HEALTH, SAFETY & ENVIRONMENT	***Tier 1 Lab Safety Review*** ***Explanation Key***	***April 2022***

Assessment Output

1) **Numerical Range from 0 to 5 –** Number of Issues observed under the question category.
2) **N/A –** The question is not applicable to the lab assessment.
3) **C/S –** Issues found and corrected on site at the time of assessment.

Engineering controls

4) **Safety Engineering Controls** – Biosafety cabinets, fume hoods, glove boxes, and laminar flow hoods are certified or checked, with no obvious maintenance issues, and function properly.

Administrative Controls

5) **SOPs – Standard Operating Procedures** – Each lab is required to develop safe handling instructions for their hazardous chemicals and operations. Example SOPs can be found here https://hse.kaust.edu.sa/training/standard-operating-procedures-(sops)

6) **Lab Door Signage** – Each lab space must have a hazard identification sign on the door indicating the primary hazards present in the room. These door signs need to be updated whenever the information changes, and reviewed at least annually.

7) **Safety Training** – All KAUST faculty, staff, and students are required to attend the HSE Emergency Incident Preparedness Training, Laboratory Safety Training, and Hazardous Waste Training. Additionally, required training can be assigned regarding the type of experimental work conducted. All safety courses can be accessed through SALUTE: https://ehs.salutesafety.com/users/sign_in

8) **Personal Protective Equipment** – Proper Personal Protective Equipment must be worn at all times in the laboratory. The minimum PPE for a laboratory is safety glasses, a buttoned laboratory coat and appropriate gloves. Depending on activities being conducted, additional PPE may be required.
Assistance with PPE selection can be obtained by contacting hse@kaust.edu.sa
And can be ordered from the chemical warehouse.

Housekeeping

9) **General housekeeping** – Workspaces (lab bench, fume hood work area, ventilated enclosures, biosafety cabinet, laboratory scales, refrigerators, storage areas) need to be kept orderly and all chemical spills must be cleaned up. No accumulated waste.

10) **Service corridor** – that includes service, circulation and exit corridor. They should not be used for conducting experiments or for personnel occupancy, should be organized with no excessive storage. Storage in service corridors must meet the Service Corridor Guidelines found here: https://hse.kaust.edu.sa/training/service-corridor

11) **Overhead Storage** – Hazardous chemicals shall be not stored above eye level or on the floor. Heavy equipment and heavy boxes should not be stored overhead.

12) **Slips/trips/fall Hazards** – Floors should be kept clean and free from debris, electrical cords, or any obstacles. Chemicals and hazardous materials stored in floor spaces must be stored in secondary containment such as trays to prevent slips if leakage or spill occurred.

General Safety

13) **Chemical Segregation** – Chemicals must be segregated by the hazards they present such as acids, bases, flammables, oxidizers, toxic, water reactive, etc. HSE can assist you with properly segregating your chemicals.

14) **Biological, chemical, radiological Labeling** – All chemical and samples containers must be labeled with their contents. The original manufacturer's label is acceptable, but if it is transferred to another container, then the secondary container must be labeled. Labels must be in English. If abbreviations or formulas are used, then an "abbreviation key" must be posted in a visible location.

15) **Cylinders Secured** - Cylinders must be secured to a sturdy object to prevent the cylinder from falling over. A chain (preferred) or strap must be tight enough and strong enough to secure the cylinder. Placement of strap needs to be in the upper 1/2 of the cylinder but not around the cap or valve.

16) **Gas Cylinder label**– Cylinders should be tagged with 'Full', 'In-use', or 'Empty' tags. Cylinder tags are available through the warehouse.

17) **Power Strips** – Power strips must not be plugged into another power strip and should be raised from the floor.

18) **Electrical Cords** – no worn or frayed electrical cords can be used, if any are found, the cord needs to be replaced. Please contact LEM for support. lem@kaust.edu.sa.

19) **Hazardous Waste Labeling** – Hazardous waste is required to be labeled with the words "Hazardous Waste" and the contents (no abbreviations, structures, formulas, or generic names). A KAUST hazardous waste tag must be attached for disposal. Hazardous waste tags are available at the chemical warehouse.

20) **Hazardous Waste Container Kept Closed** – Hazardous waste containers must be kept closed with a tight sealing lid, except when waste is being added or removed. For containers hooked up to equipment, waste bottles still need to be closed when not in process. Evaporating hazardous waste in a fume hood is not acceptable and represents a potential spill situation.

Emergency Reediness

21) **Chemical Spill Kit** – Labs are required to have the right spill kits readily accessible. Chemical spill kits can be obtained from the Chemical Warehouse.

22) **Eyewash**– Any area where corrosive chemicals or other hazardous materials are used requires a functioning eyewash station that is weekly checked, readily accessible, free of obstructions.

23) **First Aid Kit** – Laboratories are required to have a first aid kit readily accessible, with valid items expiration date. First aid kits can be obtained from the Chemical Warehouse.

24) **Automated External Defibrillator AED** – medical device that can analyze the heart's rhythm and, if necessary, deliver an electrical shock. The AED's locations: https://hse.kaust.edu.sa/services/aeds-in-kaust

25) **Sharps and Broken glass Disposal**– Hypodermic needles, syringes, razor blades and other sharps must always be discarded in a sharps or broken glass container. Do not dispose of sharps in other waste containers such as chemically contaminated items, hazardous waste, or normal trash. Sharps containers can be obtained from the Chemical Warehouse. Pipette tips must be disposed of in sharps containers or broken glass containers.

26) **Fire Extinguishers**– All users must have immediate access to a fire extinguisher (within 75 feet / 23 meters). The extinguisher needs to have a current inspection, and needs to be appropriate for the fire risks present. Personnel should frequently check the pressure gauge to make sure that their extinguisher is still properly charged. Contact 959 for fire extinguisher inspection.

Safety Culture

Safety is everyone's responsibility, it is a combination of essential beliefs, value, and pattern of behaviors that we all share. In order to mitigate the risks in the laboratory and to reduce the harms and damages resulted from accidents and incidents. Laboratory incidents often result from a lack of attention to safety issues, here is some tools and behaviors that helps us to develop a safety culture and glare together safely.

27) **Safe work Practices** – Research activities with reduced risks to personnel, equipment, materials, environment and processes.

28) **Lab Safety Plan** – Laboratories are required to complete a Lab Safety Plan and review it whenever major operational changes occur, new hazards are introduced, or at least annually. A blank Lab Safety Plan template can be found here: https://hse.kaust.edu.sa/Services/Pages/LabSafetyPlan.aspx

29) **Incidents or Near misses** – Incidents are unplanned events or chain of events has or have occurred, and resulted in injury, or caused damaged to environment or properties. Near misses are undesired event, which under slightly different circumstances, could have resulted in harm to people, property or environment damage.

30) **Safety Review** – Review or examining the potential hazards associated with an experiment and the emergency procedure if something goes wrong.