Stream Pollution Control in Indiana

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Stream pollution has been a topic of discussion for a good many years in all parts of the country. In Indiana it has been and still is a major problem. Although there are at the present time about seventy municipal sewage treatment plants throughout the state, there are still a great many places where streams are polluted by the wastes from cities or from industrial establishments. With all of the construction carried on by the WPA and PWA in the past years, the layman is apt to be of the opinion that stream pollution is a problem of the past. This, however, is far from being true. The engineers of the State Board of Health have realized that the situation needed further attention and that it was necessary to enact laws which would make it possible to force the correction of the bad situations which exist throughout the state.

The September issue of the monthly bulletin of the Indiana State Board of Health devoted the major portion of its pages to the discussion of stream pollution in Indiana. Articles by Dr. Rice, Messrs. Quinn, Milling, Fassnacht, and Heider are very enlightening. In the early days the strawboard industry was the principal offender. As you probably know, the waste from the manufacture of strawboard from wheat and oat straw requires the use of considerable water, and the resulting waste products are very offensive. Dr. Rice states that the first lawsuit over stream pollution was in 1890, and it was between the Indianapolis Water Company and the American Strawboard Company of Noblesville. Dr. Rice goes on to say that the problem of polluting the White River below Noblesville still continues to be serious.

In the early days the oil and gas industries in the northern part of Indiana in the region of Marion, Muncie, Warren, and Montpelier discharged a considerable amount of polluting waste into the stream. The polluting material in this particular case was brine or salt. While the oil-producing area was restricted to a relatively small one, the areas were at the headwaters of the Wabash, Salamonie, Mississinewa, White River, and others, all leading ultimately into the Wabash. As a result
the effect was far reaching. At times the chlorides in the White River rose as high as 100 to 125 parts per million. With such concentrations of salt, not removable by the present-day water-treatment processes, it would be unnecessary to salt your vegetables cooked in purified water from such a stream.

With the growth of cities in the early days the sewage systems that were installed discharged into the streams which were nearby. Other particularly troublesome wastes at this time were from gas plants and slaughter houses. In the early 1900's there was only about one man who was interested in stream pollution in the State of Indiana. This was Dr. John M. Hurty, then Secretary of the State Board of Health. Dr. Rice in his history of stream pollution in Indiana mentions that Dr. Hurty understood the real causes of stream pollution and when he talked about stream pollution, no one, or practically no one, understood what he was talking about. As a matter of fact, he was looked upon as a crank and one who was trying to limit the industrial development of the state or put an excessive tax load on the cities that had already been so progressive as to develop sewage systems.

The State Legislatures of 1901 passed a good stream-pollution control bill, but three days later a very vicious bill was hastily thrown together and passed and this bill superseded the first one. The later bill made it unlawful for any manufacturer or city to pollute the streams of the state unless permission to do so was granted by the State Board of Health. This act was fortunately repealed in 1909. Early in 1915 or 1916 the farmers living on the river below the city of Indianapolis organized and sued the city for damages. A judgment of one million dollars was granted, but with the provision that if the city would put in a sewage-disposal plant and clean up the stream, the million-dollar judgment would be rescinded. In 1917 the Sanitary District Law was passed. It was not until 1935 that the State Legislature again passed a stream-pollution control law, and this law was on the statute books until 1941, when it was unintentionally repealed. This put the State Board of Health and others interested in stream pollution to a great disadvantage. A great effort was made in the 1943 legislature to enact the present stream-pollution control law and to set up an effective stream-pollution control board. This 1943 law established the Stream-Pollution Control Board. As it is now set up, the Control Board consists of a six-member panel. The members are: Dr. Thurman B. Rice, Secretary of the State Board of Health; Mr. Hugh J. Barnhart, Director of the Department of Conservation; the Lieutenant Governor of Indiana, Mr. Charles M. Dawson; and three other members named by the Governor. No more than three members of the Commission can belong to
the same political party. The three members now serving are Messrs. C. K. Calvert of Indianapolis, Leo Besozzi of Hammond, and George C. Hillenbrand of Batesville. In accordance with the law, Dr. Rice as Secretary of the State Board of Health has designated Mr. J. L. Quinn, Jr., a qualified sanitary engineer and Director of the Department of Environmental Sanitation, as Technical Secretary to the Stream Pollution Control Board. He carries on this job in addition to his other duties and receives no compensation for his services as Secretary.

The Stream Pollution Control Board serves without compensation other than the per diem and mileage which are paid by the State Board of Health. The Board must meet at least six times a year; but with the amount of work that there is to be done they, of course, will have to conduct many more meetings than this minimum number. During the time between Board meetings the Technical Secretary will have charge of the necessary correspondence, make arrangements for and conduct investigations and surveys, and make such reports as the Board may direct. The Board has broad jurisdiction over the streams of the state. It can control and prevent pollution from any substance which is held to be injurious to public health, the prosecution of any industry or lawful occupation, fish life, or any aquatic animal or vegetable life, or the propagation of any animal or vegetable life.

