RAINWATER TANK TREATMENT INFORMATION

Rainwater tanks can provide a renewable supply of water that can be used for a range of purposes. In some areas it may represent the primary source of household water.

Roof collected water may falsely be perceived as fresh pure water. Whilst rain may not contain the same chemicals that river water or bore water may, it can easily become contaminated once rainwater is collected on the roof and distributed into the tanks.

This information leaflet has been prepared to assist residents to maintain a safe water supply.

Residents are advised that water obtained from creeks, dams and other surface waters is not considered suitable for domestic use/drinking without adequate treatment to remove impurities and ensure disinfection of the water (e.g. filtration, chlorination or ultraviolet light treatment).

Maintenance

Householders must ensure that their water supply is free from any likely contamination from sewage, organic matter such as leaves, grass, etc, and animals and bird excreta.

Tanks are required to be properly screened to prevent mosquito breeding. Screening also assists in preventing entry to frogs etc as well as leaves.

Inground concrete tanks should be checked for the presence of cracks/gaps in the walls, especially in areas where septic tanks are installed. Adequate separation distances must be maintained between inground tanks and septic tanks/pits to prevent contamination of drinking water. Precautions should be taken to prevent ingress of surface water around inspection/manhole cover(s).

Tanks should be regularly cleaned to remove sediment accumulation. Gutters should be regularly inspected and cleaned periodically to remove leaves, algae and other contaminants. Dead frogs, birds or vermin should be immediately removed from roof catchment areas and rainwater tanks, and chlorine added.

First Flush Water Diverter

Fitting a First Flush Water Diverter may also assist in achieving good quality water, as well as reducing tank maintenance and protecting pumps. The first flush of water from the roof can contain amounts of bacteria from decomposed organic matter and concentrated tannic acid, as well as sediments and chemical residues, all of which are undesirable elements to have in a water storage system. A first flush diverter works by preventing the first flush of water, which may contain contaminants from the roof, from entering the tank.

Water Filtration

Domestic water filtration devices are also used to improve water quality by removing suspended solids, some inorganics and microorganisms. Filters are usually fitted to the pipe between the water tank and the house or free standing 'jug type' filters can be used.

It is imperative that water filters are maintained in accordance with the manufacturer instructions. Water filters should be cleaned or replaced as necessary, and the device flushed with a diluted chlorine solution to prevent bacterial growth on the filter.

Disinfection of Tank Water

Tank water may become contaminated with microorganisms that cause gastroenteritis and other diseases. One option is to disinfect that water with chlorine. Other forms of disinfection include ultraviolet light treatment and boiling water for at least 3 minutes.

Chlorination

Two common forms of chlorine compounds can be used, those disinfectants that contain Sodium Hypochlorite (household bleach) or Calcium Hypochlorite (swimming pool chlorine powder).
It is very important that Chlorine is added to water at the correct dosage.

Firstly, calculate the amount of water in cylindrical tank by using the following formula:

Volume (in litres) = (3.14 x radius[m] x radius[m] x water depth[m]) x 1000 to convert from cubic metres to litres

The chlorine should be dissolved into a quantity of water in a container prior to being added to the water supply.

To determine the presence of chlorine in the water supply, the water should be tested for any chlorine odour 30 minutes after addition.

Disinfect water by adding enough chlorine to give a concentration of 1mg/L after 30 minutes contact (Check using a colour comparator which are available where swimming pool supplies are sold).

It is recommended that an initial dose of 5 mg/L be added to the water then maintained at >1mg/L residual in water at all times after treatment.

For 1000 litres the quantities for 5 mg/L are: (read container label)	
12.5% (approx) available chlorine Liquid swimming pool or dairy factory chlorine (Sodium Hypochlorite)	40ml or 40g
65% available chlorine Granular "swimming pool" chlorine (Calcium Hypochlorite) 1tsp = approx 5grams	8 ml or 8g

Test kits to monitor chlorine levels in the water are readily available. Keep in mind, if you use a swimming pool water testing kit for this purpose, to purchase one that will indicate mg/L of free chlorine, as opposed to a kit that does not provide a measurement (i.e. 'too low' 'satisfactory' 'too high'). This is because the acceptable level of chlorine in swimming pools is too high for human consumption.

A suitable level of free chlorine in the water in the range of 0.2 – 1.0 mg/L (or parts per million) is recommended after a 30 minute contact period. The chlorine level should be checked at least weekly and chlorine added as required.

Carrier Delivered Water

Council has received complaints from residents having water delivered to them by water carriers that at times the carted water has an unusual taste.

Residents are assured that water supplied to water carriers by Council is fully treated and of high quality. Regular tests are performed to monitor water quality.

A spokesman for the Scientific Services section of Queensland Health advised that mixing rainwater stored in tanks with town water often produced undesirable tastes. He recommended that rural residents receiving a delivery of water carry out the following procedures:

(a) Any remaining water in the tank should be drained from the tank and the tank should be cleaned out with fresh water prior to being refilled with carted water.
(b) The roof and gutters should be kept free of leaves, sap, or any organic matter, and cleaned regularly if necessary.
(c) Tanks should be inspected regularly to check if any maintenance is necessary. Inlet and outlet screens and the tank itself should be free of holes or gaps which may allow access by animals and insects to the water.
(d) Once the tank is filled with the carted water, the water should be chlorinated (refer to the chlorination process mentioned earlier).

Water Testing

The Gympie Regional Council provides microbiological testing of drinking water and analysis of the physical characteristics and chemical quality of drinking water supplies to residents for a fee.

For additional information you can consult Queensland Health's, 'Guidance on use of rainwater tanks':
http://www.health.gov.au/internet/main/publishing.nsf/Content/0D71DB86E9DA7CF1CA257BF0001CBF2F/$File/enhealth-raintank.pdf

Should you require any further information please contact Council's Planning & Development Directorate on (07) 5481 0455.