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Ministry of Water & Environment

gtz Yemeni-German Technical Cooperation Water Sector Program

Framework Concept for the Personnel Development in the Urban Water and Sanitation Sector in Yemen

Volume 3

Occupational Safety and Health Manual

Authors: **Hans Bayer**

Mohammad Al-Saleem

Editing: **Peter Herrmann**

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Abbreviations

ALO	Arab Labour Organisation
EM	Emergency Management
GTZ	Gesellschaft fuer Technische Zusammenarbeit
HRD	Human Resources Development
HRM	Human Resources Management
IAM	Incident and Accident Management
ILO	International Labour Organisation
LC	Local Corporation
MWE	Ministry of Water and Environment
MSAL	Ministry of Social Affairs and Labour
NWSA	National Water and Sanitation Authority
OSH	Occupational Safety and Health
PDC	Personnel Development Component
PPE	Personal Protection Equipment
ROY	Republic of Yemen
SCBA	Self Contained Breathing Apparatus
STE	Short Term Expert
SWL	Safe Working Load
SWP	Safe Working Pressure
UWSS	Urban Water and Sanitation Sector
WHO	World Health Organisation
WSP	Water Sector Programme

Foreword

What has Occupational Safety and Health to do with Human Resources Development?

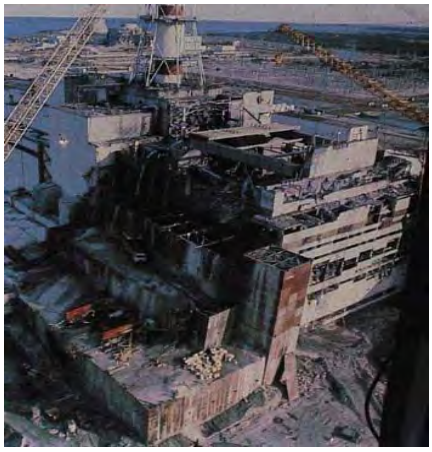
Basically, Human Resources Development (HRD) is *about adapting workers to their work. Occupational Safety and Health (OSH) is about adapting work to the workers*. These are not opposites, but two sides of the same coin: whereas HRD takes care of adapting employees to the requirements of their work, OSH takes care of adapting the work and its conditions to the physical and mental abilities of the employees.

OSH is about the life and health of real people, not about documents that are shelved and forgotten. OSH has to become a reality. It must be implemented with reasonable, practical standards. This means that managers and staff become aware of dangers, risks and unsafe practices. It means that they understand the importance of training regarding risk assessment, preventive measures as well as managing incidents and accidents.

This OSH Manual concerns the work of the decentralized water and sanitation utilities in Yemen. The risks and dangers presented here are limited to the typical ones of the urban water sector. Despite the limitation on this sector, we should never forget that OSH is a global issue that is essential for every sector, everywhere. Everybody knows about three big disasters that were caused by negligence of OSH:

- December 1984: the Union Carbide India Ltd. pesticide plant in Bhopal/India leaks methol-isocyanate gas and other toxins; poor operation and maintenance procedures lead to the death of 2,259 persons; 500,000 others suffer great harm.

- April 1986: an unsafe test carried out at the nuclear power station in Chernobyl/Ukraine causes a power surge that ruptures a reactor vessel; the resulting explosions kill about 50 people immediately; the huge plume of radioactive fallout in the atmosphere causes severe damages to public health and economies in Eastern Northern and Central Europe.



- April 2010: a deep sea oil drilling rig operating for BP in the Gulf of Mexico explodes because of an excessive escape of methane gas from the oil well 1500 meters below; 11 workers are killed, 17 injured; thousands of tons of crude oil shoot out from the well, pollute the sea over an area of 6,500 square kilometers and badly damage wildlife and its habitats as well as fishing and tourism industries.

These catastrophes happened far away and in other industries, some readers might say. What could we, in the water and sanitation utilities, learn from this? Well, in all these cases, good standards of OSH were missing. Managers did not take them seriously, so why should technicians and workers? “We know we should not do things this way, but nothing ever happened. So on with it, hurry up!”

Even if the potential dangers in the production of drinking water and in sanitation services are comparatively smaller, they are real and they are bad enough. A few grams of strong toxins dropped in an unsecured water reservoir? They could wipe out the population of a whole town. Poorly operated sewerage systems? They could cause mass epidemics of cholera and typhoid.

Admittedly, these are extreme (although real) examples. While we should be aware of the water sector's great responsibility for public health, let us focus on the daily working situation. The main objective is to protect the employee from harm and the utility from loss or damage. For this purpose, this manual describes common risks at the place of work, preventive measures, the use of protective equipment and management of incidents and accidents.

Peter Herrmann

CHAPTER 1

INTRODUCTION

1 Introduction

1.1 Background

The German Technical Cooperation (GTZ) on behalf of the German government is supporting the government of Yemen, represented by the Ministry of Water & Environment (MWE), in a technical assistance programme aiming at upgrading the institutional development of the water sector. Component 2 of the programme is supporting the Personnel Development in the Urban Water Supply and Sanitation Sector (UWSSS). Emphasis is given to a holistic approach in order to match human resources with the institutional requirements and developing systems to upgrade the qualification of staff according to demand.

Occupational Safety and Health (OSH) has been identified as an area of concern in the field of Personnel Development in the UWSS. According to a preliminary assessment of the situation in some utilities there is a general lack of awareness, procedures, safety gears, and personal protection equipment. Therefore, it is important to create the required awareness and propose immediate, mid and long term steps of action, Personnel Development Component (PDC) of the Water Sector Programme (WSP) of the Yemeni-German Technical Cooperation took the following steps toward improving the situation:

a) Conducted an investigation to find out the facts on OSH situation. The findings were summarised in the report "Occupational Safety and Health Fact Finding Report" produced in April 2009.[1]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Ministry of Water & Environment

Occupational Safety and Health
Fact Finding Report
April 2009

Prepared By:
Mohammad Al-Saleem, HR Regional Advisor, PDC
Assisted By:
Fayez Al-Senwi, HR Officer, PDU
Khaled Zaid, Project Officer, PDC
Peter Herrmann, Team Leader, PDC

Yemeni-German Technical Cooperation
Water Sector Program
Personnel Development Component

GOPA
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[1] Occupational Safety and Health Fact Finding Report, Personnel Development Component, Mohammad Al-Saleem and Others, 2009

b) Conducted a workshop in which representatives from MWE, The National Water and Sanitation Authority (NWSA), WSP, most of the urban water utilities and specialists in the field of OSH participated.

In this workshop an international consultant specialised in OSH was involved, the workshop aimed at:

- introducing the above mentioned report;
- identifying risks within UWSSS and preventive measures;
- discussing legality of OSH; and
- proposing steps of action to improve the OSH situation within the UWSSS.

The participants agreed that:

- an action plan to be developed and introduced as road map to improve the OSH situation within the UWSSS. This plan was developed – see Annex 1;
- a guideline document should be produced to manage the OSH activities of the water utilities in the form of OSH Management Manual. This document was developed (it is the document you are reading); and
- the OSH Officers of the water utilities have to be technically qualified to manage the OSH activities of their utilities. This can be achieved by enrolling them into OSH qualification programme; which is under development.

1.2 Definition of Occupational Safety and Health Management (OSHM)

The Jordanian Vocational Training Corporation defines OSH as the management concerned with *"The protection of all elements of production which are; human resources, fixed assets, and materials (raw & produced), and improving the work environment by applying certain health programs and safety procedures to prevent or eliminate possibility of incidents and accidents and to reduce their impact on the components of work environment; either internal components like human resources, material, fixed assets or external components like customers or the public".*[2]

In some contrast, the ILO/WHO Committee emphasises in its definition of OSH particularly on the protection of the human factor: "*Occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in*

[2] Safety Management – Notes by Vocational Training Corporation, Jordanian Occupational Safety and Health Institute, A. Arabiyat and M. Bdour, 1997, P3

an occupational environment adapted to his physiological capabilities; and, to summarize, the adaption of work to man and of each man to his job".

Occupational safety and health, including compliance with the OSH requirements pursuant to national laws and regulations, are the responsibility and duty of the employer. The employer should show strong leadership and commitment to OSH activities in the organization, and make appropriate arrangements for the establishment of an OSH management system. The system should contain the main elements of policy, organizing, planning and implementation, evaluation and action for improvement, as shown in the following figure.[3]

Figure 1: Main elements of the OSH management system

[3] Guidelines on occupational safety and health management systems, ILO-OSH, 2001

1.3 Importance of Occupational Safety and Health Management (OSHM)

To understand the importance of the OSHM one should look at cases of emergency and the possible direct and indirect consequences of any incident or work related accident. Possible consequences could be in particular "for management: possible prosecution, hidden costs, and avoidable costs of insurance. For the work force: injury, pain, lost time at work, and possible disciplinary penalties".[4]

What does that mean? At a closer look at the potential effects there could be seen at least six dimensions:

a) The human dimension: negative effects on the employee (workforce)

In the worst case as a result of a work related accident, an employee, e.g. a technician at a drilling rig, may lose his/her life or his temporary or permanent (invalidity) ability to work. As a direct result his/her work related income will cease or be reduced.

In case the employee is not or not fully covered by an insurance (workman's compensation, accident and health insurance) he/she will have to face the full or some costs of medical treatment and rehabilitation or part of it.

Apart from these physiological and financial aspects, the affected employee may also suffer from psychological effects (e.g. trauma) and lose self-confidence.

Work caused disability or invalidity may lead the affected person to lose hope, dreams, and ambitions and may even negatively affect his/her relations with the immediate family and the community.

b) The business dimension: negative effects on the employer (management)

The business, e.g. a water and sanitation corporation, can be directly negatively affected by incidents or accidents in various ways:

- It may lose returns on its outputs caused by stoppage of work.
- It may suffer from damaged equipment and assets that need to be repaired or replaced.
- It may have to pay compensation to its workers injured or killed in the accident.
- It may face legal prosecution and penalties, for example, if there is a shortage of Personal Protection Equipment (PPP) or lack safety procedures or insufficient safety training and awareness for the workers.
- It loses goodwill and positive image.

[4] Development of Safety Culture – Notes by Peter Sheldon, NWL Safety Advisor, 1999, P1

- It may have to pay increased insurance premiums, if the insurance company considers the bad accident history of the utility.
- Other consequences could be losing skilled labour and as a result facing extra costs to replace injured/perished employee and to qualify new recruits.

Besides these two most immediate dimensions, there are others as well.

c) The public dimension: effects on the general public

- Protection of the public from accidents is particularly required when construction works (e.g. on the water network or sanitation networks) are carried out. Areas of works need to be shielded from the public by putting signs, fences or barriers to prevent the public, especially children to fall into open trenches, open manholes etc. Careless operations can lead to accidents of the general public that may sue the corporation/company for compensation.
- Certain types of accidents which cause for example the interruption of water supply, the poisoning of drinking water by voluntary or incidental causes or the breakdown of sewerage services can affect an entire village or town.

d) The social dimension: Social consequences and effects on the public

- In case of accidents with injuries of workers, the most immediately affected parts of the community are the family of the employee. The family may lose substantial income, which may negatively affect their entire livelihood and even the educational of the children. Furthermore other dependants in the larger family may be affected, too.
- The town, village or community of the affected employee may be called upon to raise funds to sustain him or her and may lose him/her as an active part in community work and social events.
- On national level consequences could be the avoidable costs of qualifying injured workers, building rehabilitation centres, inflation of insurance cost, and reviewing the OSH related legislations.

e) The economic dimension: effects on wider business community

While minor incidents or accidents may not affect the economy at large, big accidents which halt the operation of a business can, indeed, lead to a decline in employment and income resulting in a decline of demand for essential commodities; in addition the demand of the affected business for inputs and services may drop and could lead to the closure of other businesses. In cases where the infrastructure has been damaged, substantial costs for rehabilitating the infrastructure have to be borne.

Furthermore, unemployed or disabled persons would require public subsidies or requalification measures to be financed by the government.

f) The environmental dimension:

The industrial history with accidents like the Bhopal disaster, the Chernobyl disaster and the recent oil spill in the Gulf of Mexico clearly demonstrated the gigantic effects on the national and even international environment. Although potential accidents in the water and sanitation sector may be confined to the level of towns or communities they still could lead to damage of agricultural land or pollution of sea water.

Such effects on the environment would also have combined negative effects on communities who are living of the land or the sea waters like fishermen.

The previous direct and indirect possible consequences and costs of work incidents and accidents highlight the importance of OSHM as one element of Human Resources Management (HRM). That is correct if we consider the human resource as the most valuable asset we have in UWSS.

OSHM is important because it reduces the possibility of having incidents or accidents and reduces the impacts and consequences of incidents and accidents on employee, employer, community, and the state.

1.4 Objectives of Occupational Safety and Health Management (OSHM)

One can summarise the objectives of OSHM into the following:

- increase awareness of OSH issues at all levels of hierarchy;
- eliminate or reduce health risks and impacts of work incidents and accidents;
- respond to emergencies and all potential negative effects;
- reduce the possible consequences of work incidents and accidents;
- protect the human resource as the major asset of every working sector;
- protect the assets and increase their lifetime;
- protect the product(s) and raw material(s); and
- improve the work environment.

CHAPTER 2

LEGISLATIVE PROVISIONS

2 Legislative Provisions

2.1 International and Regional Level

There are many conventions, protocols, and recommendations by the International Labour Organization (ILO) and the Arab Labour Organization (ALO) emphasizing the importance of OSH and providing legal provisions and management guidelines for OSH. These conventions, protocols, and recommendations can be used as references for those who are interested to apply international standards.

While most of the ILO conventions and protocols are not yet ratified by the Republic of Yemen (ROY)[5], most of the ALO conventions were actually ratified by ROY.[6]

For people interested in knowing what are the conventions, protocols, and recommendations of ILO and ALO; you can use Annex 2 where they are listed.

And for those who are interested in reading and downloading these documents; you can use the links in Annex 2 to reach the scripts of the documents on the internet.

2.2 National Level

At the national level, the local laws and statutes in Yemen provide the basis to manage OSH properly. OSH legislations are mentioned in details in the second edition of "National Legislations for OSH in Yemen".[6]

This document is available at the office of Occupational Health and Safety Administration / Labour Sector Relation / Ministry of Social Affairs and Labour.

