58. Household water treatment 1

This Technical Brief is the first of two examining the treatment of water in the home. Here we introduce the subject, and cover treatment by straining, storage, settlement, solar disinfection, chemical disinfection, and boiling. The second Brief (No. 59) considers treatment by coagulation, flocculation, filtration and solar distillation, and covers aspects of the reduction of some chemical concentrations.

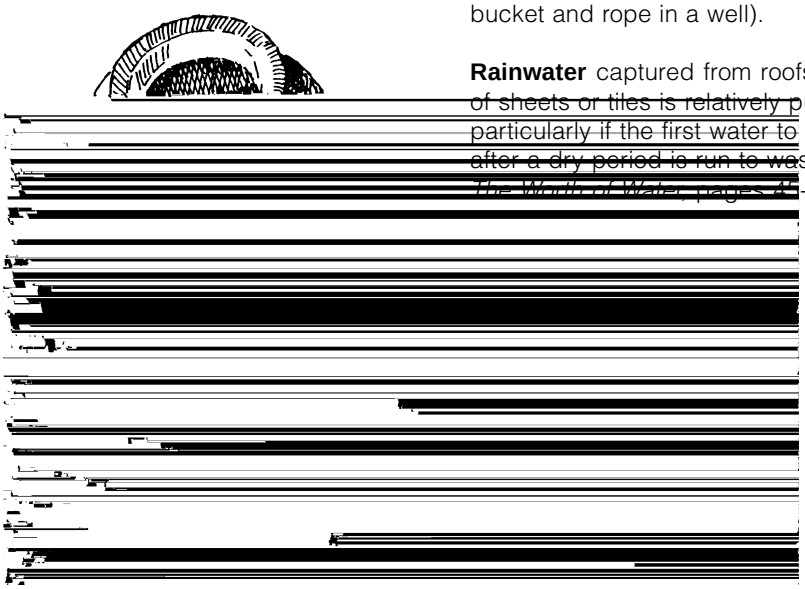
Why treat water?

It is always better to protect and use a source of good quality water than to treat water from a contaminated source ...

but water needs to be treated if:

What contaminates water?

P (disease-causing organisms) including eggs or larvae of parasitic worms; bacteria; amoebas; and viruses.



Harmful chemicals from human activities (e.g. pesticides and fertilizers) or from natural sources (e.g. chemicals from rocks and soils).

Contaminants or physical properties which, although not harmful, cause people to reject the water because of its taste, smell, colour, or temperature.

What is the best source?

Where there is no good source the best option is to treat water from the source with the highest quality water. A change of source, or use of a treatment process, however, may give the water a different taste, unacceptable to the community.

Surface water is usually quite badly contaminated (see page 89).

Groundwater is usually much purer than surface water, but may be contaminated by natural chemicals, or as a result of human activities (including the unhygienic use of a bucket and rope in a well).

Rainwater captured from roofs made of sheets or tiles is relatively pure, particularly if the first water to flow off after a dry period is run to waste (see *The Worth of Water*, pages 47-48).

Maintaining the quality

Removing pathogens will be pointless if the treated water is contaminated

Problem with raw water	Straining through fine cloth	Aeration	Storage / pre-settlement	Coagulation,flocculation and settlement or filtration	Fine sand filtration (slow)	Coarse sand filtration (rapid)	Charcoal filter	Ceramic filter	Solar disinfection	Chemical disinfection	Boiling	Desalination / Evaporation
PATHOGENS												
Bacteria, (effectiveness often also apply for amoebas, viruses and ova)	0	+	1 - 2	0 -1	4	2	-	3 - 4	4	4	4	4
Guinea-worm larvae (in cyclops)	4	0	0	-	4	2 - 3	-	4	2-4 b	-	4	4
Schistosomiasis cercaria	-	0	4	-	4	2 - 3	-	4	2-4 b	4	4	4
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