

Gathered at the Symposium on Air Pollution at Louisiana State University last week

ABATEMENT

Radical approaches

A variety of sometimes radical approaches will have to be taken to meet growing air pollution problems, says Jean Schuneman of the Maryland Health Department. Among the possibilities are:

- Substitution of nonpolluting engines for the internal combustion engine in central cities—as well as creation of mass transit systems for central cities.

- Control of buses so as to reduce diesel engine emissions. Some existing technologies appear to be possible answers, but if they are not successful, then substitution of steam or gas turbine engines may be necessary.

- Centralized heating systems for groups of buildings rather than for single buildings, the centralized systems to be managed by highly qualified engineers and to use the modern fuel and modern pollution-abatement techniques.

- Reduction of usage of electrical energy, perhaps by restricting power companies from stimulating usage through advertising at the same time they are experiencing power shortages.

LEAD POLLUTION

Biochemical activity at low levels

Experiments with rabbits indicate that trace amounts of lead cause biochemical activity in bone marrow. The amount necessary was about one-half that now typical of urban dwellers in the United States, the equivalent of 22 micrograms per hundred grams of blood in urban males, says Dr. Peter K. Mueller of the California Department of Public Health in Berkeley.

Dr. Mueller says that the biochemical action—inhibition of amino levulinic acid dehydrase (ALAD), an enzyme important in hemoglobin formation—does not necessarily indicate any physiological harm. But he suggests further research, especially in the area of possible harmful effects in conjunction with other physiological impairments.

Even at the smallest measurable dose of lead, there is at least some inhibition of ALAD, says Dr. Mueller.

EDUCATION

Environmental GP's

The University of California at Los Angeles has begun a pilot program for the training of "environmental doctors," a proposed new species of applied scientists who would be able to take a broad, systems-oriented approach to environmental problems, reports Dr. W. F. Libby, UCLA Nobel laureate in chemistry.

According to Dr. Libby, the graduate would be analogous to the general practitioner in medicine. One of his prime functions would be to view an environmental problem in its totality, then be able to ask researchers and other specialists the kinds of questions the answers to which would lead to solving the problem.

Candidates for the program generally will possess a master's degree in science or engineering. The first

two years of the program will involve classroom work in a variety of disciplines, especially those outside the candidate's earlier field of specialization. Social, physical and biological sciences, medicine and environmental law would be some of the subjects covered. Then, in the third and final year, candidates would join a multidisciplinary team in the study of an actual problem.

ATTITUDES

All sides unrealistic

Air pollution control authorities and air polluters take extreme and unrealistic stances with regard to air pollution abatement, says Dr. Arie Jan Haagen-Smit, the California Institute of Technology biochemist generally credited with discovering the nature of Los Angeles smog.

Dr. Haagen-Smit was particularly critical of the air pollution criteria issued by the Air Pollution Control Office. The criteria lacked any effort at critical judgment, "and might have been assembled by a secretary," he says.

On the other hand, he says, industrialists and local power structures drag their feet on relatively easily accomplished abatement programs, claiming lack of money. Such impoverishment almost never is a reality, and when forced to, industries manage to clean up emissions without dire economic consequences. Sometimes such clean-up programs result in savings, as in the case of oil refineries, where losses of volatile materials were reduced.

An instance of blindness of local power structures was the recent decision by the Pasadena City Council to allow burning of high-sulfur fuels, Dr. Haagen-Smit says.

PUBLIC HEALTH

Research and regulation

Public health research related to air pollution appears to have been emphasized in the 1970 Clean Air Act (SN: 1/9/71, p. 22), but there are problems in coordinating research with regulatory functions, says Dr. Vaun A. Newill of the Air Pollution Control Office.

Emergencies, such as the discovery of mercury in foods, often develop more quickly than researchers can plan and conduct studies to deal with them, says Dr. Newill.

But research is a key to meaningful regulations. As Dr. Newill explains it, regulation begins with the setting of ambient air standards—determining the amounts of any given pollutant that can exist before the threshold is reached beyond which there is damage to human health. Once the ambient air standards have been set, emission standards are aimed at meeting the ambient standards.

In determining the threshold, researchers attempt to achieve a confidence level according to which they could be 95 percent confident that ambient amounts of air pollutants in a certain range create health problems. The final air quality standard is set near the safe end of the range.