

Guidelines for the use of non-potable water in food businesses

Introduction

These guidelines provide information to assist food businesses to ensure that their water supply is safe for food preparation and human consumption.

The reasons why the water supply to a food business may not be safe may be due to either a temporary interruption to the safety of the reticulated drinking water supply or the source of water is not from an adequately treated drinking water supply.

These guidelines will assist businesses where there is the possibility that the water supply is microbiologically unsafe. Concerns and issues regarding the chemical safety of the water supply should be raised with the local council health department.

Potable water in food businesses

Food laws require food businesses to use “potable water” for all activities that use water on the premises unless the use of “non-potable water” will not affect the safety of the food.

Potable water simply means water that is acceptable and safe for human consumption and must be used in a food business for:

- Washing food and/or food ingredients;
- Cooking;
- Adding to food and drinks;
- Making ice;
- Cleaning of food contact surfaces;
- Cleaning of food containers and utensils; and
- Personal hygiene.

Non-potable water can be used only when it will not affect food safety. For example the flushing of toilets or cleaning non-food contact surfaces such as floors, or if it is treated to be safe for human consumption. If in doubt please consult your local council health department.

When the water supply is not guaranteed to be safe

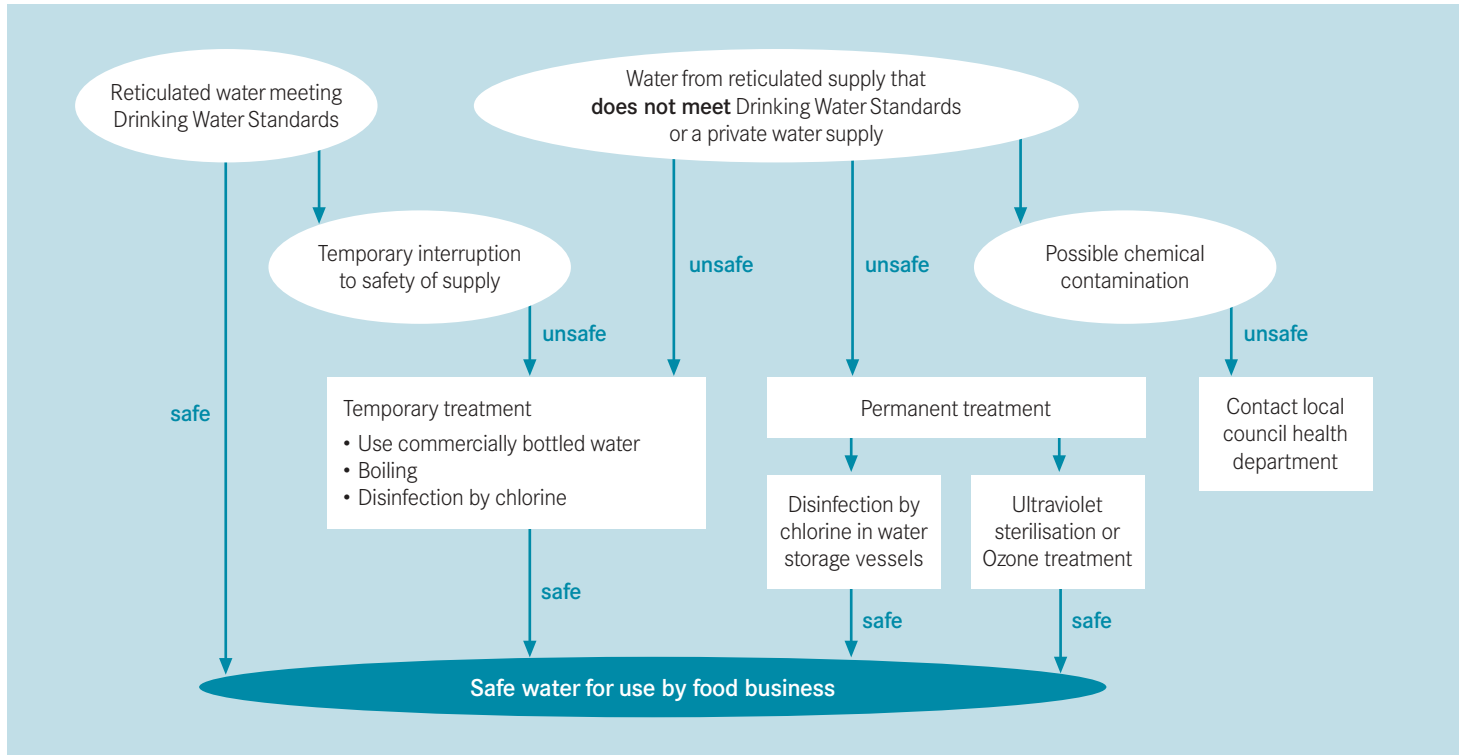
- a. The reticulated drinking water supply to a food business has had a temporary interruption to the safety of that supply maybe because of water treatment plant breakdown, fire, flooding etc.
- b. A reticulated water supply does not meet drinking water standards.
- c. A private supply such as:
 - Rainwater tanks; or
 - Ground water such as Bores; or
 - Surface water sources such as a river or lake.