The OSH legal requirements for employees working in the public sector of the ROY are outlined (in general) in the Law No. 19 of the year 1991 concerning Civil Service Law, Chapter (8), Article 108. This article states that "Government units and utilities have to apply the OSH rules and regulations of the labour law and by-laws".[7]

OSH related laws and by-laws in ROY are:

a) Law No. 5 of the year 1995 concerning Labour Law and Amendments; it includes 8 articles (Articles 113 – 121) on the OSH guidelines for employees and government entities and service insurances, and 6 articles (Articles 122 – 127) on work inspection.[8]

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5 http://www.ilo.org/ilolex/arab/docs/convdisp1.htm
6 Handbook of National Legislations for OSH in Yemen, Ministry of Social Affairs and Labor, Second Edition, 2007, Pages 70-72
7 Handbook of Yemeni Civil Services Legislations, Ministry of Legal Affairs, Fourth Edition, 2008
8 Handbook on Law No. 5 of the year 1996 and amendments concerning Labor Law, Ministry of Legal Affairs, Third Edition, 2007

b) Law No. 25 of the year 1991 concerning Insurances and Pensions elaborates on work injury insurance with 9 articles (Articles 31 – 39), it sets the rules for health insurance in 3 articles (Articles 40 – 42), and states the rights of injured employee in 5 articles (Articles 43 – 47). This law includes evaluation criteria for disability and compensation (Table No. 1), and a list of occupational diseases (Table No. 2).[9]

c) Republican Resolution No. 125 of the year 1992 concerning the By-Law of Insurances and Pensions deals with the compensation for temporary or permanent disability and death cases resulting from work accidents (Articles 64 – 84). It also includes a detailed table of disability percentages and relative compensations.[9]

d) Law No. 26 of the year 1991 concerning Social Insurances explains the sources of work injury compensation, procedures to be taken in case of work injury, and compensations for fatalities and disabilities.[9]

Details of all OSH related Republican, Cabinet and Ministerial Resolutions can be found in the handbook of "National Legislations for OSH in Yemen". Examples of these resolutions are:

a) Republican Resolution No. 19 of the year 1998 concerning the Ministry of Labour and Vocational Training Regulation.

b) The Council of Ministers Resolution No. 229 of the year 1995 concerning the affiliation of Occupational Health and Safety in the Ministry of Public Health to the Ministry of Insurances and Social Affairs and Labour.

c) The Council of Ministers Resolution No. 13 of the year 1998 concerning the formation of the Higher Committee for Occupational Safety and Health.

d) The Council of Ministers Resolution No. 138 of the year 1995 concerning the table of Occupational Diseases.

e) The Council of Ministers Resolution No. 257 of the year 2000 concerning the Vocational Medical Care.

f) The Ministerial Resolution No. 39 of the year 1996 concerning Hazard Works in which women are forbidden to be employed.

g) The Ministerial Resolution No. 40 of the year 1996 concerning works, carriers, and industries in which minors are forbidden to be employed.

h) The Ministerial Resolution No. 71 of the year 1998 concerning Means of the Medical First Aid.

The Ministry of Social Affairs and Labour (MSAL) is the authority responsible for applying the OSH rules and regulations, and looking after the safety of the workers in all production sectors and facilities. It is responsible for protecting them from chemical, physical and biological hazards, and pollutants of work environment. It has to enforce

[9] Handbook on Law No. 25 of the year 1991 concerning Insurances and Pensions, Republican Resolution No. 125 concerning the By-law of Insurances and Pensions, and Law No. 26 of the year 1991 concerning Social Insurances, Ministry of Legal Affairs, Fourth Edition,2007

necessary measurements to control the pollutants through inspection activities done by qualified occupational safety and health inspectors.

The Ministry (MSAL) has to ensure the health of workers; this has to be done by conducting clinical and laboratory medical checkups for new appointed employees and by periodical checkups during their period of employment.

Tasks to be performed by the Ministry (MSAL) are explained in Article 116 of the Labour Law.

Article 113 of the Labour Law stipulates that upon operating any new operational site the employer must provide healthy and safe conditions therein and concerned ministry (MSAL) must ensure the existence of these conditions.

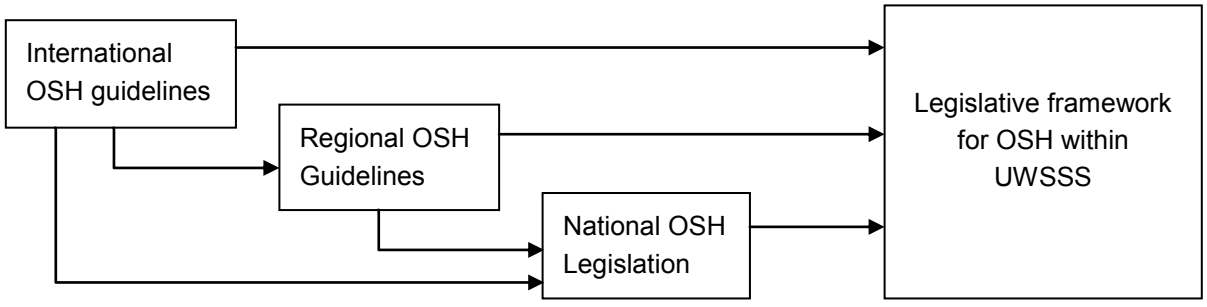
In accordance to the Labour Law, the employer has the responsibility of providing complete protection to his workers and thereof Articles 114 and 115 of the Labour Law includes rules and regulations to be abided by the employers.

Article 158 of the Labour Law stipulates that; the provisions regulating occupational safety and health stipulated by this law overrule the relevant sections in the Civil Service Law and any other laws.

In the case of UWSS, the Ministry of Water and Environment (MWE), the top management of utilities, the General Managers of utilities, and OSH Officers / Heads of Sections have to be aware of related international, regional, and local legislations and their applications, because they are collectively legally liable for maladministration of OSH and responsible for the results of ignorance and negligence.

The legislative framework for OSH within UWSS can be illustrated as follows[10]:

Figure 2: Legislative framework for OSH within UWSS



[10] Guidelines on occupational safety and health management systems, ILO-OSH, 2001

CHAPTER 3

KEY AREAS OF RISKS AND HAZARDS IN THE UWSS OF YEMEN

3 Key Areas of Risks and Hazards

What are risks? In simple words a risk is the possibility of something unwanted or bad to happen at some time in future.

What are hazards? A hazard is a situation or something that poses a level of threat to life, health, property or environment.

The key areas of risks within the water supply and wastewater sectors (which were also acknowledged by the participants of a workshop on Occupational Safety and Health held by PDC on 18/05/2009 in Sana'a) are mentioned below.[11, 12]

(Note that illustrating pictures in this chapter were taken from different water and sanitation sites in the Urban Water Sector in Yemen)

a) Travelling/ Commuting to and from the place of work:

Traffic accidents are common worldwide and Yemen is no exception. Employees face daily risks of traffic accidents on their way to work and back home after work. This refers to pedestrians and users of any kind of public or private transport.

b) Site Access

The access to sites of work, in particular sites in public spaces, like streets, sidewalks poses dangers for workers and the general public.

Uncontrolled access to a tower reservoir

Non-monitored Well

Free access to water extracting and pumping facility

c) Fire safety

Incidents of fire can occur in a variety of places. Of particular danger are any areas were inflammable materials like fuel or gases are stored.

[11] Draft OSH Manual, Hans Bayer, May 2009
[12] Occupational Safety & Health Fact Finding Report, Mohammad Al-Saleem, April 2009

d) Electrical

Electrocution or electric shocks pose other common risks due to exposed high voltage cables, connections and lacking insulation. Very common are blank connections near poorly maintained electrical pumps, at control and switch boards, at extension wires or through missing plugs on power tools.

Exposed electrical wire may cause shock to employees if they touch it

Wiring in a remote and unmanned site, some are exposed

Not using cable locator before excavating resulted in cutting the cables

e) Chemical

Different kinds of gaseous, liquid and solid chemicals are used in the water and wastewater industry. They pose risks of intoxication and fire. The most dangerous substance commonly used in water production is chlorine gas.

Welding without protection against fumes

Direction on safe chlorine handling and emergencies wall mounted in a chlorination facility (good practice)

Poorly maintained chlorination facility; while the safety signs are wall mounted (good practice)

Chlorine cylinders stored under the sun: extreme heat may cause explosion

Homemade shower in a chlorination facility, one if exposed to chlorine will not be able to use this shower

Out-of-use chlorine room left without control or maintenance for a long time

1

2

1- loose cylinders. (deficiency)

2- Vertically fitted to the wall chlorine cylinders (good practice)

Labs employees found aware of chemical hazards; more awareness needed

Safety shower found disconnected of water resource by a tap, it will not help during emergencies

f) Mechanical

Plumbing and engineering works pose a variety of risks of bodily injuries. Some of the most frequent are:

- injuries from flying particles
- slip, trip or fall in machine area
- lacerations, cuts and bruises

Powerful machines with high speed rotating parts un-covered

Using hand tools in the right way, unfortunately without protective gloves

Wrong use of hand tools results in fatigue, and without proper hand protection

Rotating parts may cause harm or cut the hands if the hands touch them intentionally or un-intentionally. Such parts are driven by powerful engines so they might cut the hands or cause death. They should be always covered.

Using PPE is essential to protect the hands against the hand tools hazards.

g) Buildings

Buildings, especially when not fully completed pose risks of falling, tripping slipping to workers and the public.

Poor housekeeping in water extracting site, this makes work difficult

Chaos on floor & walkways of water extracting site may cause fall and harm

Dirty and crowded floors & walkways in chlorination facility obstacling the work

h) Construction and Maintenance

Construction and maintenance are one of the most dangerous sectors. The main hazards include:

Working at height and fall prevention

Climbing ladders or scaffoldings bear great risks of slipping and falling, potentially causing a variety of bodily injuries, particularly broken limbs.

Working in excavations

Working in excavated areas bears the risk of collapsing walls and getting trapped by sliding soil. While shallow trenches of about 3 feet are still rather safe, deeper trenches as common in the main supply and sewerage system pose great risks to workers and the general public. In principle one could say that the deeper the excavation, the higher the risks get.



Excavation without installing barriers or supports (shoring) is wrong; workers or third party may fall into excavations and/or excavation sides may collapse and bury employees

Shelves must be mounted to the walls and to each others; otherwise they may fall due to imbalance



Working under or near overhead operations is dangerous because lifted items may fall; helmets are mandatory in such situations

Moving loads and lifting equipment

Moving loads and operating lifting equipment bear great dangers concerning falling objects that can cause severe bodily harms. Loads which are lifted and moved by hand may slip and fall on the feet of the bearer/s. Loads lifted by cranes and other hoisting equipment are usually of heavy nature and as such particularly dangerous.


All parts of lifting equipment must be maintained and inspected periodically and users should be trained

i) Confined spaces

Confined spaces are commonly understood as small spaces which are difficult for humans to access, for example manholes, division boxes, tanks and bear the risk of lacking ventilation (lacking oxygen) and causing claustrophobia.

In the left picture inside the red square, a good quality confined spaces suit found abandoned and un-maintained in an old cabinet (poor storing); the same suit seen unfolded in the right picture; apparently it was never been used before

Sewerage network employees found lacking the basic knowledge of confined spaces;
they neither use gas detectors nor ventilation tools, because they are not available;
they don't know the biological hazards of their work;
they are never subjected to periodical medical check-up nor vaccinated;
no traffic signs or reflective cones provided to be used when working in streets



Individuals may fall into opened manholes; keeping them covered is a good practice

j) Pressure systems & vessels

Pressure systems and pressurized vessels bear the danger of exploding and may cause a multitude of bodily injuries through objects and particles flying around.

k) Personal Protective Equipment & Uniform

Although Personal Protective Equipment is designed to protect workers, they themselves inhibit certain risks, e.g. through restricting movement, reducing sight or hampering manual operations.

Safety shoes are important in protecting employees' feet; they provide protection against heavy falling objects and protection against penetration e.g. nails


Managers and supervisors should attend to work showing commitment toward using PPE and unifrom, not as shown in the above pictures; employees usually affected by their superiors' good attitude

l) Workers' amenities, washrooms and toilets

Eating facilities, changing rooms, toilets and showers are often in a neglected state of repair, dirty and as a result bear risks of spreading contagious diseases.

m) Noise pollution

Noise is a well known work hazard to employees of water & sanitation utilities. For example when water is pumped into networks by large pumps of high decibel, the workers will be exposed to high levels of noise.

n) Other risks or hazards

Listing all the potential risks and hazards in detail would exceed this manual. But in view of social and political tensions acts of sabotage or terrorism cannot be excluded. They could result in contaminating water reservoirs, interrupting the network or even attacks on officers.

Natural disasters like prolonged draughts, floods (e.g. Hadramout 2008) or earth-quakes pose threats to the operations of water and sanitation utilities as well.

CHAPTER 4

PREVENTIVE MEASURES

4 Preventive Measures

4.1 General Accident Prevention

Incidents and accidents can be avoided by general and specific measures. Among the general measures a proper organisation of work, clear working procedures and using the appropriate tools, gears and equipment correctly are of great importance. Through applying the general measures, incidents and accidents are “not invited” to happen.

a) Organisation of work:

Standard operating procedures should be applied in carrying out all types of work that clearly define subsequent steps to be taken, right from preparing for a particular job until the final testing and checking of proper completion. This is essentially a managerial task of the foreman, headman or supervising engineer. Although it may not be necessary but useful to have procedures laid down in work manuals, most essential is that the entire team involved in a particular job knows all the steps very well and is aware of any critical or potentially dangerous parts.

b) Use of equipment and tools:

For every type of work the appropriate equipment and tools should be used. Their condition and proper functioning should be checked before commencing work.

Equipment and tools should be used correctly and for the purpose they are designed for. A well trained worker will know what he/she can do with a particular tool and what not.

c) Use of the appropriate labour force:

As the nature of works and jobs vary, there are jobs that can be carried out by a single person, while others require at least two or more persons. A single worker alone should never strive for accomplishing a job alone by him/herself that requires other helping hands. The appropriate number of workers should be assigned to every job. Too few are likely to cause problems and too many just as well.

d) Communication:

For any jobs that are carried out by more than one person a clear communication system, that does not allow any misunderstandings should be established and applied. This will enhance the performance of any team and avoid counterproductive steps of work.

e) Coordination and command:

Any teamwork needs to have a clear structure of command. This can be oral instructions, hand signs, light signals, phone- or radio-transmitter calls, especially when operations are carried out over substantial distances or when there is a very high level of noise.

f) Allocation of appropriate working time

For routine jobs the required working time is known from experience. However for un-known jobs or for jobs that encounter unexpected problems, sufficient extra time has to be allocated. Working under severe time pressure or in a hurry invites problems and risks of injuries.

4.2 Risk Assessment

Recommended Prevention Action is to carry out **Risk Assessment**; "employers should take whatever steps necessary to ensure the safety and health of workers".

To prevent accidents; utilities should establish a health and safety management system that incorporates risk assessment, risk management and monitoring procedures.

The guiding principles that should be considered throughout the risk assessment process can be broken down into a series of steps:

Step 1 - Identifying hazards and those at risk

Looking for those things at work that have the potential to cause harm, and identifying workers who may be exposed to the hazards.

Step 2 - Evaluating and prioritising risks

Estimating the existing risks (their severity, their probability to cause harm) and prioritising them in order of intense and importance. It is essential that the work to be done to eliminate or prevent risks is prioritised.

Step 3 - Deciding on preventive measures

Identifying the appropriate measures to eliminate or control the risks.

Step 4 - Taking action

Putting in place the preventive measures and protective gears through a prioritisation plan (most probably all the problems cannot be resolved immediately) and specifying who does what, when a task is to be completed and the means allocated to implement the measures.

Step 5 - Monitoring and reviewing

The assessment should be reviewed at regular intervals to ensure it remains up to date. It has to be revised whenever significant changes occur in the organisation or as a result of the findings of an accident or “near miss” investigation.

Another step forward in prevention is to prepare **"Accident prevention Checklist"**; this can be done by answering the following questions:

- Have clear procedures and responsibilities for health and safety been set and everyone know their own and others’ responsibilities?
- Have the main risks to health and safety been identified and actions to eliminate or reduce them taken?
- Have workers been provided with any necessary personal protective equipment to protect them of risks that cannot be avoided by other means? Have they been trained in their proper use?
- Has relevant information been provided to the workers on the risks, and have they been trained in safe working and emergency procedures?

Final Advice on prevention is "Consult, inform and train your employees"

- Employers have to consult their workforce on health and safety measures.
- Workers have a right to receive information about the risks to health and safety, preventive measures, first aid and emergency procedures.
- Training should be relevant and understandable. Training should be provided for new workers and for existing workers when work practices or work equipment change.

4.3 Preventive Measures to cope with particular risks

a) Travelling/ Commuting to and from the place of work:

To prevent travelling accidents; care should be taken in general and in particular while travelling as a pedestrian, with private car, or public transport to the place of duty and return as well as travelling during working hours.

