

## FAQs

### 1. Define hurdle technology

The microorganisms present ('at the start') in a food product should not be able to overcome ('jump over') the hurdles present, otherwise the food may spoil or even cause food-poisoning

### 2. Using hurdle technologies explain how fermented foods are preserved.

In fermented foods a sequence of hurdles leads to a stable and safe product. Hurdles in the beginning of the fermentation of salami and sausages are nitrite and salt, which inhibit many of the bacteria. However, LAB which naturally are resistant to these hurdles are able to grow and multiply, use up the oxygen and thus cause a reduction in redox potential of the product. This in turn enhances the *Eh* hurdle, which inhibits aerobic organisms. The LAB in turn grows by metabolizing the sugars present in the food. LAB during its growth produces organic acids like lactic and acetic acid. Further the acids produced decreases the pH of the product. The acidic pH of the product is thus the next hurdle created for the spoilage organism. Hence, it would be difficult to cross such multiple hurdles by the spoilage organisms.

### 3. What are shelf stable products?

Products which are heated to a certain temperatures with high moisture on the principals of hurdle technology and stored without refrigeration are called shelf stable products (SSP).

### 4. Explain the role of JECFI

The Joint committee of Expert from FAO and WHO along with international agency for atomic energy, worked on the Wholesomeness of Irradiated Food (JECFI). The committee has been working from 1960 and is convened from time to time to study the safety of food subjected to ionizing radiation treatment under properly controlled conditions.

### 5. What are the codex standards for irradiated foods?

The Codex Standard and its associated Code of Practice provide important principles for proper irradiation of food (up to an overall average dose of 10 kGy) and essential control procedures.

### 6. Which are the chemicals irradiations used?

Fumigants like ethylene dibromide (EDB), methyl bromide (MB), ethylene oxide (ETO).

### 7. What are the minimum doses of irradiation required for food preservation?

Low-dose of irradiation between 0.2 and 0.7 kGy can control insect infestation of grain and other stored products. Low-dose irradiation is effective in inactivating non-spore forming pathogenic bacteria and food-borne parasites.

8. What range of radiation do microwaves cover  
. Microwaves cover the broad range of radio frequencies from 300 MHz (million cycles per second) to 300 GHz (billion cycles per second). This corresponds to wavelengths between 1 metre and 1 millimetre
9. Why microwaves are considered as preservatives.  
Microwaves penetrate deeply into food materials and as they penetrate, the energy they carry is converted to heat, actually by the food material itself, mainly by the mechanisms of polar and ionic orientation.
10. What is the major advantage of microwave cooking over conventional cooking.  
Microwave processing is it can replace the need for water or steam as a heating source. Microwave processing in preservation is to deliver a more homogeneous heat treatment at a faster rate than conventional heating. In general and pasteurisation or sterilisation in particular such fast flow of heat is an added advantage as the time for heating can be brought down.
11. Define MAP  
The replacement of air in a packed food by a different mixture of gases is known as MAP.
12. Explain VP  
The air is evacuated and the package sealed. During storage from metabolism of the product or microorganisms) the gas produced changes and therefore the atmosphere becomes modified indirectly.
13. What are the main constraints for processing food through aseptic processing.  
major limitations of this technology is that only those foods which are in sterile condition in nature can be packed using this technology.
14. Which are the organic acids commonly used in food preservation.  
Both acetic and lactic acid used individually or in combinations enhanced the antimicrobial effects.
15. What are the major disadvantage of hydrostatic pressure processing.  
Hydrostatic pressure processing (HPP) denatures proteins and polysaccharides,. This may lead to food texturisation. However, this may also change the taste and texture of food.