

Your private drinking water supply



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If you live in a rural area of Victoria you may have your own private drinking water supply. This could be a rainwater tank connected to your roof, or a tank connected to a nearby stream, bore or well.

This booklet provides simple information to help keep your domestic drinking water supply safe and healthy.

Possible health risks



Your private drinking water supply can become contaminated with harmful microorganisms, such as viruses, bacteria and parasites. This contamination generally comes from human or animal faeces.

Rainwater tanks may be contaminated with harmful microorganisms from animal droppings on roofs, or from leaking septic tanks and wastewater drainage if you have an underground tank. Septic tanks and wastewater drainage can also contaminate bores.



Water in irrigation channels and streams is likely to be contaminated with microorganisms from farmyard runoff and drains, making it generally unsuitable for drinking unless it is properly treated.

Known as pathogens, harmful microorganisms are not visible to the naked eye and may even be present in water that appears to be clear. Drinking water containing these microorganisms can cause severe gastroenteritis. Children, older people and people with suppressed immune systems are the most vulnerable. Your guests may also become ill if they drink contaminated water.



Serious outbreaks of gastroenteritis have occurred in Victoria as a result of people drinking contaminated water. However, the risk can be minimised by ensuring your drinking water comes from a good quality source and by regularly maintaining your water supply system.

Chemical contaminants can also pose a health risk, although they are usually less common than microbiological contaminants. Things to be aware of include:

- Soil from old industrial, mining or agricultural areas may contain arsenic, heavy metals, pesticide residues or other chemicals. If dust is blown onto your roof and is washed into your rainwater tank, chemical residues can build up in the water.
- Crop dusting can result in agricultural chemicals entering rainwater tanks. Agricultural chemicals may also drift or be washed into irrigation channels, streams and dams.
- Harmful smoky residues from solid wood heaters can condense near flues on your roof.
- Particles from lead-based paints or flashing on older roofs and gutters can be washed into rainwater tanks.
- Tar-based roof coatings can bind other harmful organic chemicals (such as pesticides) to the roof surface and make it difficult to clean.
- Runoff from roofs in urban or industrial areas can contain chemical pollutants from the air.
- In some parts of Victoria, groundwater may contain elevated levels of substances such as arsenic and nitrates.

Another possible risk is from blue-green algae, which can be very toxic to humans, domestic pets and stock. These can grow in dams, streams and even unroofed water tanks under the right conditions.



Food collection/Getty Images

Making sure your water is safe to drink

The following measures can significantly reduce the risk of harmful microorganisms or chemicals in your drinking water supply:

- Collect and store your water so that contamination from human, chemical or animal sources is minimised.
- Ensure that surface runoff, channel water, irrigation water, leakage from sewer pipes, sillage drainage or shallow underground seepage cannot enter your drinking water supply. If possible, store drinking water in an aboveground tank rather than in an underground tank, and ensure that your drinking water plumbing is completely separate from all other plumbing or pipe systems on your property and that all pipe joints are properly sealed.
- Do not collect your drinking water from recently painted roofs (until after the first few rainfalls), timber roofs preserved with chemicals, roofs coated with lead-based paints or tar-based coatings, or parts of roofs near flues from solid wood heaters. Most other roof types will normally be safe for drinking water collection, provided they are kept clean.
- Regularly clean your roof and gutter to remove leaves, animal remains, dust and other debris. Install simple screens between your roof and the water tank, or use a gutter guard or leaf diverter.
- The first rainfall after a dry period usually collects most of the contaminants on your roof. Installing a 'first flush' or other diversion system will prevent this water from entering your water tank. This first flush water can be stored separately and used for non-drinking purposes such as garden watering.
- If your house is over-sprayed by aerial chemical spraying, divert the collection pipe from your rainwater tank to prevent any chemicals from entering the tank. Clean the roof or wait until after the next rainfall before reconnecting your drinking water tank to your roof.
- Seal your water tank so that insects, small animals, birds and sunlight cannot enter. This is also a good safety precaution to prevent children from accessing the tank, and will help to minimise the growth of algae.

