2019

Guidance for food business operators and local authorities

E. coli O157

Control of Cross-contamination

Food Standards Agency

Contents

Summary

Intended audience	This guidance is for local authorities and all types of businesses that handle both raw food (that can be a source of harmful bacteria including *E. coli* O157) and ready-to-eat food. For example: • manufacturers and processors • retailers • restaurants and takeaways • caterers (including movable and/or temporary premises and premises used primarily as a private house) • carers and childminders
Which UK nations does this cover?	This guidance applies to: • England • Wales • Northern Ireland
Purpose	The purpose of this document is to provide guidance on the steps that food businesses should take to control contamination between raw food that is a potential source of ***E. coli* O157** and ready-to-eat food. Following this guidance will also help control cross-contamination from a range of other foodborne bacteria such as campylobacter, salmonella and other harmful strains of ***E. coli***. Ultimately this will help provide safer food for all consumers. The measures required to control cross-contamination will vary between different businesses and should be proportionate to the risk posed in accordance with the specific activities carried out, such that: **A food business operator** must undertake an appropriate analysis of the activities within the business likely to cause food to be contaminated with *E. coli* O157 and must put into place appropriate steps to control these activities to ensure food safety. This guidance provides clear instruction that food businesses can follow depending on what is achievable and appropriate in their particular business. You may wish to discuss the controls that you consider necessary in your business with your local authority, and where relevant the primary authority, who can provide advice. **Local authority officers** should ensure that food business operators have adequate controls in place to reduce the risk of cross-contamination and ensure the safe production of food. This will include having full regard to the circumstances of each particular business. If a food business has a primary authority the local authority should liaise with that authority to ensure that an informed and consistent approach is taken. Local authorities should have due regard to the Regulator's Code on what action to take where they have determined the appropriate control measures are not in place.

Structure of the guidance and legal status	The information on the structure of this document can be found at '**How to use this guidance**'. This document provides guidance on compliance with applicable food hygiene legislation contained in Regulation (EC) No 852/2004 and good practice recommendations. This document is guidance and not law. Businesses and local authorities should refer to the laws that this guidance is based on.
Keywords	Food Law, Monitoring, Controls, Separation, Staff Training, Hygiene, Food Safety, *E. coli*, *E. coli* O157, Cross-contamination, Pathogens(harmful bacteria), Listeria, Campylobacter, Salmonella, Food hygiene, Food poisoning
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Revision history

	Revision date/change details
Version 1	2012 – First publication
Version 2	2013 – Full review
Version 3	2014 – Full review, format changes and updated guidance for dual use of complex equipment.
Version 4	2019 – Format changed, improved accessibility and clarification of language. Increased number of diagrams/information to ease understanding. Clarification of guidance for separation and chemical disinfection.

How to use this guidance

The guidance is laid out in a format designed to allow businesses to consider their processes and whether their current or proposed arrangements comply with hygiene regulations. This guidance will also help regulators to reference legal requirements and the relevant legislation.

The guidance is laid out in three areas:

'**The law**' – This quotes the relevant specific legal requirements. It is detailed in the blue box on the right of the page.

'**How to comply with the law**' – This outlines what should be done to comply with the law. Businesses may find other ways to comply with the law, however, you will need to check with your local authority if these are acceptable.

'**Good practice**' – This outlines good practices that businesses may want to implement. Good practice is voluntary, and will always be over and above the advice in '**How to comply with the law**' sections.

This guidance has been laid out in a format to allow businesses to find advice quickly. As a consequence, legal requirements quoted in '**The law**' may appear in more than one place, and appropriate additional guidance may be found elsewhere in the document. Other guidance documents are available from government agencies and other reliable sources.

A full glossary of legal definitions and other technical terms used has been provided at the end of this guide.

The information in the guidance document is to help food businesses comply with the law and reduce the risk of a cross-contamination incident. If you would like further information about how to comply with the law you should contact your local authority. You can find contact details of your local authority on the FSA website.

This guidance is also for local authority officers. When carrying out interventions with food businesses, the officer should offer advice on '**How to comply with the law**' and '**Good practice**'. When enforcement action is needed officers should refer to the corresponding regulation detailed in '**The law**' bar for each section.

Informational boxes

We have included additional information in blue popout boxes. All of these boxes are to highlight good practice to food businesses that will help to control the risk of cross-contamination. The content of these are not legal requirements.

Acknowledgements

Draft versions of this guidance have been reviewed in consultation with representatives of the following groups:

	UKHospitality (UKH)
	British Retail Consortium (BRC)
	Federation of Small Businesses (FSB)
	National Farmers' Retail & Markets Association (FARMA)
	National Farmers' Union (NFU)
	National Food Hygiene Focus Group representing local authorities in the UK
	Northern Ireland Food Managers Group
	Royal Environmental Health Institute of Scotland (REHIS)
	Scottish Food Enforcement Liaison Committee (SFELC)
	The Chartered Institute of Environmental Health (CIEH)
	All Wales Food Safety Expert Panel

We would like to acknowledge the helpful contributions provided by all. In addition, thank you to all those who have read and commented on this guidance during drafting.

Introduction

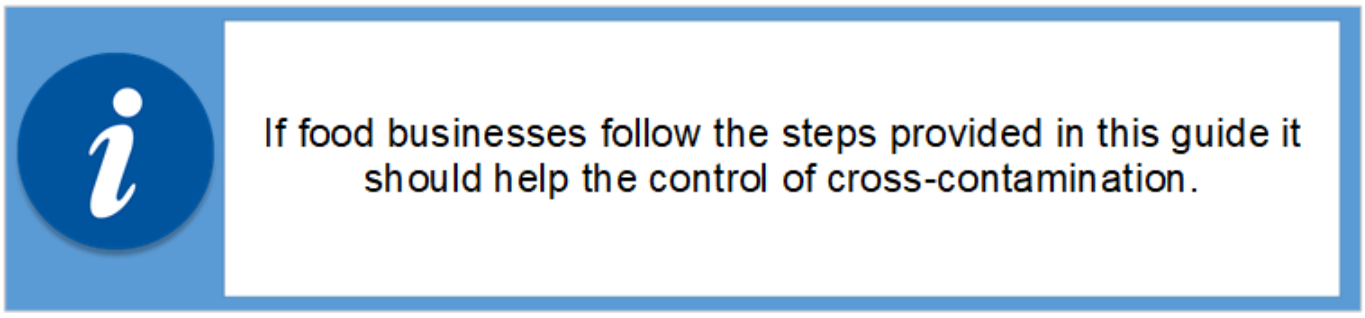
The Food Standards Agency (FSA) has produced this guidance to:

- help food businesses comply with food hygiene legislation to control cross-contamination with Escherichia coli O157 (hereafter called *E. coli* O157)
- assist food businesses in producing food that is safe to eat which in turn, will protect consumers
- clarifies the control measures that need to be applied by food businesses to avoid ready-to-eat food from being contaminated with *E. coli* O157

E. coli O157 is a harmful bacterium that is particularly dangerous because it can cause infections in very low doses - less than 10 bacteria. It can survive refrigeration and freezing and has been shown to be tolerant of acid, salt and dry conditions.
By following the steps in the guidance, a food business can control the transfer of *E. coli* O157 which may be present in food products such as raw meat and raw vegetables, to other food products which are ready-to-eat.

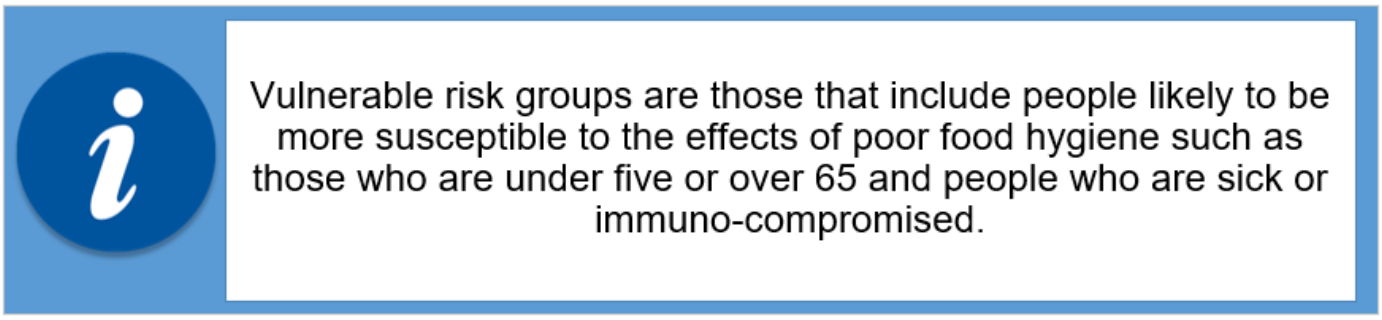
This guidance lays down the legal requirements and the FSA's interpretation of how to meet these requirements. It also includes good practice which goes further than the legal requirements.

Businesses are advised to follow the advice in the '**How to comply with the law**' sections. It is the responsibility of the food business operator to demonstrate to their local authority how they have complied with the requirements of the law. Businesses who choose to comply with the regulations in other ways will need to demonstrate to the local authority how these processes comply with the requirements of the regulations. This guidance also includes good practice, which is voluntary and will always be over and above the advice in the guide to compliance.



If consumed, even at very low doses, contaminated products can lead to death or serious untreatable illness. Even after recovery from infection, some people are left with permanent kidney or brain damage.

Whilst all people are liable to illness following the consumption of contaminated food products, special care should always be taken where vulnerable groups, such as young children or the elderly are the principal consumers of food within an establishment, for example, schools or residential/nursing care homes. The risk of cross-contamination with *E. coli* O157 must be considered and controlled in any food business where both raw and ready-to-eat food are handled.



E. coli O157 is a hazard that needs to be controlled through the business' food safety management system. To help businesses comply with this requirement the guidance explains:

- the circumstances in which *E. coli* O157 cross-contamination hazards should be considered
- the control measures that can be applied to control cross-contamination with *E. coli* O157
- that if such controls fail, there is an imminent risk to consumers with potentially severe consequences

The control measures required will vary between different businesses and should be proportionate to the risk posed in accordance with the specific activities of the business.

Your local authority will be able to advise on the control measures required in a specific business.

Who is this guidance for?

This guidance is for all types of businesses that handle both raw food (that can be a source of *E. coli* O157) and ready-to-eat food.

It will also help local authority officers assess the risk of cross-contamination with *E. coli* O157 when carrying out interventions at food businesses.

The guidance **does not apply** to the following types of food businesses:

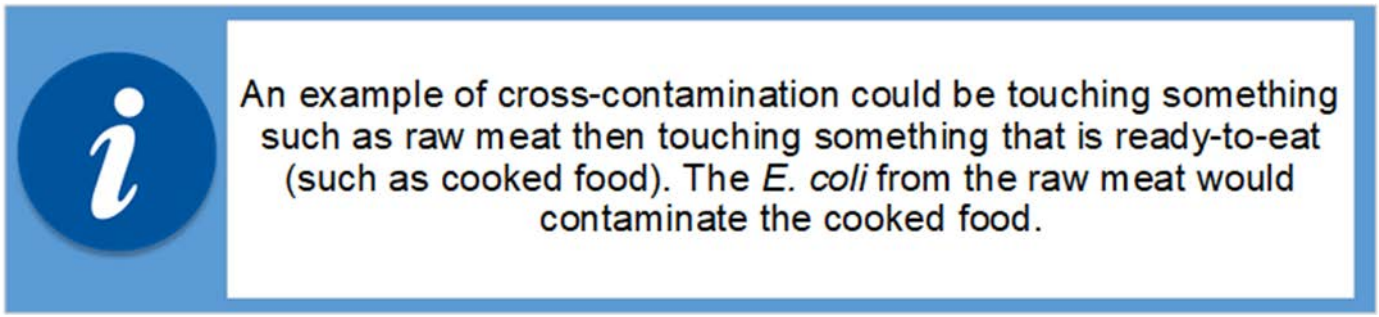
- **primary producers** and **growers** (for example, farmers)
- **food businesses** that handle only **pre-wrapped/pre-packaged food** in a way that prevents cross-contamination, such as distributors
- **warehouses** and **some retailers** where open food is not handled or packed on site
- **approved manufacturing processors** such as cheese manufacturers or raw milk processors (such as those pasteurising milk), which already have their own established systems in place to control cross-contamination

However, these businesses are still required to comply with food hygiene regulations and are advised to follow industry-specific guidance on good hygiene practices. Further information may be found on the FSA website.

