Procedure for Hazard Identification and Risk Assessment

Approval

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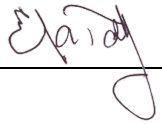
Signature:	

Document History & Revision Status

Date	Revision	Authored by	Description of change
Jan 2018	00	Natashia Fourie	Draft for Comments.
Jan 2018	01	Natashia Fourie	For Approval.
April 2019	02	Natashia Fourie	Incorporate external audit actions and roles and responsibilities.
Nov 2020	03	Natashia Fourie	For Approval as Result of Planned Review

Table of Contents

1. Purpose, Scope and Users

The purpose of this procedure is to define the methodology of hazard identification, risk assessment, and management of change regarding the Occupational Health & Safety Management System (OH&SMS), and establishing controls for risks that may affect employees' occupational health and safety in KAUST or other employees, visitors, or other people in the work place within the scope of the OH&SMS.

This procedure is applied to all work places within the scope of the OH&SMS.

Users of this document are all employees KAUST within the scope of the OH&SMS.

2. Reference Documents

- KAUST OH&SMS Manual
- Competence, Training and Awareness Procedure
- Procedure for Identification and Evaluation of Legal and Other Requirements
- Procedure for the Management of Non-Conformities and Corrective Actions

3. Roles and Responsibilities

3.1. HSE Director

The HSE Director is responsible for ensuring that a process for Health and Safety (H&S) risk management is implemented and evaluated for effectiveness. Also, to ensure that adequate tools and resources are provided for effective implementation of this procedure.

3.2. Health and Safety Manager

- Ensuring that a risk management process is implemented in all work places within the scope of the OH&SMS.
- Defining and communicating the responsibilities for and within the H&S risk management process.
- Assuring that the competence of H&S persons who apply the risk assessment matrix to the risk management process.
- Communicating and consulting with stakeholders to ensure that KAUST H&S risk management process remains relevant.
- Ensuring that legal and regulatory compliance are met.
- Approve the H&S risk assessment and hazard analysis process of Contractors and Service Providers.

3.3. Department Managers

a) Have a risk assessment process carried out for routine and non-routine activities. , covering all locations.

- Appoint or obtain a competent person to lead the risk assessment process or update the risk assessment document;
- Document control measures associated with the identified hazards and risks; and
- Provide business specific information and other resources required for the risk assessment.

b) Review the risk assessment recommendations with the risk assessment competent person and agree a remedial action plan.
- Implement the remedial action plan;
- Maintain control and recovery measures specified in the risk assessment;
- Arrange exposure monitoring and medical surveillance where required.
- Use the Hierarchy of Control when identifying and implementing hazard controls.
- Communicate relevant risk assessment risks and controls to impacted staff.

c) Review the risk assessment when changes to operations are proposed, and manage in accordance with the Management of Change process. Consider whether:
- The hazards and risks identified in the risk assessment are still present;
- New hazards have been introduced;
- The control and recovery measures are still appropriate.

d) Update the risk assessment with new hazard information.

e) Contractors and Service Providers will use a KAUST approved risk assessment and hazard analysis procedure.

f) The Department Manager shall ensure that contractors and service providers under his or her authority has an approved written procedure for hazard identification and risk control which is aligned with the requirements of this procedure.

4. Hazard Identification and Risk Assessment

4.1. Definitions

4.1.1. Acceptable risk is a risk that has been reduced to a level that can be tolerated by KAUST taking into account legal obligations and the OH&S Policy. ***When the probability of occurrence is almost non-existent, or the severity of consequence is slight, the risk level is at an acceptable level.***

4.1.2. As low as reasonably practicable (ALARP). The ALARP principle is that the residual risk cannot further be reduced, and can be tolerated by KAUST without expenditure of cost disproportionate to the benefit gained or where the solution is impractical to implement.

4.1.3. A hazard is a source with a potential to cause injury and ill health.

4.1.4. Corrective action is an action taken to eliminate the cause of the detected nonconformity or other undesirable situation.

