyl-(124-28-7)**
  - LD₅₀ oral rat: 2115, mg/kg
  - LD₅₀ dermal rat: 4,20 mg/kg
  - ATE (oral): 500,000, mg/kg bodyweight

#### Skin corrosion/irritation

- **Triethanolamine (102-71-6)**
  - Causes skin irritation: pH 7.5 - 8.5

#### Respiratory or skin sensitisation

- **Ethanolamine (141-43-5)**
  - May cause allergy or asthma symptoms or breathing difficulties if inhaled
  - Not classified

#### Carcinogenicity

- **Triethanolamine (102-71-6)**
  - Not classifiable

- **Ethanolamine (141-43-5)**
  - Not classified

- **Ethoxylooctated coconut oil alkylamine (61751-14-8)**
  - Based on available data, the classification criteria are not met

- **1-Octadecanolamine, N,N-dimethyl-(124-28-7)**
  - Based on available data, the classification criteria are not met

#### IARC group

- **Triethanolamine (102-71-6)**
  - Not classifiable

- **Ethanolamine (141-43-5)**
  - Not classifiable

#### Specific target organ toxicity (single exposure)

- **Triethanolamine (102-71-6)**
  - Not classified

- **Ethanolamine (141-43-5)**
  - Not classified

#### Specific target organ toxicity (repeated exposure)

- **Triethanolamine (102-71-6)**
  - Not classified

- **Ethanolamine (141-43-5)**
  - Not classified

#### NOAEL (oral, rat, 90 days)

- **Triethanolamine (102-71-6)**
  - > = mg/kg bodyweight/day

- **Ethanolamine (141-43-5)**
  - > = mg/kg bodyweight/day

#### Aspiration hazard

- **Triethanolamine (102-71-6)**
  - Not classified

- **Ethanolamine (141-43-5)**
  - Not classified

#### Potential adverse human health effects and symptoms

- **Triethanolamine (102-71-6)**
  - Harmful if swallowed

- **Ethanolamine (141-43-5)**
  - Harmful if swallowed
# Revital-Ox™ 2X Concentrate Enzymatic Detergent

## Safety Data Sheet

**According to the standardized hazard communication revised in 2012 (GHS 2012)**

### Symptoms/Effects of Exposure
- **Inhalation:** In case of repeated or prolonged exposure: May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation.
- **Skin Contact:** Irritating to eyes and skin
- **Eye Contact:** Causes eye irritation
- **Ingestion:** Can occur gastrointestinal disturbance

## SECTION 12: Ecological Information

### 12.1. Toxicty

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC50 Daphnia 1</td>
<td>120 mg/l (Exposure time: 72 h - Species: Daphnia magna)</td>
</tr>
<tr>
<td>LC50 fish 1</td>
<td>1510 mg/l (Exposure time: 96 h - Species: Lepeophtheirus salmonis)</td>
</tr>
<tr>
<td>EC50 other aquatic organisms 1</td>
<td>216 mg/l (Exposure time: 72 h - Species: Daphnia magna)</td>
</tr>
<tr>
<td>LC50 fish 2</td>
<td>1000 mg/l (Exposure time: 96 h - Species: Phoxinus phoxinus)</td>
</tr>
<tr>
<td>EC50 other aquatic organisms 2</td>
<td>158 mg/l (Exposure time: 96 h - Species: Daphnia magna)</td>
</tr>
<tr>
<td>LC50 fish 1</td>
<td>227 mg/l (Exposure time: 96 h - Species: Phoxinus phoxinus)</td>
</tr>
<tr>
<td>EC50 other aquatic organisms 1</td>
<td>95 mg/l (Exposure time: 48 h - Species: Daphnia magna)</td>
</tr>
<tr>
<td>LC50 fish 2</td>
<td>3854 mg/l (Exposure time: 96 h - Species: Brachydanio rerio)</td>
</tr>
</tbody>
</table>

### 12.2. Persistence and Degradability

**Revital-Ox™ 2X Concentrate Enzymatic Detergent**

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Kow</td>
<td>0.72 (at 20°C)</td>
</tr>
<tr>
<td>BCF fish 1</td>
<td>2.8</td>
</tr>
<tr>
<td>Log Kow</td>
<td>2.83</td>
</tr>
<tr>
<td>Ethanolamine (141-43-5)</td>
<td>-1.91 (at 25°C)</td>
</tr>
</tbody>
</table>

### 12.3. Bioaccumulative Potential

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioaccumulative Potential</td>
<td>Not established</td>
</tr>
</tbody>
</table>

### 12.4. Mobility in Soil

- No additional information available

### 12.5. Other Adverse Effects

- Other information: Avoid release to the environment

## SECTION 13: Disposal Considerations

### 13.1. Waste Treatment Methods

- Waste disposal recommendations: Dispose of in a safe manner in accordance with local/national regulations. Do not reuse empty containers.
- Additional information: Empty containers should be thoroughly rinsed with large quantities of clean water. Empty containers should be taken for recycling, recovery or waste in accordance with local regulation. Ensure all national/local regulations are observed.

