
feeling
خلي الـ
على جنب
وركز على
الـ Goals

في اشياء بالصناعات الصيدلانيه بدي اعمللها sterilizationواكن ممكن ما تتحمل الحراره لذلك بلجأ الي طرق اخرى و منها radiation

Radiation Sterilization

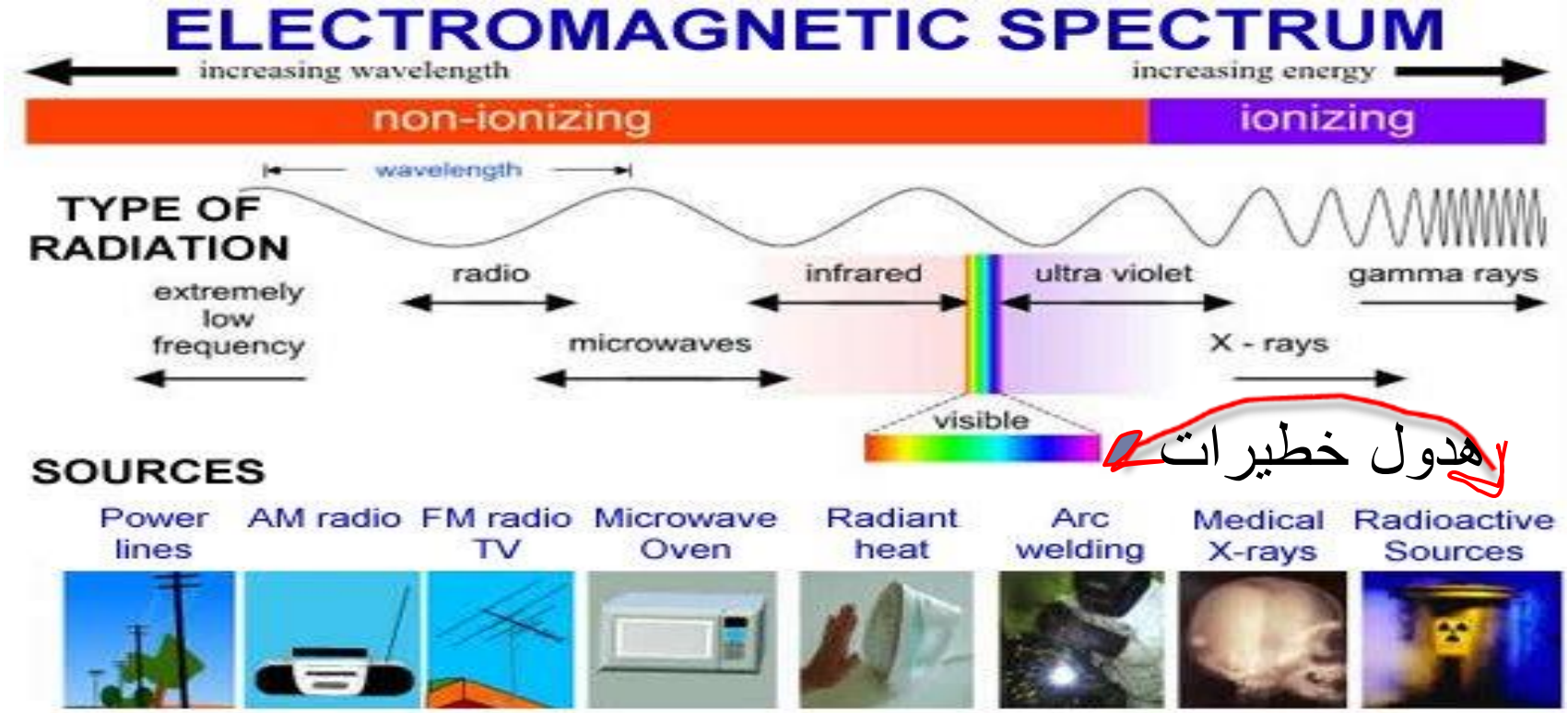
هسا هاي بستخدمها لتعقيم كل اشي طبعا لاااااا

- Gamma-rays or high-energy electrons are used to sterilize heat-sensitive materials and products:
- like medical devices (for example, prostheses, intravenous giving sets, syringes and sutures)→ in the case of medical devices, damage to plastics in terms of discoloration and brittleness is a potential problem.
- هشاشه
- surgical instruments, (اذا جابت سؤال انو هدول كيف بعمللهم تعقيم وكان مثال عليهم الستانلس ستيل بحط انو كل الطرق تزبط ولكن prefer outoclave)
- anhydrous medicines (such as ointments) and powders

