

Segment Four - Avoiding Contamination

In the last segment we talked about personal hygiene.

So, you know how to protect food from anything that you might accidentally do.

We don't know exactly where you work but you probably also use tools and equipment at work. In other words, food comes into contact with many things as well as with you.

We now have to look at premises, so that we can keep down infection from that source, as well as from ourselves. The kind of premises will range from a fish factory to a fishmonger's shop or fish and chip shop. The building and hygiene regulations are different for each of these purposes.

AIMS OF THIS SEGMENT

The main aim of this segment is to help you to achieve Objective 4 - *Describe suitable premises and facilities for food handling purposes.*

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

- Identify the general features of the work area that increase the risk of contamination;
- Recommend actions for reducing the risk of contamination;
- Select materials used in the construction of the work area that are hygienic and easy to clean;
- Be aware of the dangers of cross contamination between food stuffs;
- Advise on the suitability of storage and toilet facilities.

Like the hygiene segment, a lot of this is just **common sense**. You don't need to be a genius to see that rooms need organising so that they're easy, safe and clean to work in do you?

Let's get down to a few details on how to plan rooms and set up equipment to make cleaning as easy as possible.

THE WORKING AREA

Site

If possible, the site should be in an area free from sources of:

- Smells;
- Dust;
- Pests.

Good access roads and drainage are needed.

The Building



Handling fish needs a lot of space. The fish itself needs room to be stored before and after processing.

People need room to work easily and space is needed around machinery for safety and cleaning.

Floors

Flooring in food handling premises needs to be:

- Hardwearing;
- Washable;
- Non-slip;
- Non-porous;
- Well drained;
- Resistant to chemicals.

Types of Floors

Concrete is usually unsatisfactory because concrete is porous, absorbs fish juice, and cracks easily.

Asphalt with stone chips is satisfactory in low risk areas such as loading and unloading bays.

Tiles are satisfactory in low risk areas if joints are kept in good condition and if they are a hard fired fully vitrified type (making them non-porous). They can, however, be slippery when wet.

However, modern fish processing factories, fishmongers and fish and chip shops usually have specialist materials covering the floors. What are your floors made from?

Well-designed floors and drains should have the following features:

- Floors should slope gently towards drains, and walls should be coved (rounded) to the floor;
- Drainage from toilets should be direct to a main sewer;
- Floor drainage channels should have easily removable covers* and should have at least 10cm internal diameter;
- Drainage pipe lines should lead to a trap* before the sewer;
- Traps* should be easy to get at and clean.

Walls

Walls need to be smooth, waterproof and in good repair.

Food grade wall cladding, similar to Formica, is satisfactory if the joints are properly sealed and maintained.

Gloss paint used to be used. It is usually no longer satisfactory as in steamy conditions condensation causes it to flake quite quickly.

* Seafish have guidance on well-designed covers and traps that are hygienic and also minimise effluent-related costs. See our waste minimisation factsheets .

Ceilings

Ceilings should be smooth and easily cleaned.

If services, like electricity or plumbing, are sited overhead, a false ceiling should be fitted. The space above should be kept free from pests (more about them later).

Good lighting is very important. A well-lit workplace is easier to keep clean.

Machinery

Machinery should be resistant to corrosion and easily cleaned.

It should be easy to get to all sides of it, and to dismantle for cleaning.

If it is not flush to the floor, a clearance of 25cm should be left to allow easy cleaning underneath, or the machine should be easy to move for cleaning.



The reason for having non-porous equipment is partly to stop juices being soaked up to provide food for bacteria. Also, you don't want the smell of cleaning chemicals to stick to the surface and be transferred to food.

Suitable Materials

Stainless steel is the best material.

Hard plastic surfaces, like Formica, are satisfactory, except where chopping and cutting take place.

Other points to note:

There should be few joints and these need special care when being cleaned;

Chopping blocks should be of high density plastic and will need cleaning frequently and occasional replacement;

Wood should never be used because it is porous, will be almost impossible to clean effectively and it can splinter.

Ventilation

Ventilation is needed to remove fumes, water vapour and in warmer workplaces, reduce the temperature.

It is impossible to control hygiene if windows are open. If windows are used for ventilation, they need to be covered with a fine mesh grille that can easily be removed for regular cleaning.

It's best if there are no direct openings from food rooms to outside the building. Windows and doors may have to be altered to arrange this.

Existing windows can be fitted with extractor fans.

