



EPH LI

ENVIRONMENTAL PUBLIC HEALTH LEADERSHIP INSTITUTE

ENVIRONMENTAL HEALTH SCAN EXERCISE

CHALLENGES, OPPORTUNITIES, PRIORITIES

COHORT IV 2008-2009

February 2009

ABSTRACT

Environmental public health leaders, especially in times of budget reductions and limited resources, must be able to quickly recognize emerging issues and decide how to divide limited resources among competing priorities. The environmental health scanning and decision making processes described in the report are simple to implement and can be routinely employed by leaders to assist them in the identification and prioritization of issues. The group decision making activities used in this process may also assist in the development of critical partnerships and the support needed to develop and implement interventions. This activity can also be used to facilitate community involvement in the decision making process.

The process described in this report can be used by environmental health professionals to identify emerging issues and gather information needed to establish priorities. The process consists of four activities; 1) inform and educate, 2) discuss and listen, 3) list issues, 4) select priorities.

The first two activities, inform/educate and listen/learn are the most important aspects of the process. A comprehensive environmental scan is first used to inform participants of emerging issues and the significance of these issues. Large and small group discussion methods are then used to review and summarize available information and to increase each participant's understanding of the issues. With this increased understanding of challenges and opportunities, participants are better able to develop a list of important and relevant issues and opportunities. In this exercise several methods are used by informed participants to select, score, and rank issues.

INTRODUCTION

The environmental public health system continues to be challenged by new mandates and emerging issues. Resources are limited and often have not kept pace with the increase in demand for new and existing services. Environmental public health issues are being amplified and in some cases inadvertently created by political, policy, social, economic, technological, institutional, and cultural changes. Complex and substantial problems often described as global, national, or regional issues have become real problems for local environmental health service providers. Recent examples include public health and safety issues related to the large number of foreclosed and abandoned homes in all regions of the United States and a serious draw down of ground water resources in the Midwest due to an increase in the production of corn necessary to meet the demand for ethanol. Foods imported because of lower production costs have been implicated in food borne outbreaks; land use decisions and rapid community development have caused traffic related air quality issues and degraded the quality of surface and ground water resources. Climate change may be associated with drought and dwindling supplies of safe drinking water, increases in vector activity, and extended and more severe heat waves. Environmental public health organizations are expected to react and respond to these and many other emerging issues.

Can environmental public health leaders prepare their organizations for emerging issues? The answer is yes, and being able to identify emerging issues allows environmental public health organizations to become less reactive and more proactive. The identification of potential issues is the first necessary step to becoming a more proactive organization.

Emerging issues can be identified by developing and using an occasional or continuous scanning process. A scan gathers information that will help a leader answer this question: What is happening in my environment that may affect my future and the future of this program and organization? Information gathered by scanning is used to inform higher-level decision-makers about emerging issues and possible future conditions. This information allows environmental public health leaders to prepare for challenges and to take advantage of possible opportunities.

The scanning process gathers information from government documents, reports, studies, congressional testimony, proposed legislation, journal articles, newspapers and magazines, online sources, newsletters, conferences, personal and professional contacts, experts, universities and non-governmental organizations, and other relevant sources. Collected information is organized and analyzed to assess importance and to determine possible impacts on the organization and the practice of environmental public health.

Emergent issues of importance to environmental public health can be grouped into two broad categories. Issues in the first group are those that are generally recognized as environmental health issues in need of an environmental health solution or response. Included in this group are emerging issues and existing issues that have recently become or will become the responsibility of environmental public health. Environmental public health is the lead agency and has primary responsibility for addressing issues in this group. The response is usually reactive. As an example, the review of trade magazines and business newspapers during a routine scan finds a local company to be the first in the state to use nanotechnology in the manufacturing process. The environmental public health agency reacts by requesting oversight authority, additional staff and the hiring of staff with unique expertise, adopts new monitoring technology and techniques, and consults with experts on oversight procedures.

Issues in the second group are those that have not yet become environmental public health issues. These issues can be related to the economy, social and cultural conditions, changing lifestyles and demographics, new and changing technology, and new policies. These issues may not be recognized as public health or environmental public health issues. Another government agency may have oversight and primary responsibility or the issue may not yet have been recognized or addressed by any responsible party. If not abated, issues in this group can present a threat to public health and require an environmental public health intervention.

