



# General Microbiology

## 140 MIC

### Lab 1 : **Sterilization**



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# Sterilization:

It is the process which makes things free of microbes .



# Things that can be sterilized:

Pipettes



Petri dishes



Beakers



Flasks



Tubes



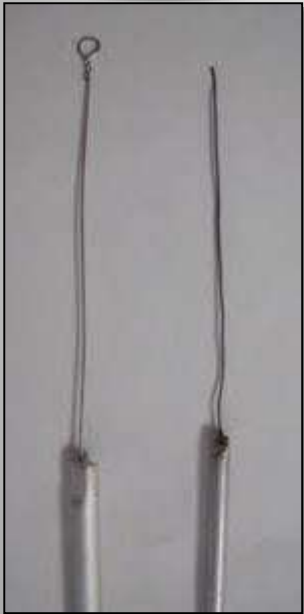
# Petri dish

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



# Things that can be sterilized:

Needles



Apparatus



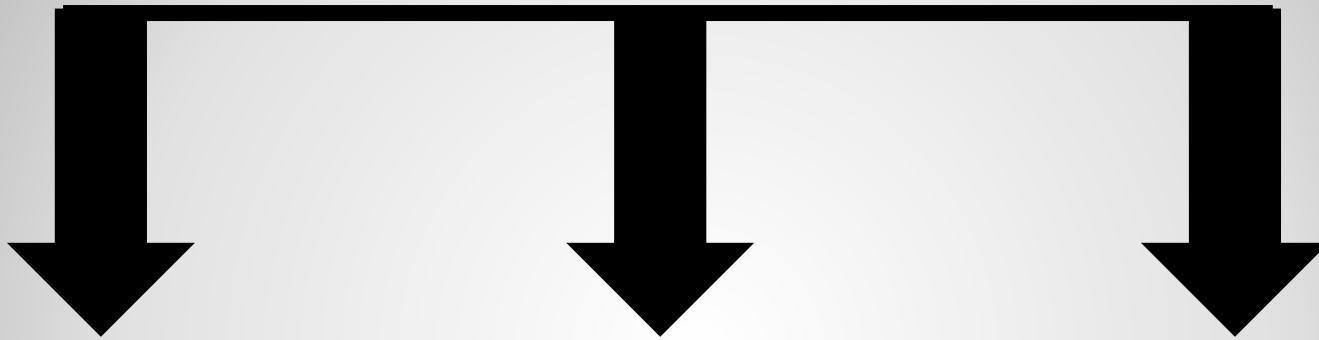
Media



Clothes



# There are **3** basic sterilization principles:



**1- Heat  
sterilization**



**2- Chemical  
sterilization**



**3-Radiation  
sterilization**



# 1- Heat sterilization

- There are 3 procedures depending on the tolerance of the material used:

**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.

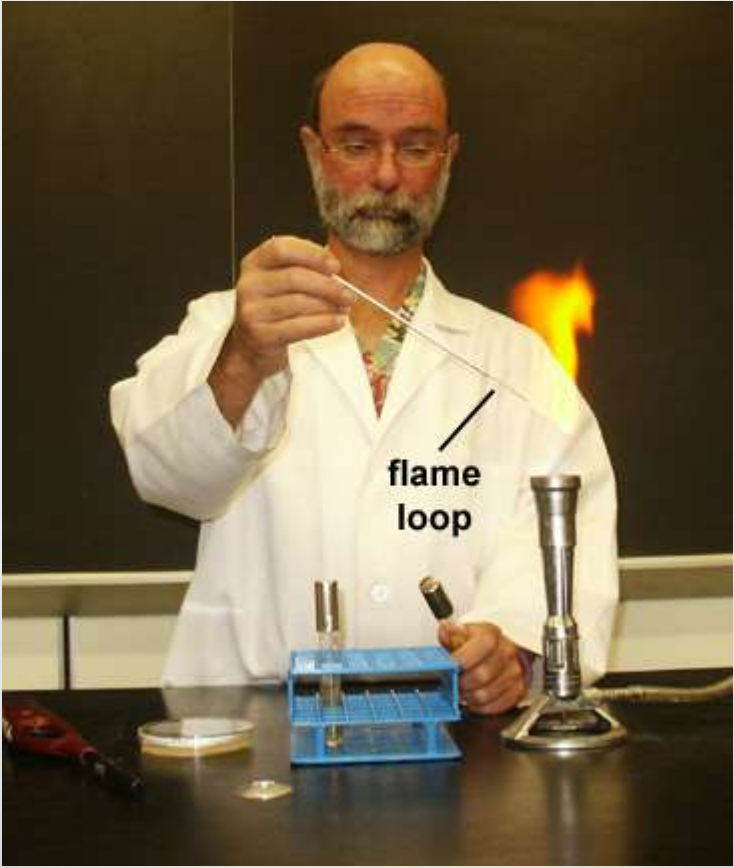
# 1- Incineration (Direct heat):

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



**Bunsen burners , flames**





flame  
loop

## 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.

After sterilization wrap them in aluminum foil to avoid recontamination.

