What are the health effects from drinking untreated rainwater?

Information in this article is taken from:

Drinking Rainwater: A Doubled-Blinded, Randomised Controlled Study of Water Treatment Filters and Gastroenteritis Incidence

By Monash University

In 2010, researchers from Monash University in Melbourne, Australia, reported on a study of 300 homes that used stored rainwater as their main drinking-water source. Their objective was to see whether drinking untreated rainwater contributed significantly to the incidence of community gastroenteritis.

They carried out a double-blinded, randomised controlled trial in Adelaide, Australia. The households involved already used rainwater as their primary drinking-water source, but were asked to pass the water through a water treatment unit prior to use for one year. Half the houses were given an ‘active’ water treatment unit which filtered the water and the other half received a ‘sham’ unit that allowed the water to pass through unfiltered. The participants were asked to record all incidences of illness over a 12 month period. Since participants were unaware whether the unit they’d had installed was active or sham, this would not have influenced their reporting of illness.

At the end of the study, participants reported 769 episodes of gastroenteritis; 411 in the group with the active treatment unit and 358 for the sham unit. This works out at 0.77 episodes per person per year; 0.78 for the active group and 0.76 for the sham group. The results show there is no significant difference between the group with an active water treatment unit and those with a sham one.

While these findings suggest that the consumption of untreated rainwater does not contribute appreciably to community gastroenteritis, it may not be possible to generalise the findings to all situations.

Untreated rainwater can be contaminated with faecal matter from birds, risking Campylobacter and Salmonella infections; for healthy adults this does not present a serious risk, but for people who are more susceptible, such as immunocompromised persons, young children and the elderly, it could be more serious. Equally, this study was carried out on people who already drank untreated rainwater regularly. It is believed that long-term use of rainwater gives partial immunity to microbial contamination, so the results may not be generalisable to households that have only recently started to use rainwater as their drinking-water supply. The study also did not assess the potential health effects of chemical contamination of rainwater.

Despite this, the study does provide evidence that untreated rainwater does not significantly increase incidences of gastroenteritis in healthy adults; the researchers suggest further work is required for households with new tank installations and to correlate rainwater quality with health outcomes.

Cited paper: