Specifications / Design / Construction and Operation of AREVA Beryllium facility

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Description of the AREVA facility

- Design
- Services

Be management

- Authorization and training
- Operators protection
- Be monitoring
- Medical follow up
Beryllium Handling Facility

Key dates
- 1994: AREVA starts to work on the conception of ITER First Wall components
- 2004: Investment of the Beryllium Handling Facility
  (Final acceptance delivered by authorized organisms)

Context
- Development and manufacturing of beryllium components representative of ITER FW panels

Objective
- To handle Beryllium and its application under optimum safety conditions

Global view of the facility
Be Room *(Depressurized)*
- Airlock 01 (-30 Pa)
- Airlock 02 (-50 Pa)
- Airlock 03 (-80 Pa)
- Be Workshop (-80 Pa)
- Airlock Equipment (-80 Pa)

Plant Room *(Atmospheric pressure)*
Services

► Airlock 01 (-30 Pa)
  ◆ Entrance
  ◆ Cloakroom

► Airlock 02 (-50 Pa)
  ◆ Sanitary room
    *(Shower, Washbasin, eye rinsing device)*
  ◆ Individual protection equipment distribution

► Airlock 03 (-80 Pa)
  ◆ Be room entrance & exit
  ◆ Dirty clothes collection

► Airlock Equipment (-80 Pa)
  ◆ Equipment transfer
Be Workshop (-80 Pa)

**Equipment**
- Laminar flow hood
- Annual equipment maintenance
- Welding station
- Physical Vapor Deposition (PVD) furnace (preparation of interfaces)
- Ultrasonic inspection bench
  - Tank dimension 1800x1300x700

**Activities**
- Be storage
- Reception and Manufacturing of components with Be parts
- Chemical etching
- Contamination levels according to specific procedures
Services

- **Air Control System**
  - Depressurization of the Be room
  - Several air filtration levels to prevent from releasing particles outside the Be room
  - Air completely renewed four times per hour
    
    *Annual equipment maintenance*

- **Vacuum Cleaning System**
  - Collection of all wastes from Be room

- **Wastewater Tank System**
  - Collection of all wastewater from Be room
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Authorization & Training

- Authorization must be provided by the occupational medicine certifying the personnel “not unfit” with the beryllium.

- Training must be provided by the safety coordinator and the Be coordinator
  - Presentation of recommendations and applicable decrees
  - Description of air control system
  - Explanation of the necessity of an individual protection equipment
  - Description of risks due to the beryllium handling
Be management

- Individual Protection Equipment
  - Skullcap
  - Over glasses
  - Respirator mask FFP3
  - Lab coat
  - Gloves
  - Over boots
Be management

Be dose monitoring

- Ground wipe test (Be room)
  - Surface Limit Value (US register 1995) < 3 µg/dm²
- Mock-up wipe test (Part)
  - Surface Limit Value (US register 1995) < 3 µg/dm²
- Nasal test (Personnel)
  - Check the correct function of individual protection equipment
- Volumetric pump (Personnel)
  - Exposure Limit Value (circular of January 12th, 1995) : < 2 µg/m³
  - Exposure Limit Value recommended by ANSES: < 0,01 µg/m³

Medical follow-up

- Monitoring of all tests after each operation
- Record all test results
- Edit and deliver an annual individual follow-up sheet to the occupational medicine