Health & Safety has developed the emergency eyewash & safety shower equipment procedure which will be implemented in 3 phases over the next four years.

Phase 1 will include the approval and roll out of this procedure which will include installations procedures, record keeping, reporting criteria and weekly/monthly maintenance.

Phase 2 will include the evaluation of existing equipment and the roll out of annual inspections.

Phase 3 will include new equipment installations, infrastructure and equipment upgrades and repair to ensure compliance with this procedure.

A detailed timeline on Phase implementation will be distributed in the coming months.

1.0 PURPOSE

The University of Windsor is committed to ensuring that all emergency eyewash and shower equipment is maintained and managed in a manner that ensures compliance with applicable regulations and provides the continued safety of our campus community.

The first few seconds after exposure to a hazardous substance, especially a corrosive substance, are critical. Delaying treatment, even for a few seconds, may cause serious injury. Accidental chemical exposures can still occur even with good engineering controls and safety precautions in place in laboratories or other areas where hazardous materials are used or stored. As a result, a proper functioning emergency eyewash and shower is an essential element to minimize the effects of injury due to an accidental exposure.

This procedure outlines the operational requirements and responsibilities associated with eyewash and shower equipment for the emergency treatment of the eyes or body of a person who has been exposed to hazardous materials.

2.0 SCOPE

This procedure applies to all departments where eye and skin hazards exist and to all workers, students and visitors who may be exposed to eye and skin hazards within the workplace departments at the University of Windsor.

3.0 DEFINITIONS

ANSI*:* American National Standards Institute

CCC*:* Chemical Control Centre

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 both the face and the eyes simultaneously.

***Eyewash**:* 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.

***Flow regulator**:* A mechanical device to control the flow of flushing fluid through pipes.

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

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

***Supervisor**:* As defined in the Occupational Health & Safety Act (OHSA) http://www.labour.gov.on.ca/english/hs/pubs/gl_supervisor.php

***Tepid**:* Moderately warm; lukewarm 16-38°C (60-100°F)

***Worker**:* As defined in OHSA http://www.labour.gov.on.ca/english/hs/worker_defn.php

4.0 RESPONSIBILITIES

Deans / Directors / Department Heads:

- Ensure that the appropriate emergency eyewash and shower equipment specific to the hazards within the work area are installed, and maintained in a safe and operational manner.

Supervisors / Principle Investigators:

- Ensure that departmental emergency eyewash and shower stations are maintained, inspected and tested per regulatory requirements.
- Notify all workers of potential eye and skin hazards in the work area and the locations of eyewash and shower equipment.
- Provide training for workers on the use of emergency eyewash and shower equipment.
- Report concerns and deficiencies with emergency eyewash and shower equipment to Department Head and Facility Services at extension 2850 or repair@uwindsor.ca.
- Tag and mark defective emergency eyewash and shower equipment. Notify workers of any defective equipment and advise them on any interim procedural or emergency plan changes. (alternate eyewash/shower location, chemical use restrictions etc.)
- Complete Accident / Incident Investigation Report with worker for any accidents or injuries, and submit Accident / Incident Investigation Report to Health & Safety within 24 hours of an incident.

Workers:

- Be aware of the eye and skin hazards in work area.

- Know the location of emergency eyewash and shower equipment in the work area.
- Be familiar with the operation of eyewash and shower equipment.
- Report concerns and deficiencies with emergency eyewash and shower equipment to Supervisor.
- Report any accident / injury immediately to their Supervisor.

Chemical Control Centre & Health and Safety:

- Provide assistance to departments with assessing risks and provide recommendations for installation of emergency eyewash and shower equipment.

Facility Services

- Installation of new units within existing facilities at the request of the department.
- Annual inspection of existing emergency eyewash and shower equipment, and resulting repairs as necessary. Inspection records to be kept for a minimum of one year.
- Ensure new emergency eyewash and shower equipment is installed in accordance with this procedure as part of construction and/or renovation projects on campus.
- Ensure all decommissioned eyewash and shower equipment is conducted in accordance with applicable legislation, this procedure and/or projects on campus.
- Maintain current emergency eyewash and shower equipment inventory and notify the Chemical Control Centre of any additions, relocations, or removal of emergency eyewash or shower equipment.

