Food Safety
AUTHORITY OF IRELAND

Safe Handling and Serving of Soft Ice-cream

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Poor practices by the food handler can result in the ice-cream becoming unsafe to eat and this can lead to food poisoning.

Food poisoning is an unpleasant illness. For young children, pregnant women, the elderly and the sick, it can be serious and sometimes fatal. Typical symptoms of food poisoning include:

- Nausea/vomiting
- Diarrhoea
- Stomach pains
- Headaches

All food businesses have a legal obligation to:

- Produce food in a hygienic manner
- Implement a food safety management system based on the principles of HACCP (Hazard Analysis and Critical Control Point)
- Implement a traceability and recall system
- Ensure that staff are supervised and instructed in food hygiene matters

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Aim of this Leaflet

The aim of this leaflet is to assist retailers involved in the sale and serving of soft ice-cream, i.e. whipped and scoop ice-cream, to comply with their legal obligations. This booklet does not deal with pre-packed hard ice-cream, i.e. ice-cream sold in cartons, tubs or on a stick.

Contents

1. Hazards of Ice-cream

Hazards which may occur during the handling and serving of soft ice-cream could affect its safety and thus the health of your customers. These hazards may be microbiological, chemical, physical and allergens. Microbiological hazards are the most common cause of foodborne illnesses.

1.1 What are Microbiological Hazards?

Bacteria are the most common type of microbiological hazard. Bacteria are tiny living structures that can only be seen with a microscope. Most bacteria are harmless but some cause foodborne illnesses. These bacteria are called pathogens.

1.2 Where are Bacteria Found?

Bacteria are everywhere, for example:

- In food
- In water
- On people (people carry bacteria on and in their bodies)
- On equipment (dirty equipment can carry bacteria)
- In dirty food premises (dirt and food particles can carry bacteria)
- On animals (pests such as insects, pets, birds and rodents can carry bacteria)

1.3 How Does Ice-cream Become Contaminated with Bacteria?

Food handlers with poor hygiene and poor handling practices can spread bacteria to ice-cream, i.e. they can contaminate the ice-cream. Examples of poor practices include:

- Inadequate hand-washing
- Using dirty machines and equipment
- Using dirty utensils, e.g. utensils which haven't been cleaned properly before use
- Using unclean dish cloths or serving cloths

1.4 What Makes Bacteria Grow?

Bacteria need food, moisture, warmth and time to grow and multiply:

Food and moisture: Bacteria grow well on foods which are high in protein and moisture, for example, ice-cream

Warmth: Most bacteria need warm conditions to grow. Pathogens grow best at body temperature (37°C) but can grow between 5°C and 63°C

Time: If the conditions are suitable (food, moisture, warmth), bacteria multiply very quickly and can double in number every 20 minutes

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2. What the Food Handler Should Do

2.1 Personal Hygiene

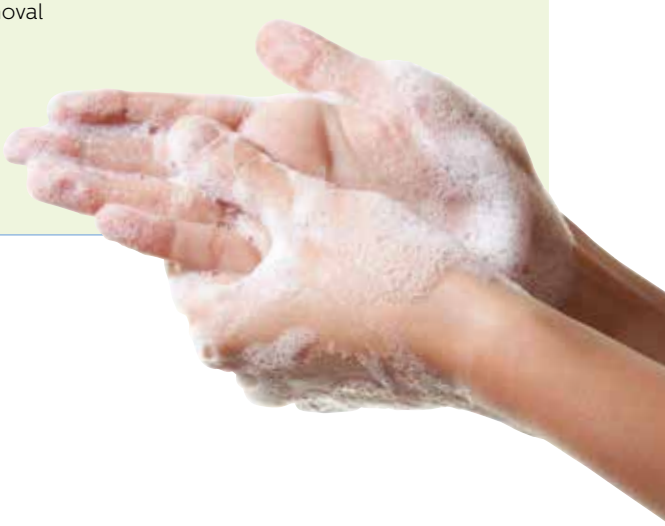
Personal hygiene is important in preventing the spread of bacteria. Good hygiene practices are outlined in Table 1.