### Ecology - Waste Materials

- Ecology: Avoid release to the environment

## SECTION 14: Transport Information

- In accordance with DOT
- No dangerous good in sense of transport regulations

### Additional Information

- Other information: No supplementary information available
# Revital-Ox™ 2X Concentrate Enzymatic Detergent

## Safety Data Sheet

### ADIR
- **Transport document description:** In accordance with DOT
- **Transport by sea:** No dangerous good in sense of transport regulations
- **Air transport:** In accordance with DOT
- **No dangerous good in sense of transport regulations**

### SECTION 13: Regulatory information

<table>
<thead>
<tr>
<th>Substance</th>
<th>Inventory Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric acid (77-92-9)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) Inventory</td>
</tr>
<tr>
<td>Triethanolamine (109-71-6)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) Inventory</td>
</tr>
<tr>
<td>Ethoxylated coconut oil alkyl amine (61791-14-8)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) Inventory</td>
</tr>
<tr>
<td>Ethanolamine (141-43-5)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) Inventory</td>
</tr>
<tr>
<td>Suberinamides (proteolytic enzymes) (9916-01-8)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) Inventory</td>
</tr>
<tr>
<td>Glycolate (56-81-9)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) Inventory</td>
</tr>
</tbody>
</table>

### 19.3. US State regulations
- This product contains a chemical known to the State of California to cause cancer.

### SECTION 16: Other information

#### Full text of hazards, see section 16

<table>
<thead>
<tr>
<th>Hazard statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Tox. 4 (Dermal)</td>
<td>Acute toxicity (dermal), Category 4</td>
</tr>
<tr>
<td>Acute Tox. 4 (Inhalation)</td>
<td>Acute toxicity (inhalation), Category 4</td>
</tr>
<tr>
<td>Acute Tox. 4 (Oral)</td>
<td>Acute toxicity (oral), Category 4</td>
</tr>
<tr>
<td>Eye Dam. 1</td>
<td>Serious eye damage/eye irritation, Category 1</td>
</tr>
<tr>
<td>Eye Irrit. 2A</td>
<td>Serious eye damage/eye irritation, Category 2A</td>
</tr>
<tr>
<td>Flammable liquids, Category 4</td>
<td>Flammable liquids, Category 4</td>
</tr>
<tr>
<td>Resp. Sens. 1</td>
<td>Sensitisation — Respiratory, Category 1</td>
</tr>
<tr>
<td>Skin Corr. 1A</td>
<td>Skin corrosion/irritation, Category 1A</td>
</tr>
<tr>
<td>Skin Corr. 1B</td>
<td>Skin corrosion/irritation, Category 1B</td>
</tr>
<tr>
<td>Skin Irrit. 2</td>
<td>Skin corrosion/irritation, Category 2</td>
</tr>
<tr>
<td>STOT RE 3</td>
<td>Specific target organ toxicity (single exposure), Category 3</td>
</tr>
<tr>
<td>Mess 2</td>
<td>Harmful if swallowed</td>
</tr>
<tr>
<td>H312</td>
<td>Harmful in contact with skin</td>
</tr>
<tr>
<td>H314</td>
<td>Causes severe skin burns and eye damage</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H316</td>
<td>Causes serious eye damage</td>
</tr>
<tr>
<td>H317</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>H332</td>
<td>Harmful if inhaled</td>
</tr>
<tr>
<td>H334</td>
<td>May cause allergy or asthma symptoms or breathing difficulties if inhaled</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation</td>
</tr>
<tr>
<td>H336</td>
<td>May cause respiratory irritation</td>
</tr>
</tbody>
</table>
**Revital-Ox™ 2X Concentrate Enzymatic Detergent**

**Safety Data Sheet**

 according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

<table>
<thead>
<tr>
<th>NFPA health hazard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Exposure could cause irritation but only minor residual injury even if no treatment is given</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NFPA fire hazard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Materials that will not burn</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NFPA reactivity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Normally stable even under fire exposure conditions and are not reactive with water</td>
</tr>
</tbody>
</table>

SDS US (GHS HazCom 2012)

The information on this sheet is not a specification and does not guarantee specific properties. The information is intended to provide general knowledge as to health and safety based upon our knowledge of the handling, storage, and use of the product. It is not applicable to unusual or non-standard uses of the product or where instructions or recommendations are not followed.
1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier
Product Name
Clorox Healthcare® Bleach Germicidal Cleaner

Other means of identification
Synonyms
None

EPA Pesticide registration number
56362-7

Recommended use of the chemical and restrictions on use
Recommended Use
Disinfectant - Non-Aerosol
Uses advised against
No information available

Details of the supplier of the safety data sheet
Supplier
The Clorox Company
Supplier Address
1221 Broadway
Oakland
CA
94612
US

Telephone
1-510-271-7000

Emergency telephone number
Emergency Telephone Number
For Medical Emergencies call: 1-800-446-1014. Transportation Emergencies, call Chemtoc: 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification
This product is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

GHS Label elements, including precautionary statements

Emergency Overview
The product contains no substances which at their given concentration, are considered to be hazardous to health.

