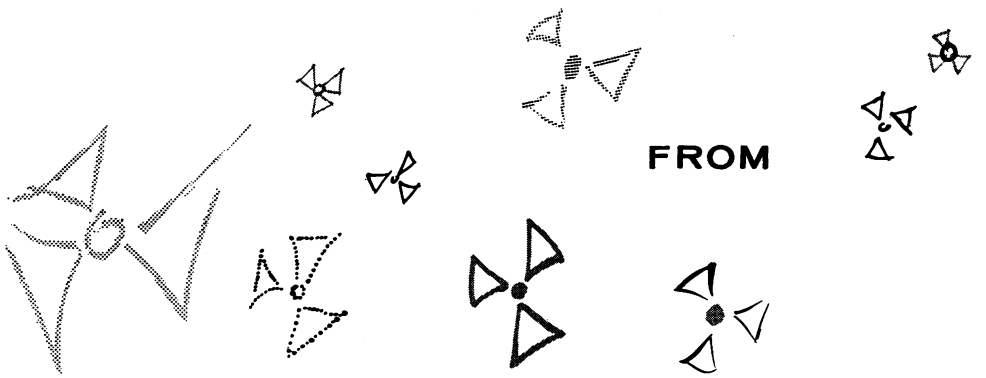
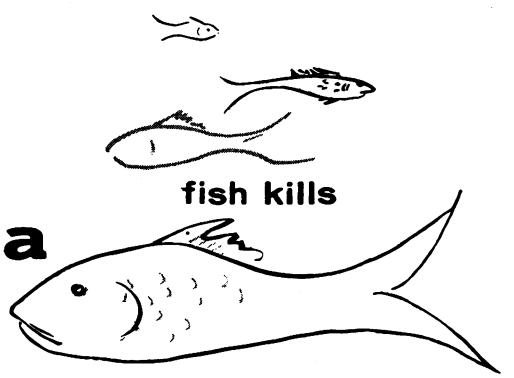


Environmental Health in Pennsylvania



CONFERENCE REPORT

AT the environmental health session of the 8th Annual Pennsylvania Health Conference, papers presented ranged from power reactors to fish killings. The program chairman was Karl M. Mason, director of the bureau of environmental health, Pennsylvania Department of Health.

George Elias, regional sanitary engineer for the southeastern region, told how models of the Delaware River Basin are presently being used to predict effects of river pollution on tidal waters. The use of the model, in which the State department of health is participating financially, removes much of the guesswork from the predictions of tidal action in the Delaware River. Some industries located in the Delaware River Basin find that wastes discharged during one period of the day are carried upstream by the tide and enter their water intakes later.

Victor Sussman, chief of the air pollution section, explained the progress of Pennsylvania's air pollution legislation currently under consideration. He drew attention to chapter 200 of the 1959 California State law which states that "The State Department of Public Health shall, before February 1, 1960, develop and publish standards for the quality of the air

of this State. The standards shall be so developed as to reflect the relationship between the intensity and composition of air pollution and the health, illness, including irritation to the senses, and death of human beings as well as damage to vegetation and interference with visibility."

"Why Bother about Silicosis?" was answered by Dr. Jan Lieben, director of the division of occupational health, who stated that the majority of the 2,957 Pennsylvanians who died of silicosis during the past 2 years were coal miners. He said that foundry workers and stonecutters also ranked high in the silicosis fatality toll. Lieben stated that deaths caused by silicosis topped the 2,032 deaths from tuberculosis, and ranked only slightly lower than lung cancer as a killer. Lung cancer caused 4,600 deaths during the 2-year period. The disease, Lieben said, results from inhalation of certain dusts. The disease is preventable and is entirely dependent on the amount and quantity of dust entering the lung tissues. Lieben said silicosis costs Pennsylvania an estimated $15 million annually to pay workmen's compensation claims of those disabled by the disease.