Table 1. Good Hygiene Practices for Food Handlers
• Be clean and tidy.
• Clean protective clothing, e.g. apron or overall should be worn where appropriate. This is particularly advisable in businesses serving large quantities of ice-cream, e.g. ice-cream parlours. Please note that: – Protective clothing should not be worn outside the food handling area – Personal garments should not be worn over the protective clothing
• Keep hair clean and neat and where appropriate, wear hats/hair nets which effectively contain the hair.
• Keep finger nails short and clean.
• Cover cuts, sores or grazes with a coloured waterproof dressing.
• Do not smoke, consume food, chew gum, lick your fingers, cough or sneeze where ice-cream is being prepared or served.
• Do not serve ice-cream if you are suffering from diarrhoea, vomiting, jaundice, fever, sore throat with fever, infected skin lesions/cuts on exposed body parts, discharges from the eyes, ears, nose, mouth/gums.

Hands are a common means of transferring bacteria to ice-cream and should be kept clean at all times. A wash-hand basin (with hot and cold water) should be sited within a reasonable distance of the ice-cream machine/ice-cream cabinet. Hand-wash products, e.g. bar soap or liquid soap and hand drying facilities, e.g. paper towel or cabinet roller towel should also be provided.

Hand-washing guidelines are outlined in Table 2.

Table 2. Hand-Washing Guidelines
Hands should be:
• Washed with warm soapy water for a minimum of 10-15 seconds (vigorously and thoroughly rubbing all hand surfaces, including the fingertips and thumbs)
• Rinsed with warm water
• Dried (using a paper towel, hand dryer or cabinet roller towel)
Wash your hands frequently and always:
• Before and after handling all food
• After using the toilet
• After using a mobile phone
• After smoking
• After sneezing, coughing and using a handkerchief
• After touching your nose, ears, mouth or hair
• After performing routine cleaning tasks
• After handling rubbish
• After handling money
• Before gloving and after glove removal (note: single service disposable gloves should be of good quality. They should be discarded when damaged or soiled, or when interruptions occur in the operation, e.g. when handling money)



Remember:
If you're unwell, tell your manager.

2.2 Good Hygiene Practices

Good hygiene practices start with the correct positioning of the ice-cream machine and the ice-cream cabinet. These should be sited indoors away from direct sunlight, heat and draughts, e.g. away from open doors, windows or air conditioning outlets.

Good hygiene practices are required by the food handler from the time of intake of the ingredients/supplies to the time of serving. Guidelines are provided in Tables 3 and 4.

Table 3. Guidelines for the Storage of Ingredients and Supplies*

Ingredients/ Supplies	Details	Storage Instructions
Whipped ice-cream mix	Sterilised liquid mix (commonly referred to as UHT mix)	• Stable at room temperature (when unopened) • Store in a clean, dry place • Keep out of direct sunlight • Once opened, keep refrigerated (≤5˚C)
	Pasteurised liquid mix (commonly referred to as fresh mix)	• Keep refrigerated (≤5˚C) at all times • Do not freeze prior to use
	Powdered mix	• Stable at room temperature • Store in a clean, dry place • Once mixed with drinking water, store under refrigerated conditions (≤5˚C)
Scoop ice-cream	Scoop ice-cream	• Deep freezers should operate at a temperature which maintains the ice-cream at -18˚C except for deep freezers used to serve ice-cream. These deep freezers should maintain the ice-cream at -12˚C and it is recommended that this storage is for not more than one week
Dry ingredients	Wafer cones and toppings	• Stable at room temperature • Store in a clean, dry place • Prevent contamination from foreign objects, dust, water, pests etc.

* The storage instructions, i.e. the storage conditions and storage period, specified by the manufacturer should be followed at all times. All supplies should be rotated in order, i.e. first in – first out, with respect to 'best-before' and 'use-by' dates.

