

Advice on drinking water supplies following a flood.

It's important that water used for human consumption (drinking), the preparation of food or drinks (including baby formula), brushing teeth, or washing dishes and utensils is safe and free from contamination.

Flood events can affect the safety of drinking water supplies. This can be due to changes in the source water, contamination of stored water or pipework by floodwater, damage to pipes, tanks, pumps, etc or through loss of power supply.

Contaminated drinking water may contain harmful microorganisms (bugs or germs) which can cause illness such as diarrhoea and vomiting. Children, older people, and people with low immunity are particularly vulnerable to these illnesses.

Here's some information to help you keep you consumers as safe as possible immediately after a flood. This information is designed for emergencies and is general in nature. Because everyone's situation after a flood will be unique, you may need to take extra or different steps to ensure your drinking water is safe.

General advice for [consumers](#)

- If you are unsure if your tap water is safe to drink, don't drink it.
- Check with your council or water supplier to see if any consumer advisories have been issued (like a boil water notice) before drinking.
- Use bottled water if it's available.
- Boiling or disinfecting water can make it safe to drink if it contains microorganisms. Boiling and disinfection will not remove chemical contamination. If you suspect the water is contaminated with chemicals e.g., fuel, do not drink it – only use bottled water.
- To boil water, bring water to a rolling boil in a pot or boil a full electric jug (until it automatically shuts off). Once the water is boiled, it is safe to drink unless it has chemical contamination.
- Store your boiled water in a clean container with a lid. Boiled water is best used within 24 hours. If you are preparing water (or formula) for bottle-fed infants or people who are immuno-compromised, you need to be extra careful to ensure the safety of the water they use.
- If you do not have access to a supply of drinking water, collected rainwater or water that has not been contaminated with floodwater can be used after boiling.
- If you cannot boil water, you can use purification tablets or bleach to make your water safe. Tablets or bleach may not work with water contaminated with floodwater. If you are unsure, it is best to boil it.
- To disinfect water with bleach:

- Add 5 drops of plain unscented bleach to 1 litre of water, or 1/2 teaspoon of bleach to 10 litres of water.¹
- Stir the water well, and let it stand for 30 minutes before using it. The time delay is important here, as it gives the bleach a chance to deal with any microorganisms in the water.
- Don't drink water that has algae growing in it.

Advice for [small drinking water supplies](#)

If your water source or storage tanks have been damaged or inundated with floodwater, then the water is likely to be contaminated and may contain hazards that you are not used to.

Drinking water suppliers need to assess the hazards and risks affecting their supplies and advise consumers of any actions they need to take, such as boiling water.

If you are a registered supplier, you should notify Taumata Arowai if the water you are supplying is or maybe unsafe or if there is an insufficient supply available.

If you are unsure about the safety or operation of your supply contact Taumata Arowai through our online portal Hinekōrako, or call 04 889 8350, or email info@taumataarowai.govt.nz. In some cases, we may be able to provide technical assistance to help you get your supply operating safely.

Microorganisms (bugs or germs)

Most bacteria can be killed by chlorine, that is why it is used in water treatment systems across the world.

Your source water may also contain protozoa, these are microorganisms that are resistant to chlorine and difficult to treat. Treatment systems with cartridge filters (1 micron pore size or smaller) and UV (ultraviolet light) treatment will inactivate protozoa. UV light will also kill bacteria if the dose is 40mJ/cm² or more.

¹ Do not use bleaches that contain detergents/surfactants (i.e. foam up when shaken), fragrances (e.g. lemon-scented) or are gel. Ideally use liquid bleach which contains 5-6% sodium hypochlorite.

Emergency treatment examples and effectiveness against contaminants

	Bacteria	Protozoa	Chemical
Fully operational filter and UV with dose of at least 40mJ/cm ²	✓ Treated	✓ Treated	× Not treated
Fully operational filter and UV with dose of at least 12mJ/cm ²	× Not treated	✓ Treated	× Not treated
Chlorine / Bleach	✓ Treated	× Not treated	× Not treated
Boil	✓ Treated	✓ Treated	× Not treated

Chemical contamination

Chemical contaminants are generally present at very low levels and are less likely to impact health in the short term. You should however consider the risk from chemicals following a flood. If you believe it is likely that your water may have been contaminated with chemicals, advise consumers do not drink, and instead use bottled water.

