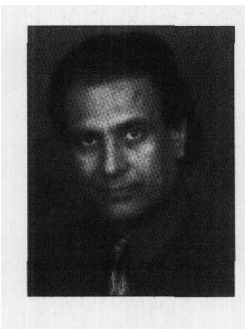


Learning from Experience

Leo F. Parvis, Ph.D., R.S., C.P.F.M.I.



Dr. Leo F. Parvis researched environmental health science as a graduate student in the Mediterranean region for three years in the late 1980s. In 1998, he received a Ph.D. in public health from Walden University in Minneapolis, Minnesota. Dr. Parvis has spent many years working in both the public and the private sectors on issues related to environmental health and education research. Currently, he is writing a book for parents—and professionals who work with parents—about protecting children from environmental health problems. He will be contributing material for the "Learning from Experience" column in every other issue of the Journal. Questions and/or comments for Dr. Parvis can be sent to <DrParvis@mn.rr.com>.

The Significance of Geography in Environmental Health, or What Can Geography Do for the Environmental Health Profession?

New Era in Geography

For many years, people believed that it was enough for geography to identify the names, places, and features of natural treasures such as mountains, rivers, lakes, and forests. Now we are in an era of technological advances where the knowledge of geography and the contributions of computer technology together can provide benefits to humankind not only in health and environment-related systems, but also in many other branches of knowledge.

Today's geography has evolved into environmental health and epidemiology. Before proceeding, it would be appropriate to briefly define geography. In a classical sense, the word geography may be defined in terms of its constituent terms: "Geo" and "graphy." "Geo" refers to the earth, and "graphy" indicates a process of writing on a subject, so the word literally means studying the Earth. In other words, geography indicates a human relationship with the land. Basically, geographers deal with spatial relationships in their writings, and the key to interpreting these spatial relationships is the map. Maps represent a geographic portrait of spatial relationships and phenomena, whether in a small segment of the Earth or across the entire globe. In my school days, when I was majoring in social science, my main focus was on

géographie l'environnement, a discipline whose main theme was serving the environment through applied geography. Since then, the field of geography has become instrumental in several social science disciplines.

The Sciences of Geography and Environmental Health

Reflecting on my experience in environmental health since the early 1980s reminds me that an environmental health professional can benefit from geography in a number of ways. Almost every aspect of environmental health has a close association with geographic knowledge. Geography not only is one of the social science disciplines, it also embraces multiple tracks and interrelates with them. In other words, if you place geography in the center of a circle and surround it with socioeconomic systems (such as politics, economics, demography, ethnology, anthropology, archeology, city planning and transportation, landscape ecology, and general sciences such as biology, ecology, marine biology, agriculture, meteorology, geology, oceanography, environmental studies, natural resources, and toxicology), you will notice that all of the orbiting systems relate to geography in one way or another. To support this argument and no doubt increase knowledge, I urge my fellow environmental health profes-

sionals to take some leisure time to browse through two remarkable sources of information: *Environmental Science: Systems and Solutions*, by Michael L. McKinney and Robert M. Schoch (Jones and Bartlett Publishers, <www.jbpub.com/envirnet>, 1998), and the fifth edition of *Environmental Science: A Global Concern*, by William P. Cunningham and Barbara W. Saigo (McGraw-Hill, 1999).

Environmental health professionals use geographic techniques in their daily duties. From waste management to energy resources to water and air quality, geography is present. I remember that in early 1990, state and county officials were becoming interested in learning about geographic information systems (GIS). Introductory GIS sessions were presented to directors of environmental health to promote this knowledge nationwide. Today, a decade later, GIS has become well known nationwide and has assisted many health departments around the country.

GIS is the most prominent contribution of geography to environmental health and other health related fields. What is GIS? Previously, we reviewed the definition of geography. Now let's find out what the phrase "information system" means. In a general sense, an information system is a

continued on page 57

New Wastewater Resources on CD-ROM

For more than 20 years, the National Small Flows Clearinghouse (NSFC) has been helping America's small communities deal with their wastewater issues. To allow greater access to its vast collection of materials, NSFC is providing its most useful information on a CD-ROM titled *Wastewater Resources for Small Communities*.