Table 4. Guidelines for the Preparation and Serving of Soft Ice-cream*	
Whipped ice-cream	• Discard any ice-cream mix which is past its 'use-by' date. • Wipe the pack of ice-cream mix with a sanitised cloth before opening. Open the pack along the perforation with sanitised utensils or tear as appropriate. • Follow supplier's instructions regarding preparation of the mix. • Dispensed ice-cream should not be returned to the hopper. • Do not refill mix containers.
Scoop ice-cream	• Ensure that there are no large ice crystals in the ice-cream or any other signs of thawing and refreezing. Discard if any signs are evident. • Use clean utensils at all times. • Wash, sanitise and dry the lids of the ice-cream containers before placing back on the container. • Do not re-freeze ice-cream. • Do not refill ice-cream mix containers.
Wafer cones and toppings	• Ensure wafer cones and toppings are free from contamination. • Serve wafer cones from their original containers or use clean dispensers. • Serve the wafer cone in a protective sheet, e.g. paper napkin.

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2.3 Cleaning

Cleaning is very important as it removes the dirt and food particles which allow bacteria to grow. Cleaning should be carried out using a designated bucket or a designated sink (cleaning should not be carried out in the wash-hand basin). The following tables (5-9) deal with general cleaning, cleaning of ice-cream machines and cleaning of utensils used during the serving of scoop ice-cream.

Table 5. What do I Clean?
• Ice-cream machine and utensils
• The general working environment, i.e. all surfaces (worktops/boards etc.) which come into contact with ice-cream

Table 6. What Chemicals or Cleaning Agents do I Need?
When you are cleaning, you need to use both detergents and disinfectants/sanitisers.
• Detergents clean by removing the dirt you can see.
• Disinfectants and sanitisers clean by killing the bacteria you cannot see once the dirt has been removed.
It is important that detergents, disinfectants and sanitisers are:
• Food grade quality if used on food contact surfaces
• Prepared at the correct strength (follow manufacturer's instructions) using designated measuring equipment
• Stored away from food

Table 7. How do I Clean?	
The following six steps should be carried out to clean what you can and cannot see:	
1. Pre-clean (remove loose dirt, spills and debris)	4. Disinfect or sanitise
2. Clean with detergent	5. Final rinse with water
3. Rinse with water	6. Air dry
When you are cleaning, you should always use clean hot water and a disposable cloth. If you don't have a disposable cloth, make sure your cloth is clean and regularly disinfected/sanitised.	

Table 8. Guidelines for the Cleaning of Ice-cream Machines
All machines should be cleaned thoroughly and frequently. The cleaning procedure and the frequency of cleaning will depend on a number of factors including the type of machine, i.e. self-pasteurising or non-pasteurising machine, and the frequency of use. Retailers should consult the manufacturer or supplier of the machine for advice. The following section is for guideline purposes only.
Guidelines for cleaning
1. Drain and discard all ice-cream from the machine.
2. Clean: • The tank of the machine using the machines washing cycle • The hopper and the tip of the dispenser unit (these need particular attention as they are open to contamination during refilling of mix and dispensing of ice-cream) • The dismantled parts (dismantle the machine according to the manufacturer's instructions and wash the parts in a designated sink or bucket) • The outside of the machine
3. Inspect and replace any damaged seals and o-rings. Reassemble the machine and lubricate parts as specified by the manufacturer.
4. Sanitise the machine as specified by the manufacturer. Drain the sanitising solution from the machine and rinse well with drinking water.
5. Refill the machine with a small amount of ice-cream mix and discard the first run.
Guidelines regarding the frequency of cleaning
• Non-pasteurising machines should be cleaned every six days.
• Self-pasteurising machines should be cleaned every 21 days; however, the machine should enter its pasteurisation cycle every three days.
The exact cleaning procedure and the frequency of cleaning should be specified in your cleaning schedule.

