

# Dates and Numbers

- **1993** : Creation
- **1999** : Gamma Irradiator
- **2002** : CNSTN became part of Sidi Thabet Technopark
- **2010** : Electron beam Accelerator
- **2011** : D-D Neutron Generator

## 2010

- **135** employee ( **24** researcher, **55** engineers/technicians)
  - **84** Students ( **24** PhDs, **15** Master)
  - **> 140** Scientific publications (2004-2010)
  - **9** specialized technical labs
- 
- Cooperation projects (**CEA**, **AAEA**, **AIEA**, ...)

# FIELDS OF ACTIVITY

- **Radiation Processing**
- **Radiation measurements**
- **Isotopic and elemental analysis**

**DREM**

- **Nuclear Safety**
- **Radiation protection**
- **Maintenance and repair of Electronic Equipments**

**DSIN**

- **Isotopic Hydrology**
- **Radio-pharmaceuticals**
- **Microbiology**
- **Sterile Insect Technique**

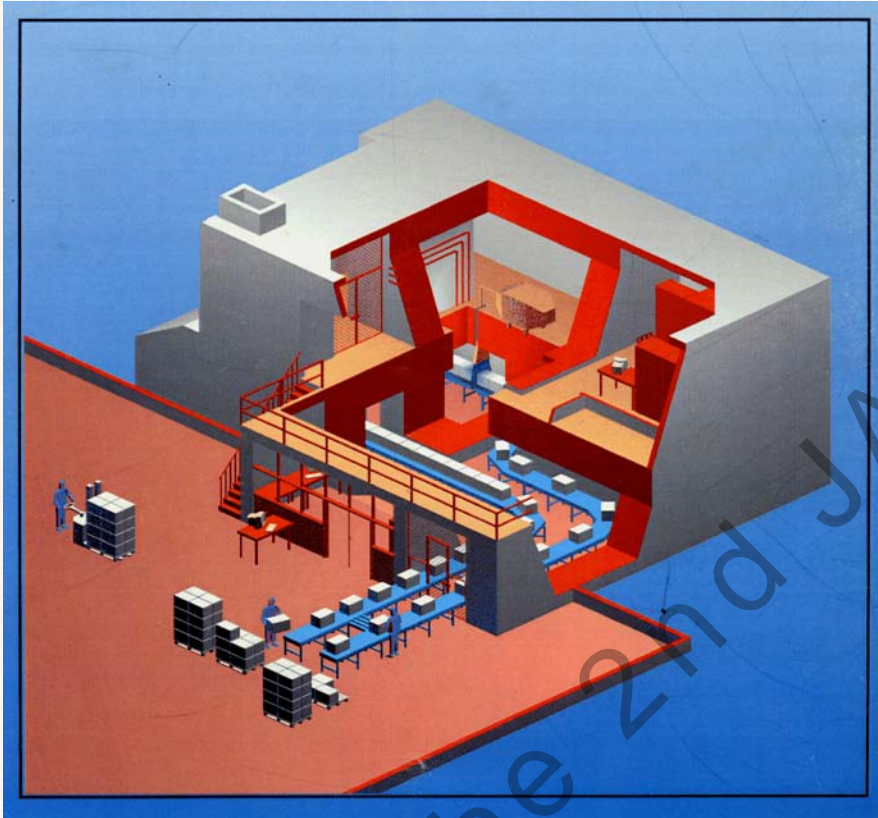
**DREV**

## Co-60 Irradiation Facility



- **Installed in 1999**
- **Co-60 Irradiation Source**
- **Activity : 100 kCi**

# ELECTRON BEAM IRRADIATION



Electron Accelerator :

- 10 MeV energy
- 5 kW power



## Three Fields of Expertise:

- Radiation measurements
- Element Concentration measurements
- Non Destructive measurements



# Radioactivity measurements

Measurements of all types of radiation (in the laboratory or in situ) in various types of samples (Environmental, Industrial, Agricultural, Foodstuff, etc ...)