هاد يذكرنا ماده الله يستر عليها

Radiation Sterilization

بدها موافقه امنيه Gamma



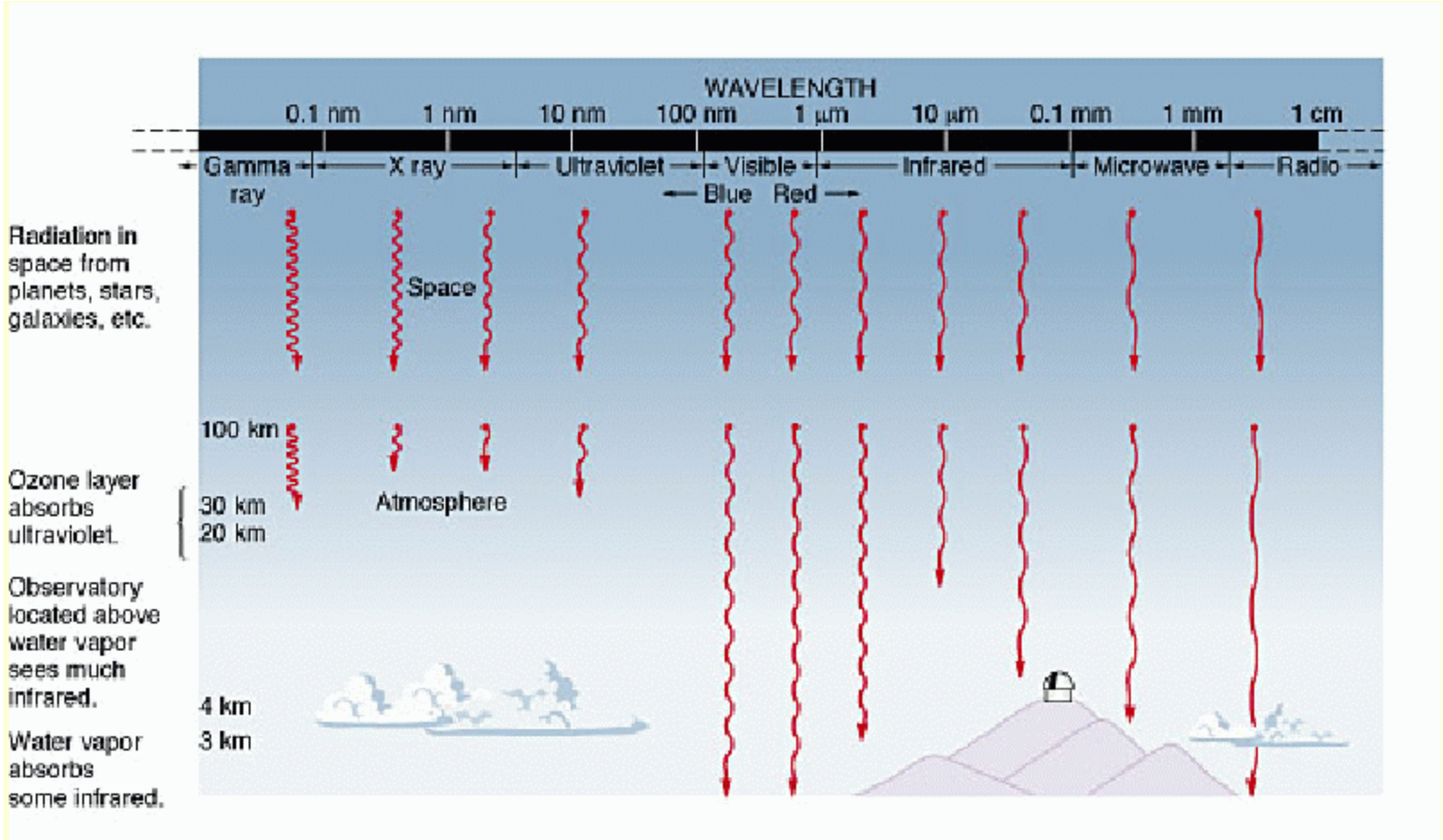
هدول خطيرات

طول موجي اعلى اقل طاقه والعكس صحيح

هون كمان مش كل Uvاستخدم بس اخره واسمهUVc

بسم الله نعمل سكيب عن هاي

Radiation Sterilization

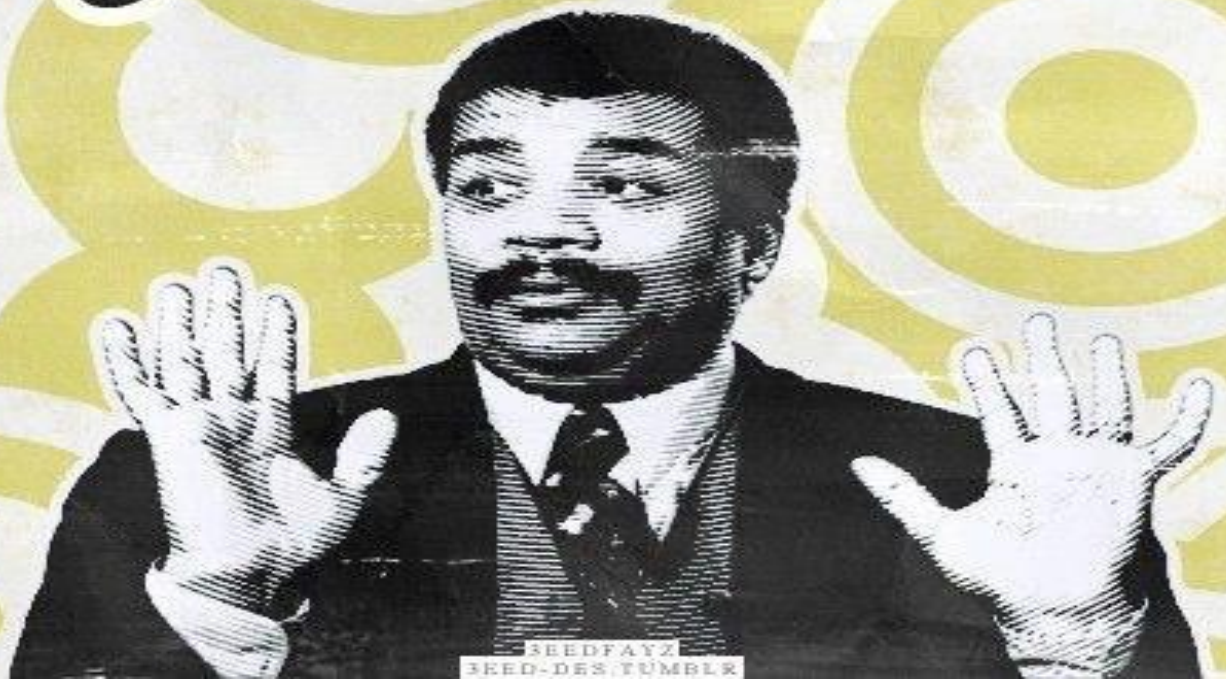