The response of the environmental public health agency to issues in this group is anticipatory and proactive. If appropriate action is taken, the impact on public health can be prevented or reduced. Environmental public health may be part of the problem solving team but the intervention is usually developed and implemented by other agencies. The growing number of foreclosed and abandoned homes and buildings caused by current economic conditions is an issue that would belong in this category. The inadequate management of foreclosed and abandoned homes and buildings may allow vector-related health issues to develop. The proactive response of the environmental public health agency is to inform the responsible governmental agency of the potential public health issue and to assist in the development of suitable closure and property maintenance guidelines. In this example, an agency other than environmental public health may have authority and responsibility for foreclosed and abandoned homes and initiates the intervention.

Scanning efforts gather information on both types of issues and trends. Environmental public health issues that have emerged or are about to emerge are not difficult to identify. These issues are related to the day-to-day work of environmental public health: food, air quality, water, wastewater, vectors, waste management, resource recovery, and others.

Environmental public health has the authority and responsibility to react to these issues and trends.

A scan also looks for economic, social, political, and technological trends. Understanding these trends allows an environmental public health leader to anticipate and plan for emerging issues. Collecting and understanding this information allows an organization to become more proactive in the development of a preventative response.

Scanning collects information from partners and shares information with partners. This process helps to build and strengthen partnerships that are critical to understanding issues and developing solutions. The ability to collect information and to use it to prioritize and target limited resources on the most critical issues is becoming increasingly important. A simple procedure for the prioritization of issues identified by a scanning process and the benefits experienced by the participants using it are described in this report.

PURPOSE OF EXERCISE

Environmental public health scanning and prioritization exercises are a part of the Environmental Public Health Leadership Institute (EPHLI) curriculum. The Environmental Public Health Leadership Institute is a one-year program designed to strengthen the leadership skills of current environmental public health professionals. Information about the program can be found at: <http://www.heartlandcenters.slu.edu:16080/ephli/index.html>

The exercise described here introduced EPHLI participants to a four-step issues identification and prioritization process. The process used in this exercise allows participants to consider the impact of global, national, regional, and local issues on health, the environment, and also the environmental public health service delivery system. This process gathers and synthesizes information needed to identify and understand emerging issues and leads to the development of relevant priorities.

Forty-eight members of the 2008-2009 Environmental Public Health Leadership Institute (Cohort IV) participated in the exercise. The list of participants is available at: <http://www.heartlandcenters.slu.edu:16080/ephli/index.html>

METHODS

The issues identification and prioritization process used in this exercise consists of four steps. The four steps are: 1) the collection and review of information from a variety of sources; 2) organizing, understanding and sharing this information

with other process participants; 3) developing a list of important issues; and 4) selection of priorities.

The four-step process is described below.

Step 1. Collection and review of information

A scan was conducted for issues and trends currently impacting or having the potential to impact health and/or the environment. The information gathering process began with a literature search of peer-reviewed articles. The time frame of the literature search was 1990 to 2008. Articles with the key words listed below in the title or abstract were reviewed for inclusion in the reading list.

- emerging environmental issues
- water, food, air, wastewater, vector, waste management issues
- environmental scan, trends
- future issues, environmental forecasting
- environmental and public health indicators
- global environmental issues
- climate change and health
- environmental issues and new technology
- pesticides and chemicals in the environment
- children's health and environment
- energy, transportation, global trade and environment
- environmental pollutants, contaminants
- international environmental and public health concerns

Informative articles were reviewed and selected by experienced environmental health specialists. The selected articles were placed on a reading list or sent in electronic format to EPHLI participants for review. Participants were also made aware of recently published and historically important books addressing public health and environmental issues.

The peer-reviewed articles and books were used to guide the second phase of the information gather process. The scan was expanded to include government documents, reports and studies, congressional testimony, proposed legislation and pending environmental or public health rules. The websites of federal and state environmental and health agencies were scanned for emerging issues. Major newspapers, popular magazines, EPHLI reports, and non-governmental organization and university websites were scanned for environmental public health issues. Informative links, reports, and articles identified in phase two of the information gathering effort were shared with EPHLI participants. The suggested reading list and material collected by the scan can be reviewed at:

<http://www.heartlandcenters.slu.edu:16080/ephli/index.html>

The last phase of the information gathering process requested that each EPHLI participant come to the environmental scan segment of the next EPHLI session prepared to describe an issue they are currently working on or may need to address in the future.

