This summary provides information on water supply for environmental health practitioners working in Aboriginal communities. At the end of this summary you will find information for specific resources that may relate to your area of interest or expertise.

Why look at water supply?

Having enough water, of good quality, having equipment that does not break down and having enough people to maintain this equipment, together with good management plans to look after the water available, is very important for Indigenous communities. These factors allow communities to enjoy good health and a sense of wellbeing, and develop economic opportunities for the people living there. The water supplied for communities must be safe for a variety of uses. It can be a complicated system, like those found in cities or towns, or as simple as a rainwater tank connected to a house.

In terms of public health a good quality water supply is:
- water for drinking
- water for personal and domestic hygiene
- a supply which does not have a harmful affect on the health of the people using it

Drinking water of a poor quality is harmful for health; however diseases can also develop from:
- cooking, washing or swimming in water contaminated with bacteria or viruses
- not having enough water to attend to personal or domestic hygiene
- drinking too little water due to poor taste, warm temperature or smell
- using water contaminated with chemicals (high salt, blue-green algae or pesticides)

It is important to understand the link between safe water and health especially in a country as dry as Australia.

How important is water to Indigenous people?

Water has always been important to Indigenous people. Rainfall is vital as there are no permanent rivers in the desert areas of Australia. Many remote communities in Australia find it difficult to get the water and then make it available in sufficient quantity to meet the needs of these communities. In some parts of Australia, for example, the Northern Territory, Indigenous communities have to compete with mining, livestock and urban development to access already scarce water supplies. Even when the water is available, many Indigenous communities, especially those in remote settings, face challenges to maintain the supply. This means organising the manpower and equipment to keep the water supply at adequate levels and of a good quality. The supply of water for Indigenous communities comes from a number of sources. Data from the Australian Bureau of Statistics (2007) shows the following sources of water supply for discrete Indigenous communities as:
- bore water (58%)
- town supply (19%)
- river or reservoir (5%)
- rain water tank (3%)
• well or spring (3%)
• other (2%)

What are the uses for water?

Communities rely on water for many purposes. This means that water quality for some uses may not have to be as high as that needed for drinking. The type of water supply system used in a community depends on what the water is used for. Some systems may provide a water supply for drinking and another for uses in less need of high quality water (e.g., dust control). The following table shows the typical water use per household in a remote dry community.

Table 1. Water Use per House Required for Health

<table>
<thead>
<tr>
<th>Use</th>
<th>Litres/day MIN</th>
<th>Litres/day MAX</th>
<th>Kilolitres/year MIN</th>
<th>Kilolitres/year MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washing people</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>shower</td>
<td>150</td>
<td>400</td>
<td>54.8</td>
<td>146</td>
</tr>
<tr>
<td>Basin or laundry tub</td>
<td>25</td>
<td>50</td>
<td>9.1</td>
<td>18.3</td>
</tr>
<tr>
<td>washing clothes and bedding</td>
<td>25</td>
<td>50</td>
<td>9.1</td>
<td>18.3</td>
</tr>
<tr>
<td>washing machine</td>
<td>90</td>
<td>450</td>
<td>32.9</td>
<td>164.3</td>
</tr>
<tr>
<td>Removing waste</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>flush toilet</td>
<td>30</td>
<td>140</td>
<td>11</td>
<td>51.1</td>
</tr>
<tr>
<td>Improving nutrition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>preparing food, kitchen sink</td>
<td>86</td>
<td>286</td>
<td>30.3</td>
<td>104.4</td>
</tr>
<tr>
<td>Temperature control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>evaporative cooling**</td>
<td>262</td>
<td>455</td>
<td>47.7</td>
<td>82.8</td>
</tr>
<tr>
<td>Temperature control, improving nutrition, dust control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>shading and food plants</td>
<td>200</td>
<td>2000</td>
<td>36.4</td>
<td>364</td>
</tr>
<tr>
<td>TOTAL PER HOUSE</td>
<td>840</td>
<td>3781</td>
<td>222</td>
<td>931</td>
</tr>
</tbody>
</table>

Notes:
* a kilolitre is 1,000 litres
** yearly total based on 6 months of use during hotter weather

What are the sources of water for a community?

To meet the water supply needs of Indigenous communities one or more of the following sources of water may be available. This may depend, however, on the location of the community.

Surface water (lakes and rivers)

If the catchment area (the place where water is collected) for lakes or rivers is mostly free from any mining activity, or urban development the water quality will usually be good. If the water is to be used for drinking it will need to go through a disinfection treatment. Disinfection means treating a water supply to kill germs and parasites.