Physical state
Liquid

Odor
Fruity, Floral, Bleach

Precautionary Statements - Prevention
Not applicable

Precautionary Statements - Response
None

Precautionary Statements - Storage

None

Precautionary Statements - Disposal
None

Hazard not otherwise classified (HNOC)
Not applicable

Unknown Toxicity
0.03 % of the mixture consists of ingredient(s) of unknown toxicity

Other Information
No information available

Interactions with Other Chemicals
No information available

Interactions with Other Chemicals
May react with bleach-containing products or other household cleaners to produce hazardous gases.

3. COMPOSITION/INFORMATION ON INGREDIENTS

The product contains no substances which at their given concentration, are considered to be hazardous to health.

4. FIRST AID MEASURES

First aid measures

General Advice
Show this safety data sheet to the doctor in attendance.

Eye contact
Rinse thoroughly with water as necessary. If symptoms persist, call a physician.

Skin contact
Wash with soap and water. If skin irritation persists, call a physician.

Inhalation
Remove to fresh air. If breathing is difficult, (trained personnel should) give oxygen. If symptoms persist, call a physician.

Ingestion
Drink 1 or 2 glasses of water. Get medical attention if symptoms occur.

Most important symptoms and effects, both acute and delayed
None known.

Indication of any immediate medical attention and special treatment needed

Notes to Physician
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical
No information available.

**Hazardous Combustion Products**
Carbon oxides.

**Explosion Data**
Sensitivity to Mechanical Impact: No.
Sensitivity to Static Discharge: No.

**Protective equipment and precautions for firefighters**
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

---

**6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions, protective equipment and emergency procedures**
- Personal precautions: Avoid contact with eyes.
- Other Information: Refer to protective measures listed in Sections 7 and 8.

**Environmental precautions**
- Environmental precautions: See Section 12 for additional ecological information.

**Methods and material for containment and cleaning up**
- Methods for containment: Prevent further leakage or spillage if safe to do so.
- Methods for cleaning up: Pick up and transfer to properly labeled containers.

---

**7. HANDLING AND STORAGE**

**Precautions for safe handling**
- Handling: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product.
- Conditions for safe storage, including any incompatibilities
  - Storage: Keep containers tightly closed in a dry, cool and well-ventilated place.
  - Incompatible products: None known based on information supplied.

---

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Control parameters**
- Exposure Guidelines: This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.
- Other Exposure Guidelines: See Section 15 for national exposure control parameters.

**Engineering Measures**
- Ventilation systems.

**Individual protection measures, such as personal protective equipment**
- Skin and body protection: No special protective equipment required.
- Respiratory protection: No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

**Hygiene Measures**
- Hand in accordance with good industrial hygiene and safety practice.
9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state | Liquid
---|---
Odor | Fruity Floral
Odor Threshold | No information available

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting / freezing point</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Flash Point</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper flammability limit</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower flammability limit</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Vapor density</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>-1.0</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Completely soluble</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Kinematic viscosity</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Dynamic viscosity</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
</tbody>
</table>

Other Information

Softening Point | No data available
VOC Content (%) | No data available
Particle Size | No data available
Particle Size Distribution | No data available

10. STABILITY AND REACTIVITY

Reactivity
- No data available

Chemical stability
- Stable under recommended storage conditions.

Possibility of Hazardous Reactions
- None under normal processing.

Conditions to avoid
- None known based on information supplied.

Incompatible materials
- Ammonia Acids

Hazardous Decomposition Products
- None known based on information supplied.
11. TOXICOLOGICAL INFORMATION

Product Information

Inhalation: May cause irritation of respiratory tract.
Eye contact: May cause slight irritation.
Skin contact: Substance may cause slight skin irritation.
Ingestion: Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Component Information

Information on toxicological effects

Symptoms: May cause redness and tearing of the eyes.
Delayed and immediate effects as well as chronic effects from short and long term exposure: No information available.
Genotoxicity: No information available.
Carcinogenicity: The table below indicates whether each agency has listed any ingredient as a carcinogen.
IARC (International Agency for Research on Cancer) Group 3 - Not Classifiable as to Carcinogenicity in Humans
Reproductive toxicity: No information available.
STOT - single exposure: No information available.
STOT - repeated exposure: No information available.
Chronic Toxicity: No known effect based on information supplied.
Target Organ Effects: Skin, Eyes, Respiratory system, Reproductive System.
Aspiration Hazard: No information available.

Numerical measures of toxicity: Product Information

The following values are calculated based on chapter 3.1 of the GHS document.
No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity: Non known.
Persistence and Degradability: No information available.
Bioaccumulation: No information available.
Other adverse effects: No information available.
13. DISPOSAL CONSIDERATIONS

Waste treatment methods
Disposal methods
Contaminated Packaging
Do not reuse empty containers. Dispose of in accordance with federal, state and local regulations.

California Waste Codes
232

This product contains one or more substances that are listed with the State of California as a hazardous waste.

14. TRANSPORT INFORMATION

DOT
Not regulated

TDG
Not regulated

ICAO
Not regulated

IATA
Not regulated

IMDG
Not regulated

15. REGULATORY INFORMATION

International Inventories
TSCA
All components are listed on the TSCA Inventory

DSL
All components are listed on the DSL or NDSL.

