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**جمهورية العراق  
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كلية العلوم  
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# **Code of ethics in Chemical work**

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## **Introduction :**

Ethics consist the essential pillar of each career . Each career has ethics , pacts , rules and principals control the work and behavior should be committed and respected because they reflect the form of general ethics in the life of people .

Chemical work ethics can be divided to :

- 1-Ethics of the dealing with chemicals .
- 2-Ethics of the chemist in laboratory .
- 3-Ethics of the chemist in the plant .
- 4-Ethics of the chemist in the research work .

## **Firstly : Ethics of the dealing with the chemicals :**

The ethics of the dealing with the chemicals required some rules control the import and export of chemicals , the method of transportation and trading , the specification of storages and the procedures of chemical waste disposal .

### **a- Ethics of the chemist in the chemicals management :**

- 1-The dealing with the chemicals should be authorized to the qualified persons in that field or the persons who have experience in the dealing with chemicals .
- 2-Inspection the direction of the chemicals and trying to reduce the quantities of these directed compounds .
- 3-Follow up the using and consuming of the chemical compounds .
- 4- Inspection the environment of work and adoption all the necessary procedures which reduce the pollution .
- 5-Held training workshops for the workers in the field of chemicals .
- 6-Providing the amenities and the save work conditions .
- 7-Providing the workers with the necessary protection tools and the medical aid service .

8- Design a program of safety Occupational health .

**b:Ethics of the chemist in the definition of chemicals:**

The important ethics of the dealing with the chemicals are :

The name of the chemical compound , commercial name , the name the supplier company ,chemical and physical properties , degree of poisoning , the mechanism of the delivery of the chemical to the human body, the followed method of protection , method of chemical waste treatment and first aid in the case of injury .

**c:Ethics of the chemist in the transportation and circulation of the chemicals which include :**

1-All the bottles of chemicals should be resistance to breaking and cracking .

2-Ensure the safety of the tools used in the transportation of the chemicals .

3-Follow proper and save methods in the transportation of the chemicals .

**d: Ethics of the chemist in the chemical storage :**

We should consider the follow ethics when we store chemicals :

1-The chemicals that have ability to react with each other should be separated , and store in different places .

2-Place a warning and heuristic signs and the posters of safety instructions .

3-Using plastic wares for storage as much as possible because they are relatively safer .

4-Put the information tag on the chemical container .

5-Avoid the storage of huge quantities of chemicals in the place of work more than the actual need .

6- Store the pyrophoric compounds in area away from that assistance of ignition .

### **e: Ethics of the chemist in the waste disposal :**

Include the ethics of the chemist in the disposal of the waste resulting from some chemical operations .

1-Get rid of fumes resulting from some chemical operation via ventilation system provided with absorbers to avoid the escaping and the effect of these fumes on the human being , organisms and the environment .

2-Treatment of the chemical waste before disposal through Sewerage network .

3-Providing special containers to collect the liquid waste .

4-Specify a special place for the waste disposal and ensure the avoid of pedestrian reaching to that place .

### **Secondly : Ethics of the chemist in the laboratory :**

1-Warning the students with the risks of the chemical using .

2-Specify enough time to explain the precautions of safety and security .

3-Must be honest and precise in the assessment of students .

4- Teach and train the students the true technic in the laboratory .

5-Ensure the availability of the appliances and precautions of security and safety during the using of the apparatus and the chemicals and give an examples about some accidents of misusing of the chemicals .

6-Avoiding the experiments which produce gases and poisoning as much as possible .

7-Emphases and remind the students to clean the glass wares and the place of work .

8- Emphasis and remind the students to don't through the liquid and solid waste in the sewerage network , but put them in the specified container .

9-Reduce the measurements used in all experiments in laboratories .

10- Impose clear instructions concerning the chemicals which thrown in the sewerage network to reduce the quantity of Hazardous waste in the laboratory .

### **Thirdly : Ethics of the chemist in the plant :**

The important ethic pact that should followed by the chemist when he prepare the chemicals is to take in account the principals of green chemistry , green chemistry deals with the design an operations produce chemical products with less effect on environment . Green chemistry is the link between the chemistry and chemical production and the effect of the chemicals and their production methods on human being and environment .

The essential and principals of green chemistry consist the important ethics that should followed by the chemist when he prepare any industrial product :

- 1-Avoiding waste formation better than its treatment .
- 2-All the starting materials used in the chemical preparation should be consumed completely .
- 3-All chemical preparations should be nontoxic as much as possible .
- 4-Reduce the quantity of the solvent or any catalytic materials as much as possible .
- 5- Reduce the quantity of the energy using in the chemical preparations .
- 6- Avoiding the side products as much as possible .
- 7- The design of any chemical product must take into account the issue of that compound must be biodegradable .
- 8- The type and shape of any chemical product must take into account the conditions that ensure avoiding the probability of disasters happening .
- 9- Reduce the quantities of the consumed toxic materials .

10-Using small plastic wares and little quantities of chemicals which lead to low cost and reducing the quantity of resulted waste in comparison with the traditional plants .

11- The preparation experiment should be done in less time as much as possible .

#### **Fourthly : The ethics of the chemist in the researches :**

1- Direct the researches to the direction that serve the knowledge and bring the prosperity to mankind as an ethic commitment .

