

HEALTH BASICS: WATER AND SANITATION



Health workers are aware of the link between safe water supplies and excreta disposal and the prevention of diarrhoeal diseases, but the installation of these facilities only provides half the answer. Of equal importance is teaching people how to use them. When is handwashing most important? How do you maintain safe water supplies? This insert provides practical information on hygiene behaviour at family and community level before, during and after the installation of water and sanitation facilities.

SAFE WATER

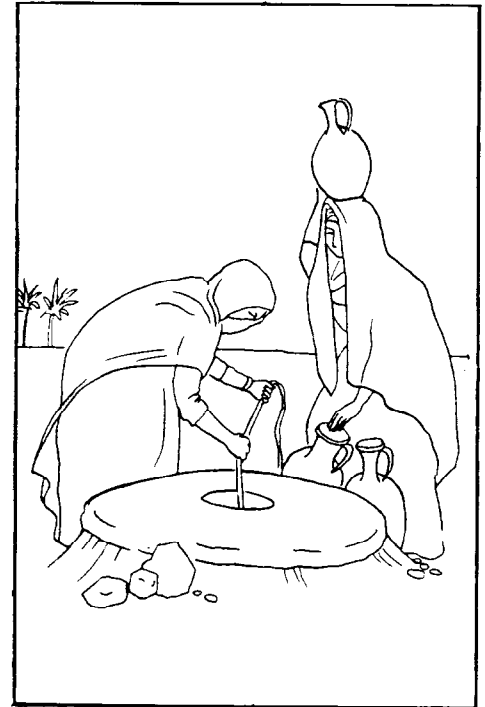
To be sure that the water we use for drinking is safe, contamination must be prevented:

1. At the water source and in the water delivery system (wells, pipes, taps etc).
2. Between collection and use.

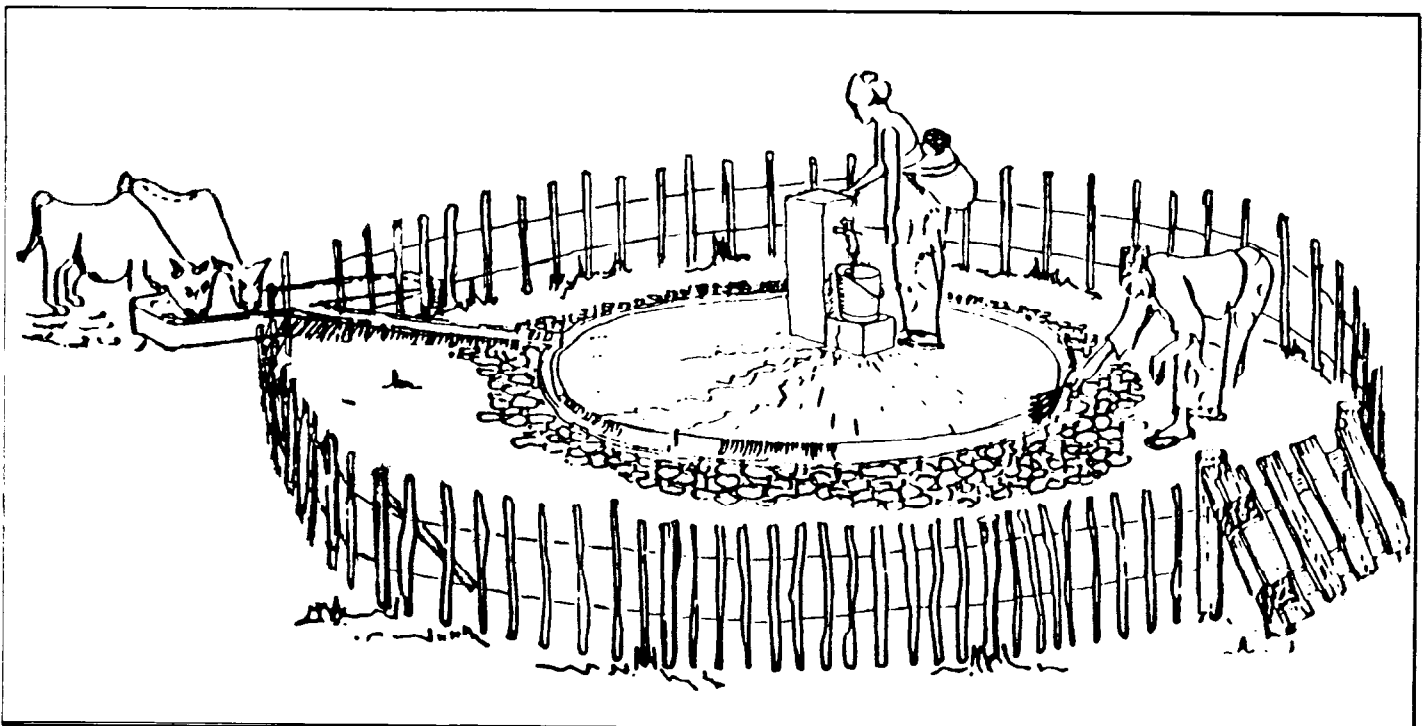
Safe water from wells

To protect well water from contamination you can:

- construct a wall around the well with a platform and drainage facilities. This will help to prevent soil from falling into the well and waste water from draining back into it;
 - only use one bucket to draw water from the well and keep this bucket clean;
 - if possible, keep the well covered when it is not being used;
 - take care that the rope of the bucket cannot get dirty with soil and contaminate the water;
 - make sure that your hands are clean when using the bucket;
 - bathe, and wash clothes, away from the well so that waste water cannot drain back into the well;
 - keep surroundings clean and animals away from the well.
- These points are also equally important for wells where handpumps are used to lift the water instead of



buckets. Handpumps need to be properly operated and maintained to guarantee a permanent supply of safe water.



Build a fence around the well or tap to keep out animals.

WATER AND SANITATION

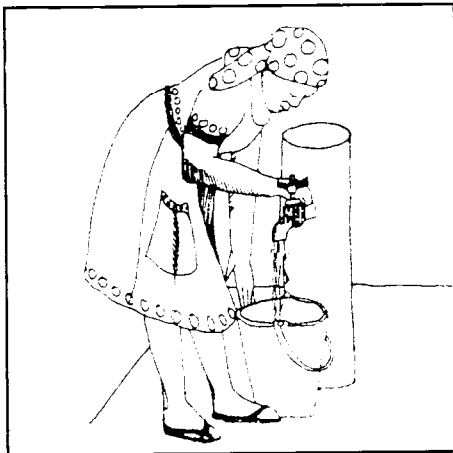
Safe water from public taps

Tap water can be from a spring water, groundwater or surface water source. To ensure that this water is safe to drink, make sure that:

- the intake (water source) area, piping system and storage tanks are protected from contamination by human and animal, agricultural and industrial wastes; *or*
- the water is adequately treated before use (although treatment may not be very feasible in some communities).

Also:

- keep the taps clean;
- clean the area around the tap daily;
- clean (and unblock if necessary) the drains regularly so that waste water can drain away;



- prevent the area around the tap from getting muddy;
- repair cracks in the concrete;
- bathe and wash clothes at some distance away from the drinking water tap;
- keep cattle and other animals away from taps.



Other ways to stop water from being contaminated include:

- asking a person living near the tap to look after it;
- building special facilities at some distance away from the water source for bathing and washing clothes;
- making a fence around the tap to keep out animals;
- building special ditches or troughs away from the tap for cattle and domestic animals to drink from.

Prevention of contamination between collection and use

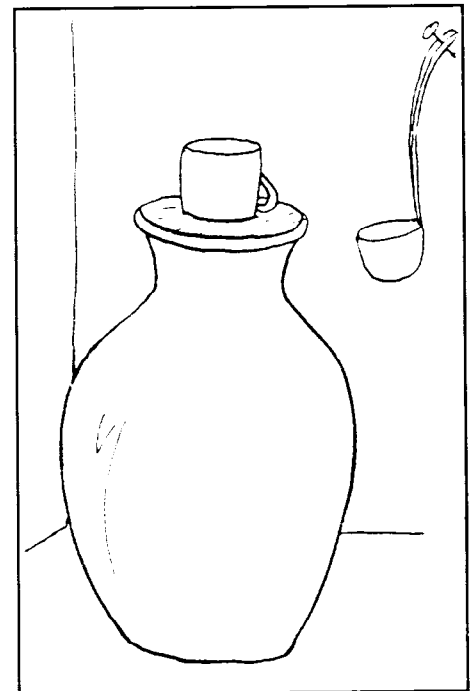
Water may become unsafe at any point between collection and use. Clean water can easily become contaminated when:

- it is touched by dirty fingers;
- it is poured into a dirty container;
- dirt or dust gets into the water from the air if the container is uncovered;
- dirty cups are used.