What is cross-contamination?

Cross-contamination is a common cause of food poisoning. It is the process by which harmful microorganisms (germs) are transferred from raw meat or soiled vegetables to ready-to-eat food with harmful effect. This process can be direct or indirect see '**Types of cross-contamination**' section.

E. coli O157 bacteria and other dangerous *E. coli* strains mostly live in the intestines of animals. As animals usually live in fields, soil can become contaminated with bacteria such as *E. coli* O157.



The diagram below shows examples of cross-contamination.

Types of cross-contamination

There are two types of cross-contamination, direct and indirect. Cross-contamination is the spread of germs from sources to other items. If uncontrolled they can continue to be spread further. Direct sources include:

- raw meat
- unwashed fresh fruit and vegetables (not labelled as ‘ready-to-eat’)
- frozen produce (not marked as ‘ready-to-eat’)

Indirect sources include:

- surfaces
- hands
- equipment that has been used for raw food
- anything else that has been contaminated, for example, cloths

For more information about the sources of *E. coli* O157 see the ‘**Sources of E. coli O157 in food**’ section.

Steps to control cross-contamination

The key control measures outlined in this guidance to control *E. coli* O157 cross-contamination are:

Separation

Separation between raw and ready-to-eat food, contact surfaces and equipment.

Effective cleaning and disinfection

Effective cleaning and disinfection procedures will help prevent the possibility of harmful bacteria remaining on work surfaces and equipment.

Good personal hygiene

Personal hygiene (particularly hand washing) is essential in tackling the spread of potentially harmful bacteria directly from those handling food and equipment.

Staff training

Staff should be trained about the risks of cross-contamination and how to prevent it.

Management controls

Effective management controls and processes should be in place to prevent cross-contamination. These include detailed HACCP plans and cleaning schedules. For help with this check out the FSA's Safer food, better business packs and Safe catering (Northern Ireland).

Sources of E. coli O157 in food

E. coli O157 can be found in the following sources, and all these products are required to be handled as if *E. coli* O157 is present.

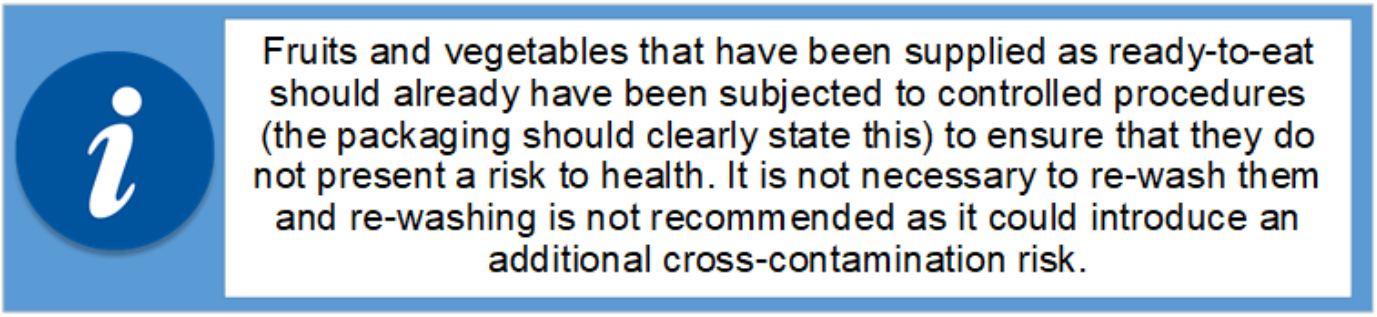
Fresh produce – fruits and vegetables, in general, must be treated as a potential source of *E. coli* O157 unless it specifically states on the label 'ready-to-eat'. To make them safe to eat they will need to undergo an adequate washing and/or processing treatment (for example, cooking).

Raw meat – *E. coli* O157 is most commonly associated with beef, lamb, goat and venison but it has also been found in pork, poultry and the offal of all the animal species mentioned. Raw bacon must be handled as raw meat because the salting/curing process will not guarantee the removal of harmful bacteria.

The soil where fresh produce grows can become contaminated with bacteria such as *E. coli* O157 which can transfer to fruits and vegetables. Root crops (for example, potatoes and carrots) and leafy vegetables (for example, lettuce and cabbage) sold loose are likely to have the most soil on the outside.

Washing will help to remove bacteria including *E. coli* O157 from the surface of fruit and vegetables. Most of the bacteria will be in the soil attached to the produce. So, washing to remove any soil is very important. When washing vegetables, do not just hold them under the tap, rub them under running water, for example, in a bowl of fresh water starting with the least soiled items first and then give each of them a final rinse. Washing loose produce is particularly important as it tends to have more soil attached to it than pre-packaged fruit and vegetables. Particular care

should be given to products that do not require heat treatment to prepare (such as salads). Even if you can't see any soiling, bacteria may be present.
Fresh produce that is not supplied as ready-to-eat is to be handled, stored and displayed in such a way that it does not contaminate ready-to-eat food. Also keep fresh items which will be consumed raw (for example, salads and fruits) that are not ready-to-eat away from more soiled vegetables.



You can find more information about washing fruits and vegetables on the NHS website.

Raw milk – raw (unpasteurised) milk and raw milk products supplied to a food business should always be treated as a potential source of contamination. Cheese manufactured from unpasteurised/raw milk and supplied as a ready-to-eat product should be treated as such. The processing of unpasteurised/raw milk in the manufacture of ready-to-eat products is beyond the scope of this guidance.

Untreated water supplies – water can be an important source of microbiological hazards because harmful bacteria may survive in water for months. Water supplied to food businesses, including private supplies, must meet potable water standards see the '**Glossary**' section.

Separation

The design of all food businesses should permit good food hygiene practices, including protection against contamination with *E. coli* O157 and other harmful bacteria.

It should be assumed that raw food brought into a business will be contaminated with bacteria including *E. coli* O157 and may result in *E. coli* O157 being introduced into the food business. Food businesses are required to identify the controls required to prevent the bacteria from contaminating ready-to-eat food.

The most effective control to minimise the risk of contamination from *E. coli* O157 onto ready-to-eat food is the **complete separation** of staff, storage areas, preparation tables, utensils and equipment. This means there will be no contact between people handling ready-to-eat food and those involved in the preparation of food which may be contaminated with *E. coli* O157. You should consider having the following separate items for both raw and ready-to-eat food:

- work and storage areas
- food contact surfaces
- equipment
- utensils
- staff

There will be circumstances where complete physical separation is not possible, and other controls will be necessary. For example, temporary separation arrangements, space or time separation. Strict cleaning and disinfection between processes must be followed between uses.

Where possible the work rota for the preparation of ready-to-eat food must be put in place to minimise any risk of cross-contamination. This means that all ready-to-eat food should be prepared first and either served for immediate consumption or chilled/stored in the relevant area. Then the food preparation area can be used for the preparation of raw meat and other raw vegetables that require cooking.

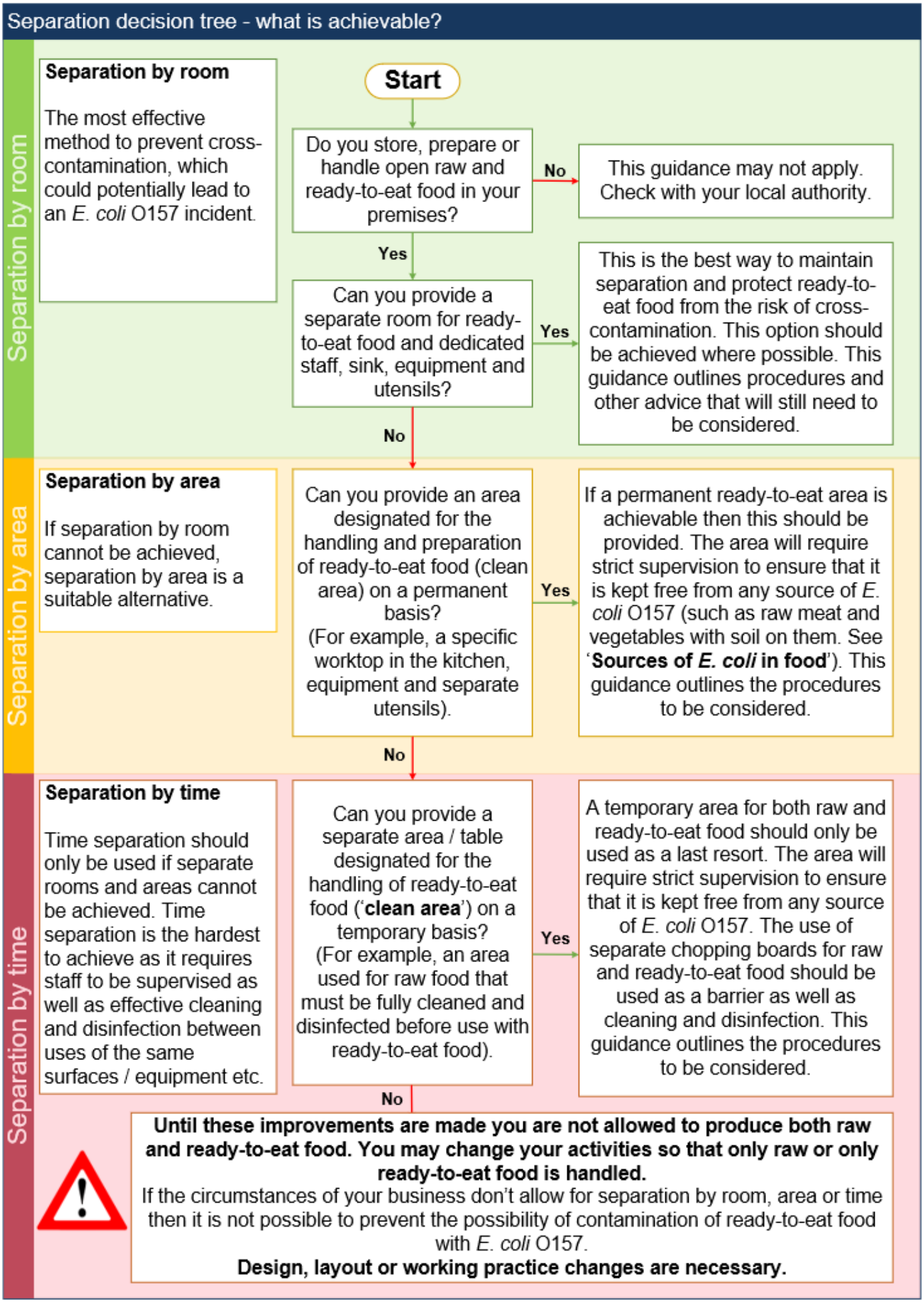
When using time separation as a control there must not be any ready-to-eat food in the work preparation area when it is being used for raw food. The work preparation area must be visually clean and disinfected prior to return to ready-to-eat use. All equipment and utensils must also be cleaned and disinfected.

Prior to any food handling, all staff and visitors must wash their hands thoroughly. Staff should be regularly reminded about the need for good personal hygiene and supervised to ensure the required standards are met. See the '**Staff**' and '**Personal hygiene and handling practices**' sections for more information.

Raw food contaminated with *E. coli* O157 may transfer bacteria to ready-to-eat food either by:

- direct contact through unsafe handling and storage
- indirect contact through staff movement and poor personal hygiene
- unsafe use of equipment, utensils and food contact surfaces
- unsafe use of cleaning materials and equipment

The diagram on the following page will help you to determine what separation method is achievable in your business. You should always implement the best method that is reasonably achievable.