5.0 REFERENCE DOCUMENTS

American National Standards Institute, Inc. (ANSI) Standard ANSI Z358.1-2014 *Emergency Eyewash and Shower Equipment*

OHS-4.6.24a Emergency Eyewash & Shower Installation Checklist

OHS-4.6.24b Emergency Equipment Inspection Log

OHS-4.6.24c Annual Inspection Checklist – Emergency Eyewash & Showers

OHS-5.2.2a Accident / Incident Investigation Report

Ontario Occupational Health and Safety Act, Regulation 851, s. 124. and 125.

6.0 PROCEDURE

Emergency Eyewash and Shower Requirements

Emergency eyewash units shall be installed in work areas where there is a potential hazard of injury to the eye due to contact with a substance.

Emergency shower units shall be installed in work areas where there is a potential hazard of injury to the skin due to contact with a substance.

Departments are responsible to ensure the appropriate type of emergency eyewash and shower units specific to the hazards within a work area are installed where required. Health & Safety and the Chemical Control Centre can assist with an assessment and provide recommendations on the appropriate type of unit required. Reference current ANSI Standard Z358.1 for illustrations of acceptable emergency equipment.

Installation

To ensure that the units are effective, they must be installed in a location where they are easily accessible – i.e. no obstructions and on the same level as the hazard. A door is considered to be an obstruction, unless:

- the hazard is not corrosive; and
- there is only one door, and it opens in the same direction of travel; and
- the door cannot be locked

Individuals must be able to reach the emergency equipment within 10 seconds (approx. 17 meters/55 feet). Depending on the potential effect of the hazards; units may need to be located closer to provide easier access, as deemed necessary. The Chemical Control Centre can provide further direction and assistance with these guidelines.

All units are to be identified with a highly visible sign located in a well-lit area. Reference Appendix I: examples of recommended signs that are available at the Chemical Control Centre.

Facility Services is responsible to ensure that new emergency eyewash and shower equipment is installed in accordance with the current ANSI Standard Z358.1 and this procedure as part of new installation, construction and/or renovation projects on campus. Facility Services will ensure all new units are added to the inventory system. Contact Facility Services to arrange for the installation of the emergency equipment at ext. 2850 or email REPAIR@uwindsor.ca.

Water delivered to new emergency eyewash and shower equipment installations shall be tepid.

The "Emergency Eyewash & Shower Installation Checklist" (OHS-4.6.24a) is to be completed by the individual assigned to install new units. Once complete, the checklist will be forwarded to Facility Services, who will retain a hard copy record for a period of not less than one year. Facility Services will forward a copy of the completed checklist to the department for their records.

Performance Requirements

Emergency equipment shall meet the performance requirements of the current ANSI Standard Z358.1, some of the requirements are highlighted below:

Emergency Showers
The emergency shower must deliver a spray pattern of water with a diameter of at least 20 inches (50.8 cm) at 60 inches (152 cm) above the floor surface. The shower head is to be between 82-96 inches (208.3 - 243.8 cm) from the floor. The minimum volume of spray must be 75.7 litres/minute (20 gallons/minute) for a minimum of 15 minutes.

The shower must be designed so that it can be activated in 1 second or less, and it remains operational without

the operator's hand on the valve (or lever, handle, etc.). This valve should not be more than 69 inches (175.3 cm) in height. If enclosures are used, ensure that there is an unobstructed area of 34 inches (86.4 cm) in diameter.

Eyewash stations:
Eyewash stations must be designed to deliver fluid to both eyes simultaneously at a volume of not less than 1.5 litres/minute (0.4 gallons/minute) for a minimum of 15 minutes of flushing time. However, the volume must not be at a velocity that can cause injury to the eyes.

The eyewash station must be designed so that it can be activated in 1 second or less and remain operational without the operator's hand on the valve (or lever, handle, etc.).

The water flow pattern should meet the requirements listed in the current version of the ANSI Standard Z358.1.

Drench Hoses and Personal Wash Units:
Drench hoses and personal wash units (bottles of eyewash fluid) are secondary units to proper emergency showers and eyewash stations. They **do not replace** the need for showers/stations.

Drench hoses may be used to "spot" rinse an area when a full shower is not required, to assist a victim when the victim is unable to stand or is unconscious, or to wash under a piece of clothing before the clothing is removed. Dual-head drench hoses may be used as an eyewash station if they meet the performance requirements of the ANSI standard (activate within one second, remain operational without hand on valve, etc.).