Points to remember:

- wash hands before collecting and carrying water;
- make sure the container for collecting the water is clean;
- carry water in a covered container if it has a large opening (e.g. if it is a bucket or basin). This will also help to prevent the water from spilling during the trip home (although a loose lid will not prevent spilling) and make sure the cover is clean;

- if possible, empty and clean the household water storage container daily;
- keep household water storage containers covered, and do not allow children or animals to drink from them;
- allow no one, especially a child, to put their hands into the storage container;
- pour water out of the water storage container without touching it, or use a clean long-handled dipper to take the water out;
- use clean cups or mugs for drawing and drinking the water.



SAFE WASTE WATER DISPOSAL

Safe waste water disposal from taps and after domestic use is very important. Stagnant pools of water and muddy places around houses and water collection sites are a health risk and can attract mosquitoes.

- clean and unblock drains near public taps regularly so that waste water can always run away;
- throw away domestic water waste or dispose of it in a soakage pit.

In dry areas where water is scarce, domestic waste water could be used to:

- water vegetables and fruit trees;
- water domestic animals;
- clean latrines.

WATER AND SANITATION

PERSONAL HYGIENE

Good personal hygiene can prevent or reduce the incidence of diarrhoea, skin and eye diseases and body lice. One way to improve personal hygiene is to have plenty of water near people's homes.

This can be used for:

- washing hands after defaecation;
- washing hands before preparing and eating food;
- washing the faces and hands of children;
- bathing or body-washing;
- regular washing of the hair;
- washing of clothes and bedclothes;
- cleaning teeth.

Washing, especially hand washing, should be done whenever possible with soap. Where soap is not available for bathing, substitutes such as ash, clean sand, a flat stone, or a clean cloth to rub the body, could be used.

The importance of handwashing

Handwashing after defaecation will greatly help to reduce the risk of disease transmission.

In areas where anal cleansing with water is practised, the promotion of handwashing may create fewer problems than in areas where other cleansing materials are used. When anal cleansing is done with water it means that at least some water is available and that handwashing may be integrated more easily as a part of defaecation practice.



Handwashing can help to reduce the risk of disease transmission.



DOMESTIC HYGIENE

To prevent disease transmission:

- make sure that water containers, dippers and cups are clean to prevent the contamination of drinking water;
- wash cooking pots, dishes, eating utensils, carefully after each use. A rack drainer (to keep items above the ground) in the sun above a soakaway may be the best place to drain and dry washed articles. The water from washing can be emptied into the soakaway (waste water soakage pit);
- control flies not only by burying faeces and use of pit latrines but also by covering food and safely disposing of domestic waste;
- cover, bury or burn domestic waste to deter flies and rats.

WATER AND SANITATION

EXCRETA DISPOSAL

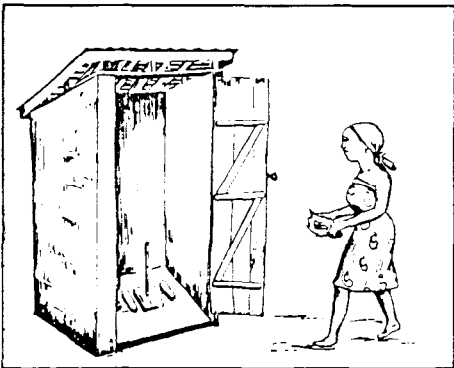
Safe excreta disposal is as essential as a safe water supply in preventing the spread of disease.

Where there is no latrine

If there is no latrine available, it is important to dispose carefully of faeces by burying – dig a small hole before passing stools (as far away as possible from houses, paths, animals and small children, and at least 10 metres away from the water supply), and cover with earth to prevent contact from flies and animals. Avoid going barefoot to defaecate, and do not allow children to visit the defaecation area alone.

