

Description of workshop on implementing effective chemical safety and security in Basrah and Basrah for oil and gas Universities/Basrah/Iraq

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Abstract

In continuation of its partnership with its colleagues in Iraqi Academic Universities and Institutions, the CBRN committees representing the Chemical Safety and Security Units of the University of Basrah has organized a three-day training workshop during the period 22 - 24 Nov. 2015, focused on the operations of Implementing Effective Chemical Safety and Security for the Teachers, Staff, and Students of University of Basrah and University of Basrah for Oil and Gas. The main topics throughout this workshop were focused on the Safety and Security in the research and teaching laboratories, Safety Laboratory Practice, Safety laboratory precautions, Chemical waste, Laboratories and Operational Ethics, Risks in the laboratories and evaluation. Officially the workshop has sponsored by University of Basrah.

Keyword: safety, security, chemicals, workshop, Basrah, university, risk assessment

Introduction

Throughout the past decade, a number of specific workshops concerning safety and security issues for chemical, as well as biological and radiation, were hosted over all the world ^[1, 4]. All of those workshops were aimed at providing a strong platform for leaders and employees in the business of chemistry at the Universities as well as Industries. The major aims of such workshops are ^[5, 6].

1. Increase visibility and awareness among staff and students in the universities.
2. Illustrate that people involved in such workshops are becoming as a key player in the chemical business.

3. Provide the tools needed to be used while running a chemical reaction.
4. Increase the chemical safety and security by identifying hazards and risks.
5. Secure chemical supply procedure from procurement to transport, shipping, laboratory use and disposal.
6. These workshops leading to conducting a laboratory safety program to minimize the risk of injury or illness to laboratory workers that they have the training information, support, and equipment needed to work safely in the laboratory ^[7].

Workshop objectives



Fig 1

1. Re-engage participants on the topics of chemical safety and security that were discussed during the Iraq Chemical Safety & Security Working Group Planning Workshop Istanbul, Turkey—Sep 13-17, 2015, particularly as they relate to the specific chemical safety and security needs of academic laboratories.

Prof. Dr. Faris Jasim Mohammad Al-Imarah take the Safety and security in the research and teaching labs The lecturer talk about the work in each of research or teaching labs is accompanied with expected hazards which could be classified as Chemical: because of materials used, Biological: factors such as microorganisms, and Physical: as a result of radiation. Chemically users of labs should be familiar with types of chemical materials to be used whether they are toxic, inflammable, corrosive, explosive, poisonous, or radioactive, and using any bottle for chemical material should be supplied with full information's concerning the safe use of this material represented by Material Safety and Data Sheet "MSDS". The most effective physical hazard is the radiation which represented by radiation sources for

Teaching and research. Biological labs are characterized by waste of different kinds: Solid represented by gloves, wound dressing, tubes, Catheters, liquids as blood, urine and serum, hard waste represented by reasor, blade, nedil, syring which needs special case for disposal. All when contaminated should be treated by heat, chemical, or radiation, for heat to be employed either steam, dry or incineration. For chemicals need to be treated by bleach, hydrogen peroxide as a liquid or ethylene oxide as gas. For radiation ^3H and ^{14}C to treat high radiation, ^{35}S and ^{125}I to treat intermediate radiation and ^3H and ^{14}C and finally the ^{32}P to treat short lived objects.

2. Facilitate the development of department-specific academic laboratory chemical safety and security benchmarks that will be overseen by the department units.

3. Work with participants to understand operational plans and roles and responsibilities, and develop appropriate standard operating procedures (SOPs) related to laboratory inspection and/or other Unit operations. These will be reinforced through laboratory demonstrations and exercises as well as post-exercise reports.

4. Discuss methods to successfully conduct lab inspections and other necessary operations performed by the chemical safety and security units. Also, develop means by which participants can continue to communicate with each other for further development of SOPs and as well as be able to effectively pass on knowledge to additional colleagues in the future.

Assist. Prof. Dr. Ferdous Abbas Jabir Alturaihy, College of Medicine, Al-Qadisiya University, Iraq, took the part that Provided training opportunities, technical assistance, and conduct risk assessments in academic laboratories and industrial settings by the lecture "Introduction to Safety Laboratory Practice" The lecture covered important points in chemical safety subject that includes (general view of safety laboratory practices and its importance, goals of chemical security and chemical safety program, chemical accidents under control: National and international legislation, chemical security and chemical safety. Also light was exposure on the roles and responsibilities that includes role of

leaders, role of Safety officer-role of chemical laboratory manager and instructor, and roles of students and workers. The importance of personal protective equipments (PPT) was explained which was included eye and face protection, head protection, foot and leg protection, hand and arm protection, body protection hearing protection. Finally the, Instruction for use of the safe operating procedure was clarified.