Separation decision tree - what is achievable?
Separation by room
Separation by area
Separation by time
Separation by room
The most effective method to prevent cross-contamination, which could potentially lead to an E. coli O157 incident.
Start
Do you store, prepare or handle open raw and ready-to-eat food in your premises?
No
This guidance may not apply. Check with your local authority.
Yes
Can you provide a separate room for ready-to-eat food and dedicated staff, sink, equipment and utensils?
Yes
This is the best way to maintain separation and protect ready-to-eat food from the risk of cross-contamination. This option should be achieved where possible. This guidance outlines procedures and other advice that will still need to be considered.
No
Separation by area
If separation by room cannot be achieved, separation by area is a suitable alternative.
Can you provide an area designated for the handling and preparation of ready-to-eat food (clean area) on a permanent basis?
(For example, a specific worktop in the kitchen, equipment and separate utensils).
Yes
If a permanent ready-to-eat area is achievable then this should be provided. The area will require strict supervision to ensure that it is kept free from any source of E. coli O157 (such as raw meat and vegetables with soil on them. See 'Sources of E. coli in food'). This guidance outlines the procedures to be considered.
No
Separation by time
Time separation should only be used if separate rooms and areas cannot be achieved. Time separation is the hardest to achieve as it requires staff to be supervised as well as effective cleaning and disinfection between uses of the same surfaces / equipment etc.
Can you provide a separate area / table designated for the handling of ready-to-eat food ('clean area') on a temporary basis?
(For example, an area used for raw food that must be fully cleaned and disinfected before use with ready-to-eat food).
Yes
A temporary area for both raw and ready-to-eat food should only be used as a last resort. The area will require strict supervision to ensure that it is kept free from any source of E. coli O157. The use of separate chopping boards for raw and ready-to-eat food should be used as a barrier as well as cleaning and disinfection. This guidance outlines the procedures to be considered.
No
Until these improvements are made you are not allowed to produce both raw and ready-to-eat food. You may change your activities so that only raw or only ready-to-eat food is handled.
If the circumstances of your business don't allow for separation by room, area or time then it is not possible to prevent the possibility of contamination of ready-to-eat food with E. coli O157.
Design, layout or working practice changes are necessary.

Food preparation rooms/areas

When both raw and ready-to-eat food is handled and prepared from the same premises, there must be effective procedures in place to prevent cross-contamination.

How to comply with the law

This will depend on the business activities, and what is achievable for the business. See the '**Separation**' section to help you determine what is the best option.
The options in order of effectiveness are:

1. **Using a permanent separate** room for preparing raw food and another for ready-to-eat food. This room should have dedicated storage facilities, staff, equipment, utensils and sinks for the handling and preparation of either ready-to-eat food or raw food. Dedicated hand washing facilities should also be provided.
2. **Using an area designated for the handling and preparation of ready-to-eat food** (also referred to as a 'clean area') on a permanent basis. The area must be of sufficient size for the operations carried out, and suitably constructed and installed in such a way as to ensure that ready-to-eat food can be effectively protected from any potential contamination (for example, located sufficiently away from areas where splashing may contaminate ready-to-eat food).
3. **Using an area designated for ready-to-eat food based on time separation** (also referred to as a 'temporary clean area'). This area will have been cleaned and disinfected between uses. See the '**Cleaning and disinfection**' section for the required standards before being used for ready-to-eat food. When taking this option, the following needs to be taken into consideration:
    - time separation is to be managed in such a way that it ensures contamination by *E. coli* O157 has been effectively removed from all surfaces (including staff hands) that come into contact with ready-to-eat food
    - worktops must be thoroughly cleaned and disinfected after the area has been used to prepare raw food before they can be used for ready-to-eat food. Depending on the activities carried out it might also be required to clean and disinfect the walls in the area
    - when using time separation, work surfaces must not be used as food contact surfaces. A suitable barrier, such as a chopping board or a container, should be used as the surface directly in contact with food
    - the spaces above and below the work surface will need to be taken into consideration to avoid anything stored in

The law

Regulation (EC) No 852/2004 Annex II

Chapter I
(2) the layout, design, construction, siting and size of food premises are to:

(a) permit adequate maintenance, cleaning and/or disinfection, avoid or minimise air-borne contamination, and provide adequate working space to allow for the hygienic performance of all operations

(c) permit good food hygiene practices, including protection against contamination and, in particular, pest control.

Chapter II
(1) In rooms where food is prepared, treated or processed (excluding dining areas and those premises specified in Chapter III, but including rooms contained in means of transport) the design and layout are to permit good food hygiene practices, including protection against contamination between and during operations. In particular:

(f) surfaces (including surfaces of equipment) in areas where foods are handled and in particular those in contact with food are to be maintained in a sound condition and be easy to clean and, where necessary, to disinfect. This will require the use of smooth, washable corrosion-resistant and non-toxic materials, unless food business operators can satisfy the competent authority that other materials used are appropriate.

them becoming contaminated or becoming a potential source of contamination

Good practice

It is recommended that separate areas are provided for raw and ready-to-eat food. Where practicable, use separate rooms that include:

- separate fridges, freezers, display units
- separate designated staff/uniforms
- separate designated utensils
- separate sinks
- separate wash hand basins
- separate equipment
- separate items such as cling film, wrapping (and dispensers), vac bags, sanitiser, cloths, marking them as raw or ready-to-eat food

Where room or area separation is used there should be clear signage informing staff and visitors which areas are designated for raw food only and which are for ready-to-eat food only.

When time separation is used it is recommended, where possible, to prepare ready-to-eat food first in a designated area before undertaking the preparation of raw food.

The law *(cont.)*

Chapter III
Requirements for movable and/or temporary premises (such as marquees, market stalls, mobile sales vehicles), premises used primarily as a private dwelling-house but where foods are regularly prepared for placing on the market and vending machines.

(1) Premises are, so far as it is reasonably practicable, to be so sited, designed, constructed and kept clean and maintained in good repair and condition as to avoid the risk of contamination...

(2) In particular, where necessary:

(b) surfaces in contact with food are to be in sound condition and be easy to clean and, where necessary, to disinfect. This will require the use of smooth, washable, corrosion-resistant and non-toxic materials, unless food business operators can satisfy the competent authority that other materials used are appropriate;

(h) foodstuffs are to be placed as to avoid the risk of contamination so far as is reasonably practicable.

Storage and display

If possible use separate storage and display facilities for raw and ready-to-eat food.

How to comply with the law

The same storage (for example, same fridge/freezer) or display units can be used for raw and ready-to-eat food if the storage space is of sufficient size and the food is stored in such a way that contamination is avoided.

Adequate separation within storage and display will often mean raw food must be stored below ready-to-eat food unless other measures are in place to ensure that cross-contamination is avoided.

Door handles, light switches and other hand contact points can be a potential source of indirect cross-contamination and should be included on cleaning checklists and schedules. See '**Personal hygiene and handling practices**' and '**Cleaning and disinfection**' sections for more information.

If the food stored is wrapped or packaged attention needs to be paid to the integrity and condition of the packaging to avoid the possibility of it becoming a source of contamination, for example, damaged or soiled packaging. Packaging of raw meat can be contaminated with harmful bacteria and should therefore also be separated from ready-to-eat food.

Staff need to be instructed on adequate separation within storage and display equipment so that they are clear on where to store food safely.

Good practice

It is good practice to use separate storage and display facilities including refrigerators, freezers and display units for raw and ready-to-eat food. Store raw and ready-to-eat food in separately designated areas, even if the food is in sealed containers. Locate ready-to-eat food so that raw food does not have to be lifted over it.

One way to control the potential risk of cross-contamination from door handles is to get the staff that handle raw food to wash their hands before touching door handles.

Ensure packaging is robust, not damaged or leaking and food is checked regularly to ensure the integrity and adequate condition of packaging.

Use clear signage designating storage areas for raw or ready-to-eat food, so that they are clearly identifiable to all staff and visitors.

The law

Regulation (EC) No 852/2004 Annex II Chapter IX

(2) Raw materials and all ingredients stored in a food business are to be kept in appropriate conditions designed to prevent harmful deterioration and protect them from contamination.

(3) At all stages of production, processing and distribution, food is to be protected against any contamination likely to render the food unfit for human consumption, injurious to health or contaminated in such a way that it would be unreasonable to expect it to be consumed in that state.

(5) Raw materials, ingredients, intermediate products and finished products likely to support the reproduction of pathogenic micro-organisms or the formation of toxins are not to be kept at temperatures that might result in a risk to health. The cold chain is not to be interrupted. However, limited periods outside temperature control are permitted, to accommodate the practicalities of handling during preparation, transport, storage, display and service of food, provided that it does not result in a risk to health. Food businesses manufacturing, handling and wrapping processed foodstuffs are to have suitable rooms, large enough for the separate storage of raw materials from processed material and sufficient separate refrigerated storage.

Equipment and utensils

How to comply with the law

If equipment and utensils (for example, chopping boards, containers and tongs) are to be used for raw and ready-to-eat food, they should be disinfected by heat or a full dishwasher cycle between uses. See '**Cleaning and disinfection**' and '**Heat Disinfection**' sections for more information.

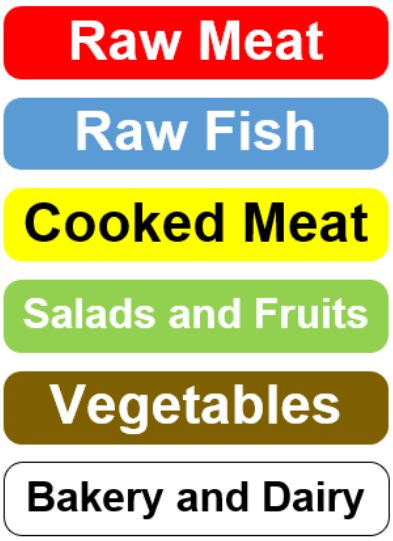
If heat disinfection or using a dishwasher is not possible, separate equipment and utensils must be used for handling raw food only and ready-to-eat food only. These must be stored and washed separately.

Equipment, utensils, dishes and wrapping materials used for ready-to-eat food are not to be stored in open storage, for example, underneath a worktop where preparation of raw food is undertaken as this could lead to cross-contamination.

Chopping boards that have deep scores from repeated use should be replaced as effective cleaning may no longer be possible.

Good practice

It is strongly recommended that businesses have dedicated separate equipment and utensils (for example, knives, containers, chopping boards) for raw and ready-to-eat food and these should be easily identifiable, for example, colour coded. Where heat disinfection or dishwasher cleaning is not available this is essential. The diagram below is an example of a colour coding system.



When using a dishwasher to clean equipment and utensils the manufacturer's instructions should always be followed. Dishwashers must be cleaned, serviced regularly and functioning correctly. If the dishwasher is not working correctly it cannot be used as a control. When using a dishwasher you should allow the washing cycle to complete fully.

The law

Regulation (EC) No 852/2004 Annex II Chapters II, III and V

Chapter II

(2) Adequate facilities are to be provided, where necessary, for the cleaning, disinfecting and storage of working utensils and equipment. These facilities are to be constructed of corrosion-resistant materials, be easy to clean and have an adequate supply of hot and cold water.

Chapter V

(1) All articles, fittings and equipment with which food comes into contact are to:

(a) be effectively cleaned and, where necessary, disinfected. Cleaning and disinfection are to take place at a frequency sufficient to avoid any risk of contamination;

(b) be so constructed, be of such materials and be kept in such good order, repair and condition as to minimise any risk of contamination;

Chapter III, Requirements for movable and/or temporary premises...

(2) in particular, where necessary:

(c) adequate provision is to be made for the cleaning and, where necessary, disinfecting of working utensils and equipment'.

Complex equipment

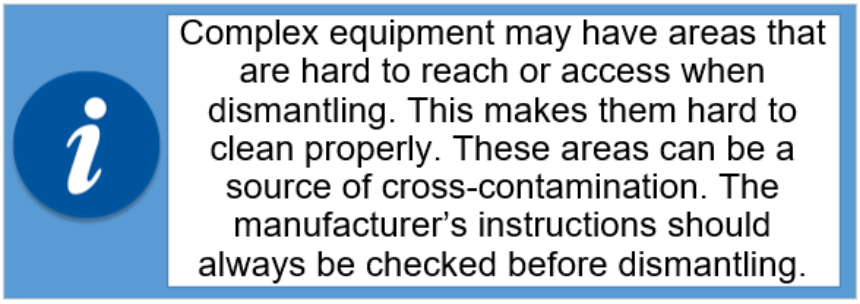
Complex equipment is any equipment that can be very difficult to clean adequately between uses. This may be because it is hard to access all parts of the equipment or because they are made up of a number of small parts and surfaces, which may not be smooth or easy to clean. Examples of complex equipment include slicers, mincers and vacuum packing machines.

There is a risk of cross-contamination where the same piece of complex equipment is used to process raw and ready-to-eat food. This is called ‘dual use’.

Depending on the complexity of equipment the contamination may not be adequately removed during routine cleaning and disinfection processes and can result in any ready-to-eat food subsequently processed becoming contaminated.

