SOME COMPONENTS OF ENVIRONMENTAL HEALTH AND PROTECTION SYSTEMS
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Turning Point New Mexico
Environmental Health Task Group
By
Larry Gordon, Professor, University of New Mexico

A system is a regularly interacting or interdependent group of activities constituting a unified whole.

Neither New Mexico nor our nation have an environmental health and protection system, but have multiple systems that do not effectively interact or form a unified whole.

I always suggest thinking in terms of “environmental health and protection” rather than environmental health or environmental protection. The separate terms are utilized to denote programs based on organizational settings rather than definable differences in programs. Environmental health and protection is a basic component of the field of public health regardless of the titles of agencies involved. See attachment # 1.

DEFINING OUR DISCUSSIONS

We may all think we know public health is, but we have widely varying definitions of public health. If we can’t agree on the nature of public health, we should not be surprised that the public and our political leaders do not adequately support public health. Few definitions of public health adequately embrace environmental health and protection. Public health has become a cause in search of an identity due to:

- The unfortunate confusion with health care and the oozing of emphasis from public health to health care,
- A paucity of public health vision and leadership, and
- Lack of clear definition and marketing. See attachment # 2.

Public health is the art and science of preventing disease and disability, prolonging life, promoting the efficiency and health of populations, and insuring a healthful environment through organized community effort.

It is important to understand that health care is not public health and public health is not health care.

Health care is the diagnosis, treatment and/or rehabilitation of a patient under care and is practiced on a one-on-one basis.

Environmental health and protection is the art and science of protecting against environmental factors that may adversely impact human health or the ecological balances essential to long term human health and environmental quality. Such factors include, but are not limited to, air, food and water contaminants: radiation; toxic chemicals; wastes; disease vectors; safety hazards; and habitat alterations.

I will first discuss agencies and programs as two basic components of our environmental health and protection systems.

HISTORICAL OVERVIEW IN NEW MEXICO

We “stand on the shoulders” of the multitude of individuals and agencies that enhanced public health through achieving environmental health and protection goals in earlier years.

In 1916, Dr. Charles Chapin wrote that: It is unfortunate that a state which now numbers nearly half a million should do nothing for public health. It is the only state of which this can be said.
The New Mexico State Health Department was established in 1919. Clinton P. Anderson (later to become U.S. Representative, U.S. Secretary of Agriculture, and U.S. Senator) was one of the leaders of the New Mexico Public Health Association (now the American Lung Association of New Mexico) and became its first director in 1919. Anderson had commenced working for the Albuquerque Herald in 1918. Anderson described powerful New Mexico Senator George Kaseman as a “stumbling block.” Kaseman often criticized the health department’s “lavish spending.” Kaseman took particular exception to the purchase of a portable chlorinating unit and indicated that things of this nature should not be purchased until needed. By a strange quirk of fate, the next outbreak of typhoid fever occurred in Madrid in the mining camp of Senator Kaseman. After the chlorinating unit had achieved its purpose, Kaseman was most penitent, never wanted the unit to leave Madrid, and became a powerful ally of public health.

Newspapers were not particularly supportive of efforts to develop a state health department. One suggested that a state health commissioner would be enough, another suggested that since a public health nurse would be essential, only a nurse would be needed. And another believed that since the health commissioner would have knowledge of sanitation, there would be no need for a sanitary engineer. Others believed that the $2,000 salary for a bacteriologist and the cost of a laboratory could be saved, as there was a bacteriologist in Albuquerque who could provide all the examinations necessary for no more than $250 per year!

The second meeting of the Board of Health in 1919 saw the authorization of the Division of Sanitary Engineering, the direct line predecessor to the New Mexico Environment Department. In 1920, the Public Health Laboratory was authorized, and regulations governing water supply, sewage disposal, food sanitation, and the prohibition of common drinking cups and towels in public places were adopted.

During those days, milk supplies were abominable, filthy and infected with tuberculosis, brucellosis, and mastitis. Milk was not pasteurized. Water supplies were the cause of typhoid and dysentery. There was no treatment of unsafe water supplies. Sewage was untreated, discharged into streams or arroyos, and used for irrigating vegetables. Three-fourths of the population used outdoor privies, and only 10% were fly proof. Malaria was common in many areas. Garbage was strewn around homes, alleys, and in open spaces. House flies bred in garbage, sewage, and animal wastes. Food sanitation was non-existent.

In 1949, the U.S. Public Health Service reported that the New Mexico death rate from diarrhea and enteritis was nearly seven times that of the United States, and that the death rates from typhoid and paratyphoid were twice the national average.

The pioneering public health personnel continued making major inroads on all such problems. Dr. Wilson Smillie wrote that, "The last state to form a Board of Health was New Mexico. It began late, but within a short time it has one of the best state health departments in the nation."

