



# Lab 2 : Sterilization (Techniques & Tools)



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# Sterilization:

## Definition:

It is the process which makes things free of microbes .



# Things that can be sterilized:

## A- Glassware:

Pipettes



2018

Petri dishes



Beakers



Flasks



Tubes





# Things that can be sterilized:

## A- Glassware:

### 1- Petri dish

A petri dish is a flat dish with a cover made of plastic (disposable) or glass (autoclavable) and used to grow microorganisms.



# Things that can be sterilized :

## B- other tools:

Needles



Apparatus



Media



Clothes



# The Three basic sterilization principles:

1

Heat



2018

2

Chemical



Amal - Shoroug

3

Radiation



6



# 1- Heat sterilization

- There are 3 procedures depending on the tolerance of the material to be sterilized:

**1- Incineration  
(Direct heat).**

**2-Dry heat sterilization  
(hot air oven).**

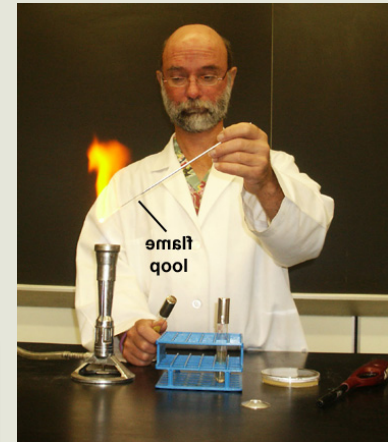
**3- Steam or wet sterilization  
(Autoclaving).**

- Advantages: It is the simplest, most effective and inexpensive method.

# 1- Incineration (Direct Heat):

Bunsen burner produces gas flame which used for heating, sterilization (inoculating loop and needled) .

e.g. Bunsen burners , flames.







## 2-Dry Heat Sterilization (Hot Air Oven) :

This kind of dry heat sterilization is recommended when it is undesirable that steam make contact with the material to be sterilized.

This is true for glassware's – glass petri plates, Pipettes as well as for substances like oil, powder, etc.

**Before sterilization, wrap the tools with aluminum foil to avoid recontamination.**





### 3- Steam /wet sterilization (**Autoclaving**) :

- **It includes autoclaves.**
  - **Used to sterilize culture media, glassware etc.**
  - **Usually it operates at 15 lb./sq. inch steam pressure at 121.5°C for 15 min.**
- **Advantages: it can reach temperatures higher than boiling water alone, so it can kill not only bacteria but also bacterial spores, which tend to be resistant.**



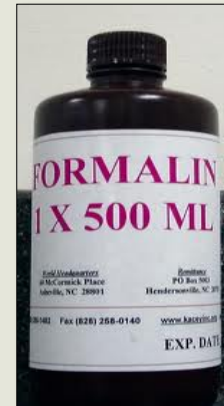
## 2- Chemical sterilization

50% Dettol



Benches /tables

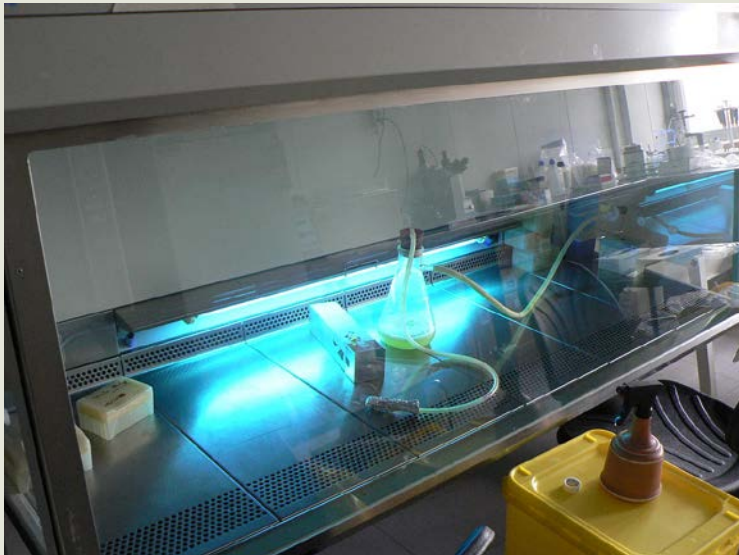
Ethylene oxide  
and formalin



For sterilizing  
disposable  
materials  
(that can not  
tolerate high  
temperatures)

## 3-Radiation sterilization

- **Gamma rays, U.V Rays.**
  - **X ray is used for sterilization of medical devices in hospital operation rooms.**



# Other sterilization techniques:

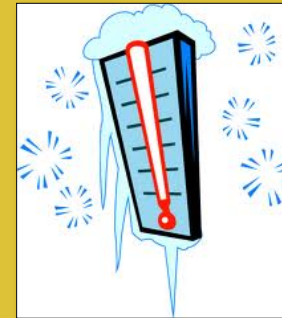
## Filtration



## Boiling



## Cold Temperature



# Thanks for listening



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