TSCA - United States Toxic Substances Control Act Section 6(d) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

US Federal Regulations
SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories
Acute Health Hazard
Chronic Health Hazard
Fire Hazard
Sudden release of pressure hazard
Reactive Hazard
No
No
No
No
No

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level.
pertaining to releases of this material

US State Regulations
California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right to Know Regulations
This product does not contain any substances above threshold limits that are regulated by state right-to-know.

EPA Pesticide Registration No. 56362-7

EPA Statement
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide label
CAUTION: Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling.

International Regulations
National occupational exposure limits
Museum - Occupational Exposure Limits - Carcinogens
A3 - Confirmed Animal Carcinogen
Canada
WHMIS Hazard Class
Not determined

16. OTHER INFORMATION

NFPA
Health Hazards 0 Flammability 0 Instability 0

HMIS
Health Hazards 0 Flammability 0 Physical Hazard 0

Prepared By
Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501

Issuing Date
10-Jan-2017

Revision Date
15-Jan-2019

Revision Note
No information available

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet
**1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING**

**Product identifier**

**Product Name**
Clorox® Germicidal Bleach

**Other means of identification**

**EPA Registration Number**
67619-32

**Recommended use of the chemical and restrictions on use**

**Recommended use**
Institutional hard surface disinfecting and sanitizing bleach

**Uses advised against**
No information available

**Details of the supplier of the safety data sheet**

**Supplier Address**
The Clorox Company
1221 Broadway
Oakland, CA 94612

**Phone:** 1-510-271-7000

**Emergency telephone number**

**Emergency Phone Numbers**
For Medical Emergencies, call: 1-800-446-1014
For Transportation Emergencies, call Chemtrec: 1-800-424-9300
Unknown Toxicity
Not applicable.

Other Information
Very toxic to aquatic life with long lasting effects.

Interactions with Other Chemicals
Reacts with other household chemicals such as toilet bowl cleaners, rust removers, acids, or products containing ammonia to produce hazardous irritating gases, such as chlorine and other chlorinated compounds.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight %</th>
<th>Trade Secret</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hypochlorite</td>
<td>7681-52-9</td>
<td>5 - 10</td>
<td>*</td>
</tr>
</tbody>
</table>

*The exact percentage (concentration) of composition has been withheld as a trade secret.*

4. FIRST AID MEASURES

First aid measures

General Advice
Call a poison control center or doctor immediately for treatment advice. Show this safety data sheet to the doctor in attendance.

Eye Contact
Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin Contact
Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Inhalation
Move to fresh air. If breathing is affected, call a doctor.

Ingestion
Have person sip a glassful of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person. Call a poison control center or doctor immediately for treatment advice.

Protection of First-aiders
Avoid contact with skin, eyes, and clothing. Use personal protective equipment as required. Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Most Important Symptoms and Effects
Burning of eyes and skin.

Indication of any immediate medical attention and special treatment needed

Notes to Physician
Treat symptomatically. Probable mucosal damage may contraindicate the use of gastric lavage.
2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

<table>
<thead>
<tr>
<th>Skin corrosion/irritation</th>
<th>Category 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

GHS Label elements, including precautionary statements

Emergency Overview

Signal word

Danger

Hazard Statements

Causes severe skin burns and eye damage
Causes serious eye damage

Appearance

Clear, pale yellow

Physical State

Thin liquid

Odor

Bleach

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling.

Wear protective gloves, protective clothing, face protection, and eye protection such as safety glasses.

Precautionary Statements - Response

Immediately call a poison center or doctor.

If swallowed: Rinse mouth. Do NOT induce vomiting.

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

Specific treatment (see supplemental first aid instructions on this label).

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Precautionary Statements - Storage

Store locked up.

Precautionary Statements - Disposal

Dispose of contents in accordance with all applicable federal, state, and local regulations.

Hazard not otherwise classified (HNOC)

Although not expected, heart conditions or chronic respiratory problems such as asthma, chronic bronchitis, or obstructive lung disease may be aggravated by exposure to high concentrations of vapor or mist.

Product contains a strong oxidizer. Always flush drains before and after use.
5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media
CAUTION: Use of water spray when fighting fire may be inefficient.

Specific Hazards Arising from the Chemical
This product causes burns to eyes, skin, and mucous membranes. Thermal decomposition can release sodium chlorate and irritating gases and vapors.

Explosion Data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions
Avoid contact with eyes, skin, and clothing. Ensure adequate ventilation. Use personal protective equipment as required. For spills of multiple products, responders should evaluate the MSDSs of the products for incompatibility with sodium hypochlorite. Breathing protection should be worn in enclosed and/or poorly-ventilated areas until hazard assessment is complete.

Other Information
Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental Precautions
This product is toxic to fish, aquatic invertebrates, oysters, and shrimp. Do not allow product to enter storm drains, lakes, or streams. See Section 12 for ecological information.

Methods and material for containment and cleaning up

Methods for Containment
Prevent further leakage or spillage if safe to do so.

Methods for Cleaning Up
Absorb and containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.
7. HANDLING AND STORAGE

Precautions for safe handling:

Handling: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes, and clothing. Do not eat, drink, or smoke when using this product.