5. Develop roles, responsibilities, and actions to be completed by Unit members upon their return to their departments, to further build institutional support for the operations of the chemical safety and security units.

6. Nuts and bolts of how a working group works Vision statements, mission statements, goals, and objectives - what are they and why would you want them for your team? The importance of accountability (group and individual) to success Seven Habits of Highly Effective People

Assist. Prof. Dr. Ammar K. Al-Baaj University of Basrah for Oil and Gas, talk about how do security measures decrease risk?

Decrease likelihood or consequence?

Deter from happening

Stop if happening

1. Detect a potential problem and assess whether false alarm or real threat
2. Delay the criminal activity
3. Respond to the problem the lecture was Safety laboratory precautions, The Lecture was contained: Although most laboratory personnel are prepared to handle incidental spills or minor chemical exposures, many other types of large-scale emergencies can affect a laboratory. Emergencies may range major phases to managing a large-scale emergency: mitigation, preparedness, response, and recovery.
 1. The mitigation phase includes efforts to minimize the likelihood that an incident will occur and limit the effects of an incident that does occur. Mitigation efforts may be procedural, such as safe storage of materials, or Physical, such as a sprinkler system.
 2. The preparedness phase is the process of developing plans for managing an emergency and taking action to ensure that the laboratory is ready to handle an emergency. This phase might include storing adequate supplies, training personnel, and preparing a communications plan.
 3. The response phase involves efforts to manage the emergency as it Occurs and may include outside responders as well as laboratory staff. The effectiveness and efficiency of a response depends on everyone Understanding their roles and having the supplies they need on hand. Training and planning ahead of time are therefore critical.
 4. The recovery phase encompasses the actions taken to restore the laboratory and affected areas to their previous conditions so they may function safely again. This stage also provides an opportunity for a review of the other phases. The four phases are interconnected. Each phase affects the other. The most important step in managing an emergency, however, is planning for one.

Assist. Prof. Dr. Ali Kareem Abdul Hussaien, College of Science \ University of Maysan. Take the part: the Chemical Waste: Waste materials are disposed of in or destined for disposed of, or that they no longer useful materials with the purpose of use. It is also to be considered within material waste if disposed of or if being considered "waste they resemble in basis," as is the case of materials spilled. Waste is classified as hazardous or not hazard. Characteristic hazard wastes exhibit one or more hazardous characteristics are Ignitability, Corrosively, Reactivity, and Toxicity.

Waste Minimization

The University is required by Federal and State regulations to develop and implement a Waste Minimization Strategy. Ways to help achieve the goal of reducing the volume of chemical waste generated on campus includes, but is not limited to: Practice the concept of Source Reduction by simply ordering the smallest quantity of chemical materials required for your research, Share surplus chemical with other labs, Purchase mercury-free instruments, Substitute hazardous chemicals with non-hazardous chemicals whenever possible and reduce the scale of laboratory experiments to reduce the volume of waste being produced whenever possible.

Chemical Waste Disposal

1. Collect Chemical Waste in sturdy leak-proof containers do not use the sinks or surrounding areas for handling, storing, or disposing of hazardous chemicals, Evaporation is not an acceptable waste disposal method. Only insignificant, residual amounts of liquid associated with lab ware or containers can be treated in this way and do not mix radioactive materials with chemical waste.
2. Label and seal chemical waste containers at all times, all chemical waste containers must be properly labeled. Complete and attach an ORS Hazardous Waste Label (as seen in Appendix A) for any unlabeled waste containers, The label must contain the amount or concentration of constituents and Chemical hazardous waste, radioactive waste and biological waste have unique labels.
3. Store waste containers properly. The caps must be tight. No open funnels or filling aids may be left in containers, never store flammable with oxidizers or acids with caustics, Labs must use bins for segregation and secondary containment and Flammable wastes are best stored in a fire rated cabinet.

Methods of Disposal of Chemical Waste

1. Recycling
2. Burn waste
3. Waste disposal in sinks
4. Release of chemicals into the atmosphere
5. Chemical reaction.

At the third day, Dr. Ali Hussain Amateghy, Faculty of Marine Sciences, take the Role of Laboratories and Operational Ethics, investigating that A laboratory is a service unit which receives samples and provides analysis reports. The authenticity of reports is based on the expertise and ethical conduct of laboratory scientists. Each and every laboratory is a legal entity which has a right to register patents, publish findings but at same time can be held responsible for the results reported by it. Laboratories are classified under different categories on the basis of their analysis objectives: include Commercial testing laboratories