Children and excreta disposal

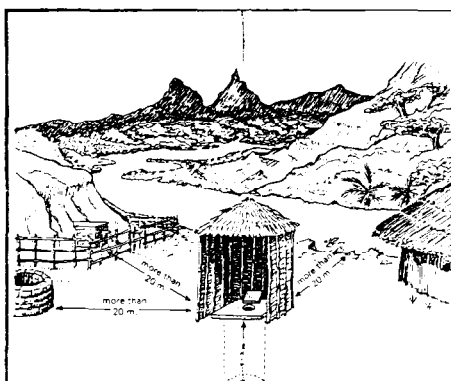
A common belief in many societies is that the faeces of babies and children are less harmful than those of adults. In fact the faeces of babies and young children are just as dangerous as those of adults. It is therefore important to dispose of these faeces in a safe way.



If children are too small, or are too scared of the squat-hole, to use a latrine, a separate children's latrine could be built or a hole in the ground at

a convenient distance from the house made for them to use for defaecation. After each time it is used the faeces should be covered with soil. Another hole can be made when the first one is full. Another possibility is to get the child to use a potty, or to defaecate onto paper or a large leaf, which can then be put in the latrine.

Locating a latrine

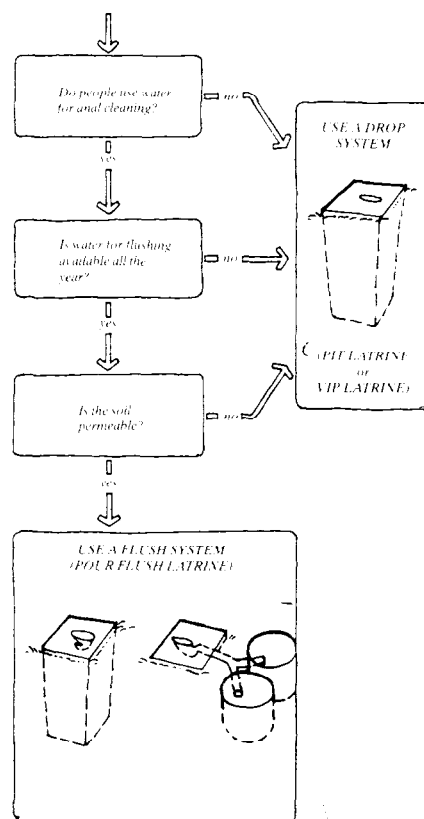


A latrine should be at least 15 metres from all wells, springs, rivers, or streams.

- If possible, the bottom of the latrine should be more than 1.5 metres above the highest groundwater table. If the bottom of the latrine is likely to be close to, or reach down into, the groundwater, then build it downhill from the water source. If you cannot place the latrine downhill, then it should be built at least 15 metres away from all houses, wells, springs, rivers or streams.
- A latrine site should be dry, well drained and above flood level.
- The latrine should be close to the home, if it is too far away, it is less likely to be used.

Choosing a latrine

Flush system or drop system?



If the answer to these questions is YES, select a flush system. If the answer to one of the questions is NO, choose a drop system.

LATRINE COMPARISONS

LATRINE	Rural application	Urban application	Cost to build	Ease of construction	Water requirement	Best anal cleaning material	Hygiene	Fertilizer production
Pit latrine	suitable in all areas	not in high density suburbs	low	simple — except in wet and rocky ground	none	any	moderate	can do
VIP Latrine	Suitable in all areas	not in high density suburbs	low	simple — except in wet and rocky ground	none	any	good	not easily
Pour flush latrine	suitable	not suitable	high	requires skilled builder	water source near privy	water	good	no

WATER AND SANITATION

Latrines

A latrine is a safe place to pass stools and urine, but only when:

- it is properly built;
- well maintained;
- cleaned every day; and
- there are no flies.

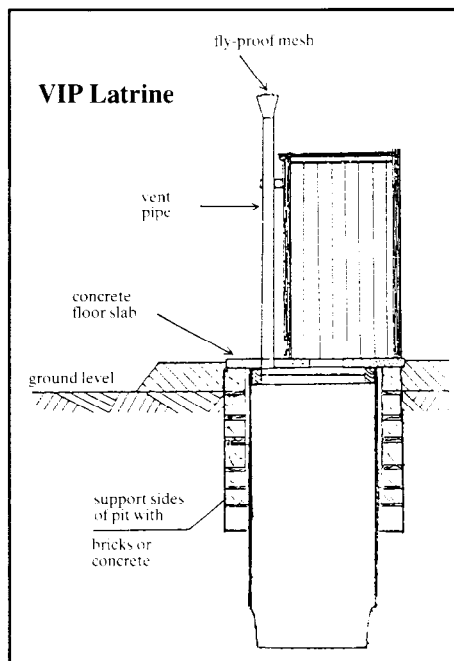
A good latrine should fulfil the following conditions:

