

Protocol for Assessing Community Excellence in Environmental Health



A GUIDEBOOK FOR LOCAL HEALTH OFFICIALS



MAY 2000

FOREWORD

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The *Protocol for Assessing Community Excellence in Environmental Health (PACE EH)* guides local public health officials and communities through a process to explore the broad physical and social environments that impact health and safety. The assessment process engages communities in a series of tasks to investigate the relationships among what they value, how their local environment impacts their health, and what actions are necessary to live safer and healthier lives.

Environmental health extends beyond technical solutions and includes human rights and equity as well. A thoughtful implementation of a *PACE EH* assessment process truly promotes community collaboration for all.

NCEH/ATSDR is committed to fostering leadership in local health practitioners and the community members who are engaged in protecting the environment and promoting health and safety where they live, work, and play. We continue to support the use of *PACE EH* throughout the nation to develop this leadership and hope to continue identifying new and innovative solutions for building healthy communities.



NOTE: This is a new foreword for the 2008 printing of the NACCHO's *Protocol for Assessing Community Excellence in Environmental Health (PACE EH) Guidebook*



TABLE OF CONTENTS

Foreword	ii
Acknowledgements	vi
Executive Summary	ix
Preface	xi
Part I: Overview of <i>PACE EH</i>	1
Part II: Philosophy	6
Part III: Methodology.....	11
Task 1: Determine community capacity	13
Task 2: Define and characterize the community	16
Task 3: Assemble a community-based environmental health assessment team	18
Task 4: Define the goals, objectives, and scope of the assessment.....	22
Task 5: Generate a list of community-specific environmental health issues	24
Task 6: Analyze the issues with a systems framework.....	28
Task 7: Develop locally appropriate indicators	38
Task 8: Select standards against which local status can be compared	41
Task 9: Create issue profiles	42
Task 10: Rank the issues.....	50
Task 11: Set priorities for action.....	56
Task 12: Develop an action plan.....	60
Task 13: Evaluate progress and plan for the future	64
Part IV: Conclusion.....	66
Glossary	67
References Cited and Related Publications	69
Sample Survey Tool	71





FOREWORD

**Stephanie B.C. Bailey, MD, President,
and Thomas L. Milne, Executive Director,
NACCHO**



Local public health agencies focus on improving the health status of their local communities. Increasingly, these agencies are coming to realize that their work is much more effective when done in collaboration with organizations and individuals in their communities. In most cases, such collaborations begin with increasing collective understanding of resources, health determinants, and information descriptive of health status through a community assessment.

The philosophy and methodology offered in *PACE EH* incorporates the notion that environmental health (one of the foundations of public health) is protected and improved most effectively when it is defined, understood, and acted upon locally. This is a theme that very much represents the future direction of local public health practice. It is also a specific strategy in NACCHO's strategic plan. *PACE EH* joins several NACCHO efforts to promote local collaboration in improving and protecting health. Included among those efforts are:

- ▶ The Mobilizing for Action through Planning and Partnerships (MAPP) process, which assists local public health agencies in creating a community public health system and which dovetails with *PACE EH*;
- ▶ The Turning Point Initiative, where the emphasis is to prepare local public health systems and practice for the next century;
- ▶ The Partnership Project, which will provide tools to assist local public health agencies and their

partners in determining the appropriate balance of population focused and individual directed services for their communities;

- ▶ The Brownfields and Superfund programs, providing for community involvement in identifying and improving areas damaged by industrial pollution.

The core functions of public health as described in *The Future of Public Health* (Institute of Medicine, 1988), provide a foundation for *PACE EH*. Further, *PACE EH* can be used to operationalize the Essential Public Health Services, developed by The Public Health Functions Steering Committee (in *Public Health in America*, 1994), which are defined as the visible activities through which the public health sector carries out its basic responsibilities.

NACCHO is striving to be the national voice of local public health. We are working for increased public awareness of and support for local public health agency activities, use of a broader definition of health in identifying prevention strategies, and an informed and effective grassroots network to advocate for local public health. NACCHO recognizes that achieving these goals requires an approach that recognizes community members as collaborators rather than clients. *PACE EH* is one more tool that incorporates this core idea.

NACCHO is pleased to offer you the opportunity to utilize *PACE EH*. We are excited about this new tool for a variety of reasons. First, *PACE EH* has already proven to be a great success with users and without doubt will contribute significantly to improvements in the nation's environmental health status. Second, *PACE EH* embodies many of the philosophical principles that will light the way for local public health practice into the 21st century. Above all, we think you will find it to be a most valuable tool to help you with your current practice needs.

**Richard J. Jackson, MD, MPH, Director
National Center for Environment Health
Centers for Disease Control and Prevention**

People cannot be healthy if they do not live in a healthful environment. We at the National Center for Environment Health (NCEH), Centers for Disease Control and Prevention (CDC), believe that the public health of a community is dependent upon the healthfulness of that community's environment. Although we all want to reduce the adverse effects of an unhealthful environment, we recognize that public health is political in nature and that effective public health action should be community-based and begin at the local level. Communities must control the process of providing and maintaining a healthful environment for their people and address such issues as sanitation, safe drinking water, and prevention of lead poisoning among young children.

The Protocol for Assessing Community Excellence in Environmental Health (PACE EH) provides methods for local communities to become aware of, carefully consider, and improve their environmental health. *PACE EH* is based on the premise that environmental health is the foundation of public health. It is a guide and a planning tool to help

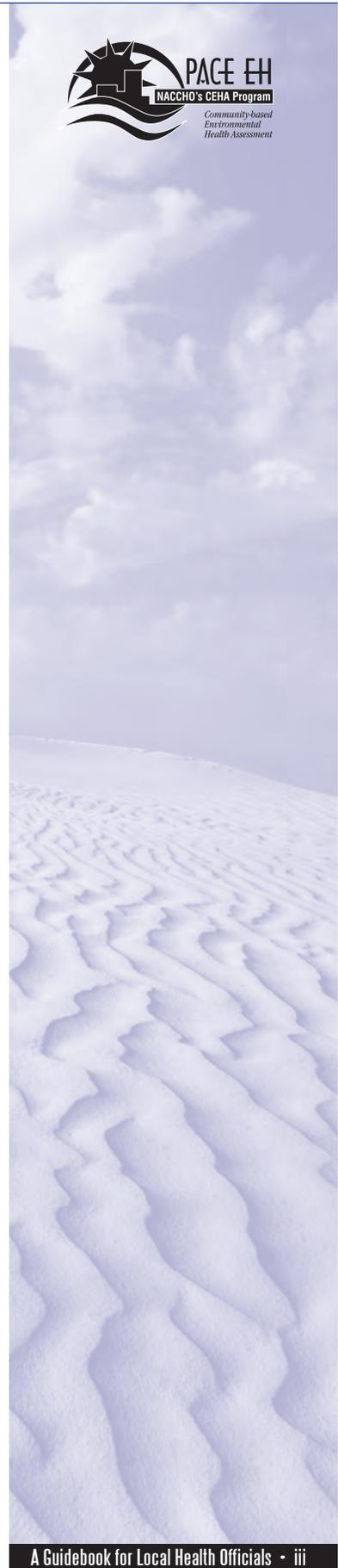
local health agencies identify and deal with local environmental health issues. The protocol clearly describes tasks that communities can use to identify local environmental issues and then to set priorities. It calls for communities to determine and define this need for action and long-term prevention and to act prudently and at the will of the community when action is necessary.

We at NCEH are proud to sponsor the development and distribution of *PACE EH*. We look forward to its success in encouraging, empowering, and enabling communities to develop new leadership capabilities, forge extensive community-based coalitions, and conduct community-based environmental health assessments.

**Jeffrey P. Koplan, MD, MPH, Director
Centers for Disease Control and Prevention**

As the Nation's prevention agency, the mission of the Centers for Disease Control and Prevention (CDC) is to promote health and quality of life by preventing and controlling disease, injury and disability. CDC is committed to preventing illness, disability, and death that result from interactions between people and their environment during all stages of their lives. To address environmental health issues and to help achieve these goals, CDC works with state and local health departments and national organizations such as the National Association of County and City Health Officials (NACCHO).

The Protocol for Assessing Community Excellence in Environmental Health (PACE EH), developed by NACCHO, is a valuable tool for assisting communities in their performance of environmental health assessments by providing a process for understanding environmental health concerns, facilitating





communication among local partners, and guiding the creation and implementation of a plan of action that approaches environmental health issues from the community's viewpoint. *PACE EH* also promotes improved environmental health data collection and provides tools to help community leaders and members develop locally relevant data sources.

Publication of *PACE EH* is very timely because, according to the PEW Environmental Health Commission, during the last 20 years scientists have noticed a sharp increase in the number of illnesses and deaths that may be linked to pollution and other environmental factors, and communities are realizing that they must work together to improve their environment. *PACE EH* will facilitate the efficient and effective use of limited time and resources within and among these communities.

Each local health department offers a unique perspective in recognizing and prioritizing health problems related to environmental exposures; but, through coordinated communication and collaborative efforts, CDC and local health departments can work together to improve the environmental health of our communities. The members of the NACCHO Community Environmental Health Assessment Steering Committee and Work Group and CDC's National Center for Environmental Health are to be commended for their vision and exemplary efforts in providing local health agencies with *PACE EH* to achieve our common goal of better health for all.

David Satcher, MD, PhD Assistant Secretary for Health Surgeon General

The twentieth century has marked several environmental health achievements of which we, as a nation, can be proud. Recently, President Clinton announced another clean air initiative at the Clean Car Event in Washington, DC, at Maury Elementary School in Washington, DC, which he called "one of the boldest steps in a generation to clean the air we breathe by improving the cars we drive." The new rule means cleaner, healthier air for everyone as 50 million tons of smog-causing air pollution will be removed from the air over the next few decades.

Monitoring our environment—whether it's for exposure to toxins and chemicals, such as lead, carbon monoxide, or pesticides, or whether it's for exposure to waste and other hazards—brings enormous health benefits. It's also an important component of a balanced community health system. One of my priorities as Surgeon General is to move this nation toward such a system that ensures access to quality care, while balancing health promotion and disease prevention with early detection, treatment, and follow-up care. As a nation, we spend more than \$1.3 trillion per year on health care. Less than three percent of that amount is spent on population-based prevention. The quality of our health care is, at best, uneven.

Balance is crucial to this effort. A balanced approach to an environmentally healthy community will require community partnerships for the community diagnosis and management of environmentally related diseases and implementation of community-based strategies to address these problems. Such an approach will focus on prevention of environmentally related diseases by engaging communities to take on

environmental health and safety issues as a priority, to develop unique opportunities for programs and partners, and to stimulate innovation while requiring limited staff and budget resources. The primary goal is to improve the well-being of the community by assuring a healthy and safe environment, free from exposure to physical, chemical, biological or psychosocial threats, contaminants, and safety hazards.

But it does not end there. Our system must be supported by the best available science, based on a balanced research agenda and new partnerships. It would feature ongoing research into environmental factors that facilitate disease emergence and ensure greater cohesion between public health and medicine.

Community is also key—we must work closely together with the entire community. To be successful, that system must be grounded at the community level, and it must call on the serious involvement of civic and other local groups, community schools, and faith-based organizations. And of course, health care providers.

This guidebook, designed for use by local health agencies in facilitating a community-based environmental health assessment, will provide a tool to empower the community to act on community public health issues by not only facilitating successful community-based environmental health assessment but also developing leadership capabilities and community-based coalitions. The U.S. Public Health Service has a strong partnership with the National Association of County and City Health Officials (NACCHO), which developed this guidebook to assist local public health agencies in better serving their communities. *Protocol for Assessing Community Excellence in Environmental Health (PACE EH)* will develop broad community-based environmental health

programs, which will enhance the activities and leadership of local agencies by integrating community collaboration into the assessment of the environmental health of the community.

Beyond that, *PACE EH* complements our efforts on the federal level to develop national public health objectives in *Healthy People 2010*. This document has a greatly expanded chapter on environmental health, which will include objectives on such issues as harmful air pollutants, indoor allergens, school indoor air quality, environmental health education in schools, and health professional training.

I believe *PACE EH* will move us forward, but it requires our willingness to work together. We must become more adept at establishing new and innovative partnerships. Despite all of our ambitious initiatives, we are abundantly clear on one thing: the government cannot do it alone. Fortunately, we can learn from and draw on some of the very fine models that exist already.

I commend NACCHO and you for your community-level efforts geared toward health promotion and disease prevention. I am convinced that your involvement at the community level, and the involvement of people like you, will help us build a solid foundation on which we can create healthier communities and strengthen our health care system in the twenty-first century.





ACKNOWLEDGMENTS

Development of *PACE EH* began in July 1995 as a multi-year partnership between the National Association of County and City Health Officials (NACCHO) and the National Center for Environmental Health (NCEH) of the Centers for Disease Control and Prevention (CDC). An 18-member Steering Committee, made up of representatives from federal agencies, academia, and research institutions, as well as local environmental health professionals and community organizers, provided overall direction and oversight. Subsequently, a Work Group of local public health and environmental health officials with interest and experience in assessment issues was convened to write this guidebook. Ten local health departments served as demonstration sites in a field test of the guidebook. This document could not have been finalized without the willingness of pilot-site coordinators to embrace the philosophical intent of *PACE EH* and to provide detailed feedback to NACCHO about their experiences and findings. Based on the test results, the Work Group completed the final version of the document in January 2000.



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In addition to the formal structures identified in the sidebars, the authors of this document relied on the contributions of many individuals and organizations in preparing this book for publication. In particular, we wish to express our gratitude to the following:

- ▶ Nancy Rawding, Art Schletty, and Heidi Klein for the original vision that inspired this undertaking;
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- ▶ NACCHO staff to the project including Carol Brown, Cheryl Connelly, Jennifer Li, Katherine McKalip, Beth Resnick and Jonathan Schwartz; and
- ▶ The *PACE EH* pilot site coordinators' supervisors, and their assessment team members, for undertaking the process in their communities with seemingly endless enthusiasm and intellectual creativity.



EXECUTIVE SUMMARY



The Protocol for Assessing Community Excellence in Environmental Health (PACE EH) offers local health officials guidance in conducting a community-based environmental health assessment and creating an accurate and verifiable profile of the community's environmental health status. The process is designed to improve decision making by taking a collaborative community-based approach to generating an action plan that is based on a set of priorities that reflect both an accurate assessment of local environmental health status and an understanding of public values and priorities.

The methodology takes the user through a series of tasks to engage the public, collect necessary and relevant information related to community environmental health concerns, rank issues, and set local priorities for action. At the heart are three core processes: developing new relationships with community stakeholders, expanding understanding about the relationship between human health and the state of the environment, and redefining a leadership role for public health officials in environmental health.

The methodology entails the steps outlined below to answer the necessary questions in determining community priorities for action:

Task 1: Determine Community Capacity to Undertake the Assessment

Do we have the necessary capacity to undertake a community environmental health assessment?

Do we have the necessary relationships with others in the community to engage in a community-based collaborative project?

Task 2: Define and Characterize the Community

What do we know about the community and its political, social, economic, and cultural systems?

Who from that community needs to be engaged in this project?

Task 3: Assemble Community Environmental Health Assessment Team

Who will participate in the team?

How will the project be governed? Who will make decisions?

Task 4: Define the Goals of the Assessment

What is the scope (geographic as well as topical) of the project?

What are the expected outcomes and decisions as a result of completing the project?

Task 5: Generate the Environmental Health Issue List

What issues does the public health team care about?

Why does the public care about these issues?



Task 6: Analyze Issues with a Systems Framework

What are the links among health status, populations at risk, environmental agent, exposure/health risk and public health protection factors for selected environmental health issues?

Task 7: Develop Appropriate Community Environmental Health Indicators

What do we need to know/track about the issue?
What are the key indicators that describe the issue?

Task 8: Select Standards

How will we evaluate our environmental health status?

Task 9: Create Environmental Health Issue Profiles

What is the nature and extent of the problem in our community?

Task 10: Rank the Environmental Health Issues

What are the biggest/most serious problems in our community?

Task 11: Set Priorities for Action

What are our priorities for local action?

Task 12: Develop an Action Plan

What can we do to address our priorities?

Task 13: Evaluate Progress and Plan for the Future

Have we been successful?
What else do we need to do?

While the methodology is laid out sequentially, it is meant to be flexible. In reality, this is an iterative and fluid process that can be taken in as many different directions as there are communities. While every community must chart its own course, *PACE EH* provides a starting point and some guidance on the primary tasks in a community-based environmental health assessment.

Presented through a mix of philosophy, practical guidance, and lessons from the field, *PACE EH* provides guidance not only on conducting an assessment but also on providing a new form of leadership, based on new relationships and partnerships with others in the community, to create healthy communities. In practice, the outcomes and benefits are as much about establishing a leadership role for local health officials and building a sustainable community process for decision making as they are about conducting a community-based environmental health assessment.



PREFACE

In the early 1990s, local public health agencies began to grapple with how to accurately identify environmental health problems at the community level, identify populations at disproportionate risk of environmental exposure and adverse health outcomes, and strategically allocate resources to address pressing community environmental health concerns. Recognizing the need to standardize these efforts and provide guidance at the local level, the National Association of County and City Health Officials (NACCHO) initiated the *Protocol for Assessing Community Excellence in Environmental Health (PACE EH)* project. The resulting *PACE EH* guidebook is a tool for helping local health officials work with the public to assess and improve the environmental health status of their communities. It was developed by a work group of local health officials, under the guidance of a multidisciplinary steering committee and with funding from NACCHO and the National Center for Environmental Health (NCEH) of the Centers for Disease Control and Prevention (CDC).

The work group was charged with designing a nationally valid tool and process for community-based environmental health assessment that would help local health officials identify and build on strengths in the community. In addition to improving local environmental health status, the assessment can also result in an enhanced leadership role for local health officials as well as the creation of a sustainable community process for decision making.

The following assumptions offered a framework for the workgroup:

- ▶ Environmental health is the foundation of public health.
- ▶ The scope of activities encompassed by environmental health needs to be defined by each community.
- ▶ The role of the local public health agency in carrying out environmental health activities, as defined in concert with the community, is essential to the process.

The work group's resources were limited. Although several diagnostic tools and models used by local health agencies addressed some environmental health concerns, none had been developed or tested on a national scale. The work group was therefore left to build on the successes and failures of those who had struggled with this issue in the absence of standardized guidance or support.

To address these gaps in knowledge, the work group provided local public health departments in ten communities with an early draft of the guidebook for field testing and feedback. The pilot-test sites spent nearly two years implementing the proposed methodology and providing critical feedback about its usefulness at the local level. Results from the field tests were incorporated into the final *PACE EH* handbook, as were experiences of the test communities. Statements reflecting field test results and





peer-based advice and insights are interspersed throughout the document as “Notes from the Field.”

The process outlined in this handbook is expected to lead to a nationwide network of experienced community groups and a compilation of case studies, success stories, and best practices generated from those who engage in the process of community-based environmental health assessment. In addition to helping local health officials meet local needs, the compilation of findings will also strengthen NACCHO’s role as the voice for local public and environmental health at the national level. NACCHO expects to continue its work in this area and to serve as an ongoing source of assistance to users of the *PACE EH* methodology.



PART I: OVERVIEW OF *PACE EH*

Purpose

PACE EH is designed to help communities systematically conduct and act on an assessment of environmental health status in their localities. The methodology takes the user through a community-based process for:

- ▶ Characterizing and evaluating local environmental health conditions and concerns;
- ▶ Identifying populations at risk of exposure to environmental hazards;
- ▶ Identifying and collecting meaningful environmental health data; and
- ▶ Setting priorities for local action to address environmental health problems.

The *PACE EH* guidebook provides tools and direction for those charged with organizing and leading this action-oriented, locally based process. The process is intended to strengthen a collective understanding of and appreciation for the critical role that environmental health plays in the overall health of a community. It guides users through a comprehensive environmental health assessment that will provide an accurate and verifiable profile of the community's environmental health status. Community health officials and advocates can then use this profile for proactive, locally appropriate decision making.

Target Issues

In undertaking the *PACE EH* process, communities will explore these questions:

- ▶ What are the connections between the environment — where people live, work, learn, and play — and human health and wellbeing?
- ▶ Are certain groups in the community currently experiencing, or likely to experience, an increased risk or disproportionate share of adverse health effects from environmental hazards?
- ▶ What can be done to protect human health and the environment?
- ▶ How appropriate and effective are current environmental health protection measures in the community?
- ▶ What are some of the key environmental resources in communities that should be preserved or protected?

Outcomes

PACE EH is a voluntary process for community self-assessment leading to a practical plan of action. Use of the methodology should result in:

- ▶ A thorough and well-documented decision-making and planning process;
- ▶ Effective participation of a well-represented public throughout the process;
- ▶ An enhanced understanding of the community's environmental health needs;
- ▶ Strengthened community support for the identification and *prevention* of environmental risks;
- ▶ An enhanced appreciation for the critical connections between health and the environment;



“At no time in my career as an environmental health official have I been more in touch with my community’s environmental values, concerns, and priorities, or felt more confident that we all can make a difference.”

- PACE EH Field Coordinator





- ▶ An appropriate and equitable distribution of environmental health programs and services, directed to priority environmental health issues; and
- ▶ A plan for action that capitalizes on the strengths of the community and the local health agency to improve the community's health.

Although the methodology is not designed for use in responding to an acute environmental health crisis, successful completion of the *PACE EH* process will nonetheless be extremely valuable if and when crises do occur. The process will help establish a foundation of trust and broad-based support among community partners so that decision makers can act quickly and decisively in a climate of urgency.

Challenges

Environmental health assessments are constrained by limited understanding of the complex relationships between the environment and health and incomplete availability of local data. *PACE EH* is designed to address these constraints to the extent possible and build on relevant local, state and national models, including:

- ▶ *Healthy People 2000* (and its latest revision, *Healthy People 2010*), prepared by the U.S. Department of Health and Human Services, and *Healthy Communities 2000: Model Standards*, produced by the American Public Health Association, which provide a national context for local environmental health issues;
- ▶ Profiles of local environmental health conditions, such as those prepared by Washington State and Allegheny County, Pennsylvania; and
- ▶ The U.S. Environmental Protection Agency's Comparative Risk projects, which provide guidance for ranking and prioritizing environmental issues within a collaborative framework.



FOR FURTHER INFORMATION:

- ☞ *Healthy Communities 2000: Model Standards, Guidelines for Community Attainment of the Year 2000 National Health Objectives* (American Public Health Association, 1991)
- ☞ *Healthy People 2000: National Health Promotion and Disease Prevention Objectives* (U.S. Department of Health and Human Services, 1990)
- ☞ *A Community Environmental Health Assessment for Allegheny County, PA* (University of Pittsburgh, April 1996)
- ☞ *Washington State Community Environmental Health Data Assessment for APEX/PH* (Washington State Department of Health, 1995)
- ☞ *A Guidebook to Comparing Risks and Setting Environmental Priorities* (U.S. Environmental Protection Agency, 1993)

Gaps in scientific understanding – Current understanding of the complex relationships between environmental exposures and health effects is limited. Many toxic substances and their interactions have not been tested and verified. Little is known about the synergistic interaction of various pollutants or the effects of multiple exposures. Even with good data, the cause-and-effect relationships between environmental exposures and health consequences are uncertain. Nonetheless, communities cannot always wait for or rely on conclusive scientific evidence when decisions are needed immediately. *PACE EH* offers a methodology for thinking about

potential connections between environmental factors and human health, as well as opportunities for integrating public health and environmental protection.

Disparity between scientific understanding and public perception – The scientific community and the public often have different views on the nature, severity, and implications of environmental health risks. Local health officials must provide accurate, understandable information to community residents. Health officials must also recognize the legitimate concerns and values expressed by affected citizens, even if those concerns are not substantiated by scientific evidence. Community perceptions, needs, and values must be considered and valued on par with other types of available data. Ultimately, policy decisions require value judgments that should be informed by the input of community residents. The *PACE EH* process is designed to help integrate technical information about environmental health with community concerns to improve decision making.

Data limitations – Often, locally relevant environmental health data are not available. Information may not be collected, or, if it is collected, it may not be reported to the local public health agency as part of a comprehensive, accessible database. For example, industrial emissions data are routinely reported to the U.S. Environmental Protection Agency (EPA), but local health agencies may be unaware of either the availability of the information or the methods by which to gain access to, interpret, and use it effectively. Ideally, through the *PACE EH* process, both existing data and data gaps will be identified so that decisions can be made with the best available information. The process is designed to increase awareness, information sharing, and generation of appropriate data on environmental health.

Lack of standard indicators – The scientific community has reached no consensus on a set of environmental health indicators that will adequately assess a community’s environmental health status. *PACE EH* therefore offers a framework for developing locally appropriate and useful indicators.

Fragmentation of authority and responsibility for environmental health – Local health officials may be held accountable for environmental health issues but not for environmental action. Such responsibility is often fragmented among many agencies at the federal, state, and local levels. Land-use planners, departments of natural resources or environmental protection, and public works departments may all have authority for environmental health issues. This fragmentation may be replicated at the city, township, borough, county, state, and federal levels. The *PACE EH* methodology encourages local health officials to take on the critical role of community advocate and catalyst to ensure that the appropriate agencies take necessary action.

Using the *PACE EH* Guidebook

This guidebook presents one of many possible frameworks for conducting an environmental health assessment. The proposed methodology is only a guide and should not be interpreted as a prescriptive formula. Designed for flexibility, the process should be shaped as needed by each community’s concerns, needs, and structure.

The guidebook is directed to the local public health agency that is likely to initiate and oversee the project. In communities where the local health agency’s authority, resources, and expertise are not sufficient to carry out an environmental health assessment, a local environmental health agency, state health office, or non-governmental agency may choose to take the lead. The locally based process detailed in the guidebook



“Because it is easy for public health professionals to assume the role of ‘knowing what’s best for the community’ we sometimes leave the community out of the decision-making process. The PACE EH process ensures that community concerns are taken into account. In effect, the process is designed for the community to look at its environmental health needs.”

– PACE EH Field Coordinator





assumes, however, that the responsibility for the assessment and the resulting actions will be held jointly by members of a community-wide team.

The assessment protocol includes 13 tasks. The description of each includes the suggested methodology and applicable tools. These are supplemented with highlights and practical tips from the ten local public health departments that conducted field testing of the protocol (“Notes from the Field”) over a two-year period. Terms and concepts used in the guidebook are defined in the glossary (page 67). These definitions are intended to provide clarity, within the context of this document, but should not be adopted without critical evaluation of their value to the community using them. Discussion among assessment team members regarding appropriate definitions for terms is critical to developing a shared understanding of, and vision for, the assessment process. A resource list in the References Cited and Related Publications section (page 69) provides references that may be helpful in preparing for and undertaking the assessment process. Supplemental documentation of *PACE EH* field-test experiences and findings will be released by late 2000.

Although implementing *PACE EH* will likely be a valuable and rewarding environmental health initiative, local health authorities should not underestimate the time and resources required and the value of thorough and thoughtful preparation. Before committing to the process, users are encouraged to read through the entire guidebook and get a full understanding of the time and resources needed to complete the assessment satisfactorily and to act on its findings. The convener of the process is advised, in particular, to ensure that skills such as meeting facilitation, team management, and project management can be found in the health agency or within the broader community.

Though a labor-intensive process, the results of the assessment – both the anticipated and the unanticipated benefits – have been shown in field-testing to far outweigh the considerable investment of time, energy and effort.