Doors can have a porch or screen built round them. These make it harder for dirt and pests to get in. In some cases fly screens will have to be fitted.

Fishmonger and Fish and Chip shops will need appropriate measures in place to allow customers into the shop, but which keep flies and other pests out of the business.

Storage

Storage rooms need ventilating and all vents these should be fitted with fine mesh wire to keep pests out.

Packaging materials need storing in a separate, dry, pest proof room.

Food ingredients need their own dry, pest proof room.

Disinfectants, detergents and other cleaning materials should be kept in a store away from rooms where food is handled. They should not be left lying around after use.

Containers

As you know, fish is quite bulky and it takes a lot of containers to store a quantity of fish. Used fish containers must be washed as soon as possible and stored under clean conditions, or disposed of hygienically. Non reusable containers must be suitably handled and disposed of.

Offal

Offal needs to be removed from the handling area, as soon as it is produced. It should be stored outside, preferably in an outbuilding.

Offal and all food bins should have **close fitting lids**. They should never be overfilled.

Sometimes offal bins have to be stored in a yard. In this case they should be on a suitable staging at least 60cm from the ground.

Food waste and offal bins should be cleaned regularly.

The Yard

Yards should be kept in good repair. The floor should be well drained, brushed and hosed frequently.

Food waste should be carted away at least every other day at which time the bins should be cleaned.

The yard surrounds need to be treated with insecticide once a week.

Water

Fresh fish processing and handling is a wet business, it needs a lot of water. (It's not called wet fish for nothing!)

A good flow of clean water of drinking quality is recommended.

Water:

- Washes;
- Dilutes;
- Cleans.

Water reduces the number of bacteria on whole fish and on work surfaces, if it flows over them.

Chlorination

The cleaning effects of water are improved if it is chlorinated. This makes the water a mild disinfectant. Household bleach is an example of chlorine based disinfectant.

Chlorine is cost effective and if used properly has no tainting or corrosive action. Chlorination of seawater (onboard fishing vessels for example) can cause problems and so should only be done using the correct equipment.

Chlorinators can be added to existing premises quite easily. In fact they are fitted in some fishing vessels. Ozone has a similar disinfectant effect and is becoming increasingly popular in processing factories.

Chlorine

- Improves hygiene by reducing the numbers of spoilage bacteria.
- Reduces odours.
- Works best when organic material has been removed first with a detergent.
- Doesn't work on grease.

**SAQ31**

Try and summarise the important general features of the following:

- a. Rooms and equipment used for handling fish;
- b. Materials used in construction of rooms and equipment;
- c. The layout of rooms and equipment.

a.

b.

c.

**SAQ42**

Why should floors have a slope built into them?

**SAQ18**

Is it permissible to have toilets and waste water draining into the same sewer?



SAQ27

Where should cleaning materials be stored?



SAQ47

Why can gloss paint be a problem as a wall covering?



SAQ21

What are the advantages of chlorinating water?

**SAQ11**

Why should machinery be either flush to the floor or raised 25cm, or more, above it?

**SAQ9**

- a. How often should offal be removed:
 - i. From the handling room?
 - ii. From the outside store?
- b. What features should offal bins have?

TOILET ARRANGEMENTS**What Does the Law Say?**

This is another area where the Law has something to say. Various laws covering health and safety, food hygiene and fish-specific regulations make references to toilets and hand-washing facilities.

In general they state that the facilities must be appropriate and adequate for the purpose. Health and safety legislation states the exact numbers and types of toilets needed in various circumstances. If you need to know the exact requirements for your workplace then consult your local Environmental Health Officer (EHO) and Health and Safety Executive (HSE) office.

As a general rule of thumb the Law requires food handling premises to have:

- Toilet rooms which have **hand washing** and drying facilities;
- Toilet facilities separate from changing rooms;
- Toilets which never open directly onto food rooms;
- Toilets which are well ventilated;
- Enough toilets for both men and women.

Separate regulations cover the particular requirements for fish markets and fishing vessels.

Problems from Lavatories

Lavatories are constant sources of harmful bacteria. They are always contaminated.

It is very difficult to avoid picking up germs through water splashes or touching a contaminated surface.

It's very difficult for people with normal clean habits to accept that they can be contaminated but it's true. Remember that:

- Bacteria pass quite easily through toilet paper. They will also be present on seats etc. via splashes;
- Opening and closing doors leaves bacteria on handles;
- Turning taps on and off leaves bacteria on taps.

