CONTENTS

1. INTRODUCTION 3
2. PURPOSE 3
3. SCOPE 3
4. DEFINITION 4
5. GUIDELINES 5
   A. Hazard Identification and Risk Assessment 5
   B. Safe Systems of Work 5
   C. General Requirements 6
   D. Emergency Shower Requirements 8
   E. Emergency Eyewash Requirements 9
   F. Emergency Eye/Face Washes 10
   G. Combination Units Requirements 11
   H. Maintenance 12
   I. Instructions and Training 13
6. REFERENCES 13

ANNEX A SAFETY CONSIDERATIONS 14
ANNEX B INSTALLATIONS CONSIDERATIONS 15
ANNEX C SAMPLE EMERGENCY EYEWASH AND SHOWER EQUIPMENT WEEKLY INSPECTION CHECKLIST 18
1. INTRODUCTION

Dubai Municipality in its continuous strive to provide a safer workplace for all workers, highlights the possible injury or illness to the persons eyes or body parts due to exposure to chemical, biological and other physical hazards. Thus, in order to minimize the adverse ill effects of these hazards due to accidental exposure, the provision of properly designed and sited emergency eyewash and shower facilities should be an integral part of various risk control measures (engineering, administrative, etc.) being implemented in workplaces to ensure the workers safety and health.

Emergency and eyewash shower at the workplace provides quick drenching or flushing to the accidentally exposed eyes and body of a person to provide first aid and minimize the injurious effect of the above hazards especially strong acids.

Presently, many industries in the Emirate of Dubai provides emergency eyewash and shower in their premises. However, most are not properly installed, located, maintained and not provided with the proper flushing water temperature especially during the summer period. Thus, the presence of such facilities offers minimized or no benefit since it does not provide immediate first aid and thus, may result in aggravation of injury.

2. PURPOSE

This technical guideline has been prepared to provide the necessary guidance for emergency eyewash and shower facility in the workplace to further realize the responsibility given to the employer as stated in Dubai Municipality Local Order 61/1991, Article 38.4 to “Take every precaution necessary for the protection of the worker and ensure his safety from occupational illness or potential work accident”.

3. SCOPE

This technical guideline, shall apply to all commercial and industrial establishments, public or government institutions, including construction-related project sites in the emirate of Dubai.

This document provides minimum guidance on proper selection, use, training and maintenance of the following types of emergency equipment: emergency showers, eyewashes, eye/face washes and combination units.
4. DEFINITION

Unless the context otherwise requires, the following terms shall be deemed to mean the definitions hereby assigned to them.

**Combination Unit**
A type of emergency equipment assembly which is interconnected by a single supplied source of flushing fluid.

**Emergency Shower**
A type of emergency equipment designed and intended specifically to deliver sufficient volume of flushing fluid to cause that fluid to cascade over the entire body.

**Eye/Face Wash**
A type of emergency equipment used to provide fluid to irrigate and flush both the eyes and the face at the same time.

**Eyewash**
A type of emergency equipment used to provide fluid to irrigate and flush the eyes simultaneously.

**Flushing Fluid**
Water which is suitable for drinking or preserved, preserved buffered saline solution or other type of manufactured solution that is medically acceptable and labeled meeting government applicable regulations.

**Hazardous Material**
Any substance or article that has the capability of causing harm on the persons’ health and safety if not properly controlled.

**Plumbed**
Equipment that is connected to a continuous source of drinking water.

**SDS**
Safety Data Sheet or Material Safety Data Sheet (MSDS) are documents that contain information on the properties of dangerous goods, its potential health effects upon exposure and safe working procedures when handling chemical products.
Self-Contained
Stand-alone equipment that contains flushing fluid.

Tepid
A flushing fluid with a temperature range of 16 to 38°C (60 to 100°F) which is conducive to promoting a minimum 15 minute irrigation period.

Workplace
Any physical location wherein a person performs work related activities under the control of the organization.

5. GUIDELINES

A. Hazard Identification and Risk Assessment

The employer shall ensure that the type and location of emergency equipment is based upon a hazard identification and risk assessment. The following can be used as a guidance but not limited to the following:

- Determine every operation where chemicals and other hazardous materials are generated and/or present;
- Safety Data Sheet (SDS) of a chemical/material require provision of flushing and drenching facility;
- Likelihood of hazard exposure to the persons’ eye, face, body or combination or all;
- Number of likely personnel that could be exposed to chemicals and other hazards at the same time;
- Presence of plumbed water supply near the area of potential exposure (This will aid in determining if facility to be installed is plumbed or self-contained unit);
- Inspect work area wherein the potential exposure may happen;
- Check surrounding area. Determine if the emergency eyewash and shower including its water supply reservoir will be exposed to heavy dust, debris and extremely hot temperature.