Conditions for safe storage, including any incompatibilities:

Storage: Store away from children. Reclose cap tightly after each use. Store this product upright in a cool, dry area, away from direct sunlight and heat to avoid deterioration. Do not contaminate food or feed by storage of this product.

Incompatible Products: Toilet bowl cleaners, rust removers, acids, and products containing ammonia.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters:

Exposure Guidelines

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hypochlorite</td>
<td>7081-52-9</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value. OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limit. NIOSH IDLH: Immediately Dangerous to Life or Health.

Appropriate engineering controls:

Engineering Measures: Showers, Eyewash stations, Ventilation systems.

Individual protection measures, such as personal protective equipment:

Eye/Face Protection: If splashes are likely to occur, wear safety glasses with side shields (or goggles) or face shield.

Skin and Body Protection: Wear rubber or neoprene gloves and protective clothing such as long-sleeved shirt.

Respiratory Protection: If irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands after direct contact. Do not wear product-contaminated clothing for prolonged periods. Remove and wash contaminated clothing before re-use. Do not eat, drink, or smoke when using this product.
9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks/Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Thin liquid</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>Clear</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Pale yellow</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>12</td>
<td>None known</td>
</tr>
<tr>
<td>Melting/freezing point</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not flammable</td>
<td>None known</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Flammability Limits in Air</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Upper flammability limit</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Lower flammability limit</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Vapor density</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>-1.1</td>
<td>None known</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Soluble</td>
<td>None known</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Kinematic viscosity</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Dynamic viscosity</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>Not explosive</td>
<td></td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td>Other Information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Softening Point</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td>VOC Content (%)</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td>Particle Size</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td>Particle Size Distribution</td>
<td>No data available</td>
<td></td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity
Reacts with other household chemicals such as toilet bowl cleaners, rust removers, acids, or products containing ammonia to produce hazardous irritating gases, such as chlorine and other chlorinated compounds.

Chemical stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Conditions to avoid
None known based on information supplied.

Incompatible materials
Toilet bowl cleaners, rust removers, acids, and products containing ammonia.

Hazardous Decomposition Products
None known based on information supplied.
11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation
Exposure to vapor or mist may irritate respiratory tract and cause coughing. Inhalation of high concentrations may cause pulmonary edema.

Eye Contact
Corrosive. May cause severe damage to eyes.

Skin Contact
May cause severe irritation to skin. Prolonged contact may cause burns to skin.

Ingestion
Ingestion may cause burns to gastrointestinal tract and respiratory tract, nausea, vomiting, and diarrhea.

Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hypochlorite</td>
<td>8200 mg/kg (Rat)</td>
<td>&gt;10000 mg/kg (Rabbit)</td>
<td>-</td>
</tr>
</tbody>
</table>

Information on toxicological effects

Symptoms
May cause redness and tearing of the eyes. May cause burns to eyes. May cause redness or burns to skin. Inhalation may cause coughing.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization
No information available.

Mutagenic Effects
No information available.

Carcinogenicity

The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hypochlorite</td>
<td></td>
<td>Group 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IARC: International Agency for Research on Cancer
Group 3: Not Classifiable as to Carcinogenicity in Humans

Reproductive Toxicity
No information available.

STOT - single exposure
No information available.

STOT - repeated exposure

Chronic Toxicity
Carcinogenic potential is unknown.

Target Organ Effects
Respiratory system, eyes, skin, gastrointestinal tract (GI).

Aspiration Hazard
No information available.

Numerical measures of toxicity - Product Information

The following values are calculated based on chapter 3.1 of the GHS document

ATExm (oral)
50 g/kg

ATExm (inhalation-dust/mist)
55 mg/L
SECTIONS 12, 13, 14 LIMITED VALUE IN DETERMINING EYEWASH/SHOWER

12. ECOLOGICAL INFORMATION

Eco-toxicity
Very toxic to aquatic life with long lasting effects.
This product is toxic to fish, aquatic invertebrates, oysters, and shrimp. Do not allow product to enter storm drains, lakes, or streams.

Persistence and Degradability
No information available.

Bioaccumulation
No information available.

Other adverse effects
No information available.

13. DISPOSAL CONSIDERATIONS

Disposal methods
Dispose of in accordance with all applicable federal, state, and local regulations. Do not contaminate food or feed by disposal of this product.

Contaminated Packaging
Do not reuse empty containers. Dispose of in accordance with all applicable federal, state, and local regulations.

14. TRANSPORT INFORMATION

DOT
Not restricted.

TDG
Not restricted for road or rail.

ICAO
Not restricted, as per Special Provision A197, Environmentally Hazardous Substance exception.

IATA
Not restricted, as per Special Provision A197, Environmentally Hazardous Substance exception.

IMDG/IMO
Not restricted, as per IMDG Code 2.10.2.7, Marine Pollutant exception.
15. REGULATORY INFORMATION

Chemical Inventories

TSCA  All components of this product are either on the TSCA 8(b) Inventory or otherwise exempt from listing.

DSL/NDSL  All components are on the DSL or NDSL.

