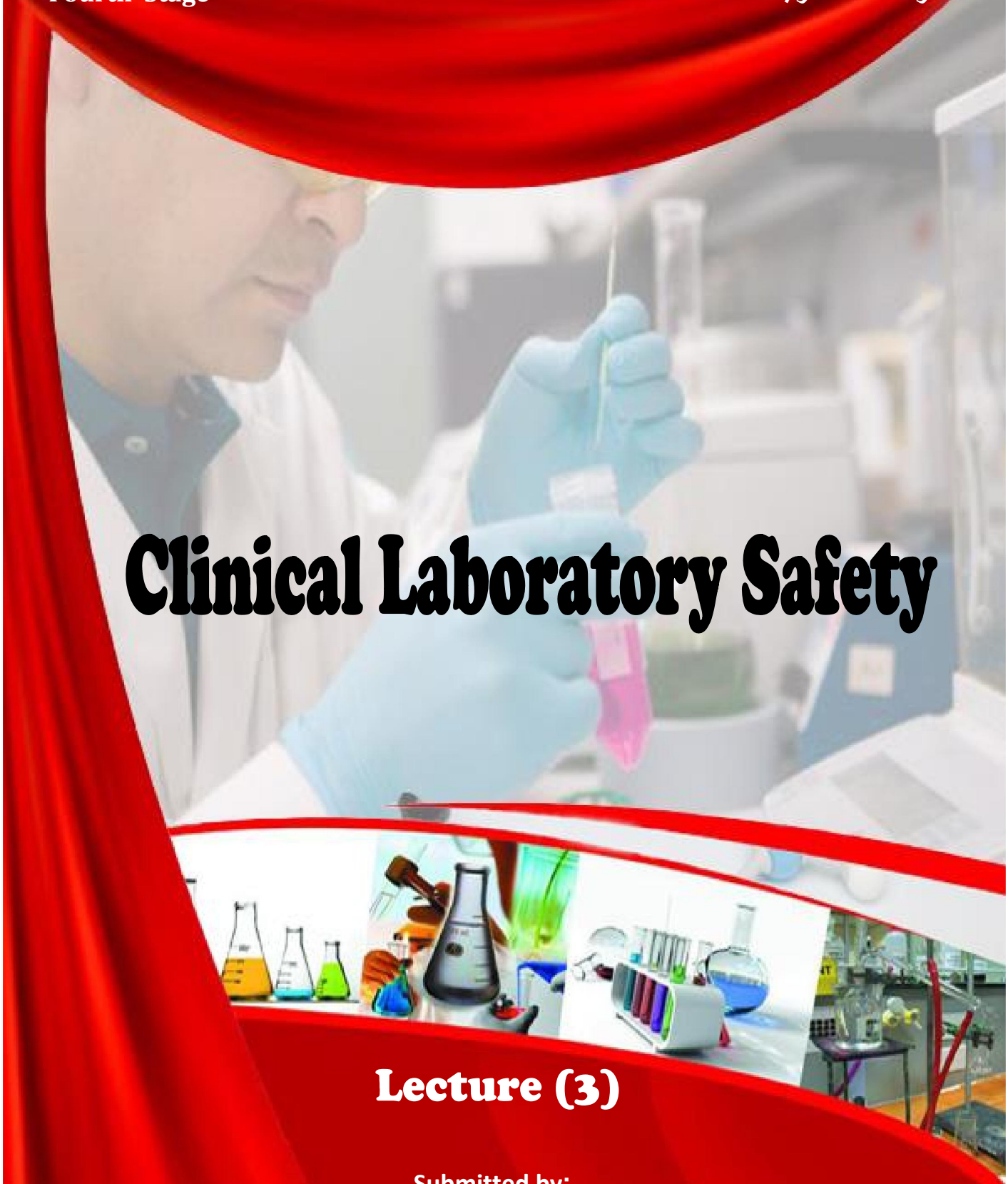
Al-Rasheed University College
Medical Analysis Department
Clinical Chemistry Lab.
Fourth Stage

كليـــــة الرشيد الجامعـــــة
قســـــم التحليلات المرضيــة
مختبر الكيميـــاء السريريـــة
المرحلـــــة الرابعـــــة



# Clinical Laboratory Safety

## Lecture (3)

Submitted by:
*Ahmed Abdul Sattar*
Assistant Lecturer

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# Clinical Laboratory Safety

Faulty technique is one of the chief causes of accidents and, because it involves the human element, is one of the most difficult to cope with. The purpose of this discussion is to help the student understand proper laboratory safety, to increase his awareness of the possible risks or hazards involved with laboratory work and to realize the laboratory is generally a safe place to work if safety guidelines are properly followed.