Benefits Accrued to Pilot-site Communities

- ▶ Increased media attention on community health activities
- ▶ New funding sources identified and tapped
- ▶ Greater development of new skills for environmental health on the part of department agency staff and community members
- ▶ Increased political support for environmental health
- ▶ Increased community support for, and ownership of, environmental health
- ▶ Better integration of environmental health with other community health activities
- ▶ Identification of community weaknesses related to environmental health and new approaches to addressing them
- ▶ Identification of priorities for environmental health programs, services, and policies
- ▶ Generation of new environmental health data and identification of existing sources of data
- ▶ Creation and strengthening of relationships beyond the immediate jurisdiction
- ▶ Development of a community-endorsed definition of environmental health
- ▶ Heightened community satisfaction and empowerment about the ability to influence decisions affecting health
- ▶ Enhanced community capacity for environmental health
- ▶ Recognition of solutions to significant environmental health issues and concerns



NOTES FROM THE FIELD

Building Coalitions

When asked to name the most important benefit of engaging the community in the *PACE EH* process, pilot-site coordinators did not note the impressive progress made by new local environmental health initiatives, but rather praised the coalition-building that resulted. Coalition-building benefited communities by bringing previously competing, overlapping, and combative local agencies together (for the life of the project and beyond) to foster improved relationships between the public health agency and the community. The result was greater agency efficiency and effectiveness. In one site the assessment process served as a highly supported, politically neutral project around which disparate local factions could rally. The value of *PACE EH* therefore goes beyond improved local environmental health and assistance in development of a national program to address environmental health. It also improves the local public health agency's ability to work with residents and institutions on a wide range of issues.





“The PACE EH assessment process provides a place to start in development of a public health leadership role within the environmental health arena.”

- PACE EH Field Coordinator



PART II: PHILOSOPHY



The *PACE EH* assessment protocol is based on four underlying principles:

- ▶ A community-based environmental health assessment supports the **core functions of public health**.
- ▶ Strengthening **leadership** abilities in the field of environmental health will make local health officials more effective in ensuring the health of the community.
- ▶ **Community collaboration** is the cornerstone of a useful environmental health assessment process and of effective community planning.
- ▶ Principles of **environmental justice**, whether explicit or implicit, underlie the practice of sound local public health and environmental health.

Core Functions of Public Health

With increased competition for available resources and rising public concern about health and the environment, local government officials are faced with added pressure to develop locally appropriate and responsive programs and policies. Health and environmental officials need a way to identify local problems, set priorities, target populations most at risk, and strategically allocate resources to address the most important community environmental health concerns. An environmental health assessment that uses community-based expertise and assets can be a community resource and stepping stone for community action. Assembling community health data, establishing science-based health policies, and ensuring that appropriate health services are available in communities are the essence of public health practice.

The core functions of public health have been defined as: assessment, policy development, and assurance (Institute of Medicine, 1988). **Assessment** includes the systematic collection, assembling, analysis, and provision of information on the health of the community. **Policy development** refers to the responsibility for serving the public interest through the development of comprehensive policies and using the scientific knowledge base in decision making. **Assurance** means providing either directly, or through other entities and mechanisms, the services necessary to achieve agreed-upon goals.

The *PACE EH* methodology systematically applies the core public health functions to the environmental health context through these activities:

- ▶ **Assessment**
 - Assessing the environmental health needs of the community
 - Assessing the determinants of environmental health in the community
 - Investigating the occurrence of environmentally related health effects
- ▶ **Policy development**
 - Advocating for environmental health improvement, building constituencies, and identifying community resources
 - Setting priorities for environmental health action
 - Developing plans and strategies to address environmental health priorities

► Assurance

- Managing community resources and developing sound organizational structures
- Implementing environmental health programs
- Evaluating programs and developing quality assurance mechanisms
- Informing and educating the public about environmental health issues
- Protecting residents from exposure to contaminants and hazardous surroundings
- Providing healthy physical and natural surroundings



FOR FURTHER INFORMATION:

☞ *The Future of Public Health* (Institute of Medicine, 1988)

Leadership Role for Local Health Officials in Environmental Health

If the mission of public health is "...assuring conditions in which people can be healthy" (Institute of Medicine, 1988), the importance of a strong environmental health system is apparent. The *PACE EH* guidebook has been designed to help local health officials and agency staff demonstrate leadership in working collaboratively to provide for a healthy environment and healthy citizens. This leadership responsibility may require taking on new roles in the community, such as catalyst, convener, and collaborative partner. It may also require expanding the boundaries of "environmental health" beyond the traditional responsibilities of public health agencies (e.g., sanitation, food safety, water quality) and examining the relationships among environment, human health, and quality of life.



NOTES FROM THE FIELD

Local Public Health Agency as Leader

In many jurisdictions, the priorities and services of the local public health agency have historically been dictated, at least in part, by state statute and funding sources. As we move into an era where funding is becoming less categorical and localities are allowed more freedom to determine public health needs, set priorities, and decide how to address them, local health officials may find unprecedented opportunities to take part in making these decisions. According to one pilot-site coordinator, *PACE EH* can help health officials assume greater leadership in local health planning.

The *PACE EH* process supports a leadership role in several ways:

- development of networks through coalitions formed;
- perception of leadership through facilitation of community meetings;
- development of data priorities, data assembly, and use of data on behalf of the entire community (an expansion beyond merely reporting to a funding source or regulatory agency);
- coordination of the implementation of action plans; and
- demonstration to the community of the power of local planning and cooperative action.





“Your assessment team represents the community at large and should be allowed to drive the process. Remember, the customer (community) is always right because they pay the bills.”

- PACE EH Field Coordinator



Community Collaboration in Solving Environmental Health Problems

Central to the new leadership role for local health officials is establishing new ways of working with the community. One of the purposes of *PACE EH* is to create a better-informed public by involving community members in decision making and priority setting for environmental health. Community participation ensures that:

- ▶ Community interests are included in the planning process;
- ▶ Community-based knowledge and expertise inform decision making;
- ▶ Community knowledge and input inform the design and implementation of programs, policies, and services; and
- ▶ Community constituencies for environmental health are identified.

Local health officials charged with initiating the *PACE EH* process should actively seek community participation from the onset (see Box: Community Collaboration, next page). Early involvement provides citizens with an opportunity to collaborate in setting priorities for action that contribute to improved health status in their communities. It also helps develop specific strategies to address critical issues and involves community stakeholders in implementing these strategies. Citizens’ roles in the assessment process are to:

- ▶ Identify and quantify resources needed to undertake and complete the assessment.
- ▶ Identify and define the range of environmental health issues and problems of concern to the community.
- ▶ Identify assets and resources that can facilitate the assessment and contribute to long-term improvements in community health.
- ▶ Document local environmental health conditions for issues identified for study; select appropriate indicators and standards to measure both trends and improvements in environmental health status.
- ▶ Assess health impacts in terms of outcomes and exposure risks.
- ▶ Systematically rank environmental health issues by significance of risk, recognizing that rankings will differ among neighborhoods and locales.
- ▶ Set local priorities and realistic environmental health goals.
- ▶ Develop community-endorsed environmental health policies, plans, and strategies to accomplish those goals.
- ▶ Prepare action plans that are based on sound science and reflect the community’s unique political, economic, legal, and social characteristics.
- ▶ Periodically reassess the effectiveness of strategies, and adjust action plans to reflect emerging problems and resolution of past problems.

