

AMA Congress

ON

Environmental Health Problems

The American Medical Association's first major effort in the environmental health field attracted nearly 400 participants to the AMA Congress on Environmental Health Problems, held May 1 and 2, 1964, in Chicago. Presentations were aimed toward the physician in practice, centering on the relation of environmental health problems to medical practice and the role of the physician in evaluation and prevention.

The theme of the congress was a question: Can some diseases be engineered out of the environment? While the 22 principal speakers focused largely on the four major areas of air pollution, water pollution, pesticides, and radiation, they also touched on other hazards that stem from modern urbanization.

Dr. James H. Sterner, chairman of the AMA Committee on Environmental Health, keynoted the congress by calling on practicing physicians to become more informed about environmental health problems in their areas and to take active roles in helping to solve them. "An active and effective effort by the medical profession will provide a balance and much needed assistance to governmental agencies dealing with these matters," he said.

Highlights of the various sessions are covered in this brief report.

Air Pollution

"Present levels of control activity are generally not sufficient to prevent further aggravation of the serious air pollution problem," Vernon G. MacKenzie, chief of the Division of Air Pollution, Public Health Service, told the doc-

tors at the first panel session. "The problem, in short, is serious enough today to compel greatly increased preventive action by all segments of society, including government at all levels, industry, the health and allied professions, and the general public," he stated.

Earlier MacKenzie had pointed out that some 107 million Americans, about 60 percent of the total population, live in 7,300 places where the air is polluted to some degree. Of these, 43 million live in urban areas where air pollution problems are judged to be major and 30 million live in areas where problems are moderate.

Dr. William S. Spicer, Jr., head of the division of pulmonary diseases of the University of Maryland School of Medicine, concluded that polluted air and cigarette smoke have similar effects on the lungs, and a combination of the two may be involved in many chronic lung conditions. "In this country, to date, the relationship of air pollution to chronic lung disease in large population groups is considerably overshadowed by the relationship to cigarette smoking," Spicer said. "However, there are numerous indications of synergistic effects, and, in fact, we all recognize that we are not really dealing with two separate groupings but with variations in concentration and mode of delivery of irritants to the lung."

Spicer said we can expect the amount of pollution to increase as we expand our great urban areas, adding: "It behooves the practicing physician to be aware of the trend in respiratory disease and to accept a major role in community action relating to air pollution and respiratory health."

In a paper evaluating the effects of air pollution in clinical situations, Dr. Reginald H. Smart, Los Angeles chest specialist, told the group that “. . . air pollution is a condition of modern industrial and urban life which has known detrimental effects on certain sensitive groups in our population as observed by clinicians, epidemiologists, and pulmonary physiologists alike. A lifetime of exposure to present levels of urban atmospheric pollutants may well be having serious and ultimate effects upon the health of many other persons, and by the time all the research and epidemiologic evidence is available, it may be too late for millions of people.”

S. Smith Griswold, air pollution control officer of the Los Angeles County Air Pollution Control District, declared that ignorance and apathy are the real limitations on the control of air pollution. “Potentially, we have the ability to assure an acceptable standard of air quality for our urban areas. We have a basic understanding of what is polluting our atmosphere, and adequate techniques of control not only are known but are in regular use,” he said.

“A community endures air pollution because it lacks leadership and the will to act,” Griswold stated, adding that “the most frequently voiced objection to controlling air pollution, namely, that it is too costly and would hurt industry, is not valid. Los Angeles adopted the most stringent air pollution control programs in the world,” he said, “and it didn’t cause a ripple in the business community.”

“We know of no instance in which an industrial plant was driven from the area because it could not carry the burden of controlling air pollution,” Griswold stated. “We know of no layoff that occurred. We do know that new industrial enterprises continued to move into the area. If there has been any deterrent to industry locating and growing in the Los Angeles area, it has been due not to the cost of controlling air pollution but rather to the expense and inconvenience of living with it. What is costly is not clean air but dirty air.”

Discussing the physician’s role in control activities, Dr. Joseph R. Christian, chairman of the division of pediatrics, Presbyterian-St. Luke’s Hospital, Chicago, told the congress that the physician should be the community leader

in helping to solve this urgent medical problem. Dr. Christian said each physician in each community should strongly recommend:

1. Medical society participation in environmental health, at least at the State and county levels.

2. Formation of an advisory committee on environmental health, with representatives of the various medical specialties, allied sciences, meteorology, law, and industry, with an added suggestion that physicians on the committee participate in one postgraduate course on environmental health each year.

3. Routine monitoring for dustfall, particulates, gaseous, organic and inorganic pollutants, and radioactive materials.

4. Cooperative interchange of information with the National Air Sampling Network.

5. Participation in research programs so that more effective air quality standards can be made and local problems can be more effectively interpreted.

