



A Glimpse into Establishing and Developing Safety Measures in the Department of Chemistry, College of Science, Al-Nahrain University in 2016

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Abstract

The department of Chemistry is one of the main academic departments in the College of Science at Al-Nahrain University. The department awards Bachelor degree in Chemistry and Master degree in Analytical, Physical, Organic, Inorganic, and Biochemistry. Chemistry department since its establishment has twenty one laboratories within. Fifteen of them are devoted for postgraduate students and the rest are for undergraduates. During 2016, we aimed to focus our attention towards maintaining safety measures within all of these laboratories to ensure a safe working environment. In 2016, the department witnessed many significant achievements with regards to disseminating safety measures through lectures, workshops, seminars and publications as well as renovating infrastructures. Also, during the last six years, the department adopted a strategy to promote safety and security which has been approved by Civilian Research and Development Foundation (CRDF). Herein, we would like to shine a spotlight to all departmental activities and programs conducted to motivate and educate our students and affiliates to take safety as their first priority at all times and keep maintaining safety standards in our department.



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Introduction

There are many procedures that need to be taken into account to improve the safety and security situation in the chemistry laboratories.^{1,4}

A substantial effort was dedicated by our department staff members to design programs and activities

that match the proposed strategy for offering the best possible safety standards in our laboratories. These programs and activities can be summarized as follows:

1. Safety and security practices

We believe that safety, security, and supplying our

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staff members with the required information to work efficiently and safely in laboratories is paramount. That is why, one of our priorities was to holding seminars, workshops as well as publishing papers on safety practices as outlined below.

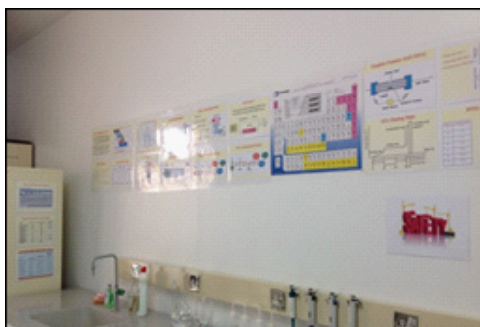
- A seminar on some laboratory incidents
As a part of our academic activities, the department hosted a seminar titled 'Incidents in laboratories'. The seminar was carefully designed for all researchers to raise awareness on possible accidents in chemistry laboratories as a result of handling toxic and inflammable materials.
- Issuing a monthly bulletin 'Jabir ibn Hayyan' which named after the great scientist (died in 815 A.D.) who had very significant contributions to chemistry and science during the golden Islamic era. This bulletin usually includes a section talks about safety.
- Holding a seminar titled 'smoking and its menace on society'. In this seminar, presenter

focused on showing the audience the adverse effects of smoking on society.

- In collaboration with the continuous education unit at Al-Nahrain University, the department hosted a workshop on safety practices for using gases in laboratories .
- A seminar on the globally harmonized system (GHS) for classifying and labelling chemicals which has been adopted by United Nations in 1992. This harmonized system allows researchers and chemists to understand new regulations for labelling and using the safety data sheet (SDS) in compliance with the GHS.
- A workshop on chemicals inventory system to help affiliates to follow up the remaining of any chemical present in their laboratory with ease.

Hosting a seminar to discuss the way forward to apply the Royal Society of Chemistry (RSC) standards for promoting chemistry graduates in terms of learning outcomes and enabling them to have knowledge and practical skills.

- A seminar was held on information security which aimed to keep information regarding chemicals and hazardous materials always secure and prevent any unauthorized people to have access to them. Also, there was active participation for one of our affiliates in a workshop held overseas.
- A well designed seminar for second year chemistry students to educate them the importance of taking safety precautions in an industrial domain.



Picture 1: Safety instructions and SOPs



Picture 2: Renovated research laboratories



Picture 3: New ventilation systems

The seminar encompassed a comprehensive overview of safety practices for using hazardous chemicals in Iraqi industrial amenities.

- Distributing safety instructions, standard operating procedures (SOP) and flyers in all chemistry laboratories within the department as depicted in picture 1.

2. Promoting postgraduate research laboratories

In order to maintain safety standards in our department, it was mandatory to renovate some of our postgraduate research laboratories to be in compliance with the international safety standards as shown in pictures 2. In this regard, new ventilation systems were installed especially in the chemicals store as shown in picture 3.

Furthermore, the department took into its consideration offering the personal protective equipment (PPE) to all undergraduate and postgraduate students in their laboratories as shown in pictures 4. So far, we have done our best to minimize the amount of hazardous materials that undergraduates need to deal with in the laboratory when they conduct their experiments. Instead, our qualified staffs have carefully designed experiments which need low risk chemicals. New dry powder fire extinguishers purchased to enhance the extinguishers in the department as shown in pictures 5.

3. Conducting a fire drill to allow students and affiliates how to extinguish fires using the fire extinguishers in case of fire accidents.

4. Attending conferences and publishing in peer reviewed journals

- A group of our professional affiliates participated by five high quality papers in the first international conferences of forensic sciences in Baghdad on the 27th and 28th of September 2016.
- Two staff members participated by two posters on the anniversary of the organization for the prohibition of chemical weapons which was held in Netherlands during the period from the 2nd to the 4th of May 2016.
- Three of our colleagues took part in the national coordination conferences for chemical and biological safety.
- Publishing high quality papers in peer reviewed journals in the field of safety [5-8].

The department has been teaching a comprehensive course of safety in laboratories for six years in a row. This course has been well suited to second year students, and our professional staff in the field of safety have paid a great attention to include full details when they prepared the curriculum for this course. It is worth mentioning that this course was approved by the CRDF[9-10].

Conclusion

It is clear through the procedures carried out by the Department of Chemistry within the various axes to strengthen the infrastructure of laboratories



Picture 4: Using PPE by students



Picture 5: Purchasing new dry powder extinguishers

and to promote the dissemination of the culture of safety through conferences, lectures and seminars supported by practical procedures and practices to increase the experience in the procedural processes of the Department's attention to the aspects of chemical safety and security, To improve the working environment in laboratories to ensure the

safety and safety of employees and the educational institution.

Acknowledgments

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