Handwashing

People think that it's enough to simply rinse hands after using the toilet. but it's not as simple as that:

- You can contaminate a tap as you turn it on;
- Then you clean your hands;
- Then you contaminate your hands as you turn the tap off!

It's easy enough to rinse off the tap handle as you wash your hands, but how often do you think of doing it?

This is why hand operated taps are not allowed in many food handling premises.

Most people do not wash their hands correctly, and why should they if they have not been properly trained?

But you are a trained food handler and you should wash your hands using an **approved method**.

- Nails should be scrubbed with a clean nail brush;
- Thorough hand washing using non-perfumed, bactericidal soap or soap solution is essential;
- Hands should be dried on a disposable paper towel or a hot air dryer;
- Care should be taken not to contaminate your hands before re-entering the food handling room;
- Barrier creams with a germicide can be useful at this point. They help to prevent skin cracking and will destroy some of the bacteria.

We know this might seem like a lot of trouble to take, but you're a food handler, not a coal miner!

**SAQ35**

If you are a food handler, when should you wash your hands?
List the appropriate times.

HANDLING DIFFERENT FOODS- CROSS CONTAMINATION

All foods in their natural state will have some bacteria present. Some foods, such as fish, can be remarkably free of **pathogenic** bacteria to begin with but this is a condition that can easily change. Bacteria can be found in many places, on our hands and clothes, on tools, workbenches, processing lines etc.

Food poisoning bacteria (**Pathogens**) are not quite as common as spoilage bacteria but are still to be found in many types of unprocessed foods including raw chicken, meat and fresh vegetables.

Your hands are also common places to find them. If these bacteria are able to get from these sources onto otherwise uncontaminated food then we have **cross contamination**.

Bacteria from unwashed hands can contaminate food, knives and cutting boards. Any food processed with these tools may become contaminated, and these contaminated fish may go on to contaminate more equipment, products etc.

Some foods can be largely free of bacteria, cooked foods for instance. If these foods are then contaminated with food poisoning bacteria (perhaps by cross contamination) then the bacteria will have no competition for space, food etc. from other bacteria and can multiply very quickly.

Foods contaminated in this way can appear perfectly OK even when they carry large numbers of dangerous (**pathogenic**) bacteria.

This last section is possibly the most important in the whole module. Why not read them again!



It is important not to contaminate one food with the bacteria from another food.

This is even more vital if one food is **raw** and the other is **cooked**.

Different foods should be handled in their own **separate areas**.

If different foods have to be handled in the same area, it must be at different times and the area must be cleaned between uses.

We told you earlier that freshly cooked food usually has no bacteria on it. If it gets infected by harmful bacteria from raw food, it becomes an ideal breeding ground for them with no competition and a nice warm temperature.

High Risk Foods are all food items that may be eaten after processing without further heat treatment or cooking before being eaten. Any bacteria present will not be destroyed by heating and may cause poisoning. This includes food products such as smoked fish (e.g. smoked salmon, hot smoked fish/shellfish), cooked dishes, live shellfish (oysters), canned and vacuum packed cooked food products, as well as products such as cooked meats and poultry, cheese, egg dishes and some dairy produce.

Another term for **high risk** is **high care**. As these **ready to eat** foods can become contaminated and will not be cooked before being eaten it is essential that they are treated with care when handled. Often in food factories we refer to areas which are either **low risk** or **high care** areas as customers don't like the terms *Low Care* or *High Risk* when used to describe their food!

And now for a final SAQ.



SAQ44

If you are producing **cooked products** what precautions do you need to take?

SUMMARY

Having studied this unit, you should now know a lot more about how food handling premises should be set up to reduce the risks of contaminating the food.

You should realise the importance of:

- Good design ;

- Careful choice of materials, when planning and equipping food handling premises

You should also be more aware of how easily cross-contamination of surfaces, equipment and food can happen.



Food handlers must be careful at all times to avoid cross-contamination

Especially:

- After using the lavatory;
- When handling raw food;
- When handling cooked food.

Fishmongers display cabinets are often divided into low risk (uncooked) and high care (cooked) products.

The workflow in a fish and chip shop is often

- raw materials delivered at the rear,
- preparation in a back room,
- cooking front of the shop and
- customers (and their food) leave by the main entrance.

There's no crossover of raw and cooked products, few opportunities for cross contamination.



Always keep raw and cooked products separate, preferably handle in separate rooms or separate production areas.

Wash hands and utensils after handling raw and before handling cooked foods.

You have now achieved Objective 4.