

**ENVIRONMENTAL HEALTH PERSONNEL AND PROGRAM PRIORITIES
FOR THE EIGHTIES**

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For an official of operating agencies, a state bureaucrat, to talk about environmental health personnel and program priorities before such a distinguished group is obviously ridiculous. I do not propose to compete with your wealth of knowledge, but perhaps comments from a program official may be of some interest. I have been fortunate to have some limited contact with schools of public health and other graduate public health programs as a member of the Council on Education for Public Health, as a member of the Environmental Health Accreditation Council, and as a sometimes member of ad hoc funding committees for the Health Resources Administration.

Students of environmental health have been given special recognition and opportunities by the government and various private foundations. Much has been given to environmental health programs in terms of financial support, responsibility, challenging careers, and public recognition. I feel that much is expected in terms of training and developing qualified professionals to be effective in preventing and solving environmental health problems.

Every speaker has a different statement of purpose for graduate environmental health programs, so this leaves me free to offer my own. The purpose is to educate graduate students with a working knowledge of the principles and practices of environmental health to the end that such graduates will be effective in solving environmental health problems.

Certainly there are many forces at work which are making change and it is equally true that public health curriculum has always been "becoming different" since the origins of formal education in public health in the United States. It is generally agreed that formal graduate public health education began sometime in the early 1900s, with designation of

schools of public health in the 1920s. These early schools emphasized control of the serious communicable diseases of that era and catered to the then public health giants -- the health officers and engineers. From these early starts, other emphases such as epidemiology, vital statistics, environmental health, and public health administration developed.

The schools have changed, and changed significantly to meet changing problems, priorities, and to effectively utilize the latest techniques and knowledge. All have not changed at the same rate or in the same patterns, but some continuing change is obvious in all of them.

Changes have been created by changing environmental health problems, changing societal values and expectations, changing environmental health priorities, and the emergence and development of a vast array of environmental health programs, organizations, and institutions. The changes have been created through internal academic decisions, recommendations from students and graduates, evaluation of the roles and needs of graduates, pressures from employers, gentle guidance from funding sources, accreditation mechanisms, and recommendations from other organizations such as the Milbank Memorial Fund Commission for the Study of Higher Education for Public Health.

I have no doubt that students and graduates are more knowledgeable and mature than ever before. Students are demanding educational relevancy to a greater extent than in the past, and this pressure continues to have some effect on educational curriculum.

It is obvious to everyone that the complexity of the total environmental health delivery system is increasing, resulting in needs and demands for different types of personnel. Greater recognition has also been given to the premise that improved managerial skills will improve the effectiveness of the environmental health delivery system.

Creative grantsmanship has resulted in the development of new, or at least re-titled, programs which are sometimes difficult to identify separately from pre-existing or concurrent program tracks. Many schools have broadened their definitions and perspectives of the environment from the traditional environmental health perspective to a more encompassing ecological viewpoint, and this has

also resulted in changes in curriculum.

The changes in health problems which have been accompanied by changes in curriculum include the decreases in communicable diseases as major causes of death; the aging of our population with associated increase in a multitude of chronic diseases; changing life-styles relating to exercise, obesity, smoking and nutrition with their implications for public health; and increased recognition of the relationship between environmental pollutants and stresses in terms of cancer, heart disease, and genetic effects. The increasing realization that the best answer to public health problems lies in prevention has, and will continue to have, an effect on environmental health curriculum.

I became interested in issues of environmental health manpower within the first few weeks after I joined the New Mexico Department of Public Health in 1950. At that time, I knew nothing of the lore and tradition of public health and its various fiefdoms so I was probably much more objective than I am now. At any rate, I was astounded to learn at that early stage in my career that one with my background in biological sciences and chemistry could not aspire to hold the top level job in environmental or the top job in public health in the Department in which I was employed. By tradition and textbooks, only a sanitary engineer could hold the top job in environmental health, and only a physician could fill the top job in public health.