carry out analysis of samples received from clients and receive payments for services provided., Regulatory body laboratories constitute a chain of laboratories covered and controlled by national or international bodies which provide standard methods and certified reference materials which have international acceptance and traceability., In-house quality control laboratories are part of manufacturing organizations which certify the quality conformity of the manufactured goods., Research laboratories can be a part of academic institutions, universities, national level laboratories or research institutions under private ownership. Such laboratories conduct analytical studies in the areas of basic as well as applied research. And Social cause laboratories provide analytical services for ensuring safe use of natural resources, consumer products such as pharmaceuticals, foods, environmental specimens, and crime investigation, Laboratory Ethics The analytical chemist serves mankind through the development of new materials and certifies the quality of manufactured goods as well as natural resources and agricultural produce for human consumption. The profession demands a high degree of integrity and ethical conduct which rests on Independence, Confidentiality and Commitment to society Independence Laboratory decisions should not be influenced by monetary inducements Judgments should be made based on professional knowledge and skills Laboratory staff should not succumb to pressures from clients or production departments to manipulate results Confidentiality Results of analysis should not be disclosed to unconcerned outside parties Laboratory tests and operating procedures should not be passed on to competitor laboratories Proficiency testing results should not be disclosed in advance to other participating laboratories Each employee should be made to sign a confidentiality agreement at time of joining employment Commitment to society A chemist taking financial or other inducements and qualifying failed products is doing immeasurable harm to society Environmental controls and safety measures should be adhered to strictly to prevent exposure of a section of population to health hazards, Laboratory wastage and discharge should be properly treated in accordance with the civic body regulations before disposal All chemists who abide by the ethical code of conduct are making immense contribution to the welfare of humanity as well as upkeep of the quality of the natural environment. Their services deserve to be recognized and rewarded by their serving organizations as well national bodies.

In Final Prof. Dr. Hadi Al-Lammi, Dept. of Chem. College of Science, Basrah University, talk about Risks in the laboratories and evaluation, which were create a culture of safety and security on the basis of the recognition that the well-being and safety of everyone depends on teamwork and personal responsibility. And this culture must become a trend and not the expectations imposed by institutional rules. To create a culture of safety and security requires continued commitment to high standards at all levels-from corporate leadership for top laboratory working day after day. Over the last century, the chemicals have helped increase our understanding of the physical and biological world alike, and our ability to take advantage of it. Most of the articles included which accept in modern life, modern industrial chemical processes or natural, and continue the work that is done within the chemical laboratories around the world to

enable advances in science and engineering in the surroundings free from danger or risk the lives of workers. That's mean, from this workshop we can: Best practices in establishing collaborations

- The importance of working on projects in teams – why would you want to?
 - Sense of accomplishment
 - No one person has the best ideas
 - Ability to accomplish more than a single person
- How to seek opportunities to engage biological and radiological experts in preparation for the First National Conference
- Open discussion about initial thoughts for project focus areas...either logistics related (e.g., communications, trusted vendor outreach, etc) or CSS related (procurement, ethical chemistry, information protection, etc).

Workshop planning

This workshop is being organized in coordination with parallel colleagues from Iraqi academic universities and institutions. This workshop is currently intended to be held during the same week as a workshop facilitated Iraq Chemical Safety & Security Working Group Planning Workshop Istanbul, Turkey—Sep 13-17, 2015, based on the desired qualifications described above. Consistent with applicable requirements for providing business hospitalities. Department of Chemistry & Marine Environmental Pollution, Marine Science Centre, Laboratories will provide:

- Development, printing, and binding of workshop materials and supplemental materials
- Travel and lodging for technical experts to facilitate the workshop
- Allowable travel expenses for all workshop participants
- Workshop venue
- We request the cooperation of our colleagues from Iraq to provide:
 - Identification of workshop nominees based on the desired qualifications above (the exact number of participants to be selected will be based on nomination information received and the
 - Final venue)
 - Opening remarks (if desired),
 - Institution-specific presentations (five minutes per presentation) on the current status of institutional chemical safety and security units.

Discussion

In the beginning this workshop is being designed for no more than 100 participants. Participants selected to attend this workshop should have prior education, training, and/or experience in chemical laboratory safety and security. The most suitable audience for this workshop would be from established units dedicated to chemical laboratory safety and security in Iraqi colleges and universities. Priority for participation will be given to participants from established chemical safety and security units at Iraqi universities. The Lecturers selected to Provide practical chemical risk management tools for use by chemical engineering faculty and students, Provide information on identifying, evaluating, and controlling chemical hazards and threats, Promote a culture of excellence in chemical risk assessment, mitigation,

and management and determine needs for future training and support Other participants with direct responsibilities related to the direct oversight, supervision, and/or implementation of laboratory chemical safety and security risk management within Iraqi universities, and especially measurement and analysis of chemical risk management, may benefit from this training [8, 11].

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