- Regularly maintain your water tank and clean out accumulated sludge from the base. You should check your tank for sludge accumulation every 2-3 years. Advice on desludging tanks is provided in the enHealth Council's *Guidance on use of rainwater tanks* (see details at the end of this booklet).



- Make sure that any bore you use as a source of drinking water is properly cased, with an above ground well-head. Information on bores and groundwater quality is provided in the Groundwater Notes Series, available from the Department of Sustainability and Environment website (see contact details at the end of this booklet).
- If you are considering using groundwater to prepare infant formula first consult your maternal and child health nurse or family doctor, as nitrates can pose a particular risk to bottle-fed babies.
- Disinfect your water supply if you suspect it has become contaminated with harmful microorganisms.
- Drink only boiled water if you have a suppressed immune system.

You should also consult the installer or manufacturer of any bores, roofing material, tank systems or ancillary equipment on your property for any specific advice you may need. Pipes and water tanks should meet the Australian Standards that relate to materials in contact with drinking water.

Frequently Asked Questions

Do I need to filter my water?

Generally, water that is cloudy or dirty will not be suitable for drinking unless it is properly treated.

Often it is more cost-effective to obtain your water from a good quality source than to treat poor quality water so it is safe to drink. However, if your drinking water supply does require filtration, make sure the filter complies with the relevant Australian Standards and be sure to follow the maintenance instructions.

Do I need to disinfect my water?

In most rural areas of Victoria, rainwater collected from a clean roof and securely piped into a well-maintained aboveground tank shouldn't need to be disinfected. Groundwater from cased deep bores also shouldn't require disinfection, but groundwater obtained from a shallow bore should be disinfected in case the bore has been contaminated with farm waste or effluent from septic tanks.

If you suspect your water supply has become contaminated with harmful microorganisms, it should be disinfected before being used for drinking, food preparation or making ice.

How do I disinfect my water?

A number of methods can be used to disinfect water. These include boiling the water that you drink, adding chlorine to the water supply, and using ultraviolet light. Guidance on boiling and chlorinating water is provided here. Ultraviolet light systems require very clear water to work effectively, and must be carefully designed, maintained and operated.

Boiling

Water can be disinfected by bringing it to a rolling boil. Electric kettles with an automatic shut-off can be used for this purpose. Allow the water to cool and store it in a clean container until it is needed.

Chlorinating

Chlorinating your water supply is a cheap and effective means of disinfection. Enough chlorine should be added to provide a free chlorine residual of around 0.5 milligrams per litre (mg/L) after 30 minutes. As a general guide, an initial dose of 5 mg/L of chlorine will provide this residual (see box below). You can test the residual in your water tank with a swimming pool test kit or dip strips, which are available from pool shops and suppliers.

Be sure to follow safety and handling instructions on all chlorine containers, especially for granular pool chlorine, and wear proper hand and eye protection when handling or preparing chlorine solutions.

After chlorinating, you should ideally wait at least 24 hours before using the water to allow for harmful microorganisms to be destroyed. The chlorine may leave a harmless taste and odour in the water, which should disappear in around 10 to 14 days. Boiling the water will remove most of this taste and odour.

To work out how much chlorine to add to your tank to provide an initial dose of 5 mg/L:

1. Calculate the volume of water in your tank (in kilolitres)

For a cylindrical tank the volume of water (in kilolitres) = $D \times D \times H \times 0.785$

Where D = diameter of the tank (in metres), and H = depth of water in the tank (in metres).

To check your calculation, compare this volume with the maximum capacity of your tank.

2. For every kilolitre (1,000 litres) of water in your tank, add either:

- 40 mL of liquid pool chlorine (sodium hypochlorite – 12.5% available chlorine), **or**
- 8 grams of granular pool chlorine (calcium hypochlorite – 65% available chlorine).