Training

All individuals who may be exposed to hazardous materials must be instructed in the location and proper use of all emergency eyewash and shower equipment. Instructions are to be given by the department/individual responsible for the units.

Workers shall:

- Be aware of the eye and skin hazards in the work area.
- Know the location of emergency eyewash and shower equipment in the work area.
- Be familiar with the operation of eyewash and shower equipment.
- Report any concerns or deficiencies regarding the eyewash and/or shower equipment to their supervisor and advise other users.

Maintenance & Testing

Emergency equipment shall be maintained properly as per the manufacturer's operating manual instructions and regulatory requirements regarding inspection and testing.

The purpose of the mandatory testing is to ensure that no sediment build-up occurs within the supply line and to reduce microbial contamination associated with sitting water.
The department responsible for the emergency equipment will perform the weekly/monthly testing, and Facility Services will conduct the annual inspections.

The department shall ensure the following maintenance and testing requirements are performed at a minimum:

WEEKLY - EYEWASH EQUIPMENT:

1. **INSPECT** unit for leaks or pipe damage and proper placement of protective caps.
2. **INSPECT** unit to ensure it is free of any obstructions.
3. **TEST** valve actuator – the unit must activate the water within one second or less and must stay on unless manually turned off.
4. **TEST** eyewash unit to ensure water flow is continuous and free from rust and other pipe build up. Activate unit for at least three minutes or until water runs clear, whichever is longer. The purpose is to remove stagnant water, verify proper operation and remove sediment from the emergency equipment. Should you notice rust or other build-up, more frequent testing may be required. Contact Facility Services.
5. **RECORD** the inspection on the on the Emergency Equipment Inspection Log – OHS-4.6.24b or similar form.

MONTHLY – SHOWER EQUIPMENT:

1. **INSPECT** unit for leaks or pipe damage.
2. **INSPECT** unit to ensure it is free of any obstructions.
3. **TEST** valve actuator – the unit must activate the water within one second or less and must stay on unless manually turned off.
4. **TEST** shower unit to ensure water flow is continuous and free from rust and other pipe build up. Activate unit for at least three minutes or until water runs clear, whichever is longer. An emergency shower testing kit is available through the Chemical Control Centre. The purpose of the monthly test is to remove stagnant water, verify proper operation and remove sediment from the emergency equipment. Should you notice rust or other build-up, weekly testing may be required. Contact Facility Services.
5. For combination units, ensure the eyewash and shower components operate simultaneously.
6. **RECORD** the inspection on the on the Emergency Equipment Inspection Log – OHS-4.6.24b or similar form.

Weekly/monthly testing records are to be maintained by the department for a minimum of one year.

ANNUALLY – EYEWASH AND SHOWER EQUIPMENT:

All emergency eyewash and shower equipment shall be inspected annually by a plumber from Facility Services per the requirements listed on the *Annual Inspection Checklist – Emergency Eyewash and Showers (OHS-4.6.24c).*

Any defective equipment must be visibly identified by placing a bag over the unit and labeling it as "Out of Service". Facility Services shall communicate any defects to the department so that an interim solution can be implemented until the unit is repaired. Facility Services will ensure that any necessary repairs to the equipment are made.

Facility Services shall document the annual inspections on the checklist and initial the equipment's annual inspection tag or relevant tracking system. The completed inspection checklist will be sent to Facility Services, who will retain a hard copy record for a period of not less than one year. Copies of the annual inspection records shall be readily available upon request.

Reporting

All concerns and deficiencies with emergency eyewash and shower equipment must be reported to the Supervisor. The Supervisor will report the concerns and deficiencies to the Department Head and Facility Services at extension 2850 or repair@uwindsor.ca.

ALL accidents, incidents, and near misses must be reported to a supervisor immediately. The Supervisor is responsible for filling out the Accident/Incident Report (OHS-5.2.2a) with the employee, and forwarding the report to Health & Safety as soon as possible but within 24 hours of the incident.

7.0 REVISION HISTORY

Date (yyyy/mm/dd)	**Revision**

Appendix I: SIGNAGE

The following standard signs are recommended to be used to indicate the presence of eyewash and safety showers. These signs are available at the Chemical Control Centre.