Remember:
Always 'clean as you go' and mop up spills as they occur.

Table 9. Guidelines for the Cleaning of Utensils used during the Serving of Scoop Ice-cream
• Before use, the utensils should be washed in warm water and sanitising solution (a food grade sanitiser prepared according to the manufacturer's instructions should be used).
• Throughout the serving period, the utensils should be rinsed and sanitised frequently. This can be achieved by placing two containers containing sanitising solution within easy reach of the ice-cream freezer. One container should be used for rinsing off the ice-cream and the other for sanitising the utensils. Both containers should be emptied and refilled with fresh solution at least once every hour.
• Surplus solution should be shaken off the scoop before use.

3. What the Owner/Manager Should Do

3.1 Food Safety Management Based on Hazard Analysis and Critical Control Point (HACCP)

It is the owner/manager's responsibility to develop and implement a food safety management system based on the principles of HACCP. This involves identifying the hazards in the business, planning how they can be controlled and ensuring control is maintained. Table 10 gives examples of typical hazards associated with the sale/serving of ice-cream and suggests ways of controlling these hazards. This table can be used as the basis for your system but should be amended to suit the actual conditions and practices within your business. It is important to check regularly that the appropriate controls are being implemented and that if things go wrong, corrective action is taken. For further information on developing a food safety management system based on the principles of HACCP, see 'Additional reading'.

3.2 Food Allergens

There is a requirement to declare food allergens for non-prepacked food. Food sold in loose form or packed on the premises for direct sale or supply to the final consumer is considered non-prepacked food. Legally, there are 14 specific food allergens that must be declared. For guidance on what and how to declare food allergens, see the FSAI's leaflet Allergen Information for Non-prepacked Foods at **https://www.fsai.ie/allergens/**

3.3 Food Safety Training

The owner/manager is responsible for ensuring that staff understand and use good hygienic practices. Details on the type of food safety skills that food handlers need can be obtained from the FSAI guides on training, see 'Additional reading'.

3.4 Traceability and Recall

It is a legal requirement to implement a traceability and recall system. This simply means that the business needs to keep track of its supplies and that in the event of a problem with a supplied product, the business must cooperate with the product recall. The following is the minimum information which must be recorded:

- Name of product
- Name and address of supplier
- Date of delivery

In practice, the commercial documents accompanying the delivery may have all these details. These documents must be maintained by the food business at least until it can be reasonably assumed that the food has been consumed.

Table 10. Examples of Hazards and their Control

Step	**Hazards** What can go wrong?	**Control Measures** How can I control it?	**Monitoring** How can I check everything is ok?	**Corrective Action** What to do when things go wrong?
Purchase	Microbial, chemical or physical contamination.	Use reputable suppliers.	Check supplier has a food safety management system.	Remove supplier from your list of approved suppliers.
Receipt/ Delivery	Microbial, chemical or physical contamination.	Only accept food: • Stored at the correct storage temperature (Table 3) • With intact packaging • Within its 'use-by' or 'best-before' date • That has been transported hygienically	Check temperature. Visual check.	Reject delivery.
Storage in premises	Microbial growth.	Store food at correct temperature (Table 3).	Check temperature.	Fix the storage equipment and discard food if exposed to high temperatures for too long.

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Step	**Hazards** What can go wrong?	**Control Measures** How can I control it?	**Monitoring** How can I check everything is ok?	**Corrective Action** What to do when things go wrong?
Preparation of ice-cream	Microbial hazards from: • Ice-cream machine • Water (used to rehydrate powdered mix)	Establish a cleaning schedule according to manufacturer's instructions. For self-pasteurising machines, ensure pasteurisation cycle is carried out according to manufacturer's instructions.	Check cleaning has taken place and is effective. Check the pasteurisation cycle took place as planned.	Retrain staff.
		Use drinking water.	If using a private water supply, arrange for it to be tested.	Use alternative water supply which meets legislative requirements for drinking water.
Serving	Microbial hazards from poor handling.	Make sure staff understand personal hygiene and food handling practices (Tables 1,2 and 4).	Visual check.	Retrain staff.