Albuquerque Mayor Clyde Tingley appointed one city milk inspector in the early 1940s. Other functions such as food sanitation and meat inspection were soon added. By 1955, the title of the department had evolved from city milk inspector, through city sanitary inspector and city sanitation department to the Albuquerque Health Department.

I accepted a $225 per month entrance grade position in Silver City with the New Mexico Department of Public Health in 1950, was promoted to the Santa Fe office, and transferred to the Albuquerque Health Department in 1955. We developed programs of food protection, pure food control, milk sanitation, meat inspection, industrial hygiene, swimming pool safety and sanitation, housing conservation and rehabilitation, environmental health planning, liquid waste disposal, water supply protection, subdivision control, air pollution control, radiation protection, and low-rent leased public housing. We developed the urban renewal program and accepted the Animal Control and Solid Waste Management Divisions. We gained enactment of the New Mexico Municipal Health Act that specifies the powers and duties of local health departments. We gained approval of a Joint Powers Agreement between the state Board of Finance, the state Board of Health, and the city and county commissions to create the nation’s first local environmental health department --- the Albuquerque-Bernalillo County Environmental Health
Department. We were the prime movers for gaining enactment of the New Mexico Air Pollution and Water Quality Acts.

In 1967, I transferred back to Santa Fe as Director of the Environmental Services Division where we quickly developed the state’s first air and water standards and gained enactment of the Occupational Safety and Health Act. In 1971, I developed the bill to create the New Mexico Environmental Improvement Agency, that is now the New Mexico Environment Department — the direct line successor of the 1919 State Sanitary Engineer.

About 1971, the Bernalillo County Commission canceled the Joint Powers Agreement and created the Bernalillo County Environmental Health Department.

In 1973, I gained legislative authorization and construction funding for the Scientific Laboratory System. The Scientific Laboratory remains a “first”, and is unique in the nation. In 1976, I worked with the Governor Apodaca’s staff and the legislature to create the Health and Environment Department. HED was split into the Environment Department and the Health Department following my retirement.

A LITTLE FEDERAL HISTORY

Until 1971, most federal environmental health and protection responsibilities were lodged within the U.S. Public Health Service, although the Interior Department, the Atomic Energy Commission, the Agriculture Department also had major responsibilities. President Nixon’s Council on Executive Reorganization conducted hearings regarding the need for and scope of a federal environmental health and protection agency. Representing the American Public Health Association, I testified recommending the need, scope and mission of the EPA.

WHY ORGANIZATIONAL DIVERSIFICATION?

Public health services delivery systems have evolved from travelling on a single track to travelling on multiple tracks, these being personal public health and environmental health and protection. Reasons include:

- The perception that health departments and the U.S. Public Health Service were not being effective agencies for environmental health and protection,
- The public and political demand for greater emphasis on environmental health and protection,
- The increasing societal importance of environmental health and protection,
- The unfortunate oozing of health department emphasis toward health care and away from public health, including environmental health,
- The effectiveness of environmental advocacy groups,
- Health department failure to emphasize regulatory methods,
- Health department discomfort in addressing ecological issues,
- The increasing complexity of environmental issues, and
- Environmental health and protection is now widely considered to be an entitlement.

At the state levels, environmental health and protection expenditures and numbers of personnel account for approximately half of the entire field of public health. Environmental health and protection is the largest single component of the field of public health. Some 90 to 95% of state level environmental health and protection activities are now assigned to agencies other than state health departments, and there appears to be a similar trend at the local level.

Program examples include: See attachment # 3.

Federal environmental health and protection agencies include: See attachments #s 4 & 5.

State environmental health and protection agencies include: See attachment # 6.
Local environmental health and protection agencies include: See attachment # 7.

SOME SYSTEM SUPPORT ELEMENTS

I have briefly described some of the major agencies and programs as components of our environmental health and protection systems. But programs require numerous support elements, including:

EPIDEMIOLOGY --- THE MOTHER SCIENCE OF PUBLIC HEALTH

Early day environmental health and protection practice was geared to communicable disease problems. Now, environmental health and protection also embraces the impacts of various types and combinations of non-living contaminants and other stresses. Such impacts are more subtle and long range in their effects. There is greater difficulty in measuring the effects as well as in isolating and understanding the cause.

Few environmental health and protection agencies have epidemiology expertise, and many of them rely on epidemiological services from health departments. Every environmental health and protection agency should have in-house epidemiology expertise.

Be wary of accepting problems in the absence of good epidemiology. Otherwise, we might conclude that CARROTS WILL KILL YOU! After all,

- Nearly all sick people have eaten carrots. Obviously the effects are cumulative.
- An estimated 99.9% of all people who die from cancer have eaten carrots.
- 99.9% of people involved in auto accidents ate carrots within 30 days prior to the accident.
- Some 93.1% of juvenile delinquents come from homes where carrots are served frequently.
- Among people born in 1878 and later ingested carrots, there has been 100% mortality.
- All carrot eaters born between 1910 and 1940 have wrinkled skin, have lost most of their teeth, and have brittle bones and failing eyesight if the toxic effects of carrots have not already caused their deaths.