On the subject of power reactors, Donald Lazarchik, sanitary engineer with the division of sanitary engineering, stated that Pennsylvania will have 13⅓ percent of the Nation's total nuclear power generating capacity by 1963. He said, a concentrated effort in power reactor research has been in the development of pressurized water reactors similar to those used in nuclear-powered submarines and that of the nuclear power generating plant at Shippingport. The Shippingport plant, he stated, has successfully operated more than 5,000 full power hours and for the first 560 days of operation has discharged less than 6 percent of the wastes allowed by the health department in the unidentified category. Less than 2 percent of the allowable concentration of tritium was discharged, and the gaseous wastes were much less than anticipated.

Another experimental reactor is planned at Saxton in Bedford County. This power generating station is being built with the express purpose of reducing costs to levels of conventional power plants. Lazarchik stated that conventional power plants cost from $100 to $200 per kilowatt of installed capacity while at present most nuclear power plants cost $300 to $400 per kilowatt. In an effort to reduce costs to a competitive basis, 52 privately owned utility companies have formed a company known as High Temperature Reactor Development Associates, Inc. This corporation plans to build an advanced concept power plant at Peach Bottom, York County, Pa. According to the engineers, the plant looks very promising because of its simplicity, economy of operation and construction, and its inherent safety.

Lazarchik stated that the nuclear power industry produces less than 1 percent of the Commonwealth's electrical consumption and presents no problem today with widely scattered power plants. If the trend of power consumption continues to double every 10 years and we assume widespread use of the atomic power, it may be difficult to cope with the resulting problems and to determine the effect of these plants on the environment, be cautioned.

The needs in radiation research were discussed by Dr. Ursula I. Nitch of the division of occupational health. Nitch pointed out that radiation effects on man have been spotlighted in the past few years. She stated that there is no doubt that certain delayed effects are harmful to man but that human genetics are not far enough advanced to give precise answers regarding the damage to reproductive cells at various levels of radiation.

Nitch stated that most information is collected on subjects who have been exposed to high levels of radiation energy. Along these lines the State health department is studying the possible effects resulting from the use of X-rays and fluoroscopy among the patients in State tuberculosis and crippled children's hospitals. Nitch went on to say that for five decades low or moderate energy levels have been used in medical diagnostic radiology and the sum of human benefits derived can never be measured.

Recently, however, some authors have become concerned about the possible hazards from radiation in medical practice and there is some danger of hysteria in a confused public. There are 129,000 X-ray machines in Pennsylvania, 50 percent are used by dentists and the remaining half are owned and operated by medical doctors, osteopaths, chiropodists, and chiroprac-

tors, of which less than half are operated by radiologists. Of the 13 million fluoroscopic examinations, only half are done by a radiologist, the other half are performed by radiologically untrained medical doctors. Added to this figure are the 5 million radiographs and 1,900,000 fluoroscopic examinations performed annually by osteopaths, chiropractors, and chiropodists.

There is an apparent need for continuous education of professionals and the laity. At the same time, it is essential to have research into the detailed nature and magnitude of these hazards to find out:

1. How much radiation will produce given biological effects?
2. What is the relation of the age of the individual to the dose necessary for any given effect?
3. Are all end results without threshold in their inception?
4. How do the various somatic responses differ in relation to the dose?
5. What is the range of variability of response in any given group of humans?
6. To what extent are radiation responses dependent upon co-factors in the genetic and environmental profile?

Package-type sewage treatment plants are being widely adopted as a solution to waste disposal problems for suburban housing developments, joint schools, shopping centers, and industrial plants not reached by municipal sewerage systems, Arthur F. Lehmann, chief of the sewerage system section in the division of sanitary engineering, declared.

These small treatment plants generally combine a high degree of treatment with a minimum of operation, and their widespread adoption indicates that their cost is not prohibitive, Lehmann stated. "Cost of installing sewers and treatment plants usually is recoverable in the purchase price of houses in a subdivision," he said. "These small plants serve a useful purpose as an intermediate solution until trunk or interceptor sewers can be extended to pick up isolated housing developments," Lehmann added. "Package plants offer one solution to the widespread problems caused by overflowing septic tanks," he said.