What should I do if I find a dead possum or bird in my tank?

A dead animal in your tank will not necessarily cause illness if you drink the water, but it is best to drain all water from the tank as a precaution.

Wash out any sludge from your tank, repair any holes in the roof and scrub the interior with a household bleach solution. Remember to maintain good ventilation whenever you are cleaning out any tank and always work with an assistant outside the tank (refer to the enHealth Council's *Guidance on use of rainwater tanks* for further information on tank cleaning and desludging – details at the end of this booklet). Refill your tank with good quality water and disinfect it with chlorine.

If good quality water is in short supply and it's not feasible to drain and refill the tank, you should remove as much of the animal carcass as possible and chlorinate the water.

Where can I get my water tested?

Generally, your drinking water supply shouldn't need to be tested if it is well managed and maintained. However, if you do need your water to be tested many analytical laboratories can provide this service. Look in a business telephone directory under "Analysts".

Is there enough fluoride in my private drinking water supply?

Fluoride is added to many town water supplies to help protect teeth against decay. Rainwater will not contain fluoride, however some groundwater supplies may.

If your drinking water supply doesn't contain fluoride it is especially important that you look after your teeth through healthy eating, regular brushing with fluoridated toothpaste (toothpaste containing fluoride should not be used for children under two years of age without dental advice), and regular dental check-ups. For more information on fluoride contact the Department of Human Services (see contact details at the end of this booklet).

What other problems might affect my water supply?

- Mosquitoes often breed in water tanks. Screening inlets and overflow outlets with fine mesh is the best option to prevent mosquitoes from entering your tank. If mosquitoes are already breeding in your tank, you can add a small amount of domestic kerosene or liquid paraffin. Use one teaspoon of kerosene in a 1 kilolitre water tank or 3 teaspoons

in a 10 kilolitre tank (double these amounts if you are using liquid paraffin). Industrial or commercial kerosene should not be used, and kerosene may not be suitable for use in tanks constructed of or lined with plastic. If in doubt check with your tank manufacturer.

- Zinc from a newly galvanised tank might give an unpleasant metallic taste to the water for a while, but is not harmful.
- Water pH tends to rise when stored in new concrete tanks, due to the leaching of lime from the concrete surface. These tanks may need to be flushed before their first use.
- Bushfires generate large amounts of smoke, ash and debris, which can settle on your roof. This generally doesn't represent a health risk, although it may affect water colour, taste and odour. If your area has been affected by a bushfire you should remove ash and debris from the roof, and ensure that the first flush of rainwater is not collected in your tank.

I operate a business with a private drinking water supply. Are there any additional obligations I should be aware of?

Private drinking water supplies used for commercial purposes, such as within a food business or commercial accommodation, need a higher level of management than that required for individual dwellings, as there is a responsibility to provide assurance that the water is safe for drinking. Drinking water supplies in these situations should meet the *Australian drinking water guidelines* (available from the National Health and Medical Research Council).

The *Guidelines for the use of non-potable water in food businesses* provide information to assist food businesses in ensuring that their water supply is safe for food preparation and human consumption. These guidelines are available from the Department of Human Services website (see contact details at the end of this booklet).

Legislation that may be relevant to the use of a private drinking water supply within commercial premises in Victoria includes the *Food Act* 1984 and the *Health (Prescribed Accommodation) Regulations* 2001. Contact your local council for more information.

Further information

enHealth Council - *Guidance on use of rainwater tanks*

For detailed information on the use of rainwater download this publication from the federal Department of Health and Ageing website.

www.health.gov.au

Department of Human Services

For further enquiries regarding the safety of your private drinking water supply.

Tel 1300 761 874

www.health.vic.gov.au

Department of Sustainability and Environment

For information on groundwater and bore construction (note that if you are considering constructing a bore you should also contact the rural water authority in your area).

Tel 136 186

www.dse.vic.gov.au

Your family doctor

For queries about the effect on your health of drinking from a particular water supply.