4.1.5. Competence is the ability to apply knowledge and skills to achieve intended results.

4.1.6. Hazard identification is the process of recognizing that a hazard exists and defining its characteristics.

4.1.7. OH&S risk is a combination of the likelihood of a work-related hazardous event(s) or exposure(s), and the severity of injury or ill health that can be caused by the event or exposure.

4.1.8. Risk assessment is the process of evaluating the risk(s) arising from a hazard, taking into account the adequacy of any existing controls, and deciding whether or not the risk(s) is acceptable.

4.1.9. Residual risk is the level of hazard that remains even after implementing effective control (protective) measures.

4.2. Methodology

4.2.1. Prepare for and set the scope (parameters) of the assessment and establish the level(s) of acceptable risk.

4.2.2. Identify tasks with that scope.

4.2.3. List the hazards associated with those tasks.

4.2.4. Assess the initial risk.

4.2.5. Take steps to reduce that risk following the hierarchy of controls.

4.2.6. Assess the residual (remaining) risk.

4.2.7. Repeat the iterative process until acceptable risk has been achieved.

4.2.8. Document the risk assessment.

4.2.9. Validate the solution (s).

4.3. Hazard identification and risk assessment

4.3.1. The following group of hazards must be considered during hazard identification and risk assessment:

- Mechanical hazards emerging from using tools
- Hazards related to characteristics of the work place
- Hazards related to use of electrical power
- Hazards related to use of dangerous substances
- Biological hazards
- Physical hazards
- Chemical hazards
- Ergonomic hazards
- Hazards related to physical exhaustion
- Hazards emerging during work
- Hazards related to work organization
- Other hazards emerging in the work place

4.3.2. Use the risk assessment matrix (RAM) for performing H&S risk assessments. Conduct a risk analysis of each hazard by applying the risk assessment matrix (RAM). The three colored areas describe the level of control required to the manage risk.

Risk Assessment Matrix (RAM)

SEVERITY	CONSEQUENCES				INCREASING LIKELIHOOD				
					A	B	C	D	E
	People	Assets	Environment	Reputation	Never heard of in the Industry	Heard of in the Industry	Has happened in KAUST or more than once a year in Industry	Has happened in the Department, or more than once a year in KAUST	Has happened more than once a year in the Department
0	No injury or health effect	No damage	No effect	No impact					
1	Slight injury or health effect	Slight damage	Slight effect	Slight impact					
2	Minor injury or health effect	Minor damage	Minor effect	Minor impact					
3	Major injury or health effect	Moderate damage	Moderate effect	Moderate impact					
4	PTD or up to 3 fatalities	Major damage	Major effect	Major impact					
5	More than 3 fatalities	Massive damage	Massive effect	Massive impact					

4.3.3. Use the descriptions below to describe the effect on people:

Consequence level	Explanation
Slight Injury or health effect	Reversible injury requiring only simple medical treatment with no confinement. No lost work time.
Minor injury or health effect	A permanent injury that does not significantly impact upon the enjoyment of life, or a reversible injury, either of which requires medical treatment. The person is able to return to the same job.
Major injury or health effect	Permanent and nonreversible injury significantly impacting the enjoyment of life, and which may require continued medical treatment, but person is able to return to work at some point.
PTD or fatality	Death or seriously debilitating long-term injury, such as multiple amputation or coma, where a person is unable to return to work.

4.4. Safeguarding the Hazard – Application of the Hierarchy of Control

4.4.1. The four areas describe the level of control required to manage risk:

Blue	Manage for continuous improvement through the effective implementation of the OH&SMS.
Yellow	Perform detailed risk assessment and Identify and implement controls and recovery measures to reduce risk to ALARP.
Red	Perform detailed risk assessment and Identify and implement protective measures to reduce the risk to ALARP, and provide a documented demonstration of ALARP.

4.4.2. Controls for identified yellow and red hazards are recorded in the Hazard Risk Register. The purpose of controls is to decrease the consequences or probability in a way that will reduce risk to ALARP.