6. A continuous education program for professional and lay persons.

Pesticide Hazards

“We have no evidence at present that the extremely small amounts of certain pesticides which may be found in our food or in our general environment cause us any harm,” Dr. Mitchell R. Zvon, associate professor of industrial medicine at the University of Cincinnati College of Medicine, reported in a paper on the diagnosis and treatment of pesticide poisoning.

In pointing out that the effects of pesticides on our general environment will probably require many years of research to evaluate, Zvon said, “The quantities of pesticides about which we are talking may be measured in parts per billion or parts per trillion. At these low levels new analytical methods and other new techniques may have to be developed, a time-consuming process.”

Dr. Wayland J. Hayes, Jr., medical director and chief of the Toxicology Section of the Public Health Service Communicable Disease Center, in Atlanta, said there has been no distinct trend toward increase or decrease in the death rate from accidental pesticide poisonings in the United States in the past 25 years, and that there

has been no change associated with the newer pesticides and their increasing use. He listed the annual death rate from accidental pesticide poisoning at approximately 1 per million population, and the annual case rate of nonfatal poisoning at about 1 per 10,000 population.

Hayes credited wise administration of the extensive laws under which pesticides are sold and used for the relatively good safety record of pesticides in this country, but cautioned that we cannot exclude the possibility that individual pesticides or groups of pesticides may have effects we have not yet detected.

A California public health officer stated that too little was known about DDT and similar pesticides when they were brought into massive use in agriculture and that widespread contamination of the environment resulted, causing many unforeseen, irrevocable, and undesirable side effects in animals and man.

Dr. Irma West, public health medical officer in the bureau of occupational health, California Department of Public Health, said the unforeseen side effects have included mass deaths of fish, birds, and aquatic animals; death and injury to plants; contamination of water supplies, lakes, rivers, and even the ocean; accumulation of harmful amounts of chemicals in the soil; and accumulation of chemicals in the tissues of plants, animals, and human beings, with various and often unknown effects.

West urged that mistakes in the use of pesticides be thoroughly analyzed to prevent similar misadventures in the future, noting that the chlorinated hydrocarbon pesticides were tested primarily from the standpoint of residues on food and not subjected to tests that would have indicated their total environmental effects.

"There is no organized environmental monitoring and human surveillance system to provide comprehensive and representative data about the locations, amounts, and trends of this contamination," she said, "and we are technically unprepared to predict if or what significant long-term effects this contamination may have on animal and human life."

Dr. Robert Blackwell Smith, Jr., president of the Medical College of Virginia, said pesticide damage to wildlife is regrettable and that studies are being made of some non-food-crop pesticidal practices to reexamine their advisa-

bility, but emphasized: "As to the use of insecticides on food crops, there is absolutely no cause for alarm. The nature and amount of residues on food are kept at safe levels by rigid Federal and State laws and regulatory practices."

His paper on the safe use of pesticides in food production pointed out that no amount of research or study will ever provide "absolute assurance of safety," but that "as research improves our knowledge, the degree of assurance will certainly improve."

Parke C. Brinkley, president of the National Agricultural Chemicals Association, traced the development of pesticide regulations beginning with the Federal Insecticide Act of 1910, and said his organization believes that "a good, strong regulatory program wisely administered is in the best interests of all concerned."

Brinkley pointed out that chronic toxicity studies normally involve a minimum of 2-year feeding studies on laboratory animals, and that a wide margin of safety on any proposed tolerance is then imposed, normally a hundredfold margin. "Thus," he said, "if the chronic toxicity data show that 1,000 ppm is the safe level, then 10 ppm is the maximum tolerance that the Food and Drug Administration will allow."

Radiological Hazards

"Our knowledge of the biological effects of radiation has many gaps, but enough is known that practitioners of medicine, dentistry, and public health should make every feasible effort to prevent or reduce all unnecessary radiation exposure," Dr. Donald R. Chadwick, chief of the Division of Radiological Health, Public Health Service, told the congress in the discussion on radiological hazards.

"In recent years," Chadwick said, "doubts have arisen concerning the possibility of determining a dose which when delivered to a large population will produce no harm in any individual. Evidence on the genetic effects of radiation, for example, suggests that even small doses of radiation to the gonads before reproduction will be accompanied by deleterious genetic mutations, the frequency of which increases with the dose. Firm evidence is lacking to disprove also the possibility of somatic

effects from small chronic doses to large populations. This has led to a concensus of opinion that the most prudent basic biological assumption is: There is no level of radiation exposure below which there can be absolute certainty that harmful effects will not occur to at least a few individuals when sufficiently large numbers of people are exposed."

