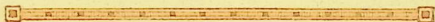


WHY



WALLACE & TIERNAN CO., INC.

NEW YORK

1919

*Information Mr. Ogden
J. H. P.*

WHY



WALLACE & TIERNAN CO., INC.

NEW YORK

1919

Copyright, 1917, by
Wallace & Tiernan Co., Inc.
Reprinted May, 1919

Technical Publication No. 7

Douglas C. McMurtrie New York

W^HY sterilize water? To make it safe to drink. To render it harmless. To make sure that individuals drinking the water will not be exposed to typhoid fever or some similar disease which water may carry.

A polluted water supply causes disease. Many diseases are known to be caused by bacteria or germs. Before the inception of a disease the patient in some way or other must become infected by the particular germ which causes the disease in question.

There are many diseases that can be transmitted by water, and of these typhoid fever, dysentery, and cholera are the best known. The germs causing these diseases are found in sewage from patients infected with the sickness. As most refuse is discharged into or is ultimately carried away by water, it is easy to see how the water may become polluted.

Typhoid fever can only be contracted by swallowing the typhoid bacillus. Unpleasant as is the thought that sewage entering a water supply ultimately reaches the consumer, it is



a fact which must be appreciated. If in such sewage there are 'germs' from persons sick with typhoid fever, every person drinking the water is exposed to the disease and unquestionably some of them will contract it.

Now the mere fact that a water supply is not definitely known to be polluted by sewage; the fact that there are no direct pollutions does not remove the potential danger. The nature of typhoid fever is such that a person ill with the disease usually does not become sufficiently ill to remain at home until from ten to fourteen days after infection. During this period of incubation (as the time between infection and confining illness is termed) the patient is an active carrier of the disease germs. There is also a type of typhoid known as 'walking typhoid' in which persons are infected with typhoid fever, but owing to their high vital resistance or to the mildness of the attack are not confined by the illness. In addition, patients who have recently suffered from typhoid fever may possibly carry in their systems the typhoid bacillus for a considerable period after they

have sufficiently recovered to be up and about. Persons in any of these classes going more or less about their normal daily duties, but at the same time being infected by the typhoid bacillus, are termed 'typhoid carriers'. The real danger in the pollution of a water supply is from the typhoid carrier. It has come to be recognized as almost criminal to knowingly permit untreated, polluted matter to be discharged into a water supply without treating the water supply so as to overcome the effects of the pollution. It has been said, "Every death from typhoid fever should and might soon be a proper subject for investigation by a coroner's jury."

With most water supplies, however, there is nothing to prevent a typhoid carrier who goes hunting and fishing from polluting the supply. There are cases on record where such pollution remaining under the snow and ice during the winter periods has been washed into the water supply by the heavy spring thaws and rains. There are other epidemics of typhoid fever traceable to pollution from typhoid

carriers made from trains passing over the water shed.

Not only surface water supplies become polluted but sub-surface and well-water supplies are also subject to pollution. A well supply is obtained from water which has passed through porous strata of earth. If the water on the surface has been subjected to pollution, and if in its passage through soil strata it is subject to pollution from cesspools or privies, the water in the well probably will show indications of pollution.

Nor should too great reliance be placed upon filtered water. To be sure, a filter cleanses a water. It removes the dirt and the color, making the water more palatable. It removes some of the bacteria or germs, but filters are not always reliable. They may not be operated at their highest state of efficiency. There may be periods when polluted water will find its way through the filters into the distributing mains, and many such cases are matters of record.

Typhoid carriers can pollute almost any water supply, and every water

supply should be so treated as to overcome the effects of such pollution.

The only sure way to accomplish this is to sterilize the water, and that means to kill the bacterial or germ life. Sterilization, disinfection, fumigation, vaccination, the use of antitoxins, etc., are all means of either destroying the germs before they can get into the human system, or forestalling their activity if they do get in.

There are many ways of sterilizing water, but the most efficient and least expensive is to chlorinate the water.

When a water is chlorinated, minute quantities of chlorine are added which absolutely destroy the germs in the water, but do not alter the chemical or physical characteristics of the water in the least. The difference between a water that has been chlorinated and one that has not been so treated is that in the first case the germs are destroyed, but in the second case they are not destroyed and remain in the water to cause possible disease.

In 1908 the process of chlorination actively began on a large scale in this country by the use of a chlorine compound commonly known as chloride of



lime. For the last few years pure chlorine, commercially known as 'liquid chlorine', has come to be used for water sterilization, and its marked increased efficiency coupled with its economy and the ease of application is bringing it daily into more favor among waterworks men. Liquid chlorine was well known in 1908 when the first large scale use of chloride of lime was made in the sterilization of water, and it was known for a long time before that. It was not available for use in the field of water purification, however, because its application to water could not be controlled. Either too much was added, causing trouble, or not enough was added to destroy the germs, and so the object in view was not attained. Chlorine, valuable as it is in the field of water sterilization, serving as it does to protect the health of so many million people, is, at the same time, so active that it is necessary that it be properly controlled, in order to insure its proper application.

This company specializes in apparatus for the control of chlorine. We have developed, designed, manufac-



tured, and installed over two thousand installations of chlorine control apparatus at this writing (May, 1919). We have fifteen types of apparatus, which control the application of liquid chlorine, applying the chemical to the water that it is desired to sterilize with absolute reliability—just the amount of chlorine desired, not a bit more and not a bit less.

Our apparatus has been developed for the practical waterworks man. It can be operated by any competent waterworks attendant or pumping station engineer. Our equipments are now operating day after day, treating nearly three billion gallons of water per twenty-four hours on installations scattered from the northern parts of Canada to the Canal Zone, and from the trenches in France to the Philippine Islands. The cities of New York, New Haven, Hartford, Albany, Trenton, Baltimore, Richmond, Scranton, Wilkes Barre, Charleston, Birmingham, Chicago, Indianapolis, Dallas, Austin, Minneapolis, Duluth, Salt Lake City, Butte, Cleveland, Detroit, Milwaukee, Philadelphia, Toronto, Ottawa, and Calgary are but a few of



the better known cities protecting the health of their consumers by W. & T. apparatus. Day after day these installations of ours are on the job sterilizing water, protecting the health of the water consumers.

The cost of the process of chlorination is insignificant. The average water supply can be sterilized so that the ever present danger from polluting material will be eliminated for a total average cost of twenty cents per million gallons. Twenty cents per million gallons to protect the health of every water consumer! Twenty cents per million gallons—about one ten-thousandth of a cent per day, one cent in twenty-five years, for each man, woman, and child drinking the water. Pretty cheap insurance.

Men in charge of waterworks have a great responsibility. Their consumers rest assured in the belief that they are doing their utmost in taking every precaution to see that the water delivered to them is pure and free from organisms creating disease. Practically every up-to-date waterworks has its chlorinator, and at every large filter



plant the water is chlorinated after filtration as a further safeguard.

One of our types of chlorinators is applicable to your waterworks. Undoubtedly this little booklet has presented to you the necessity, economy, and desirability of sterilizing your water supply. If you desire the opinion of our technical staff of trained sanitary engineers on your particular problem, without incurring the least obligation, the necessary data can be furnished on the enclosed mailing card and sent to our New York office.

We have a series of technical publications describing and discussing in detail our various types of apparatus and the process of chlorination. Any of this literature will be gladly sent upon request. May we co-operate with you in securing a safe water supply for your community?

WALLACE & TIERNAN CO., INC.
349 BROADWAY NEW YORK CITY