## 1- Standard Operating Procedures

### ➲ A. General Personal Safety

1. Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in areas where specimens are handled.
2. Food and drink are not stored in refrigerators, freezers, cabinets, or on shelves, countertops, or bench tops where blood or other potentially infectious materials are stored or in other areas of possible contamination.
3. Long hair, ties, scarves and earrings should be secured.
4. Keep pens and pencils OUT OF YOUR MOUTH!!.
5. Appropriate Personal Protective Equipment (PPE) will be used where indicated:

**Lab coats** or disposable aprons should be worn in the lab to protect you and your clothing from contamination. Lab coats should not be worn outside the laboratory.

**Lab footwear** should consist of normal closed shoes to protect all areas of the foot from possible puncture from sharp objects and/or broken glass and from contamination from corrosive reagents and/or infectious materials.

**Gloves** should be worn for handling blood and body fluid specimens, touching the mucous membranes or non-intact skin of patients, touching items or surfaces soiled with blood or body fluid, and for performing

venipunctures and other vascular access procedures. Cuts and abrasions should be kept bandaged in addition to wearing gloves when handling biohazardous materials.

**Protective eyewear** and/or masks may need to be worn when contact with hazardous aerosols, caustic chemicals and/or reagents is anticipated.

6. **Never Mouth Pipette!!** Mechanical pipetting devices must be used for pipetting all liquids.
7. Frequent hand washing is an important safety precaution, which should be practiced after contact with patients and laboratory specimens.
   Proper hand washing techniques include soap, running water and 10-15 seconds of friction or scrubbing action. Hands should be dried and the paper towel used to turn the faucets off.
8. Laboratory work surfaces must be disinfected daily and after a spill of blood or body fluid with a 1:10 dilution of Clorox in water.
9. Electrical safety.
10. Eye Safety when working with (certain caustic reagents, blood or other body fluid, reagents under pressure, close proximity to ultra-violet radiation (light).
11. Wearing contact lenses in the laboratory is discouraged and requires extra precaution if worn.

## ➲ B. Safe Handling of Biologically Hazardous Material

1. **You should all patient samples as potentially biohazardous material**. This means **Universal Precautions** should be followed at all times!!
2. **When working in the laboratory:**
   a. Wear protective closing (lab coat, gloves. If you have a cut/abrasion, also wear a band-aid.
   b. Avoid spillage and aerosol formation.
   c. Hands should be washed immediately and thoroughly if contaminated with blood or other body fluids.

d. All biohazardous material should be discarded in a biohazard bag to be autoclaved.

e. All counter and table tops should be disinfected with a proper disinfecting solution:

1) At the beginning of the day.

2) If you should spill a patient sample.

3) At the end of the day.