Gamma measurements

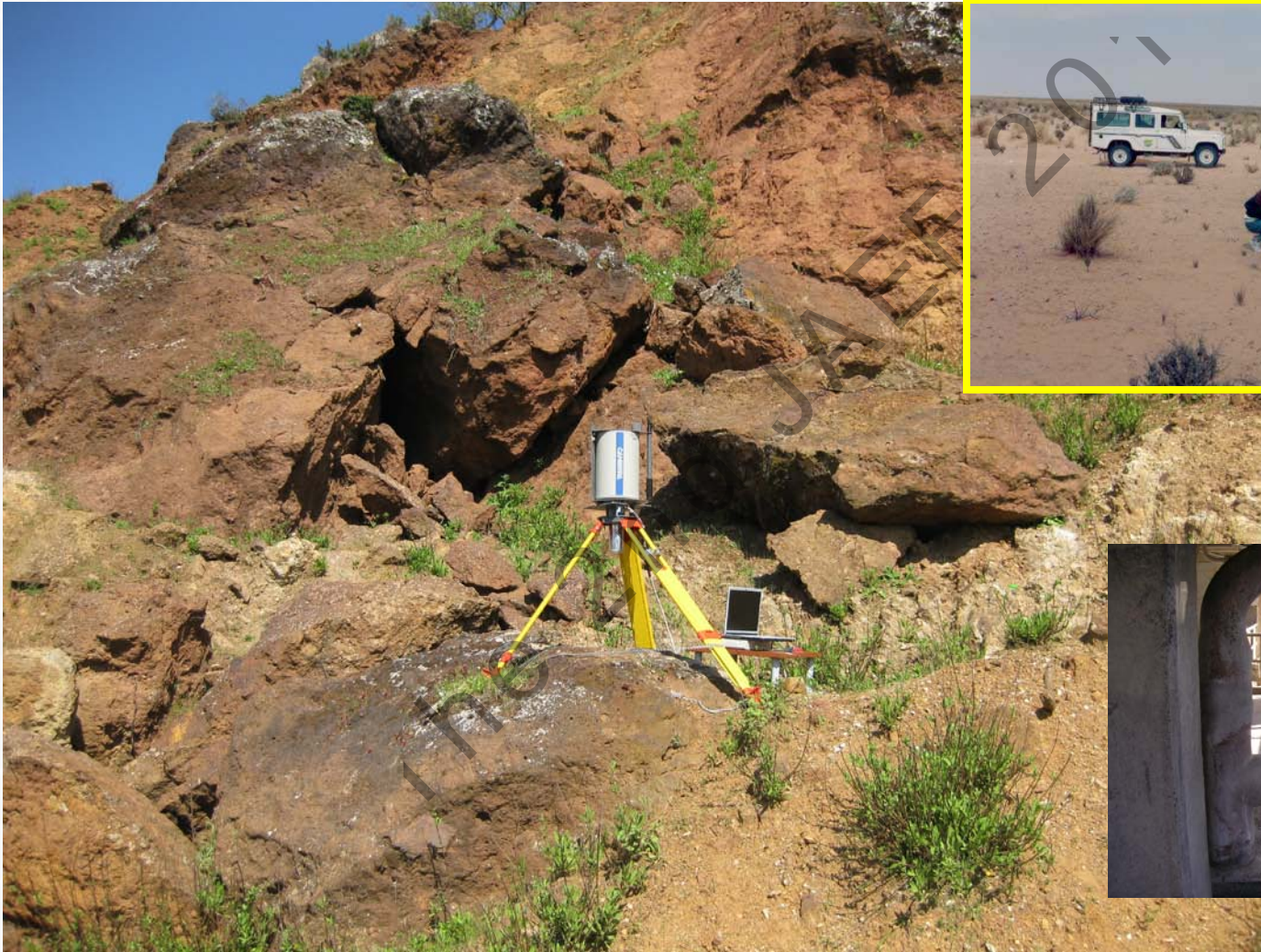


Alpha measurements



LSC

# In Situ measurements

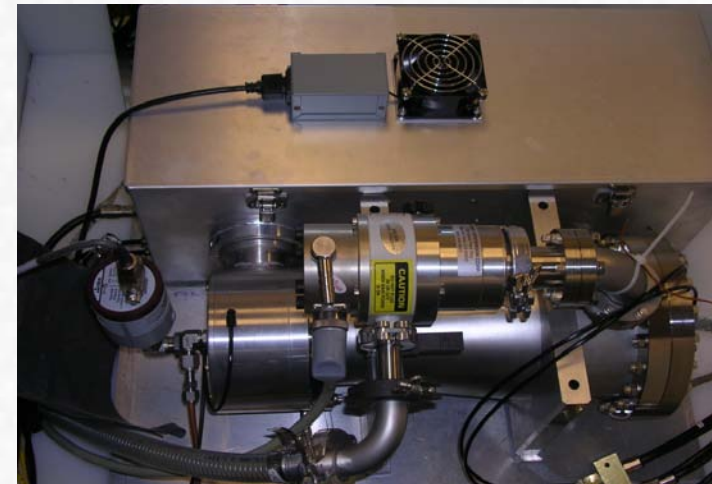


# Neutron Activation Analysis



D-D reaction  
2.45 MeV neutrons

$10^{10}$  neutrons per second





# Non Destructive Testing

- Application of gamma scan and radiotracers to monitor mechanical equipments and industrial processes in situ
- Save time – less Shut Downs – Better products – More benefits



# RADIATION-CHEMISTRY LAB



- Preparation of samples for alpha, beta and gamma spectrometry.

- Determination of veterinary drug's residue in foodstuffs of animal's origin.

- Detection of irradiated foods.


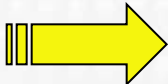
- Monitoring of harmful algal bloom for the detection of marine toxins using the technique of receptor binding assay based on radiotracer



# Sterile Insect Technique : SIT LAB

To reduce the population of Med fly without using insecticides



1. Produce the Fruit Fly in the laboratory
2. Irradiate the males  Sterile
3. Release Sterile males in the field  **NO Offspring**
4. Sterile Males meet with normal females