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

U.S. Federal Regulations

SARA 311
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard  Yes
Chronic Health Hazard  No
Fire Hazard  No
Sudden Release of Pressure Hazard  No
Reactive Hazard  No

Clean Water Act
This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
<th>CWA - Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hypochlorite</td>
<td>100 lbs</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Hazardous Substances RQs</th>
<th>Extremely Hazardous Substances RQs</th>
<th>RQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hypochlorite</td>
<td>100 lb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium hypochlorite</td>
<td>7881-52-9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium hypochlorite</td>
<td>100 lb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium hypochlorite</td>
<td>7881-52-9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium hypochlorite</td>
<td>100 lb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium hypochlorite</td>
<td>7881-52-9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EPA Statement
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets and workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

- **DANGER: CORROSIVE.** Causes severe eye damage and skin burns. Harmful if swallowed. Do not get in eyes, on skin, or on clothing. Wear protective eyewear and rubber gloves when handling this product. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the restroom. Avoid breathing vapors and use only in a well-ventilated area.
US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
<th>Rhode Island</th>
<th>Illinois</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hypochlorite</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium chlorate</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

International Regulations

Canada

WMAS Hazard Class
E - Corrosive material

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA Health Hazard</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical and Chemical Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS Health Hazard</th>
<th>Flammability</th>
<th>Physical Hazard</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>B</td>
</tr>
</tbody>
</table>

Prepared By
Product Stewardship
23 Britannia American Blvd.
Latham, NY 12110
1-800-572-6501

Revision Date
July 24, 2018

Revision Note
Revised Section 1.

Reference
1064453/166081.004

General Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal, and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
1910.1048(a) **Scope and application.** This standard applies to all occupational exposures to formaldehyde, i.e. from formaldehyde gas, its solutions, and materials that release formaldehyde.

- 1910.1048(i)(2) If employees' skin may become splashed with solutions containing 1 percent or greater formaldehyde, for example, because of equipment failure or improper work practices, the employer shall provide conveniently located quick drench showers and assure that affected employees use these facilities immediately.

- 1910.1048(i)(3) If there is any possibility that an employee's eyes may be splashed with solutions containing 0.1 percent or greater formaldehyde, the employer shall provide acceptable eyewash facilities within the immediate work area for emergency use.

- 1910.1048(j) **Housekeeping.** For operations involving formaldehyde liquids or gas, the employer shall conduct a program to detect leaks and spills, including regular visual inspections.

- 1910.1048(j)(1) Preventative maintenance of equipment, including surveys for leaks, shall be undertaken at regular intervals.
I HAVE HEARD ABOUT ASSE 1071. WHAT IS IT?

- The American Society of Sanitary Engineering (ASSE) standard 1071 sets performance requirements for temperature activated mixing valves used in conjunction with emergency equipment. Local plumbing codes may require mixing valves be compliant with ASSE 1071.
## EYEWASH AND EYEWASH/FACE REQUIRED FLOW RATES

<table>
<thead>
<tr>
<th>Eyewash/Face</th>
<th>Flow rate for 3 gpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oz per gal</td>
<td>Oz for 3 gal</td>
</tr>
<tr>
<td>128</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eyewash</th>
<th>Flow Rate for 0.4 gpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oz per gal</td>
<td>Oz for .4 gal</td>
</tr>
<tr>
<td>128</td>
<td>51.2</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# SHOWER TESTING

<table>
<thead>
<tr>
<th>Ounces</th>
<th>Gallons</th>
<th>Time in seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>640</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>1280</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>1920</td>
<td>15</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>55</td>
</tr>
<tr>
<td>2560</td>
<td>20</td>
<td>60</td>
</tr>
</tbody>
</table>

1 Gallon every 3 seconds
American National Standard
for Emergency Eyewash and Shower Equipment

1. Scope

This standard establishes minimum performance and use requirements for eyewash and shower equipment for the emergency treatment of the eyes or body of a person who has been exposed to hazardous materials. It covers the following types of equipment: emergency showers, eyewashes, eyeface washes, and combination units.

This standard also includes performance and use requirements for personal wash units and drench hoses, which are considered supplemental to emergency eyewash and shower equipment.

2. Purpose

This standard is intended to provide uniform minimum requirements for the performance, use, installation, test procedures, maintenance and testing of emergency eyewash and shower equipment.

3. Definitions

For the purpose of this standard, the following terms apply as defined:

certified: A system whereby a certification organization determines that a manufacturer has demonstrated the ability to produce a product that complies with the requirements of this standard, authorizes the manufacturer to use a label or list product that comply with the requirements of this standard, and establishes a Follow-up program conducted by the certification organization as a check on the methods the manufacturer uses to determine continued compliance of labeled and listed products with the requirements of this standard.

certification organization: An independent third party organization that determines product compliance with the requirements of this standard with a labeling/listing/followup program.

combination unit: An interconnected assembly of emergency equipment supplied by a single source of flushing fluid.

drench hose: A supplemental device consisting of a flexible hose connected to a flushing fluid supply and used to provide fluid to irrigate and flush face and body areas.

