Segment Six - Contamination

A FOOD PEST is:

An animal, bird or insect that is in the wrong place at the wrong time, and can damage or contaminate food.

You should note that this could include people who are not properly dressed or who have not washed properly. In this segment however we're not going to say any more about them.

CONTAMINATION is:

Any substance present in food which should not be there, whether it is harmful or not.

AIMS OF THIS SEGMENT

The main aim of this segment is to help you to achieve Objective 6 - *Relate common types of pests to food contamination and state some methods of controlling pests.*

At the end of this segment you will be able to:

- Describe the part played by food pests in transmitting food poisoning bacteria.
- List the habits of the main food pests (rats and mice, insects, birds, cats and dogs).
- Identify appropriate methods of preventing or controlling food pests.
- Describe many of the common contaminating substances, their sources and methods of prevention.

FOOD PESTS

What Harm Do They Do?

Food pests:

- Carry disease.
- Contaminate food and containers.
- Damage the fabric of buildings.

It is a **legal requirement** that Health Authorities be told about serious infestations of some food pests.

Environmental Health Officers (EHOs)

All local authorities employ EHOs to check that hygiene regulations in their area are followed. They are not a branch of the police who are out to get you! They are there to help. Their help is **free and professional. Use them!** If you suspect contamination or infestation or just want advice on preventing problems, call in the EHO. They have the experience to make safe use of the substances used to poison food pests.

The protection of waste from food pests is important. Waste should not be allowed to build up inside the factory or outside. It should be stored outside the factory in covered metal bins or skips to keep out dogs, cats, rats, birds, flies etc. and should be taken away on a regular basis for safe disposal.

What Food Pests Are We Talking About?
The food pests we are mainly concerned with are:

- Rats and mice. sometimes grouped together as Rodents.

Common indicators = hairs, greasy smears, gnaw marks, small black droppings

- Insects, flies, wasps and cockroaches.

Common indicators = eggs and maggots

- Birds, pigeons, sparrows and seagulls.

Common indicators = droppings and feathers

- Cats and dogs.

Common indicators = droppings

All these food pests **carry disease and contaminate** any food or surface they contact.

Let's just spend a minute thinking about where they may have been, just before entering the food room.

Rodents - sewers, drains, undergrowth, refuse, garbage.

Insects - faeces, rotting garbage, refuse.

Birds - refuse dumps, dead animals, sewage works.

Cats and Dogs - on the ground, amongst THE dirt.

Remember: Food pests **are always** dirty.

Two mottos to remember:

- **'Know your enemy'.**

  &

- **'Get them out and keep them out'.**

Now, let's talk a bit about the food pests themselves.

RODENTS

Rats
There are two main types:

- Black rat (commonly found on ships).
- Brown rat (commonly found in sewers, waste areas and many other places).

Habits
Rats operate mostly in the dark and they hide from people, when possible. They are intelligent and breed rapidly. They can burrow through soil for several metres and can bite their way into non-metal containers.

Detection

Rats have regular runs and leave marks where they brush against walls or beams in dark places.

They leave black droppings in dark places usually, so it is necessary to search for them.

Bags and other food containers will be gnawed open. This is often the first sign in many cases.

What To Do?

We're going back to the motto 'Get them out and keep them out'.

Get Them Out

Rats are difficult to trap and the poisons used to kill them are dangerous. Get expert help from your local EHO or pest control company.

Leave it to the experts.

Keep Them Out

Like us, rats need **food, water** and **shelter** so make all these hard to get.

- Keep premises clean and leave food in sealed metal containers. Make sure there are no scraps about. Don't forget canteen and locker areas as well as food handling rooms.

- Don't let paper waste or boxes accumulate. They can be used for nesting materials.

- Keep the area around premises clear and clean. Rodent-proof any openings, for example fit them with fine wire mesh grills.

The EHO etc. will advise on proofing buildings against rodents.

Mice
Their habits are much the same as those of rats, but they are more inquisitive.

The droppings are small and black, like black rice.

They are quite easy to trap, so you can tackle this yourself, but it is usually better to call in an EHO or another professional to solve the problem.

BIRDS

We don't suppose you had any problems in thinking about rats and mice as food pests. Most people find them fairly objectionable.

It's harder to accept that birds are food pests. They are better looking than most food pests and they live in the open.

People sometimes think they are a bit of a nuisance, but not a health hazard. You're more likely to worry because a gull is stealing a fish, rather than because its feet are infecting the other fish in the box.