Hazard identification and Risk Assessment shall be conducted by a competent person(s) and appropriate knowledge of the work activity.

B. Safe Systems of Work

Employers are required to implement safe systems of work in every work site which includes information, training, instruction and supervision. Safe systems of work must be properly communicated to all stakeholders.
detailling potential hazards, duties and responsibilities, procedures and guidelines. Ensure that workers are properly trained in the proper use of emergency eyewash and shower facilities.

Safety management systems shall be properly reviewed and revised to assess effectiveness and suitability of all existing control measures.

C. General Requirements

Employers must ensure to provide adequate and appropriate emergency eyewash and shower facilities in the workplace to provide quick drenching or flushing to the accidentally exposed eyes and body of a person to minimize the injurious effects of chemical, biological and other physical hazards.

Employers shall purchase emergency eyewash and shower equipment from manufacturers or traders which has a valid conformity certificate from Emirates Authority for Standardization and Metrology (ESMA) and/or conforms to international standards such as ANSI Z358.1-2014, EN 15154-1, EN 15154-2, etc.

The employer shall also comply with the following:

Accessibility - Emergency equipment shall be easily accessible for all workers especially to those considered as People of Determination and unobstructed from all travel directions or passages at all times.

Availability - Once installed, unit(s) shall be available for use at all times and ensure that a continuous controlled flow of flushing fluid is provided

First Aid Device - This equipment are designed to deliver quick drenching or flushing of the eyes and body within the work area to rinse contaminants from the user and ensure that the pressure or velocity provided for the flushing fluid is controlled low enough to be non-injurious to the user. However, use of this equipment is not a substitute for safe procedures of handling dangerous goods and primary protective equipment. Emergency eyewash and shower equipment shall only be used for its intended purpose only.

Location - Emergency equipment shall be installed on the same level of the hazard and within 10 seconds (approximately 16 meters) from hazardous materials. For work areas wherein strong corrosives and caustics are handled, emergency showers should be located adjacent to the hazard and qualified professional shall be consulted for proper distance. Units shall be situated in areas wherein its operation will not come into contact with materials or any electrical equipment that may become a hazard when wet.
Water Supply - Flushing fluid must be capable of supplying a large and continuous supply for at least 15 minutes and protected from airborne contaminants. *Portable eye wash bottles while can be used for personal comfort, do not meet the requirements of this technical guideline.*

Water Temperature - Flushing fluid delivered by the equipment shall be tepid or lukewarm ranging from 60 to 100°F (15.6 to 37.8°C). Appropriate control measures shall be provided to avoid scalding due to hot water during summer season.

Shut Off Valves - Ensure that the shut off valves connected to the water supply lines of plumbed emergency units are provided with provisions to prevent unauthorized closure of shut off valves during maintenance operations.

Ease of Use - Valve actuator is easily accessible and can be activated in less than one (1) second and shall remain open without the use of operator’s hands until manually closed (see Figures 1B, 2D).

*Note: Faucet mounted (gooseneck) “eyewashes” does not meet the requirements of this technical guideline*

Corrosion Resistance - Made of materials that will not corrode in the presence of flushing fluid.

Installation and O&M - Units shall be installed in accordance with manufacturers’ specifications. Operation and Maintenance (O&M) manual shall be provided to operation for proper use, inspection and maintenance of the units.

Signage - All emergency unit locations should be well-lit area provided with highly visible signs.
D. Emergency Shower Requirements

Emergency showers shall be capable of delivering adequate flushing fluid at least 75.7 liters per minute (20 gpm) for a minimum of 15 minutes until medical personnel arrive (see Figure 1A).

Emergency showers shall provide a flushing fluid column (dispersion pattern) height in between 208.3 cm (82 in.) and 243.8 cm (96 in.) from the surface on which the user stands (see Figure 1C).

Spray pattern shall have a minimum diameter of 50.8 cm (20 in.) at 152.4 cm (60 in.) above the surface on which the user stands, and the center of the spray pattern shall be situated no less than 40.6 cm (16 in.) from any obstruction. Substantial dispersion of flushing fluid shall be observed throughout the spray pattern (see Figure 1D).

