

## Cleaning and Disinfection of Cold Rooms

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### Cleaning cold rooms

The general hygiene rules to be observed at the level of the production line, in the plots and the conditioning station (see Chapter 2), are also valid at cold rooms.

Cleaning is the first measure of hygiene. It reduces the risk of developing microorganisms that can contaminate products directly or indirectly.

The cold rooms (floor, gutters, walls, doors and ceilings) should be cleaned regularly to keep them clean and free of visible dirt, plant remains, traces on the floor, etc.

Disposal of garbage and debris on the ground should be done regularly during work. Simple sweeping may be sufficient, but vigorous brushing may be necessary when debris has adhered to wall, floor, door and ceiling surfaces, or also to drains and screens.

The condensation or thawing water of refrigeration systems must not drip on fruits and vegetables!

### Disinfection of cold rooms

A facility remediation plan will complement the daily cleaning and will eliminate micro-organisms that may cause rot or mold on fresh fruits and vegetables, during storage or even after shipping.

Disinfection of cold rooms should be considered at least once a year, at the beginning of the campaign, when the cold rooms are closed and the facilities are out of order.

It is important to cover electrical and metal installations, especially if corrosive substances are used. Special attention should be paid if the contamination rate is assumed to be high.

Particular attention must be paid to respect the time lag between the use of disinfectants, the ventilation needs of cold rooms after disinfection and the entry of new horticultural products. To allow a good ventilation of the cold rooms, the doors must be open so that outside air can enter the room.

### Rinsing

Some disinfectants emit odors that can give unwanted taste to fruits and vegetables. In addition, the prolonged effect of some products may cause corrosion of materials in the conditioned chamber structure.

Rinsing is done by thoroughly watering all surfaces treated during disinfection, starting with the highest ones to allow the downward flow of residues. All stagnant water must be removed.

It is essential to use drinking water so as not to recontaminate the facilities.

After cleaning the cold rooms, it is important to be careful not to recontaminate the installations with soiled protective clothing, safety shoes, equipment coming directly from the fields, crates, pallets, etc.

### Maintenance and verification of cold rooms

In storage, a malfunction of the refrigeration systems can have very serious consequences on the quality of the foodstuffs: rupture of the cold chain, risk of contamination, etc.

The establishment of a maintenance and verification program is essential (see also Chapter 2, on PRP programs).

### The following must be verified

**The cleanliness of premises and installations:** Walls, floors, doors, ceilings... Indeed, a batch of products may be contaminated by product residues chemicals from cleaning and disinfecting the premises, or odors from previous products or insects housed in the material.

### The water tightness of the installations:

- It must be ensured that the doors are permanently closed and that entry and exit operations are kept to a minimum and as brief as possible.
- Make sure doors close tightly and completely: Damage to the walls or ceiling can let in heat, moisture, dirt and insects from outside.
- The verification can be carried out as follows: with the doors closed, a person inside the room must check that there is no light.
- The tightness of refrigerant circulation lines must be checked regularly. Leaks at this level can lead to contamination of premises and foodstuffs.

### The temperature control device

The temperature probes used for the temperature control in the chambers must be regularly calibrated (verification of the temperature indicated by the probe by means of another thermometer whose operation has been verified). If necessary, the sensor must be adjusted or replaced. As a reminder, level thermometers filled with mercury are forbidden!

### Air circulation:

- If the circulation of the air is not sufficient, the lot will deteriorate.
- It is necessary to provide sufficient space between the top row of boxes and the ceiling to allow good air circulation below, around and through the load to protect the product from the following phenomena:
  - Heat released by breathing the product;
  - Accumulation of ethylene due to the maturation of the product.

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