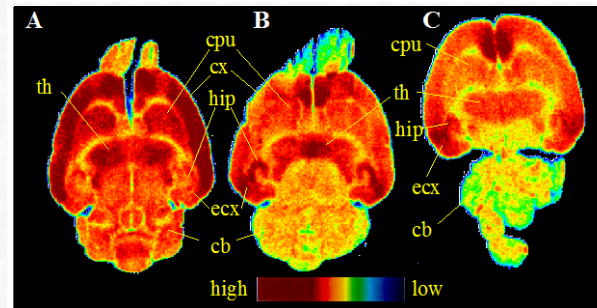
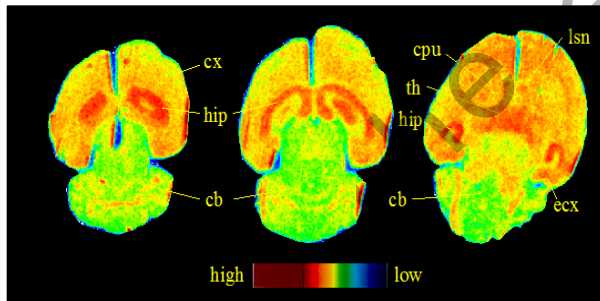
# ISOTOPIC HYDROLOGY LAB

- Determination of fresh water sources and pathways in old water tables
- Measuring the rate of mineralization in ground water
- Using Isotopic techniques to study sea water intrusion into coastal fresh water tables
- Studying the sedimentation rates in rivers and around dams
- Monitoring dam leakages
- Management of water resources
- Carbon dating



# Radiopharmaceuticals LAB

- Research and development of new cerebral tracers
- Mastery of the technology of the preparation of the radio - pharmaceutical kits used in nuclear medicine



# MICROBIOLOGY LAB

- Insurance, control, and improvement of the microbiological quality of the irradiated products
- Introduction of molecular techniques : PCR, Hybridization, Marking of the DNA...



# RADIATION PROTECTION AND NUCLEAR SAFETY

- Implement and guarantee the proper use of safety procedures
- Give advice on issues relating to nuclear safety and radiation protection
- Physical protection
- Nuclear Security
- Waste Management
- Mobile Laboratory Response for Nuclear and radiological Emergency