Radiation Sterilization

- The unit for absorbed radiation dose is the gray (Gy) which has replaced the older unit of the rad.
- The standard radiation dose recommended for sterilization of pharmaceutical products is 25 kGy

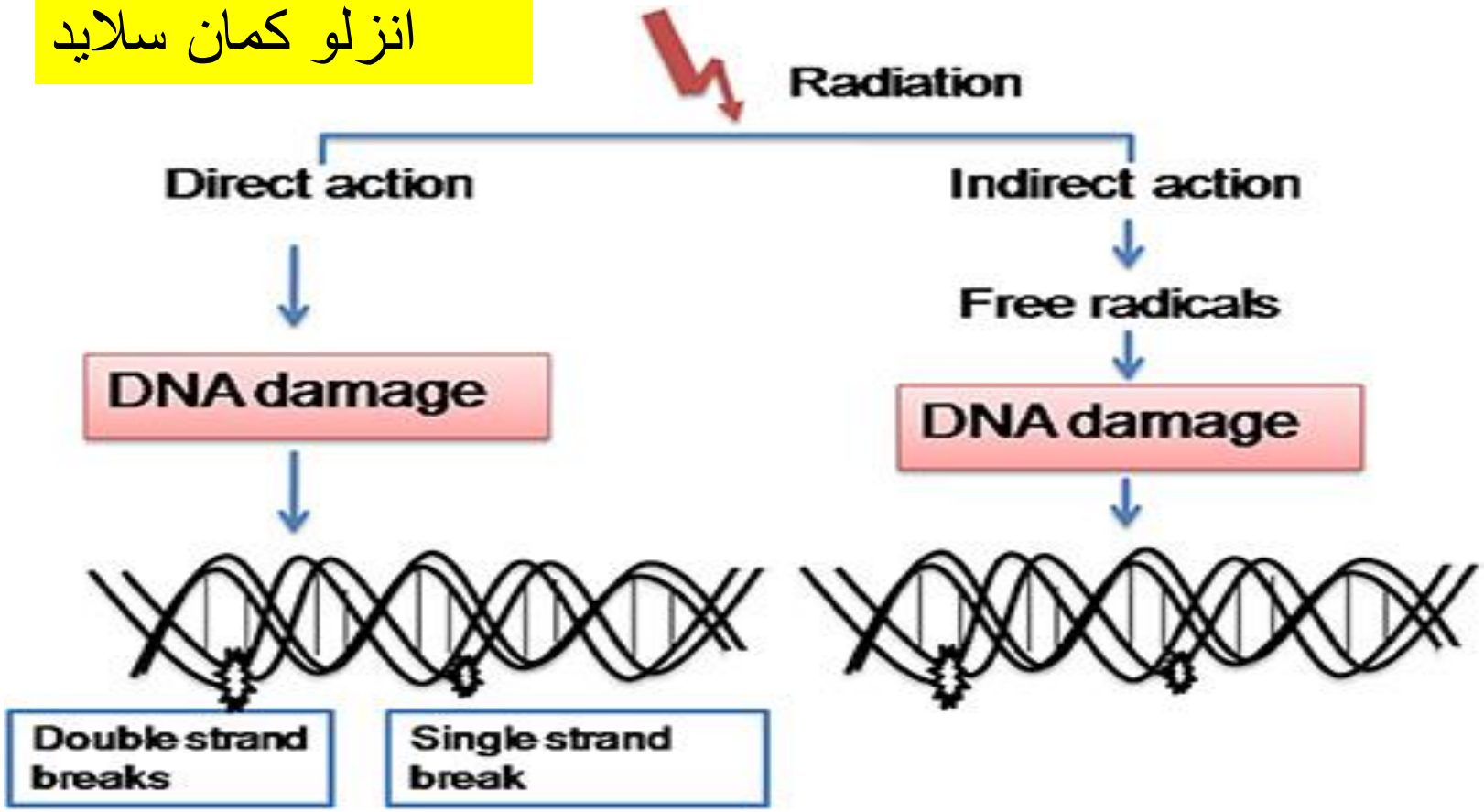
الي عليه هايلايت حكت عنو الدكتوره يكفي نعرف هاد بس

