Besides the problem of obtaining data on health parameters, data on environmental conditions are needed to relate to these health data. To what level of contamination is the public exposed? We do not have water quality data on the drinking water actually consumed by the public. The data we have are on the quality of water leaving the unpolluted source or the treatment plant. This is changed by contact with the distribution system and with household plumbing.

Many epidemiologists trained in communicable disease control are not attracted by the challenge of studying the effects on human health resulting from more subtle materials. Such tedious and time-consuming work requires that a number of different scientific disciplines be brought together in a planned stack on such "environmental contaminant-disease" related problems.

Disease outbreak investigation is, of course, a classical role for the epidemiologist. In this situation, many cases are compared for common exposure, and the cause is determined. Another investigative technique, the retrospective study, compares the past experience of a group of ill persons with a control group of well persons to investigate chronic disease causes. Probably the chronic diseases do not have a single sufficient cause, but many conditions influence their cause. The retrospective study, which finds the most dominant cause first, would not be able to determine the more subtle effects of, say, water quality until the more dominant causes were controlled. This might be illustrated with the example of cancer of the lung; it is difficult to show the effect of air pollution when the most dominant cause is cigarette smoking.

Prospective studies are used by epidemiologists, but they are costly. Here, one with population, and another without, the environmental contaminant are followed to see how many cases of disease develop. The study populations must be large and can differ in only a few environmental conditions.

Although the Public Health Service Drinking Water Standards represent the best current knowledge on the protection of water and shellfish consumers from communicable disease and illness, the health aspects associated with the pollution of water are numerous and complex and certainly have not been adequately studied. As we have pointed out before, technological progress constantly creates new contaminants that must be evaluated in relation to their effect in human health.

Frankly, we do not know enough about the acute and chronic effects on human health of some contaminants found in water, and until we do, the development of meaningful standards will be delayed. The best that can be done at present is to use current knowledge until adequate funding becomes available for the required research, studies, and investigations that will provide answers to these problems.

In those instances where there appears to be a relationship between environmental contaminants such as organics or trace elements in water supplies and chronic disease, the Public Health Service has now organized its resources both at the National Center for Urban and Industrial Health in Cincinnati and at the Division of Environmental Health Sciences of the National Institutes of Health in North Carolina to undertake careful and precise studies, investigations, and assessments of these relationships in an effort to unearth some of the facts on which future water quality criteria can be developed.

We do not believe that calculated risks can be assumed where human health is involved; where harmful contaminants are present in drinking water supplies, they must be removed.

PREPARED STATEMENT OF CURTISS M. EVERTS, CHIEF, WATER SUPPLY AND SEA RESOURCES PROGRAM, NATIONAL CENTER FOR URBAN AND INDUSTRIAL HEALTH, PUBLIC HEALTH SERVICE, U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, CINCINNATI, OHIO

The interest of the Public Health Service in problems of water supply and its relations to health began in 1912 with the enactment of Public Law 410. These statutes authorized the Surgeon General to conduct research investigations and studies related to the cause, and prevention of diseases and impairments of man; to make and enforce certain public health regulations including those relating to the prevention of the interstate spread of communicable diseases; and accept assistance from and to assist States in obtaining compliance with regulations, as well as to control and prevent disease.