"Wide acceptance of the nonthreshold concept as the only prudent basis for setting radiation protection standards has profoundly influenced attitudes and procedures in clinical practice and in public health programs," he said, "because when any dose chosen as a standard will involve some risk to the exposed individual or population, then both standards-setting and the application of such standards in medical and public health practice involves a balancing of the risk of exposure against the reasons for accepting that risk."

Dr. John H. Harley, director of the Atomic Energy Commission's Health and Safety Laboratory, in New York, discussed the radioactive contamination of the human diet and man, pointing out that natural radioactive isotopes give Americans a bigger dose of radiation every year than radioactive fallout provides, although the dose from fallout is a "significant fraction" of the natural dose.

The role of the Atomic Energy Commission in developing radiation protection standards was outlined by Dr. Forrest Western, director of the AEC Division of Radiation Protection Standards. He noted that AEC regulations designed to limit the exposure of the public are not stated in terms of exposure but in terms of levels of radiation that may be permitted in an uncontrolled area and in terms of average concentrations of radioactivity in air and water that may be released into the environment. He described safety precautions at nuclear reactors and listed some of the criteria for limiting exposure to the public in the event of a reactor accident.

"Despite the acceptance of the nonthreshold statistical risk concept in radiation protection, the concept of the threshold limit value or a maximum acceptable concentration is almost a practical necessity for regulatory purposes not concerned with source control," the doctors heard from Dr. Paul C. Tompkins, executive

director of the Federal Radiation Council. He noted that man has always lived in a field of ionizing radiation due to the presence of radioactive material in the earth and to cosmic rays, and that there is speculation as to whether this level of "normal" radiation is beneficial or deleterious to man.

"We have then," Tompkins stated, "a lower limit of continuous exposure to radiation that is unavoidably tolerated by man. There is, on the other hand, a much higher level of exposure that is definitely known to be harmful. Between these two extremes there is a level of exposure, in the neighborhood of 0.1 roentgen per day, that experience to date shows to be safe for the individual concerned; however, the time of observation of large numbers of people exposed at this rate under controlled conditions is too short to permit a categorical assertion to this effect."

"In considering basic radiation protection guides for the general population, it is necessary to assume that any practical limit of exposure that may be set up today will involve some risk of possible harm," Tompkins said. "The problem then is to make this risk so small that it is readily acceptable to the average individual; that is, to make the risk essentially the same as is present in ordinary occupations not involving exposure to radiation."

Water Supply and Pollution

A dilemma that threatens the world-famed resort of Lake Tahoe was cited as one consequence of water pollution by Dr. Harold M. Erickson, deputy director, California Department of Health, who discussed the nature of water pollution at the congress. "There is current concern," he said, "over the possible eutrophication (gradual maturing, ultimately to a meadow) of this sky-blue body of water through percolation of quantities of nutrients, nitrates, and phosphates, and perhaps vitamins and hormones, originating from highly treated domestic sewage. Such eutrophication can result in a dull-gray, highly mineralized body of water."

Besides destruction of esthetic values, Erickson listed transmission of disease, poisoning of man and animals, detrimental effects on aquatic

life, creation of odors or unsightliness, unsatisfactory quality of treated water, impairment of shellfish culture, and increase of mineralization as the consequences of water-quality impairment leading to water pollution.

Dr. Charles L. Wilbar, Jr., Pennsylvania secretary of health, charged that the public health aspects of water pollution are being "overshadowed" by demands to keep water pure for recreational and industrial purposes. He asked physicians to take as much interest in water pollution control as conservationists.

"The practicing physician can campaign for the passage of bond issues for a sewer system or sewage-treatment plant in his town, and can support bond issues for new water treatment plants or distribution systems," Wilbar said. "Medical skill is also needed in studying the effects of certain pollutants, such as detergents and the newer chemicals, on human health."

A paper by Dr. Russell E. Teague, Kentucky commissioner of health, pointed out that many communities do not discharge their full responsibility in preventing water pollution, and that one of the frequent functions of a State agency is to order a community to abate pollution or to construct the works required to control pollution of a particular stream. The paper also discussed the work of multi-State agencies created for dealing with interstate waters.

Curtiss M. Everts, Jr., director of the Public Health Service Pacific Northwest Water Laboratory at Corvallis, Oreg., outlined regional water pollution control resources and listed the following seven fundamental activities which he said should comprise a successful program for water pollution control.

1. Recruitment and training of a competent technical staff.
2. Development of facilities such as laboratories, field stations, and research units.
3. Collection and collation of comprehensive data regarding the waters under surveillance.
4. Development of a comprehensive plan for the prevention, control, or abatement of pollution.
5. An aggressive information program.
6. Initiation of special studies or research of problems for which current technical knowledge does not provide answers.
7. Initiation of enforcement action to bring

about compliance when voluntary cooperation or other means fail to achieve abatement.