لہ لہ لہ کدا تو متش



The mechanism by which radiation kills cells is that of ionization causing free radical production and damage to the DNA

انزلو كمان سلايد



مراجه صغيره كيف كل طريقه تعمل sterilization

- Outoclave
  - عن طريق coagulation of protein
- Dry heat
  - عن طريق oxidation
- Radiation
  - في طريقتين وحده direct انو يعمل تدمير ل DNA لاي خليه
  - ولما يجي على اجزاء الخليه المختلفه رح يعمل (indirect(free radical وهاي عندها نقص بالاكترونات الغلاف الاخير وتصير تحاول توخذ هاد الالكترون من اي مكان وهيك خربت صح

Radiation Sterilization

- Radiation sterilization facilities are expensive to construct and to operate, so companies manufacturing products to be sterilized in this way normally send them to one of a small number of specialist contractors.

طبعا هاي من اغلى الطرق بسسبب **تكلفه** صناعتها **بدها** مكان مخصص وادوات والخ...

والوحيدين الي عندهم هم هيئه الطاقه الذريه

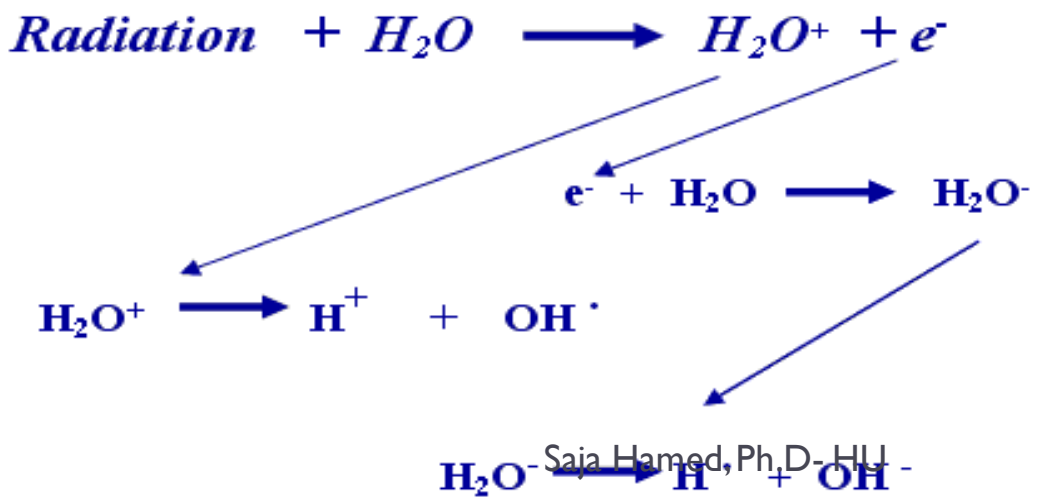
Radiation Sterilization

هسا هاي الغاما ما تزبط لاي اشي فيه ماء

- Gamma radiation is rarely used for water-containing products, why?