Employees with private vehicles should make sure that the vehicle they use is in a road-worthy condition, this means technically in a good operational condition. Brakes, lights and steering system have to be in order. Drivers of company vehicles should possess a valid driving license and be conversant with – or if need be trained in – the particular vehicle used. The driving style must be of good nature and adapted to the road and traffic conditions.

b) Site Access

It is important for water facilities to be guarded and the access of the public and of vehicles to be controlled in order to eliminate, for example, sabotage actions which may cause harm to facilities and employees. Potential consequence could be the stop of service delivery.

c) Fire safety

Incidents of fire can occur in a variety of places. Of particular danger are any areas were inflammable materials like fuel or gases are stored.

Emergency response procedures should include a part to deal with cases of fire.

Emergency routes must be identified with reflective lines on floors and marked by signs posted on walls.

In dark places, “Exit” lighting should be installed and function well.

Regularly tested fire extinguishers should be placed in risk areas, and employees trained in their use. Extinguisher signs should be wall mounted.

Ideally it would be to have fire alarm and fire fighting systems installed and periodically inspected for readiness.

d) Electrical

Cables on pumping and other equipment should be jointed professionally and covered to prevent electrical shock. Wiring in switchboards should be of professional standard and the switchboards closed and protected against un-authorised persons. Unprotected switchboard and other equipment can cause electric shock and in some cases burns or heart failure (death).

A cable locator is a piece of necessary equipment in water and waste water network construction and maintenance. It determines the location of buried cables. This equipment should be provided for excavation teams in sufficient numbers.

e) Chemical

In general the storage control of any chemicals should be of high level, and employees must be trained in their safe handling and use.

The most dangerous material used in water and sanitation utilities is Chlorine gas. It is important to use leak monitoring systems composed of gas detectors, and alarms should be installed and inspected periodically for proper functioning.

Since chlorine gas is 2.5 times heavier than air, ventilation for chlorine gas evacuation must be constructed on ground level.

Some safety specialists recommend filter-masks to be used in chlorine facilities based on very rare leak accidents, but it is of good practice to provide Self-Contained Breathing Apparatus (SCBA) as it is much safer, no one can predict when the gas will leak. SCBA should be provided in sufficient quantity and quality and periodically inspected for readiness and safe use.

For leakage cases; Emergency Response Procedure (ERP) including first aid measures should be installed and employees trained in its implementation through periodical drills. A leak confinement kit should be also provided by the utility and employees trained for proper use. Finally, safety showers (water showers which has to be operated from outside the chlorination room) should be installed and working properly.

f) Mechanical

Plumbing and engineering works pose a variety of risks.

Hand tools of adequate safety standard should be provided to protect the hands of employees.

Rotating parts on pumps and other machinery should be covered to prevent direct touch by hand.

g) Buildings

Maintenance of the structure, floors, and walkways provides a safe work environment for workers and visitors.

Fire exits should be located and exit signs to be installed.

Other working conditions like temperature, lighting and housekeeping should be maintained to acceptable human levels.

h) Construction and Maintenance

Construction and maintenance are one of the most dangerous sectors. The main hazards include:

Working at height and fall prevention

Ladders and scaffolding used for climbing up must be well positioned and firm. Reservoirs and tanks should be equipped with handrails and stairs. They must be covered to prevent fall of employees or visitors.

Working in excavations

Before beginning with excavations, employees must install portable barriers and traffic signs to prevent fall of employees, pedestrians or vehicles into excavations. Same refers to opened manholes.

A cable locator should be used to detect and locate buried cables. Only then excavating should start. For safe working conditions, side supports (shoring) should be used for deep excavations to prevent a collapse of soil.

Moving loads and lifting equipment

Loads moved by hand should not exceed the physical capacity of the bearer/s. Whenever cranes and similar lifting or hoisting equipment is used, it has to be ensured that the equipment is positioned on safe ground and loads do not exceed the lifting capacity of the equipment. Frequent use of lifting and hoisting equipment may reduce the actual lifting capacity as part of general wear and tear. Therefore lifting equipment should be periodically tested to assign the Safe Working Load (SWL) and to post a SWL sign in a prominent place for the users. The users should be trained periodically in the safe use of lifting equipment. Whenever working on lifting and hoisting equipment; workers should wear protective helmets and safety shoes.

i) Confined spaces

They should be identified, listed and secured with covers. Entry equipment like tripods and safety harnesses should be provided. Gas detectors should be used to detect dangerous gases before entering confined spaces. Detectors are usually provided by utilities and employees got training for their usage, calibration and maintenance. Air circulators are also necessary to decrease gas concentration especially for deep manholes.

j) Pressure systems & vessels

All parts of pressure systems like pressure gauges and valves should be tested and a sign of Safe Working Pressure (SWP) to be installed for operators. This applies to vessels as well.

k) Personal Protective Equipment & Uniform

Utilities have to identify all types of Personal Protection Equipment (PPE) after scientific identification of work hazards. PPE of certain standards must be procured to provide sufficient protection for employees against work hazards. Employees must be trained in proper PPE use, maintenance and cleanliness. Uniforms are recommended to reflect the corporate image of the utility and identify its employees.

l) Workers' amenities, washrooms and toilets

Eating facility, toilets and showers should be provided by the water utility for employees' use, especially for those who work on shifts or as lone-workers in remote sites. These facilities should be clean and properly maintained. Working clothes (overalls), especially of sewerage employees, are contaminating media. To prevent employees' homes and families from being exposed to contamination, lockers are used to keep overalls on the work site and forbid employees from taking them to their homes. First aid provisions have to be installed at work place with frequent inspection for expiry dates and completeness.

m) Noise

Noise is a well known work hazard to employees of water & sanitation utilities because water is pumped into networks by large pumps of high decibel. To prevent employees from noise, especially in modern utilities, sound isolation is used. The employees can operate and monitor pumps through isolated windows of double glass. For extra reduction of noise, sound-proofing material could be used.

Currently, in utilities of medium noise level ear-muffs of good quality are used.

n) Other risks

Acts of sabotage and terrorism resulting from social or political tensions can be avoided by controlling the access to all important sites, particularly to reservoirs and pumping stations.

Natural disasters like prolonged draughts, floods or earthquakes are difficult to predict. However in areas prone to floods or earthquakes security measures can be incorporated in the design of the facilities.

For lone-working employees, means of communication should be provided to allow the worker to report any problems or incidents.

Waste disposal should be governed by environmental-friendly procedure.

CHAPTER 5

PERSONAL PROTECTION EQUIPMENT (PPE)

5 Personal Protection Equipment (PPE)

Personal Protection Equipment provides the employee with a first line protection against injury. Wearing personal protection equipment is an added safety feature, not a substitute for necessary safety procedures. Personal protection equipment should not give an employee a false sense of security.

Always remember:

- Use proper personal protection equipment.
- Be familiar with the limitation of personal protection equipment and do not exceed the levels of protection it provides.
- Select one item of personal protection equipment that will be compatible with another and that will not interfere with the intended use of other personal protective equipment items.
- Inspect, clean and maintain personal protection equipment for maximum protective capability.
- Replace defective or damaged personal protection equipment.

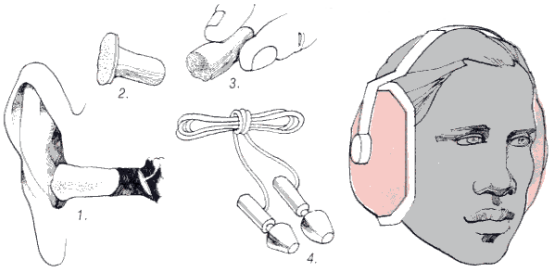
5.1 Types of PPE, according to the Part of the Body it Protects:

a) Head Protection

- Wear a hard hat when there is a risk of head injuries from falling objects, flying materials, working with lifting and hoisting equipment or if exposed to electrical conductors.
- Wear a hard hat at the direction of the supervisor.
- Check the hard hat for cracks, dents, discoloration, brittleness and frayed or torn suspension. Replace damaged parts or replace the hard hat as necessary.

b) Hearing Protection

- The goal of hearing protection is to reduce the exposure to harmful noise but allow machine warnings and conversation to be heard.
- Wear hearing protection when noise levels in the work environment exceed 80 dB, dB is defined as a measure of sound pressure level, noise level measuring unit. Noise level examples are soft music (30 dB), normal speech (60 dB), shop tools (80 dB), sandblasting (115 dB), and explosive blast at peak (140 dB).
- Wear hearing protection to meet or exceed the OSH attenuation criteria by utilizing earplugs and/or earmuffs.
- Earmuffs are made specifically for certain noise levels and work environments. A perfect seal between the muff and the skin around the ear is required, otherwise, earmuffs will provide a minimum level of protection; ensure that hair, jewelry and glasses do not interfere with the seal.
- Wear multiple hearing protections when necessary to reduce sound and when extended time is required to complete an activity.



Disposable earplugs:
1. Formable bedding – acoustical fibers.
2. Plastic covered acoustical fibers.
3. Expandable plastics.
4. Reusable plastic earplugs.

c) Eye & Face Protection

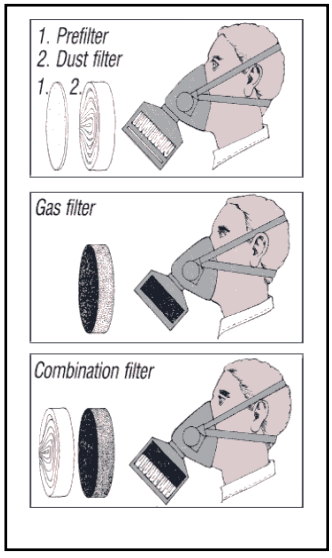
- Wear safety glasses when there is a risk of injury to the eye. At any time there is a danger of injury by flying objects, you must fit safety glasses with side shields or wear safety goggles.
- Wear safety glasses when operating various power tools or machines, which may throw particles.
- Wear safety glasses when working with a battery.
- Wear safety goggles when needed to protect the eyes from dust and mist.
- Wear safety goggles when there is a danger of foreign objects entering the eye from the side.

- Wear face shields when there is a splash danger from chemicals or other substances that may cause injury to the face or neck.
- Prescription glasses and contact lenses will not protect the eyes. Contact lenses alone can be more hazardous and cause eye injury if dust or materials are lodged under the lenses.
- Wear safety glasses, goggles or face shields upon the direction of the supervisor.

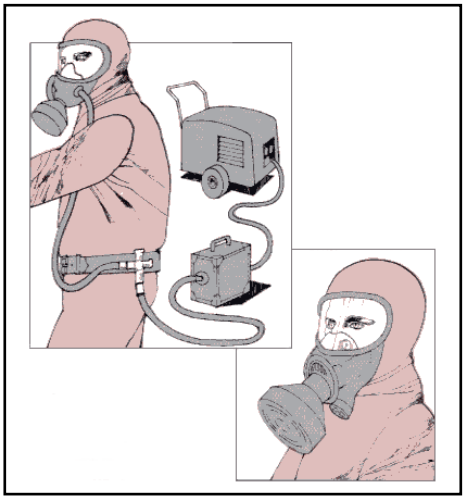
d) Respiratory Protection

- Employees must receive training and re-training as necessary prior to being required to utilize respiratory protection in a work activity.
- Respiratory protection is required for two basic hazardous environments and/or atmospheres: oxygen-deficient and contaminated. If an environment or atmosphere contains less than 19.5% of oxygen by volume, it is considered oxygen-deficient. Confined spaces are potentially oxygen-deficient environments. Inhalation is the quickest way for contaminants to enter the bloodstream. The respiratory system must be protected from a contaminated atmosphere that has dust, spray, fume, vapor, smoke or harmful gas exposure.
- Base selection of respiratory protection on results of workplace atmospheric sampling, if necessary, the nature of the work activity, the amount of time spent on a specific work task and the activities expected to be performed while wearing a respirator. There are two (2) basic types of respirators, air purifying and air supplying.

Air Purifying



Air Supplying



- Be medically certified to wear a respirator.

1. Air purifying respirators are available in three (3) basic types, particulate removing, vapour and gas removing and a combination of two or more. Air-purifying respirators are approved for use only when the atmosphere contains sufficient oxygen to sustain life, contaminant concentration is known and/or contaminant levels do not exceed the limitation of the face piece or cartridge.
2. Air supplying respirators are available in two (2) common types, self-contained breathing apparatus (SCBA) and airline respirator. Both types provide breathing air from an outside source of air to a mask or hood. The SCBA supplies air from oxygen tanks and provides the highest level of respirator protection and positive pressure. SCBA is more commonly used in rescue or emergency situations. The SCBA provides protection for both oxygen deficiency and contaminates that are immediately dangerous to life or health.

- Employees who will have extensive use of respiratory protection will be trained, medically evaluated and fit-tested.
- Wear respiratory protection when required by a product or when performing such activities as working in confined spaces, mixing, applying, or spraying chemicals, and welding or cutting metals.
- Wear respiratory protection upon the direction of the supervisor.
- Proper respirator maintenance is required to ensure maximum capability and will include inspection, decontamination and storage.

e) Hand & Arm Protection

- Wear work gloves during any operation when there is a risk of abrasion, laceration, burns, blisters or punctures to the hands.
- No single glove type will protect against all potential hand hazards. There are three general glove classifications for the water and wastewater sector:
  1. General purpose: made of either leather or cotton, the gloves offer minor protection from abrasions, cuts, punctures, snags and minor temperature variations. Leather gives an overall better protection.
  2. Special purpose: manufactured according to the work activity exposure. As an example, for welding and fire fighting use specially insulated gloves designed for use in extreme heat. Another example, for wastewater operations use specially designed bio-protective gloves.

3. Chemical-resistant: made of several different types of materials for resistance to specific chemicals and prevents contact with or absorption of hazardous chemicals into the body. The gloves must be non-porous.

- Inspect the gloves for rips, holes or anything that may weaken the effectiveness. Either repair or replace damaged gloves prior to a potential exposure.
- Ensure that the gloves fit properly, a glove too big or small will not provide adequate protection.

f) Body & Leg Protection

- Wear a safety vest fitted with reflecting strips or made of high visibility material when performing duties on the roadway.
- Wear coveralls/overalls and/or long sleeved shirts when welding, cutting or exposed to poisonous plants or hot materials.
- Wear clothing that is fire and/or heat resistant when work activity has high-voltage, heat or fire exposure.
- Wear specific chemical resistant clothing if the work activity has a chemical exposure.

g) Foot Protection

- All workers except those who do not have regular exposure to hazardous conditions or who have obtained a doctor's certificate shall wear safety footwear.
- Safety footwear is designed to guard against impact or compression and should be appropriate for the work activity and exposure.
- Wear safety footwear with a sturdy reinforced toe area if the work activity requires handling heavy objects, parts or tools.
- Wear safety footwear with puncture-resistant soles if the work activity has a potential for sharp objects like nails to penetrate the feet.
- Wear safety footwear that is non-conductive if the work activity has an electrical exposure.

- Wear safety footwear with conductive properties to transfer static charge into the ground, if the work activity requires a static charge free environment.
- Wear non-sparking safety footwear if the work activity has an explosive mixture hazard.
- Wear safety footwear that is specially coated to resist chemicals if the work activity has a chemical exposure.

