

Strategies for Establishing an Environmental Health Surveillance System in California

A Report of the SB 702 Expert Working Group

In October 2001, Governor Davis signed Senate Bill 702 (Escutia), which declared the legislature's intent to establish an environmental health surveillance system. Environmental health surveillance is the systematic, ongoing collection, collation, and analysis of information related to disease and the environment. Reliable surveillance information is the most basic tool for preventing chronic diseases that are related to the environment.

SB 702 required the Division of Environmental and Occupational Disease Control of the Department of Health Services, in cooperation with the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment and the University of California, to establish a working group of technical experts to devise possible approaches to establishing such a system, including measurements needed to monitor Californians' health, a database to facilitate examination of the relationship between chronic diseases and the environment over time, and the estimated cost for each approach.

The report of the expert working group includes a description of the purpose and scope of our work, the need for and goals of environmental health tracking in California, and current knowledge about environmentally related diseases and their costs. In the report we list the diseases, environmental hazards, and exposures that should be tracked in California; describe community information needs; and describe ethical, legal, and policy

issues. We conclude the report by identifying our priority recommendations.

The Case for Environmental Health Surveillance

Environmentally related chronic diseases take a fiscal and human toll on Californians. For example, we found the costs associated with only nine such diseases, including childhood asthma, cancer, and lead poisoning, to be an estimated \$10 billion per year, or \$288 per person. Researchers are finding that some of these illnesses are on the rise. For example, from 1984 to 2003, asthma in adults and children reportedly increased 76% nationwide.

Environmental hazards include chemicals, physical agents, and biological toxins in the environment that have a negative impact on health. Exposure to environmental hazards accounts for a significant proportion of many chronic diseases, including an estimated 30% of childhood asthma exacerbations and 10% of neurodevelopmental disorders in children. More than 33 million Californians reside in areas where exposure to air pollution results in increased risk for chronic disease. The majority of Californians believe that environmental protection should be a priority for state government.

The establishment of a cost-effective environmental health surveillance system will play a key role in reducing environmentally related chronic disease.



Such a system will give the state information needed to improve existing pollution- and disease-prevention programs. An environmental health surveillance system would:

- ▶ Track environmental hazards to guide exposure-prevention efforts;
- ▶ Track disease trends to understand if they are changing over time, in residents statewide, in specific populations, or in certain geographic areas;
- ▶ Link environmental-hazard information, exposure data, and disease reports to support environmental-health research;
- ▶ Inform the development and evaluate the effectiveness of disease-prevention and environmental-protection programs and policies; and
- ▶ Facilitate public access to information on environmental-health issues.

Investment in a surveillance system that enables the state to take action to prevent environmentally related diseases will result in cost savings. An effective surveillance system that reduces only 1% of the cost of environmentally related chronic diseases would save \$100 million annually.

Major Findings and Recommendations

Detailed recommendations are found throughout the report, but the major findings and recommendations are summarized here.

Need to Coordinate Databases

There is an urgent need for a coordinating office for all California databases that track environmental health. Although several state health and environmental agencies collect data, there is no coordinating office that promotes collaboration and that integrates, analyzes, and disseminates data on environmental hazards and environmentally related diseases.

Integration, analysis, and dissemination of existing data can be performed at a fraction of the cost that the state spends on collection. Better collaboration and integration of environmental health data will create new opportunities for disease prevention. We urge the state to authorize the Department

of Health Services (DHS) and the California Environmental Protection Agency (Cal/EPA) to establish an interagency Office of Environmental Health Tracking (OEHT) to discharge these responsibilities and implement the recommendations of this report.

Data Sharing, Integration, and Communication

Environmental health data need to be shared and integrated in a standardized manner and communicated to the public in a timely way. The OEHT should have as a goal providing web-based information dissemination and visualization tools to make environmental-hazard data timely, accessible, and useful for communities, researchers, and the general public. A tracking network should actively support research, policy, and the public's right to know by facilitating access to scientifically valid and personally relevant information. Data access should be limited only to the extent necessary to protect confidentiality.

Eroding Resources for Addressing Health Concerns

California's resources to address concerns about environmental health are eroding. The State of California needs to be able to respond to environmental health threats. Public health and environmental agencies currently lack adequate staff to address health issues related to environmental exposures.

For example, the state has reduced the funding for its premier Birth Defects Monitoring Program. Cuts during the past decade have resulted in the elimination of many highly trained and experienced scientists, health educators, and data managers in all of our health and environmental agencies. Such staffing is critical for analyzing and communicating tracking data to inform public-health action. The DHS spends many times more on treating disease through its Medi-Cal program than it does on preventing disease through the state's Prevention Services.