Valve actuator is easily accessible and located not more than 175.3 cm (69 in.) from level of the user stands (see Figure 1E).
E. Emergency Eyewash Requirements

Equipment is provided with controlled flow of flushing fluid to simultaneously rinse both eyes and is non-injurious to the user (see Figure 2A).

Eyewash shall be designed and positioned in such a way that it will not pose hazard to the user.

Spray heads or nozzles shall be protected from airborne contaminants. Covers shall be removed by flushing fluid flow and will not require separate motion by the operator when activating the unit (see Figure 2B).

Flow rate for flushing fluid for eyewashes shall be not less than 1.5 liters per minute (0.4 gpm) for a minimum of 15 minutes until medical personnel arrive (see Figure 2A).

Unit shall be designed to provide adequate height of water flow and sufficient space to allow the hands to hold open the eyelids while the eyes are in the flushing fluid stream (see Figure 2A).

Valve actuator is easily accessible and located from the user (see Figure 2C).
Unit shall be arranged such that the flushing fluid flow pattern is positioned in between 83.8 cm (33 in.) and 134.6 cm (53 in.) from the surface on which the user stands and be provided with a minimum space of 15.3 cm (6 in.) from the wall or the nearest obstruction (see Figure 2E).

Eyewashes shall provide flushing fluid to both eyes simultaneously. The flushing fluid shall cover the areas in between the inside and outside lines of the gauge at no greater than 20.3 cm (8 in.) above the equipment spray nozzle(s) (see Figure 2F).

**F. Emergency Eye/Face Washes**

Equipment is provided with controlled flow of flushing fluid to simultaneously rinse both eyes and face and is non-injurious to the user (see Figure 2A).

Units shall be designed and positioned in such a way that it will not pose hazard to the user.

Spray heads or nozzles shall be protected from airborne contaminants. Covers shall be removed by flushing fluid flow and will not require separate motion by the operator when activating the unit (see Figure 2B).

Flow rate for flushing fluid for eye/face washes shall be not less than 11.4 liters per minute (3 gpm) for a minimum of 15 minutes until medical personnel arrive (see Figure 2A).

Unit shall be designed to provide adequate height of water flow and sufficient space to allow the hands to hold open the eyelids while the eyes are in the flushing fluid stream (see Figure 2A).

Valve actuator is easily accessible and located from the user (see Figure 2C).

Unit shall be arranged such that the flushing fluid flow pattern is positioned in between 83.8 cm (33 in.) and 134.6 cm (53 in.) from the surface on which the user stands and be provided with a minimum space of 15.3 cm (6 in.) from the wall or the nearest obstruction (see Figure 2E).

Emergency equipment shall provide flushing fluid to both eyes simultaneously. The flushing fluid shall cover the areas in-between the inside and outside lines of the gauge at no greater than 20.3 cm (8 in.) above the equipment spray nozzle(s) (see Figure 2F).
G. Combination Units Requirements

Performance of combination units shall operate individually and simultaneously in accordance with all requirements specified in Section 5 of this technical guideline.

Emergency showers shall meet the requirements of this technical guideline.

Emergency eyewashes shall meet the requirements of this technical guideline.

Emergency eye/face washes shall meet the requirements of this technical guideline.

Figure 3: Emergency Eye or Eye/Face Wash and Shower Combination Station
H. Maintenance

The manufacturer or supplier of the emergency eyewash and shower shall provide all necessary documents such as operation, inspection and maintenance instructions to the employer/workplace wherein the equipment has been installed. All instructions shall be readily available to personnel involved in maintenance.

Plumbed emergency eyewash and shower shall be activated at least once a week for a period long enough to verify good working condition and to ensure availability of flushing fluid.

Self-contained emergency eyewash and shower shall be checked visually at least once a week to find out if flushing fluid needs to be replaced or augmented. Such inspection shall be done following the manufacturer’s instructions.

All emergency eyewash and shower shall be inspected annually by a competent person or third party company.

Maintenance program shall include in ensuring that all materials, equipment or other facilities do not block or encroach the designated access route to the emergency eyewash and shower.

Emergency eyewash and shower found not to be properly functioning or out of service shall be tagged, immediately repaired as per manufacturers’ instructions or replaced. Work shall be planned so as not to expose workers from chemical and other hazards in case of non-availability of emergency eyewash and shower or equivalent control measures are not in place.