Interior Room Signs

Interior eye wash station sign (CCC ID: LAB 0001 / Accuform signs – MRSD905XT)	Interior safety shower station sign (CCC ID: LAB 0002/ Accuform signs – MRSD903XT)

Hallway Signs:

Hallway eye wash station sign (CCC ID: LAB 0003/ Accuform signs – MFSD592)	Hallway eye wash & shower station sign (CCC ID: LAB 0004 / Accuform signs – MFSD593)	Hallway shower station sign (CCC ID: LAB 0005 / Accuform signs – MFSD597)

OHS – 4.6.24a Emergency Eyewash & Shower Installation Checklist

This checklist has been developed to ensure that all emergency eyewash stations and showers are installed in accordance with the appropriate standard (ANSI Z358.1) and internal procedures.

Date:			Installed by:		
Building:			Location:		
Department:					
Dept. Contact & Ext #:					
Type of Unit:	☐ Emergency shower ☐ Eyewash station ☐ Eye/Face wash		☐ Combination Unit ☐ Supplemental Equipment ☐ Other:		
Manufacturer:		Model:		ID#:	

The installation of any emergency eyewash and shower equipment must be in accordance with proper plumbing practices and installed by a licensed plumber.

Installation Checklist – all units

#	Question	Yes	No
1	Has the unit been assembled and installed in accordance with the manufacturer's instructions?		
2	Has the unit been installed in an accessible location, on the same level (i.e. no stairs), that requires no more than 10 seconds to reach (approx. 55 feet) from the hazard?		
3	Has a sign been installed clearly identifying the location of the unit?		
4	Is the area around the unit well-lit?		
5	If shut off valves have been installed, have provisions been made to prevent unauthorized shut off? (ie. locks)		
7	Is the equipment constructed of materials that will not corrode in the presence of the flushing fluid?		
8	Has a copy of the manufacturer's operating manual been provided to the responsible department? If yes, please specify name:		
9	Has the unit been correctly connected to a flushing fluid source that can provide a minimum of 15 minutes of fluid?		
10	By visually inspecting the piping connections, are there any observable leaks?		
11	Fully open the valve. Does the valve remain open without the need to use your hands?		
12	Were you able to turn the valve from off to on within one second?		
13	Is the flushing fluid substantially dispersed through each nozzle?		
14	Using a flow meter, or other means, determine and record the flow rate here: *Flow Rate (litres/minute)=* Does the tested flow rate meet the appropriate requirements as listed below?: a) Emergency showers (75.7 L/min or 20 gpm); b) Eyewash equipment (1.5 L/min or 0.4 gpm); or c) Eye/face wash equipment (11.4 L/min or 3 gpm)		
16	Allowing the unit to run for approximately 1 minute, determine the temperature of the flushing fluid: Temperature (°C): Is the flushing fluid recorded between 16°C and 38°C (tepid)?		
17	Is the path to the unit free of obstructions that may inhibit the immediate use of the equipment?		
18	Has an inspection tag been attached to the unit?		

For Shower Stations only:

#	Question	Yes	No
1	Is the shower head positioned between 208.3 cm (82 in.) and 243.8 cm (96 in.) from the floor?		
2	Measure the diameter of the spray pattern at 152.4 cm (60 in.) above the standing surface: Diameter (cm/in.): Is the tested diameter at least 50.8 cm / 20 inches?		
3	Are any obstructions a minimum of at least 40.6 cm / 16 inches away from the centre of the spray?		

For Eyewash Stations only:

#	Question	Yes	No
1	Is the water flow pattern between 83.8 cm (33 in.) and 134.6 cm (55 in.) from the floor?		
2	Is the eyewash pattern acceptable when measured using a clear plastic eyewash testing gauge – *Water flow covers area indicated on test gauge at no more than 8" above spray heads* (CCC#USG0888)?		
3	Are the nozzles protected from airborne contaminants?		
4	Unit washes both eyes simultaneously?		
5	Can the operator remove the airborne contaminant protection device without a separate motion when activating the unit?		
6	Is the unit located at least 15.3 cm / 6 in. from the wall or nearest obstructions; thereby allowing adequate room to allow the eyelids to be opened with the hands while being flushed?		