The State health department is asking real estate developers to install sewerage systems instead of septic tanks in suburban developments wherever possible, according to Thomas A. Ford, chief of the suburban development section in the division of sanitation. He told the conference that septic tanks are not suited for use in large areas of the State because of soil conditions. Before new homes are erected, Ford said, developers are being contacted and asked to report on the feasibility of tying in with municipal sewers and sewage treatment plants or constructing small interim plants. He reported that Pennsylvania is the first State to use this feasibility report system.

Habits of food servers are the target of a fresh approach to restaurant sanitation. Hugh C. Sarraf, chief of the food section in the division of sanitation, believes that the restaurant grading system which gives eating places A, B, or C ratings has outlived its usefulness since grading accomplishes only a change in equipment. He plans a study of attitudes and patterns of behavior of employers or employees. Sarraf also asserted his belief that more people suffer from poor management of food in the home than from food contaminated in restaurants.

The food section chief also revealed that State sanitarians are trying to help hospitals control the spread of staphylococcus infection.

"Who killed the fish?" is a question to be answered many times each year by the division of sanitary engineering of the department of health. Marlin E. Wilt, regional sanitary engineer for the north central region, presented a factual account of a fish killing which occurred in 1956. There are three general reasons for a fish killing: natural phenomena over which there is no control, accidents or unforeseen circumstances, and surreptitious discharges of toxins. Most fish killings are accidental or occur because of unforeseen circumstances. In some instances killings can be costly and ecologically significant. As presented by Wilt, the facts are given as the case was investigated.

November 30, 1956: Went to bed, expecting to go to hunting camp the next day.

December 1, 8:48 a.m.: Awakened by call from fish warden that 200,000 fish (trout) were killed at the Benner Springs hatchery. We agreed on sampling program until I got there.

9:35 a.m.: Notified central office to alert chemical laboratory of samples to be delivered.

12:00 noon: Arrived on scene with sample bottles, D.O. kits, and pH comparator.

4:45 p.m.: Completed sampling of stream all the way to source and placed dye in siphon dosing tank and checked flow through the night to ascertain what time pollutant was discharged. Estimated that discharge occurred at 3:00 p.m., Friday, November 30. Possible sources of stream pollution were ammonia from ice skating rink, caustic boiler water, chemicals from laboratories, or radioactive wastes from reactor. Radioactive contaminants showed negative. Met with borough officials, college officials, and collected more samples.

11:00 p.m.: Met with fish biologist.

December 2, 12:10 a.m.: Lab report shows no cyanide. Other tests being made.

4:30 a.m.: Arrived home.

8:30 a.m.: Returned to scene of killing and made more inspections of stream, sewage treatment plants, and interviewed operators. College officials agreed to carry on investigation by continued sampling. Waited for lab results and got permission to go to hunting camp.

December 3, 10:30 a.m.: Shot a nice spike buck.

1:00 p.m.: Returned to State college, where head of physical plant informed me that all avenues of the investigation were negative except that 104 gallons of supposedly wornout plating solution had been dumped in a college laboratory sink.

December 4: Checked source of dumping with dye to determine time to reach sanitary sewer and treatment plant and interviewed people responsible for the dumping.

December 5: More meetings but no answers. Lab instructed to save old samples.

December 6: More meetings but no answers.

December 7: Lab reports that cyanide was found in original samples as well as soil samples and in the dead fish.

11:00 a.m.: Officials notified of cause.

2:00 p.m.: Press release issued.

Remarks: 50 pounds of chlorine would have effectively destroyed all the hazardous effects of cyanide and saved 200,000 fish.

Reports of the Osteuropa-Institute

Through its Russian Scientific Translation Program, the National Institutes of Health, Public Health Service, will distribute to cooperating libraries, at no charge, selected biomedical publications issued by the Osteuropa-Institute of the Free University of Berlin.

The first publications selected for distribution are "Current Problems of Soviet Medicine" and "Blood Pressure and Subarctic Climate in the Soviet Union." The first of these volumes summarizes, through a search of the pertinent periodical literature, recent developments in such fields as helminthology, psychiatry, oncology, and otorhinolaryngology. The second volume is a compilation of data on the climatico-meteorological susceptibility of blood pressures in the human organism. A study of blood pressure records of 1,203 World War II German prisoners-of-war forms the basis for this treatise.