This guidebook provides a structure for working with the community to complete these tasks. By maximizing community involvement in identifying assets, articulating issues of greatest concern, and developing action plans, the effectiveness of those action plans is maximized. By their commitment to the process, community members contribute unique knowledge and resources. Those who are involved are likely to take responsibility for the process and therefore will be more committed to implementing the solutions.

NACCHO's philosophy of community collaboration is based on the following assumptions:

- ▶ Community members have knowledge, although it may not be represented in the form of technical training or academic degrees. For example, they know the history and demographics of the area.
- ▶ Community members have a right to participate, regardless of expertise, in decisions affecting their lives. They have the capacity to assimilate information, define issues, and make appropriate recommendations and decisions.
- ▶ There may be a disparity in access to information, resources, and skills between the local public health agency and the community.
- ▶ The local public health agency may be in a unique position because of its authority and resources. Health officials need to understand the implications of that position with respect to how it affects community relationships.
- ▶ Health concerns in the community are connected to issues beyond physical health. Public health agencies need to be concerned with psychosocial, political, economic, and related issues.
- ▶ A quiet community is not necessarily a satisfied, involved, or unconcerned one. Input should be sought from all segments of the community, not merely from the most vocal.
- ▶ Most disagreements between public officials and the community over policy or practice are about values or preferences, not about technical matters.

Source: *Improving Community Collaboration: A Self-Assessment Guide for Local Health Officials* (NACCHO, 1997)

 **NOTES FROM THE FIELD**

Community Collaboration

According to pilot site coordinators, one of the more significant issues the team needs to address during the process is what constitutes appropriate “community collaboration.”

Pilot site coordinators offered a range of interpretations, from large-scale community outreach efforts to community representation through assessment team membership. One site that limited community collaboration to assessment team representation found that the overall assessment process was conducted relatively quickly and the assessment team displayed a high level of commitment to the process. However, most coordinators reported that efforts to obtain more extensive community input (through surveys, focus groups, etc.) were repaid through an increased presence for the local health agency at the local level and an improved understanding of the environmental health concerns of the community. Sites with a broader approach to community collaboration attributed their high level of team commitment to the extensive collaborative efforts.



“At the first assessment team meeting, I was amazed at how many members knew each other but were previously unknown to the health department or were just a voice on the phone. All expressed that this was the first time they were brought together for this type of process.”

- PACE EH Field Coordinator





“The positive relationships that were formed have created a mutual understanding and respect between the health department and the community.”

- PACE EH Field Coordinator



Environmental Justice

PACE EH gives communities a way to address issues of environmental justice — the consideration of links among environmental contamination, adverse health effects on minority or disadvantaged groups, and social equity. The environmental justice movement is based on growing documentation of disproportionate environmental hazards and unequal enforcement of environmental laws in low-income and minority communities.

Because public health seeks to ensure conditions in which all people can be healthy, environmental justice is an important guiding principle for the work of local health officials. A truly *community-based* environmental health assessment upholds this principle by enabling health officials to identify and meet the needs of the community. Ensuring broad-based representation of low-income, minority, and disenfranchised members of the community is crucial to the acceptance and success of the assessment process. Specific suggestions from the environmental justice community for effective involvement of community members are provided in *The Model Plan for Public Participation* (US EPA, 1994) developed by the U.S. EPA’s National Environmental Justice Advisory Council (available on the Internet at www.epa.gov/compliance/).



NOTES FROM THE FIELD

Underlying Principles

The underlying principles of the *PACE EH* process can provide direction whenever the local assessment team reaches an impasse. Many pilot-site coordinators found that a key ingredient for success was ensuring that the team understood the philosophical basis for the project. In one site, whenever momentum stalled, the coordinator had the team reread the four underlying beliefs described in this section. They served as a reminder of the profound personal and community value inherent in the process.

The first principle reminds the group that environmental health assessment and action planning are key components of public health practice. The second principle is useful in addressing issues of “burnout” by reminding team members of a key reason for taking on the assessment. The third reminds the team of the need for community collaboration despite the procedural difficulties involved. The fourth provides a reminder that the assessment has not only local equity implications but also broader significance by contributing to the national environmental justice movement. The coordinator summarized: “You have to keep the assessment philosophy in the back of your mind from day one if you want to ensure success throughout year one and beyond.”



PART III: METHODOLOGY

The *PACE EH* environmental health assessment protocol consists of 13 tasks:

Task 1: Determine community capacity

Task 2: Define and characterize the community

Task 3: Assemble a community-based environmental health assessment team

Task 4: Define the goals, objectives, and scope of the assessment

Task 5: Generate a list of community-specific environmental health issues

Task 6: Analyze the issues with a systems framework

Task 7: Develop locally appropriate indicators

Task 8: Select standards against which local status can be compared

Task 9: Create issue profiles

Task 10: Rank the issues

Task 11: Set priorities for action

Task 12: Develop an action plan

Task 13: Evaluate progress and plan for the future

Although presented in a numbered sequence, the protocol is not necessarily a step-by-step, sequential process, but rather an iterative, dynamic, and ongoing activity. Each step builds on previous steps but also has implications for future steps and, potentially, for decisions made in previous steps. Throughout the process, users should revisit and revise prior tasks as needed.

Figure A illustrates the non-sequential nature of the methodology. The arrows at ① suggest that the identification of issues of concern may lead the team to redefine “community.” For example, if the community is initially defined by political boundaries, but an identified issue of concern is a recreational body of water in a neighboring state, it might make sense to redefine the community geographically. Similarly, if team members are unfamiliar with an issue, the team may need to be supplemented with appropriate community members or expert advisor(s).

As illustrated at point ②, the composition of the assessment team (Task 3) could have direct bearing on subsequent tasks. If, for instance, the team is over-represented by individuals concerned with water quality, the overall assessment may be biased toward this issue rather than truly representative of community concerns. Likewise, when developing indicators and identifying data sources, the team might benefit from members skilled in these areas. However, a team too heavily influenced with “experts” may push the assessment process in a direction that may be inconsistent with community concerns.

