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1. PURPOSE

The purpose of this document is to outline the process for ensuring new laboratories, laboratories assigned in “Swing labs” spaces, or laboratory neighborhoods are ready for safe operations after construction has finished, and prior to commencement of laboratory operations.

2. SCOPE

This procedure applies to all laboratories on the KAUST campus, including the Research Park Innovation Cluster.

3. ACRONYMS

- 3.1 MCC: Mechanical Completion Certificate, document that is issued from E&PM once the construction of the lab is over
- 3.2 EIL: Exception Item List, list of items to be delivered by the construction company
- 3.3 HSE: Health, Safety, and Environment Department
- 3.4 LSR: Lab Safety Representative, liaison person between the lab and HSE group
- 3.5 TGM: Toxic Gas Monitor System
- 3.6 E&PM: Engineering and Project Management
- 3.7 NFPA: National Fire Protection Association
- 3.8 POSHER: Pre-Operational Safety, Health & Environmental Review Form

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4. LABORATORY SAFETY READINESS AND APPROVAL FORM

During the early stages of laboratory design, the E&PM team contacts the laboratory principal investigator to prepare a Pre-Operational Safety, Health & Environmental Review Form (POSHER). This document ensures that hazards involved in the labs are considered during the design stage and appropriate measures are in place in the Issued For Construction (IFC) drawings and documents. HSE participates in these sessions adding feedback and lessons learned from previous designs and lab fit outs.

Before the completion of construction and sign off for the MCC (Mechanical Completion Certificate), HSE works with E&PM and laboratory representatives in the safety readiness for the new laboratory. This can be completed through a meeting and a quick visit to the lab area. HSE explains the process to prepare the lab for operations, hand over a copy of the Laboratory Safety Readiness Checklist and sends an email to the PI with the actions to take, typically to complete the safety readiness process takes about 2 weeks, but it will depend on the involvement of the management and the lab members.

Principal Investigators are accountable for the health and safety of employees engaged in activities under their supervision, prior to the startup of operations of the laboratory. The PI and laboratory staff is responsible of the following actions:

4.1 Assign a Lab Safety Representative

Laboratory Safety Representatives (LSR) provides an important link between the campus community and Health, Safety & Environment (HSE). LSR's are the eyes and ears that help extend the safety network across campus. They play an important role in helping to improve lab safety, identify hazards, and help to prepare for and deal with emergency situations.

By reporting any problems and working with HSE staff to find solutions, LSRs can help ensure their lab is as prepared as possible for emergencies. LSRs are encouraged to work with HSE staff in any of the safety and compliance issues identified within their department.


More information about Laboratory Safety Representative (LSR) Program:

<http://facilities.kaust.edu.sa/Services/Pages/Lab/LabSafetyRep.aspx>

PIs are responsible for sending the name of the designated Lab Safety Representative and backup LSR to researchsafety@kaust.edu.sa.

4.2 Prepare Lab Specific Safety Plan

Each laboratory is required to have a written safety plan (Laboratory Safety Plan) to protect personnel, property or the environment against specific hazards from the lab operation, this includes laboratories having hazardous materials (chemical, biological or radioactive), high-pressure, high-energy, Laser, X-Ray, or other significant mechanical, physical, electrical hazards, or other hazards.

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The Laboratory Safety Plan should outline the lab-specific practices and procedures (Standard Operating Procedures or SOPs), personal protective equipment (PPE), emergency procedures and other safety requirements to protect employees from the hazards they may encounter in the laboratory.

The Laboratory Safety Plan serves as the basis for training of all laboratory users. In order to ensure that the Plan remains current and up-to-date it should be regularly reviewed (no less than annually).

To download the Lab Safety Plan template, please visit:

<http://facilities.kaust.edu.sa/Services/Pages/Lab/LabSafety.aspx>

Once completed send the lab safety plan to researchsafety@kaust.edu.sa for review and approval.

4.3 Purchase Safety Supplies and PPE

When deciding on the appropriate PPE to wear when performing any operations or experiments, a number of factors must be taken into consideration such as:

- The chemicals being used, including concentration and quantity.
- The hazards the chemicals pose.
- The routes of exposure for the chemicals.
- The material the PPE is constructed of.
- The permeation and degradation rates specific chemicals will have on the material.
- The length of time the PPE will be in contact with the chemicals.

Principal Investigators, laboratory managers, and centers are free to set policies that establish minimum PPE requirements for personnel working in and entering their laboratories above the KAUST minimum standards.


The rules for proper laboratory attire are designed to increase safety and prevent injury to individuals while working in KAUST Laboratories. These rules are consistent with the KAUST Laboratory Safety Manual requirements and appropriate best practices. The document with the rules for proper lab attire can be found at:

<http://facilities.kaust.edu.sa/assets/HSE/Safety/LabSafety/Documents/Rules for Proper Laboratory Attire.pdf>

To visit lab safety supplies web page:

<http://facilities.kaust.edu.sa/Services/Pages/Lab/SafetySuppliesCatalog.aspx>

To order personal protective equipment and other lab safety supplies please contact the warehouse directly at: ProcurementHelpdesk@kaust.edu.sa.

