

Florida's Seafood Sanitation Program

R. P. HARDISON, *Seafood Sanitarian, Florida State Board of Health, Apalachicola, Florida*

THE SEAFOOD SANITATION PROGRAM in the State of Florida today is limited to those products which are consumed raw, or are prepared in the plant for consumption, without any further processing by the consumer. This statement is true with the exception of scallops, and the State Board of Health would exercise no control over this product if it were thoroughly cooked before being consumed. Because of the economic factors it has been necessary for our organization to place major emphasis on that product which has in the past, or may in the future, present the greatest danger to the public's health. For this reason much of our time is spent working with people engaged in the oyster industry.

Oysters have been responsible for many cases of enteric diseases in various areas, and suspicion has fallen on those of Florida many times. It is not to be assumed from this that Florida oysters from approved sources have been incriminated in any epidemic of disease in this or any other state. There have been, however, incidents of diseases in Florida being traced to oysters taken from condemned areas. These occurred in Fort Pierce and Lyn Haven, and this year, in Vero Beach and Pensacola, where oysters from condemned areas did cause a few cases of enteric diseases. The shellfish sanitation program for the entire United States is based upon outbreaks of typhoid fever which were traced to oysters. During the period of 1924-28 the oyster industry was faced with complete shut-down. People were afraid to buy oysters and doctors looked for histories of the typhoid patients having eaten oysters. The industry was rapidly dying for lack of market. This resulted in the United States Public Health Service being asked to take over the control of sanitation pertaining to shellfish. However, the federal agency could not do this, except where interstate commerce was concerned, and the Pure Food and Drug agency was already charged with this responsibility. The solution to the problem was a cooperative program between the states and the United States Public Health Service.

The seafood sanitation program functions thus: First, the various oyster producing states each set up regulations which govern the production and handling of oysters within its boundaries. These laws are generally patterned after regulations recommended by the United States Public Health Service. The state provides for inspectional service and enforcement of its laws.

Secondly, the United States Public Health Service makes semi-annual or annual visits to the various states and evaluates the state shellfish program. They visit a representative number of oyster houses over the entire state and then approve or disapprove the entire state program, on the basis of this evaluation. If a state program is approved, any oyster house certified by the state agency appears on the certification list which is published semi-monthly by the United States Public Health Service, and sent to the various Health Departments in the United States.

Actually, the United States Public Health Service does not have any method of enforcing any regulation pertaining to the oyster industry, but any state program which is not approved, and fails to make the certification list, is in a rather unfortunate position. The remaining State Health Departments will not

permit oysters to enter their states and compete with their industry if the producer's name does not appear on the United States Public Health Service certification list.

One of the most important items in any shellfish program concerns the waters in which the shellfish are grown. The best oyster-producing areas are in waters where there is a mixture of fresh and salt water. Therefore, oysters occur where the rivers enter the sea. Early settlers chose these spots to land their ships and build their homes. Then a few moved up the river and settled other communities. As these communities grew they were faced with the problem of waste disposal, so they built sewers to collect the human waste and carry it away. Many times these sewers ran to the edge of town and emptied into lakes, ponds, sinkholes, etc. This was unsatisfactory, because of the odors, so to move the sewage farther away they decided to empty it into the river. Here it did not cause them any trouble. There were no odors and the cost of disposal was nil. This happened not only in inland towns, but also in coastal towns. The communities did not realize that they were taking filth from their communities and sending it to a point where it would settle on the oysters that would be on their tables later.

As the communities grew more pollution was added to the oyster-producing areas. Each year more cases of filth-borne diseases were traced to oysters. The various State Boards of Health were forced to close many valuable oyster-producing areas. These acts were harmful to the oyster industry, but the State Boards of Health were forced to protect the health of the people.

It has been only in recent years that we have become conscious of the tremendous amount of pollution which exists in the various bodies of water. Sanitary Engineers have sought means of disposing of this waste without polluting oyster producing areas, or causing damage to other natural resources.

The Florida State Board of Health has recently been exerting a great deal of effort to inform the people as to the problem that exists, and how the situation can be corrected. Florida citizens are now taking steps to correct their problem. In 1949 the State spent \$11,504,240 to provide thirty-three sewage treatment and eight water treatment plants. This sum of money is more than all the combined expenditures of the rest of the southeastern states for this same purpose. If this effort can be continued the greatest portion of our oyster producing areas can probably be reclaimed and put back in production within the next five to ten years.

As mentioned earlier, a large number of potential oyster producing areas are now closed because of pollution, and many coastal communities are disposing of their waste into the rivers or directly into the surrounding bodies of salt water. What happens to the bacteria released into these waters? Are they destroyed by a bacteriophage existing in sea water or by the process of sedimentation and absorption? Or are they destroyed by the effect of sunlight or some toxic substance that exists in the ocean? On the other hand, do these organisms accumulate in certain areas and continue to develop? These questions have not been satisfactorily answered. At the present time there is a study going on at Woods Hole, Massachusetts, which may help to answer these and other questions. This study is concerned with the viability of *Escherichia coli* in sea water.

This organism, *E. coli*, is one of the most widely distributed of bacteria, but it is not harmful to humans. It is one of the primary constituents of human feces, along with *Clostridium welchii* and *Streptococcus fecalis*. In the United

States the safety of drinking water, or the amount of pollution existing in a body of water, is tested by determining the presence of the coliform organisms. The State Board of Health is frequently asked why it does not test water for the pathogenic organisms expected to be found in water instead of this normally harmless bacterium. The answer is that any water containing pollution of human waste must be considered dangerous. In addition, it would be impossible to make tests for the many pathogenic bacteria which might be present. It is essential to use an indicator, such as *E. coli*, for which a test can be made in a matter of three or four days. Since the coliform bacteria are more hardy than the pathogens, by the time they die all disease producing bacteria have been dead for a reasonably safe period of time. Hence, it is relatively certain that no pathogenic organisms of intestinal origin exist in water which gives a negative coli test.