The science of epidemiology attempts to sort out from myriad chance correlations those meaningful ones that might involve cause and effect.

RISK ASSESSMENT

Considering the serious difference in opinions between scientists and political leaders, risk assessment should be understood and practiced by all interests involved in protecting the health of the public and the quality of the environment.

We do not live in a risk free society or environment. The pursuit of zero-risk is frequently unattainable and creates unfounded public concern when zero-risk is not attained. Nothing is risk free, but many things are safe enough.

Those interested in environmental health and protection should:

- Place a high value on the role of scientific excellence in developing public policy, and recognize the use or misuse of science in efforts to justify a position or alarm the public.
- Recognize that if all the alleged catastrophes were scientifically factual, we would have many times our actual morbidity and mortality rates.
- Question reports based on an anecdotal example, such as one cancer case near a hazardous waste site that capitalizes on an appeal to the emotions.
- Question proposed and existing standards to determine scientific validity. Standards tend to be magical and take on lives of their own. A standard in motion tends to remain in motion unless impeded by an opposite force.
- Remember that people tend to over-estimate risk from rare but dramatic events, and under-estimate common events such as unintentional injuries and the slow homicide and slow suicide cause by tobacco.
- Remember that people disdain changing preconceived notions about risks, and are quick to dismiss evidence as erroneous if the information contradicts their preconceived opinions.
• Understand that people seem to exhibit a love for calamity. Some extremists are applauded and profit from false predictions of environmental calamity. Those promoting such hysteria accept no responsibility for their false predictions.
• Define problems and attendant risk before proposing solutions, and fit solutions to problems rather than problems to solutions.

LABORATORY SUPPORT
High quality laboratory support is essential to environmental health and protection functions. Laboratory support has been termed “The Silent Partner.” New Mexico is fortunate in having one of the better, more comprehensive laboratory systems in the nation.

THE WORKFORCE
Effective programs depend on the quality of the workforce. However, less than 5% of environmental health and protection practitioners have been adequately educated in basic environmental health sciences and in program methodologies. Schools of public health, once the incubators for environmental health and protection leaders, have gravitated toward health care and research, and away from educating environmental health and protection practitioners. While accredited environmental health and protection academic programs outside schools of public health concentrate on educating practitioners, there are no such programs in New Mexico.

Formal education was once considered to be a vaccine that would prevent ignorance and ineffectiveness later in one’s career. However, such formal education is inadequate by itself, and does not provide all the knowledge and skills for effective careers. Continuing education, or “re-treading”, should be relevant, and strongly supported by management.

See attachment # 8.

DATA AND SURVEILLANCE
Programs must have adequate data and surveillance systems in addition to epidemiology and risk assessment. GIS is an excellent example. Practitioners must be computer literate and have current technology. Surveillance systems are essential, but typically inadequate.

RISK COMMUNICATION
Many environmental health and protection practitioners do not demonstrate risk communication skills. This is among the reasons environmental health and protection priorities and policies frequently differ from those recommended by scientists. In the absence of effective risk communication, sound risk assessment is merely an academic exercise. Many practitioners confuse public information with the art of risk communication.

Risk communication is an art requiring openness throughout planning and decision processes. Failure to communicate risk and develop scientifically valid priorities and policies are linked to the failure to educate and involve the public, and openly discuss the data, assumptions, and alternatives on which risk has been assessed.

PUBLIC INFORMATION
Environmental health is the public’s business, and will not be understood or supported in the absence of comprehensive and continuing public information and educational activities practiced by all practitioners, not solely by a public information officer. Citizens and political leaders must be part of the solution and understand the importance of the environment to quality of life and economic wellbeing.

BUILDING BRIDGES
See attachment # 9.
Effective environmental health and protection depends on building and constantly travelling communication bridges connecting a wide variety of groups and agencies involved in the struggle for a quality environment and enhanced public health. These include land use, energy production, transportation, resource development, the medical community, public works, agriculture, conservation, engineering, architecture, education, product design and development interests, economic development, chambers of
commerce, advocacy groups, trade and industry groups, the media and elected officials. And the bridges must be institutionalized rather than being left to chance and changing personalities. Environmental health and protection requires a community commitment.

PRIORITIES
Surveys have indicated that most public health professionals believe that funds for reduction of environmental health and protection risk are improperly targeted. A Roper poll indicated that the public considered hazardous waste sites to be the most significant environmental issue. But EPA's Science Advisory Board lists ambient air pollution, worker exposure to chemicals, indoor air pollution and water pollutants as the major risks to human health. While not EPA programs, food protection, childhood lead poisoning and unintentional injuries must be added to EPA's list by any reasonable public health priority ranking. It is vital that priorities be established for each jurisdiction.