Contaminated Roofs

If you have a rainwater supply and your roof has been contaminated by floodwater, disconnect your downpipe to prevent further contamination entering your tank.

If it is possible to do so safely, brush the roof to dislodge any dust, silt or debris (remember to wear a mask/goggles).

It is recommended that you conserve water however if you are confident that you have an adequate store of water then you can clean the roof. Otherwise wait until there has been sufficient rainfall to clean the roof before reconnecting to the tank.

Contaminated Tanks

Before drinking from your water tank(s), check it for evidence of damage and/or contamination from flood waters.

If your tank(s) has been contaminated, ideally it should be cleaned out and disinfected. However, there are risks around this that you will need to consider:

1. Water tanks are a confined space and can be very dangerous. Do not enter drinking water tanks, until professional advice and/or assistance is available.
2. Do you have sufficient water for cleaning at this time?

3. What parts of the system can you access safely to clean? You should not undertake work from height unless you are sure you can do so safely.
4. Do you have appropriate personal protective equipment and support available?

Disinfecting tanks and plumbing

If you have plain unscented bleach² available, you may be able to disinfect your tanks and system by the following process:

1. Calculate the volume of the tank.

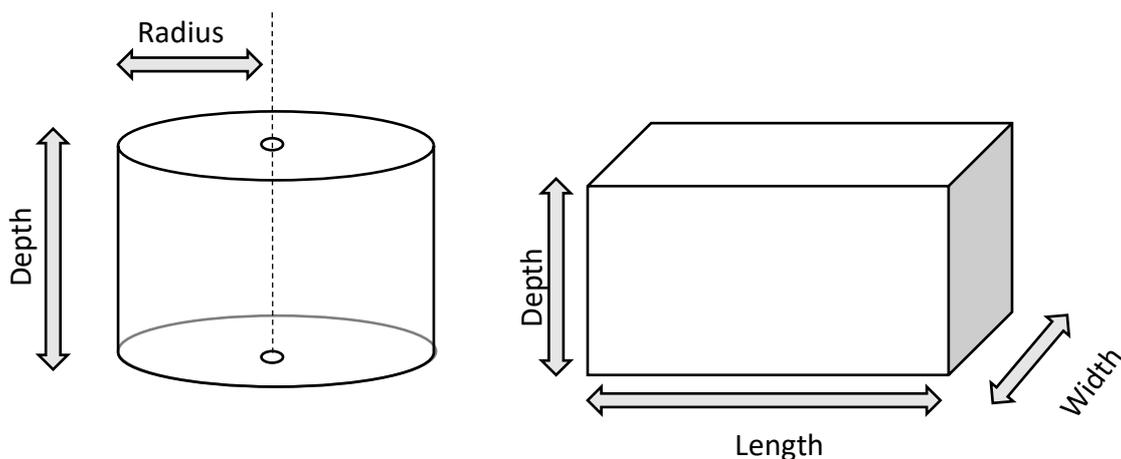
- Square tank

Length (m) x width (m) x depth of water (m) x 1000 = number of litres

- Circular tank

$3.142 \times \text{radius (m)} \times \text{radius (m)} \times \text{depth of water (m)} \times 1000 = \text{number of litres}$

radius = half the diameter (the widest part of the circle)



Note all measurements are in metres.

2. Add the required volume of bleach and mix.

Tank volume (litres)	Millilitres (ml) of bleach
500	35
1000	70
2000	140
5000	350
10000	700

² Do not use bleaches that contain detergents/surfactants (i.e. foam up when shaken), fragrances (e.g. lemon-scented) or are gel. Ideally use liquid bleach which contains 5-6% sodium hypochlorite.

