

مركز أبوظبي للصحة المهنية
ABU DHABI OCCUPATIONAL SAFETY AND HEALTH CENTER

اوشاد
oshad

Abu Dhabi Occupational Safety and Health System Framework

(OSHAD-SF)

OSHAD-SF Technical Guideline

Process of Risk Management

Version 3.0

July 2016

ABU DHABI PUBLIC
HEALTH CENTRE

مركز أبوظبي
للصحة العامة



Important Note:

(Document Republished for Continued Implementation
under Abu Dhabi Public Health Center)

(إعادة نشر الوثيقة لاستمرار التطبيق بإشراف مركز أبوظبي للصحة العامة)



ADPHC_AE



ADPHCAE



ADPHC.AE



ADPHC-AE

WWW.ADPHC.GOV.AE



+971 56 231 2171

Table of Contents

1.	Introduction	3
2.	Training and Competency.....	3
3.	Consultation	4
3.1	Who should be involved in Consultation.....	4
3.2	Benefits of Consultation	4
4.	When to Undertake a Risk Assessment.....	5
5.	Five Steps of Risk Assessment	5
5.1	Step One - Identify the Hazards	6
5.2	Step Two – Identify Who / What can be Harmed or Damaged and How	6
5.3	Step Three - Evaluate and Select Additional Control Measures	7
6.	Recording the Risk Management Process.....	13
6.1	Risk Register	13
7.	References.....	14
8.	Document Amendment Record	15
	Appendix 1: – Example Hazard Walkthrough Form.....	16
	Appendix 2: Example Risk Assessment Form	17
	Appendix 3: Example Risk Register Form.....	18

1. Introduction

- (a) This technical guideline provides additional information to assist entities to comply with the requirements of *OSHAD-SF - Element 2 – Risk Management*. The contents of this technical guide are not mandatory; however adopting the information within this guide will assist the entity in compliance to *OSHAD-SF - Element 2*.
- (b) A risk assessment is nothing more than a careful examination of what, in the workplace, could cause harm to people, so that the entity can weigh up whether it has taken enough precautions or should do more to prevent harm and/or protect the environment.

2. Training and Competency

- (a) Those carrying out risk assessments should be competent to do so. Competency is defined in a number of ways and cannot be achieved by just attending a training course.
- (b) Competence is defined as:
 - (i) 'Sufficient training and experience, or knowledge and other qualities, to enable a person to properly undertake the measures needed to comply with OSH Legislation'.
- (c) Simple situations may only require the following:
 - (i) an understanding of relevant best practice;
 - (ii) an understanding of the process being assessed;
 - (iii) an awareness of the limitations of one's own experience and knowledge; and
 - (iv) the willingness and ability to supplement existing experience and knowledge, when necessary by obtaining external help and advice.
- (d) More complicated situations will require the competent person to have a higher level of knowledge and experience. More complex or highly technical situations will call for specific applied knowledge and skills which can be offered by appropriately qualified specialists.
- (e) Employers are advised to check the appropriate OSH qualification (some of which may be competency based and/or industry specific), or membership of a professional body or similar organisation (at an appropriate level and in an appropriate part of OSH) to satisfy themselves that the assistance they appoint has sufficiently high level of competence.
- (f) Those undertaking risk assessments must take their own knowledge of the subject into account prior to undertaking a risk assessment and when unsure of the process, call upon additional support. This could be in the form of an industry expert for complex processes and/or employee(s) who undertake the task in question.

3. Consultation

- (a) Consultation shall take place at every stage of the risk management process. *OSHAD-SF - Element 4 – Consultation and Communication* sets out requirements for consultation, which involves fostering cooperation and developing partnerships between employers, employees, and contractors to ensure protection of the environment, and the health and safety of workers.
- (b) Prior to undertaking any risk assessment, depending on the complexity of the process or task, the staff who are involved in the undertaking of the process or task should be consulted to gain an understanding of the hazards involved and more importantly, how the task is undertaken. This will help ensure that any measures that are identified to control risk can be implemented without creating additional risk(s) or complicating the processes.

3.1 Who should be involved in Consultation

- (a) A comprehensive consultation process will help to achieve better OSH outcomes through the risk management process.
- (b) A consultative group could include:
 - (i) workers;
 - (ii) supervisors;
 - (iii) workplace safety and health officers;
 - (iv) workplace safety and health representatives;
 - (v) workplace safety and health committees;
 - (vi) contractors; and
 - (vii) other relevant stakeholders.

3.2 Benefits of Consultation

- (a) Consultation between management, workers and stakeholders is beneficial throughout the risk management process because it:
 - (i) brings together different areas of expertise to identify and analyse risks and allows those with day to day experience of the hazards to provide valuable input;
 - (ii) allows workers to have ownership of the risks and the solutions;
 - (iii) increases the likelihood that workers will be committed to implementing the control measures, because they understand why they are being imposed;
 - (iv) increases workers' morale, satisfaction and retention rates, as staff feel they are being listened to and involved;
 - (v) improves trust, communication and teamwork;
 - (vi) improves productivity as a result of better decision-making processes; and
 - (vii) contributes to developing a positive safety culture in the workplace, by increasing team commitment to workplace health and safety.

4. When to Undertake a Risk Assessment

- (a) OSH risk assessment is an on-going process and shall be undertaken at various times including:
- (i) when planning or making a change to a work procedure, activity and/or practices;
 - (ii) when introducing new plant, equipment, materials or substances into the workplace;
 - (iii) after an OSH incident (including near misses);
 - (iv) introduction of new workers;
 - (v) presence of a high level of risk associated with a specific work activity (e.g. confined space);
 - (vi) at regular or scheduled intervals appropriate to the nature of the workplace and the hazards present;
 - (vii) when legislative obligations change (including regulations); and
 - (viii) before work activities begin.

5. Five Steps of Risk Assessment

- (a) The risk assessment process can be systematically divided into five steps:
- (i) **Identify Hazards**, based on experience, recorded data and other information;
 - (ii) **Identify who can be harmed or what can be damaged and how** – understand who can be harmed or what can be damaged from the risk and to what extent;
 - (iii) **Evaluate the Risk and Select Additional Control Measures (if required)**. Using a recognized method, evaluate the level of risk and decide if it is required to implement any additional control measures. If additional control measures are required, select these from the hierarchy of control (e.g. eliminate, substitute, isolate or engineer out the risks, or reduce them through administrative measures or personal protective equipment) by selecting the highest order control method possible and then proceeding down the list in order;
 - (iv) **Implement the Selected Control Measure(s)** in the workplace; and
 - (v) **Monitor the Control Measures** to ensure that they are working correctly to control the risks and that no other risks have been introduced.
- (b) Attention shall be given to risks that may be easy to fix but may have low risk priority scores (e.g. power leads across the floor). These risks shall be fixed promptly. Particular attention shall also be given to risks that may have very low likelihood of an occurrence but may result in major consequences.

5.1 Step One - Identify the Hazards

- (a) Start the process by walking around the workplace to identify the likely risk issues. For instance, these may arise from:
 - (i) work activities;
 - (ii) plant and machinery;
 - (iii) known hazards;
 - (iv) incident reports; and
 - (v) known near misses.
- (b) The aim is to generate a comprehensive list of sources of risk and events that might have an impact on the safety and health of employees. The form in Appendix 1 can be used to record the hazards spotted during the walkthrough of the building.
- (c) When identifying hazards, always observe the actual practice as this may differ from what is supposed to happen. Consult with employees who undertake the task as they may have very good safety reasons for undertaking a task in a certain manner.
- (d) Having identified what might happen, it is necessary to consider possible causes and scenarios. There are many ways an event can occur. It is important that no significant causes are omitted.
- (e) Approaches used to identify risks include checklists, judgements based on experience and records, flow charts, brainstorming, systems analysis, scenario analysis and systems engineering techniques.
- (f) The approach used will depend on the nature of the activities under review, types of risk, the entity and the purpose of the risk management study.
- (g) Manufacturer's instructions or data sheets can also help to identify hazards and put risks into their true perspective.

5.2 Step Two – Identify Who / What can be Harmed or Damaged and How

- (a) Make a list of the groups of people and other components that could be affected by the hazards, and always ensure they are taken into account:
 - (i) employees;
 - (ii) visitors;
 - (iii) contractors;
 - (iv) members of the public;
 - (v) consumers of products or services;
 - (vi) specific sensitive or protected environment areas; and
 - (vii) plant / equipment / property damage.

- (b) Take into account persons who may have additional difficulties, such as new or expectant mothers, people with special needs, young or inexperienced workers.
- (c) Identify how each group and component could be harmed by the hazards found, as this will help to identify control measures to help reduce the risks at a later stage in the assessment process.

5.3 Step Three - Evaluate and Select Additional Control Measures

- (a) Evaluating risk is about developing an understanding of the risk. It provides an input to decisions on whether risks need to be controlled and the most appropriate and cost-effective risk treatment strategies.
- (b) Risk analysis involves consideration of the sources of risk, their consequences and the likelihood that those consequences may occur. Factors that affect consequences and likelihood may be identified. Risk is analysed by combining consequences and their likelihood. In most circumstances existing controls are taken into account.
- (c) The level of risk is calculated by multiplying the Consequence Score and Probability of Occurrence together:
- (d) $Risk = Consequence\ Score \times Likelihood\ of\ Occurrence$
- (e) Consequences and likelihood may be estimated using statistical analysis and calculations. Where no reliable or relevant past data is available, subjective estimates may be made which reflect an individual's or group's degree of belief that a particular event or outcome will occur.
- (f) The most pertinent information sources and techniques shall be used when analysing consequences and likelihood. Sources of information may include the following:
 - (i) past records;
 - (ii) practice and relevant experience;
 - (iii) relevant published literature;
 - (iv) economic, engineering or other models; and
 - (v) specialist and expert judgments.
- (g) Techniques include:
 - (i) structured interviews with experts in the area of interest;
 - (ii) use of multi-disciplinary groups of experts;
 - (iii) individual evaluations using questionnaires; and
 - (iv) use of models and simulations.
- (h) Where appropriate, the confidence placed on estimates of levels of risk shall be included. Assumptions made in the analysis shall be clearly stated.
- (i) For the discharge or emission of a pollutant, evaluating factors such as those listed below should help in the assessment of relative consequence:

- (i) persistence;
 - (ii) toxicity;
 - (iii) health effects;
 - (iv) concentration of chemical;
 - (v) volume discharged per event;
 - (vi) duration of the discharge;
 - (vii) proximity to water-bodies;
 - (viii) potential dilution;
 - (ix) the area of land/marine waters affected; and
 - (x) taking into account secondary consequences and existing mitigation measures.
- (j) Regarding occupational safety and health, evaluating factors such as those listed below will help in the assessment of relative consequence:
- (i) health effect (e.g. long / short term effects, fatality, degree of injury / illness, disability); and
 - (ii) damage to assets (e.g. plant, premises).
- (k) The potential consequences shall be judged using all available information. This information may include, but not be limited to:
- (i) control measures in place;
 - (ii) written systems of work, permit-to-work procedures for the tasks;
 - (iii) monitoring data from within and outside the entity;
 - (iv) tasks being carried out, their duration and frequency and locations;
 - (v) plant, machinery, powered hand tools to be used;
 - (vi) size, shape, surface character and weight of materials that may be handled; distances and heights to which materials have to be moved;
 - (vii) service used (e.g. compressed gas), substances used or encountered during the work;
 - (viii) parties carrying out the tasks (training received); and
 - (ix) legal requirements.
- (l) For risk assessment, five levels of severity of consequences have been used – insignificant, minor, moderate, major and catastrophic. The definitions used to assess relative consequences have been adopted from *HB 203:2000*, and are shown in Table 1 below.
- (m) Table 1 provides a consistent method of assessment that can be applied by different personnel and at different times.

5.3.1 Understanding the Consequence of the Hazard

- (a) At this stage of evaluating process the entity is trying to understand what harm can come from the hazard. Using table 1 provides a consistent method of assessment that can be applied by different personnel and at different times.
- (b) The following table is not linked to categorization of *OSHAD-SF* Serious Incidents.

Area impacted (a)	Insignificant Consequences (Score = 1)	Minor Consequences (Score = 2)	Moderate Consequences (Score = 3)	Major Consequences (Score = 4)	Catastrophic Consequences (Score = 5)
Human Health and Safety	Minor injuries, which may require self-administered first aid. Injured personnel can continue to perform normal duties.	Injuries requiring on-site treatment by medical practitioner. Personnel unable to continue to perform duties.	Serious injuries requiring off-site treatment by medical practitioner or immediate evacuation to hospital. Potential long-term or permanently disabling effects.	Single fatality.	Multiple fatalities.
Production Loss	Incident event without causing production loss.	Production loss or delay up to one week.	Production loss or delay of one week to one month.	Production loss or delay for over one month.	Loss of licence to operate or ability to produce indefinitely.
Total Cost of Impacts or Incident Event	Financial loss (compensation, fines, cost to repair, plant damage) of less than AED5,000.	Financial loss (compensation, fines, cost to repair, plant damage) of AED5,000 - AED50,000.	Financial loss (compensation, fines, cost to repair, plant damage) of AED50,000 - AED500,000	Financial loss (compensation, fines, cost to repair, plant damage) of AED500,000 - AED10M.	Severe financial penalties or legal liabilities. Financial loss (compensation, fines, cost to repair, plant damage) of greater than AED10M.

Table 1- Hazard Consequence

5.3.2 Understanding the Likelihood of the Event

- (a) Following on from looking at the magnitude of the consequences of an event, should it occur, the entity now needs to understand the likelihood of the event occurring. Using table 2 provides a consistent method of assessment that can be applied by different personnel and at different times.

Descriptor	Likely Frequency	Probability
Frequent	Occurs frequently	5
Often	Occurs several times per year	4
Likely	Has occurred more than once	3
Possible	Has occurred	2
Rare	Never occurred	1

Table 2 – Likelihood

5.3.3 Assigning a Risk Rating

- (a) Following on from the analysis for likelihood and consequence, the entity can now assign a risk rating to the hazard. This will assist when looking at the additional control measures (if any) that are needed. Using table 3 provides a consistent method of assessment that can be applied by different personnel and at different times.

Likelihood (From Table 2)	Consequence (From Table 1)				
	Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Rare (1)	1	2	3	4	5
Possible (2)	2	4	6	8	10
Likely (3)	3	6	9	12	15
Often (4)	4	8	12	16	20
Frequent/ Almost Certain (5)	5	10	15	20	25
15 - 25	Extreme Risk	Activity or industry should not proceed in current form.			
8 - 12	High Risk	Activity or industry should be modified to include remedial planning and action and be subject to detailed OSH assessment.			
4 - 6	Moderate Risk	Activity or industry can operate subject to management and /or modification.			
1 - 3	Low Risk	No immediate action required, unless escalation of risk is possible.			

Table 3 – Risk Rating

5.3.4 Step Four-Implement the Selected Control Measures

- (a) When the risk is categorized, the entity should identify the corrective action in order to manage the hazard at an acceptable and “as low as reasonably practicable” (ALARP) risk level. For hazard(s) with low risk, actions may not be required.
- (b) Identified foreseeable risks will be eliminated if reasonably practicable. If it is not reasonably practicable to eliminate the risk then the following hierarchy of controls will be applied.
- (c) The safety and health hierarchy of control is as follows:
 - (i) elimination of the hazard (where possible);
 - (ii) substitution (eg. use a less hazardous substances);
 - (iii) engineering / isolation - for plant and equipment (e.g. exhaust ventilation);
 - (iv) procedural (e.g. via improving work methods, housekeeping); and
 - (v) personal protective equipment (PPE) – it is the last resort if the above measures are not practicable.
- (d) In the evaluation of which control measures shall be taken, consideration shall be given to reducing risk to a level deemed ALARP. This includes consideration of:
 - (i) legal requirements;
 - (ii) international standards / guidelines;
 - (iii) entities OSH policy / objectives;
 - (iv) availability of resources;
 - (v) costs and benefits; and
 - (vi) the status of scientific and technical knowledge.
- (e) To reduce a risk to an ALARP level involves balancing reduction in risk to a level, objectively assessed, where the trouble, difficulty and cost of further reduction measures becomes unreasonably disproportionate to the additional risk reduction obtained. To demonstrate ALARP, it requires consideration of different options to ensure risk is reduced to a level whereby the cost or effort for any further reduction is grossly disproportionate to the risk reduction achieved.
- (f) When the mitigation measures are identified, an action plan shall be formulated addressing roles and responsibilities, training required for the relevant parties, time frame for completing the actions, the required changes for the OSHMS and its associated documents / procedures, the procedures for quality assurance, monitoring, maintenance and inspection (where appropriate). More importantly, the action plan shall be monitored (e.g. progress) to ensure actions are closed per the plan.