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4.4 Purchase First Aid Kit and Chemical Spill Kit

It is the responsibility of each center or laboratory to have the appropriate first aid kit for the likely risks occurring in the work area. A responsible person should be designated to maintain the kit and properly trained individuals should be available to administer first aid, if necessary. First aid training classes may be arranged through the HSE Department.

Chemical spill kits must be available in each laboratory where hazardous chemicals are used or stored. Spill clean-up kits suitable for responding to typical laboratory spills are available from the Chemical Warehouse. Alternatively, you may prepare your own spill kit – see the Laboratory Safety Manual for more information:

<http://facilities.kaust.edu.sa/Services/Pages/Lab/LSM/LSMch2.aspx#2.4.3>

To visit lab safety supplies web page:

<http://facilities.kaust.edu.sa/Services/Pages/Lab/SafetySuppliesCatalog.aspx>

For more information please contact: ProcurementHelpdesk@kaust.edu.sa.

4.5 Hazardous Waste Disposal

The Principal Investigator (PI), Lab Manager (Core Lab), or Center Director have ultimate responsibility to ensure the personnel working under their direction follow all policies and procedures established in the Lab Safety Manual. Individuals who generate chemical waste (e.g., lab technicians), or are responsible for the generation of waste (e.g., principle investigators), are considered the generators of these regulated materials. Therefore, it is the responsibility of each generator to verify waste materials are handled in a manner consistent with HSE requirements. One responsibility includes contacting the Site Services Team to agree on location of Satellite Accumulation Area and receive detailed information about hazardous waste disposal procedures.

Chemical warehouse contact:


WHSOrder@KAUST.EDU.SA

For more information please consult the laboratory hazardous waste management manual:

<http://facilities.kaust.edu.sa/Services/Pages/Lab/HWM/HWM.aspx>

To order waste supplies, check the lab safety supply list and contact the procurement department:

<http://facilities.kaust.edu.sa/Services/Pages/Lab/SafetySuppliesCatalog.aspx>

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4.6 Training

All KAUST faculty, staff, and students who work in labs with chemical, biological, radiological hazards and/or physical hazards present are required to attend the HSE *Laboratory Safety Training, Hazardous Waste Training and Emergency and Crisis Management Overview*. This training must occur before any individuals are permitted to work in KAUST laboratories. These training requirements can be met in a live classroom session or online via Blackboard. For more information, see the Training webpage: <http://facilities.kaust.edu.sa/Services/Pages/Lab/Training.aspx>.

Additionally, the Principal Investigator or laboratory manager is responsible for informing all staff, students, and visitors who work in their labs of any potential health and safety risks that may be present in their workplace, and provide any additional training above and beyond the KAUST minimum training. Laboratory personnel who attend HSE training classes will have documentation entered and maintained for them within the HSE training database. Faculty, laboratory managers, and Laboratory Safety Representatives can request a list of attendees for their labs from HSE to verify all personnel have attended the required training.


It is the responsibility of Principal Investigators and laboratory managers to ensure personnel working in laboratories under their supervision have been provided with the proper training, received information about the hazards in the laboratory they may encounter, and been informed about ways they can protect themselves.

To consult training calendar or training sessions online:

<http://facilities.kaust.edu.sa/Services/Pages/Lab/Training.aspx>

4.7 Lab Hazard Door Sign

All labs are required to have a lab hazard door sign on the outside of lab doors. The lab hazard signage should be placed on laboratory doors (atrium doors and service corridor doors) identifying hazards present in the lab, lab information and contact information.

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Laboratory Information

Department: Building: Room:

Laboratory Hazards

Please place a check next to the hazards present in your lab (choose at most 10 hazards):

<input type="checkbox"/> 	<input type="checkbox"/> 	<input type="checkbox"/> 	<input type="checkbox"/> 	<input type="checkbox"/> 
<input type="checkbox"/> 	<input type="checkbox"/> 	<input type="checkbox"/> 	<input type="checkbox"/> 	<input type="checkbox"/> 
<input type="checkbox"/> 	<input type="checkbox"/> 	<input type="checkbox"/> 	<input type="checkbox"/> 	<input type="checkbox"/> 
<input type="checkbox"/> 	<input type="checkbox"/> 			

Personal Protective Equipments

Please place a check next to the safety equipments required inside your lab (choose at most 3 equipments):

<input type="checkbox"/> 	<input type="checkbox"/> 	<input type="checkbox"/> 	<input type="checkbox"/> 	<input type="checkbox"/> 
--	--	--	--	--

The Lab Hazard Door Sign template is available at:

http://rcweb.kaust.edu.sa/group/rc/IT_Forms/signage.html

4.8 Compressed Gas Cylinder Brackets

Order cylinder brackets from the warehouse or call facility help desk 959 to mount permanent brackets.