How to comply with the law

Food business operators must ensure that **vacuum packers, slicers, mincers, blenders, mixers** and **other complex** equipment are not to be dual used unless the equipment is fully dismantled and disinfected between uses as there is a risk of cross-contamination. This is because contamination can occur throughout the internal components of the equipment that cannot be adequately disinfected without a full dismantle.



In the case of **vacuum packers**, a full dismantle should only be undertaken by a competent engineer as the internal components need to be accessed, cleaned and disinfected.

Separate guides about ‘**vacuum packing**’ and ‘**how to re-commission vacuum packers**’ are available.

In the case of slicers and mincers, a full dismantle to facilitate cleaning and disinfection may be less complicated than a vacuum packer, however, it is considered that this process could not be done effectively during the normal operations of a working day.

The law

Regulation (EC) No 852/2004 Article 5

Hazard analysis and critical control points

(2) The HACCP principles consist of the following:

(a) identifying any hazards that must be prevented, eliminated or reduced to acceptable levels;

(b) identifying the critical control points at the step or steps at which control is essential to prevent or eliminate a hazard or reduce it to acceptable levels;

(c) establishing critical limits at critical control points which separate acceptability from unacceptability for the prevention, elimination or reduction of identifiable hazards.

Annex II Chapter IX

(3) At all stages of production, processing and distribution, food is to be protected against any contamination likely to render the food unfit for human consumption, injurious to health or contaminated in such a way that it would be unreasonable to expect it to be consumed in that state.

Effective cleaning procedures during normal operations may be possible. For example, during a period when the business is not operating, ensuring sufficient time and attention can be given to properly dismantle clean and disinfect. Dismantling will depend on the type of machine used, but the food business operator must be able to easily access and disinfect all surfaces that could be contaminated.

For other types of less complex equipment, such as temperature probes, mixers and weighing scales, the food business operator needs to determine whether it is safe to dual use it during the normal operations of a working day. If you are unsure check with your local authority.

This will involve:

- determining how complex the equipment is
- how the equipment is used/dual used by the business (for example, continuous use versus occasional)
- the activities of the business
- the cleaning and disinfection required to minimise the risk of cross-contamination

The level of cleaning and disinfection will be dependent on the equipment. For example, equipment that has flat surfaces will be easier to disinfect than those with lots of smaller moving parts. See the '**Chemical disinfection**' section for more information.

It may, therefore, be possible to dual-use certain types of less complex equipment if the business has the correct controls in place.

It should be noted that machines intended for use with food are required to comply with the European Machinery Directive 2006/42/EC.

Good practice

It is recommended to label or colour code complex equipment so all staff are aware of its intended use.

If permanent preparation areas for raw food only and ready-to-eat food only have been designated, then complex equipment should be located in the area appropriate to that use.

It is also recommended to have separate vacuum packing bags clearly marked for raw food only and ready-to-eat food only to reduce the risk of cross-contamination.

The law *(cont.)*

(5) Raw materials, ingredients, intermediate products and finished products likely to support the reproduction of pathogenic micro-organisms or the formation of toxins are not to be kept at temperatures that might result in a risk to health. The cold chain is not to be interrupted. However, limited periods outside temperature control are permitted, to accommodate the practicalities of handling during preparation, transport, storage, display and service of food, provided that it does not result in a risk to health. Food businesses manufacturing, handling and wrapping processed foodstuffs are to have suitable rooms, large enough for the separate storage of raw materials from processed material and sufficient separate refrigerated storage.

Cash registers

How to comply with the law

Cash registers and other non-food contact equipment (for example, pens, phones, chip and pin machines and light switches) may be shared by staff handling raw and ready-to-eat food.

Staff must wash their hands before handling any ready-to-eat food and after handling raw food. This is the main control. See the '**Personal hygiene and handling practices**' section for more information.

Good practice

Having separate cash registers ensuring one is kept in the raw area and one is kept in the ready-to-eat area.

Cash registers and other equipment should be included in your cleaning schedules.

Staff should be trained on how to wash their hands effectively and how often they should wash them.

The FSA has produced a video showing how to wash your hands effectively.

The law

Regulation (EC) No 852/2004

Article 5

(2) The HACCP principles consist of the following:

(a) identifying any hazards that must be prevented, eliminated or reduced to acceptable levels;

(b) identifying the critical control points at the step or steps at which control is essential to prevent or eliminate a hazard or reduce it to acceptable levels;

(c) establishing critical limits at critical control points which separate acceptability from unacceptability for the prevention, elimination or reduction of identifiable hazards.

Annex II Chapter IX

(3) At all stages of production, processing and distribution, food is to be protected against any contamination likely to render the food unfit for human consumption, injurious to health or contaminated in such a way that it would be unreasonable to expect it to be consumed in that state.

Sinks

How to comply with the law

Where possible, separate sinks should be used for washing raw food only and ready-to-eat food only and equipment.
If separate sinks are not possible a shared sink may be used, providing the taps and any other fittings, are cleaned and disinfected between uses.

When the sink is shared for raw food and ready-to-eat food, the food must not come into direct contact with the sink. A dedicated container for either raw food or ready-to-eat food only can be used to avoid direct contact.

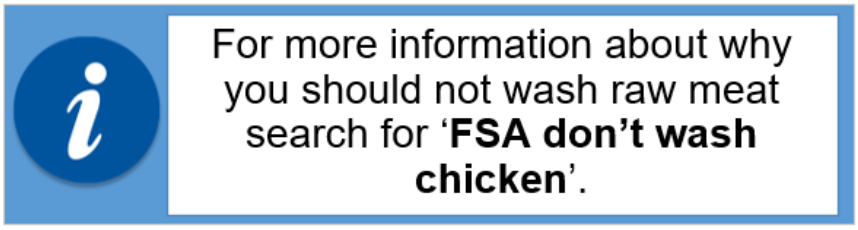
Disinfectants used to disinfect sinks are required to comply with the **BS EN 1276:2009** or **BS EN 13697:2001** or equivalent standards. See the '**Chemical disinfection**' section for more information.

Good practice

It is recommended to have separate sinks:

- for washing equipment and utensils used for raw food and for rinsing raw food such as fruits and vegetables
- for washing equipment and utensils used for ready-to-eat food and for rinsing ready-to-eat food such as cooked rice or pasta

It is not recommended to wash raw meat or poultry due to the increased risk of splashing bacteria onto surrounding surfaces.



It is not recommended to rewash vegetables or fruit that have been supplied as ready-to-eat. See the '**Sources of E. coli O157 in food**' section for more information.

The law

Regulation (EC) No 852/2004

Chapter II

(2) Adequate facilities are to be provided, where necessary, for the cleaning, disinfecting and storage of working utensils and equipment. These facilities are to be constructed of corrosion-resistant material, be easy to clean and have an adequate supply of hot and cold water.

(3) Adequate provision is to be made, where necessary, for washing food. Every sink or other such facility provided for the washing of food is to have an adequate supply of hot and/or cold potable water consistent with the requirements of Chapter VII and be kept clean and, where necessary, disinfected.

Chapter III

Requirements for movable and/or temporary premises.

(2) In particular, where necessary:

(d) Where foodstuffs are cleaned as part of the food business' operations, adequate provision is to be made for this to be undertaken hygienically;

(e) an adequate supply of hot and/or cold potable water is to be available;

Wrapping and packing material

How to comply with the law

Materials used to wrap and/or pack ready-to-eat food must be stored in a designated area and the wrapping material must be kept free from contamination at all times.

Staff handling wrapping and packaging materials must ensure that their clothes and hands are not sources of contamination when loading or removing wrapping and packaging materials.

Food businesses must ensure that food received wrapped and/or packaged from other establishments is visually checked to ensure the integrity and condition of the packaging does not pose a risk of cross-contamination, and the separation between raw and ready-to-eat food during transport is adequate.

When unpacking or unwrapping packaged food, ensure that packaging and wrapping materials are removed hygienically and are not a source of contamination.

Good practice

It may be possible to obtain assurance regarding the cleanliness of the wrapping and packaging material through contractual arrangements with the supplier. For example, auditing the packaging material supplier or requesting written confirmation detailing the hygienic procedures followed to ensure that the wrapping/packaging materials are safe to be used with ready-to-eat food.

Food businesses may consider having a written agreement with their suppliers about the delivery requirements.

Where necessary raw food should be unpacked and/or unwrapped and placed in designated containers before it is brought into the kitchen or storage area.

Separation of wrapping/packaging materials for raw food only and ready-to-eat food only should be implemented. This should include the equipment such as cling film dispensers, overwrap machines and greaseproof paper.

The law

Regulation (EC) No 852/2004 Annex II

Chapter X

(1) Material used for wrapping and packaging are not to be a source of contamination.

(2) Wrapping materials are to be stored in such a manner that they are not exposed to a risk of contamination.

(3) Wrapping and packaging operations are to be carried out so as to avoid contamination of the products. Where appropriate and in particular in the case of cans and glass jars, the integrity of the container's construction and its cleanliness is to be assured.

(4) Wrapping and packaging material re-used for foodstuffs is to be easy to clean and, where necessary, to disinfect.

Chapter XII

Food business operators are to ensure:

(1) That food handlers are supervised and instructed and/or trained in food hygiene matters commensurate with their work activity.

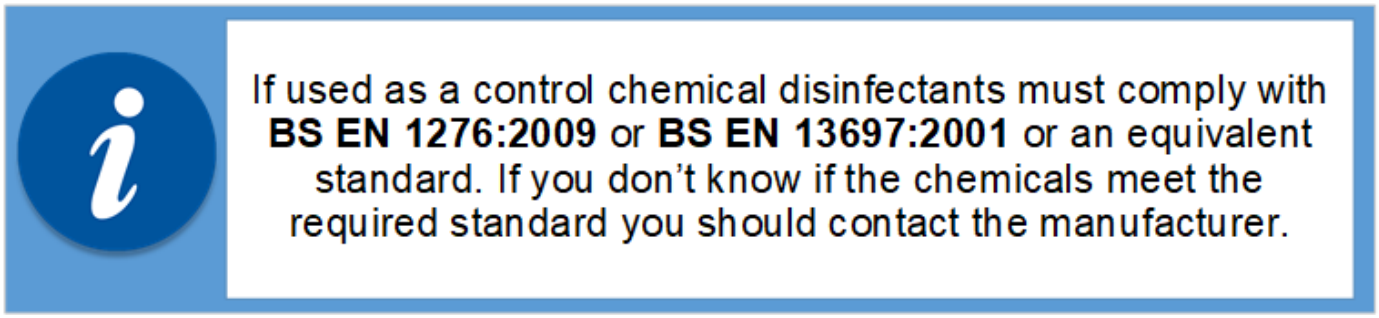
Cleaning and disinfection

Cleaning is the removal of dirt, grease and other matter from surfaces. To do it effectively you will need to use an appropriate chemical detergent to dissolve and remove the grease, dirt and food.