This Board has the power and right to order any person, corporation, municipal corporation, partnership, or legal entity to acquire, construct, repair, alter, or extend such treatment plants as may be necessary for the disposal or treatment of organic or inorganic matter which is causing or contributing to or about to cause pollution of the water.

The Board or any agent duly appointed by the Board shall have the right to enter at any time upon any private or public property for the purpose of inspecting and investigating conditions relating to the pollution of any water of this state. Furthermore, they shall have the power to call upon any state officer, board, department, school, university, or other state institution for any assistance necessary to carry out the provision of the law. This stream-pollution law also states that it shall be unlawful for any corporation, municipal corporation, association, partnership, or person to throw, drain, run, or otherwise dispose into any of the streams or waters of this state or to cause, permit, or suffer to be thrown, run, drained, or allowed to seep or otherwise dispose of into such streams, any organic or inorganic matter that shall cause or contribute to the pollution of such water, and the Stream Pollution Control Board has the power to determine what shall constitute a polluted condition of such water and what shall be deleterious to the public health.
or to the prosecution of any industry or lawful occupation for which such waters may be lawfully used or employed.

I have given this in detail but did so to bring out that the law apparently covers all situations. The law goes on to state that the Stream Pollution Control Board can prevent the pollution of a stream which affects the agricultural or livestock industry. If any stream is used to water domestic animals and this stream becomes polluted, the Board may demand that the water be cleaned up by the construction of the necessary treatment works. If the pollution is detrimental to fish life or any other aquatic life of the stream, the Board has the power to see that the necessary corrections are made. When the Stream Pollution Control Board determines that there has been a violation of the stream pollution law, they will serve notice by registered mail on the alleged offender. This notice is an order to cease violation and to abate the existing complained-of conditions, and they state in the notice a reasonable time for accomplishing the necessary correction. Within fifteen days of receipt of such a notice from the Board, the offender may file with the Stream Pollution Control Board a full report showing what steps have been taken and are being taken to control such wastes or pollution. Or a brief may be submitted showing cause why steps for correction or abatement are not being instituted. Or such offender may, by written petition mailed by registered mail or delivered in person to the Stream Pollution Control Board within the fifteen-day period, deny the fact of such violation and request a hearing on the issue of the facts.

If it is a municipal corporation which has been served, any forty or more taxpayers or owners of real estate in the municipal corporation may, within fifteen days after publication of such notice, petition by mail the Stream Pollution Control Board, denying the fact of violation and requesting a hearing on the issue of the facts presented. This may take place regardless of any action which may be taken by the proper officials of the municipal corporation in response to the order.

Thus, you can see that while the Stream Pollution Control Board has extensive power, it cannot become a controlling board which can crowd upon the taxpayers of the state an unreasonable burden. If the offender is a municipal corporation, the cost of acquisition, construction, repair, alteration, or extension of the necessary plant, machinery, or works, or of taking such steps as may be necessary to comply with the order of recommended changes, are to be borne by the city and are to be paid from municipal funds. These may be surplus funds, general obligation bonds, or if the bonding limit has been exceeded, the munici-
pality may issue revenue bonds, the retirement of which is to be provided for in the regular manner. If the violator does not comply with the order issued by the Board within sixty days from the date of issue, the Board may then commence an action for enforcement in the circuit or superior court of the county in which the alleged violator resides. Such court action will be tried as any civil action, and either party will be entitled to have it tried before a jury. The court shall have the jurisdiction to determine whether the order is reasonable or unreasonable, and whether a polluted condition exists or is about to exist. Either party to such action may, within thirty days after judgment, appeal to the Supreme Court of Indiana under the same procedure as governs appeals in ordinary civil action. Then, within thirty days after the final order or judgment affirming the order, the violator shall take thirty days to construct the necessary recommended appurtenances. However, if a request for a hearing by forty or more taxpayers or owners has been made, notice of time and place of the hearing must be served upon such petitioners by publication in a newspaper of general circulation in the municipal corporation affected by the order. Such hearings shall be held in a summary manner. Witnesses may be heard and evidence presented upon the question of existence or eminence of such violation only. The Board has the power to compel witnesses to attend and to administer oaths, and all witnesses shall be examined under oath or affirmation. Full record will be kept of such a hearing and a transcript of the proceedings and evidence duly authenticated by the Chairman and Secretary of the Board. Within fifteen days after the completion of the hearing the Board will make a written recommendation concerning the affirmance, revocation, or modification of the original order. If there are any changes in the original order after the hearing, the final order will be filed in the office of the Stream Pollution Control Board and the final order will be served upon the alleged offender in the same way as the first order was served.