For Combination Units:

Please complete both sections above "Shower Stations" and "Eyewash Stations"

For any 'No' response, please provide details on deficiencies report to Supervisor and list corrective actions taken (i.e. work order submitted). For any malfunctioning units, identify unit as defective by placing a bag over the unit and label as "Out of Service".

***Facility Services to ensure all new units are added to the inventory system, copy of form is retained and a copy of the completed forms is provided to the appropriate Department.**

OHS – 4.6.24b Emergency Eyewash/Shower Inspection Log

All emergency eyewash stations and showers are to be flowed and inspected in accordance with the appropriate standard (ANSI Z358.1) and internal procedures. At a minimum, eyewashes are to be inspected weekly and showers are to be inspected monthly.

Building:		Room #:	
Department:		Unit ID #:	
Name of P.I. Responsible for Unit:			
Type of Unit:	☐ Emergency shower ☐ Eyewash station ☐ Eye/Face wash ☐ Combination Unit ☐ Supplemental Equipment ☐ Other:		

Date	**Inspection Requirements - Indicate Y for yes, N for No**				**Action Taken (for any "No" Response) i.e. Work Order submitted**	**Inspector Initials**
	Water flushed for >3 min?	Unit activates within 1 sec.?	Caps present & in working order?	Flow Pattern is adequate?		

***Please retain this inspection record for a minimum of one year.**

OHS – 4.6.24c Annual Inspection Checklist - Emergency Eyewash & Showers

Annual inspections are required for all emergency eyewash stations and showers on campus. This inspection is completed by a qualified individual to assure compliance with the appropriate standard (ANSI Z358.1) and internal procedures.

Date:			Inspected by:		
Building:			Location:		
Department:					
Dept. Contact & Ext #:					
Type of Unit:	☐ Emergency shower ☐ Eyewash station ☐ Eye/Face wash		☐ Combination Unit ☐ Supplemental Equipment ☐ Other:		
Manufacturer:		Model:		ID#:	

#	Question	Yes	No
1	Was a copy of the manufacturer's operating manual available from the responsible department at the time of the inspection?		
2	Is there a sign visible within the area identifying the location of the unit?		
3	Is the path to the unit free of obstructions that may inhibit the immediate use of the equipment?		
4	Is the unit correctly connected to a flushing fluid source that can provide twenty minutes of fluid?		
5	By visually inspecting the piping connections are there any observable leaks?		
6	Fully open the valve. Does the valve remain open without the need to use your hands?		
7	Were you able to turn the valve from off to on within one second?		
8	Is the flushing fluid substantially dispersed through each nozzle?		
9	Using a flow meter, or other means, determine and record the flow rate here: *Flow Rate (litres/minute)=* Does the tested flow rate meet the appropriate requirements as listed below?: a) Emergency showers (75.7 L/min or 20 gpm); b) Eyewash equipment (1.5 L/min or 0.4 gpm); or c) Eye/face wash equipment (11.4 L/min or 3 gpm)		
10	Allowing the unit to run for approximately 1 minute, determine the temperature of the flushing fluid: Temperature (°C): Is the flushing fluid recorded between 15.5°C and 38°C (tepid)?		

For Shower Stations only:

#	Question	Yes	No
1	Measure the diameter of the spray pattern at 152.4 cm (60 in.) above the standing surface: Diameter (cm/in.): Is the tested diameter at least 50.8 cm / 20 inches?		
2	Are any obstructions a minimum of at least 40.6 cm / 16 inches away from the centre of the spray?		

For Eyewash Stations only:

#	Question	Yes	No
1	Is the eyewash pattern acceptable when measure using a clear plastic eyewash testing gauge. *Water flow covers area indicated on test gauge at ton more than 8" above spray heads* (CCC#USG0888)?		
2	Are the nozzles protected from airborne contaminants?		
3	Unit washes both eyes simultaneously?		
4	Can the operator remove the airborne contaminant protection device without a separate motion when activating the unit?		

For Combination Units only:

Please complete both sections above "Shower Stations" and "Eyewash Stations"

For any 'No' response, please provide details on deficiencies and corrective actions taken (i.e. work order submitted). For any malfunctioning units, identify unit as defective by placing a bag over the unit and label as "Out of Service".

***Facility Services to ensure all new units are added to the inventory system, copy of form is retained and a copy of the completed forms is provided to the appropriate Department.**