هاي مش تسبب تحلل للماء ولكن تكونfree radical

because the products of radiolysis of water usually cause too much damage to the drug



في بعض الاماكن كيف تكون معقهمه يكونو مشغلين UVطول اليل

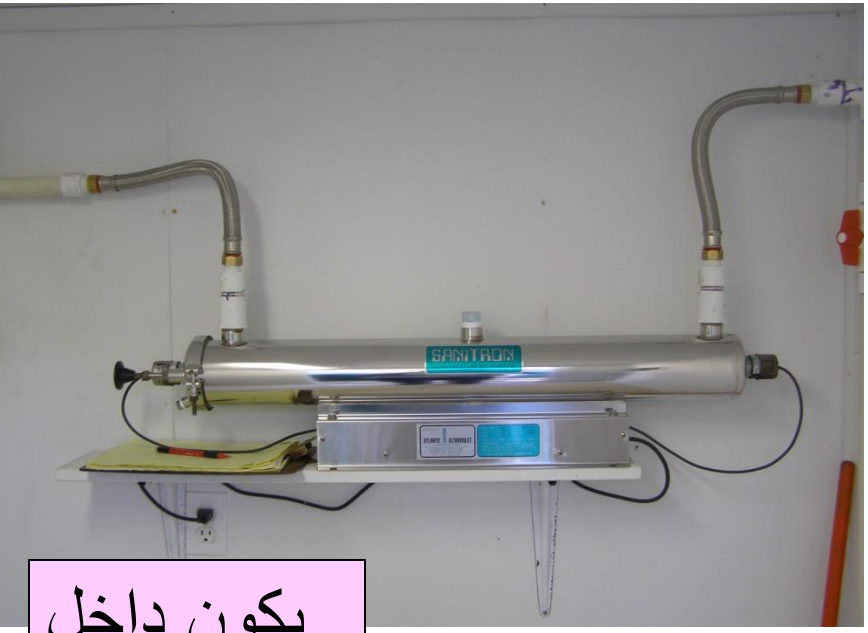
Radiation Sterilization

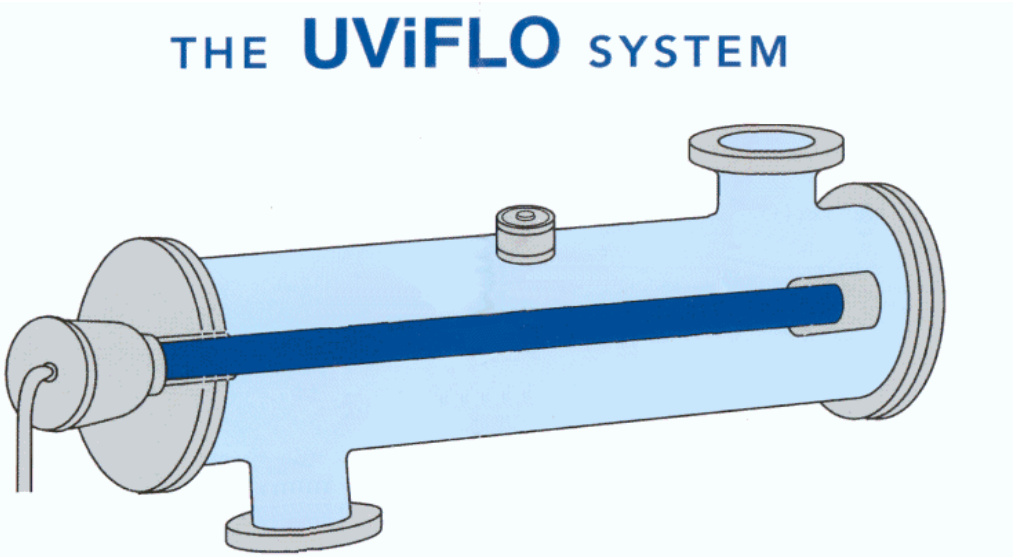
يفيد بس لsurfaces

- Ultraviolet light is a nonionizing form of electromagnetic radiation that has poorer penetrating power.
- It is commonly used for the disinfection of surfaces in aseptic work areas, air (as in microbiological safety cabinets and operating theatres for example) and for decontamination of water to be used both as an ingredient of medicines and for cleaning purposes.