4.4.3. Use the ALARP decision tree to demonstrate ALARP:

ALARP Question	ALARP Decision	ALARP Action
Can the hazard be eliminated?	If yes, is elimination practicable?	If yes, corrective action is elimination. Transfer action to corrective action table.
Can the hazard be substituted with a less hazardous agent?	If yes, is substitution practicable?	If yes corrective action is substitution. Transfer action to corrective action table.
Can the agent be isolated to reduce the risk?	If yes, is isolation practicable?	If yes corrective action is isolation. Transfer action to corrective action table.
Can engineering controls be used to reduce the risk?	If yes, are engineering controls practicable?	If yes corrective action is engineering controls. Transfer action to corrective action table.
Can procedural controls be used to reduce the risk?	If yes, are procedural controls practicable?	If yes corrective action is procedural controls. Transfer action to corrective action table.
Can personal protective equipment be used to reduce the risk?	If yes, is PPE the only practicable control option in the long term?	If yes, corrective action is PPE. Transfer action to corrective action table. If no then repeat the assessment of achieving ALARP starting at the top (elimination).

4.4.4. ***The following priority must be established in application of controls:***

- ***Risk elimination*** – e.g., changes in work place (design for minimum hazard and introduce equipment that will decrease the risk level). This is the preferred option.
- ***Substitution –*** e.g., replacement of toxic materials with less hazardous substances, or decrease of energy in the system (temperature, pressure, etc.).
- ***Engineering controls –*** control of installations, ventilation, equipment maintenance, etc.
- ***Signalization/warnings/administrative controls –*** safety signs, labeling hazardous areas, photo-luminescent signs, access control, working permits, and/or safety procedures and instructions.
- ***Personal protection equipment –*** protective goggles, helmet, protective clothes and shoes, antiphons, glows, etc. This is the least-desired option because the risk still exists.
  Use a combination of control options when no single method fully protects exposed populations.

4.5. Review (monitoring)

4.5.1. ***The intent is that the risk assessment is an evergreen document, meaning that there is no fixed review period. In addition to having a planned review schedule, a review must be initiated when:***

- There is reason to suspect that the previous assessment is no longer valid;
- New hazards have been introduced (such as when new processes or equipment are introduced);
- A change in status is noticed from ongoing monitoring;
- Facilities are modified;
- New chemicals are introduced;
- New equipment are purchased and installed;
- When new health and safety information is received;
- Maintenance or construction activities are planned that may expose other workers to hazards.

4.5.2. ***During the review, consider whether:***

- The H&S hazards and risks initially identified are still valid.
- The precautionary or control measures are still valid.

4.5.3. ***In case of change of hazard significance and control effectiveness, the Procedure for the Management of Non-Conformities and Corrective Actions will be applied.***

4.6. Management of change related to OH&SMS

Changes related to the OH&SMS in KAUST can be internal and external.

4.6.1. Internal changes

Internal changes in KAUST can be, but are not limited to:

- Staff changes
- Changes in process, work instructions, and materials

Staff changes

These changes are the result of hiring new employees, internal fluctuation, or changes in organizational structure. According to the Competence, Training and Awareness Procedure, employees must be familiar with duties defined for their work place, as well as with protection measures.

Changes in process, work instructions, and materials

These changes are reviewed prior to their implementation, through identifying hazards, assessing the risks, and suggesting preventive actions.

4.6.2. External changes

External changes occur as a result of:

- Changes and/or amending legislations
- Development of OH&S knowledge and technologies

Changes and/or amendments in legislations are monitored according to the Procedure for Identification and Evaluation of Legal and Other Requirements.

In order to improve the OH&SMS and risk control, information about development of knowledge and technologies regarding OH&S are gathered by the Management team from the following sources:

- Specialized magazines
- Professional conferences inside or outside KAUST (classes, seminars, trainings, etc.)
- External communication – exchange of information with other companies

5. Managing Records Kept On The Basis Of This Document

Record name	Document No	Storage		Responsibility
		Retention time	Location	
Hazard Register & Risk Assessment	HSE-OHSMS-PR07-F01	3 years	SharePoint	H&S Manager

Only the KAUST H&S Manager can grant other employees access to the records.