However, we're afraid that the feet and droppings of birds are full of bacteria. A recent survey showed that **one in five** gulls carried food poisoning bacteria. So, you have to regard birds as flying rats. In fact they are worse than rats in some ways, because there are more of them about and they can spread bacteria on fish from a great height.

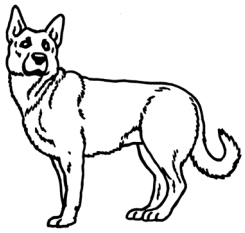
The droppings may not get directly on the food but insects will visit them and they may then contaminate the raw materials or final product you are working on. Most seagulls and many other birds carry *Salmonella* bacteria and are every bit as much a problem as rats. Imagine your reaction to a rat walking on a box of fish!

How Do We Deal With Birds?

- Don't encourage them.
- Don't feed them - your waste food for their bacteria is a bad exchange.
- Remove waste food. Keep food and waste covered.
- Stop them from getting through windows, ventilators or other openings.
- Try to cut down on perching points. Fit bird repellent strips.

CATS AND DOGS

Dogs



Dogs carry many organisms that can spread diseases to people.

These diseases in fact go beyond normal food poisoning.

Dog excreta is a special source of danger and it can enter food rooms on people's shoes, dog's feet or insects' bodies. This is one reason why everyone should change shoes before entering food rooms.

Food room shoes should **never, ever** be worn outside.

Neither for that matter should you wear your food whites outside. Apart from anything else, what impression does it give to your potential customers?

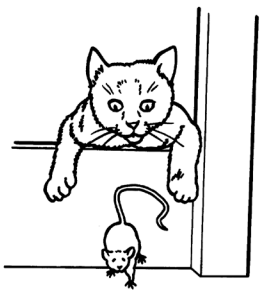
Domestic animals must, by law, be prevented from having access to food areas.

If you find a dog remove it and clean, then disinfect the area where it has been.

Cats

It is illegal to allow cats into food areas. **They are not** the answer to your rodent problems.

- Do not encourage them.
- Do not allow others to encourage them.
- Remove them and clean/disinfect the area.



People often think of cats as clean because they bury their excreta and 'wash' themselves. This means nothing in bacterial terms.

In many ways they are worse than dogs because they are noticed less. They climb well and they obey only themselves.

Remember cats are dirty

INSECTS

All the previous food pests can be kept out of food rooms and on the whole you're dealing with relatively few individuals.

Insects are different:

- There are a lot more of them.
- They are small.
- They can leave eggs and larvae all over the place.

Remember: it's almost impossible to eliminate them completely.

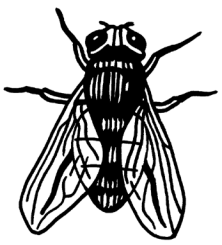
There is one good thing from our point of view:

Fish is not attractive to a lot of insect food pests, so we've fewer to worry about than other food industries!

Flies

There are quite a few varieties of fly, but they all cause the same problems.

All flies carry disease. Their feet and bodies are contaminated with bacteria from whatever they landed on recently.



They are attracted to rotten food and to excrete. They eat by **vomiting** onto food, this softens the food which they can then suck up.

- Do everything possible to keep them out. Indirect ventilation is the best way here. Open doors and windows allow flies easy access.
- Keep food covered.

All round cleanliness is necessary. Inside and outside of containers, bins etc. need to be clean.

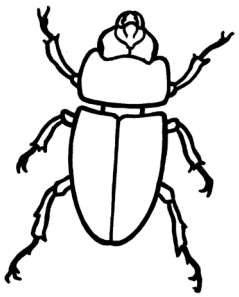
Electric fly traps are useful if positioned carefully, where dead flies cannot contaminate food etc. The traps must be emptied on a regular basis. Remember to leave the traps switched on overnight when they are most effective – and empty them of dead bodies frequently!

Aerosol fly sprays can be used, especially overnight. Take care to cover the equipment. Be careful to use a pyrethrum type that is safe near food. **Read the instructions** to make sure the spray is safe. The dead insects should be removed and the equipment cleaned.

Fly papers have gone out of fashion because they are unsightly, but they **do work** and they are satisfactory if used in an out of the way place. They should be replaced every 2 or 3 days. They are particularly useful as a means of alerting you to a potential problem.

Fly killer strips should **not** be used around food. They are not effective in a well ventilated room - which a food room should be. They may be OK in small toilet areas but they should really not be needed if cleaning is regular.