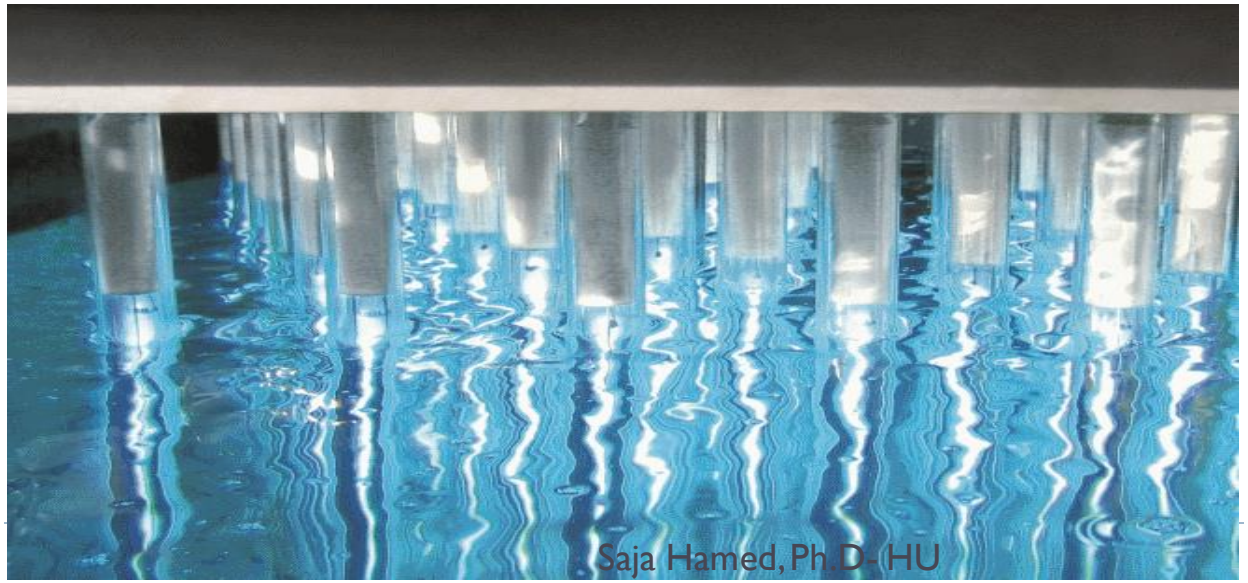
لحتى استخدم Uvlightما بستخدم حيالله UVlight

- UV treatment could not be used to produce
- endotoxin-free water for injection.