Step 2. Understand and share information

To prepare for the environmental scan exercise, participants were asked to review the distributed information and suggested readings, and scan relevant websites. Because of the volume of information available, participants were divided into groups of three or four individuals. Each small group reviewed and discussed a set of key articles and reported the major points to the larger group at the environmental scan session. Each participant also quickly summarized their issue of concern.

Step 3. List important issues

The comprehensive scan and the review of important materials by participants facilitated informed and vital discussions at the environmental scan session. Using this information and their understanding of current and emerging issues, this group of experienced environmental health professionals developed a list of 92 environmental health issues. The 92 issues were categorized into nine issue groups. The nine issue groups are:

1. water issues
2. wastewater issues
3. food issues
4. air quality issues
5. vector-related disease issues
6. emergency preparedness and response issues
7. materials management issues
8. environmental health workforce issues
9. community development issues

Step 4. Select priorities

Following the development of the issues list and the organization of issues into nine categories, participants assigned themselves to one of the nine issue groups. Individuals assigned themselves to an issues group based on work experience, knowledge, or interest in a topic. These small groups reviewed the content of each topical group and added or combined issues. This effort reduced the issues list to 85.

The time frame ranking method was used to begin the prioritization process. Each of the small groups ordered their topical issues by urgency and importance.

This was accomplished by writing each issue on a single note card and placing each issue randomly on a table. Group members discussed the issues and used a *Now or Later Table* to rank the urgency/importance of each issue. Each *Now or Later Table* was labeled as shown on Tables 1 through 9 of this report without the column headings of 1 through 5 or the row headings of A through F. The column and row headings were added to the tables in the data analysis phase of the process to help order and rank issues. The groups were instructed to place each issue on the *Now or Later Table* in order of urgency/importance. Those issues placed near the top left corner (Now – Now quadrant) are considered urgent priorities. Those issues placed towards the lower right corner of the Table (Later-Later quadrant) are less urgent and are considered lower priority issues.

Following the ranking of issues by time frame, each group was asked to select two high-priority issues from their *Now or Later Table*. Each issue (a total of 18) was written on a poster size paper. These 18 issue statement sheets were separated and placed in different areas of the meeting rooms. This was done to allow small group discussion and interaction as participants scored each issue. Each participant of the environmental scan session was asked to review each of the 18 issue statements and place two scores on each issue sheet.

The first score is the probability (0 to 1.0) that this issue will affect human health. Participants were asked to estimate the likelihood of this issue causing disease, disability, reducing the quality of life, or shortening the length of life of residents of the United States.

The second score is an estimate of the proportion (0 to 100%) of the United States population that could be affected by this issue. United States regional population estimates (2007) of Northeast = 18%, Midwest = 22%, South = 37%, and West = 23% were provided to assist in estimating the proportion of population affected. These two scores were recorded and organized for analysis.

Probability and population means were calculated for each of the 18 issues using SPSS Version 15 statistical analysis software. The case summary and SPSS frequency output reports are available at:

<http://www.heartlandcenters.slu.edu:16080/ephli/index.html>

The probability and population means are presented on Table 10 of the Results section of this report. The mean probability value and the mean population value were multiplied together to calculate a rank score for each issue. For example, the probability mean for water infrastructure is .77079 and the population mean is 73.55. The total score for water infrastructure is 56.691 ($.77079 \times 73.55 = 56.691$). Issues are listed in rank order by score on Table 10.

RESULTS

The 85 issues listed by topical group are provided on Time Frame Ranking Tables 1 through 9. Issues selected for scoring by topical group are listed below.

1. Water
 - a. crumbling infrastructure
 - b. fewer sources of safe drinking water and difficult to protect
2. Wastewater
 - a. funding of illicit discharge elimination program
 - b. shift to wastewater reduction and management vs. treatment
3. Food
 - a. standards, policies, programs to test and monitor imported foods
 - b. increasing safety and security threats to U.S. food supply
4. Air Quality
 - a. indoor air quality and mold
 - b. impact of environmental changes on air quality not understood
5. Vectors
 - a. arboviral disease and climate change
 - b. re-emerging zoonotic diseases
6. Emergency Preparedness and Response
 - a. funding and support
 - b. role and responsibilities of environmental health not well defined
7. Material Management
 - a. mandate material management
 - b. resource recovery to reduce energy demand and to produce energy
8. Environmental Health Workforce
 - a. workforce is retiring
 - b. profession not marketed or attractive
9. Community Development
 - a. land use and urban infill
 - b. educate disciplines and agencies involved in community design