Cockroaches



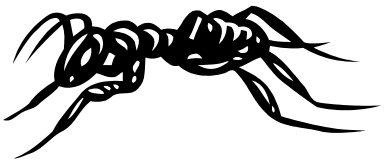
Cockroaches are not really a problem with fish itself, they prefer cereals.

They also like warmth which is fairly uncommon where fish is being handled.

They should be controlled by the used of insecticide, but it is best to get advice from your **local EHO** if you think you have an infestation.

Wasps
Treat as flies.

Ants
Ants are unlikely to be a problem inside fish premises, but they can infest badly kept outside areas.



Rotting meat is attractive to them.

If you notice any, especially if they are very bright coloured you should **contact the EHO.**

INSECTICIDES

You can buy many chemicals to kill insects.

PLEASE DON'T!

- Very many of these chemicals are poisonous to people too.

The only insecticide you should use yourself is a domestic type aerosol spray which states that it is **'safe'** near food. Although it claims to be safe it should be used carefully.

The best way is to spray the room last thing at night and thoroughly clean the surfaces the next morning before starting work.

Remember: It is best to get expert advice and not to use other insecticides yourself. If you can, treat the underlying cause of the insect invasion.

You'll probably feel like having a bath after reading this segment!

When writing it I was eating a supermarket sandwich, I'm glad the person making that sandwich was well trained in food hygiene!

Before you do, try answering these SAQs - then you can have a long, relaxing break.

SAQ14

Why can people sometimes be classified as food pests?

SAQ52

If you have any sort of food pest infestation, what should you do?

SAQ24

What is the common feature of all food pests?

SAQ40

Which insecticides are absolutely safe to use around food?

SAQ17

How would you know you'd got an infestation of rats or mice?

? SAQ15

Try to list four basic ways of avoiding infestation by food pests.

? SAQ49

What is the most common danger from:

a. Birds.
b. Dogs.
c. Insects.

a.

b.

c.

POLLUTION AND CONTAMINATION

Pollution and contamination can have serious effects on fish quality.

Pollution occurs **before** catching.

Contamination occurs **after** catching and/or landing.

These have the same effect on the quality of fish - the fish **becomes tainted.**

Tainted fish has an unpleasant smell or taste. This is picked up by the flesh of fish from its diet or environment before catching and/or from surroundings during handling and storage.

Tainted fish tastes bad and **may cause illness.**

Pollution
Pollution of fish is caused by harmful or waste substances being deliberately or accidentally dumped in the sea or in fresh water by people.

Main groups of pollutants:

- Metals and other elements (there was a mercury contamination scare with tuna in the 1970s).
- Waste disinfectants and cleaning fluids.
- Mineral oils (from leaking oil tankers and oil wells).
- Radioactive waste material.

You have no control over this kind of pollution. All you can do is be aware that it can happen and **report any unusual smells from fish to a supervisor.**

Contamination
Contamination of fish is caused by harmful or unpleasant substances coming in to contact with fish during handling and processing.

There are three main ways in which fish can become contaminated:

- **Bacterial** contamination (spoilage and food poisoning bacteria).
- **Chemical** contamination (cleaning chemicals, equipment lubricants).
- **Physical** contamination (foreign bodies).

Remember: Each type of contamination can be prevented.

Fish is usually handled quite a few times between catching and reaching the customer. Sometimes it is handled simply as in gutting and selling. At other times it is handled in bulk, usually packed in boxes. It is moved from box to box and from box to work surface and back. It lies around markets and it is transported at various times.

There are chances for contamination at all stages by bacteria or foreign bodies. Before we go on to give you some examples of how fish becomes contaminated, try these questions to see that you understand what we've said so far.

SAQ54

1. Give two examples of how fish can be polluted before landing.
2. How does fish become tainted?
3. What are the three main types of contamination after fish is landed.

1.

2.

3.

HOW DOES FISH GET CONTAMINATED?

This next table will help you to see many different ways that fish can become contaminated.

