

# Segment Six – Product Handling and Packaging

## INTRODUCTION

This segment starts by looking at some of the reasons which cause smoked fish products to deteriorate. It then leads on to describe how careful handling and correct packaging can help to keep the product in good condition.

## AIMS OF THE SEGMENT

The main aim of this segment is to help you to achieve objective 6 given on page xiii. When you have completed the segment you should be able to.:

- State the need for personal hygiene when handling food;
- Explain the need to separate smoked and fresh fish products;
- State how mould may occur in smoked fish;
- List advantages of packaging smoked fish products;
- State advantages of pre-packing smoked fish;
- Describe briefly the meaning of controlled atmosphere packaging .

## **SPOILAGE AFTER SMOKING**

There are a number of ways in which the product can become contaminated after smoking. It is important to reduce the possibility of contamination occurring in all smoked products but, in particular:



Remember that hot smoked products are cooked and are therefore often eaten without further cooking. These products can become a serious health hazard if they are contaminated.

### **Personal Hygiene**

Unhygienic methods are a likely source by which bacteria can enter the product. Apart from the need to maintain clean environments in containers, factories, transport etc, **the personal hygiene of the handler is very important.**

About 80% of people carry bacteria on their skins and respiratory passages which can cause food poisoning. In addition the bacteria, which can cause salmonella poisoning, are present in the guts of some people.

- **Clean toilet and washing facilities must always be provided and used.**
- **Special clothing must be worn by people handling food products.**

### **Cross Contamination**

If smoked and fresh fish are not separated during manufacture, transport and display then cross contamination can occur. This may take the form of:

- **Bacteria entering the smoked product from fresh ungutted fish;**
- **Colour or smell of the smoked product affecting the fresh fish.**

## Mould

Mould spores are always present in the air we breathe. It is highly unlikely that we can stop these getting on to the smoked fish before it is safely packaged. Another source of the mould spores can be the smoking process itself. If the sawdust, which is used in the fire is damp then millions of spores are carried by the smoke on to the fish surfaces. The factory sawdust store should be a special dry room and not used for any other purposes.

Since we cannot avoid mould spores getting on to the fish it is very important to stop them growing and producing the mould. To do this the product should be kept as dry as possible because the spores require water to grow.

An important factor in controlling the mould growth is the cooling of the product before packaging. If it is not cooled down to a temperature at which it is going to be stored then water will evaporate from the product. This water then condenses on to the inside of the package, drops on to the product and the mould grows.

## Product Breakage



It is important to handle smoked products carefully in order to preserve them intact. They are then more likely to be presented to the customer in an attractive form.

Careless handling, excessive smoking or overcrowding in boxes or other packaging can all lead to a fragmented product.

Choosing the best fish for smoking plays an important part too. Fatty fish can be very fragile at certain times of the year when the fat content is high.

Now attempt the following SAQs:

**Ⓚ SAQ16**

Why is personal hygiene very important when handling food?

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**Ⓚ SAQ21**

Why should smoked fish products be kept separate from fresh fish?

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**Ⓚ SAQ26**

Give two possible sources from which mould spores could be deposited on to smoked fish. How can these spores be prevented from multiplying?

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## **PACKAGING**

Having talked about the need to present good quality, attractive products to the consumer let us now see what part the packaging can play in achieving that aim.

First of all here is a list of factors offered by good packaging:

- Acts as a heat insulator;
- Acts as a container;
- Gives protection from physical damage;
- Gives protection from contamination;
- Provides separation;
- Offers convenience of handling;
- Gives ease of display;
- Offers an attractive display;
- Makes storage easier;
- Allows attractive labelling.

## **BULK PACKAGING**

If containment was the sole function of packaging then developments in packaging need not have progressed much beyond the water resistant cardboard or wooden box stage.

In fact the majority of UK smoked fish is still bulk packed in either cardboard boxes or boxes which are now made of more suitable materials such as various types of plastic.

The function of these boxes however goes beyond that of simply containing a quantity of fish. They also provide some protection from both physical damage and contaminating sources.

In spite of the use of stout boxes physical damage could still occur due to:

- The package being knocked or roughly handled during storing or transport;
- Products becoming fragmented due to movement caused by loose packing within the box;
- Products on the bottom layer suffering pressure from those above.

The use of greaseproof paper acts both as a cushion and as a separator. If used with a stout box it plays an important part in reducing physical damage.

**② SAQ31**

State three reasons for packaging smoked fish products.

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### INDIVIDUAL PRODUCT PACKAGING

The use of plastics has brought about the revolution in the handling and display of food products.

#### Properties of suitable plastics

Let us now briefly consider the properties of plastics suitable for packaging:

- Thickness must be sufficient to give adequate strength but must be flexible and clear;
- The plastics must be able to be manipulated over a sufficient temperature range without becoming too brittle or too limp;
- It must be capable of being heat sealed at a reasonable temperature;
- It must offer an effective barrier to the passage of gases and water vapour.



Remember if water vapour enters mould can grow. If gases enter or exit then a vacuum pack will not last for the shelf life of the product.

- The plastic itself should be odourless and it should not affect the flavour of the food;
- Finally and obviously it should be non-poisonous.

## Types of Plastic Packs

The styles of pack which employ plastics are:

- **Overwrap.** This method uses a tray containing the product which is wrapped in a sheet of shrink film plastic. When passed through a hot air duct the plastic sheet shrinks on to the pack. Although the pack is attractive it is **not leakproof**.
- **Overpouch.** This involves slipping the tray into a plastic pouch open at one end. The open end is then heat sealed to give a leakproof pack.
- **Vacuum pouch.** As with the overpouch the tray is placed in a flexible pouch. Before the end is heat sealed, however, the air is withdrawn to create the vacuum within the pouch.

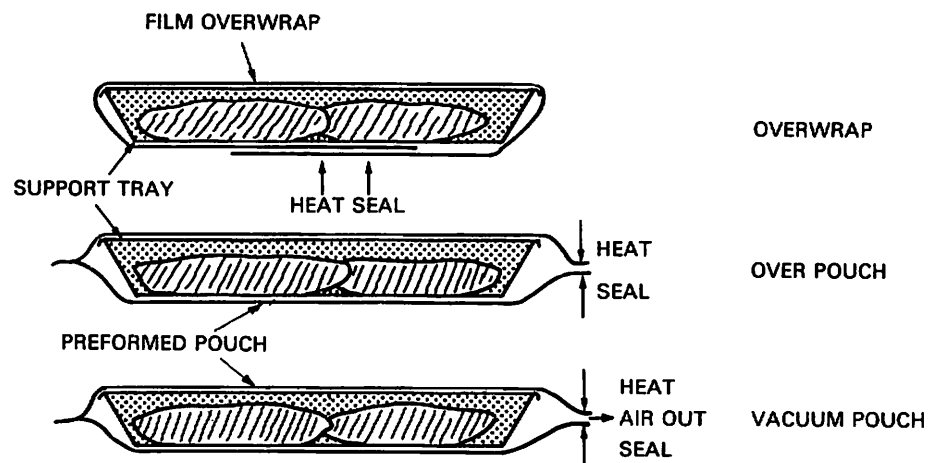


Figure 14 Plastic Packs

- **Controlled Atmosphere Packs (CAP).** This is a more expensive method of packing but it gives an extended shelf life. The process is similar to the vacuum pouch production but the air which is withdrawn is replaced by a different mixture of gases, usually carbon dioxide, nitrogen and oxygen.

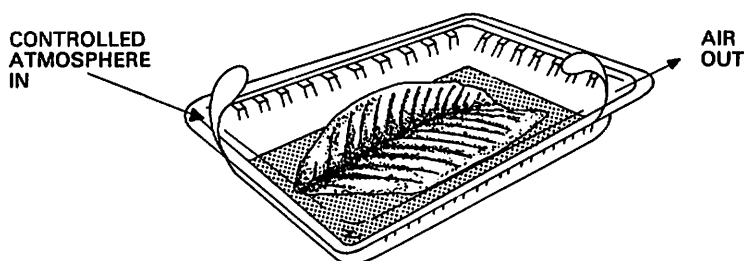


Figure 15 Controlled Atmosphere Pack

Some smoked products are sufficiently rigid to not require the use of a tray when inserted into an overpouch.

All smoked fish products should be stored and transported at temperatures as near to 0°C as possible. The storage and display cabinet temperature should not be above 5°C.

**SAQ36**

List the advantages of pre-packing smoked fish products under clear plastic.

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**② SAQ6**

State briefly what is meant by Controlled Atmosphere Packaging.

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**DISPLAY OF SMOKED PRODUCTS**

Smoked products displayed on a slab are:

- Open to contamination;
- Difficult to handle;
- Give off smells.

In addition the slab requires continuous manning.

Pre-packed products on the other hand.:

- Can be placed in an unmanned chilled display cabinet;
- The customer can handle them with ease;
- Through a clear plastic the customer can see what is being offered;
- Attractive labelling can be used on which the customer can easily see the price, weight and sell by date.

When the customer has purchased the product it can be transported with other groceries without the need for further packaging.



The purpose of pre-packing is mainly to give good presentation. It is not to give a significant increase in preservation.

A final word of caution:



Do not use ice on smoked products.

## **SUMMARY**

This segment has dealt with the possible causes of spoilage of a smoked product. These are:

- Lack of personal hygiene and hygienic conditions;
- Cross Contamination;
- Mould Growth;
- Breakage.

The main features of good packaging have been listed and bulk and individual product packaging dealt with separately.

The importance of packaging in presentation is emphasised together with the changes in marketing techniques which the modern pre-packaging has brought about.

That concludes this module on the smoking of fish. You have achieved all the objectives set out on page xiii and I hope that you will find this extra knowledge of benefit to you in your work.