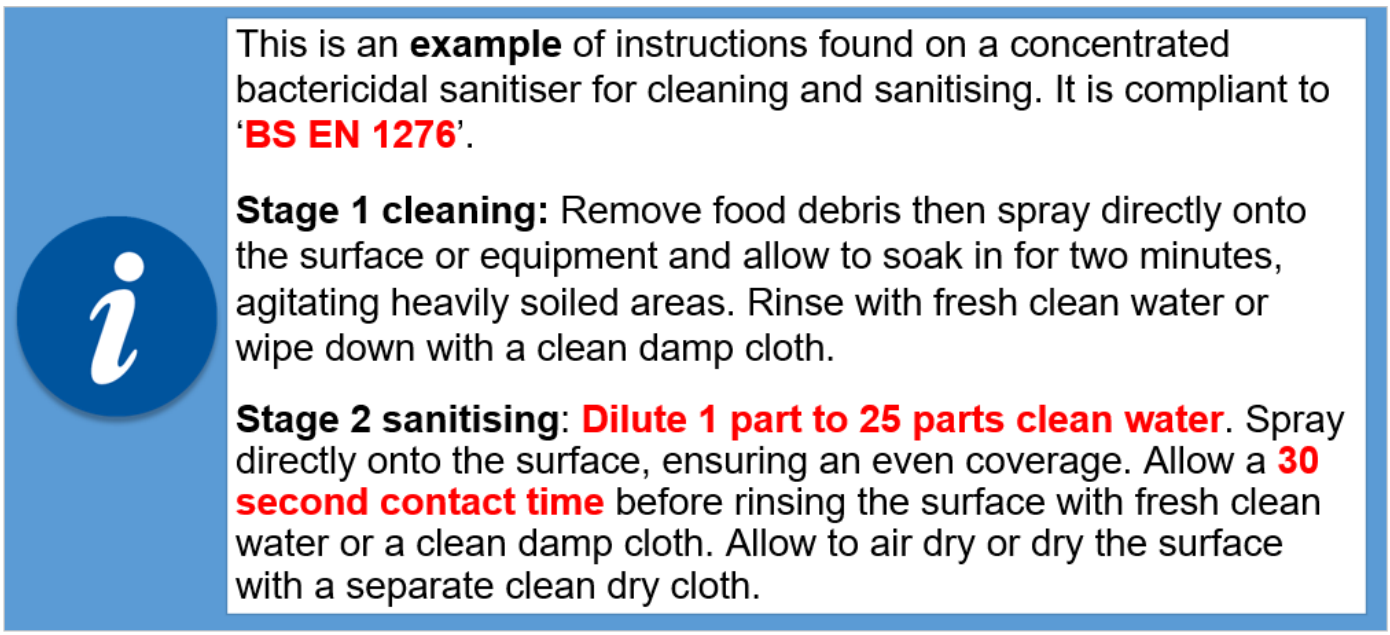
Disinfection is the reduction of the levels of microorganisms (germs) on a surface. There are two main ways to kill *E. coli* O157 (and other harmful bacteria) to control cross-contamination. It is recommended to use heat or chemicals (disinfectant/sanitiser).

A disinfectant is a chemical that kills bacteria. Check that surfaces are clean of grease, dirt and food before you use a disinfectant. There may be other ways to disinfect, however you should check with your local authority if these methods are acceptable as a control.

When using a chemical disinfectant, it is important to follow the manufacturer's instructions carefully. There will be specific instructions on how to use it, including the dilution rate, and the contact time. There are specific standards that chemical disinfectants must meet. See the '**Chemical disinfection**' section for more information.



A sanitiser is a two-in-one product that acts as a detergent and a disinfectant. If you use a sanitiser, make sure you use it twice, in two stages. First to clean and remove grease, and then to disinfect. The diagram below shows an **example** of the two-stage sanitising process. Always follow the manufacturer's directions for each product used.



When complete physical separation is not possible, cleaning and disinfection procedures are considered critical to control cross-contamination and to ensure food safety.

E. coli O157 and other harmful bacteria must be effectively removed from all surfaces and equipment before they can be used in the preparation of ready-to-eat food.

If cleaning and disinfection are not performed properly it may result in the contamination of food which would be a health risk for consumers.

It is essential that staff designated for carrying out cleaning and disinfection procedures are adequately supervised, instructed and/or trained to ensure the procedures are carried out effectively every time.

Make sure staff are fully trained on how to clean and disinfect surfaces such as worktops and equipment. This training should be repeated where required and managers should check processes are being followed correctly.

Heat disinfection

How to comply with the law

Heat is the most reliable way to kill *E. coli* O157 and many other harmful bacteria.

If the same utensils and equipment are used for both raw food and ready-to-eat food at separate times, they should be heat disinfected or put through a full dishwasher cycle capable of destroying *E. coli* O157 between uses.

Dishwashers must be cleaned and functioning correctly. If the dishwasher is not working correctly it will not be an effective control. When using a dishwasher, you must follow the manufacturer's instructions and allow the washing cycle to complete fully.

Any method of heat disinfection is acceptable if the process removes *E. coli* O157 from all surfaces. For example, a sterilising sink or a steam cleaner. Adequate time and temperature combinations may need to be considered and utensils and equipment should be visibly clean prior to any heat disinfection.

If heat disinfection or a dishwasher is not available, then equipment and utensils should not be shared. As such they should be specifically designated for either raw food only or for ready-to-eat food only. See the '**Separation**' section for more information.

Good practice

The use of dishwashers to clean utensils and food equipment is good practice if they are properly maintained. The full cycle must be completed and not interrupted once it has started.

Food businesses should follow the manufacturer's instructions for use which usually include instructions on removal of food particles, correct loading (avoid overloading), pre-rinsing equipment and utensils, removal of limescale from water jets, filters and drains, appropriate use of chemicals and regular cleaning of the machine.

If chemical disinfection is used within a dishwasher this should be discussed with the relevant chemicals' manufacturer to ensure the chemicals used are suitable.

Where heat or a dishwasher is not available it is good practice to use separate designated sinks to wash equipment and utensils.

The law

Regulation (EC) No 852/2004 Annex II

Chapter I

(1) Food premises are to be kept clean and maintained in good repair and condition.

(2) The layout, design, construction, siting and size of food premises are to:

(a) permit adequate maintenance, cleaning and/or disinfection, avoid or minimise air-borne contamination and provide adequate working space to allow for the hygienic performance of all operations.

Chapter V

(1) All articles, fittings and equipment with which food comes into contact are to:

(a) be effectively cleaned and, where necessary, disinfected. Cleaning and disinfection are to take place at a frequency sufficient to avoid any risk of contamination;

(d) be installed in such a manner as to allow adequate cleaning of the equipment and the surrounding area.

Chapter IX

(3) At all stages of production, processing and distribution, food is to be protected against any contamination likely to render the food unfit for human consumption, injurious to health or contaminated in such a way that it would be unreasonable to expect it to be consumed in that state.

Chemical disinfection

How to comply with the law

When the same non-food contact surfaces such as worktops, sinks, etc. are used at different times to prepare raw food and ready-to-eat food, they must be cleaned and disinfected between uses.

Chemical disinfectants used in these areas must comply with **BS EN 1276:2009** or **BS EN 13697:2001** or an equivalent standard. An equivalent standard is one that meets or exceeds the requirements of the British Standard. If you don't know if the chemicals meet the required standards you should contact the manufacturer.

Disinfection will only be effective if carried out on visibly clean surfaces that are free from grease, film or solid matter. Chemical disinfection must always be carried out as a two-stage process.

Stage 1: General cleaning using a detergent
This involves the physical removal of visible grease, dirt and food particles from surfaces and equipment, followed by a thorough rinse to ensure the removal of all residues from the surface.
Stage 2: Disinfection
This involves the use of a disinfectant following the manufacturer's instructions for its dilution rate and contact time. Disinfectants will not be effective if used on dirty surfaces, or if applied at the incorrect dilution or for the insufficient contact time or the incorrect temperature.

When using a sanitiser, the two-stage cleaning process as described above is still required. Therefore, apply the sanitiser as a detergent first for general cleaning, rinse and then apply the sanitiser again for the disinfection stage.

Manufacturer's instructions must be checked for the correct dilution factor, contact time and rinsing for disinfectants and sanitisers. This is to ensure that the work surface has been effectively cleaned and residue from the disinfectants or sanitisers doesn't contaminate the food.

Temperature probes are an effective way to check the temperature of food. It is very important to keep the probe clean, otherwise, it could cross-contaminate the food. Before and after a probe has been inserted into food, clean and disinfect it. If you

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are using probe wipes these should contain a disinfectant (to the required standards **BS EN 1276:2009** or **BS EN 13697:2001**). The probe should be wiped immediately after use, first to remove any food residue and then again with a new wipe to disinfect. Evidence has shown that agitation (moving the wipe up and down the probe firmly) is important when cleaning temperature probes. Ensure contact time is in line with the manufacturer's instruction.

Probe wipes can be used as a risk reduction method but not as a control in the removal of *E. coli* O157. This means if the same probe is used for both raw and ready-to-eat food, a more effective means of decontamination should be used. For example, wiping the probe to remove excess food residue, followed by immersion in boiling water above 80°C.

Further advice on probes can be found in Safer food, better business (SFBB).

Staff involved in cleaning procedures must be supervised, instructed and/or trained as required, see the '**Management controls and training**' section for more information.

Good practice

The 'Clean as you go' method is recommended to ensure that work areas, utensils and equipment are kept to the required levels of hygiene during the working day.

The 'Clean as you go' method means staff keep the work area clean and tidy at all times whilst working. This may include cleaning up spills, wiping down surfaces, removing waste to bins and generally keeping the work area, tools, staff and equipment to the required levels of hygiene to produce safe food.

When choosing disinfectants for chillers/freezers you should check with the supplier if the disinfectant chosen is effective when used at low temperatures.

Where probe wipes may not be available an alternative could be using a disinfectant that meets the required standards with a disposable paper towel.

Chemicals should be purchased from reputable suppliers. If you don't know if the chemicals meet the required standard you should contact the manufacturer.

Whenever you work with chemicals, you should carry out a '**Control of Substances Hazardous to Health**' (COSHH) assessment. Manufacturers will usually have information about this. Controls might include 'wear gloves when using' or 'do not breathe in spray'. The Health and Safety Executive has more information about how to carry out a COSHH assessment.

Training on cleaning procedures should include:

- all appropriate health and safety information
- materials and equipment required
- name of products
- required dilutions
- required contact times
- the overall standard to be achieved as part of the cleaning and disinfection process

Standards for disinfectants and sanitisers

How to comply with the law

Any disinfectant or sanitiser used as a control of cross-contamination *E. coli* O157 should at least meet the requirements of one of the following published standards at the recommended use, dilution and contact time:

- **BS EN 1276:2009**
- **BS EN 13697:2001**
- **an equivalent standard**

These standards provide assurance that the disinfectant (or sanitiser) is capable of reducing a range of harmful bacteria, including *E. coli* O157, to acceptable levels if used as stated by the manufacturer. An equivalent standard is one that meets or exceeds the requirements of the British Standard.

Food business operators and staff must ensure that they are using the appropriate disinfectants. If the standard is not displayed on the product's label they need to contact the supplier or manufacturer for confirmation.

Good practice

Disinfectants should be freshly prepared according to the manufacturer's instructions. If disinfectants or sanitisers are being prepared in advance or transferred into new bottles (for example, to dilute concentrated products) then it is good practice to put instructions on the bottle on how to use the chemical, for example, to specify contact time, expiry date of the product, dilution rate and if it requires rinsing.

Further information on chemicals can be obtained through the Health and Safety Executive.

Because new products come onto the market and others are discontinued or change formulation, the FSA does not hold a list of products that comply with **BS EN 1276:2009** or **BS EN 13697:2001** standards.

The law

Regulation (EC) No 852/2004 Annex II

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Chapter V

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Chapter IX

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Cleaning materials

How to comply with the law

Food business operators must ensure that cleaning equipment is not a source of contamination.

Cloths that have been used to clean raw food areas must not be used to clean ready-to-eat food areas unless suitably washed between uses in such a way that ensures that *E. coli* O157 has been destroyed.

Steeping dirty cloths in bleach is not considered an effective measure to control cross-contamination with *E. coli* O157. Any organic matter, such as grease, dirt or food left on the cloths will reduce the effectiveness of the disinfectant properties in the bleach.

Cleaning materials (for example, cloths, brushes, etc.) used on the floor must be separated from materials used on other surfaces such as worktops.

The cleaning of floors must be carried out in a way that does not contaminate surfaces in a clean environment (for example, by splashing).

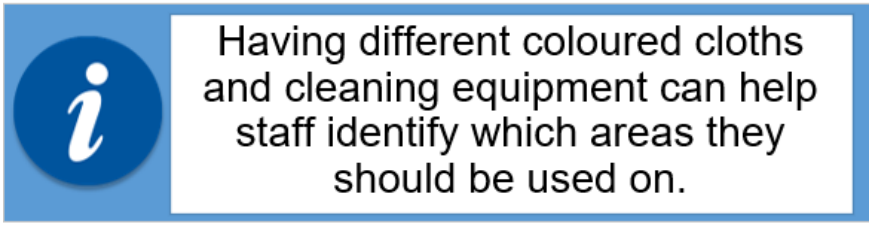
Cleaning equipment should be kept in good condition and regularly cleaned and disinfected or replaced as required.

Good practice

When washing reusable cleaning materials (such as cloths), a suitably high temperature can be obtained using a 90˚C cycle in a washing machine.

The use of disposable, single-use cloths or blue paper roll is recommended to prevent cross-contamination.

Cleaning materials for different areas should be easily identifiable (for example, colour coded) and stored separately.



Floors can never be regarded as clean and any food or surfaces of food equipment that come into contact with a floor must be considered as potentially contaminated (food should be discarded, and containers should be suitably cleaned and disinfected).