5.2 Special Considerations

a) Confined Space

- Wear appropriate and prescribed personal protective and respiratory equipment for the specific work activity and environment so as in wastewater channels and water tanks. Safety harnesses and lifelines must be attached to allow evacuation in the event of an emergency.
- Test the air inside the confined space for flammable, explosive and toxic vapors and gases before entry. If necessary, test again while work is in progress to ensure continued safety.
- Use spark-proof tools and explosion-proof fans, lights or air movers if environment has an explosive potential.
- Have trained and equipped workers involved in the work activities. Good communication is essential.

b) Electrical

- Wear hard hat;
- Wear insulating gloves;
- Use rubber mat.

c) Emergency Response and Fire fighting

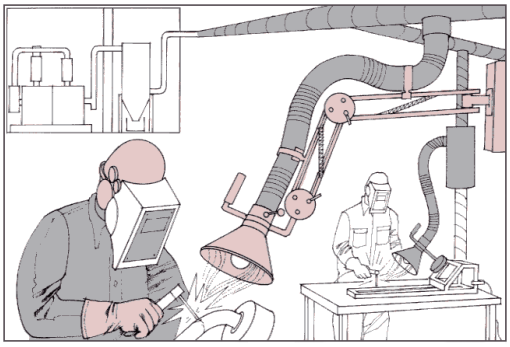
- Bunker equipment (helmet, coat, pants, gloves, boots, SCBA, etc.)

d) Hazardous Materials

- Utilize special impermeable gloves when working with hazardous chemicals;
- Utilize rubber boots when required;
- Utilize rubber boots when mixing and applying chemicals.

e) Welding

- Wear head protection;
- Wear welding gloves;
- Wear eye and face protection;
- Use respiratory protection, if required.



f) Construction/Maintenance Site Protection safety gears

- Before beginning of excavations, employees must install barriers and traffic signs to secure themselves, the public and vehicles.

- A cable locator should be used to detect and locate buried cables.

g) Avoiding misuse of PPE

- Never use personal protective equipment without the proper training;
- Never use personal protective equipment except for its intended purpose;
- Never use personal protective equipment that is damaged or defective.

CHAPTER 6

EMERGENCY MANAGEMENT (EM)

6 Emergency Management

6.1 Definition of Emergency

Preventive measures against a variety of risks can reduce the occurrence of emergencies. But in spite of implementing a range of preventive measures emergencies cannot totally be excluded.

What is an Emergency? **An emergency is a suddenly occurring situation that poses an immediate risk to life, health, property or environment.** Typical characteristics of an emergency are:

- unexpected;
- state of danger;
- occurs suddenly;
- serious;
- threatens health and/or life and poses risks of severe material and/or environmental damage.

Examples are overflowing sewerage tanks, expanding floods, fires in nearby areas, chlorine leaks or digging trenches for network repairs which threaten to collapse etc.

An emergency requires urgent intervention to prevent worsening of the situation and to prevent or mitigate any negative effects on life, health, property or environment.

6.2 Purpose of Emergency Management

The general purpose of emergency management is to recognize imminent threats and to respond to them. For coping with unexpected and dangerous situations emergency management plans and systems have to be put in place to provide guidance on necessary response and appropriate action. This means e.g. clearly prescribing steps to be taken, defining roles of persons to take action and prescribing communication and information systems and procedures.

Example: when recognizing that walls of a trench are about to collapse, workers inside are called out and the walls are supported before work can resume.

Emergency Management is the discipline of dealing and avoiding risks. It comprises of

- prevention;
- response;

- recovery;
- mitigation (making a situation less dangerous).

In practical terms Emergency Management for a water and sanitation utility means:

- assigning responsibilities for the management of emergencies at the water utility, covering:
  - emergency and evacuation planning;
  - response to emergencies;
  - recovery from emergencies;
- providing the procedures and guidance required for each Department and Section to prepare adequately for local emergencies;
- putting systems for the management of utility based emergencies into place; and
- defining the minimum evacuation practice requirements for each building and campus of the utility.

6.3 Responsibilities

6.3.1 Routine Responsibilities

All employees of the utility must be familiar with the relevant requirements of an emergency procedure and be prepared to take or initiate the necessary steps.

Heads of departments and sections with Area Responsibilities must ensure that:

- the requirements of an emergency procedure have been implemented and are being maintained in their Area(s);
- **Area Wardens** and their deputies are appointed,
- the names of Area Wardens and Deputy Area Wardens, and changes to Warden arrangements, are communicated to the Safety Officer;
- training (including the induction of new staff) is organized and conducted within their Area(s) for the implementation of the Local Emergency Instructions;
- Emergency Floor Plans are kept up-to-date in their Area;
- a minimum of one evacuation drill per building per year is conducted in their Area(s), and details are documented in accordance with the Evacuation Drill; and
- relevant members of their staff are released for utility-wide emergency training.

The Safety Officer is responsible for:

- developing and maintaining an emergency procedure and related documents;
- developing and conducting training sessions for the implementation of an emergency utility-wide procedure for Supervisors, Managers, and First Aiders;
- advising Managers and Supervisors in the implementation of an emergency procedure;
- monitoring the development of Local Emergency Instructions within Portfolios with Area Responsibilities;
- proposing/appointing Area Wardens and Deputy Area Wardens and instructing them;
- ensuring that Emergency Control Personnel have been issued with color-coded helmets (Area Wardens and Deputy Area Wardens: white);
- organizing a minimum of one whole-campus evacuation drill for each multi-building campus every 2 years in consultation with local management, and in addition to the building evacuation drills mentioned above; and
- monitoring the implementation of the procedure, collecting information from Evacuation Drill Reports, and reporting yearly to the utility Safety and Health Committee on the implementation, with suggestions for improvements.

The Risk Assessment Team is responsible for:

- providing the initial Emergency Floor Plans; and
- updating Emergency Floor Plans upon request from the Portfolios with Area Responsibilities.

6.3.2 Special Responsibilities

In order to divide tasks among the employees it is necessary to assign certain parts or areas of a corporation/utility to one person in charge. Within this context each facility of the utility has to be divided into distinct Areas, based on buildings, floors, and their occupancy.

"**Area Responsibility**" in the context of an emergency procedure means the responsibility for fulfilling suitable emergency tasks in the assigned area.

All Departments and sections should have an "Area Responsibility" for their buildings, floors, and facilities.

"**Manager**" and "**Supervisor**" are employees of the utility to whom other employees or contractors formally report. They include Senior Managers of the utility and Heads of departments and sections.

"**Emergency Control Personnel**" are employees of the utility who have been appointed under an emergency procedure or under the local adaptations of an emergency procedure to the function of **Area Warden or their Deputies**.

The position of an Area Warden is not a full time job but an additional assignment to an employee in a particular Area. He/she should be a highly reliable person and being in good working relations with his/her team or colleagues within the Area. During emergencies, evacuations and practices, the Area Warden and Deputy Area Warden should wear white helmets for easy recognition. The main task of the Area Warden and/or deputy is to alert employees within his/her Area and assists them in the evacuation and assembly in a Designated Assembly Points[13].

During emergencies, the Emergency Control Personnel must assume responsibility for their areas and staff. They follow the instructions given in their Local Emergency Instructions.

"**Emergency Services**" are the public/communal Fire Brigade, Law Enforcement Authority (Police), Ambulance other State Emergency Services (e.g. often provided by the defence force) and hospitals.

All other staff, trainees, contractors and visitors must comply with the instructions given by Emergency Control Personnel.

In case the media seek comments regarding the emergency, staff must refrain from commenting, and must direct enquiries to senior management (e.g. Manager) or to the Public Relations Office, if applicable.

[13] In Areas jointly used or occupied by several Portfolios, it is not necessary for Area Wardens and Deputies to come from the Division or Department with Area Responsibility. The choice of Emergency Control Personnel should primarily be guided by personal characteristics and availability rather than by considerations related to organisational or reporting structure.

6.4 Emergency Instructions

6.4.1 General Emergency Instructions

Whoever comes first to the scene of an emergency, must remember the key steps**:**

1. **Assess** the situation for immediate dangers to your safety and take appropriate steps;
2. **Alert** (a) personnel around you, (b) the appropriate Emergency Services (**indicate Tel. No.**), and (c) the Area Warden (if applicable);
3. **Assist** any person in immediate danger **if safe to do so;**
4. **Contain** or combat the emergency **only if safe to do so;**
5. **Evacuate** to a safe location (if necessary);
6. **Notify** your Supervisor/Manager (staff), Teacher/Lecturer (trainees), and Designated utility Contact (contractors and visitors). Also notify the Safety Officer for incidents that are likely to cause distress to the people involved.

6.4.2 Local Emergency Instructions

Departments and sections with Area Responsibilities must develop, document and implement a set of Local Emergency Instructions. They should be prepared for each of the sections, buildings, areas and activities. These instructions may need to be developed in consultation with other departments/sections where relevant (e.g. if they share buildings). Local Emergency Instructions must:

- address the risks of fire and serious injury [14];
- identify any other emergency situations relevant to the area;
- list the steps to be followed in each case, including the method to be used to initiate an evacuation of the building [15];
- make special provision for the evacuation of people with disabilities, if applicable to the Area; and
- be consistent with the utility's Model Emergency Instructions.

[14] Refer to OSH Procedure – Incident Management for utility-wide instructions pertaining to serious injuries and deaths.
[15] This may involve manually activating a break-glass alarm, operating a hand-held evacuation siren, verbally instructing people to evacuate, etc.

6.5 Evacuation Instructions for Buildings

These instructions refer to all staff, trainees, contractors and visitors.

In case one is instructed to evacuate a building or area either by means of an automatic or manual alarm or by verbal order:

1. Make all equipment safe (shut off) !
2. Evacuate promptly from the building, closing doors behind you if practical !
3. Assemble at the Designated Assembly Point for that building or area !
4. Report to the Area Warden (ideally: white helmet) !

Area Wardens and Deputies:

(a) Initiate an immediate evacuation of your area in the following cases:

- automatic evacuation alarm (not preceded by a verbal announcement to disregard it); or
- instruction to evacuate given by the Area Warden or Deputy Area Warden, or by Emergency Services personnel.

(b) Investigate the emergency and decide on the need for evacuation in the following cases:

- verbal report of an emergency by staff, trainees, visitors, etc; or
- other indication of a threatening situation or problem.

(c) In case an evacuation is required, employees MUST:

1. follow Local Emergency Instructions to initiate an evacuation (if not already automatically initiated);
2. ensure that the appropriate Emergency Services have been contacted by phone (indicate Tel. No. …… for internal phones or indicate Tel. No. …….. for others), even in case of automatic alarm;
3. put on helmet if readily available;
4. conduct a thorough and systematic search of the area under control, advising all people to evacuate to the Designated Assembly Point;
5. proceed to the Designated Assembly Point;

6. determine whether the Designated Assembly Point is safe and take appropriate action if not;
7. ascertain whether anybody appears to be missing;
8. report to the Safety Officer (if applicable) the result of the concerned area search and head count; and
9. if necessary, take steps to prevent unauthorized persons from entering the building.

6.5.1 Facility Evacuation Instructions

In case the evacuation of a whole facility or of a part of a facility is required, the Area Warden or Deputy must:

- ensure that the appropriate Emergency Services have been contacted by phone or other means; and
- initiate an evacuation in their building in accordance with their Local Emergency Instructions. All other instructions are as above.

6.5.2 Importance of Emergency Floor Plans

A minimum of one Emergency Floor Plan should be prominently displayed on each floor of every building (exception are small buildings with one room only). Each floor plan must show:

- the name or code of the building and the floor level;
- the location of the plan itself (e.g. "You are here") on the floor depicted;
- the emergency exits for that floor, the location of fire fighting equipment;
- the location of any break-glass alarm; and
- the location of any first aid kit.

Immediately adjacent to the floor plan, a one-page summary of the Local Emergency Instructions should be displayed.

6.6 Coping with Threats

Each Section within each Portfolio must identify the employee(s), who is most likely to receive phoned threats, such as bomb threats, or the workstations where such threats are most likely to be received. The Section must ensure that these employees have

been issued with a copy of the Sabotage Treat Checklist, or that a copy of the Sabotage Threat Checklist is readily available at these workstations. (Typically, Receptionists, Administrative Officers, and Secretaries are most likely to receive these calls.)

The Safety Officer in cooperation with the local law enforcement agency should arrange/offer sabotage threat training to employees nominated by their Section.

6.6.1 Sabotage or Bomb Threats

(a) Written Threat: Any utility employee receiving a written sabotage threat must:

- avoid unnecessary handling of the letter, envelope, etc;
- preserve the evidence by placing it into an envelope or sleeve (preferably clear plastic); and
- immediately report the matter to the local Manager/Supervisor.

The Manager/Supervisor must contact the Police (indicate Tel. No ……) and the Area Warden or Deputy.

(b) Telephone Threat: Refer to the Sabotage Treat Checklist.

The Manager/Supervisor must contact the Police (indicate Tel. No……..) and the Area Warden or Deputy.

(c) Suspect object or mail item: Any utility employee who discovers a suspicious object or receives a suspect item of mail must:

- avoid handling the object or item;
- alert nearby people and retreat from the immediate area;
- immediately report the matter to the local Manager/Supervisor.

The Manager/Supervisor must contact the Police (indicate Tel. No……..) and the Area Warden or Deputy.

6.7 Reporting

All emergencies must be reported in accordance with the Occupational Safety and Health Procedure – Incident Reporting.

Title	Location	Responsible Officer	Minimum Retention Period
Template 09 – Local Emergency Instructions	Portfolio with Area Responsibility	Head of Division or Department	Update as necessary
Template 10 – Sabotage Treat Checklist	Portfolio with Area Responsibility	Head of Division or Department	15 years from date of incident if no injuries 20 years if injuries sustained ***
Template 11 – Evacuation Drill Report	Portfolio with Area Responsibility	Head of Division or Department	5 years ***

*** Number of years should be adjusted to Yemeni requirements.

CHAPTER 7

INCIDENT AND ACCIDENT MANAGEMENT (IAM)

7 Incident and Accident Management (IAM)

7.1 Definitions

In contrast to an emergency, which is a threatening situation, where something might happen, incidents and accidents are events that have actually happened and caused some negative consequences.

"**Incident**" means an unplanned event that has happened and causes minor, medium or severe risks to life or property or causes other negative effects, which may range from a personal conflict to material damage and human injury.

Incidents include minor or dangerous near-miss cases rather than actual serious disasters.

Example: walls of a trench have collapsed but the workers inside managed to escape unhurt.

In simple words **"Accident"** means a bad incident or unfortunate event which has caused physical harm or damage to property, material and or inflicted human casualties. Accidents happen unintentionally or by chance.

Example: walls of a trench have collapsed and buried the workers inside. One worker suffered injuries another one could not be rescued alive.

Within the given context, emphasis is given to work place or work related accidents.

7.2 Purpose of Incident and Accident Management (IAM)

The purpose of incident and accident management is to effectively and efficiently handle adverse and critical situations, to save life, protect property and minimize damage. In short, IAM should control damage and provide relief.

IAM describes the steps to be taken when confronted with an incident or accident involving casualties among staff and visitors and/or damages to the fixed or mobile assets of the utility.

These instructions are to be read in conjunction with the Occupational Safety and Health Procedures – First Aid Services and Emergency Management - aim to:

- comply with common law and community expectations regarding the duty of care owed to injured or sick people;
- ensure utility compliance with relevant requirements of Occupational Safety and Health legislation; and

- meet the requirements of the utility Occupational Safety and Health Policy – Incident and Accident Management.

7.3 Responsibilities

In any case of an incident or accident, immediate responsibilities have to be assumed by

- **employees at the scene**; they need to take immediate rescue action and depending on the seriousness call the First Aider, Area Warden, their supervisor and the Occupational Health Officer for assistance;
- **the First Aider** has to attend to any casualties;
- **the Area Warden** has to assist protecting or cordoning off the area;
- **the Occupational Health and Safety Officer** has to facilitate rescue operations and call in external Emergency and Rescue Services;
- **the Supervisor and the Head of the concerned department** have to authorize treatment of casualties at hospitals.

7.4 Procedures

7.4.1 General Procedure

"**Injury or illness**": covers any injury or illness incurred by any person (called "***casualty***" in this procedure) whilst present on grounds of the utility or engaged in utility-endorsed activities. It includes the recurrence or aggravation of any pre-existing injury or illness, and any illness which becomes apparent on utility grounds, even if unrelated to the utility.

"**First Aider**": means an employee of the utility who:

- holds a first aid qualification issued by an accredited first aid trainer, or an equivalent qualification as determined by the Safety Officer; and
- is included in the OSH Record – First Aiders.

"**As far as practicable**": in this procedure, this expression means being practicable in regard to:

- the severity of the injury or illness and the number of casualties;
- the availability of First Aiders;
- the availability of other trained First Aiders, medical or Para-medical personnel;

- the availability of a next-of-kin, legal guardian, etc of the casualty or casualties; and
- the wishes of any casualty or casualties.

In all cases of an incident or accident, the priorities for action by any employee is as follows (listed in decreasing order of importance):

1. to preserve the safety and health of nearby people;
2. to render assistance to casualties, particularly by obtaining help from trained personnel (First Aiders, Ambulance Officers, etc);
3. to preserve relevant evidence for any investigation; and
4. to report the incident in accordance with the Occupational Safety and Health Procedure – Incident and Accident Reporting.

For incidents that are likely to cause distress to the people involved, the First Aider or the most senior member of utility staff present must contact the most Senior Officer of the utility.

7.4.2 Specific Procedure - No Injury Incidents

(Near-Miss or Material Damage Only)

In case of an incident or accident that does not cause any injury or illness, staff present at the scene must take all reasonable steps to ensure that the incident or accident does not recur or worsen. Reporting requirements are outlined in the OSH Procedure – Incident and Accident Reporting.

7.4.3 Specific Procedure - Injuries or Illnesses

In case of injury or illness, people present at the scene must organize, as far as practicable, the prompt examination of the casualty(s) by a First Aider.

If a First Aider is available (case A), the First Aider assumes control of the situation. If no First Aider is available (case B), the most senior utility employee present at the scene assumes control of the situation. In consultation with the casualty - if conscious[16] - the First Aider or utility employee will determine the appropriate course of action. The following options would normally be considered (listed broadly in increasing order of severity):

1. making casualties comfortable and allowing them to rest;
2. allowing casualties to self-administer treatment if they suffer of a diagnosed condition and carry appropriate medication;
3. contacting a next-of-kin or legal guardian to come and assist casualties;
4. advising casualties that they should seek examination by a medical practitioner;
5. providing first aid treatment, making use if necessary of first aid equipment supplied by the utility;
6. transporting casualties to an appropriate medical service for prompt (but non-emergency) attention [17]; and
7. calling an ambulance (emergencies).

For every person they attend to, First Aiders must complete an entry into the First Aid Report (see Template 7) that should be included in all First Aid Kits. Every 3 months, First Aiders shall provide a copy of the completed First Aid Report forms to the Safety Officer.

[16] When consulting with a casualty, any factor thought to impair the casualty's judgment should be taken into account. Such factors include:
- Disorientation, confusion or embarrassment experienced by the casualty as a result of the incident, the injury, or a medical condition;
- Immaturity of judgment (e.g. in some children); and
- The possible side effects of pharmaceutical substances, or the possible influence of drugs.
- Where a casualty is thought to have an impaired capacity for sound judgment and steadfastly refuses to follow the recommended course of action, reasonable steps shall be taken to protect the person and others against the possible consequences of their actions. These steps may include contacting emergency services against the will of the casualty.
- Physical coercion should only be used in the most extreme situations and solely in an attempt to protect life and limb.

In all cases where a casualty is unconscious, an ambulance shall be called, as far as practicable.

[17] If, in the opinion of the First Aider (case A) or utility employee (case B), a casualty needs to be transported to an off-facility medical facility for prompt attention and a next-of-kin or legal guardian cannot be contacted, the First Aider or the Manager/Supervisor may organize transport depending on circumstances. Ambulances or utility vehicles should be used in preference to private vehicles. In general, casualties requiring medical treatment are deemed to be unable to drive safely. In such cases, unless the casualty repeatedly insists on leaving the facility or incident scene by their own means, the most senior utility employee present will assign a reliable employee to drive the casualty to an appropriate medical facility. Only in exceptional circumstances should a staff member drive a casualty without a third person - usually a First Aider - in the vehicle to monitor the situation and provide any necessary assistance.

7.4.4 Specific Procedure - Death

If, following an apparently fatal injury or illness, there is a possibility that the casualty may still be alive, he/she must be treated as in Chapter 7.5.3 concerning injuries and illnesses. In particular, the role of first aiders in such circumstances is to apply appropriate resuscitation techniques until relieved by personnel with higher medical or Para-medical qualifications. An ambulance must be called immediately.

In case a person dies in an incident or is found dead, the scene of the incident must be preserved except where measures are required to prevent further injuries or illnesses. The Law Enforcement Agency (Police) must be called immediately.

Following a Risk Assessment, corrective measures should be taken to minimize available risks.

To cope with the OSH policy, the utility must also ensure the provision of required Safety and Health equipment and material.

Title	Location	Responsible Officer	Minimum Retention Period
Template 07 – First Aid Report	Safety Office	Safety Officer	Destroy 15 years from date of incident ***

*** Number of years should be adjusted to Yemeni requirements.

CHAPTER 8

FIRST AID SERVICES

8 First Aid Services

First Aid is the provision of initial care for an illness or injury. It is usually performed by a non-expert person to a sick or injured casualty until proper medical treatment can be accessed. First Aid generally consists of a series of simple and in some cases, lifesaving techniques. In view of the nature of work in the water and sanitation sector and the number of employees in a utility, first aid services must be made available in all of them.

The main aims of First Aid are:

- to preserve life;
- to prevent further harm; and
- to promote recovery.

8.1 Purpose of First Aid Services

The purpose for First Aid Services is to provide quick response to injuries and illnesses and to avoid a deterioration of the medical condition of a casualty before professional medical treatment can be obtained.

8.2 Responsibility

The **Occupational Safety Officer** is responsible for:

- maintaining and updating the first aid procedure and related documents as required;
- developing, coordinating and delivering, the training required by Managers, Supervisors and First Aiders to fulfill the role assigned to them in the first aid procedure;
- assisting Sections, Divisions and Departments in complying with the first aid procedure;
- maintaining the utility Occupational Safety and Health Record[18] - OSH Officer; and
- for the provision and coordination of a Hepatitis information, prevention and vaccination programme.

The "**First Aider**" is an employee of the utility and trained in First Aid Services. Especially in smaller utilities this is not a fulltime job but an additional assignment.

[18] Refer Labour Code, Act No. 5 of 1995, Article 114 (10)

Considering the fact that First Aid Training is not yet very widespread in Yemen, the appointment of First Aiders is of great importance. A First Aider should be a person, who

- holds a first aid qualification issued by an accredited first aid trainer, or an equivalent qualification as determined by the Safety Officer; and
- is included in the Occupational Safety and Health Record as shown in Template 2 - First Aiders.

First Aiders are responsible for:

- complying with the provisions of the OSH Procedure – Incident and Accident Management in case of incident;
- reporting to their Safety Officer, any condition that may prevent them from performing their first Aider duties properly and safely;
- attending the training sessions organized for the maintenance and development of their first aid skills;
- regularly (e.g. monthly) checking the contents and condition of first aid kits in their area and ordering first aid stocks as required, using the First Aid Order Form;
- entering into a Hepatitis prevention program which may, after proper information and consent, include vaccination; and
- providing documentary evidence of their first aid qualifications upon request.

8.3 Actions

Departments and Sections with Area Responsibilities must conduct assessments of the level of first aid services required in their Area(s). These assessments must be conducted at least yearly and each time organizational changes may impact on the previous assessment. They must be conducted in consultation with **Health and Safety Representatives** to be appointed as shown in Template 3 and Safety Officers in particular, and in accordance with the following method:

Step 1: Area Classification

Determine first aid classification of each Area using the following guidelines:

Class "A": if staff, trainees or visitors in the Area, or in part of the Area, regularly perform any of the following activities or activities that present a similar risk of injury or illness, the Area or the part concerned shall be classified as "A":

- use of powered tools, compressed gases, or workshop machinery;
- use of kitchen equipment, stoves, ovens, food processors, blenders, etc;

- handling of chemicals classified as "dangerous goods";
- maintenance, testing or repairs of electrical equipment;
- conducting sports, presenting an acrobatics component (football, gymnastics, etc.); or
- field trips and outdoor activities in areas where medical assistance would normally arrive after 2 hours or more.

Class "B": if staff, trainees or visitors in the Area, or in part of the Area, regularly perform any of the following activities or activities that present a similar risk of injury or illness, the Area or the part concerned shall be classified as "B":

- use of non-powered hand tools (screwdrivers, hammers, knives, etc)
- sporting and physical activities other than those included in class "A";
- excursions, field trips and outdoor activities in urban areas or rural areas where medical assistance would normally arrive in less than 2 hours;
- driving group transport vehicles; or
- heavy manual handling.

Class "C": if staff, trainees or visitors in an Area, or in part of the Area, do not regularly perform any of the activities listed under Class "A" and Class "B", and do not regularly perform activities that present a similar risk of injury or illness, the Area or part concerned shall be classified as "C".

Step 2: First Aider Numbers [19]

The number of First Aiders should be determined in consultation with the Safety Officer. According to experience, the number of employees (35 – 100) to be covered by one First Aider depends on the risks associated with the type of work. Three groups of different levels of risk can be identified.

The following guidelines must be used in this process:

Class "A": one First Aider readily available for **35 people** present at any one time (staff, trainees and visitors).

Class "B": one First Aider readily available for **50 people** present at any one time (staff, trainees and visitors).

[19] When determining the appropriate number of First Aiders, consideration must be given to:
- absences due to leave or other reasons, and unavailability due to other commitments;
- the availability of non-First Aiders or medical support (e.g. when visiting public or private organizations);
- the geographical spread and possible isolation of people in the Division, Department, sub-unit, excursion groups, etc; and
- times outside of normal working hours when staff, trainees or visitors can be expected to be working or using utility facilities (e.g. Library if available).

Class "C": one First Aider readily available for **100 people** present at any one time (staff, trainees and visitors).

Step 3: First Aid Facilities

The provision of first aid kits for all First Aiders has to be ensured[20]. Minimum numbers of first aid kits per Department or Section are the same as the numbers specified for First Aiders; in addition a minimum of one first aid kit shall be provided for each floor of a building. Special consideration must be given to activities taking place in isolated locations and in large multi-storey buildings.

Each kit provided in buildings must contain, as a minimum, the basic contents listed in the First Aid Order Form as shown in Template 4 and any additional module (burn or eye) required, as determined by the local First Aiders in consultation with local management and the relevant Safety Officers. Kits must comply with the requirements of the Code of Practice, as listed in First Aid Kits (see Template 5).

The contents of first aid kits provided for field excursions shall be determined by the First Aiders involved.

Title	Location	Responsible Officer	Minimum Retention Period
Template 04 – First Aid Order Form	Safety Office	Safety Officer	N/A
Template 06 – First Aiders Nomination Form	Safety Office	Safety Officer	For duration of staff member's employment
Template 07 – First Aid Report	Safety Office	Safety Officer	Destroy 15 years from date of incident ***

*** Number of years should be adjusted to Yemeni requirements.

[20] Refer Labour Code, Act No. 5 of 1995, Article 115 (d)

CHAPTER 9

INCIDENT AND ACCIDENT REPORTING

9 Incident and Accident Reporting (IAR)

9.1 Purpose

The purpose to prepare reports about incidents and accidents is to facilitate investigation, prevention of similar incidents or accidents and to improve response. The reporting has to ensure compliance with utility policies and regulatory requirements relating to the reporting, investigation and correction of incidents and accidents; and

To collect accurate data for incident and injury prevention.

9.2 Definitions

"**Incident**": means any unplanned event within the scope of IAR procedure that causes, or has the potential to cause, an injury or illness and/or damage to equipment, buildings, plant or the natural environment. Incidents range from near-miss incidents to serious incidents and emergencies.

"**Serious Incident/Accident**": means an incident/accident which results in-

- the death of any person; or
- a person requiring medical treatment within 24 hours of being exposed to a substance; or
- a person requiring immediate hospital treatment as an in-patient in a hospital; or
- a person requiring immediate medical treatment for:
  - amputation;
  - serious head injury;
  - serious eye injury;
  - separation of skin from underlying tissue (for example de-gloving or scalping);
  - electric shock;
  - spinal injury;
  - loss of bodily function; or
  - serious laceration.

It also includes dangerous occurrences which seriously endanger the lives or the safety and health of people in the immediate vicinity. Such dangerous occurrences include:

- collapse, overturning, failure or malfunction of, or damage to, items of plant such as cranes, scaffolds, boilers, etc;
- collapse or failure of an excavation or the shoring support of an excavation;
- collapse of a building or structure;
- implosion, explosion or fire;
- escape, spillage or leakage of substances.

"**Injury or illness**": covers any injury or illness incurred by any person whilst present on grounds of the utility, and any illness which is thought to be in some way related to the utility. It includes the recurrence or aggravation of any pre-existing injury or illness.

"**Very Minor Injury or Illness**": means an injury or illness that only causes discomfort or short-term pain, has no lasting effect, has no foreseeable potential to worsen, and was caused by trivial and isolated causes. Typical examples include; small cuts from sheet metal or knifes, small bumps and bruises, minor scratches, temporary headaches or indispositions, etc.

"**Utility Contact**": means any employee of the utility who organizes or supervises the presence of contractors or visitors on utility grounds.

9.3 Actions

Employees, trainees, contractors and visitors must report all incidents (as defined) as soon as possible:

- employees must report incidents to their Manager, Supervisor and Safety Officer;
- contractors and visitors must report them to their Utility Contact; and
- trainees must report them to one of their trainers etc.

Managers, Supervisors, Utility Contacts, and Trainers etc to whom an incident has been reported must in case of:

9.3.1 Serious Incidents/Accidents

- during business hours, immediately contact the Safety Office;
- after hours or if nobody within the Safety Office can be contacted, every effort should be made to contact the (insert any other appointed Person [insert Tel. No……..]; and
- send a completed Injury Report (a sample is shown in Template 12) to the Safety Office within 24 hours of the incident.

9.3.2 All Injuries and Illnesses other than very minor

- ensure that the injured person has been cared for in accordance with the Occupational Safety and Health Procedure – Incident and Accident Management;
- advise the Safety Office within one working day preferably by faxing Part 1 of the Injury Report to ext. [insert Fax. No.] (or by phone or email) of the basic details of the incident; and
- ensure that an Injury Report is completed, signed and forwarded to the Safety Office within five working days of the initial report. [21] (Note: the original, hard-copy report must be sent with all required signatures. Unsigned documents, copies and emailed attachments are not acceptable.)

9.3.3 Very Minor Injuries or Illnesses

- Organize prompt first-aid treatment (if available).

9.3.4 Near- Miss Incidents with Potential to be Serious

- Complete a Hazard/Near Miss Report (Template 13) within 2 working days of the initial report.

[21] The sequence for completing Injury Report forms is as follows:
1. Initial verbal report by injured person to Manager/Supervisor etc.
2. Supervisor/Manager ensures that part 1 of form is completed, preferably by injured person. If injured/ill person is an employee of the LC, Supervisor/Manager supplies a copy of Part 1 to OSH team within 1 working day of initial verbal report.
3. Supervisor/Manager investigates circumstances and contributing factors of injury, and recommends corrective actions in part 2 of form.
4. Head of Divisions and Departments review parts 1 and 2 of form and amend or endorse proposed corrective actions. Sign, file copy, forward form to OSH team within 5 working days of the initial verbal report.
5. Safety Officer sign part 3 of form for employees and serious injuries to trainees. Send copy to injured person.