Employers are required to properly keep records of any inspection, flushing and related maintenance activities for at least five (5) years and be made readily available to Dubai Municipality OHS inspectors and other regulatory agencies for review and demonstrate compliance with pertinent UAE and DM regulations.
I. Instructions and Training

Employers are required to provide instruction and training for all workers and individuals who are at risk of exposure to chemicals and other hazards by a competent person or third party company. Records of any training including induction and tool box talks shall be properly kept for at least five (5) years and be made readily available to Dubai Municipality OHS inspectors and other regulatory agencies for review and demonstrate compliance with pertinent UAE and DM regulations.

Scope of training shall include proper use, location, activation and maintenance of emergency eyewash and shower. Ensure that the training are delivered regularly (at least once a year) and is easily understood by all. Training assessment shall include hands on drill on the proper use and finding the nearest emergency eyewash and shower in the workplace.

Instructions shall be easily understandable and be posted beside the emergency eyewash and shower equipment.

Trainers must inform trainees that emergency eyewash and shower shall be used for its intended purpose only and use of the equipment is always regarded as the last resort in risk control measures wherein elimination or minimizing the risks are considered first. Emergency eyewash and shower do not prevent injuries but provides first aid in case of accidental exposure of the persons’ eyes and body from chemicals and other hazards.

6. REFERENCES


ANNEX A: SAFETY CONSIDERATIONS

These annexes are included with the intent of providing additional information only to guide employers/companies.

A1: Personal Wash Unit

The first seconds following the exposure of the eye from chemicals or hazardous materials are often critical in minimizing the severity of eye injury. Presence of personal wash unit may be provided beside the hazardous working area of the employee.

The main purpose of these units is to supply immediate flushing. Upon flushing, the injured person shall proceed to the nearest emergency eyewash (approximately 10 seconds or 16 meters away) and flush the eyes for the required 15 minute period.

Note: Providing personal wash units are not mandatory since it does not meet the requirements of this technical guideline.

A2: First Aid Practices

All workers shall be instructed and trained by a competent person on workplace hazards and on how properly use, activate, locate and maintain emergency eyewash and shower in their respective workplace.

A3: Personal Protective Equipment

Emergency eyewash and shower equipment is not a substitute for various risk control measures (e.g. elimination, substitution, engineering, administrative, PPE). Appropriate Personal Protective Equipment shall be provided in accordance with Dubai Municipality requirements. OHS Technical Guidelines (TG’s) are available in www.dm.gov.ae under Health and Safety Department.

A4: Drainage and Collection System

Provide appropriate drainage and collection system for the wastewater generated as a result of the emergency equipment operation. Disposal shall be in accordance with Dubai Municipality regulations.
ANNEX B: INSTALLATIONS CONSIDERATIONS

These annexes are included with the intent of providing additional information only to guide employers/companies.

B1: Supply Lines

Installation procedures shall be in accordance with manufacturer’s instructions, proper plumbing practices and adequately sized supply piping to meet flow requirements.

B2: Water Capacity

The employer and the company/person contracted to design and install the emergency eyewash and shower are responsible to ensure that flushing fluid is properly delivered at possible low pressure points in the plumbing system and to ensure that the plumbed equipment is installed as per the flushing fluid delivery requirements of the equipment manufacturer.

The plumbed emergency equipment shall be activated on a weekly basis under normal facility operating pressures. Water velocities delivered by the equipment under excess flow pressure can cause injury to the user or may cause the equipment to be inoperable. Caution should be exercised when flow pressures exceed 0.552 kPa (80 psi).

B3: Valve Operation

For best safety interest, control valve which is left open is preferred in order to allow the user to use both his/her hands for holding the eyes open or during disrobing.

B4: Alarm Devices

Emergency eyewash and showers may also be fitted with warning lights or audible alarms to indicate that the equipment is in use. These alarm devices are particularly important in remote areas. Some companies connects these alarm devices to the valves electrically in central dispatch areas to alert concerned personnel and authorities when the emergency equipment is operated.
B5: Placement of Emergency Eyewash and Shower Equipment

Emergency eyewash and shower equipment should be available and sited as near as possible for immediate use. The individual should reach the nearest emergency eyewash and shower in less than 10 seconds (when walking at a normal pace) or less than 16 meters from the place of hazardous exposure.