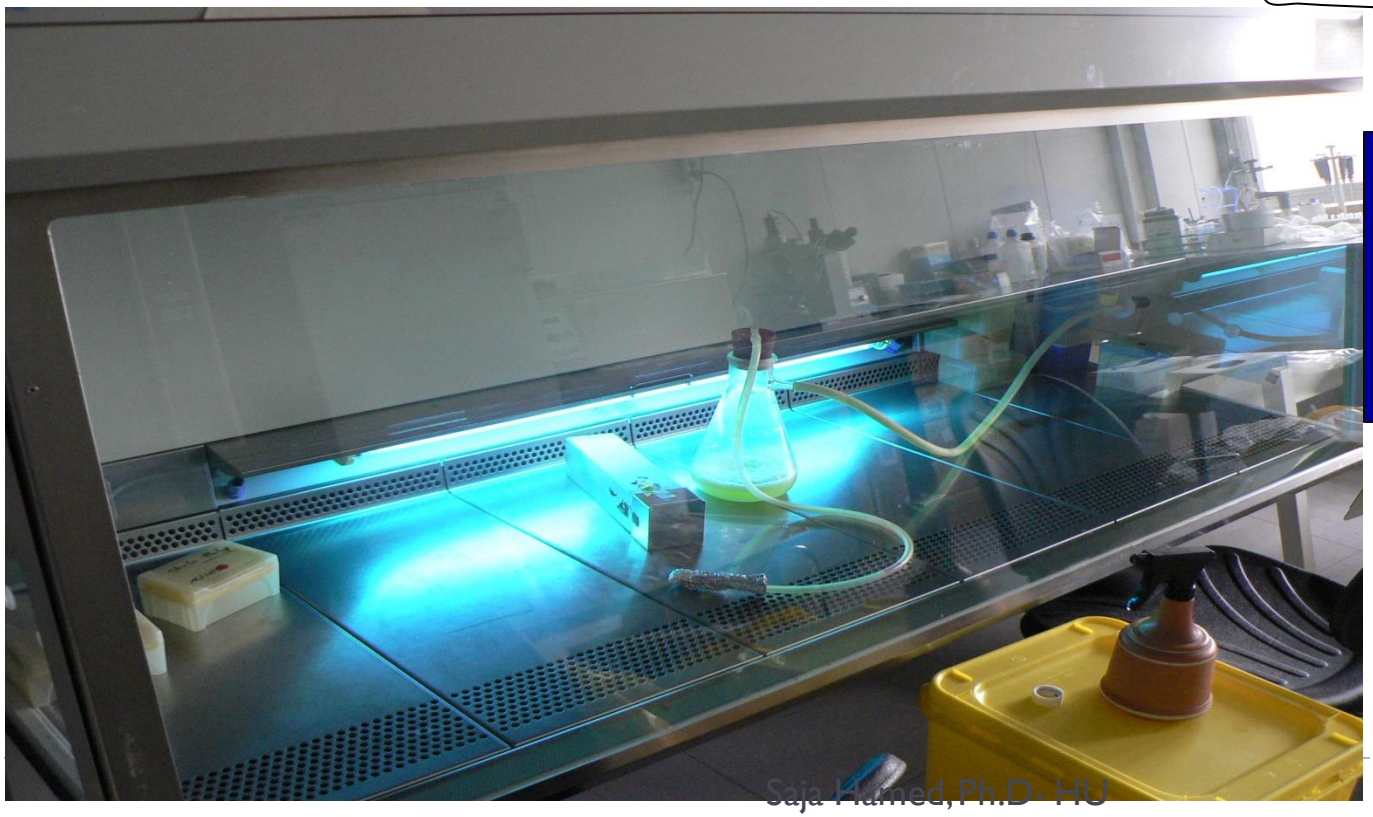




يكون داخل هاد انبوب يمر المي فيه وبنفس الوقت الوقت هاد الانبوب يتعرض ل UV



هاد اسمه biosafety cavity



يلا هانت
راح كثير
وضل شوي


كملو لاتسحبو
لأ معلش

Gaseous Sterilization

- Several microbiocidal gases have been used for sterilization including:
- ethylene oxide,
- formaldehyde,
- hydrogen peroxide(سائل ولكن ممكن اخليه غاز) وهاد استخدمه ب cold sterilance واسمهمdialysis machine)
- and peracetic acid

Ethylene oxide (sometimes referred to as EtOx) is by far the most common and will be the only one considered here

Gaseous Sterilization

- It is not a favored method because:

الاعتماد قليل عليها ليه تخيلو عندي غرفه صغيره ودخلت عليها غاز شو يضمن هون انو يوصل الغاز لكل اشي بالتركيز الصحيح

it is less reliable than heat and radiation → it needs rigorous in-process monitoring to confirm that sterilizing conditions have been achieved

- it is also slow توخذ فتره طويله جدا
- and there are several safety issues concerning its use, بدك تحمي المختر او المصنع ويمكن يطلع للخارج

So it is only employed when there is no alternative.

Gaseous Sterilization

- Ethylene oxide is suitable for sterilizing materials that are both heat and radiation sensitive: لتخلص منهم
  - so it is used primarily for disposable medical devices.
  - It is also infrequently used in hospitals for surgical instruments
  - and the sterilization of isolators and chambers, although hydrogen peroxide is now preferred.

sterilize medicine غرف مغلقه حتى اصنع داخلها ال

- Ethylene oxide diffuses easily into paper, rubber and many plastics, but it cannot easily penetrate into crystalline materials and its activity is significantly reduced by the presence of organic material (blood, pus or feces) so it cannot be used to sterilize crystalline raw materials or unwashed surgical instruments.

Gaseous Sterilization

- Hospital ethylene oxide sterilizers are similar to conventional autoclaves, being steel chambers of varying capacities from about 65 liters upwards, whilst industrial-scale sterilizers are very much larger

يدخل المركب بكرتونته النهائيه وبتركيز غاز ووقت معين وبعدين ما يطلع على طول للاستخدام في وقت safeحتى يروح تاثير الغاز