9.4 Responsibility

All affected employees, trainees, contractors and visitors are responsible for the initial report of incidents or accidents. They submit a signed report to the Occupational Safety and Health Officer who may amend or correct the report to ensure it is conclusive and complete.

The Safety Officer is responsible for:

- obtaining a first report from the affected employees, other persons or witnesses;
- amending, correcting or complementing the report to make it conclusive, e.g. by adding sketches or photographs;
- publicizing the existence of this procedure to the utility community;
- developing and delivering the training required by Supervisors, Managers and Utility Contacts to fulfill the role assigned to them in this procedure;
- assisting Supervisors and Managers in complying with IAR procedure;
- maintaining the Utility's Register of Injuries as required under Workers Compensation legislation;
- assisting in the investigation of serious incidents and accidents; and
- maintaining the records required by legislation in relation to serious incidents or accidents.

Title	Location	Responsible Officer	Minimum Retention Period
Template 12 – Injury Report	Safety Office	Safety Officer	20 years from date of incident ***
Template 13 – Hazard/Near Miss Report	Safety Office	Safety Officer	15 years from date of incident ***

*** Number of years should be adjusted to Yemeni requirements.

CHAPTER 10

INCIDENT AND ACCIDENT INVESTIGATION

10 Incident and Accident Investigation

10.1 Why Investigate Incidents and Accidents ?

The main aim of investigating incidents or accidents is to:

- prevent similar incidents recurring in the future;
- identify any new risks and hazards; and
- identify and choose suitable controls.

The aim is to reduce the cost in pain, suffering, disruption to work and loss of earnings of injured workers and trainees. There is also the wish to reduce the costs of incidents/accidents to the utility. Therefore, it is necessary to investigate fully and accurately the circumstances and causes of incidents or accidents.

10.2 When to Investigate Incidents and Accidents?

It is important that any investigation is carried out as soon as possible. The less time passes between an incident or accident and the investigation, the more accurate the information will be that can be obtained. While concern for an injured worker should take precedence over everything else, when incidents or accidents involve injury or illness, early investigation is essential.

10.3 What to Investigate?

Obviously, any incident/accident in which injury or significant property damage occurred should be investigated. There will also be events usually referred to as "near misses". Most readers will remember incidents in which one has been 'lucky' to escape injury. Such near misses have the same causes and actions as more serious incidents, only the outcomes vary. Study of near misses can therefore be used to prevent more serious incidents.

10.4 How to Conduct an Investigation

It is important to examine the causes and results of any incident objectively. The investigator must begin the investigation with an open mind. No assumptions should be made and any judgment should be based on information that is known to be comprehensive, conclusive and accurate.

It is important to ask open-ended questions and not to put words into witnesses' mouths. It is also important not to blame people but rather to emphasize the importance of seeking the reasons for the incident to prevent a recurrence.

It is far less effective to attempt to change people, to ask them to be better, to be more human, than it is to change their environment, so that the consequences of an error on their part are either eliminated or reduced. Rather than engaging in an emotive discussion of patterns of behavior, a more positive approach towards attempting to modify the environment is needed. That is, it is more effective to alter the situations producing an error than to attempt to change human nature. Or in short “the adaption of work to man”.

For example, if material is poorly stacked on a high shelf and it falls off, the immediate obvious cause could be poor housekeeping. However, possible underlying causes could include the employee not realizing the hazard of the action, the shelving being unsuitable for the task or being poorly maintained. Therefore, the true basic causes could identify the need in this case for:

- further operator training;
- better planning, layout and or access; or
- new equipment or methods.

An investigation may require photographs, sketches or another's technical expertise before the final causes of an incident can be determined and adequate controls considered and chosen.

When commencing the investigation:

1. Before starting an investigation, make sure any injured person is given appropriate medical attention without delay and control the scene of the incident/accident, place barriers, turn power off, etc.
2. Then start the investigation as quickly as possible. Conduct interviews at the scene of the incident/accident if possible. Ensure that the witnesses discuss the incident/accident in relative privacy. Begin with those who can contribute most.
3. After each interview, repeat the witness' statement as you understand it to ensure that you have correctly understood.
4. Close each interview on a positive note.
5. Take immediate corrective action where warranted.
6. Complete report with recommendations.
7. Ensure follow-up action occurs.

10.5 Who to lead the Investigation

The key person to take responsibility for an investigation is the **Occupational Safety and Health Officer.** He/she must initiate, facilitate and coordinate the process. In cases of very severe incidents or accidents this responsibility may be handed over to the Head of the Department concerned or the General Manager.

10.6 Key Questions to ask

Who? Get the names of everyone involved, witnesses present or aware of possible contributing factors.

What? Describe materials and equipment involved, check for defects, get an exact description of chemicals involved, etc.

Where? Describe the exact location, note all relevant facts, i.e. lighting, weather, floor conditions, etc.

When? Note the exact time, date and other factors, i.e. shift change, work cycle, break period, etc.

How? Describe the usual and actual sequence of events, during and after the incident/accident.

Why? Find all possible direct and indirect causes AND how to keep it from happening again.

10.7 Fundamental Concepts

Causes of incidents or accidents are rarely simple when circumstances are examined closely. Behind every incident or accident there are many contributing factors and causes. The key is to identify those that can be most effectively acted upon to prevent recurrences in the long term.

Incident/accident investigations should emphasize on the long-term elimination of injury, loss or damage. The focus should be on deficiencies of systems and in the work environment in preference to human factors.

After identifying causes and factors, suitable improvement actions must be identified and implemented.

CHAPTER 11

ORGANIZATIONAL SETUP

11 Proposed Organisational Set-Up

An effective organisational set-up requires a clear policy on OSH and the assignment of responsibilities.

11.1 Occupational Safety and Health Policy (Sample)

Every Local Corporation or Utility should develop a policy that meets their particular size, area of operation and situation. But a general sample can be used for starting the process of drafting an OSH policy:

The Water and Sanitation Local Corporation/Utility of……..recognizes the importance of providing all employees, visitors and contractors with a safe and healthy work environment and are committed to the continuous improvement of occupational safety and health in the workplace.

Our goal is to prevent all occupational injuries and illness and we will seek to achieve this by:

- providing and maintaining, so far as is practicable, workplaces, plant and systems of work so that employees, contractors and visitors are not exposed to hazards;
- ensuring that management provides all employees, on an ongoing basis, with the necessary information, instruction, training and supervision to perform their work in a manner which will not expose them to hazards;
- ensuring that management keeps safety and health representatives, supervisors and staff up to date with information about any changes to the workplace which may affect safety and health;
- consulting and cooperating with safety and health representatives and other employees regarding occupational safety and health at the workplace;
- assisting the Safety and Health Committee with the facilitation and communication between management and employees on safety and health matters;
- providing adequate systems and resources to effectively manage the return to work of employees who receive injuries or illness in the course of their work.

The Water and Sanitation Local Corporation/Utility of ……will implement and maintain an ongoing occupational safety and health program, including conducting regular inspections of the workplace, aimed at preventing accidents and incidents.

All Supervisory personnel are responsible and accountable for the safety of employees, contractors and company property under their control, as well as ensuring all ap-

plicable legislation, standards, procedures and safe work practices are followed at all times.

All employees and contractors are expected to:

- follow all organizational safety requirements and relevant legislation and supporting documentation;
- maintain a clean and orderly work area;
- report all injuries and safety incidents;
- actively participate in safety improvement activities.

This policy will be reviewed annually in accordance with the commitment of the Water and Sanitation Local Corporation/Utility of …….. to continuous improvement in safety management.

Based on the OSH Policy appropriate procedures should be developed.

The utility will:

- develop, publish, and maintain procedures for:
  - the appropriate prevention and treatment of injuries and illnesses;
  - the prompt reporting and investigation of incidents, injuries and illnesses;
  - the implementation of corrective actions following incidents;
  - the management of foreseeable emergencies;
- inform the utility staff/community of the existence and outlines of the procedures;
- develop and conduct training sessions for Managers, Supervisors, Safety and Health Representative's (further Safety Officers), and First-Aiders;
- allocate resources for the implementation of incident, injury and emergency management measures;
- monitor the implementation of the policy and related procedures; and
- assign responsibilities in relation to the implementation of this policy and related procedures.

11.2 Assigning Responsibilities

The Board of Directors of the utility is ultimately responsible for the OSH policy, and is accountable for the performance of the utility in relation to the OSH policy.

The Board of Directors will:

- approve specific budget allocations for the implementation of appropriate incident and accident management measures;
- form an OSH Committee and nominate members from within the utility; and
- ensure that all employees, contractors, trainees, and visitors will comply with the relevant requirements of the OSH policy and related procedures.

The Occupational Safety and Health (OSH) Committee will:

- monitor the implementation of the OSH policy and related procedures;
- nominate, in consultation with employees, Safety Officers (a job description is shown in Annex 3) required in their area under procedures related to the OSH policy;
- nominate, in consultation with employees Area Wardens and their deputies;
- nominate, in consultation with employees, the First-Aiders (a job description is shown in Annex 4) required in their area under procedures related to the OSH policy; and
- nominate Risk Assessment Teams required in their area under procedures related to this policy.

The Utility Manager will:

- develop, publish and maintain utility-wide procedures for the implementation of the OSH policy;
- develop and conduct training sessions for Supervisors, Safety Officers, Wardens/Deputy wardens and First-Aiders; and
- advise Supervisors in implementing the policy and related procedures.

Supervisors will:

- attend training sessions organized in relation to the OSH policy and related procedures;
- develop the systems required for the training on the OSH policy and related procedures of employees (including new staff), contractors, trainees, and visitors under their control; and

- comply with the OSH policy and related procedures. (This requirement may include developing and implementing departmental procedures adapting utility-wide documents for local conditions.)

Safety Officers will:

- maintain and update the OSH procedures as required;
- develop, coordinate and deliver the training required by Managers, Supervisors, Warden/Deputy Wardens and First Aiders to fulfill the role assigned to them in the OSH procedures; and
- assist Departments and Sections in complying with the OSH procedures.
- attend training sessions organized in relation to the OSH policy and related procedures; and
- assist local Managers and Supervisors in implementing the OSH policy and related procedures in the area and for the work group they represent.

The Safety Officer is responsible for developing, implementing and maintaining internal procedures for the provision of counseling and other support services for critical incidents or accidents.

Area Wardens will alert employees within his/her Area and assist them in cases of evacuation and assembly in Designated Assembly Points.

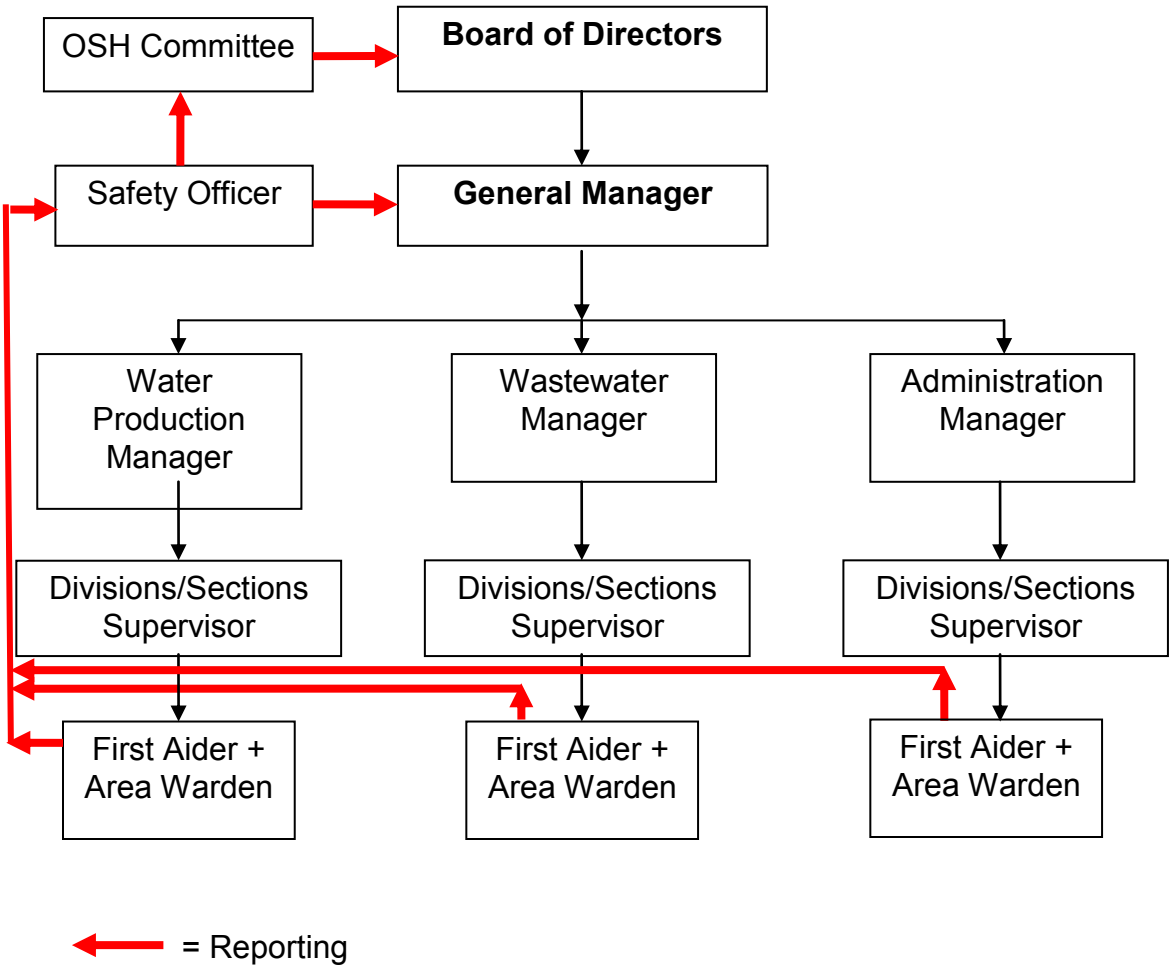
First Aiders are responsible for the subsequent management and treatment of casualties. They will:

- attend training sessions organized in relation to the OSH policy and related procedures.

All employees are responsible for the initial management of the incidents/accidents they witness.

A suggested organisational set-up is shown in figure 3 on the next page.

