

# Guidance for Developing Good Operating Practice Procedures: Water – Roof Water Supply

August 2011  
Amendment 1

## Background

A water supply can be made up of one or more water sources:

- council or network water supply
- surface water
- groundwater
- roof water

Roof water refers to the collection of rainwater from roofs and gutters for future use. Because rainwater is slightly acidic it can react with and leach chemicals from certain materials used for roofs, guttering, pipework and the storage system. The water may also be contaminated with faecal material from birds and animals containing pathogenic microorganisms (bacteria e.g. *E. Coli* and *Campylobacter*, viruses, and protozoa e.g. *Cryptosporidium* and *Giardia*) that, if untreated, can cause illness.

Common uses for roof water include irrigation and drinking water supply. The *Drinking-water Standards for New Zealand 2005* (DWSNZ 2005) which are administered by the Ministry of Health, define good quality drinking water and the maximum concentrations of chemical, microbiological and radiological contaminants that are acceptable for public health. The standards apply to all water intended for human consumption, food preparation, utensil washing and personal hygiene – whether the water is from a public or private supply. The exception is bottled water which is subject to different standards set in regulation under the Food Act and in the Food Standards Code.

This guidance aims to help food businesses that use a roof water supply ensure that it is safe to use, and maintains the safety and suitability of food.

*For further guidance:*

Off-the-peg Food Control Plan: Food Service and Catering. Section 2 – [The Basics: Roof water supply](#) [192 KB PDF]

Off-the-peg Food Control Plan: Food Service and Catering. [Section 2 – The Basics: Water supply](#) [201 KB PDF]

Water Supply Assessment Checklist from Schedule 1 of the current version of the [Animal Products \(Specifications for Products Intended for Human Consumption\) Notice Draft Guidelines for Drinking-water Quality Management in New Zealand \(2005\)](#)

Drinking-water Standards for New Zealand 2005 ([DWSNZ 2005](#)) [1 MB PDF]

Ministry of Health [Household Water Supplies](#) [1.54 MB PDF]

Ministry of Health [Water Collection Tanks and Safe Household Water](#) [337 KB PDF]

## 1 Purpose / Scope

Write up your purpose/scope for Water - Roof Water Supply.

*Example:* To ensure the supply of roof water is of a suitable quality to enable hygienic operations, minimise contamination and maintain the fitness for intended purpose of the final food. Water includes ice and steam.

*See also (as applicable):*

- Surface water
- Groundwater
- Council / Network Supply

These topics have been covered individually in other guidance documents.

## 2 Authorities and Responsibilities

Write up who has specific authorities and responsibilities for Water - Roof Water Supply. Think about managers, supervisors and other people as may be necessary.

*Example:* The business operator has overall responsibility for ensuring the roof water used in the business is fit for its intended use.

Water that a business draws from a roof supply needs to be treated to a level that ensures it is clean and safe for making food, cleaning food areas and for using for personal hygiene.

Other people or parties that have operational responsibility for this procedure are: [please identify who they are and specify their responsibilities].

## 3 Control Measures

Write up how you ensure your roof water is safe to use.

Consider at least the following points:

### 3.1 Water Source

- how you determine if the water source is satisfactory, e.g.:
  - using the Water Supply Assessment Checklist from Schedule 1 of the current version of the [Animal Products \(Specifications for Products Intended for Human Consumption\) Notice](#) to assess the proposed water supply and identify potential water quality problems;
  - carrying out a visual assessment of the roof, guttering and pipework etc. to check if they are well maintained and constructed of suitable, non-toxic materials (e.g. no uncoated metallic / exposed timber surfaces, lead-based paint, bitumen, copper spouting / pipework etc.) and to check for access by animals;
  - if necessary, testing for chemicals that are likely to be present and could pose a risk to food safety in order to identify appropriate treatment methods.

The Draft Guidelines for Drinking-water Quality Management for New Zealand (2005) published by the Ministry of Health discusses a range of contaminants that are common in roof water and some possible treatment methods for these contaminants. . Further information is available at: Off-the-peg Food Control Plan: Food Service and Catering. [Section 2 – The Basics: Water supply](#) [201 KB PDF]

- testing for the presence of *Escherichia coli* (*E. coli*) to confirm whether microbial contamination has affected your water source. *E. coli* is found in faecal material, so its presence in the water can indicate the presence of other disease-causing microbes such as *Campylobacter* and *Salmonella*; and
- ensuring any new water sources are assessed prior to use.

### 3.2 Water Treatment

- how you determine what treatment and/or other corrective action should be applied before the water is used in the business, e.g.:

- taking measures to protect the water source from contamination (e.g. screening gutters and ensuring roof areas are kept clear of overhanging vegetation to reduce faecal contamination by birds, animals, and leaves etc);
- installing first-flush diverters to reduce contamination. These devices divert the first rinse of water from the roof to waste whenever it starts raining;
- ensuring the system you select for water treatment (e.g. filtration and chlorination disinfection / UV disinfection) is appropriate for the contaminants that have been identified and require control. A range of treatment processes is available, but the effectiveness of each type depends on the contaminants that need control. Further information is available at: Off-the-peg Food Control Plan: Food Service and Catering. [Section 2 – The Basics: Water supply](#) [201 KB PDF]

A water treatment specialist can also assist you to select and design a water treatment system that best suits your particular water supply and your business needs; and

- ensuring that following unusual events (e.g. a volcanic eruption depositing ash in the atmosphere, unusual or increased industrial activity nearby) you re-assess your roof water and ensure that, before further use, your treatment system is capable of dealing with any additional issues posed by the event;

If you have concerns about the water quality, you should contact a Health Protection Officer at the local public health service or an Environmental Health Officer at the local council. They are also the people to speak to about any water testing, and where to get it done.