ولانه قابل للاشتعال ما بستخدمخ لحاله لازم مع مركب ثاني حتى اقلل من خطورته

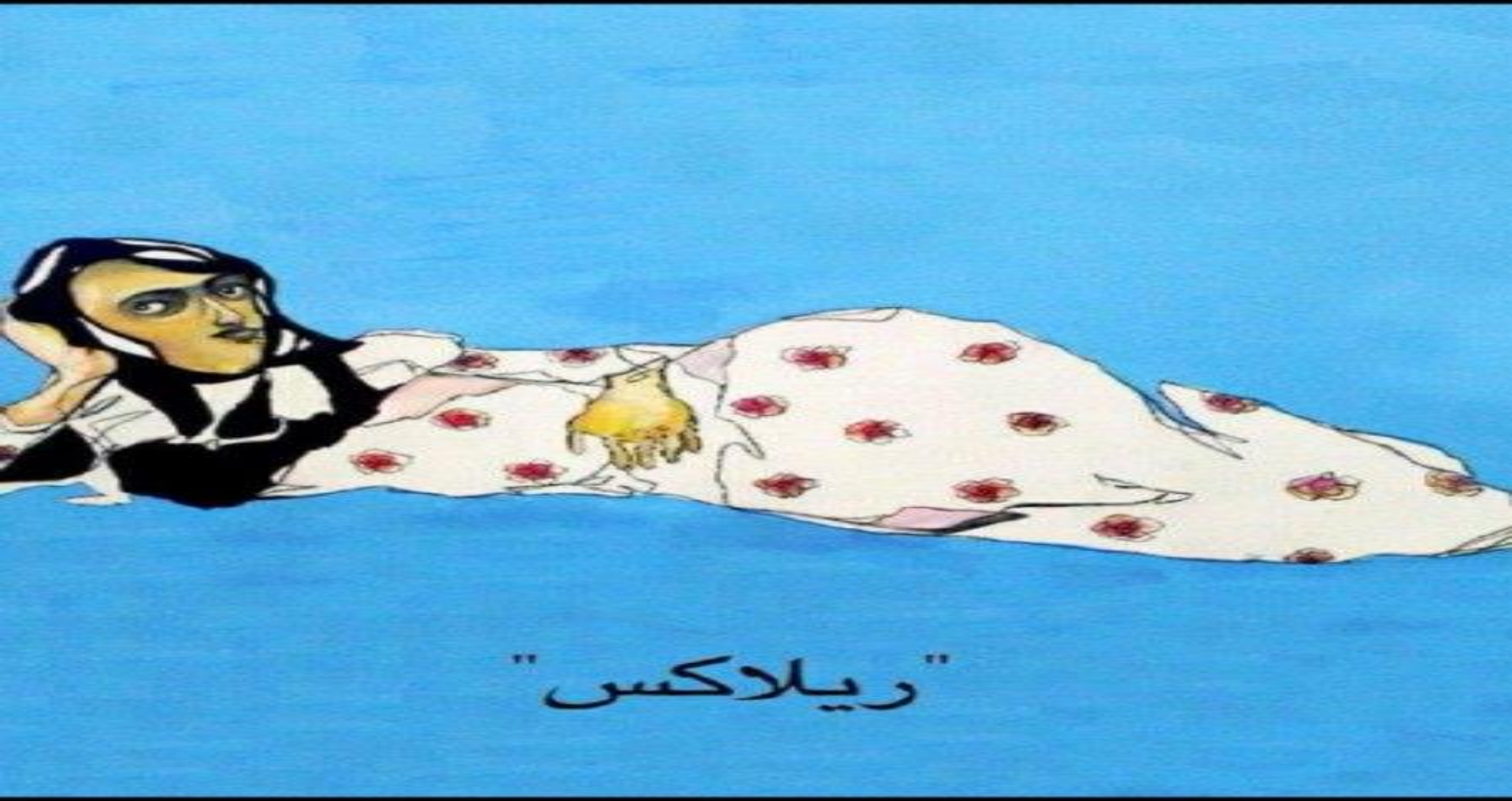
Gaseous Sterilization

- Ethylene oxide is a colorless gas that is explosive when mixed with air in proportions greater than 3.6% by volume,

قالت مش ضروري نعرف هاي التفاصل للامتحان مين بحط مع مين

- so it is normally used as a mixture with carbon dioxide (8.5–80% of ethylene oxide), nitrogen or dichlorodifluoromethane (12% ethylene oxide) to minimize the risk.
- Alternatively it is introduced into an evacuated sterilization chamber as the pure gas at subatmospheric pressure.

اذا استخدمته لحاله يكون يخضع لل.....sub atmos


"ريلاكس"

Gaseous Sterilization

يعني اذا بضيفه للبروتين رح يخربه

- Ethylene oxide is thought to kill microorganisms by alkylating essential proteins and nucleic acids in the cell
- this mechanism of action means that the gas is both mutagenic and carcinogenic.

وهاد يعني لما يوصل على جلدي رح يعمل سرطان او تخريب للDNA

- It also causes acute eye, skin and bronchial irritation at concentrations above 200 parts per million (ppm) but, crucially, many people are unable to detect it by smell until the concentration is about three times that value, or more.

اهون اذا كان التركيز اعلى من200 رح يعمل تهيجات وكمان الاغلب ما يقدرو يشمو ريحه الو اذا وصل 3 اضاف 200

- Health and safety aspects of ethylene oxide sterilization are therefore a major consideration.