Three years later I was privileged to be selected to attend a school of public health to absorb the mystique of public health and earn another Masters degree. The school of public health bulletin described several different programs, and I still remember the description of two of them. For a person with a background in biological sciences and chemistry, the MPH graduate would be qualified to be the chief of a section or bureau within a division of environmental health. A person with a background in engineering would be qualified to be a director of the division of environmental health. And a further oddity was that both of these groups of personnel took identical courses at the school of public health.

Well, there has been lots of water under the bridge since that time, and one-by-one many of these ridiculous traditions have been ended and the poorly conceived fiefdoms shattered.

Before talking about the types of environmental health person-power that will be required in the future, I should set the stage for my discussions by defining environmental health programs. Environmental health programs are rational groupings of activities designed to protect and promote health, comfort, safety, and well-being by managing the environment. Within this definition, environmental health programs include, but are not limited to, air pollution control, water pollution control, safe drinking water, hazardous waste management, solid waste management, occupational health and safety, institutional environmental health, radiation protection, recreational environmental health, swimming pool sanitation and safety, housing conservation and rehabilitation, noise pollution control, food protection, and insect and rodent control. Environmental health person power requirements include not only those working in and managing such programs, but also those academicians producing such person-power and those research scientists developing the necessary health data. The spectrum of such person-power ranges from inspectional level sub-baccalaureate personnel doing routine inspection and sampling through the baccalaureate, masters, and doctoral levels required for the more complex aspects of policy, management, research, and education. Types of person-power required will include those having major emphasis in biology, chemistry, physics, environmental health engineering, health physics, industrial hygiene, geology, hydrology, geo-hydrology, entomology, microbiology, virology, radiation, chemistry, epidemiology, medicine, law, economics, toxicology, and planning. Such diverse groups are not only desirable, but essential when one understands the scope, the magnitude, and the importance of environmental quality to this and future generations. .

Earlier, I referred to the ridiculous strangle hold that engineering personnel once had on environmental programs. Now, in one state, registered sanitarians have the same type of control and have written the requirement for registered sanitarians into many of the major environmental health statutes and ordinances so that this group of personnel not only controls all the programs, but requires an engineer to be a registered sanitarian to effectively practice in the field of environmental health. Not only is such a practice ridiculous, but it tends narrow the scope of environmental health within health agencies and create fragmentation of environmental health programs to a number of other agencies, special districts, and departments, resulting in overlapping, duplication, confusion, and

generally disenfranchising the public of its right to comprehensive, coordinated environmental health programs.

The goal of environmental health programs is also worth considering when setting the stage for discussions relating to environmental health person-power needs. The goal should be to ensure an environment that will confer optimal health, safety, comfort and well-being on this and future generations. Historically and traditionally, environmental health personnel have been intent on considering only the health aspects of air pollution, the health aspects of water pollution, the health aspects of hazardous wastes, and the health aspects of the occupational environment. This has led to a further fragmentation of environmental health programs and has frequently resulted in the creation of special districts and/or single purpose agencies designed to deal with specific issues such as air pollution control, mosquito abatement, or solid wastes in a comprehensive fashion. As an example, my own department is the only "health agency" in the nation administering a federally approved occupational health and safety program. Most are handled by a labor department or some similar creature of a legislature.

Most graduate environmental health programs do a fair to excellent job of training environmental health personnel in the technical intricacies of environmental health. Graduates can spout facts about parts per million, half-lives, time-temperature relationships, BOD, etc. However, few such programs do even a reasonable job of training graduates in the application of such knowledge in terms of political process, management, supervision, organizational behavior, public relations, inter-personal relations, and the planning process.

When considering environmental health person-power needs, it is well to keep in mind that such personnel are now needed and utilized not only by agencies having health goals, but by industry, voluntary agencies, and such diverse governmental agencies as Interior, Agriculture, Transportation, Urban Renewal, the Nuclear Regulatory Commission, planning agencies, DOE, and Natural Resource Departments.

We need to know much more about the specific types of person-power needed. To this end, individual positions from the executive level through the management level, supervisory level and technical level, as well as those positions involved in research and education, must be better studied so that we can ensure the proper type of education,

training, and experience for specific positions. At this time, I am convinced that many individuals in environmental health are using no more than 5 percent of their capabilities in terms of their educational background. In other words, we are grossly misusing personnel, and such personnel are frequently highly educated doctoral level individuals.