Figure 3: Suggested Organisational Set-up



ANNEXES

Annex 1

Occupational Safety and Health Implementation Plan
Urban Water and Sanitation Sector – Yemen

Seq	Activity	Responsibility	Objective	Support Required	Period	Time Limit
1 – OSH Manual						
1.1	Finalize OSH Manual	STE/PDC Team	Setting the Draft OSH Manual with international expertise		Done	August 2010
1.2	Present and explain OSH Manual at workshop	PDC Team	Familiarise utilities with the Manual			November 2010
1.3	Translate OSH Manual	Translator				December 2010
2 – OSH Management Manual						
2.1	Develop OSH Management Manual in Arabic	Utilities, individually	Develop OSH MM with international, regional, and local experiences to make it applicable in Yemeni utilities	PDC	2 months	March 2011
2.2	Introduce OSH MM at internal workshops of utilities	GMs and OSH-officers of utilities	Familiarise all staff members with the OSH MM		1 month	May 2011
3 – OSH Committee						
3.1	Nominate OSH Committee members (preferably the GM or Deputy as Head of OSH Committee)	GM of utility	GM best knows the suitable employees to manage the OSH issues within utilities	PDC Team if asked for	2 weeks	May 2011
3.2	Identify OSH training opportunities	Utility Training Section	Provide needed OSH awareness for all levels of utilities	PDC Team if asked for	2 weeks	May 2011
3.3	Training of OSH Committee members	Training Institution	Qualify OSH Committee members in OSH issues	PDC Team if asked for	1 week	June 2011
3.4	Appoint OSH Committee members	BOD of utility	Formally represent the BOD and GM, delegated the powers to run OSH management and become legally responsible for OSH shortcomings		1 week	June 2011
3.5	Nominate Safety Officer and First Aider	Utility OSH Committee	To run the day-to-day OSH functions, tasks, and duties	PDC Team if asked for	1 week	July 2011
3.6	Training of Safety Officer and First Aider	Training Institution	Qualify them as required	PDC Team if asked for	2 weeks	July 2011
3.7	Appoint Safety Officer and First Aider	Utility GM	Formally delegate to them the day-to-day OSH functions, tasks, and duties		1 week	July 2011
3.8	Start Awareness Programme	Utility OSH Committee	To raise the level of OSH awareness all over the hierarchy	PDC Team if asked for	1 month	August 2011

4 – Risk Assessment						
4.1	Nominate Risk assessment team	Utility OSH Committee	To conduct risk assessment exercise	Preferably the Safety Officer, First Aider, and Engineer	1 week	September 2011
4.2	Conduct Risk assessment	Utility Risk Assessment Team	To identify and classify risks	PDC Team if asked for	1 month	September 2011
4.3	Identify required actions, safety gears, first aid supplies, and personal protection equipment	Utility Risk Assessment Team	To improve working condition all over the facilities & offices of the utility	PDC Team if asked for	1 month	October 2011
5 – Implementation of OSH Policy						
5.1	Start implementing the OSH MM	Utility OSH Committee	To eliminate or reduce impacts of incidents and accidents	PDC Team if asked for	1 month	November 2011
5.2	Procure required PPE, safety gears, and first aid supplies recommended by OSH Committee	Utility Procurement Section	Provide suitable protection to HR, assets, and production.	PDC Team if asked for	1 month	December 2011
6 – Periodical Actions						
6.1	Report on OSH situation to OSH Committee as indicated in OSH MM	Safety Officer and First Aider	Provide control mechanism on OSH management, and to keep controlling risks and hazards		Quarterly	First report in September 2011
6.2	Conduct internal staff training and awareness	Training Section of Utility	To keep employees aware of OSH issues		Annually	
6.3	Re-conduct/update risk assessment	Utility Risk Assessment Team	To keep up-to-date knowledge and records of risks and OSH requirements		Annually	Preferably October each year
6.4	Discuss and evaluate OSH performance and report on that to GM	Utility OSH Committee	To take necessary actions and decisions regarding OSH		Annually	December each year
6.5	Report on OSH Management to BOD	GM of Utility	To strategically control and improve the OSH management		Annually	January each year

Annex 2

List of Conventions, Protocols, and Recommendations regulating OSH by International Labor Organization and Arab Labor Organization

A - ILO Conventions and Protocols (not ratified by Yemen)

- Convention No. 32 – Protection against accidents (Dockers) Convention (Revised), 1932.
- Convention No. 119 – Guarding of Machinery Convention, 1963.
- Convention No. 148 – Working Environment (Air Pollution, Noise and Vibration) Convention, 1977.
- Convention No. 152 – Occupational Safety and Health (Dock Work) Convention, 1979.
- Convention No. 155 – Occupational Safety and Health Convention, 1985.
- Convention No. 161 – Occupational Health Services Convention, 1988.
- Protocol No. 155 – Protocol of 2002 to the Occupational Safety and Health Convention, 1981.

To read or download scripts click the following links:

English text - http://www.ilo.org/ilolex/english/convdisp1.htm

Arabic text - http://www.ilo.org/iloex/arab/docs/convdisp1.htm

B - Most related ALO Conventions and Recommendations

- Convention No. 7 – Occupational Safety and Health Convention, 1977 – Ratified by Yemen.
- Convention No. 13 – Work Environment, 1981 – Not ratified by Yemen.
- Convention No. 19 – Work Inspection, 1989 – Ratified by Yemen.
- Recommendation No. 1 – Occupational Safety and Health Recommendation, 1977.
- Recommendation No. 8 – Work Inspection, 1998.

To read or download scripts click the following link:

http://www.alolabor.org/nArabLabor/index.php?option=context&task=view&id=312

Annex 3

المؤسسة المحلية للمياه والصرف الصحي – محافظة .....
..... Water & Sanitation Local Corporation

نموذج وصف وظيفي
Job Description Form

	2رقم. Job Number	ضابط لس . مة والصحة المهنية **Health & Safety Officer**	اسم الوظيفة: Job Title	1

	4عدد الشاغلين # Staff #	إدارة الموارد البشرية في الإدارة الرئيسية **Human Resources, based at Head Office**	الإدارة/القسم/الوحدة التابعة Department/Division/Unit	3

Reports to the Safety and Health Committee and General Manager	المدير المباشر Line Manager (Reporting to)	5

The post holder is to provide an advisory and training service to all departmental heads regarding health and safety legislation and good practice at work.	المهام والمسئوليات Tasks & Responsibilities	6
Establish a suitable health and safety policy in the utility.		1-6
Provide guidance to managers to ensure a safe workplace without risk to the health or safety of employees and the public.		2-6
Develop emergency procedures and conduct training exercises.		3-6
Ensure that all national health and safety legislation is complied with.		4-6
Conduct risk assessments at all potential hazardous sites including treatment works, workshops, etc.		5-6
Establish contact and communications with emergency services and other utilities.		6-6
Provide training to all staff in relevant health and safety matters including first aid.		7-6
Ensure adequate provision of first aid and safety equipment at all sites.		8-6
Ensure adequate recording and reporting of incidents and emergencies.		9-6

	متطلبات الوظيفة Job Requirements		7
Higher or further education in any science, environmental or engineering subject. Must be highly numerate and literate with strong personality.	المستوى التعليمي Education		1-7
Minimum 5 years in a health and safety environment and have gained, or be working towards, recognized S & H qualifications.	سنوات الخبرة Years of Experience		2-7
First aid skills	1-3-7	المهارات Skills	3-7
Knowledge of hazardous materials used in the treatment of water and wastewater	2-3-7		
Knowledge of safe excavation practices and the safe use of plant and machinery	3-3-7		
Knowledge and practical implementation of national S & H legislation	4-3-7		
Must be a good communicator; calm in emergencies, quick thinker	متطلبات خاصة Special Requirements		4-7

Annex 4

المؤسسة المحلية للمياه والصرف الصحي – محافظة .....
..... Water & Sanitation Local Corporation

نموذج توصيف الوظيفي
Job Description Form

	2رقم الوظيفة. Job Number	مسعف أولي **First Aider**	اسم الوظيفة: Job Title	1

	4عدد شاغلي الوظيفة . Staff #	قسم السلامة والصحة المهنية **Occupational Safety & Health Section**	الإدارة/القسم/الوحدة التابعة Department/Division/Unit	3

Reports to the Safety Officer and Human Resources Officer	المدير المباشر Line Manager (Reporting to)	5

The post holder is to provide first aid, advisory and training service within his department and other departments if required.	المهام والمسئوليات Tasks & Responsibilities	6
Assist the Safety Officer to establish a suitable health and safety policy in the utility.		1-6
Provide guidance to managers to ensure a safe workplace without risk to the health or safety of employees and the public.		2-6
Apply emergency procedures and conduct training exercises.		3-6
Ensure that all national health and safety legislation is complied with.		4-6
Assist in risk assessments at all potential hazardous sites including treatment works, workshops, etc.		5-6
Establish contact and communications with emergency services and other utilities.		6-6
Provide training to all staff in relevant health and safety matters including first aid.		7-6
Ensure adequate provision of first aid and safety equipment at all sites.		8-6
Ensure adequate record keeping and reporting of incidents and emergencies.		9-6

	متطلبات الوظيفة Job Requirements		7
School Grade 10, preferably Grade 12.	المستوى التعليمي Education		1-7
Minimum 3 years in a health and safety environment and have gained, or be working towards, recognized S & H qualifications.	سنوات الخبرة Years of Experience		2-7
First aid skills including shock therapy, reanimation techniques, chemical burns and poisoning treatment.	1-3-7	المهارات Skills	3-7
Knowledge of hazardous materials used in the treatment of water and wastewater.	2-3-7		
Knowledge and practical implementation of national S & H legislation.	3-3-7		
Must attend yearly in First Aid update course.	متطلبات خاصة Special Requirements		4-7

TEMPLATES

Template 1

Emergency Area Responsibilities

Emergency Area Responsibilities

- **LC (Sana'a)**

AREA DESCRIPTION -	AREA RESPONSIBILITY
Central Store and Workshop	Maintenance Section

Template 2

First Aiders Record

First Aiders Record

LC	Facility	Surname	Name	Tel. Ext.	First Aid Certificate			First Aid Nomination Form held	Comments
					Issue Date	Renew Date	Copy held		
Sana'a	Workshop						yes	yes	

Template 3

Health and Safety Representatives

Health and Safety Representatives

- **LC (Sana'a)**

DESIGNATED WORK GROUP – Maintenance Section	HEALTH AND SAFETY REPRESENTATIVE	PHONE No.	TERM END
Workshop	Name	0000	19/09/2011

DESIGNATED WORK GROUP - Treatment	HEALTH AND SAFETY REPRESENTATIVE	PHONE No.	TERM END
Chlorination	Name	0000	28/04/2011

DESIGNATED WORK GROUP - Administration	HEALTH AND SAFETY REPRESENTATIVE	PHONE	TERM END
Human Resources	Name	0000	01/03/2010

Template 4

First Aid Order Form

First Aid Order Form

Name:	**Extension:**
Department:	**LC:**
Kit ID Code:	**Date:**

ITEM	QUANTITY PER KIT	QUANTITY REQUIRED	UNIT
Adhesive hypoallergenic tape 2.5cm x 9m	1 roll		each
Bandages triangular	2 each		each
Basic first aid notes	1 set		set
Cold pack for bruises and sprains	1 each		each
Crepe bandage 7.5cm x 1.5m	1 roll		each
Disposable gloves	5 pairs		pair
Dressing (large for serious wounds) 20cm x 90cm	1 each		each
Dressing (small) sterile 10cm x 20cm	1 each		each
Dressing strip adhesive fabric 6cm x 1m	1 each		each
Dressings adhesive hypoallergenic plastic strips (“Band-Aids”)	2 box of 20		box of 40
Emergency thermal blanket	1 each		each
Eye pads sterile	4 each		each
First aid report forms	1 form		each
Plastic bags for disposal	2 each		each
Resuscitation mask	1 each		each
Safety glasses	1 each		each
Safety pins assorted	1 box		small box
Saline solution ampoule (single use)	5 each		each
Scissors stainless steel blunt/sharp	1 pair		pair
Splinter probes (single use)	1 pack of 5		pack of 5
Surgical face mask	2 each		each
Swabs antiseptic	10 each		each
Wound dressings un-medicated sterile large No. 15	2 each		each
Wound dressings un-medicated sterile medium No. 14	2 each		each
Wound dressings un-medicated sterile small No. 13	2 each		each

Eye Module – Optional

1 x Adhesive hypoallergenic tape 1.25cm x 9m roll 1 x Eye treatment guidance card 10 x Eye-wash saline solution ampoule (single use) 4 x Sterile eye pads	1 each		each

Burn Module – Optional

2 x Burns dressing sterile non-adherent absorbent 10cm x 7.5cm 4 x Burns dressing sterile non-adherent absorbent 7.5cm x 5cm 1 x Burns dressing sterile very large 75cm x 220cm 1 x Burns treatment guidance card	1 each		each

Send completed forms to (insert name), HRD Department, LC (Sana’a)
Email: (insert if available), Fax No.: (insert if available)

Office Use Only

Date Received:	**Processed by:**
Date Supplied:	**Items Backordered:**
Delivery Method: Internal Mail / Hand-Delivered / Post	

Template 5

First Aid Kits

First Aid Kits

1. Scope

These guidelines apply to workplace first aid kits supplied under the LC- OSH Procedure - *First Aid Services*. They do not apply to portable first aid kits, such as the kits provided in LC vehicles or those intended for off-facility or outdoor activities.

2. Basic Contents

Refer to the *First Aid Order Form* for a list of the basic contents of workplace first aid kits to be provided at the LC of Sana'a.

3. Additional Modules

3.1 Eye:

Where any of the following points applies to a workplace, an eye module must be added - in a clearly labelled container - to the basic first aid kit(-s):

- chemical liquids or powders are handled in open containers (e.g. some laboratories, cleaners stores, etc);
- spraying, hosing, compressed air or abrasive blasting operations are carried out (e.g. some laboratories, gardeners stores, some workshops, etc);
- there is any possibility of flying particles (e.g. some workshops, laboratories, etc);
- welding, cutting or machining operations are conducted; or
- wearing of eye protection is recommended.

The eye module must contain as a minimum:

- Adhesive tape 2.5 cm x 5 m (1 roll)
- Eye treatment guidance notes
- Eye-wash containers single use (10)
- Sterile eye pads (4)

3.2 Burn:

Where any of the following points applies to a workplace, a burn module must be added - in a clearly labelled container - to the basic first aid kit(-s):

- heat or flame is used in the process (e.g. kitchens, some laboratories, ceramics and metal workshops, etc);
- flammable liquids or gases are used;
- chemical acids or alkalies are used; or
- other corrosive chemicals are used.

The burn module must contain as a minimum:

- Burn treatment guidance notes
- Burns dressings sterile non-adherent absorbent 7.5 cm x 5 cm (4)
- Burns dressings sterile non-adherent absorbent 7.5 cm x 10 cm (2)
- Clean sheeting

4. Requirements

First aid kits shall be:

- dust proof with the exterior coloured white, and prominently labelled with a white cross on a green background and the words "FIRST AID" in green;
- large enough to hold the contents of the kit neatly stored;
- kept unlocked at all times;
- readily accessible during all hours of operation (i.e. not kept in locked offices or storerooms);
- regularly inspected and maintained;
- located, if possible, in close proximity to a supply of clean water; and
- identified by a sign complying with Yemeni Standard mounted high on a wall or door so as to make it as conspicuous as possible (except for portable kits).

Template 6
First Aider Nomination Form

First Aider Nomination Form

PART 1 INFORMATION

1. **"LC *First Aider"*** is an employee of the LC of Sana'a who holds a first aid qualification issued by an accredited first aid trainer, or an equivalent qualification as determined by the Safety Officer; and has been nominated in accordance with this form.
   LC First Aiders represent the primary resource for attending to injuries and illnesses incurred on facilities, and during LC-endorsed activities (excursions, Open Day, etc). More information is available in the OSH Procedure - *Incident Management*.

   Hepatitis Prevention Program: LC First Aiders are encouraged to enter into a Hepatitis Prevention Program which may, after proper information and consent, include vaccination (to be conducted at ……. Health Centre). The HR department fully funds the cost of the Hepatitis prevention program for LC First Aiders. The ……. Health Centre at …….. provides the program to First Aiders from the ……... Other arrangements are in place on the ……...

PART 2 TO BE COMPLETED BY FIRST AIDER

FULL NAME

DEPARTMENT | LC

TYPE OF FIRST AID CERTIFICATE (e.g. Workplace Level (2), Senior First Aid, etc)

CERTIFICATE ISSUED BY (……., Red Cross, etc) | DATE OF ISSUE

I have read Part 1 and agree to act as a LC First Aider, in accordance with the LC OSH Procedures – *First Aid Services* and *Incident Management*

I will take part in the Hepatitis Prevention Program Yes ☐ No ☐

SIGNATURE | **DATE**

PART 3 TO BE COMPLETED BY HEAD OF LC OR……..