THE FUTURE
The environmental health and protection systems in New Mexico have an enviable record of achievement. In New Mexico, as at the federal level and in 46 other states, personal public health and environmental health and protection systems are travelling on multiple tracks with inadequate systems support and coordination. "Equals cannot coordinate equals!" Therefore, lasting systems improvements are not attained in the absence of the support and direction of elected officials. While we may think we are doing something when we talk with each other, we must recognize that major public policy changes depend on the art of politics.

AND, A FINAL THOUGHT, P.S.
While the media, public health personnel and others wax effervescent about plague, hantavirus, AIDs, hazardous and radioactive wastes, and scores of other concerns, some 50 Americans die each hour from slow suicide or slow homicide as a result of the slow, insidious, debilitating, irreversible toxic and ultimately lethal effects of a legal drug called tobacco.
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CHALLENGE: ORGANIZATIONAL AND PROGRAMMATIC DIVERSITY

PROGRAM EXAMPLES:

- AMBIENT AIR QUALITY
- WATER POLLUTION CONTROL
- SAFE DRINKING WATER
- INDOOR AIR POLLUTION
- NOISE POLLUTION CONTROL
- RADIATION PROTECTION
- SANITATION OF EATING AND DRINKING ESTABLISHMENTS
- SANITATION OF FOOD PROCESSING ESTABLISHMENTS
- OCCUPATIONAL HEALTH AND SAFETY
- THERMAL POLLUTION
- CHILDHOOD LEAD POISONING
- ACID DEPOSITION
- MEAT INSPECTION
- DISASTER PLANNING AND RESPONSE
- CROSS-CONNECTION ELIMINATION
- SHELLFISH SANITATION
- INSTITUTIONAL ENVIRONMENTAL CONTROL
- PURE FOOD CONTROL
- HOUSING CONDITIONS
- RECREATIONAL AREA ENVIRONMENTAL CONTROL
- POULTRY INSPECTION
- SOLID WASTE MANAGEMENT
- HAZARDOUS WASTE MANAGEMENT
- VECTOR CONTROL
- PESTICIDE CONTROL
- ON-SITE LIQUID WASTE DISPOSAL
- LAND USE
- MILK SANITATION
- TOXIC CHEMICAL CONTROL
- UNINTENTIONAL INJURY PREVENTION, AND

GLOBAL ENVIRONMENTAL ISSUES SUCH AS ECOLOGICAL DYSFUNCTION, HABITAT DESTRUCTION, POSSIBLE GLOBAL WARMING, POSSIBLE STRATOSPHERIC OZONE DEPLETION, PLANETARY TOXIFICATION, DESERTIFICATION, DEFORESTATION, NON-RENEWABLE RESOURCE CONSUMPTION, AND OVER-POPULATION.
Federal Environmental Health and Protection Agencies

- Environmental Protection Agency
- Department of Labor
- U.S. Public Health Service
  - National Institute of Environmental Health Sciences
  - National Center for Environmental Health
  - Food and Drug Administration
  - Indian Health Service
  - Agency for Toxic Substances and Disease Registry
  - National Institute for Occupational Safety and Health
- Coast Guard
Federal Environmental Health and Protection Agencies (cont.)

- Geological Survey

- National Oceanographic and Atmospheric Administration

- Nuclear Regulatory Commission

- Corps of Engineers

- Department of Transportation

- Department of Agriculture

- Department of Housing and Urban Development
State Level Environmental Health and Protection Agencies

- Health departments
- EPAs
- Ecology departments
- Conservation departments
- Environmental quality departments
- Natural resources departments
- Pollution control departments
- Agriculture departments
- Labor departments
Local Level Environmental Health and Protection Agencies

- Health
- Environmental health
- Planning
- Public works
- Building and inspection
- Solid waste management
- Housing
- Councils of government
- Special purpose districts
- Regional authorities
WORKFORCE COMPETENCIES

- Knowledge of the relevant environmental health and protection sciences such as epidemiology, etiology of diseases, biology, chemistry, physics, geology, ecology, and toxicology.
- Environmental health and protection technical issues, such as air, food, water, wastes, radiation, etc.
- Risk assessment, risk communication, and risk management.
- Marketing techniques.
- Personnel and program management.
- The political process, including public policy development and implementation.
- Environmental health and protection planning.
- Financial planning and management.
- Fiscal impacts of environmental health and protection problems and programs.
- Environmental health and protection law.
- Federal, state, and local environmental organizations.
- Program planning, prioritization, and evaluation.
- Definition and philosophy of environmental health and protection.