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WORLD WATER DAY

Water purification

Heavy metals

Heavy metals are only a problem in certain areas of the country. The best way to identify their presence is by a laboratory test of the water. Unless you are down stream of a factory, the chances of a substantial presence of heavy metals to be present in sufficient levels to cause problems is very improbable.

Turbidity

Turbidity refers to suspended solids, i.e. muddy water, is very turbid. Turbidity is undesirable for 3 reasons:

1. Aesthetic considerations
2. Solids may contain heavy metals, pathogens or other contaminants.
3. Turbidity decreases the effectiveness of water treatment techniques by shielding pathogens from chemical or thermal damage, or in the case of UV treatment, absorbing the UV light itself.

Organic compounds

Water can be contaminated by a number of organic compounds such as chloroform, gasoline, pesticides, and herbicides. These contaminants may be identified in a laboratory test. It is unlikely ground water will suddenly become contaminated unless a quantity of chemicals is allowed to enter a well or the source of water. One exception is when the source is located in limestone. Not only will water flow faster through limestone, but the rock is prone to forming vertical channels or sinkholes that will rapidly allow contamination from surface water. Surface water may show great swings in chemical levels due to differences in rainfall, seasonal crop cultivation, and industrial effluent levels.

Pathogens

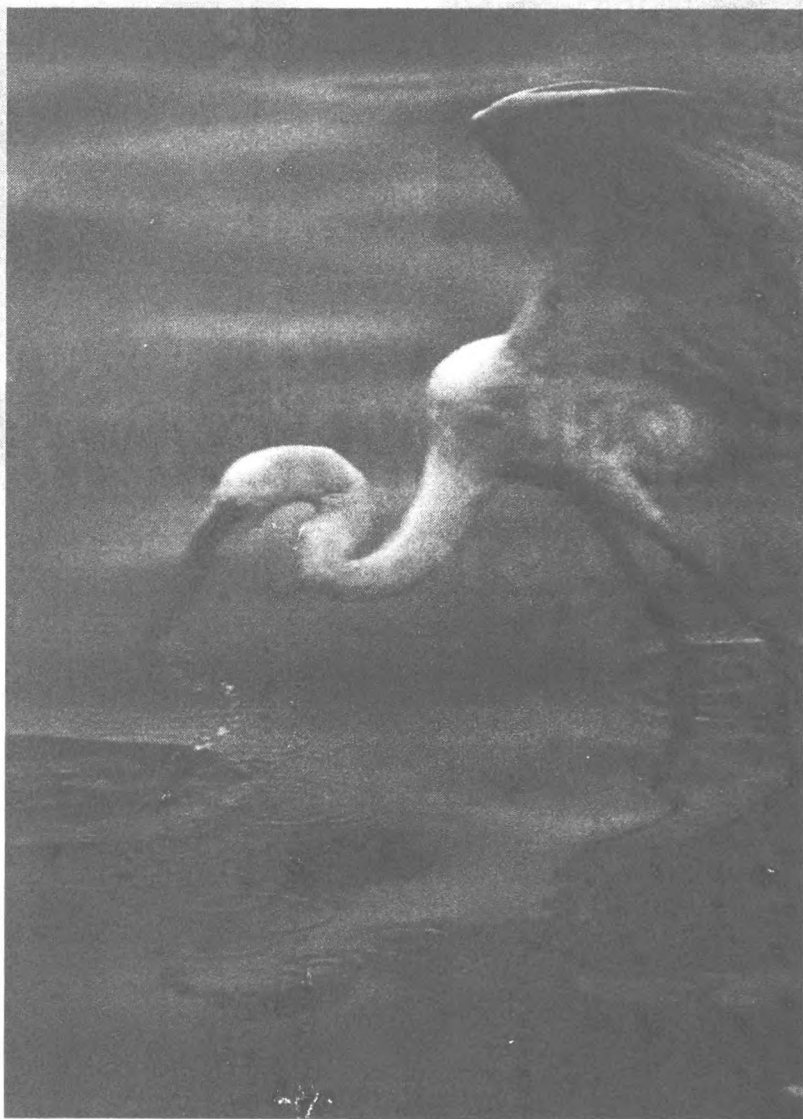
Protozoa

Protozoa cysts are the largest pathogens in drinking water, and are responsible for many of the water borne disease cases worldwide. Protozoa cysts range in size from 2 to 15 microns (a micron is one millionth

of a meter), but can squeeze through smaller openings. In order to insure cyst filtration, filters with an absolute pore size of 5 microns or less should be used. The two most common protozoa pathogens are Giardia and Cryptosporidium (Crypto). Both organisms have

Bacteria

Bacteria are smaller than protozoa and are responsible for many diseases such as typhoid fever, cholera, diarrhoea, and dysentery. Pathogenic bacteria range in size from 0.2 to 0.6 microns, and a 0.2 micron filter is



caused numerous deaths in recent years worldwide specially in the non developed countries, the deaths occurring in the young and elderly, and the sick and immune compromised. Many deaths were a result of more than one of these conditions. Neither disease is likely to be fatal to a healthy adult, even if untreated. Protozoa are responsible for many cases of amoebic dysentery.

Some independent testing have shown presence of Giardia and/or Crypto in up to 24% of vertical wells and 76% of springs in Sri Lanka.

necessary to prevent transmission. Contamination of water supplies by bacteria is blamed for the cholera epidemics which devastate undeveloped countries from time to time. Even in the developed countries, E. coli is frequently found to contaminate water supplies. Fortunately, E. coli is relatively harmless as pathogens go, and the problem is not so much with E. coli found, but the fear that other bacteria may have contaminated the water as well. Nevertheless, dehydration from diarrhoea caused by E. coli has resulted in fatalities, specially among the infants.