I endorse the nomination of the person mentioned above as LC First Aider for my LC, and I confirm that his/her appointment complies with the OSH Procedure - *First Aid Services*

SIGNATURE | **DATE**

Send completed form with a copy of your most recent First Aid Certificate to: Safety Officer, LC (Sana'a)

PART 4 OFFICE USE ONLY

Hep Program Coordinator	Date Hep Program Commenced	Date Hep Program Completed

Template 7
First Aid Report

FIRST AID REPORT

This form must be used in accordance with the Occupational Health and Safety Procedures
Incident Management & *Incident Reporting*

LC: ……………………………………………………………… Section/ Program Area: ……………………………………………………………

Date	Name of Injured Person	Status of Injured Person	Nature of Injury	Treatment Provided	Further Treatment Advised?	Injured Person's Signature	First Aider's Name
		Employee/Trainee/ Customer/Visitor			☐ YES ☐ NO		
		Employee/Trainee/ Customer/Visitor			☐ YES ☐ NO		
		Employee/Trainee/ Customer/Visitor			☐ YES ☐ NO		
		Employee/Trainee/ Customer/Visitor			☐ YES ☐ NO		
		Employee/Trainee/ Customer/Visitor			☐ YES ☐ NO		
		Employee/Trainee/ Customer/Visitor			☐ YES ☐ NO		
		Employee/Trainee/ Customer/Visitor			☐ YES ☐ NO		
		Employee/Trainee/ Customer/Visitor			☐ YES ☐ NO		
		Employee/Trainee/ Customer/Visitor			☐ YES ☐ NO		
		Employee/Trainee/ Customer/Visitor			☐ YES ☐ NO		
		Employee/Trainee/ Customer/Visitor			☐ YES ☐ NO		

Send reports to Safety Officer – OSH every 3 months

Template 8

Emergency Control Personnel

Emergency Control Personnel

AREAS - ……	AREA WARDENS (DEPUTIES)	DESIGNATED ASSEMBLY POINTS
Business Building (B) - Basement	Name – Tel. No. (Name – Tel. No.)	Car Park
Business Building (B) - First Floor		
Business Building (B) - Second Floor		
Engineering Building (E) - Level 1		
Engineering Building (E) - Level 2		
Engineering Building (E) - Level 3, Workshops and Labs Top of F Bldg		

Template 9

Local Emergency Instructions

Local Emergency Instructions

(Insert name of) LC……..

- Insert Description of Area (eg Building Z, First Floor) -

Emergency Control Personnel			
Area Warden:	(Insert the name of the Warden for the area)	**Phone:**	
Deputy Warden:	Name of Deputy	**Phone:**	
First Aider(s):	Name of LC First Aider(s) servicing the area	**Phone:**	

Designated Assembly Point:

Give exact location of Designated Assembly Point.

General Emergency Instructions

If first at the scene of an emergency, remember the three first key steps **AAA:**

1. **Assess** the situation for immediate dangers to your safety and take appropriate steps
2. **Alert** (a) personnel around you, (b) the appropriate Emergency Services (0-000), and (c) the Area Warden
3. **Assist** any person in immediate danger **if safe to do so**
4. Contain or combat the emergency **only if safe to do so**
5. Evacuate to the Designated Assembly Point, if necessary
6. Notify your Supervisor/Manager.

Building Evacuation Instructions

In case you are instructed to evacuate a building or area by means of XXX or XXX (specify here what means of alarm are applicable to the area, e.g.: an automatic or manual alarm or verbal order)

1. make all equipment safe (specify here what needs to be done to what equipment, e.g. switch off oxy-acetylene gas manifold, turn off all rotating machinery, etc)
2. evacuate promptly from the building, closing doors behind you if practical (specify here whether any door needs to be locked off for security reasons, and any measure implemented to prevent people from entering the evacuated area)
3. assemble at the Designated Assembly Point
4. report to the Area Warden (white helmet), do not smoke and await further instructions

Template 10

Sabotage Threat Check List

SABOTAGE THREAT CHECKLIST

This form relates to the Occupational Safety and Health Procedure - *Emergency Management*

1 Initial Actions

Time of call:	AM/PM	**Do not hang up!**	Keep caller talking

2 Exact Wording of Threat

3 Questions to Ask

When will the sabotage action occur?	
Where exactly is the location?	
When did you put something there?	
What does the bomb look like?	
What kind of bomb is it?	
What will make the bomb explode?	
Did you place the bomb?	
Why did you place the bomb?	
What is your name?	
Where are you?	
What is your address?	

4 Listen for

VOICE	accent / impediment / tone / speech / diction / manner
LANGUAGE	polite / incoherent / irrational / taped / read out / abusive
NOISES	traffic / voices / machinery / music / noises on the line / local call / STD
OTHER	sex of caller / estimated age

Do not hang up

5 After the Call

Note the time of the end of the call:	AM/PM
Name of recipient (print):	
Signature:	Date:
Report the call to your local Manager/Supervisor, who will contact the Police and the Manager in Charge	

Template 11

Evacuation Drill Report

EVACUATION DRILL REPORT

This form must be used in accordance with the Occupational Health and Safety Procedure - *Emergency Management*

Building/Department/Area:		**Date of Drill:**		**Name of Area Warden(s):**	
Method Used for Initiating Evacuation:	☐ Manual activation of alarm at fire indicator board ☐ Other specify →				
Time of Initial Alarm:		**Time when Last Person Exited the Building/Area:**			
Could the Alarm be Heard in all Locations?	☐ Yes ☐ No specify →				
Were Difficulties Encountered when Conducting Area Search?	☐ Yes specify → ☐ No				
Were all Occupants Accounted for?	☐ Yes ☐ No specify who, why →				

List the Corrective Actions to be Adopted as a Result of this Evacuation Drill:

Actions	Person Responsible	Deadline

Other Comments	**Signature**		**Date**
	After each evacuation drill, send copies of report to: • Chair of relevant Portfolio • Area Warden • Safety Officer		

Template 12

Injury Report

INJURY REPORT

This form must be used in accordance with the OHS Procedure - *Incident Reporting*

Part 1 *(Injured Person to Complete if Possible)*

Incident (Events that led to Injury)

Date of Incident	Time of Incident	LC
	AM/PM	

Incident Reported to	Date and Time of Report

Description of Events

Precise Location of Events

Personal Details of Injured Person ***(Strictly private – see statement at bottom of second page)***

Surname	Given Names

Home Address

City, Town or Suburb	Postcode	Telephone

Status

				Details
	Employee		Customer	
	Trainee		Contractor	
	Visitor		Other (provide details right)	

Name of Section/Directorate/Company

Injury

Exact Body Location of Injury

Left/Right

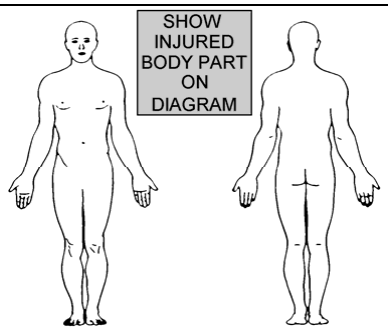
Nature of Injury/Illness (e.g. cut, burn, dermatitis, etc)

Name of Witness(es)	Phone
1.	
2.	

Treatment

	First Aider*		Health Centre
	Doctor*		Ambulance

*Name of First Aider/Doctor/Hospital



Did Injured Person Complete This Form?

	Yes	Signature		Date	
	No	Reason			
		Name		Relationship to inj. Person	
		Signature		Date	

Part 2 *(Section or Department Management to Complete)*

Investigation

Name of Injured Person's Supervisor/Manager Conducting Investigation	Phone Extension
Other Participants	**Date of Investigation**

Was Injured Person Interviewed?
Yes No (Note: whenever possible, it is important to talk to the injured person)

Main Contributing Factors	Corrective Actions	Person Responsible	Completion Date

Comments

Approval Signatures

Head of Injured Person's Section/Department	Date
Health and Safety Representative of Injured Person's Designated Work Group	Date

Send original (no emails) and signed report to Safety Officer, LC
Copies to (1) Section/Department file, (2) On request, to H&S Representative

Part 3 *(Safety Officer to Complete)*

LC……Acknowledgment (Employee Reports and Serious Trainee Injuries Only)

The LC of ……..acknowledges receiving notification of the injury as described above.
Note: This is not a insurance claim form..

Name	Signature	Date

Copy to: Injured Person
Original to: Risk, Health and Safety File

Privacy Statement: The information on this form, which includes health information, is collected for the primary purpose of legal compliance. Another purpose of collection is to eliminate or minimise the risk of a recurrence of incidents. You have a right to access personal information that the LC of …….. holds about you, subject to any exceptions in relevant legislation. If you wish to seek access to your personal information or inquire about the handling of your personal information, please contact the Personal Officer at ……

Template 13

Hazard/Near-Miss Report

HAZARD/NEAR-MISS REPORT

This form must be used in accordance with the

OSH Procedures - *Issue Resolution* & *Incident Reporting*

Part 1 (Employee Reporting Hazard or Near-Miss to Complete)

Description of Hazard or Near-Miss: ……
……
……
……
……
……
LC: …… Section/Building/etc: ……
Precise Location: ……
Name of LC Management Representative to whom Hazard or Near-Miss has been Reported:
……
Name of S&H Representative to whom Hazard or Near-Miss has been Reported:
……
Date of Report: ……/……/…… Name of Person Reporting: ……

Part 2 (LC Management Representative to Complete)

Name of LC Management Representative: ……

Corrective Action for Hazard or Near-Miss Reported	**Person Responsible**	**Completion Date**

Signature of Reporting Employee: ……Date: ……/……/……
Signature of S&H Representative: ……Date: ……/……/……
Signature of Management Representative: ……Date: ……/……/……

Return original report to Employee Reporting Hazard

Copies to: (1) S&H Representative, (2) Management Representative, (3) Safety Officer

Template 14

Risk Assessment Form

Occupational Safety & Health Risk Assessment Form for Water Supply & Sanitation Facilities in Yemen [22]

Location and type of premises:		Date inspected:
Name of inspectors:		Signature:

Notes:		**Record No.**	
Required:	Y: Yes N: No	Observation:	SA: Safely Applied RA: Risky Applied NA: Not Applied

Risk Assessment (Rating):

VLR: Very Low Risk - Not harm but elimination is better.

LR: Low Risk - Not harm but incidents & accidents expected.

MR: Moderate Risk - Harm and incidents & accidents possibility is moderate.

HR: High Risk - Incidents & accidents possibility is high and results will be harm

VHR: Very High Risk - Incidents & accidents possibility is very high and results will be very harm to deadly.

Point under investigation	Required Y / N	Observation SA / RA / NA	Risk Rating VLR / LR / MR / HR / VHR	Notes
1- SITE ACCESS:				
1 Enclosed (a wall or a fence)				
2 Controlled (guarded)				
3 Public access				
4 Vehicle control				
2- BUILDINGS:				
1 Structure				
2 Floors & Walkways				
3 Stairs & Ladders				
4 Fire exits & warning notices				
5 Temperature				
6 Lighting (inside and/or outside)				
7 Workspace				
8 Housekeeping				
3- FIRE SAFETY:				
1 Escape routes				
2 Extinguishers				
3 Alarm systems				
4 Emergency lighting				
5 Emergency practice				
4- MECHANICAL:				
1 Machine guards				
2 Portable equipment				
3 Hand tools				

[22] Source: Occupational Safety and Health Fact Finding Report, April 2009 by Mohammad Al-Saleem, HR Regional Advisor, PDC

5- ELECTRICAL:					
1	Cables & connections				
2	Portable equipment				
3	Hand tools				
4	Cable location				
6- CHEMICALS:					
1	Gases - toxic				
2	flammable				
3	Liquid - toxic				
4	flammable				
5	Solids - toxic				
6	flammable				
7	Dust				
8	Storage controls				
9	Instructions for use				
10	Emergency response & drill				
11	Safety showers				
7- CONFINED SPACES:					
1	Identified and listed				
2	Secured (covered)				
3	Entry equipment				
4	Gas detector (tested)				
5	Trained team				
8- FALL PREVENTATION:					
1	Fixed tanks - handrails				
2	stairs				
3	covers				
4	Platforms - handrails				
5	stairs				
6	Portable barriers				
9- EXCAVATIONS:					
1	Services identified				
2	Traffic signs used & in place				
3	Barriers used & in place				
4	Excavation supports				
5	Cable locator				
6	Safety after hours/end of work				
10- LIFTING EQUIPMENT:					
1	All items registered				
2	All items tested				
3	Users trained				
4	Safe Working Load (SWL) sign				
11- PRESSURE SYSTEMS & VESSELS:					
1	Systems tested				
2	Safe Working Pressure (SWP) sign				
3	Pressure gauge				
4	Pressure relief valve				

12- PROTECTIVE CLOTHING & UNIFORM:					
1	Requirements identified				
2	Issued and recorded				
3	Used				
4	Maintained (cleanness & storage)				

13- WELFARE PROVISIONS:				
1 Toilets (clean & tidy)				
2 Wash / shower				
3 Lockers				
4 Eating facilities				
5 First aid provisions				

14- OTHERS:				
1 Lone working				
2 Manual handling				
3 Breathing apparatus				
4 Waste disposal				
5 Noise				
6 ……..				
7 ……..				
8 ……..				

RECOMMENDATIONS/CORRECTIVE MEASURES:

To 1.1

Glossary

Accident

In simple words “Accident” means a bad incident **or unfortunate event** which has caused **physical harm or damage and has been brought about unintentionally or by chance**. Within the given context, emphasis is given to work place or work related accidents.

Area Warden

The position of an Area Warden is not a full time job but an additional assignment to an employee in a particular Area. The main task of the Area Warden and or deputy is to alert employees within his/her Area and assists them in the evacuation and assembly in Designated Assembly Points[23].

Catastrophe

A catastrophe is a sudden disaster that causes the suffering of many people.

Disaster

Disaster is an unexpected event or bad accident that kills many people and/or causes a lot of damage to equipment, infrastructure or environment.

Emergency

An emergency is a suddenly occurring situation that poses an immediate risk to life, health, property or environment. Typical characteristics of an emergency are:

- unexpected
- state of danger
- occurs suddenly
- serious
- threatens health and/or life and poses risks of severe material and/or environmental damage

Examples are overflowing sewerage tanks, expanding floods, fires in nearby areas, chlorine leak, etc.

[23] In areas jointly used or occupied by several Portfolios, it is not necessary for Area Wardens and Deputies to come from the Division or Department with Area Responsibility. The choice of Emergency Control Personnel should primarily be guided by personal characteristics and availability rather than by considerations related to organisational or reporting structure.

First Aid

First Aid is the provision of initial care for an illness or injury. It is usually performed by a non-expert person to a sick or injured casualty until proper medical treatment can be accessed.

Hazard

A hazard is a situation or something that poses a level of threat to life, health, property or environment.

Human Resources Development

A term used to describe the function of implementing strategies and policies relating to the development of skills, knowledge and attitude of individuals who comprise the workforce of an organization.

Incident

"Incident" means an unplanned event that has happened and cause**s** either some **minor, medium or** severe risks to life or property **or causes** negative effects which may range from a personal conflict to material damage and human injury. Incidents include **minor or** dangerous near-miss cases **rather than** actual **serious** disasters.

Mitigation

Mitigation is the act to make something less harmful, less serious.

Occupational Safety and Health

A cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment.

Prevention

Prevention is the act of stopping something unwanted or bad to happen.

Risk

Risk is the possibility of something unwanted or bad to happen at some time in future.