- how you can help ensure that your water treatment is effective and your water supply is safe to use includes, e.g.:
  - ensuring that the water filtration system takes into account:
    - o the specific types of contaminants identified;
    - o filter grade; and
    - o water flow rate through the filter.
  - ensuring filters are installed between the water source and other treatment steps (e.g. chlorination);
  - improving filtration in water with high sediment loads by the use of coagulating chemicals;

- controlling turbidity for effective disinfection;
  - installing a manual or automatic chlorination system to maintain a suitable level of chlorine in filtered water; or
  - installing an ultraviolet light disinfection system where filtration is effective in controlling high sediment loads and turbidity;
  - installing the treatment system appropriate for your water in accordance with manufacturers' instructions; and
  - maintaining the treatment system appropriate for your water in accordance with the manufacturers' instructions. (Take into account provision of a back-up system – e.g. manual chlorine dosing - in the event of a power-outage).
- if an alternative water quality has been determined suitable for certain operations, how you ensure you maintain the safety and suitability of the food, e.g.:
    - ensuring lesser quality water (e.g. for agricultural irrigation) does not come into contact with food produce (e.g. the edible portion of the plant);
    - ensuring that lesser quality water cannot be mistaken for clean/drinking water.

### **3.3 Water Reticulation**

- how you ensure your water reticulation system is suitable for the purpose and maintains the quality of the water once it has been treated, e.g.:
  - ensuring the water reticulation system (e.g. pipe work, tanks, hoses and associated equipment) meets the requirements of relevant New Zealand legislation such as the Building Act and any local council regulations;
  - ensuring there are no cross connections between reticulations systems for potable water and non-potable water;
  - ensuring there are no dead ends or unused pipes in the system where water can stagnate;
  - ensuring pipes are flushed following periods of inactivity (such as seasonal shut-downs) and after any repairs to the system (i.e. turn on taps and allow a significant flow of water through to remove stale water, rust, scale and other material from the system);

- providing back flow prevention devices at critical points in the system to prevent contamination of clean water (e.g. treated tank supply);
  - maintaining water pipes, storage tanks and facilities, and other parts of the reticulation system in good condition and according to the manufacturers' instructions; and
  - protecting treated water from environmental contamination (e.g.: cover tanks and screen ends of open pipes (e.g. ventilation pipes) from animals, birds and debris).
- how you ensure all water lines are identifiable so that potable water and non-potable water lines can be distinguished, e.g. all water lines conveying non-potable water (e.g. for cleaning down areas external to the premises, flushing toilets, fire-fighting equipment etc.) are clearly identified at:
    - all outlets;
    - junctions and valves;
    - both sides of wall penetrations; and
    - any other place where identification is necessary to distinguish the water type.

## 4 Monitoring

Write up how you check your roof water collection, water treatment and water reticulation systems are working effectively.

Consider the following:

- confirm no change or alteration of collection surfaces that could cause water to become contaminated (e.g. building modifications, roof re-painting);
- check infrastructure (e.g. pumps, piping etc.) is fully operational and well maintained. Any specialised equipment is being operated and maintained in accordance with the manufacturers' instructions (e.g. schedule routine maintenance in advance and check that it is done);
- regularly check water tanks (e.g. inlet and outlet screens, access covers in place, strainer clear of debris, structural integrity, sludge level is below the water outlet level, tanks are internally clean);
- Look for evidence of problems (e.g. lack of water pressure, evidence that there may be a leak) and deal with issues when they arise;

- monitor treatment systems (e.g. check residual chlorine levels of the water if you are using a chlorine dosing system, check UV light sources are operating correctly, check turbidity if this is known to be a problem);
- make regular visual, smell and taste checks of water at point of use to determine that the system is operating as intended or whether something may be wrong; and
- test as necessary for E. coli, chemical hazards, protozoa or viruses in treated water.

Seek advice from a water treatment professional if you have any problem with your water supply and treatment systems.

## 5 Corrective Action

If you have a problem with your treated water supply, do not use it until you have fixed the problem. Until the water quality has been restored you must stop any operations requiring clean potable water or use a safe, alternative supply (e.g. bottled water; or water from a registered water tanker; or water that has been boiled for one minute, or water that has been disinfected by adding chlorine).

Write up how you correct any problems that monitoring identifies.

Include how you cover the following:

1. Defining the extent of the problem (i.e. what has happened, how/why it happened, and if appropriate how much product is affected);
2. Notify your verifier of the problem and take immediate action to restore control (e.g. boil the water for 1 minute / disinfect with chlorine or use an alternative temporary supply of safe water until the problem has been rectified); arrange for repairs and maintenance to be carried out on the reticulation system or the treatment system as required; remove the source of the contamination; check that water quality/treatment system is working properly before using the water again;
3. Dealing with food and other things affected by the problem (e.g. hold/recall/destruction of suspected product / water; and
4. Preventing re-occurrence (e.g. review maintenance programme; review incident with verifier and/or water professional).

## 6 Documentation and Record Keeping

Determine what records you need to keep for this procedure. These will help you to introduce and maintain consistent good practices, and to demonstrate to your verifier (auditor) that you are sufficiently controlling those factors that can impact on the safety and suitability of the food.

Assess any records you already have, and introduce any additional records you need for the monitoring and corrective action activities you specify in your procedure. When monitoring, you may have an option to either:

- record every check; or
- indicate that checks have regularly been carried out (e.g. throughout a week) and only record the results of a specific check where something went wrong. In these instances, always make a record of what you did to put things right (the corrective action).

Keep blank record forms handy for staff to use and let people know where they are. Keep completed record forms together where they can be found easily for your regular internal verification checks.

For your [general programme requirements](#) refer to the guidance document on the appropriate risk-based programme or plan which can be found on the Food Safety website.