The CD-ROM will be of use to anyone who works with or has an interest in small-community wastewater issues, including professional engineers and operators, government agencies, local officials, researchers, and homeowners. A wealth of helpful information is at the user's fingertips, including

- statistics on the status of septic systems in the United States, detailed by state;
- a series of septic-system brochures in English and Spanish;
- general and technical versions of fact sheets about 13 different technologies for treating and disposing of wastewater;
- educational materials that include the poster *Onsite Wastewater*

Treatment for Small Communities and Rural Areas, describing 23 different wastewater treatment technologies;

- more than 300 articles from NSFC's publications since 1989, including information from the *Small Flows* newsletter, the *Small Flows Quarterly* magazine, and the *Pipeline* newsletter;
- the complete text of U.S. EPA's *Response to Congress on Decentralized Wastewater Treatment Systems*, which analyzes the costs and benefits of decentralized wastewater treatment alternatives and U.S. EPA's plans for implementing the alternatives; and
- the 2000–2001 *Wastewater Products Catalog*, which provides a complete listing of the 434 free and low-cost products NSFC offers.

The cost is \$14.95 plus shipping. To order, call NSFC at (800) 624-8301 or (304) 293-4191, or send an e-mail to <nscf_orders@mail.nesc.wvu.edu>. Request Item #WWCD-GN162.

Learning From Experience

continued from page 42

discipline whose primary function is to improve our ability to make decisions. It is a chain of operations that takes us from planning, observation, and the collection of data to storage and analysis of data. Now it is easier to define GIS: The term "geographic information system" is talking about an information system designed to work with data referenced by spatial or geographic coordinates. It has become popular in recent years simply because the technological advances of cyberspace make it unique, multifaceted, and key to exploring our world.

GIS offers a significant contribution to public health in the areas of epidemiology and general environmental health studies. Environmental health professionals should put more emphasis on studying the link between the environment and health. And, in this regard, GIS can be very beneficial. For example, ecological studies, or geographic co-relational studies, use information about exposure and disease classified according to geographic units such as a census tract, city, or county. Development of a GIS for environmental health has been an interesting subject in many health agencies nationwide because it relates demographic, environmental, and health-outcome data spatially. It uses several software packages for address matching, mapping, data management, and statistical analysis. Thus, GIS provides environmental health

professionals with a new tool for viewing and analyzing perplexing data. Most environmental divisions within the public-health realm use GIS in their daily routines. In cancer studies, GIS has made a great contribution. Many environmental health issues—such as those involving radon, electromagnetic fields, and some chemical agents, for instance—are related to cancer these days.

GIS technology is being used to address many aspects of health care planning, marketing, and delivery. It has played an extremely important role in resource management activities. In the 21st century, information technology is the password to progress—not only in the health care system, but also in business and in most other aspects of human life.

How to Increase Our Geographic Knowledge?

Environmental health professionals are not the only ones who can benefit from their geographic knowledge; the general public also will enjoy benefits, especially if members of the profession acquire the following skills and apply them in our daily activities on behalf of the public:

- know how to read maps (especially topographic maps) properly;
- know how to use a compass effectively;
- know about soil topography;
- know about weather hazards and land instability;

- know about aquatic resources in our area;
- know about hydrologic and atmospheric cycles, climate, and weather;
- know about the fundamentals of energy, fossil fuels, and hydroelectric power;
- know about physical limitations in our environment—these include a vast number of constraints such as water supply, space availability, or soil and light in the case of plants;
- know more about the use of pesticides and fertilizers in our communities;
- know about preservation and conservation;
- know the food pyramid well;
- get acquainted with PC and GIS desktop applications;
- know about cultural diversity in our communities and its geographic distributions;
- know about urban geography and locational analysis for health-related research; and
- know about global warming so that we can take preventive measures.

In short, geography is a vast body of knowledge, and the list of geographic-education subjects that can enhance our profession goes on and on. It is quite apparent that geography has a close relationship with environmental health science and that environmental health professionals with geographic knowledge can more fully serve the public.