emergency shower: A device specifically designed and intended to deliver flushing fluid in sufficient volume to cause that fluid to cascade over the entire body.

eye/face wash: A device used to provide fluid to irrigate and flush the eyes.

flow pressure: The pressure in the water supply pipe near the water outlet while the faucet or outlet is fully open and flowing.

flushing fluid: Potable water, preserved buffered saline solution or other medically acceptable solution manufactured and labeled in accordance with applicable government regulations.

flushing fluid column: The dispersion pattern of flushing fluid which is created by an emergency shower and meets the standard’s prescribed coverage requirements. This pattern can be achieved by a variety of design configurations.

freeze protected equipment: Equipment designed to allow the emergency device to operate under freezing conditions.

freeze protection: A means to protect flushing fluid in an apparatus from freezing and rendering it inoperable. This can be achieved through several means including mechanical valves and electrical heat tracing.

hazardous material: Any substance or compound that has the capability of producing
adverse effects on the health and safety of humans.

**personal wash:** A supplementary device that supports plumbed and/or self-contained units, by delivering immediate flushing fluid to the eyes or body.

**plumbed:** A term used to describe equipment that is connected to a continual source of potable water.

**potable water:** Water that is suitable for drinking.

**self-closing valve:** A valve that closes automatically when released by the user.

**self-contained:** A term used to describe a stand-alone device containing flushing fluid.

**tepid:** A flushing fluid temperature conducive to promoting a minimum 15 minute irrigation period. A suitable range is 16 - 38°C (60 - 100°F). (See Appendix B6).

**valve actuator:** A device connected to the valve to facilitate its operation.

4. Emergency Showers (See Illustrations 1, 2, 3)

4.1 Performance of Emergency Showers

4.1.1 A means shall be provided to ensure that a controlled flow of flushing fluid is provided at a velocity low enough to be non-injurious to the user.

4.1.2 Emergency showers shall be capable of delivering flushing fluid at a minimum of 75.7 liters per minute (20 gpm) for a minimum of 15 minutes. If shut-off valves are installed in the supply line for maintenance purposes, provisions shall be made to prevent unauthorized shut-off.

4.1.3 Emergency showers shall provide a flushing fluid column that is at least 208.3 cm (82 in.) and not more than 210.6 cm (86 in.) in height from the surface on which the user stands.

4.1.4 The spray pattern shall have a minimum diameter of 30.8 cm (12 in.) at 152.4 cm (60 in.) above the surface on which the user stands, and the center of the spray pattern shall be located at least 40.6 cm (16 in.) from any obstruction. The flushing fluid shall be substantially dispersed throughout the pattern.

4.1.5 Emergency showers shall be designed, manufactured, and installed in such a manner that, once activated, they can be used without requiring the use of the operator's hands.

4.1.6 Emergency showers shall be constructed of materials that will not corrode in the presence of the flushing fluid. Stored flushing fluid shall be protected against airborne contaminants.

4.2 Performance of Control Valve

The valve shall remain open without the use of the operator’s hands until intentionally closed. The valve shall be simple to operate and shall go from “off” to “on” in 1 second or less. The valve shall be resistant to corrosion. Manual or automatic actuators shall be easy to locate and readily accessible to the user. Valve actuators shall be located not more than 172.5 cm (68 in.) above the level on which the user stands.

4.3 Emergency Shower Enclosures

If used, enclosures shall provide a minimum unobstructed area of 0.94 m² (34 in²) in diameter.

4.4 Testing Procedures for Certification

4.4.1 Plumbed Emergency Showers

Plumbed emergency showers shall be certified as follows:

1. Connect a flowmeter to the unit to be tested or provide other means of measuring flushing fluid flow.

2. Connect the unit per the manufacturer’s specifications to a flushing fluid supply at a flow pressure of 207 kPa +3.4 kPa -0 kPa (30 psi +0.5 psi -0 psi).

3. Open the valve on the unit and verify that it fully opens in one second or less and that it stays open.

4. Determine that flushing fluid is substantially dispersed throughout the pattern. The flushing fluid column pattern shall...
Illustrations
The illustrations included in ANSI/SEA Z358.12014 are included as examples of configurations capable of meeting the criteria set forth in this standard. Other configurations may be acceptable if they meet the performance criteria established in this standard.

Illustration 1
Emergency Shower – Overhead Type

15.3cm (6 in.)

MINIMUM DISTANCE FROM WALL OR OBSTRUCTION

83.8cm (33 in.) - 134.62cm (53 in.)
HEIGHT FROM FLOOR

Illustration 4
Plumbed Eyewash
Appendices (The appendices are not part of ANSI/ISEA Z358.12014, but are included for information only.)

APPENDIX A – SAFETY CONSIDERATIONS

A1. Personal Wash Unit

The first seconds following an eye injury are often critical to keeping eye injury to a minimum. A personal wash unit may be kept in the immediate vicinity of employees working in a potentially hazardous area. The main purpose of these units is to supply immediate flushing. With this accomplished, the injured individual should then proceed to a plumbed or self-contained eyewash and flush the eyes for the required 15 minute period.

A2. First Aid Practices

A physician or other appropriate professional should provide guidance on specific workplace hazards and should provide instruction on the use of emergency eyewash and shower equipment.

