



RAIN WATER HARVESTING

Rain water is an ideal supply for our water requirements.

Importance of incorporating good design features into rain water harvesting systems



Whilst there are large losses of water in water catchment systems such as dams, rainwater tanks harvest water efficiently during droughts and reduce demand on water supply reservoirs. There is more rainfall in urban areas and minimal water is lost from the roof to the tank. Rainwater tanks complement mains water supply infrastructure. Rainwater tanks are underutilized if water is only used for irrigation. Maximum benefit occurs when rainwater is used for indoor + outdoor uses.

The quality of rainwater is ensured by a natural treatment chain in the tank that reduces the presence of bacterial and metal contaminants. Bacteria, organics and chemicals form flocs that become biofilms on surfaces or settle to the bottom of the tanks to the sludge. The processes of flocculation, settlement and biofilms in tanks act to improve the quality of rainwater. The quality of rainwater is acceptable for hot water, toilet, laundry and outdoor uses. Water quality monitoring has shown effective pasteurization of rainwater in hot water systems. Separation of the first flush of rainwater from the roof and gutters will improve tank water quality. Extensive analysis of literature and research revealed that health concerns about rainwater tanks were significantly overstated.

Illness from drinking rain water

The risk of disease arising from roof-collected rainwater consumption can be low, providing that the water is visibly clear, has little taste or smell and, most importantly, the storage and collection of rainwater is via a properly maintained tank and roof catchment system.

Studies have often shown deficiencies in the use of rainwater catchment systems and components cited include: lack of maintenance; inadequate disinfection of the water; poorly designed delivery systems and storage tanks; and, failure to adopt physical measures to safeguard the water against microbiological contamination.

A range of enteric pathogens has been found in roof-collected rainwater including Salmonella, Campylobacter, Giardia and Cryptosporidium. The likely sources of these pathogens were faecal material deposited by birds, frogs, rodents, dead animals and insects, either in the gutters or in the water tank itself.





Rainwater users can reduce their risks of disease from contaminated rainwater consumption by regular maintenance and using a well-designed system.

Regular maintenance should include:

- Keeping roof catchments clean and clear of moss, lichen, debris and leaves.
- Cutting back trees and branches that overhang roofs.
- Regular inspections and, if necessary, cleaning of gutters.
- Cleaning gutter and tank inlets and screens every 3–4 months.
- Disinfecting the supply, if tank contamination is apparent.
- Inspecting tanks annually and cleaning them out if necessary.
- Testing the water periodically.

Good design features should include:

- A clean, impervious roof made from non-toxic material.
- The absence of lead flashings or lead-based paints.
- A coarse filter and first flush device to intercept water entering tank and gutter guards / screens.
- Wire mesh (screens) to cover all tank inlets.
- A covered and light-proof tank.
- Tank taps or draw-off pipes that are at least 100mm above the tank floor (Alternatively, a floating arm draw-off valve).
- A tank floor which slopes towards the sump and washout pipe.
- A well-covered manhole for easy access and inspection.

Roof-collected rainwater can be made safe and potable so that it complies with strict international drinking water standards. This is true when measures such as tank cleaning and the use of first flush diverters and coarse rainwater filters are undertaken.

Visit www.reservoir.co.za for further information on water quality in your area.