**3. When performing venipuncture:**

**a.** Wear clean gloves for each patient you draw.

**b.** Wash your hands whenever you change gloves.

**c.** Dispose of contaminated needle, syringe and test tubes in a proper biohazardous receptacle.

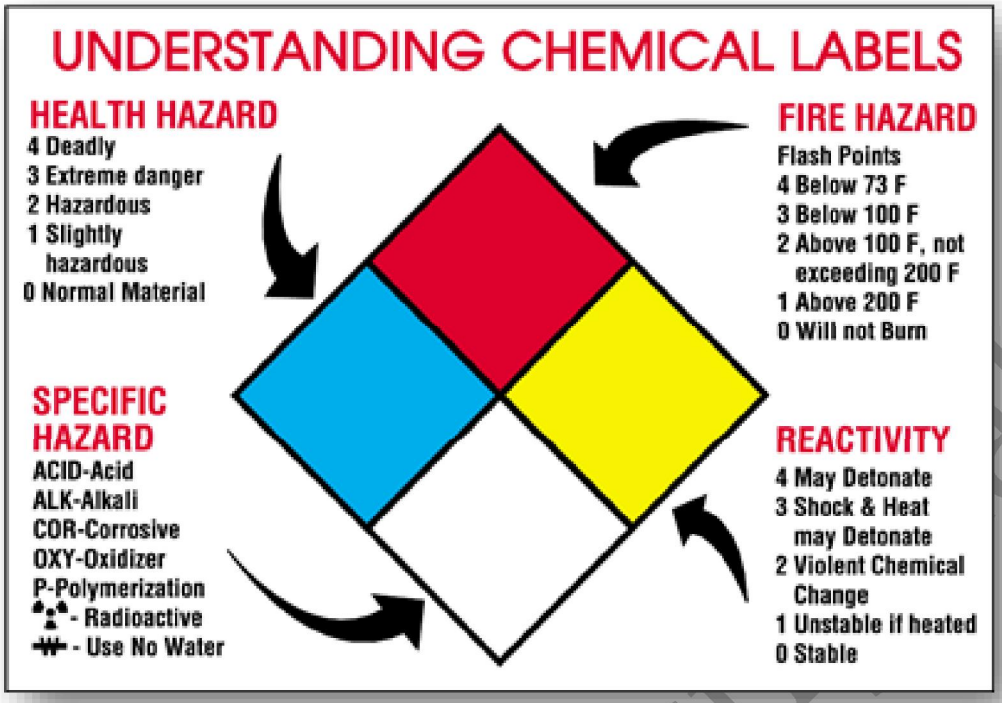
**d.** When drawing blood from a patient in an isolation room.

**1.** All material taken into this room must remain in the room.

**2.** Label all tubes drawn from this patient with isolation stickers.

## ➲ C. Safe Handling of Chemical and Gas Hazardous Material

To provide a safe working environment, all personnel should be aware of potentially hazardous materials and the proper way of handling this material. Avoid unnecessary exposure to chemicals. Occupational Safety and Health Administration (OSHA) requires any necessary information in the form of MATERIAL SAFETY DATA SHEETS (MSDS) concerning the handling of hazardous materials to be available to all laboratory personnel, so that they may achieve and maintain safe working conditions.




## 1. Physicochemical Hazard

| Abbreviation | Hazard | Description of hazard |
|---|---|---|
| **E** | **Explosive** | Chemicals that explode |

| Abbreviation | Hazard | Description of hazard |
|---|---|---|
| **O** | **Oxidizing** | Chemicals that react exo-thermically with other chemicals. |

| Abbreviation | Hazard | Description of hazard |
|---|---|---|
| **F** | **Flammable Material** | Chemicals that have an extremely low flash point and boiling point, and gases that catch fire in contact with |

## 2. Health Hazard

| Abbreviation | Hazard | Description of hazard |
|---|---|---|
| T | **Toxic Material Category (1, 2)** | Chemicals that at low levels cause damage to health (Carcinogens Category, Mutagens Category, Reproductive toxins Category,…, etc) |

| Abbreviation | Hazard | Description of hazard |
|---|---|---|
| T | **Toxic Material Category (3)** | Chemicals that at low levels cause damage to health (less than first and second category) |

| Abbreviation | Hazard | Description of hazard |
|---|---|---|
| C | **Corrosive** | Chemicals that may destroy living tissue on contact. |

## 3. Environmental

| Abbreviation | Hazard | Description of hazard |
|---|---|---|
| N | **Dangerous for the environment** | Chemicals that may present an immediate or delayed danger to one or more components of the environment. |

## ➲ D. In Case of Accidents

### A. Accidental Needle Stick

1. Bleed wound.
2. Wash wound thoroughly with soap.
3. Notify the supervisor of the incident and report to Student Health with an incident report form.
4. May need to get blood tested for hepatitis.

### B. If you should wound yourself in the laboratory:

1. Any type of accident should be brought to the attention of the Teaching Supervisor of the area.