Failure to comply with the final order of the Stream Pollution Control Board within thirty days of the receipt of the order will be considered a misdemeanor, and the offender will be subject to prosecution in the usual manner. The fine is not less than $25.00 nor more than $100.00, to which may be added imprisonment in the county jail for a period not to exceed ninety days. The Board has the right to extend this period of starting work for another thirty days, provided the offender has shown good faith in his effort to comply with the order as issued. If the offender should then fail or refuse to correct the situation in compliance with the order within the fixed time, he would be subject to a penalty of $100.00 per day for as long a time as the pol-
It is the duty of the Attorney General to prosecute all actions for penalties. All penalties so recovered are to be paid into the Common School Fund of the State.

The question may be asked, "Is there any remaining work for such a Board to undertake?" At the present time at least forty percent of the urban population are not served by sewage-treatment plants, and there are a great many industrial wastes still being discharged into streams in the state. One of the wastes that is causing particular difficulty during these times is the acid (pickle liquor) waste from steel mills, which is particularly difficult to handle in sewage-treatment works where the quantities of iron deposited in the treatment works are extremely high. The wastes from powder mills, which are acid, are giving no particular trouble in Indiana because they are neutralized with ground limestone. Some of the gas plants discharge large quantities of phenol (carbolic acid) into receiving bodies of water. As you might guess, phenol is not a particularly harmful material where bacteria are concerned, inasmuch as it is often used as a disinfectant. However, phenol combined with water which is eventually chlorinated and used for drinking purposes produces a product which has a medicated taste and is extremely objectionable to the consumer. Phenols are removed in sewage-treatment works when they appear in quantities not excessive. In the activated-sludge treatment of sewage, phenols are easily removed if the quality of phenol is below the concentration which will sterilize the incoming sewage.

In some of the plating industries where cyanide is used, the waste discharged is actually poisonous and extremely dangerous. Stock have been killed after drinking water contaminated with cyanide waste. It is not, however, the poisonous wastes which usually kill off the fish and aquatic life in streams. The organic matter as it decomposes in the stream uses up the oxygen; and most game fish require a water relatively high in oxygen, that is, somewhere between six and seven parts per million of oxygen. However, fish such as carp can exist in waters which do not have more than three parts per million of oxygen in them. All oil wastes as they float on the top of a stream prohibit the oxygen from entering the water from the air. Oil on water surfaces makes an unsightly situation, and oils which get into sewers and eventually into sewage-treatment plants are harmful to the biologic processes. It is thought that the oil coats the particles of organic matter and thus prevents the oxidation of these materials. Cutting oils, which are emulsified oils, cannot be easily detected in sewage until such time as they enter the sewage-treatment plants where the sewage is aerated in some
manner. In this procedure the emulsions are broken down and the oils liberated in the sewage-treatment plant.

One of the great industries of Indiana is food packing. Out of the ninety-two counties sixty-eight have at least one canning plant, there being 235 canning plants in the state. This widespread distribution of canning plants, many of which are not connected to city sewerage systems, constitutes a major problem of the Stream Pollution Control Board. In food canning, large quantities of water are used and large quantities of wastes are discharged to the streams. The waste discharged from a small canning plant may represent the quantity of sewage discharged from a city with a population of several thousand. In food canneries, in the preparing and packing of one case of food, the amount of waste produced is estimated to be equivalent to that from 3.5 persons. In the manufacture of beer the amount of waste is appreciable. For instance, in the manufacture of one barrel of beer the discharged waste is equal to the waste from nineteen persons. In the meat-packing industry the waste discharged in the processing of one hog is equivalent to that from twenty-four people. In strawboard manufacture, the waste from one ton of product is equivalent to that from 1,230 persons.

We are often confronted with the problem of odor nuisance and displeasing sights to the eye and give less thought to the actual public-health aspect of the situation. Perhaps some of us have been impressed by the fact that our records show that the death rate from typhoid fever in the United States has gradually dropped since the beginning of the century. It should not be said "gradually" diminished, but "markedly" diminished. It has been gradually diminished since 1920, but further study of the statistics shows that since 1920 the number of outbreaks of typhoid have, in general, not decreased at all. That these outbreaks number between nineteen and thirty per year is certainly an indication that there is plenty of room for improvement. Many of the outbreaks were due to failures in water-treatment-plant operation, but indirectly they were due to the gross pollution of the raw water used by these particular water-treatment plants. If the raw-water supply had been relatively free of pollution, many of the outbreaks would not have occurred. These figures which have just been given are on typhoid and, of course, do not indicate the number of dysentery cases which can be attributed to the use of polluted water supplies.

The mild cases of dysentery, of course, take up a good many man-hours of time. Though dysentery is not as serious a problem from the standpoint of death as is typhoid, it affects a great many more people.
So long as we have any deaths or cases of sickness attributed to stream pollution and as long as we have streams which cannot be used for recreational or industrial purposes, there is plenty of work for a Stream Pollution Control Board to undertake.

I have tried to point out to you the need for the control of stream pollution. There is now a satisfactory law which will assist in handling the legal side of the problem. I ask you engineers as citizens interested in your own health and welfare to be observing and report to the Stream Pollution Control Board through their Secretary, Mr. Quinn, such situations as you may think need attention.