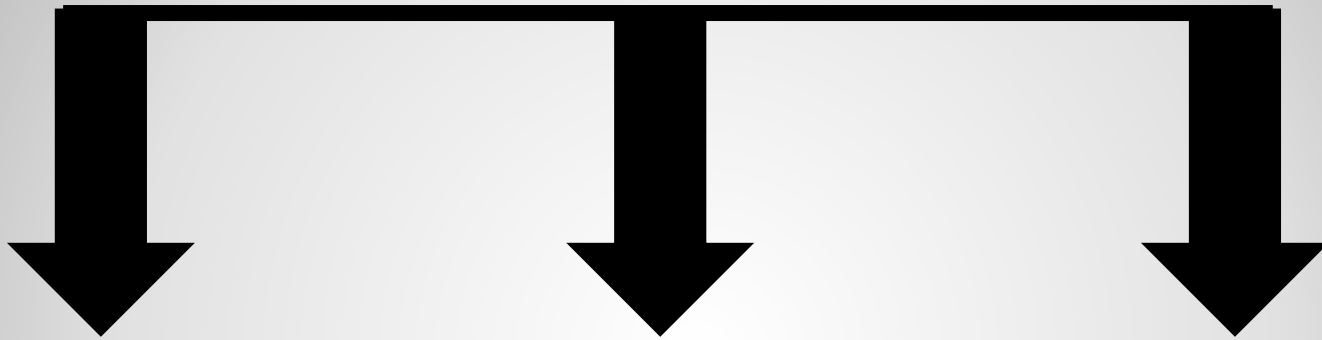


### 3- Steam sterilization (Autoclaving) or wet :

- 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.
- The advantage of using an autoclave is that 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.



# There are **3** different sterilization principles:



**1- Heat  
sterilization**



**2- Chemical  
sterilization**



**3-Radiation  
sterilization**



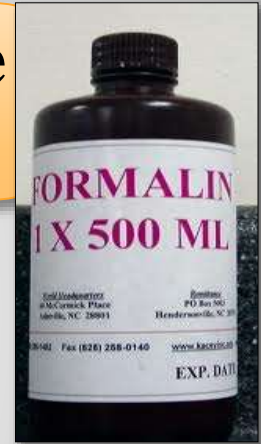
## 2- Chemical sterilization

50% Dettol



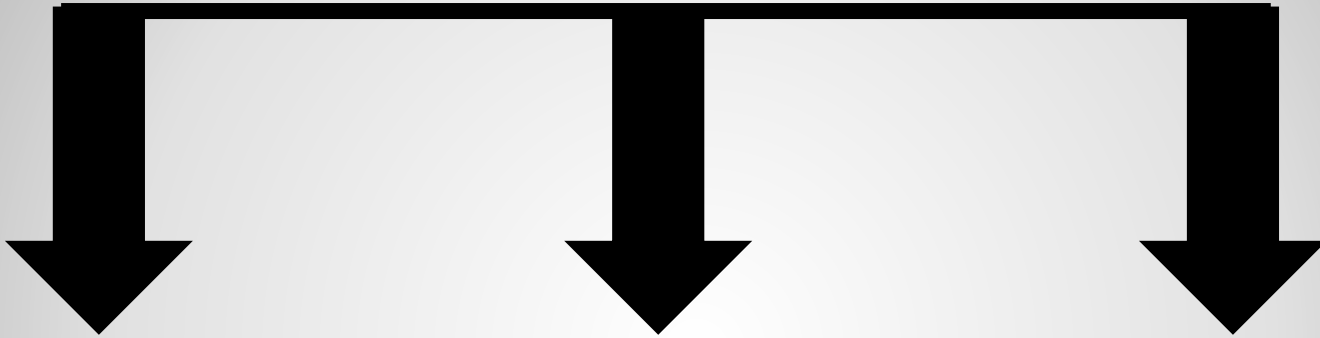
**Benches /tables**

Ethylene oxide  
and formalin



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

There are **3** different sterilization principles:



**1- Heat  
sterilization**



**2- Chemical  
sterilization**



**3-Radiation  
sterilization**

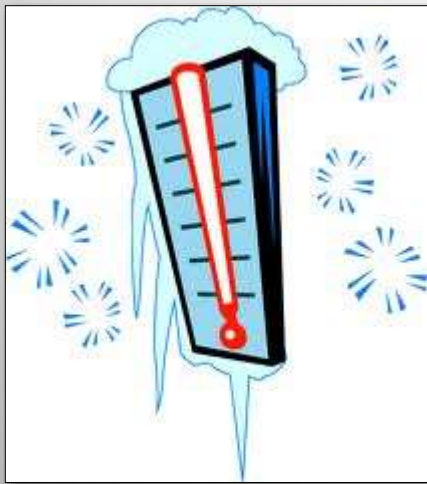


## **3-Radiation sterilization**

- **Gamma rays,U.V Rays.**

# Other sterilization techniques:

- Filtration
- Boiling
- Cold temperature





# Thanks...



Shroog Al-Shahrani