<http://facilities.kaust.edu.sa/Services/Pages/Lab/SafetySuppliesCatalog.aspx>


4.9 Fire Extinguishers

Please contact the facility help desk at 959, and you will receive a visit from HSE for further assessment according to the lab requirements and fire extinguisher types.

4.10 Inform Radiation Safety Officer of potential hazards in the lab

Radiation officer to visit lab and help lab users to follow radiation safety programs. The Radiation Safety Program is designed to provide a simple means of tracking the use of equipment, materials and persons as they relate to ionizing radiation. It also provides requirements for the safe use of ionizing radiation within the laboratories.

Contact researchsafety@kaust.edu.sa for more information.

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4.11 Inform LASER Safety Officer of potential hazards in the lab

Laser Safety Officer (LSO) to visit lab and help lab users to follow LASER safety programs. The Laser Safety Program is designed to provide a simple means of tracking the use of equipment, materials and persons as they relate to laser generation and control and the safe use of laser generating equipment within the laboratories.

Contact researchsafety@kaust.edu.sa for more information.

4.12 Complete The Lab Safety Readiness Checklist

The laboratory is responsible to complete all relevant items from the lab safety readiness check list (Appendix 1) and work together with HSE to finalize them before the starting operations in the laboratory.

4.13 Lab Move

In case a laboratory moves from a different location, the Laboratory Safety readiness procedure applies together with the Lab Move Guide from the Appendix 3 in the Laboratory Safety Manual. As part of the final approval for operations, a safety inspection would be conducted in the old and new lab. For more information on the guidelines for lab move please consult the Lab Safety Manual:

<http://facilities.kaust.edu.sa/Services/Pages/Lab/LSM/LSMapp3.aspx>

4.14 Final Walkthrough and Occupancy Approval Form.

A final walkthrough of the lab is scheduled before the start of operations to make sure all actions are closed and the lab is ready to conduct experiments safely. Send final approval form to PI, E&PM, Campus support and LEAM.

Complete safety readiness check list (Appendix 1) and obtain signatures.

After completion of the laboratory safety readiness and occupancy approval form with no open items the lab is consider operational, Campus Support conducts Laboratory Visual Inspection and Lab Occupancy and Operations permit to grant access and full access to maintenance and operation services.

References:

Bio Safety Manual


http://facilities.kaust.edu.sa/assets/HSE/Safety/LabSafety/Documents/Biosafety/Biosafety_Manual.pdf

Campus Support Laboratory Visual Inspection Procedure

Contact CSD for the procedure

Laboratory Hazardous waste management manual

<http://facilities.kaust.edu.sa/Services/Pages/Lab/HWM/HWM.aspx>

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Laboratory Safety Manual


<http://facilities.kaust.edu.sa/Services/Pages/Lab/LSM/LabSafetyManual.aspx>

LASER Safety Manual

[http://facilities.kaust.edu.sa/assets/HSE/Safety/LabSafety/Documents/LaserSafety/KAUST Laser Safety Manual.pdf](http://facilities.kaust.edu.sa/assets/HSE/Safety/LabSafety/Documents/LaserSafety/KAUST_Laser_Safety_Manual.pdf)

Radiation Protection Manual

[http://facilities.kaust.edu.sa/assets/HSE/Safety/LabSafety/Documents/RadSafety/KAUST Radiation Protection Manual.pdf](http://facilities.kaust.edu.sa/assets/HSE/Safety/LabSafety/Documents/RadSafety/KAUST_Radiation_Protection_Manual.pdf)

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Appendix:

1 Laboratory Safety Readiness Check list and Occupancy Approval Form

Appendix 1 Laboratory Safety Readiness Check list and occupancy approval form (To review and prepare key sheet) - Link

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RESEARCH SAFETY TEAM

LABORATORY SAFETY READINESS CHECKLIST AND

OCCUPANCY APPROVAL FORM

Building:	Lab Name:
Floor:	
Area:	PI/Lab Representative:
Review By:	Date of Review:

Availability of required safety devices, supplies and equipment:

Equipment	Required		Available		Functional		Comments
	Yes	No	Yes	No	Yes	No	
Emergency Shower							
Eyewash Station							
Chemical Fume Hood(s)							
Biological Safety Cabinet							
Other Local Exhaust Devices							
Gas Cabinets							
Gas Manifold System							
TGM							
Emergency Shut Off - Gas							
Emergency Notification							
Emergency Shut Off - Electrical							
Emergency Shut-Off Water							
Chemical Storage - Flammables							
Chemical Storage Corrosives							
Chemical Storage- Other							
Fire Extinguishers							
Chemical Spill Kit							
First Aid Kit							
Personal Protective Equipment							
Calcium Gluconate							
Waste Supplies							
Other:							

	Yes	No	Comments
Door Signage Posted			
POSHER Complete			
Lab Safety Plan Complete			
Emergency Procedures in Place			
Required Safety Training Complete			

Approval of Occupancy:

This laboratory is ready to operate following the safe operating practices stated in the KAUST Laboratory Safety Manual.

HSE Lab Design Date

HSE Director Date