An effective environmental health tracking system requires a strong infrastructure. State government must commit funding to implement such an infrastructure in California. Without this ability to address environmental health threats, collection of environmental health tracking data would be meaningless.

Need for More Complete Hazard Data

The state needs more complete data on chemical, biological, and physical hazards in California. Limited information regarding the use and distribution of chemical, biological, and physical hazards represents a major gap for environmental-health surveillance. For example, data on chemical use would improve the accuracy of air pollution inventories and exposure models, alert public-health authorities to emerging hazards in workplaces and communities, and help in interpreting the results of biological monitoring. Cumulative hazard data for multiple pollutants need to be available at the community level.

Industries that produce, import, or store chemical, biological, or physical agents in California should be required to develop and provide basic information to the state, including: (1) essential chemical and toxicological properties to allow evaluation of hazards and their persistence in the environment; (2) location and quantity of manufacture, use, and/or storage; and (3) laboratory methods for measuring chemical, biological, and physical agents, degradation products, and metabolites in environmental media and human samples.

Limited Ability to Monitor Exposure

There is limited monitoring of environmental concentrations of and human exposure to toxic chemicals in California. Consequently, we know very little about where chemicals concentrate in the environment and what the public is being exposed to. Because there is no statewide environmental and biological monitoring program in place, laboratory capacity for detecting and measuring exposure of concern is limited.

- ▶ State laboratory capabilities need to be enhanced to perform biological monitoring of human samples for an array of contaminants, including certain pesticides, brominated flame retardants, and mercury.
- ▶ California needs to initiate its own Health and Nutrition Examination Survey (CalHANES), modeled after the national NHANES surveys. A CalHANES survey would provide data on a range of health indicators and environmental exposures among a representative sample of the state's population.

- ▶ The state should also conduct a California Human Exposure Assessment Survey (Cal-HEXAS), modeled after the NHEXAS surveys. This survey would also be used to identify exposures in the indoor environment, where many pollutants gather and concentrate.

New and Augmented Surveillance Systems

Surveillance systems need to be developed for priority environmentally related diseases, and existing systems require adequate resources. Among environmentally related diseases, priority tracking systems are either being developed or need to be developed for asthma, childhood neurodevelopmental disorders, and neurodegenerative disorders (such as Alzheimer's and Parkinson's disease).

For some diseases, innovative approaches such as tracking medication use may be a cost-effective approach to system development. The state should partner with health-care providers to support the development of cost-effective surveillance systems that take advantage of routinely collected information.

The California Cancer Registry should add and institute a rapid case-ascertainment capability. In addition, the Birth Defects Monitoring Program should be expanded to serve the entire state. The state also needs to invest resources in improving systems to collect and effectively utilize occupational illness data, because in many cases occupational groups are the most highly exposed and are likely to include the most easily identified cases of environmentally related disease.

Providing Information to Communities

Health-tracking can provide helpful information to communities that have concerns about local environmental exposures or suspected disease clusters. The Department of Health Services should establish a uniform set of guidelines for state and county health authorities on how to respond to community environmental-health concerns and when and how to further investigate suspected disease clusters. Tracking data can also be used for investigating suspected disease clusters. Timely communication of relevant health and environmental information is needed when suspected disease clusters emerge.



Disparities in Hazards and Diseases

Environmental hazards are disproportionately distributed by racial and ethnic groups as well as income. The proposed Office of Environmental Health Tracking should report hazard, exposure, and health-outcome data by race, ethnicity, and income so that issues of environmental justice can be monitored. The distribution of environmentally related diseases continually needs to be monitored by public-health authorities in order to inform public policies that will decrease the incidence of such diseases.

Providing Technical Assistance to Communities

The state needs to make an intensive, long-term, and consistent commitment to community outreach and education to address issues related to environmental justice. Communities and community groups need information, training, and other technical assistance to build their capacity to access and understand surveillance and exposure data so they can participate meaningfully in public-health policymaking and decisions affecting their communities. California needs to allocate more resources to fund health education staff qualified to address such issues, especially in relation to concerns about chronic-disease clusters.

The legislature and executive branch should establish and adequately fund an effective environmental health surveillance system to improve environmental quality and protect public health in California. This will require a strong commitment as well as partnerships among the public and private sectors, academia, and communities. The establishment of this ambitious and innovative system will place California in a position of national and international leadership in public environmental health.

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