The law

Regulation (EC) No 852/2004 Annex II

Chapter I

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(1) All articles, fittings and equipment with which food comes into contact are to: (a) be effectively cleaned and, where necessary, disinfected. Cleaning and disinfection are to take place at a frequency sufficient to avoid any risk of contamination;

Chapter IX

(3) At all stages of production, processing and distribution, food is to be protected against any contamination likely to render the food unfit for human consumption, injurious to health or contaminated in such a way that it would be unreasonable to expect it to be consumed in that state.

Staff

How to comply with the law

Staff must not be a source of contamination. Staff need to be trained, instructed and supervised to ensure movement between raw food areas and ready-to-eat food areas is managed in such a way that the risk of cross-contamination is minimised.

Where physical separation is not possible and time separation is used as a control, it is essential that staff are trained to understand the risks of cross-contamination, how to clean and disinfect, noting the correct dilution rates and contact time. See the '**Chemical disinfection**' section for more information.

It is important that staff are trained to the required standard and that training and personal hygiene are maintained to ensure that staff are not vehicles of cross-contamination.

Good practice

Food businesses should consider having separate staff for handling raw and ready-to-eat food.

Staff should be trained on the dangers of cross-contamination. This training should be repeated regularly.

When training staff about food hygiene and cross-contamination, check their understanding either by asking questions or by a simple questionnaire.

The law

Regulation (EC) No 852/2004

Annex II Chapter XII

Food business operators are to ensure:

(1) That food handlers are supervised and instructed and/or trained in food hygiene matters commensurate with their work activity.

Personal hygiene and handling practices

It is essential that staff follow good personal hygiene practices to help prevent cross-contamination of harmful bacteria onto ready-to-eat food.

Effective handwashing and suitable clean protective clothing can help prevent harmful bacteria from spreading to food, work surfaces, equipment etc. through hand contact or clothing. Below is an example of a good hand washing technique (from the World Health Organization).

There must be procedures in place to monitor and manage strict adherence to a documented handwashing procedure and to the appropriate use of protective clothing to control the risk of cross-contamination from *E. coli* O157.

The FSA has produced hand washing videos as well as printable diagrams on effective hand washing for use by food businesses:

How to comply with law	
Video	Food safety coaching: Handwashing
SFBB handwashing	Safe Method: Handwashing
Safe catering handwashing	Safe catering: your guide to making food safely

Washbasins must be located to prevent contamination of ready-to-eat food by splashing, and have an adequate supply of hot and cold, or appropriately mixed, running water, cleaning materials and hygienic means of drying hands.

Taps can be a source of contamination, and therefore it may not be appropriate for hands to come into contact with taps after they have been washed. For example, a disposable paper towel can be used to turn the taps off.

To control cross-contamination, handwashing is required:

- prior to handling ready-to-eat food
- after touching raw food or its packaging (includes unwashed fruit and vegetables)
- after a break
- after going to the toilet
- after cleaning
- after removing waste
- after blowing your nose
- touching your face, hair, arms or other body parts

Measures such as regular hand washing, cleaning and disinfection must be taken before touching phones, light switches, door/fridge/freezer handles and cash registers to ensure these are kept clean.

Although there may be slight variations in effective handwashing techniques they all include the following steps:

- wetting of hands prior to applying soap
- a prescribed technique for hand rubbing, aimed at physically removing contamination from all parts of the hands
- rinsing of hands
- hygienic drying

It is important that staff dry their hands thoroughly as bacteria can spread more easily if hands are wet or damp.

The law

Regulation (EC) No 852/2004 Annex II

Chapter I

(4) An adequate number of washbasins is to be available, suitably located and designated for cleaning hands. Washbasins for cleaning hands are to be provided with hot and cold running water, materials for cleaning hands and for hygienic drying. Where necessary, the facilities for washing food are to be separate from the handwashing facility.

Chapter III

Requirements for movable and/or temporary premises...

(2) In particular, where necessary

(a) appropriate facilities are to be available to maintain adequate personal hygiene (including facilities for the hygienic washing and drying of hands, hygienic sanitary arrangements and changing facilities)

Chapter VIII

(1) Every person working in a food-handling area is to maintain a high degree of personal cleanliness...

Hand sanitising gels do not remove visible dirt and are not to be used as a replacement for handwashing.

Businesses should have a system in place to ensure that any visitor entering the premises follows the established hygiene controls.

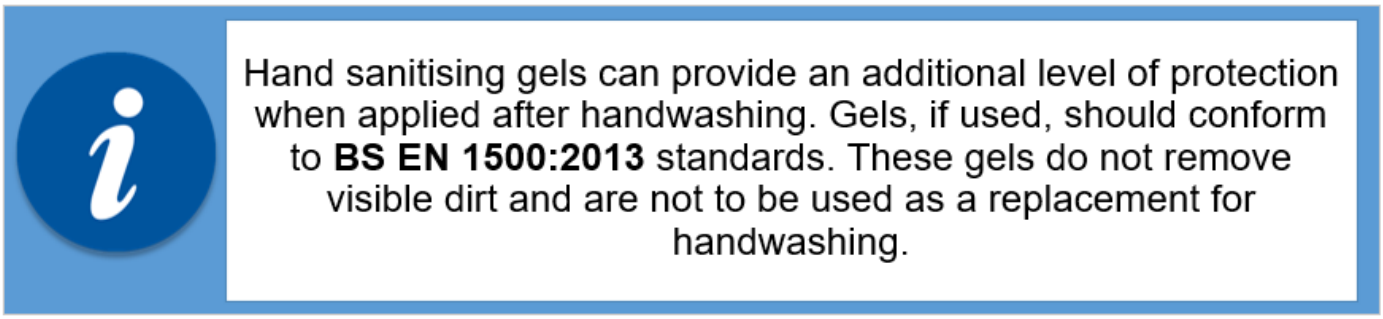
Good practice

It is good practice to use non-hand operated taps (such as sensor, elbow or foot operated taps) at handwashing facilities as they reduce the risk of cross-contamination. If non-hand operated taps are not available, short-lever taps that can be operated with the back of the hand can make a good alternative.

Single-use, disposable towels are recommended for hygienically drying hands. Reusable towels are not recommended.

For extra protection against harmful bacteria and contamination, it is recommended to use an anti-bacterial hand wash that has disinfectant properties conforming to the **BS EN 1499** standard.

This information should be available on the label of the product or may be obtained from the supplier/manufacturer.



Where possible, working practices should minimise the requirement of frequent handwashing, for example, by preparing raw food at different times to ready-to-eat food or by having separate staff for different dedicated activities (for example, one handling raw food and one handling ready-to-eat food).

Minimising direct hand contact with food by using clean tongs, other utensils or other non-touch methods may help reduce cross-contamination risks.

Even with these procedures, effective handwashing needs to be followed to help further reduce any risks, for example, the risk of cross-contamination through utensil handles.

Displaying posters describing the correct hand washing technique and the personal hygiene rules will help staff and visitors remember the correct procedure.

Gloves are not a substitute for effective handwashing. If gloves are used they should be changed as often as you should wash hands as described above. Gloves should also be changed if they become damaged or torn. Hands should also be washed prior to putting gloves on and when necessary after taking them off (for example, it may not be required when only ready-to-eat food has been handled).

The use of separate identifiable or colour coded disposable gloves for different activities located in designated areas might assist with avoiding cross-contamination.

Staff illness

How to comply with the law

There are three main types of staff illnesses that could cause contamination of food at work, bacteria, virus and other organisms such as parasitic worms.

People who work around open food while suffering from certain infections can contaminate the food or surfaces the food may come into contact with. This can spread the infection to other people through the food. Diarrhoea and/or vomiting are the main symptoms of illnesses that can be transmitted through food.

Staff handling food or working in a food handling area must report these symptoms to management immediately.

Managers must exclude staff with these symptoms from working with or around open food, normally for 48 hours from when symptoms stop naturally.

The legal requirement also extends to managing the risk from contamination by other infected workers and visitors to rooms and areas where open food is stored or handled, for example, managers, maintenance contractors, inspectors etc.

There are other legal requirements that are out of the scope of this guidance but can be found in the FSA's fitness to work guidance.

Good practice

It is best to assume that the cause of any symptoms like those described above poses a contamination risk. The food handler should be excluded from food preparation areas until evidence to the contrary is received.

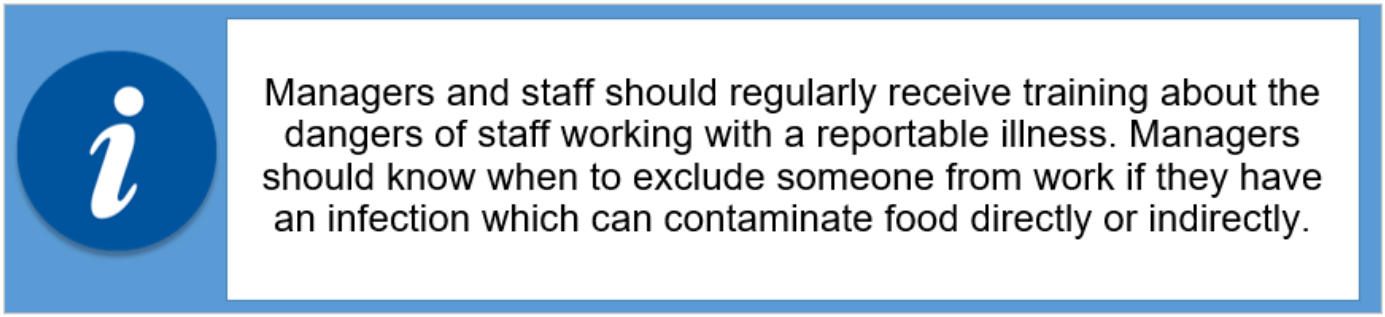
Excluding infected food handlers from the entire premises is also an option, as this will remove the potential risk of contamination of food via other staff who may use the same facilities as the infected person, for example, toilets or canteens.

The law

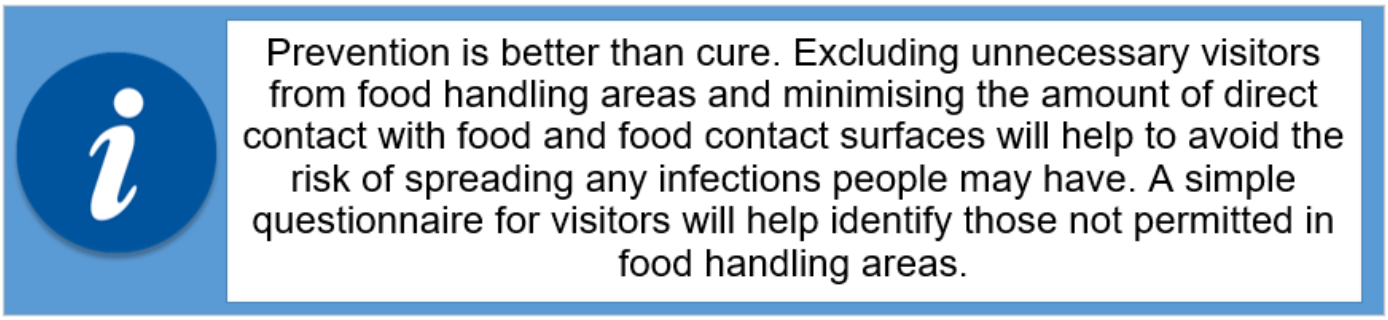
Regulation (EC) No 852/2004 Annex II

Chapter VIII

2) No person suffering from, or being a carrier of a disease likely to be transmitted through food or afflicted, for example, with infected wounds, skin infections, sores or diarrhoea is to be permitted to handle food or enter any food-handling area in any capacity if there is any likelihood of direct or indirect contamination. Any person so affected and employed in a food business and who is likely to come into contact with food is to report immediately the illness or symptoms, and if possible their causes, to the food business operator.



Pre-employment checks on the health of food handlers and other workers in food businesses are not required by law, but they have been common in the food industry for many years. Such checks are usually in the form of questionnaires and requirements to obtain medical clearance certificates before working. These can provide a useful snapshot of someone's health at a point in time and reveal information about their past which could be relevant. They also provide an opportunity to emphasise to food handlers the importance of personal health and hygiene to the safety of food. However, they cannot be relied on and don't guarantee the future health status of any individual. These checks are not required by food hygiene legislation.