- (g) The purpose of implementation plans is to document how the chosen options will be implemented. These plans shall include:
 - (i) proposed actions;
 - (ii) resource requirements;
 - (iii) responsibilities;
 - (iv) timing;
 - (v) performance measures; and
 - (vi) reporting and monitoring requirements.
- (h) Any relevant work procedures, in relation to the new control measures, should also be updated, which may involve clearly defining responsibilities of management, supervisors and workers.
- (i) Work procedures shall also detail maintenance requirements and verification of the maintenance to ensure the on-going effectiveness of the control measures.
- (j) All relevant persons should be informed about the control measures being implemented; in particular, the reasons for the changes.
- (k) Adequate supervision should be provided to verify that the new control measures are being implemented and used correctly.
- (l) Depending upon the magnitude of risks and the potential consequences of hazards, the risk assessment shall be periodically reviewed by competent staff (normally at annual intervals).
- (m) This review shall verify whether changes have occurred to base assumptions made since implementation of the original design (e.g. change of legal requirements, public perception, introduction of new technology, whether the performance of the plant/equipment achieved expectations of the original design).

5.3.5 Step Five - Monitor and Review

- (a) On-going review is essential to ensure that the management plan remains relevant. Factors that may affect the likelihood and consequences of an outcome may change, as may the factors that affect the suitability or cost of the mitigation options. It is therefore necessary to repeat the risk management cycle regularly.
- (b) Actual progress against risk control plans provides an important performance measure and shall be incorporated into the nominated entities performance management, measurement and reporting system.
- (c) Monitoring and review also involves learning lessons from the risk management process, by reviewing events, the mitigation plans and their outcomes.

6. Recording the Risk Management Process

- (a) Each stage of the risk management process shall be recorded appropriately. Assumptions, methods, data sources, analyses, results and reasons for decisions shall all be recorded.
- (b) The records of such processes are an important aspect of good corporate governance.
- (c) Decisions concerning the making and capture of records shall take into account:
 - (i) the legal and business needs for records;
 - (ii) the cost of creating and maintaining records; and
 - (iii) the benefits of re-using information.

6.1 Risk Register

- (a) More complex operations will benefit from completing a risk register that summarises their risk assessments and can act as a management tool for the monitoring and updating of risk assessments.
- (b) The risk register should include all the basic details of the risk assessment including (an example is included in Appendix 3):
 - (i) risk assessment reference/number;
 - (ii) activity;
 - (iii) risk ranking;
 - (iv) control measures;
 - (v) Timescales;
 - (vi) action owner; and
 - (vii) review dates.

7. References

- *OSHAD-SF – Element 2 – Risk Management*
- *5 Steps to Risk Assessment – HSE Books, ISBN 0 7176 1565 0*
- *ISO Standard, ISO 31000: 2009 - Risk management -- Principles and guidelines*
- *Standards Australia - HB 203-2000 - Environmental Risk Management - Principles and Process*

8. Document Amendment Record

Version	Revision Date	Description of Amendment	Page/s Affected
3.0	1 st July 2016	Change of Logo	All
		Change from AD EHS Center to OSHAD	throughout
		Change of document title: AD EHSMS RF to OSHAD-SF	Throughout
		EHS changes to OSH	Throughout
		Environmental assessment requirements removed	Throughout
		Title of Section 5.3 updated to provide clarity	7

Appendix 1: – Example Hazard Walkthrough Form

Entity Name	Date	Walkthrough Reference	Assessor Name	Task / Process

OSH Issue	Risk			Action Priority	Notes
	H	L	Risk		

Appendix 2: Example Risk Assessment Form

Entity Name	Date	Walkthrough Reference	Assessor Name	Task / Process

Hazards Identified	Groups Exposed (Inc. Numbers and Patterns)	Previous Hazardous Events	Existing Control Measures	Risk		
				H	L	Risk

Additional Controls Required	Action Date	Date Completed	Residual Risk	Review Date

Appendix 3: Example Risk Register Form

R/A Ref	Activity / Hazard	Risk	Control Measures	Timescales	Action Owner	Review Date

