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## Survey of Health Department-Based Environmental Epidemiology Programs

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**Abstract:** A survey of state epidemiologists in all 50 states and New York City was conducted between October 1982 and January 1983 to determine which states had existing programs in environmental epidemiology. We identified 29 environmental epidemiology programs with at least one full-time state-funded staff member. The most common areas of responsibility included investigations of indoor air pollution (96 per cent), exposures to toxic or hazardous substances (93 per cent), and pesticide exposures (93 per cent). (*Am J Public Health* 1984; 74:1023-1025.)

### Introduction

The industrialization of our society over the past 200 years has led to significant increases in the human lifespan within developed countries. However, industrialization has also generated potential hazards in the form of chemical and radiological wastes and pesticide residues. The first victims of the industrial revolution were populations exposed occupationally to these hazards; however, toxic substances have gradually begun to seep into our water supplies and to contaminate our food and air. These habitat changes raise important questions regarding their various impacts on human health.

In response to the growing need for investigations into the health effects of environmental pollutants, epidemiology

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programs focusing on environmental problems are being developed in many state health departments. This paper reports the results of a national survey of health department-based environmental epidemiology programs. The study was designed to determine which states currently have established programs in environmental epidemiology and to ascertain their size and areas of responsibility.

### Materials and Methods

Between October 1982 and January 1983, state epidemiologists in all 50 states and New York City were sent a questionnaire and asked to provide information about their state's activities in environmental epidemiology. Telephone interviews were conducted where questionnaires were incomplete or not returned. States were ranked separately according to population and number of US Environmental Protection Agency Superfund sites.<sup>1</sup> States with and without environmental epidemiology programs were compared.<sup>2</sup>

An environmental epidemiology program was defined as a program separate from communicable disease epidemiology, having a staff of at least one state-funded, full-time equivalent, and addressing problems in one or more of the following areas: health effects of air pollution, illnesses from indoor pollution, hazardous consumer products, foodborne illnesses, non-communicable diseases or cancer clusters, occupational hazards or diseases, pesticide exposures, radiation exposures, adverse pregnancy outcomes, exposures to toxic substances, and waterborne diseases.

### Results

All of the states surveyed had programs in communicable disease control, and 28 states plus New York City had established environmental epidemiology programs. These programs were most prevalent in the northeastern and

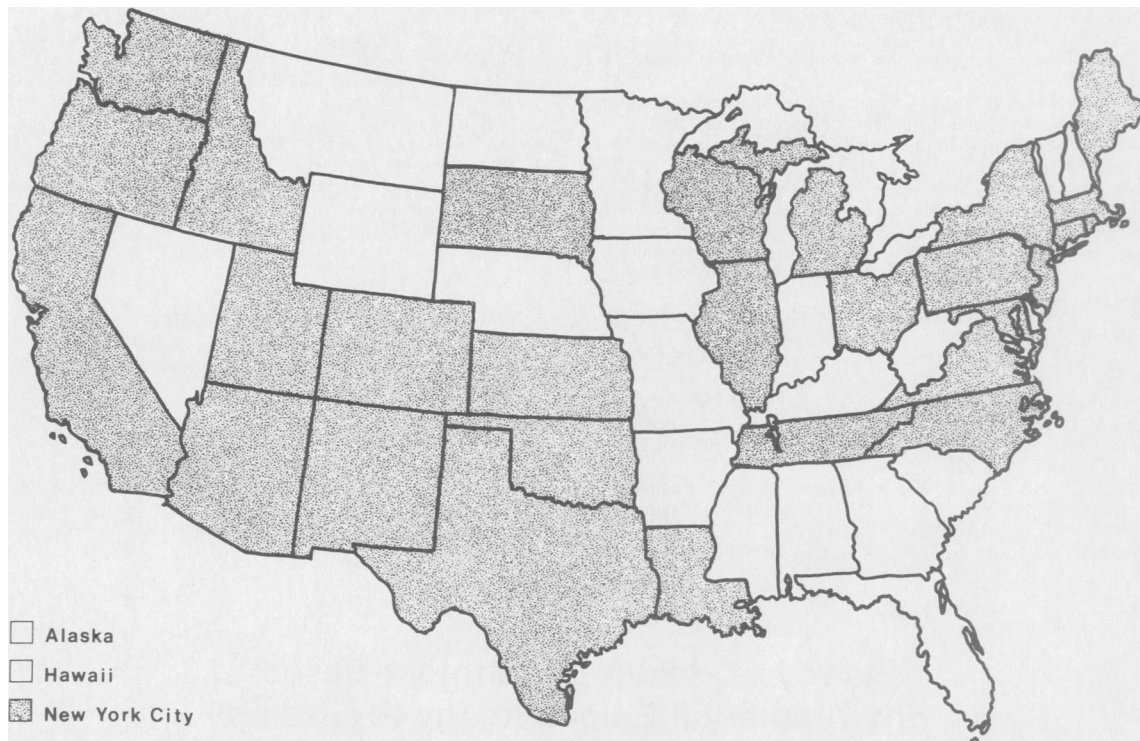


FIGURE 1—Darkened Areas Represent Health Department-Based Environmental Epidemiology Programs in 28 States and NYC, January 1983

western United States (Figure 1). Presence of an environmental epidemiology program was positively associated with state population and the number of Superfund sites ( $p < .05$ ).