Food business operators and managers should have an open and trusting relationship with staff. This is so they are comfortable in reporting illnesses that require them to be excluded from food preparation areas. Penalising staff for being ill, for example, by not paying them when they are excluded from work, could lead to them not reporting illness and working whilst ill. Incentives to have fewer sick days can have a similar effect.

Protective clothing

How to comply with the law

All staff should wear clean clothes when working with food. Staff working with ready-to-eat food must always wear suitable clean clothing that does not present a risk of indirect cross-contamination. Ideally, they should change into clean work clothes before starting work and not wear these clothes outside food preparation areas. There is no specific recommended temperature at which uniforms are to be washed.

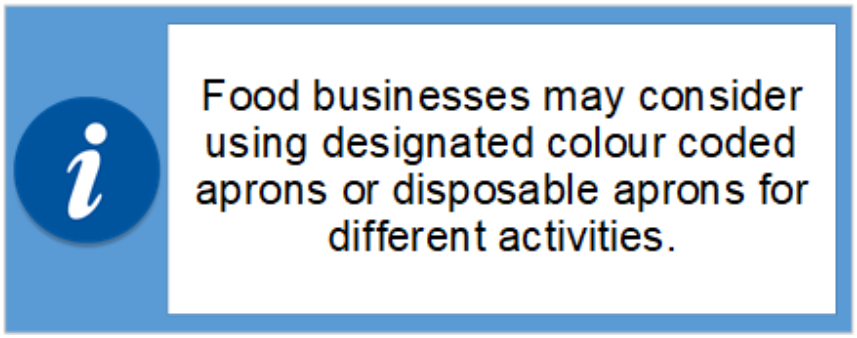
Protective clothing (such as aprons) must not present a cross-contamination risk. If contaminated they need to be changed prior to handling ready-to-eat food.

Staff members must wash their hands after changing contaminated clothing and before putting on clean clothing.

When the same staff handle raw and ready-to-eat food alternately (for example, during cooking) there is no need to change protective clothing for different activities but care must be taken to ensure that clothing does not become contaminated or pose a risk of cross-contamination. If clothing does become contaminated it will need to be changed.

Good practice

Staff should have clean, well-maintained clothing that is washed before every shift.



Food businesses are to have separate sets of clothing for staff handling raw and ready-to-eat food (and ideally separate staff) where this is appropriate and practical.

The law

Regulation (EC) No 852/2004 Annex II

Chapter VIII

(1) Every person working in a food-handling area is to maintain a high degree of personal cleanliness and is to wear suitable, clean and, where necessary, protective clothing.

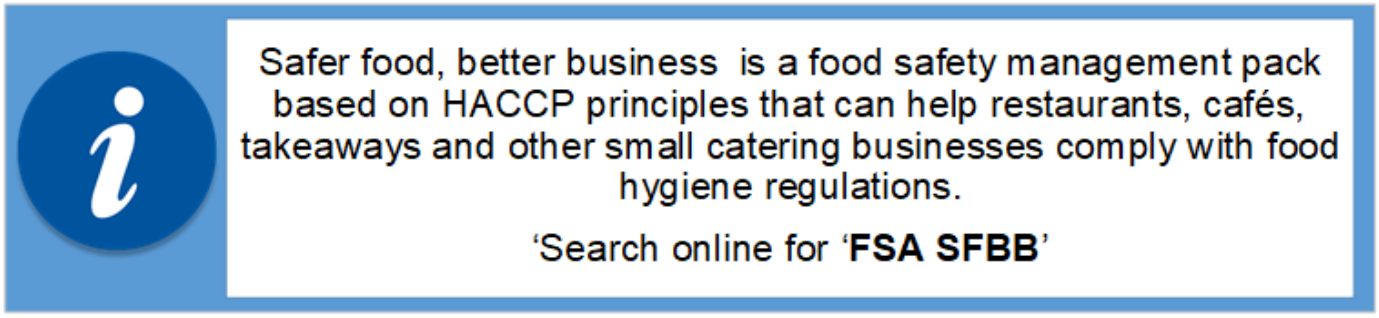
Management controls and training

Effective food safety management controls are critical to controlling cross-contamination with *E. coli* O157.

Food hygiene legislation requires food business operators to put in place food safety management procedures based on the HACCP (Hazard Analysis and Critical Control Point) principles.

HACCP is a system that helps food business operators look at how they handle food and introduces procedures to make sure the food produced is safe to eat.

It is not the intention of this guidance to explain those requirements in full, however, some of these requirements are dealt with in this section. For more information about HACCP see FSA – HACCP.



Food business operators must ensure that food handlers are trained, instructed and supervised fully to understand the importance of food hygiene matters. This training should be relevant and proportional to the work they do.

Training and instruction should cover the importance of:

- separation of raw and ready-to-eat food
- personal hygiene
- effective hand washing techniques
- the hazards associated with inadequate cleaning and disinfection
- dismantling equipment to be effectively cleaned (where appropriate)
- documentation and record keeping procedures

All staff involved in cleaning procedures need to be trained to ensure they are competent before being asked to undertake heat or chemical disinfection. See the '**Heat disinfection**' and '**Chemical disinfection**' sections for more information.

Training

How to comply with the law

Staff must be instructed or trained in all safe methods that are relevant to the job they do.

The competency of staff must be supervised and reviewed routinely so that the need for training can be identified and retraining can take place.

Staff responsible for the development and maintenance of the food safety management system must receive specific training in the application of HACCP principles and other areas of food safety that relate to their duties.

Training records must be kept for an appropriate period. See the '**Record keeping**' section for more information.

Good practice

There is no legal requirement to attend a formal training course, however, food businesses may consider using recognised training courses specific to the requirements of your particular business.

Training staff on a regular schedule will help reduce cross-contamination risks and potential food incidents. For example, refresher training for staff annually about cross-contamination and personal hygiene. Another example would be to use the four-weekly review diary found in the Safer food, better business caterers pack to help you and your staff, maintain safety standards as well as identify any problems that could require retraining.

The necessary skills can also be obtained through other methods such as on the job training, self-study or relevant prior experience.

The law

Regulation (EC) No 852/2004 Annex II

Chapter XII

Food business operators are to ensure:

(1) that food handlers are supervised and instructed and/or trained in food hygiene matters commensurate with their work activity;

(2) that those responsible for the development and maintenance of the procedures referred to in article 5 (1) of this regulation or for the operation of relevant guides have received adequate training in the application of the HACCP principles.

Documentation

How to comply with the law

Food businesses must keep up to date documented procedures that cover cross-contamination control. This must also be part of the relevant staff training.

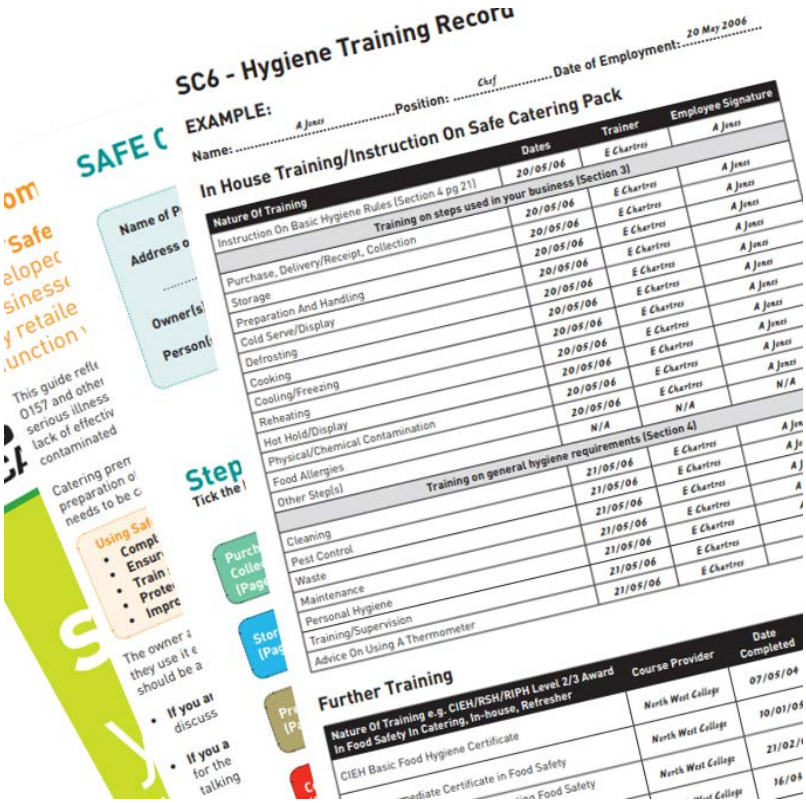
Food business operators must document:

- any potential sources of *E. coli* O157 in the business
- method of separation (for example, permanent separate areas)
- cleaning procedures for surfaces, equipment and utensils
- the type of disinfection required for each area/equipment (such as heat disinfection and chemical disinfection.)
- personal hygiene procedures (for example, hand washing requirements, personal hygiene rules and use of protective clothing)
- staff training

Whenever you change a process you must update the records to reflect the change. For example, if you change from a heat disinfection process to chemical disinfection.

New records should be created when you start a new process, for example, if you start a new cooking method a new HACCP plan or safe method for that process may be appropriate.

Records must be kept for an appropriate period. See the '**Record keeping**' section for more information.


SC6 - Hygiene Training Record

EXAMPLE: Name: A Jones Position: Chef Date of Employment: 20 May 2006

In House Training/Instruction On Safe Catering Pack

Nature Of Training	Dates	Trainer	Employee Signature
Instruction On Basic Hygiene Rules (Section 4 pg 21)	20/05/06	E Chartres	A Jones
Training on steps used in your business (Section 3)			
Purchase, Delivery/Receipt, Collection	20/05/06	E Chartres	A Jones
Storage	20/05/06	E Chartres	A Jones
Preparation And Handling	20/05/06	E Chartres	A Jones
Cold Serve/Display	20/05/06	E Chartres	A Jones
Defrosting	20/05/06	E Chartres	A Jones
Cooking	20/05/06	E Chartres	A Jones
Cooling/Freezing	20/05/06	E Chartres	A Jones
Reheating	20/05/06	E Chartres	A Jones
Hot Hold/Display	20/05/06	E Chartres	A Jones
Physical/Chemical Contamination	20/05/06	E Chartres	A Jones
Food Allergies	20/05/06	E Chartres	A Jones
Other Step(s)	N/A		N/A
Training on general hygiene requirements (Section 4)			
Cleaning	21/05/06	E Chartres	A Jones
Pest Control	21/05/06	E Chartres	A Jones
Waste	21/05/06	E Chartres	A Jones
Maintenance	21/05/06	E Chartres	A Jones
Personal Hygiene	21/05/06	E Chartres	A Jones
Training/Supervision	21/05/06	E Chartres	A Jones
Advice On Using A Thermometer	21/05/06	E Chartres	A Jones

Further Training

Nature Of Training e.g. CIEH/RSH/RIPH Level 2/3 Award In Food Safety In Catering, In-house, Refresher	Course Provider	Date Completed
CIEH Basic Food Hygiene Certificate	North West College	07/05/04
[illegible] Certificate in Food Safety	North West College	10/01/05
[illegible] Food Safety	North West College	21/02/[illegible]
	[illegible] College	16/05[illegible]

The law

Regulation (EC) No 852/2004 Article 5

(1) Food business operators shall put in place, implement and maintain a permanent procedure or procedures based on the HACCP principles.

(2) The HACCP principles referred to in paragraph 1 consist of the following:

(a) identifying any hazard that must be prevented, eliminated or reduced to acceptable levels;

(b) identifying the critical control points at the step or steps at which control is essential to prevent or eliminate a hazard or to reduce it to acceptable levels;

(c) establishing critical limits at critical control points which separate acceptability from unacceptability for the prevention, elimination or reduction of identified hazards;

(d) establishing and implementing effective monitoring procedures at critical control points;

(g) establishing documents and records commensurate with the nature and size of the food business to demonstrate the effective application of the measures outlined in subparagraphs (a) to (f).

(4) Food business operators shall:

(a) provide the competent authority with evidence of their compliance with paragraph 1 in the manner that the competent authority requires, taking account of the nature and size of the food business;

Good practice

Food businesses should have a food safety management system that is appropriate to the size and complexity of the business.

Management records should be kept in an organised and logical way, so you can find the right record easily when needed.