A3. Waste Disposal

Consideration should be given to the proper disposal of waste flushing fluids from operating emergency eyewash and shower equipment. Freezing temperatures, drainage, elevated showers and pollutants are some, but not all of the considerations. Consult authorities for assistance with applicable local, state and federal regulations.

A4. Personal Protective Equipment

Emergency eyewash and shower equipment is not a substitute for proper primary protective devices. As a defense against flying solid particles and splashing injurious liquids, workers should wear personal protective equipment as needed.
APPENDIX B – INSTALLATION CONSIDERATIONS

B1. Supply Lines
Installation procedures should be in accordance with proper plumbing practices and supply piping adequately sized to meet flow requirements.

B2. Water Capacity
The ANSI/SEA Z358.12014 standard includes reference to a flow pressure of 207 kPa (30 psi) only in the certification-related sections for plumbing equipment. This is to ensure that the testing for certification purposes is consistent and that reproducible results can be generated regardless of the laboratory conducting the testing. It is the responsibility of the designer and owner to ensure proper flushing fluid delivery at possible low points of pressure in the plumbing system and to ensure that the plumbing equipment is installed in accordance with the flushing fluid delivery requirements specified by the equipment manufacturer. The weekly activation of plumbed emergency eyewash and shower equipment is to be conducted at normal facility operating pressures. Excess flow pressure can deliver water to the equipment at velocities that could injure the user or render the equipment inoperable. Caution should be exercised with flow pressures over 0.052 kPa (0.58 psi).

B3. Valve Operation
In the interest of safety, a control valve remaining open is most desirable to allow the user the use of both hands for dispensing or holding the eyes open. However, a self-closing valve may be permitted in a school laboratory situation as a limited exception only when the enforcing authority is of the opinion that the hazard posed is not a serious threat.

B4. Alarm Devices
In addition to the equipment identification required by ANSI/SEA Z358.12014, users may also want to use audible alarms or warning lights to indicate that the unit is in operation. These are particularly important in remote areas. Many companies connect valves electrically to warning lights or buzzers in central dispatch areas to alert the appropriate authorities when the unit is in use.

B5. Placement of Emergency Eyewash and Shower Equipment
Emergency eyewash and shower equipment should be available for immediate use, but in no instance should it take an individual longer than 10 seconds to reach the nearest facility.

There are several factors that might influence the location of emergency facilities. It is recognized that the average person covers a distance of approximately 55 ft. (16.8 m) in 10 seconds when walking at a normal pace. The physical and emotional state of a potential victim (usually impaired, with some level of discomfort/pain, and possibly in a state of panic) should be considered along with the likelihood of personnel in the immediate area to assist. The installer should also consider other potential hazards that may be adjacent to the path of travel that might cause further injury. A single step up into an enclosure where the equipment can be accessed is not considered to be an obstruction. Additionally, installers should allow for adequate overhead clearance to accommodate the presence of cabinets over counter- or faucet-mounted emergency eyewashes, so as not to create an additional hazard that could be encountered when using the device.

A door is considered to be an obstruction. Where the hazard is not corrosive, one intervening door can be present so long as it opens in the same direction of travel as the person attempting to reach the emergency eyewash and shower equipment and the door is equipped with a closing mechanism that cannot be locked to impede access to the equipment.
6. Eye/Face Wash Equipment (See Illustration 8)

6.1 Performance of Eye/Face Washes

6.1.1 A means shall be provided to ensure that a controlled flow of flushing fluid is provided to both eyes and face simultaneously at a velocity low enough to be noninjurious to the user.

6.1.2 Eye/face washes shall be designed and positioned in such a way as to pose no hazard to the user.

6.1.3 Nozzles and flushing fluid units shall be protected from airborne contaminants. Whatever means is used to afford such protection, its removal shall not require a separate motion by the operator when activating the unit.

6.1.4 Eye/face washes shall be designed, manufactured and installed in such a manner that, once activated, they can be used without requiring the use of the operator’s hands.

6.1.5 Eye/face washes shall be constructed of materials that will not corrode in the presence of the flushing fluid.

6.1.6 Eye/face washes shall be capable of delivering flushing fluid to the eyes and face not less than 11.4 liters per minute (3.0 gpm) for 15 minutes. If shut off valves are installed in the line for maintenance purposes, provisions shall be made to prevent unauthorized shut off.

6.1.7 Eye/face washes shall be designed to provide enough room to allow the eyelids to be held open with the hands while the eyes and face are in the flushing fluid stream.

6.1.8 Eye/face washes shall provide flushing fluid to both eyes simultaneously. A test gauge for making determination of a suitable eyewash pattern shall be a minimum 10.16 cm (4 in.) in length with two sets of parallel lines equidistant from the center (See Illustration 7). The interior set of lines shall be 3.18 cm (1.25 in.) apart and the exterior lines shall be 8.26 cm (3.25 in.) apart. Place the gauge in the stream of the eyewash. The flushing fluid shall cover the areas between the interior and exterior lines of the gauge at some point less than 20.3 cm (8 in.) above the eye/face wash nozzle(s).