Table 1. Time frame ranking of water issues



Now or Later	Now  Later					
		1	2	3	4	5
Now  Later	A	crumbling infrastructure	increasing number of contaminants	new analytical methods / technology	new & improved treatment technologies	interpretation & development of regulations
	B	safe water sources	watershed protection	adequacy of ocean water for drinking	water rights	
	C	water system security	water re-use			
	D					
	E					
	F					

Table 2. Time frame ranking of wastewater issues

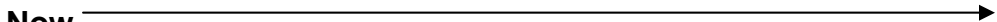

Now or Later	Now  Later					
		1	2	3	4	5
Now  Later	A	funding illicit discharge elimination programs	alternative treatment systems	wastewater reuse		
	B	evaluation & maintenance of onsite systems	shift to management vs. treatment	usage permit evaluation program		
	C	consistent standards for large community systems		sound treatment technologies		
	D					
	E					
	F					

Table 3. Time frame ranking of food issues

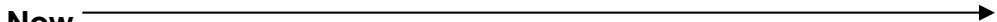

Now or Later	Now  Later					
		1	2	3	4	5
Now  Later	A	standards/ policies for testing imported foods	follow FDA model code and standards	assess burden of illness/ data analysis & risk assessment	prion disease	
	B	increased food safety / security threats	monitor risk in large scale animal production			
	C	identify emerging food issues (hormones, others)	improve food jurisdiction partnerships			
	D	genetically modified organisms				
	E					
	F					

Table 4. Time frame ranking of air quality issues

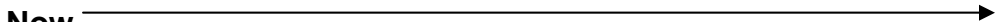

Now or Later	Now  Later					
		1	2	3	4	5
Now  Later	A	mold	asthma indoor / outdoor	household chemical use and respiratory health	increase in farming near populated areas - allergens	
	B	time spent indoors	tight buildings and materials	impact of environmental changes on air quality not understood		
	C	ethanol unregulated air emissions	drier climate = increase in environmental dust	airborne industrial pollutants (mercury)		
	D	lack of indoor air specialists	confined animal feeding operations / large farming operations			
	E					
	F					

Table 5. Time frame ranking of vector-related disease issues

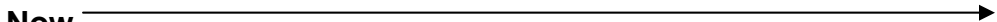

Now or Later	Now  Later					
		1	2	3	4	5
Now  Later	A	arboviral diseases / climate change	abandoned housing issues		re-emerging zoonotic diseases	
	B	integrated pest management	animal control			
	C	pesticide exposure and residuals				
	D					
	E					
	F					

Table 6. Time frame ranking of emergency preparedness and response issues



Now or Later	Now  Later					
		1	2	3	4	5
Now  Later	A	funding	staff knowledge & education	staff training		
	B	define role & responsibility of EH	lack of written useable plan	staff willingness to respond		
	C	raise awareness of EH role	EH input on new legislation	capacity to respond		
	D	inter-agency buy-in of EH role				
	E	citizen self-sufficiency				
	F					

Table 7. Time frame ranking of materials management issues

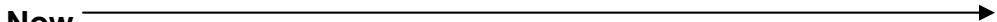

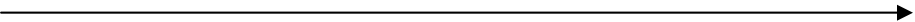

Now or Later	Now  Later					
		1	2	3	4	5
Now  Later	A	reduce, recycle, reuse	resource recovery and energy			
	B	stakeholder education on material management	use of CAFO effluent to eliminate run- off			
	C	mandate materials management				
	D	landfill management pre/post RCRA				
	E	societal behavior change				
	F					

Table 8. Time frame ranking of environmental health workforce issues

Now or Later	Now  Later					
		1	2	3	4	5
Now  Later	A	low pay & compensation	retiring workforce	lack of succession planning		
	B	no marketing of profession	no active recruiting programs	lack of strategic planning		
	C	cross-training/ ongoing mentoring for new hires	no career ladder or retention efforts	losing institutional knowledge		
	D	no career identity	national professional registration	little awareness of competencies, 10 essential services, etc.		
	E					
	F					