Managers and supervisors should be trained on how to complete records and how to ensure that processes are followed correctly.

The following documents can help food business operators to implement and maintain a good food management system:

- Safer food, better business (SFBB)
- Safe catering (Northern Ireland)

The law *(cont.)*

(b) ensure that any documents describing the procedures developed in accordance with this Article are up-to-date at all times;

(c) retain any other documents and records for an appropriate period.

Record keeping

How to comply with the law

Food businesses must keep records that cover cross-contamination control. Businesses must be able to demonstrate that procedures are being followed correctly.

Records must be kept for an appropriate time. This must be long enough to ensure information is available in case a product needs to be traced back. Depending on the activities of the business these may include records of:

- monitoring and verification activities
- when something has gone wrong and what action you took to correct it
- cleaning, maintenance and pest control
- review of the food safety management system

The food safety system must be reviewed whenever significant changes are made. For example, when introducing a new product that could affect food safety, such as homemade burgers.

Records must be kept of training and supervision. This should include training on cross-contamination procedures.

Food businesses should have records that are sufficient for the size and complexity of the business.

Good practice

It is not necessary to set up complex systems. Simple records are often easier to understand and keep up to date.

Documents and records should be kept for an appropriate length of time. Some factors to consider are:

- the shelf life of the product
- the period of staff employment (for training records)
- the regularity of scheduled cleaning

For example, if the shelf life of a product is two years the records relating to that batch should be kept for at least three years.

The food management and record control system should be reviewed at least once a year.

The law

Regulation (EC) No 852/2004 Article 5

(4) Food business operators shall:

(a) provide the competent authority with evidence of their compliance with paragraph 1 in the manner that the competent authority requires, taking account of the nature and size of the food business;

(b) ensure that any documents describing the procedures developed in accordance with this Article are up-to-date at all times;

(c) retain any other documents and records for an appropriate period.

Corrective actions

How to comply with the law

When things go wrong, such as a loss of control, food business operators must take immediate action to ensure consumers are protected. If a ready-to-eat product has potentially been contaminated with *E. coli* O157 the affected operation must stop immediately. The food business operators must remove the contaminated product to a safe area and investigate the cause. Then the following may be appropriate:

- disposal of contaminated product
- re-cook potentially contaminated product, for example, heat treatment with temperatures that will destroy *E. coli* O157
- withdrawal or recall of the contaminated product

If a product needs to be recalled, you **must** inform your local authority and the FSA. Information on the control of food incident controls can be found on the FSA's incidents webpage.

Food businesses must keep records when things go wrong. These records should include:

- what went wrong
- when the incident happened
- how it went wrong (the control that failed)
- what you did to correct it
- who you informed and when for example, your local authority or the FSA
- what control has been put in place to prevent it from happening again

Good practice

Food businesses should be open and honest when things go wrong. Reputational damage is usually much worse when businesses try to hide or cover up incidents. Evidence of businesses taking corrective action is a positive indication that they can deal with problems and put them right.

All food businesses, irrespective of size, should be taking reasonable precautions to ensure that food is safe. The precautions small businesses take may not be as extensive as those taken by a larger business. Businesses can take the following actions:

- use trusted suppliers
- ask for help from your local authority
- regularly check processes are working

The law

Regulation (EC) No 852/2004 Article 5

2 (e) establishing corrective actions when monitoring indicates that a critical control point is not under control;

Verification and review

How to comply with the law

Food businesses must regularly review all procedures established to control cross-contamination. Reviews are also required whenever there are significant changes to processes. For example, when introducing a new product or when using a new ingredient in a recipe.

Food businesses must check and confirm that the controls in place are effective during both quiet and busy periods, and particularly when a new procedure is introduced. These are called verification checks. Any verification check that establishes a loss of control must be considered a serious risk of cross-contamination and corrective actions must be taken immediately.

Verification checks must be recorded and kept for an appropriate amount of time. See the '**Documentation**' and '**Record keeping**' sections for more information.

Good practice

Food businesses should have a system in place to regularly check that their processes are working. For example, monthly checks of the cleaning of a different area at various times.

Verification checks should ideally be carried out by someone other than the person responsible for monitoring. This means if a supervisor is responsible for monitoring, a manager could carry out the verification check.

Verification checks can be done in house (by someone in the business) or by an external independent third party, for example, an external auditor.

Verification procedures can include:

- audits of suppliers
- validation of critical limits
- corrective actions that have been taken
- calibration of instruments used for monitoring
- servicing of machinery
- temperature checking of dishwashers
- environmental sampling

This list is not exhaustive, and you should design verification checks for your specific business. If you need help with this, you can contact your local authority.

The law

Regulation (EC) No 852/2004 Article 5

2 (f) establishing procedures, which shall be carried out regularly, to verify that the measures outlined in subparagraphs a) to e) are working effectively.

Glossary

The following definitions are specific to this guidance.

Term	Definition
Anti-bacterial hand wash	Hand sanitising products such as bactericidal (capable of killing bacteria) liquid or foam soaps.
An area designated for ready-to-eat food (clean area)	An area within a food business that is specifically designated for ready-to-eat food. It must be managed in a way that ensures that harmful bacteria such as *E. coli* O157 have been effectively excluded from all surfaces and staff that will touch ready-to-eat food.
BS EN	British Standard, European Norm. Disinfectants that comply with **BS EN 1276** and/or **BS EN 13697** published standards or equivalent standards have shown to kill *E. coli* O157 if applied and used correctly.
Chemical disinfectant	A chemical that reduces the levels of microorganisms. It is capable of reducing the levels of specific bacteria when applied to visibly clean surfaces at the specified dilution and for the recommended contact time. There are specific standards these should meet. See the '**Chemical disinfection**' section.
Clean as you go	Keeping the work area clean and tidy at all times whilst working. This may include cleaning up spills, wiping down surfaces, removing waste to bins and generally keeping the work area, tools, equipment and staff to the required levels of hygiene.
Complex equipment	Items of equipment that can be very difficult to clean adequately between uses. This may be because it is hard to access all parts of the equipment or because they are made up of a number of small parts and surfaces which may not be smooth or easy to clean. For example, slicers, mincers and vacuum packing machines.
Contact time	The period of time that the disinfectant needs to be left on the surface to work effectively.
Contamination	The presence or introduction of a biological, physical or chemical hazard in a food or food environment.
Cross-contamination	The spread of harmful bacteria onto food from either other food sources, such as raw meat or soiled vegetables (known as direct cross-contamination) or from surfaces, hands or equipment that have been contaminated (known as indirect cross-contamination).
Detergent	Product used for general cleaning (to dissolve grease and remove dirt). Detergents do not have disinfectant properties (for example, if used on their own they are not able to kill bacteria such as *E. coli* O157).
Dilution rate/Dilution factor	Quantity of water to use with a concentrated chemical before it can be used. Always follow the manufacturer's instructions.

Term	Definition
Food business operator/FBO	Food business operator. Regulation (EC) No 178/2002 defines 'food business operator' as the natural or legal person(s) responsible for ensuring that the requirements of food law are met within the food business under their control.
Foodborne	Microorganisms, such as bacteria which move into humans from food where they can then cause infection.
HACCP	Hazard Analysis and Critical Control Points. HACCP is a system that helps food business operators look at how they handle food and introduces procedures to make sure the food produced is safe to eat.
Hand sanitising gels	Hand sanitising products, such as alcohol-based gels/bactericidal (capable of killing bacteria) hand gels and wipes.
Handling	To pick up and hold, move, or touch with the hands or with equipment such as tongs or other non-touch techniques.
Hazard	A biological, chemical or physical agent in food with the potential to cause harm to the consumer's health.
Heat disinfection	Reducing the levels of specific bacteria using heat. For example, boiling or steaming. Disinfection can only happen after you have visibly cleaned all the surfaces. See the '**Heat disinfection**' section.
Leafy vegetables	Vegetables such as lettuce, spinach, cabbage, watercress, chicory, endive and radicchio and fresh herbs such as coriander, basil, and parsley. As these are likely to have soil on them, it is important to remove all the soil and separate from ready-to-eat food. See the '**Separation**' section. In some cases, these may be supplied and clearly labelled as ready-to-eat and pre-washed.
Monitoring	A pre-arranged programme of checks (observations or measurements) of critical and/or 'legal' limits to check whether control measures are in danger of failing and which determine the need to take corrective actions.
Non-food contact surfaces	Surfaces that do not normally come in direct contact with food, for example, walls or cupboards, but can potentially cause cross-contamination due to its close proximity to exposed food.
Packaging	Placing of one or more wrapped foodstuffs in a second container (and the second container itself).
Pathogens	These are microorganisms such as harmful bacteria and viruses - that cause disease.
Protective clothing	Items that protect food from contamination from people. For example, coats, overalls, aprons, gloves, hats, hairnets and footwear.

Term	Definition
Potable water	Water meeting the minimum requirements laid down in Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption.
Raw food	In this context include raw meat and any raw food, including fruit and vegetables and any ingredient that are potential sources of *E. coli* O157 (fresh or frozen).
Ready-to-eat food	Defined in Regulation (EC) No 2073/2005 means food intended by the producer or the manufacturer for direct human consumption without the need for cooking or other processing, effective to eliminate or reduce to acceptable level micro-organisms of concern. For example, cooked meats, washed/peeled fruits, salads, pies, bread, cheese and sandwiches.
Recall	When customers are asked to return/dispose of a food product. This may be needed if there is a serious issue with the food. Information on the control of food incident controls can be found on the FSA's incidents webpage.
Reportable illness	A disease likely to be transmitted through food, symptoms of which must be reported to the food business operator's manager immediately. Under no circumstances should those displaying these symptoms be allowed to enter the food handling area or handle any food.
Root vegetables/root crops	Vegetables such as potatoes, onions, carrots, beets, and turnips. As these are likely to have soil on them it is important to remove all the soil and separate from ready-to-eat food. See the '**Separation**' section.
Sanitisers	Products that combine a disinfectant and a detergent in a single product. For effective disinfection they must be used twice: first to clean and then again to disinfect.
Sterilising sink	A sink unit used for sterilising. They usually have one sink for washing and one for a sterilising rinse. The sterilising sink is heated to temperatures from between 85ºc to 94ºc. These temperatures will kill most bacteria and viruses if used for the correct amount of time.
Supervision	The process of overseeing staff performing tasks and procedures. Staff should be supervised to ensure that tasks are carried out effectively and to the required standard.
Validation checks	Before implementing HACCP, the contents of the plan must be validated. This is to make sure the plan will lead to safe food being produced. The focus is to ensure that the hazards identified are complete, correct and have suitable controls in place.
Verification	This means performing tests or checks, checking that procedures are being adhered to and reviewing the HACCP system to ensure that the food being produced is safe.

Term	Definition
Visibly clean	Free from any visible grease or film or solid matter (food). A visibly clean surface can still be contaminated by harmful bacteria if it has not been disinfected.
Withdrawal	The process of withdrawing a product from the market. This may need to happen if there is a serious issue with a food product. See FSA Food incidents page.
Wrapping	Placing food in a wrapper or container which is in direct contact with the food. For example, foil, cling film or a bag.

Relevant legislation

EU legislation

Regulation (EC) No 852.2004 on the hygiene of foodstuffs
Regulation (EC) No 2073/2005 on microbiological criteria for foodstuffs
Regulation (EC) No 178/2002 requires that all food placed on the market must be safe to eat and defines requirements for traceability
Council Directive 98/83/EC on the quality of water intended for human consumption
Council Directive 2006/42/EC on machinery, and amending Directive 95/16/EC

National legislation

The Food Safety and Hygiene (England) Regulations 2013
The Food Hygiene (Wales) Regulations 2006
The Food Hygiene Regulations (Northern Ireland) 2006
The Private Water Supplies (England) Regulations 2018
The Private Water Supplies (Wales) Regulations 2017
The Private Water Supplies (Northern Ireland) Regulations 2017

General guidance

FSA, Safer food, better business
FSA, Safe catering (Northern Ireland)
FSA, Staff training guidance
World Health Organization, Good washing hands technique
FSA, HACCP
Guidance Notes for food business operators on food incidents
Health and Safety Executive, Control of substances hazardous to health catering specific
Health and Safety Executive, Storing chemical products (small scale)
Health and Safety Executive, Diluting chemical concentrates
Guidance on Food Traceability, withdrawals and recalls within the UK Food Industry

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