Local rainwater storage (rainwater tanks)

The rainwater, which falls on the roofs of houses, is often collected using roof guttering leading through a pipe to a storage tank. The quality of the water collected in this way may be affected by the seasons and the plants growing near the tank. It is important to check and repair any problems with tanks as they can quickly become a breeding ground for mosquitoes. If the water from the tanks is to be used for drinking it will need to be disinfected.

Rainwater tanks are becoming more important for communities as the water collected can be used for other uses in addition to drinking, for example, flushing toilets or dust control.

Groundwater supplies (bore water, wells, springs)

Bore water is collected by drilling holes deep into the ground until a body of water is found. Pipes are then put down the drilled holes and a pump is used to get the water to ground level. Springs are underground water which flows out of the ground by itself without using drills or pumps. Bores, wells and spring water are important for communities in very dry areas of Australia. It is vital that the water from these sources is managed well so that the water supply is always available and safe enough to drink. Bore water is the major source of water for remote Aboriginal communities.

Sometimes the water from bores may need treatment before it is safe for drinking.

Others

Other sources of water include dams, rock catchment areas and rock holes and soaks.

What is needed to supply water for a community?

The following equipment is needed for water supply:

• storage to hold the water and to meet the changing demands for the water available.
• treatment facilities where water can be treated to make it safe for human use. Once the water is treated it must be stored for future use.
• distribution system to move treated water from the storage tanks to the people who will use it. This is usually a network of
pipes. When the system involving pipes is not available water carting trucks may be used.

What is good quality water?

Water must be safe to drink, that is, it should be free from and germs and parasites.

Water can be contaminated by:
- animal carcasses
- animal and human sewage
- food waste
- grass, leaves and wood being left in the water
- oil, petrol and grease
- scrap metal and junk
- sand
- pesticides and herbicides
- salts
- radioactive materials

The Australian Drinking Guidelines (see the section resources and equipment) presents a set of guidelines and fact sheets on the accepted measures for drinking water and how to maintain water supplies so they are safe for drinking. If water supplies meet these standards, then in terms of public health, the water can then be used for other needs including bathing and cooking.

How do communities prevent contamination of water supply?

The best way to prevent contamination of a water supply is a multiple barrier method, this means providing more than one barrier to stop the spread of germs, parasites and other forms of pollution. Examples include:
- protecting the water at its source
- keeping water in storage for a long time before use
- treating the water by coagulation, settling and filtration
- disinfecting water
- maintaining left over chlorine throughout the water systems at safe levels

The multiple barrier method should be used for all types of water supply, large or small. The list of references at the end of this summary provides examples of how to prevent water contamination.

It is important to monitor the quality of water to decide if the barriers used in a community are working properly. Sanitary surveys provide a starting point for planning and testing water supplies. The survey requires an inspection of the water supply to check for contaminants. These surveys are vital for communities where the treatment of water is minimal, water quality may be inadequate or water borne illness may have occurred.

How often these surveys take place depends on where the community is located, the source of the water, the amount of time the water is held in storage and the level of treatment for the water available.

Another important aspect of water supply in terms of public health is the need to disinfect all drinking water. If drinking water is not disinfected there is an increased risk of harmful organisms already present in the water to cause illnesses for the people drinking it.

Water can be disinfected by
- chlorination
- boiling
- chemicals

Chlorination is the most popular way to disinfect water as it is an easy, safe and cheap method. A number of resources are provided in the section ‘resources and equipment’ on this website to help those workers or officers responsible for completing sanitation surveys and disinfecting water supplies in communities.

References

The Australian Indigenous HealthInfoNet is an innovative Internet resource that contributes to ‘closing the gap’ in health between Indigenous and other Australians by informing practice and policy in Indigenous health.

Two concepts underpin the HealthInfoNet’s work. The first is evidence-informed decision-making, whereby practitioners and policy-makers have access to the best available research and other information. This concept is linked with that of translational research (TR), which involves making research and other information available in a form that has immediate, practical utility. Implementation of these two concepts involves synthesis, exchange and ethical application of knowledge through ongoing interaction with key stakeholders.

The HealthInfoNet’s work in TR at a population-health level, in which it is at the forefront internationally, addresses the knowledge needs of a wide range of potential users, including policy-makers, health service providers, program managers, clinicians, Indigenous health workers, and other health professionals. The HealthInfoNet also provides easy-to-read and summarised material for students and the general community.

The HealthInfoNet encourages and supports information-sharing among practitioners, policy-makers and others working to improve Indigenous health – its free online yarning places enable people across the country to share information, knowledge and experience. The HealthInfoNet is funded mainly by the Australian Department of Health and Ageing. Its award-winning web resource (www.healthinfonet.ecu.edu.au) is free and available to everyone.

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