The arrows at point ③ demonstrate that the ranking of issues (Task 10) can be influenced by decisions made while identifying issues (Task 5) and developing indicators (Task 7). Ranking, for example, will be facilitated if a *manageable* number of issues result from the issue identification process. Also, the best ranking method will be determined by the types of issues identified, as influenced by the team’s



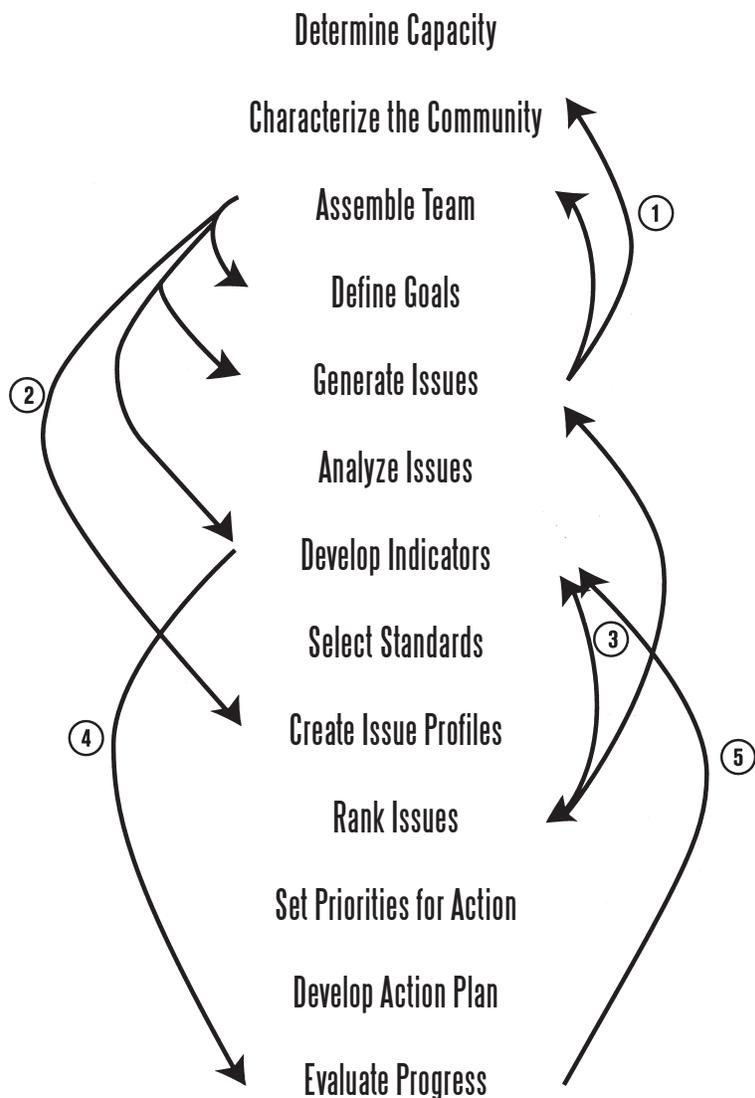


definition of environmental health. Similarly, indicators that provide the information needed for ranking will be more useful than indicators developed without considering decisions made at these earlier steps.

The arrow at point ④ illustrates the importance of indicators in the assessment process. Indicators move the team from theory to action. Users should approach indicator development with a clear understanding that this task will provide the foundation and parameters for setting priorities and evaluating future actions.

At point ⑤, an arrow denotes the important relationship between the evaluation of progress and the use of indicators. At the evaluation phase, when using locally developed indicators to track progress, the assessment team may recognize the need to revise existing indicators or create new ones. Environmental health action plans are therefore not the conclusion of the *PACE EH* process, but rather data sources for ongoing assessment activities.

Figure A — Non-sequential Relationships among *PACE EH* Tasks



Users may find additional examples of non-linear relationships among the tasks. Some may choose to address the tasks in a different order. In some cases, for example, data may be gathered and reviewed in advance of issue identification, even though this methodology recommends that existing data should not drive issue identification or indicator selection. This chapter presents one way of progressing through the assessment, but it is designed to be flexible and to accommodate local variability. Users are reminded to read through the entire chapter before undertaking the assessment to be prepared for how the tasks build on each other and to understand relationships among the various phases.



NOTES FROM THE FIELD

PACE EH as an Interactive Process

Although *PACE EH* is presented sequentially, the experiences of some of the pilot-site coordinators suggest room for variation. One coordinator noted that *PACE EH* is an iterative process; throughout the assessment, later tasks resulted in a need to revisit and rethink previous tasks. For example, activities during the ranking task warranted returning to the issue development step and ensuring that a *manageable* number of issues are generated. Likewise, developing objectives for the assessment may require rethinking the team's composition and adding members with particular skill or experience. It is important for users to recognize this possibility and realize the interconnectedness of the tasks within the protocol.



TASK 1:

Determine Community Capacity to Undertake the Assessment

- ▶ Specify the resources, skills, and capacities needed for the assessment
- ▶ Specify the available resources, skills, and capacities
- ▶ Review possibilities for collaboration
- ▶ Determine ability to carry out the assessment

Before committing to the assessment, users should assess the capacity of the community, including the public health agency, to undertake the *PACE EH* process. This initial appraisal is a way to identify and evaluate: 1) the resources and capacities needed for the assessment; 2) the resources and capacities available for the assessment; 3) the quality of the agency's relationship with the community; and 4) the existence of effective working relationships with other agencies and organizations that have essential resources and data for a community-based environmental health assessment. Follow these steps to assess initial capacity and determine additional capacities, skills or resources that might be found in new community partners, or developed through the community process:

Specify the resources, skills, and capacities needed for the assessment

Determine the resources needed to conduct the assessment. These will include time, money, personnel, and technical skills, among others.

From start to finish, project duration can range from one to several years, depending on the level of community collaborative capacity and process dynamics. Team members should expect to commit to one or two meetings per month, with periods of



“We found that community-based standards could not be set prior to data collection for the simple reason that until we viewed local data, we had no baseline to establish a standard against.”

- *PACE EH* Field Coordinator





increased or decreased intensity and the occasional out-of-meeting work assignment. The level of effort required on the part of the project coordinator is estimated to be at least 20% of a full-time position, to coordinate logistics, facilitate meetings, provide necessary support, and complete follow-up activities. Financial resources will be required for printing, copying and postage for community outreach materials, as well as meeting space and refreshments. Staff will be needed for project coordination, attending community meetings (in addition to preparation and follow-up activities), data collection and analysis, and community outreach. Additional skills and capacities that may be helpful include coalition building, data collection and analysis, and project management, among others (see Box: Essential Skills and Capacities Related to *PACE EH*).

Keep in mind that not all the resources need to, nor should they, come from the local public health agency. While an agency may initiate the process, a community-based assessment draws upon the strengths and resources of the full community. It is very likely that other agencies, institutions, and organizations have contributions to make regarding resources and technical expertise.

Essential Skills and Capacities Related to *PACE EH*

- ▶ community mobilization
- ▶ coalition building
- ▶ communication
- ▶ strategic planning
- ▶ survey methodology
- ▶ data collection and analysis
- ▶ epidemiology
- ▶ public relations/marketing
- ▶ qualitative data management
- ▶ leadership
- ▶ public outreach
- ▶ time management/project management
- ▶ group process
- ▶ access to technical support
- ▶ political savvy

Specify the available resources, skills, and capacities

Local Public Health Agency

The *PACE EH* process depends on strong internal agency capacity. Local public health agencies that lack strong data collection and data analysis capabilities, adequate staffing, or integrated planning and policymaking processes drawing on community input will find that community-based environmental health assessment only magnifies existing organizational weaknesses.