- it should not contaminate the surrounding area;
- there should be no contamination of surface or ground water which can enter springs or wells;
- there should be no need to handle fresh faeces;
- faeces should not be accessible to flies, animals or other people;
- there should be minimal bad smells;
- the methods used to build latrines and maintain them should be simple and inexpensive;
- it should be safe and attractive for children to use;
- it should be designed in such a way that it is culturally acceptable.

Types of latrines

Pit latrine

The pit latrine consists of a hole in the ground bridged by a floor slab or squatting plate, around which a hut is built to provide privacy. A cover, with a long handle, can be used to prevent flies from entering the hole.



The pit latrine should be about 3 metres deep by 1 metre wide and the sides should be strengthened with sticks, stones, or bricks to prevent collapse.

When the pit is two-thirds full, it should be filled in with earth, and a new pit dug nearby. The liquids from the old pit will soak into the soil, and the solids remaining will become harmless after two years and can be dug from the pit and used as fertilizer.

VIP latrines

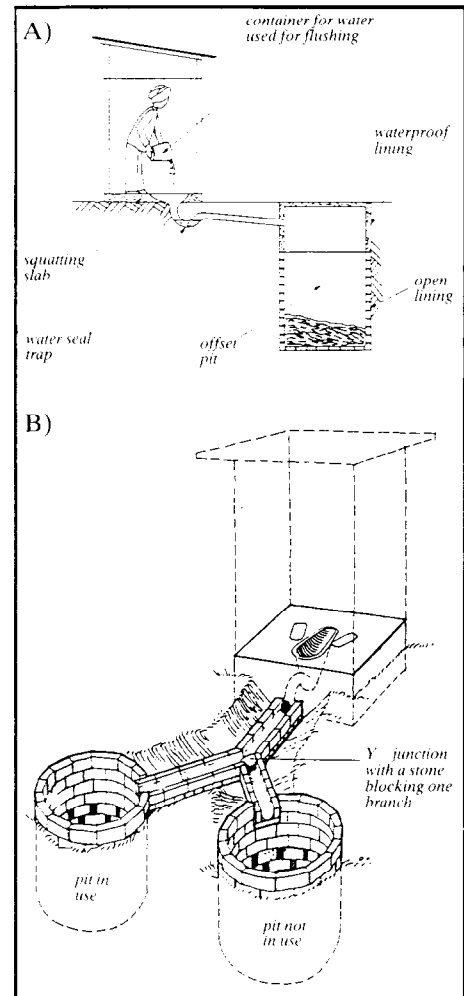
Good ventilation is important. Problems of bad smells and flies can be reduced if a vent pipe is installed. This should be at least 300 mm (0.3 metres) above the highest point of the hut, (except for conical roofs, where the vent pipe should go to at least the height of the apex). The movement of air across the top of the pipe will create an up-draught, drawing up smells from the pit, and trapping any flies under the mesh at the top of the pipe.

The mesh should be inspected every month to make sure it is properly secured, and that spiders' webs, flies and other debris are not blocking the vent pipe. These can be cleared by pouring water down the pipe.

Pour flush latrine

A) The pour-flush latrine has a squatting slab which is specially made to include a water seal trap, set into the floor. Excreta is flushed down a short length of pipe from the water seal trap with a small amount of water. The pit itself should be open lined at the bottom to allow the escape of liquids, while the top section should be waterproof.

B) Two pits can be dug side by side and connected to the latrine by a 'Y' junction. One arm of this junction is sealed at first, so that only one pit fills. When this pit is full, it is sealed and the second pit is used. By the time this pit is full, the contents of the first pit can be dug out and used as fertilizer. The advantage of this type of latrine is that it includes a water seal trap, so that fly-breeding in the pit, and odours are avoided.



Acknowledgements

The information contained in this insert is based on material from:

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- Pacey A., Rural Sanitation: Planning and Appraisal. 1980. Intermediate Technology Publications.
- VITA, Village Technology Handbook. 1981.