Some causes of Contamination of Fish			
Source	**Example**	**Type of Contamination**	
		Bacterial	**Physical**
Food Handlers	Dirty boots – standing on boxes Dirty hands/overalls Coughing/sneezing Uncovered cuts and sores Uncovered hair Cigarettes Overall pockets	Occurs Occurs Occurs Occurs Occurs Occurs Occurs	Dirt Dirt, buttons, fingernails Hairs Cigarette ash & ends Sweet papers, rings, earrings, pen tops, paperclips
Equipment	Transport vehicles Processing equipment Poor premises Maintenance and Repair Packaging/wooden boxes	Occurs Occurs Occurs Occurs Occurs	Dirt-Dust Grease and oil. Pieces of metal. Flaking paint or rust. Bolts, nuts, wire, staples. Cardboard, string, polyethylene Glass, wood
Chemicals	Detergents, Disinfectants, Sanitisers. Other chemicals	Poorly rinsed cleaning chemicals. Badly stored chemicals. Non-food grade chemical use.	
Refuse	Decaying fish, offal Windblown	Occurs Occurs	Mould, dirt, dust, smoke
Animals	Cats and Dogs Birds Flies and cockroaches Rats and mice	Occurs Occurs Occurs Occurs	Hairs and dirt Feathers, dirt and droppings. Droppings, urine, hairs

PREVENTING CONTAMINATION

Using the information we've given you on how fish can be contaminated, we want you to think about how contamination can be stopped.

To help you do this we have drawn up a table for you to fill in.

Look at the table below and fill in the blank columns.

First - list the main ways fish can be contaminated at each handling stage.

Second - write in a suggestion for preventing each type of contamination.

Concentrate on the areas where you are involved in handling fish.

Use an extra sheet of paper if you run out of space.

Handling Stage	How fish can be contaminated	How contamination can be prevented
At the Market		
Transport to the processor		
Unloading from the lorry		
Storage before processing		
Gutting and filleting		

We've filled in the same table, so compare your ideas with ours. We wouldn't be surprised if you had more ideas than us, especially at the handling stage where you actually work.

Handling Stage	How fish can be contaminated	How contamination can be prevented
At the market	Dirt from shoes Splinters from wooden boxes Seagulls and droppings	Don't walk on top of boxes. Use plastic boxes. Keep seagulls off fish or cover fish.
Transport to the processor	Dirt from lorry Dirt and dust blown on open boxes in open lorry Seagulls	Hose down the lorry regularly. Cover boxes. Cover boxes.
Unloading from the lorry	Cigarette ash/ends Dirt	Don't smoke when unloading. Cover boxes.
Storage before processing	Birds, cats, dogs Insects, rats and mice Stored next to chemicals - causing taints	Keep these out of the storage area. Get the area checked regularly for vermin. Use vermin proof boxes. Take more care. Use separate storage areas for fish and other materials.
Gutting and filleting	Dirt from clothes/hands Coughing, sneezing over fish Dirty knives Dirty cloths Leaky machinery Dirty working surfaces Decaying fish offal	Observe much higher standards of **cleanliness** and **hygiene.** All food handlers should wear clean overalls. Remove unfit or waste food quickly and keep apart from fish. Use correct cleaning procedures. Use hand-washing basins. Do not use dirty or defective equipment. Keep food covered where possible.

CLEAN WORKING PRACTICES

The key thing when trying to prevent contamination is **awareness.**

While the quality of fish is improving throughout Britain there are some who have yet to change their attitudes, to meet the challenge of higher hygiene standards, and the demands of the consumer.

You have seen that there are lots of ways for fish to get contaminated.

Remember: Keep your eyes open and look after the fish in your care.

Preventing contamination by clean working practice usually involves working **hygienically.**

Hygiene is a science which aims to prevent disease by avoiding bacterial and physical contamination.

You will now know that bacteria are found everywhere, and given food, moisture, warmth and time, will multiply quickly and cause spoilage or poison people.

FOOD POISONING RISKS

Food poisoning bacteria don't occur naturally on fish. This is because bacteria can't survive in the cold conditions where fish spend their lives before catching.

Once fish has been killed and especially if it's been cooked, poisoning bacteria can and will multiply on fish - **if given the opportunity.**

The bacteria are always introduced by people, or food pests, or dirty contaminated machinery, or contaminated food, or clothing.

Remember: Unclean working conditions can cause food poisoning.

Food poisoning is almost always caused by negligence and poor handling.

- It harms people.
- It loses customers.
- It causes legal problems.

All food handlers are required by law to handle food hygienically, and the food handling premises must also be clean.

SUMMARY

Food pests have been mentioned several times before in this module. Having read this segment, you should now be aware of why it is so important to control the food pests which might set up home in your fish handling premises.

Remember: Food pests spread bacteria and disease.

Find out more about the **habits** of

- Rodents.
- Birds.
- Dogs and cats.
- Insects.

You will then be much more able to take steps to **prevent or control** their activities on your premises.

You have also found out that the **Environmental Health Officer** is there to give help and advice on controlling food pests.

Use the EHO - his advice is free.

You have now achieved Objective 6