3. Turn on each tap and flush each toilet in the house or buildings until you smell chlorine and then close the tap. You are trying to get the chlorine solution to all parts of the plumbing. If there are any in-line filters, they should be removed and replaced with new filters after the disinfection is complete.
4. Allow the chlorine to sit in the pipes for at least two (2) hours, preferably overnight.
5. Open all taps and flush out the chlorine solution for a couple of minutes to ensure it is all through the pipes.
6. Sampling for *E. coli* can be done to reassure you that the water is safe. Information on sampling is provided below.
7. Disinfection will not remove chemical contamination. If you think that your supply may have been contaminated by fuel or other chemicals, do not drink until you have tested to confirm it is safe.

Bore Water Supplies

If you have a groundwater supply where the bore has been flooded but the rest of your system is not affected, then you can take steps to disinfect your supply.

Run water from the bore to waste (flush) for several hours to flush contaminated water through the system. Then disinfect the bore and system in the following way:

1. Pour approximately 2 litres of plain unscented bleach which contains 5-6% sodium hypochlorite into a large bucket and dilute with water.
2. Pour the bleach solution down the inside of the well casing.
3. Turn on each tap and flush each toilet in the house or buildings until you smell chlorine and then close the tap. You are trying to get the chlorine solution to all parts of the plumbing. If there are any in-line filters, they should be removed and replaced with new filters after the disinfection is complete.
4. Allow the chlorine to sit in the pipes for at least two (2) hours, preferably overnight.
5. Open all taps and flush out the chlorine solution for a couple of minutes to ensure it is all through the pipes. Your bore and distribution system should now be disinfected.
6. Sampling for *E. coli* can be done to reassure you that the water is safe. Information on sampling is provided below.
7. Disinfection will not remove chemical contamination. If you think that your supply may have been contaminated by fuel or other chemicals, do not use drink until you have tested to confirm it is safe.

Testing your drinking water

We are aware that sampling may not be possible during the initial response to major flooding however drinking water suppliers should be contacting local laboratories to arrange testing as soon as possible. The contact numbers of local laboratories are provided below.

You must use bottles provided by your laboratory and follow the instructions from the laboratory when collecting the sample. Testing for bacteria is a priority. If your supply has been contaminated, you should keep a boil water notice in place until you have had three sample results indicating no *E. coli* is present. If you think that your source water (bore, stream, rainwater tank etc) may have been contaminated by chemicals then you should discuss chemical testing with the laboratory.

Laboratory Name.	Location	<u>Phone</u> Number	Web Address.
<u>Analytical Research Laboratories</u>	Awatoto	+64 68359222	<u>www.arllab.co.nz</u>
<u>Te Whatu Ora - Te Tai Tokerau, Dargaville Hospital Laboratory</u>	Dargaville	+64 94393330	<u>www.northlanddhb.org.nz</u>
<u>Linnaeus Laboratory</u>	Gisborne	+64 68630434	<u>www.linnaeus.co.nz</u>
<u>Analytica Laboratories Ltd</u>	Hastings	+64 68706449	<u>www.watertestinghb.nz</u>
<u>Eurofins ELS</u>	Hawkes Bay	+64 6 355 3685	<u>https://www.eurofins.co.nz</u>
<u>Ventia New Zealand Operations Limited</u>	Kaikohe	+64 94052602	<u>https://www.ventia.co.nz</u>
<u>Rotorua Lakes Council Laboratory</u>	Rotorua	+64 73462843	<u>https://www.rotorualakescouncil.nz</u>
<u>Far North Lab Ltd</u>	Taipa	+64 204406000	
<u>Tauranga City Council Laboratory</u>	Tauranga	+64 75777245	<u>https://www.tauranga.govt.nz</u>
<u>Wairoa District Council Laboratory</u>	Wairoa	+64 68387309	<u>www.wairoadc.govt.nz</u>
<u>Bay of Plenty Regional Council</u>	Whakatane	+64 800368267	<u>www.boprc.govt.nz</u>
<u>Whangarei District Council Laboratory</u>	Whangarei	+64 94304220	<u>www.wdc.govt.nz</u>