RESOURCE LIST

SOURCES OF INFORMATION AND EQUIPMENT

- **African Medical & Research Foundation (AMREF)**, P.O. Box 30125, Wilson Airport, Nairobi, Kenya.
- **Blair Research Institute**, Ministry of Health, P.O. Box 8105, Causeway, Harare, Zimbabwe.
- **Centre for Agricultural Mechanisation and Rural Technology (CAMARTEC)**, P.O. Box 764, Arusha, Tanzania.
- **EARTHSCAN**, 3 Endsleigh Street, London, WC1, U.K.
- **ENDA TIERS MONDE**, B.P. 3370, Dakar, Senegal.
- **ENSIC**, P.O. Box 72461, Asian Institute of Technology, Bangkok, Thailand.
- **Environmental Liaison Centre**, P.O. Box 72461, Nairobi, Kenya.
- **Global Water Film Library**, Suite 500, 1629 K Street, NW, Washington, D.C. 20006, U.S.A.
- **Imperial College**, Department of Civil Engineering, University of London, London, SW7 3BU, U.K.
- **Intermediate Reference Centre for Community Water Supply and Sanitation (IRC)**, P.O. Box 93190, 2509 AD, The Hague, The Netherlands.
- **Intermediate Technology Development Group**, Myson House, Railway Terrace, Rugby, CV21 3HT, U.K.
- **Intermediate Technology Publications**, 9 King Street, London, WC2E 8HW, U.K.
- **International Development Research Centre (IDRC)**, Health Sciences Division, P.O. Box 8500, Ottawa, Ontario, Canada, K1G 3H9.
- **Kenya Water for Health Organisation (KWAHO)**, P.O. Box 61470, Nairobi, Kenya.
- **London School of Hygiene and Tropical Medicine (LSHTM)**, Department of Tropical Medicine, Keppel Street, Gower Street, London, WC1E 7HT, U.K.
- **National Demonstration Water Well Project**, US Agency for International Development, Development Information Centre, Washington, DC 20523, U.S.A.
- **National Environmental Engineering Institute (NEERI)**, Nehru Marg, Nagpur 440 020, India.
- **National Water Council**, Overseas Manpower Development Group, James House, 27 London Road, Newbury, Berkshire, RH13 1JL, U.K.
- **Peace Corps**, Information Collection and Exchange, 806 Connecticut Ave, NW, Washington DC 20525, U.S.A.
- **Teaching Aids at Low Cost (TALC)**, P.O. Box 49, St Albans, Herts AL1 4AX, U.K.
- **TOOL**, Entrepotdok 68a/69a, 1018 AD Amsterdam, The Netherlands.
- **UNICEF**, Water and Environmental Sanitation Team, and **United Nations Development Programme (UNDP)**, United Nations, 1 U.N. Plaza, New York, NY 10017, U.S.A.
- **University of Birmingham**, Department of Civil Engineering, P.O. Box 363, Birmingham, B15 2TT, U.K.
- **Volunteers in Technical Development (VITA)**, 1895 North Lynn Street, Arlington, VA 22209, U.S.A.
- **WASTE**, Consultants on Appropriate Technology, Crabethstratt 38f, 2801 AN, Gouda, Netherlands.
- **WATERAID**, 1 Queen Anne's Gate, London, WC1H 9BT, U.K.
- **Water and Sanitation for Health Project (WASH)**, 1611 N. Kent Street, Room 1002, Arlington, Virginia 22209, U.S.A.
- **Water and Waste Engineering for Developing Countries (WEDC)**, University of Technology, Loughborough, LE11 3TU, U.K.
- **World Bank**, Water Supply and Urban Development Department, 1818 H Street, NW, Washington DC 20433, U.S.A.
- **World Health Organisation (WHO)**, CH-1211, Geneva 27, Switzerland.

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- A Handle on Health**. (Testing, Manufacture and Design of Low Cost Handpumps.) 16mm film. 27 minutes. 1985. IDRC.
- For Want of Water**. VHS. 28 minutes. £13.00 (inc. p & p surface mail). **Shell Film Unit**, Shell Centre, London, SE1 7NA, U.K.
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- Waterlines**. Intermediate Technology Publications.
- Waterfront**. UNICEF.
- World Water**. Thomas Telford House, 1 Heron Quay, London, E14 9XF, U.K.