



Rainwater contamination from diffuse sources

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The provision of safe and affordable water supplies in rural areas results from an evaluation of available sources and present practices, and a suitable option shall depend on reliability of supply, existing quality, health protection, costs, and environmental and social impacts. In many countries of the world, rainwater collected from small catchments such as roof tops has become a viable alternative source of water in regions where other sources have proved too difficult to extract or where the quality has been very poor. Although rainwater collected from roof catchments has been regarded as a source of safe water for drinking purposes, recent studies have shown that its quality is affected when the roof is contaminated by diffuse sources of pollution from the atmosphere and with the faeces of birds and other creatures, as well as from deterioration of the roofing material itself.

Yaziz et al., (1989) found a relationship between zinc concentrations in roof runoff and the duration of dry weather between storm events, and concluded that the accumulation of dust as a contributing factor. In another situation roofs at a sawmill in coastal Washington were found to be a source of high concentrations of zinc and other pollutants that greatly exceeded the water quality criteria (Good, 1993). An evaluation of the quality of rainwater collected from different roof catchments in rural, urban and industrial areas by Thomas and Greene (1993) indicated that the bacterial quality was poor, and the physical and chemical qualities varied between each area and between each site. Rainwater from industrial and urban areas roof catchments had high levels of lead, zinc, turbidity and suspended solids whereas rural area catchments showed low or zero levels of these param-

eters. However, rural area catchments indicated increased levels of nitrates derived from agricultural activities. It was concluded (Thomas and Greene, 1993) that the contamination of rainwater collected from different roof catchments was mainly due to the diffuse pollution from the atmospheric deposition.

In many areas, the national water quality control campaigns are directed towards surface and groundwater supplies, and the rainwater users (most of them belong to the rural population) collect water directly from the roofs without any precautionary methods. They are not aware that their water quality is affected by the local environmental and climatic conditions. It may be appropriate to educate them of the health effects of chemical, organic and bacteriological contamination induced by diffuse pollution in the roof runoff and of the appropriate measures to prevent collecting contaminated water such as avoiding the first flush or introducing some form of treatment depending on the use.

References

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