Food laws and potable water

Paragraph 4 of Food Safety Standard 3.2.3 requires a food business to use potable water for all activities that use water on the food premises, unless the business demonstrates that the use of non-potable water for a purpose will not adversely affect the safety of the food handled by the food business.

Paragraph 14(2)(b) of Food Safety Standard 3.2.3 requires hand washing facilities to be connected to, or otherwise provided with, a supply of warm running potable water.

Figure 1: When water is safe to use in a food business



Possible health risks from non-potable water

Microbiological Contamination

Contaminated water may contain harmful micro-organisms, such as viruses and bacteria such as Salmonella or Campylobacter and gastro-intestinal parasites such as Giardia or Cryptosporidium. These harmful micro-organisms, known as pathogens, are not visible to the naked eye and may even be present in clear water.

Drinking water containing these micro-organisms can cause severe gastro-enteritis, possibly lasting for several weeks. Infants, the elderly and people with suppressed immune systems are more likely to be affected.

Chemical Contamination

Chemical contaminants are usually less common than microbiological contaminants, but they can still be present in the rural environment.

Soil from old industrial, mining or agricultural areas may contain arsenic, heavy metals, pesticide residues or other chemicals. If dust is blown onto roofs and is washed into rainwater tanks, chemical residues may build up in the water. Runoff from roofs in urban or industrial areas may also contain chemical pollutants from the air.

Lead-based paints or flashing used on some older roofs may also flake off and be washed into rainwater tanks. Tar-based coatings can bind other harmful organic chemicals such as pesticides to the roof surface and also make it difficult to clean.

Harmful smoky residues from solid wood heaters can also condense near flues on roofs. These chemicals may leach from the roof surface over time and may be washed into rainwater tanks.

Aerial application of fertilisers and pesticides such as 'crop dusting' can sometimes result in these agricultural chemicals entering rainwater tanks. Agricultural chemicals may also drift or be washed into drains, irrigation channels, local streams and dams.

Whatever the water source it is the responsibility of the food business to check what possible chemical contaminants can get into the water supply.

These guidelines address how to make the water supply safe if there is the possibility that the water supply is microbiologically unsafe. If you suspect that your water supply could be chemically unsafe, consult with your local council health department.

Water treatment methods

Temporary treatment

There can be times when a water supplier may notify that its normally potable water supply will either be shut off for maintenance or has suffered from temporary contamination, which is usually microbiological but may be accompanied by dirty water. They may advise to boil the water for a short time, to treat any possible contamination in the water supply.

There are number of things a food business can do to ensure the safety of their water supply during a short-term interruption.

Table 1: Temporary treatment

Water used for	Action or treatment
Drinking	Use either commercially bottled water or water that has been brought to a rolling boil, that is the water is boiling vigorously for at least one (1) minute.
Ice making	If you need to make ice during this time, only make it from water that is suitable for drinking (see above).
Washing of hands	Use a water container with a tap that contains either bottled water or water brought to a rolling boil for at least one (1) minute, or that has been disinfected with chlorine (see Chlorination guide on page 4).
Cleaning of Equipment	For the cleaning of equipment, such as pots, pans, cutting boards, dishes and cutlery the following options can be considered: <ul style="list-style-type: none"> • Sanitising by immersing the utensils in hot water at or hotter than 77°C for at least 30 seconds. As it is unlikely that a hot water system will deliver water at a minimum of 77°C at the sink, it may be necessary to use a water heater in the sink to maintain the temperature to at least 77°C or an urn to feed water to the sink. A rinsing basket to submerge the utensils in the water is desirable for safety reasons. • Using a commercial dishwasher capable of sanitising. • Using disposable cups, plates and other utensils. • Using a chemical sanitiser for cleaning eating and drinking utensils and for other utensils that require sanitising such as large mixing bowls, chopping boards, etc. that will not fit in the commercial dishwasher.
Cleaning of floors and non food contact surfaces	If you want to sanitise these surfaces washing in water with a concentration of chlorine 100–200 mg/L is more than adequate.

Note:

In sewered areas the responsible authority should be consulted as to whether discharge of effluent containing these concentrations of chlorine are permitted. Also care should be taken if you have a septic tank as this may compromise the septic system. Please consult your local council health department.

Permanent treatment

Food businesses can either follow the advice in the previous section ‘*Temporary treatment*’ on a more permanent basis, or seek a longer-term solution to managing the safety of their water supply.

Treating water in a water storage vessel—such as a water tank

If the water source is from a non-potable water supply, groundwater, or surface water, a practical way to ensure the water supply is safe is to periodically fill a water storage vessel from the water supply and treat the water in the vessel with *chlorine*.

Storage vessels for treated water should:

- be clean;
- have covers;
- be above ground level;
- be in a cool position;
- be cleaned periodically;
- be mosquito proof; and
- be unlikely to taint the water (seek advice from manufacturer).

Chlorination guide

- The initial dose should give a free chlorine residual of 5.0 mg/L.
- There should be enough chlorine to give a free chlorine residual of 1.0 mg/L after 30 minutes contact time.
- Check after 30 minutes using a colour comparator, like the ones used for swimming pools.
- If necessary add more chlorine to ensure that the required minimum of 1.0 mg/L maintained for 30 minutes, is achieved.
- Each time the storage vessel is running low, refill it and retreat with chlorine.
- Chlorinate each time the storage vessel is filled with water from a non-potable source.
- Tables 2, 3, and 4 outline how much available chlorine is required to achieve free chlorine residuals.
- Some household bleach contains alkalis and other chemicals such as perfumes. The alkalis in these products will increase the pH of the water, often above pH 9, making other sources of chlorine for disinfection of drinking water preferred.

Table 2: Volume of 4% available chlorine (household bleach) required to achieve free chlorine residuals

Water volume to be treated	Concentration required		
	5 mg/L	100 mg/L	200 mg/L
5 litres	0.63 ml	12.5 ml	25 ml
1000 litres	125 ml	N/A	N/A
5000 litres	625 ml	N/A	N/A

Table 3: Volume of 12.5% available chlorine required to achieve free chlorine residuals

Water volume to be treated	Concentration required		
	5 mg/L	100 mg/L	200 mg/L
5 litres	0.2 ml	4 ml	8 ml
1000 litres	40 ml	N/A	N/A
5000 litres	200 ml	N/A	N/A

Table 4: Amount of “swimming pool” chlorine (HTH)—65% available chlorine required to achieve free chlorine residuals

Water volume to be treated	Concentration required		
	5 mg/L	100 mg/L	200 mg/L
1000 litres	8 gm	N/A	N/A
5000 litres	40 gm	N/A	N/A

Note: 65% Chlorine is granular. 1 teaspoon = about 5 grams

Alternative permanent water sterilisation methods

There are many methods that can be used to treat the water supply for microbiological safety. Two such treatment methods that are chemical free are ultraviolet sterilisation and ozone treatment.

Look under ‘*Water Treatment or Equipment*’ in the business telephone directory for alternative water sterilisation methods.

If you have any doubts as to what to do, employ the services of a water treatment expert to advise the best solution to meet your business needs, or contact your local council health department.

Regular microbiological and chemical testing

For a monitoring program to be meaningful, it needs to be designed by a specialist, using specialised equipment and sampling techniques. It is recommended that food businesses focus on risk management or Hazard Analysis Critical Control Points (HACCP) activities on the premises.

It is useful to verify that the water treatment methods are working by arranging periodic samples for microbiological analysis.

In some circumstances a chemical analysis of the water could also be prudent for example when a new bore is used or rainwater tanks following bushfires. Consult your local council health department regarding what to sample and how often.

Water testing

Many analytical laboratories in Victoria can advise on chemical, microbiological and algal testing of water. Look in a business telephone directory under the heading ‘*Analysts*’.

Alternative permanent water sterilisation methods

Ultraviolet steriliser	Ultraviolet (UV) sterilisers can be installed at point of entry of water to the business to destroy pathogenic organisms. They work as follows: Ultra violet light is generated within a sealed chamber and the water stream is directed through the centre of that chamber inside a quartz glass sleeve which admits the maximum available light. Ultra violet light is known to kill all types of pathogenic micro-organisms and render the water supply ‘sterile’. Providing they are properly maintained and the water being treated is ‘clean’ they can be highly effective. If the water cannot be guaranteed as being ‘clean’, then a water filter between the water source and the Steriliser should be used.
Ozone treatment	Uses ozone gas to treat the water. Consult a water treatment expert for advice.
Other methods	Consult a water treatment expert or the local council health department.

Further information

- Department of Human Services Environmental Health Unit publication *Your Private Drinking Water Supply*, can be found at www.health.vic.gov.au/environment/water/tanks.htm
- Victorian Department of Sustainability and Environment (DSE) Customer Service Centre on 136 186, regional information centres, or the DSE website—www.dse.vic.gov.au/dse/index.htm
- Detailed information about planning, installing and using rainwater tanks can be found in the National Public Health Partnership publication ‘*Guidance on the use of rainwater tanks*’ which is located on their website—www.enhealth.nphp.gov.au/.
- The Food Safety Unit web site contains further guidelines about potable water transport in Victoria—www.health.vic.gov.au/foodsafety
- Bushfire safety information is also available from the Country Fire Authority (CFA) on 1800 240 667 or the website—www.cfa.vic.gov.au/
- Co-operative Research Centre for Water Quality and Treatment has more information about drinking water quality in Australia—www.waterquality.crc.org.au/
- Local council health departments can advise on environmental issues and building or planning regulations associated with water tanks in local areas.
- Consult a doctor if you have concerns regarding the health effects of drinking from a particular water supply.