

CHAPTER 4

WATER AND HEALTH

G. William Page, III

University of Wisconsin-Milwaukee

Water is essential to life. We consume it to replenish the approximately 90% of our bodies that is water. It is also directly related to disease and death. The World Health Organization has estimated that as much as 80% of all disease is water-related (Guest, 1979). Less direct impacts of water on human health come from: (1) supplying food—the bountiful supplies of fish, shellfish, water fowl, and aquatic plants we consume, the water used for agricultural and animal production; (2) protecting humans—the water we use for fire protection; (3) producing goods and services—the use of rivers, canals, lakes, and the oceans for transport; water bodies for the disposal of sewage effluent and industrial wastes; water for the production of hydroelectric power and the cooling of electric power generating plants; and the use of water for recreational opportunities, which are extremely important to the mental and physical health of large segments of human populations.

The relationship of water to human health is the focus of this chapter. The topic is large. This chapter will concentrate on the direct impacts on human health in industrially developed countries. The indirect health impacts and the special problems of the less developed countries will be briefly described in order to understand the context of water-related health problems.

The chapter has four major sections. The first provides a historical perspective on the impact of water on health since prehistoric times: the role of water in the development of civilization, the great pandemics, yellow fever and typhoid fever in the United States, chlorination and other technological advances in water treatment, current problems, and the environmental movement and legislation in the United States. The second section discusses nonmalignant (noncancerous) water-related diseases, including those caused by bacteria, viruses, and protozoa. It also discusses improving human health through the control of water hardness and fluoridation. The relationship of microcontaminants in drinking water to malignant disease is the next topic. This is an area of water and health research that is currently most active and the subject of considerable scientific and policy debate. The focus here is on the relationship of water to cancer, radioactivity in water, solid particles