Among the 29 health departments with such programs, the common areas of responsibility were: investigations of illnesses from indoor air pollution (96 per cent), exposures to toxic or hazardous substances (93 per cent), and exposures to pesticides (93 per cent) (Table 1). Over half of the programs also investigated clusters of cancer or non-communicable diseases, health effects of outdoor air pollution, adverse reproductive outcomes, radiation exposures, and occupation-related diseases. Foodborne and waterborne diseases were usually investigated by staff responsible for communicable disease epidemiology. Only one-third of the state environmental epidemiology programs dealt with consumer protection issues.

Where environmental epidemiology programs did not exist, investigations of noncommunicable diseases or chemical exposures usually were handled by communicable disease epidemiology staff. In some cases, these problems were either referred to other state agencies or assistance was provided from the federal Centers for Disease Control, the National Institute for Occupational Safety and Health, the Environmental Protection Agency or the Food and Drug Administration. In other states, independent county health departments assumed a primary role in conducting epidemiologic investigations. At least one state, West Virginia, has created a task force with representatives from several state agencies that respond to environmental emergencies. Several states, including Hawaii and Missouri, were working toward establishing environmental epidemiology programs.\*

\*Since the survey was completed, Hawaii has added an environmental epidemiologist to its program.

Current programs vary in numbers of full-time staff. Eight states have five or more full-time equivalent staff members, 13 have two to four, and eight have only one. The largest programs are in California, New Jersey, New York, and Wisconsin.

Sixteen of the state environmental epidemiology programs are directed by physicians, three by doctorate level epidemiologists, one by a veterinarian, and nine by professionals with other training. Only six programs presently employ full-time toxicologists.

#### Discussion

This survey was conducted to identify environmental epidemiology programs within state health departments and to categorize the problems receiving greatest emphasis. The data have several limitations. First was the problem of defining an environmental epidemiology program. Our definition includes all programs with one full-time staff member, even if this person has no postgraduate training in epidemiology or public health. The number of such programs contrasts sharply with the 1981 report by the Association of State and Territorial Health Officials, wherein only six state health agencies listed environmental epidemiology or environmental disease control as one of their defined programs.<sup>3</sup>

Second, the absence of a defined environmental epidemiology program did not mean that the problems listed in our definition were not investigated in those states. All state health agencies have responded to various environmental crises by conducting investigations that could be considered environmental epidemiology. In 1981, for example, 51 states and territories reported 164 environmental health programs that conducted epidemiological investigations.<sup>4</sup>

TABLE 1—State Health Department-Based Environmental Epidemiology Programs: Areas of Responsibility, January 1983 Survey

State	AIR	BLDG	CONSUM	FDB	NCD-CC	OCCUP	PEST	RAD	REPROD	TOXIC	WBD
Arizona		X			X		X	X	X	X	
California	X	X	X		X	X	X	X	X	X	
Colorado	X	X			X		X	X	X	X	
Connecticut	X	X	X	X*	X		X	X	X	X	X*
Idaho		X		X*	X	X	X	X	X	X	X*
Illinois	X	X				X	X	X	X	X	
Kansas	X	X			X	X	X	X	X	X	X
Louisiana	X	X	X	X*	X	X	X	X	X	X	X*
Maine		X					X	X	X	X	
Maryland	X	X	X	X	X	X	X	X	X	X	X
Massachusetts	X	X	X	X	X		X	X	X	X	X*
Michigan	X	X	X	X*	X	X	X	X	X	X	X*
New Jersey	X	X		X	X	X		X	X	X	
New Mexico	X	X		X	X	X	X	X	X	X	X
New York	X	X	X			X	X	X	X	X	
New York City		X	X			X	X		X	X	X
North Carolina		X			X		X	X	X	X	
Ohio		X			X		X	X	X	X	
Oklahoma		X			X		X	X	X	X	
Oregon	X	X	X	X*	X	X	X	X	X	X	X*
Pennsylvania	X	X			X		X	X	X	X	
Rhode Island		X			X		X	X	X	X	X
South Dakota				X			X	X	X	X	X
Tennessee	X	X	X	X*	X	X	X	X	X	X	X
Texas	X	X			X		X	X	X	X	
Utah	X	X		X	X	X	X	X	X	X	X
Virginia	X	X	X	X*	X	X	X	X	X	X	X*
Washington		X			X	X		X	X	X	X
Wisconsin	X	X	X		X	X	X	X	X	X	

AIR—Health effects of air pollution

BLDG—Illness from indoor pollution

CONSUM—Hazardous consumer products

FDB—Foodborne diseases

NCD-CC—Non-communicable diseases or cancer clusters

OCCUP—Occupational hazards or diseases

PEST—Human pesticide exposures

RAD—Radiation exposures

REPROD—Adverse reproductive outcomes

TOXIC—Exposures to toxic or hazardous substances

WBD—Waterborne diseases

\*If a chemical is the suspected etiologic agent.

Finally, state governments always seem to be in what might aptly be called "bureaucratic flux." Some programs identified in November 1982 were actually dissolved or reorganized when staff were contacted again in January. With respect to the geographical distribution of states with established environmental epidemiology programs, the population and Superfund site data support the notion that the states with the greatest need for investigating environmental problems, i.e., those with large populations and with defined hazardous waste problems, are more likely to have implemented environmental epidemiology programs.

The survey calls attention to a very important emerging field—that of environmental epidemiology. We hope this survey will promote interchange among health professionals working in this area. Since epidemiologists in all states are faced with many of the same environmental problems, an

interstate network for the timely exchange of information and experience could enhance each program's effectiveness.

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