2- The chemist must has scientific honest in the conduction of the researches.

3-All the researchers must have real role when they conduct any paper .

4- Write all the references in a precise and honestly way .

5-The chemist must has the precision and honesty in all data filed and their analysis with the keeping of their security .

6-Guidance savior in the selection of the research subject .

7-Providing the sufficient scientific help for the postgraduate students and develop their scientific research ethics .

8-Ensure the students acquisition for thinking ability and drafting researches plans and implement them in efficient way .

9- Precision and neutrality in the assessment of the results and scientific researches .

10- Respect the student opinion during the research in the scientific discussion sessions of thesis or researches .

11- Direct the thanks to all people whom have any help in the implementation of the thesis or the research .

#### **Appendix :**

The forms of evaluation of the chemist as ( administrative , responsible of laboratory , a worker in a plant , in charge of a chemical storage ) .



**The form ( 1 ) : The evaluation of the chemist when he deals with the chemicals**

**The first section : Chemicals management**

No	Item	Agree	Agree to some extent	Don't agree
1	Dose the chemist direct the dealing with the chemicals to the qualified or experinced persons .			
2	Dose the chemist pursue the operation of recivieving and cnosuming of the chemicals .			
3	Does the chemist inspect the environment of the work and ensure all the necessary processing which reduce the polution .			
4	Dose the chemist inspect the direction of the chemicals and trying to reduce their quantities as much as possible .			
5	Dose he give traning workshop to the worker in the field of chemicals .			
6	Dose he provide the amneties and save work conditions .			
7	Dose he provide the workers with the personla protection tools and the medical aid and service .			

**The second section : The ethics of the chemical identification .**

No	Item	Agree	Agree to some extent	Don't agree
1	Dose the chemist put identification tag for each compound			
2	Dose the identification tag contain the name and the information of the compound .			
3	Does the identification tag contain the commercial name and the name of the producing company .			
4	Dose the identification tag contain the physical and chemical properties of the chemical .			
5	Dose the identification tag contain the degree of toxicity and the mechanism of the delivery of the chemical to huamn body and the way of protection that should take into account .			

### **The third section : The chemist ethics in the chemical storage .**

No	Item	Agree	Agree to some extent	Don't agree
1	Dose the chemist consider the separation between the chemicals that have ability to react with each other .			
2	Dose the chemist put guidance and warning signs and the posters of safety instructions .			
3	Does the chemist use the plastic wares as much as possible.			
4	Dose the chemist put the infromation tags on the chmical containers .			
5	Dose he store the chemicals in inproper way .			
6	Dose he separate the pyrophoric materials from that help ingnition .			
7	Dose he precise in the calculations of stored and directed chemicals .			

**The fourth section : The chemist ethics in the disposal of chemical waste .**

No	Item	Agree	Agree to some extent	Don't agree
1	Dose the chemist treat the chemical waste before disposal .			
2	Dose the chemist put a special containers to collect liquid waste .			
3	Dose the chemist bury the soild waste .			
4	Dose he run the ventelation system with absorbers to expel gases.			
5	Dose he specify a far place for waste disposal to ensure the impossibility of access of pedestrian to that place to avoid risks .			

**Notes:**

[illegible]





**The form ( 2 ) : The evaluation of the chemist as a researcher .**

No	Item	Agree	Agree to some extent	Don't agree
1	Dose the chemist direct his reserches to serve the society and the knowledge .			
2	Dose the chemist have t he scientific honesty in the implementation of his research .			
3	Does the chemist have the honesty and precision in the collection of the laboratory data and their analysis .			
4	Dose the chemist offer the scientifc help for postgraduate students .			
5	Dose he develop the scientific research ethics among students .			
6	Dose he help the postgraduate students in the acquisition of thinking skills and the design of researche plans and implement them in efficiency .			
7	Dose he have the precision and neutrality i the evaluation of the scientific research results .			
8	Dose he respect the student opinion during research an in the discussion sessions .			
9	Does the chemist direct thanks to any one whom provide help in the implentation of the research or thesis .			
10	Dose he economize in the consumption of the chemicals during research period .			
11	Dose he was honest in the presentation of scientific references and the way of citation .			

**Notes:**

[illegible]

**The form ( 3 ) : The evaluation of the chemist as a responsible of laboratory .**

No	Item	Agree	Agree to some extent	Don't agree
1	Dose the chemist ( rsponsible of lab ) notify the students about the risks of the chemicals .			
2	Dose the chemist specify enough time to explain the precautions of security and safety for each experiment .			
3	Does the chemist avoid as much as possible the experiment that produce a toxic materials .			
4	Dose the chemist pursue the cleaning of glass wares in the lab .			
5	Dose he emphasis on the avoiding of waste pouring in sewerage network .			
6	Dose he reduce the quantity of the chemicals used in the experiments .			
7	Dose he present describtion explantion for each material in the lab .			
8	Dose he provide you with lab technic which helps you implement the experiment in easy way .			
9	Does your evaluation in practical part was fair .			

**Notes:**

[illegible]

**The form ( 4 ) : The evaluation of the chemist ethics in the plant .**

**Notes:**

[illegible]