There are several factors that the installers should consider in locating emergency facilities. The following are:

- The physical and emotional state of the injured person. The affected person maybe visually impaired which is also experiencing some level of discomfort, pain and state of panic;
- The likely and immediate presence of trained/qualified personnel that will assist in the event of injury;
- The presence of potential hazards adjacent to the path of travel that might cause aggravation of injury;
- Provision of adequate clearance to accommodate the presence of cabinets over counter - or faucet-mounted emergency eyewashes, so that additional hazards are not created when using the equipment.

Emergency eyewash and shower equipment shall be accessible and not obstructed at all times. Equipment enclosure shall be designed in such a way that there are no unnecessary steps leading to the equipment since this may cause further injury due to tripping and falling.

Doors leading to the equipment is considered an obstruction. If the chemical hazard is not classified as corrosive, one intervening door can be present as long as it opens to 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.

Competent professional should be contacted to advice on proper distances in the placement of emergency eyewash and shower equipment close to the hazard, such as exposure to highly corrosive chemicals. Equipment should be located near the hazard, but sited in such a manner such that exposure to the splash hazard or other hazards (e.g. exposed electrical conductors) does not occur while using the eyewash.

B6: Delivered Flushing Fluid Temperature

Continuous, timely irrigation and providing conducive flushing fluid temperature of affected body tissues for the recommended irrigation period are the principal factors in providing suitable first aid facilities.
As per medical recommendations, flushing fluid at tepid temperatures (16 to 38°C) shall be delivered to affected chemically injured tissue. Temperatures exceeding of 38°C (100°F) have proven to be injurious to the eyes and can enhance chemical interaction with the skin and eye tissue.

Consideration should be given to the impact of isolated ambient temperature changes. For countries such as the UAE having warm temperatures during the summer months, warmer ambient temperature might require a re-evaluation of the water temperature.

While cold flushing fluid temperatures provide immediate cooling after chemical contact, prolonged contact to cold fluids affect the ability to maintain adequate body temperature and can result in the premature termination of first aid treatment. Recent information indicates that a temperature of 16°C (60°F) is the lowest suitable tepid flushing fluid without causing hypothermia to the equipment user.

**B7: Weekly Activation for Plumbed Emergency Eyewash and Shower Equipment**

Plumbed emergency eyewash and shower shall be activated for at least once a week to ensure the following:

- Presence of a flushing fluid supply at the head of the equipment;
- Remove built up sediments in the supply line which could prevent fluid from being delivered to the head of the device; and
- Minimize microbial contamination due to stagnant water.

The duration of the activation is dependent on the volume of water contained in the equipment unit itself and all pipework sections that do not form part of a constant circulation system (also known as “dead leg” portions). Water in these sections is stagnant until a flow is activated by opening a valve. Stagnant water in the dead leg portions should be flushed out completely. Where mixing valves are used, both the hot water and cold water supplies to the valve must be considered.
ANNEX C: SAMPLE EMERGENCY EYEWASH AND SHOWER EQUIPMENT WEEKLY INSPECTION CHECKLIST

**SAMPLE EMERGENCY EYEWASH AND SHOWER EQUIPMENT WEEKLY INSPECTION CHECKLIST**

Requirements:

1. Are all emergency eyewash and shower equipment unobstructed and easily accessible?
2. Are emergency eyewash and shower adequately activated (Let the flushing fluid flow for approximately 3 minutes)?
3. Are eyewash nozzles equipped with protective covers which are automatically removed upon activation?
4. Does both the emergency eyewash and shower deliver sufficient and simultaneous flushing fluid flow from nozzles/shower head?
5. Is the delivered flushing fluid temperature constant and tepid (16 to 38°C)?
6. Does the quick opening valve remain in open position until it is closed?
7. Equipment location is highly visible, well lit and marked with highly visible signage?
8. Is it used for its correct purpose (as first aid equipment)?

*If there is a “No” answer in any of these requirements, please contact the management or OHS in charge of the company immediately to request for repair of the deficiency.*

<table>
<thead>
<tr>
<th>Name of Supervisor:</th>
<th>Location of Equipment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Name of Inspector</td>
</tr>
</tbody>
</table>

*Note: Emergency eyewash and showers shall be checked for proper access and visible signs of equipment damage only. Equipment shall be activated and inspected weekly as part of the pre-operation OHS program of your company/establishment. Adapted from ANSI Z358.1:2014 Emergency Eyewash and Shower Equipment Standard.*
Further information is available from:

Health and Safety Department
Dubai Municipality
Tel: 800900
Safety@dm.gov.ae