"Despite success in controlling bacterial contamination of our water supplies through adequate treatment processes, we are grossly lacking knowledge to eliminate various enteric viruses and chemical contaminants," Dr. Gaylord W. Anderson, director of the School of Public Health, University of Minnesota, told congress participants.

In pointing out present and future technical problems in water pollution, Anderson paid special attention to the chemical contaminants which include household chemicals, chemical wastes from industries, and the huge quantities of agricultural chemicals such as pesticides, herbicides, and fungicides.

"We cannot deny that we are dealing, however minutely, with substances of known toxicity, and that the quantities are increasing," he said. "At what point do we exceed the critical level, for there must be a critical level, even though we do not know it today?"

Anderson expressed hope for the future, however, stating that he was confident the problems would be solved even though "the situation may get worse before it gets better."

Other Environmental Problems

Collaboration between architects and medical scientists to create healthier urban environments was proposed to the congress by a west coast architectural and engineering firm executive.

Speaking at a luncheon session, Welton Becket, president of Welton Becket & Associates, Los Angeles, called for an AMA committee to work with a similar group to be established by the American Institute of Architects. "It is time," he said, "for architects and medical scientists to cooperate and communicate so that architects can introduce to man's environment the factors which doctors know to be beneficial."

Among the possibilities Becket mentioned were: color selection, since studies have shown that color has definite effects on mood and certain physiological functions; the inclusion of open landscaped areas in cities to promote rest and recreation; senior citizen housing located where the elderly can mingle with the young and designed with proper temperature control,

lighting, quiet, and privacy; hospitals which are the ultimate in a therapeutic environment, designed for optimal privacy, sanitation, and sound control; lighting fixtures that not only reduce glare but can be adjusted to support or counteract an emotional mood.

Becket even suggested entire cities with controlled environments. He pointed out that architects and engineers are already at work on artificial environments to be used on the moon and planets.

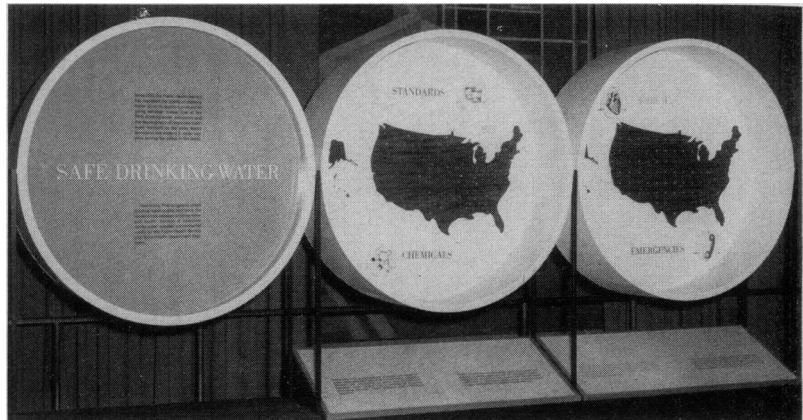
The final luncheon speaker, Dr. John A. Zapp, Jr., director of the Haskell laboratories for toxicology and industrial medicine, E. I.

du Pont de Nemours & Co., emphasized that scientific control of environmental changes, rather than legal prohibitions, is the answer to mankind's problem of how to deal with environmental health problems. He also noted that the "problem" of environmental health is much broader than air, water, radiation, and chemicals, and includes "such things as food, clothing, shelter, light, sound, climate, heating and air conditioning, traffic conditions, the social and political attitudes of others, conditions of urban and suburban living, the pressures of the job and home, and the surrounding flora and fauna."

Exhibits

Safe Drinking Water

This three-panel display describes continuing Public Health Service programs for regulating the quality of drinking water used aboard interstate carrier conveyances, studying the relationship between drinking water and health, and providing emergency information service to communities finding chemical pollutants in their water. Surveys of interstate carrier water supplies are conducted jointly by State health department and Public Health Service engineers. Colored lights indicate places where water is regularly sampled and show the operation of the emergency referral service network. Copies of the 1962 Public Health Service Drinking Water



Specifications: No. EEFP-110. Free-standing exhibit, 7 feet 6 inches high, 12 feet wide, and 40 inches deep; total weight 620 pounds including two packing crates; crate measurements 4 feet by 4 feet by 31 inches and 4 feet by 5 feet by 41 inches. Lighting fixtures require three outlets totaling 1,500 watts.

Standards are distributed with the exhibit.

The exhibit is available on loan free from the Water Supply Section of the Interstate Carrier Branch, Division of Environmental Engineering and Food Protection, Public

Health Service, U.S. Department of Health, Education, and Welfare, Washington, D.C., 20201. Requests should be made well in advance of the date desired. Instructions for assembling are attached to the two packing crates.