Additional Reading

Food Safety Authority of Ireland (2016)
Guide to Food Safety Training Level 1: Induction Skills and Level 2: Additional Skills

Food Safety Authority of Ireland (2016)
Guide to Food Safety Training - Level 3: Food Safety Skills for Management

Food Safety Authority of Ireland (2008)
Microbiological quality of whipped and scoop ice-cream
Report of 2nd Trimester National Study 2008 http://www.fsai.ie/uploadedFiles/Monitoring_and_Enforcement/Monitoring/Surveillance/ice_cream_whipped_scoop.pdf

Food Safety Authority of Ireland (2001)
Microbiological quality of soft ice-cream
Report of 3rd Quarter National Survey 2001
http://www.fsai.ie/uploadedFiles/Monitoring_and_Enforcement/Monitoring/Surveillance/3rdQuarter.pdf

Food Safety Authority of Ireland (2012)
Safe Catering - Your guide to Making Food Safely

Food Safety Authority of Ireland (2017)
Safe Food to Go

Food Safety Authority of Ireland
HACCP: A food safety management system

1. What is HACCP? (2010)
2. Terminology Explained (2008)
3. How to select an external HACCP consultant (2008)
4. Catering (2010)

Food Safety Authority of Ireland (2013)
Guidance Note No. 10: Product Recall and Traceability (Revision 3)

National Standards Authority of Ireland (2007)
I.S. 340:2007 Hygiene in the Catering Sector

National Standards Authority of Ireland (2007)
I.S. 341:2007 Hygiene in Food Retailing and Wholesaling

National Standards Authority of Ireland (2005)
I.S. EN ISO 22000:2005. Food Safety Management Systems - Requirements for any Organisation in the Food Chain

Glossary

Bacteria: Single-celled living organisms which cannot be seen with the naked eye, e.g. *Salmonella* species.

'Best-before' Date: The date up until a food can reasonably be expected to retain its best quality if kept under the correct storage conditions. 'Best-before' dates are more about quality than safety (see also the definition for 'use-by' date).

Chemical Hazard(s): Chemicals, e.g. poison which may cause harm if consumed e.g. bleach in ice-cream.

Detergent: A chemical used to remove grease, dirt and food particles from a surface e.g. washing-up liquid, soap.

Disinfectant: A chemical or process used to reduce numbers of microorganisms to a safe or acceptable level.

Foodborne Illness: Illness resulting from infection or intoxication after eating or drinking a contaminated food, e.g. illness resulting from eating ice-cream contaminated with *Salmonella* species.

Food Handler: Any person who handles or prepares food whether packaged or unpackaged, e.g. a person serving whipped or scoop ice-cream.

Food Hygiene: All measures necessary to ensure the safety and quality of food for sale or supply to the consumer, e.g. food preparation, processing, storage, distribution, handling, display and retail.

Hazard: The potential to cause harm. Hazards, i.e. dangers, may be biological, chemical or physical, e.g. *Salmonella* species in a chicken burger (biological hazard), detergent in milk (chemical hazard) or glass in a breakfast cereal (physical hazard).

Microorganism: A small organism that generally cannot be seen with the naked eye, e.g. bacteria, viruses, yeasts, moulds and parasites

Physical Hazard(s): Materials, e.g. glass or metal fragments that may cause harm if consumed in foods.

Sanitiser: A chemical or process used to clean and reduce numbers of microorganisms on a surface, e.g. chlorine, ultra violet light.

'Use-by' Date: The date up until a food can reasonably be expected to be safe to consume if kept under the correct storage conditions. 'Use-by' dates are more about safety than quality, e.g. high-risk foods such as ice-cream (see also the definition for 'best-before' date).

Notes

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