Some definitely established facts have resulted from the Woods Hole studies on *Escherichia coli*: (1) *Escherichia coli* population are unable to survive when placed in raw sea water. (2) There is a marked seasonal variation in the length of time that coli can survive in sea water: they are less viable in summer than in the winter. (3) Aging of raw sea water results in an increase in the bactericidal activity of the water; aging of boiled and autoclaved water produces little or no change in its bactericidal properties. (4) Sea water sterilized by boiling, autoclaving, pasteurizing, and chlorinating has less bactericidal activity than raw sea water. This shows that salinity of sea water is not responsible for the bactericidal action. (5) The addition of organic matter decreases the bactericidal activity of sea water, but it has less effect than various methods of sterilization. (6) It is concluded that the most probable cause of the death of *E. coli* population in sea water is an antibiotic action which requires the presence of the normal marine flora.

It is not known whether these conclusions would be valid for Florida's tropical conditions, but it is desirable to find out. It is possible that the joint Laboratory of the Florida State Board of Health and Oyster Division of the Florida State Board of Conservation in Apalachicola will undertake a similar project within the next few months. This laboratory in Apalachicola is one of the newest developments in seafood sanitation in Florida. It was established by two of the state agencies who are interested in the improvement of the shellfish industry. The Oyster Division wants to produce them, and the State Board of Health wants them safe for human consumption. With a joint laboratory the best cooperation and exchange of information is possible. The Oyster Division has provided all essential equipment for the operation of a water laboratory, to run fifty samples per day. A portion of their building has been set aside as office space for our personnel. The State Board of Health has provided a twenty foot cabin cruiser which enables the collection of water samples under almost any weather conditions, and has provided personnel to operate the laboratory and make inspections of the seafood houses.

The laboratory in Apalachicola has enabled the Board of Health to keep a closer check on the actual conditions existing in this important shellfish growing area, and has made it possible to open and close certain areas of the Apalachicola Bay, depending on the outcome of tests for coliform organisms in the water. This should result in a smaller loss of oysters to a polluted area, and make it more certain that oysters produced meet sanitation requirements. Producers are more cooperative under these conditions than under the former, less flexible, system of year-long closures for certain areas.

At the request of the industry, Franklin County will provide funds to test all shellfish and crustacea shipped from the Apalachicola area. By the early part of 1951 the seafood control laboratory will be operating in a manner similar to that of the Sealtest system of quality control for milk and ice cream. Approved houses will be permitted to label their products "Produced under the supervision and laboratory control of Florida State Board of Health."

Recently in Apalachicola, in cooperation with the Franklin County Health Department, the Board of Health conducted a food handling training program for people engaged in the food industry, such as operators of restaurants, soda fountains, oyster and crab houses. The material covered in this program was concerned about equally with seafood and restaurant sanitation. Attendance at these food sanitation meetings was entirely voluntary, the only requirement was that a person had to attend one two-hour session for each of three days before he was entitled to receive the food handler's certificate, or be entitled to wear the trained food handler's emblem.

The total attendance at these classes was 256. Over half of those present were engaged in sea food work. While this may seem a small number for a community which depends entirely on seafood for its income, our program was conducted at a time when most of the crab houses were not operating and very few of the oyster houses had opened for the season.

At the suggestion of those seafood workers who attended this training program, plans are now being made to conduct another training program in Apalachicola, strictly for seafood employees. The material to be presented in this new program includes the following items: (1) Fundamentals of Bacteriology and the relation of certain bacteria to the seafood industry. (2) Construction of seafood houses and equipment. This subject will be illustrated by film strips taken in Florida. (3) Refrigeration. A surprising number of people in the seafood industry do not realize the importance of proper refrigeration for perishable food. (4) Cleaning and sterilization of utensils and equipment used in seafood houses. (5) Insect and rodent control, and their relation to disease and the seafood industry. (6) Personal Hygiene. (7) Operational techniques for seafood houses.

Of the six-hour program approximately eighty per cent of the time will be devoted to visual aids, such as posters, films, etc. The Board of Health believes that people want to be educated, and that "showing" is better than "telling." Within the next year this raining program should be available to all seafood producing areas in the state of Florida.

It has always been the policy of the State Board of Health to do everything possible to help those engaged in the seafood industry. Only as a last resort are penalties invoked for violations of sanitary regulations. Probably 95 per cent of the plant operators want help and make mistakes only because they are not properly informed. It is true that there are laws pertaining to the operation of shellfish and crustacea houses, and many of these regulations could be forced on the industry. The Board of Health would prefer to foster an atmosphere of cooperation. Otherwise the plant operator might meet the minimum physical requirements for the plant, such as a safe water supply, a concrete or impervious floor, and other similar items, but still run an unsanitary plant. Proper operational procedures might never be complied with, except while the inspection is taking place. Each plant operator and employee must understand why regulations exist if the laws are to be effective. Within a few years it is expected that 95 per cent of seafood people will be educated as to the State

Sanitary Code requirements for the seafood industry. When this day comes the Board of Health will not hesitate to use law enforcement on the remaining 5 per cent.

The services of the Bureau of Sanitary Engineers of the State Board of Health are free for the asking. The Board has engineers located in various regional offices of the State who are continually making surveys locating the source of sanitation problems. These engineers are to discuss sanitation problems with anyone concerned. The only thing the Board cannot do is supply the money which is usually required to correct sanitation deficiencies.