Registration acts still pose a dilemma and are still being pursued by individual professional groups who are frequently more interested in protecting their turf than in serving the public. Registration acts may be a disservice to the public by legally limiting the field of practice to groups not educationally attuned to the tasks at hand in the first place.

Despite the scores of professionals needed to insure effectiveness in the programmatic research and educational components of comprehensive environmental health, two basic health sciences are essential to all environmental health professionals unless they are to be strictly technicians. Epidemiology and biostatistics are, in my mind, these two sciences. Any educational program that purports to train graduate level environmental health personnel must ensure a working knowledge of epidemiology and biostatistics in addition to any other needs.

I believe it is unrealistic to assume that all graduate environmental health person-power will come from formal graduate environmental health programs. They will continue to come from such programs, but will also continue to come with education in the various sciences such as chemistry, biology, geology, physics, and from engineering. We should do a much better job of add-on training for such individuals in the various aspects of environmental health as well as in biostatistics and epidemiology.

There is also a serious shortage of adequate graduate level training to re-tread those of us whose formal education ended 10, 20, or 30 years ago and are no longer technically current. Few graduate programs appropriately educate environmental health personnel in the basic environmental health issues: the issues that underlie and create our pollution and health problems; the priority issues which must be understood and managed if we are ever to realize our goal of "an environment that will confer optimal health and safety on this and future generations." The issues I refer to are over-population, renewable energy resources, and land-use. And even these will not be solved without ameliorating problems of ignorance and poverty throughout the World.

There continues to be a gap between town and gown. While some environmental health educational programs and operating programs have excellent, continuing communication, many still operate in comparative vacuums. The best interests of both town and gown as well as the entire public are served when town and gown work together through organized mechanisms instead of leaving such communication to chance and personalities.

There has been a discernible enlargement of emphasis in many educational programs to properly include the currently important issues of toxic chemicals, hazardous wastes, and ionizing radiation. Those few still operating primarily in the microbiological era are producing narrowly oriented sanitation personnel who will have difficulty producing and competing. These institutions are out-of-step as seriously as the engineering schools that emphasize only water and waste-water while purporting to educate environmental health engineers.

I wish to quote from a 1974 letter I wrote Bill Hickey when he chaired the APHA Section on Environment:

"During the height of the interest in environmental issues during this 'decade of the environment,' the APHA Section on Environment has been noticeably lacking in positive policy statements regarding major environmental issues such as energy, population, transportation, land-use, etc. We are still waiting for someone to do something for us. Regrettably, we APHA'ers have really abdicated our traditional leadership role regarding environmental issues and other organizations have been ready and eager to take up the reins of leadership. Perhaps I can illustrate this point best by recalling an amusing incident that I observed at one of the APHA sessions last Fall. The morning had been filled with learned discussions involving issues of land-use, pollution, environmental quality, population, and consumption of resources. At the end of the session came the time for audience questions and discussions. After a lengthy silence, a young man asked if mayonnaise should be refrigerated after it was opened."

Enough said!

The career heights to which professional environmental health personnel may aspire are as great as the individual's capabilities and desires. While it was once assumed there was

a career ceiling over professionals in environmental health, time and experience have proven that individual capabilities equal those in other professions. There is a solid record of achievement in government, academia, industry, professional organizations and community service: There are directors of health, directors of environmental health agencies, professors, deans, industry and association executives, and various other managerial and executive capacities listed within the ranks of environmental health personnel. Environmental quality is an important goal in our society and protecting human health is an essential part of that goal. Capable environmental health personnel are necessary in achieving the goal, and as a profession, we need not take a back seat to any other group. Any question of capabilities comes from negative attitudes, rather than from the lack of expertise or the need for same. Environmental health personnel should realize their value and continue to aspire and achieve, and be proud of their part in providing a quality environment.

Appropriately trained personnel will not ensure resolution of all environmental health problems, but resolution will be impossible without them.