

more precise and sensitive methods for the identification and measurement of both known and unknown contaminants. The increasing occurrence of pesticides in water supplies and their potential toxicity to man may require changes in water treatment practices.

BIOLOGICAL EFFECTS

While many of the classical communicable diseases such as typhoid fever, amoebic dysentery, bacillary dysentery, and gastroenteritis transmitted by water have been brought under control, waterborne epidemics are still occurring in this country. During the period 1946-1960, there were 228 waterborne disease outbreaks which resulted in 25,984 cases of illness. For example, a waterborne outbreak of salmonellosis in Riverside, California in 1965 resulted in some 18,000 cases of the disease.

In view of these continuing outbreaks, the question can logically be raised as to the reliability of time-tested safeguards and safety factors applicable to the production of potable drinking water. Substantive questions have been raised as to the adequacy of coliform organisms as a measure of safe water quality. It is known that viruses in water supplies react differently than bacteria. Until studies can be made to demonstrate the efficacy of the current water treatment practices, this question will remain. In light of the proposals to permit the reuse of treated sewage effluent, the adequacy of the coliform organism as the indicator of pollution must be critically examined. The standard bacteriological method requires approximately 18-24 hours for preliminary results which does not permit the degree of close control and surveillance required when sewage reuse is being proposed.

FOOD SOURCES

Another area in which water pollution has a health impact is in the food production and processing industry. This is best illustrated in the case of shellfish which are filter-feeders with almost unparalleled ability to extract and consume biological and chemical contaminants from polluted water. Since many shellfish are consumed raw, the ultimate effects of contaminated shellfish are self-evident. Considerable effort is required in order to preserve the quality of shellfish-producing waters. The relationship of water supply to the growing and processing of food is also well recognized. Fortunately, most of the processing does result in the production of a food that is safe. With the increasing use of land surface for the disposal of wastes, however, the situation may change. The use of water in food processing operation may result in concentration of the chemicals present and their retention in the food.

RECREATIONAL USE OF WATER

The pollution of water resources creates a hazard to individuals using such waters for body contact sports. Typhoid fever outbreaks have resulted from swimming in areas polluted by human sewage. Contamination of water by domestic or wild animals has resulted in outbreaks of leptospirosis in humans. It is essential that we develop new and improved indices of bacteriological quality for recreational waters. As a health related problem the destruction of the aesthetic qualities of water have a detrimental effect on the use of these waters for recreational and scenic purposes and population groups are denied the health related benefits therefrom. Fish taken from such waters may contain toxic levels of certain chemicals which have been concentrated in the flesh of the fish.

BREEDING OF DISEASE VECTORS

The improper management of water resources may provide areas for the breeding of insect vectors capable of transmitting human disease. Mosquito vectors of encephalitis appear to reproduce more prolifically in polluted water. The normal problem of insect vector control measures at water impoundments take on a more significant aspect in relation to this phenomenon.

Individuals involved in water contact occupations such as fish and boat washing operations are potential victims of schistosomiasis from pollution of their water environment with wastes from humans infected with the disease. More adequate