An internal agency assessment, such as that described in NACCHO's *Assessment Protocol for Excellence in Public Health (APEXPH)*, will help the agency evaluate:

- ▶ its ability and capacity to undertake an assessment of this nature;
- ▶ the quality of its relationship with the community, as the success of this process relies on effective community collaboration; and
- ▶ the existence of effective working relationships with other stakeholders, including agencies and organizations that may possess data necessary for the assessment.

If organizational weaknesses are uncovered, it is still possible to carry out *PACE EH*. While consideration should be given to refraining from undertaking the process until those weaknesses can be addressed, some of the capacities can be developed through the *PACE EH* process.

i FOR FURTHER INFORMATION:

- ☞ *APEXPH Organizational Capacity Assessment* (NACCHO, 1991)

Community

The *PACE EH* process also requires strong community capacity. The agency should begin by completing a community profile to identify and inventory local technical, informational, and community-building resources that can be linked to the environmental health assessment. The profile will be useful later for assembling an assessment team, identifying issues, gathering data, and planning for action. NACCHO's *Partnerships for Environmental Health Education* provides guidance on developing a community profile, as do the documents referenced below.

The community's capacity can be determined by creating an "asset map," which is a catalogue of local resources and strengths. The asset-mapping process is designed to identify a community's skills and assets (individual, organizational, institutional) for building partnerships and mobilizing action. In a community-based environmental health assessment, identifying the range of community assets will indicate whether the necessary capacities and resources exist in the community. Creating an asset map will be useful in completing Tasks 2 and 3 of the *Methodology* (defining and characterizing the community, and assembling the assessment team).

○ FOR FURTHER INFORMATION:

- ☞ *Partnerships for Environmental Health Education: Performing a Community Needs Assessment at Hazardous Waste Sites* (NACCHO, 1997)
- ☞ *Where We Live: A Citizen's Guide to Conducting a Community Environmental Inventory* (Mountain Association for Community Economic Development, 1995)
- ☞ *Building Communities from the Inside Out: A Path Toward Finding and Mobilizing A Community's Assets* (The Asset-Based Community Development Institute, 1993)

Review possibilities for collaboration

The *PACE EH* process relies on effective community collaboration and working relationships with a variety of agencies and organizations. The assessment process can build upon and strengthen these relationships. A lack of strong and stable relationships is not a reason to avoid *PACE EH*, but it does suggest the need for additional effort and time in the beginning to establish needed understanding, trust, open communication, and commitment.

Some key considerations in evaluating the collaborative capacity of the agency and the community are the level of community conflict, mistrust and disunity; the success rate of prior collaborative efforts; and the existence of leaders with energy, commitment, and credibility. Additional requirements for the lead agency in the assessment are a willingness to share decision-making power with the broader community and the ability to leverage relationships with other agencies or community players to address the community concerns that the health agency cannot adequately address on its own.





In The Future of Public Health, the Institute of Medicine (1988) defines community as “an aggregate of persons with common characteristics such as geographic, professional, cultural, racial, religious, or socio-economic similarities.”



i FOR FURTHER INFORMATION:

🇺🇸 *Collaborative Leadership: How Citizens and Civic Leaders Can Make a Difference* (Chrislip and Larson, 1994)

Determine ability to carry out the assessment

Completion of these initial steps will provide an understanding of the potential strengths and weaknesses of the agency and the community for undertaking the *PACE EH* process. At this point, the agency will need to gauge whether the level of local resources, capacities, and relationships – as well as the collective commitment and leadership potential – are sufficient to sustain an intensive community-based environmental health assessment. If it is, the likelihood that a full-scale assessment will be successful is enhanced. If it is not, recognize that engaging in the process can strengthen the very capacities, resources, and skills necessary for its completion. While *PACE EH* is designed as an assessment process, it is also a skills- and community-building process.

At the completion of this task, the process facilitator(s) should have:

- ▶ Specified the resources, skills, and capacities needed for the assessment
- ▶ Specified the resources, skills, and capacities available within the community
- ▶ Determined possibilities for collaboration
- ▶ Determined the ability to carry out the assessment

✓ TASK 2: Define and Characterize the Community

- ▶ Define the community
- ▶ Describe the community’s characteristics, composition, organization and leadership
- ▶ Refine the definition of the community as needed

As a locally based process, *PACE EH* depends on defining the target community and then involving members of that community in the assessment process. The assessment team needs to be familiar with the community that they want to engage and with that community’s assets, resources, institutions, and leaders. The definition of community also will influence many of the subsequent activities in the assessment process, such as: selecting environmental health concerns, deciding on ways to involve community members, developing issue profiles, identifying community partners, identifying resources and collaborative opportunities, and developing an action plan. Follow these steps to define and characterize the community:

Define the community

A community can be as small as a neighborhood or as large as a multi-political jurisdiction. Community boundaries may be defined along health-agency jurisdiction lines, city limits or county lines. The definition can be based on geographic boundaries, voting districts, cultural or ethnic groupings, or socioeconomic delineations. A community can also be defined as a watershed area or other topographical boundary. Depending on the goals of the assessment, geological conditions or ecological regions may define the community.

Future decisions about appropriate methods for involving community members may depend on how the community is defined. For example, a very large community would be unmanageable if convened as a full group, language considerations must be taken into account in a community containing diverse populations, and frequent centralized meetings are unlikely to be well attended in a large, rural area.

Describe the community's characteristics, composition, organization and leadership

Once the community is defined, the next step is to learn about the community and gain an understanding of citizens' environmental health concerns. Each community has a unique demographic profile, history, political structure, business and social development, and values and perspectives. Important statistical descriptors include: basic demographic and health data; socioeconomic data; data on educational status, language, culture, and religion. The statistical description should be enhanced with information on who the community members are, what they care about, how they function (e.g., cohesively or not), how decisions are made, and who commands the trust and respect of the community (e.g., key leaders). Knowledge of the level and scope of civic activity is important in understanding the context(s) in which environmental concerns will arise and decisions will be made.

A thorough description of the community will aid in developing environmental health profiles for selected issues identified in Task 5. Examining sub-populations may help characterize populations most at risk. Finally, a robust community description will help facilitate action planning (Task 12), by helping to identify partners, resources and opportunities for engagement.

FOR FURTHER INFORMATION:

 Asset map of the community's capacity and resources (from Task 1)

Refine the definition of community as needed

The definition of the community is an essential tool for identifying initial members of the assessment team. However, as the boundaries of a community are often vaguely defined, the definition should be revisited after the initial assessment team is convened (Task 3). At that point, affected members of the community can refine the definition according to their individual perspectives. The goals and scope for the assessment (developed in Task 4) also might suggest the need to revisit how broadly or narrowly the community is defined.

NOTES FROM THE FIELD

Defining "Community"

Decisions about the definition of community had far-reaching repercussions in the pilot sites. One assessment team in a large metropolitan area had difficulty prioritizing sub-local environmental health issues (significant issues confined to a small segment of the overall population) because the size and demographics of the entire community tended to "push them off the table." Another team addressed this problem by weighing community input not only objectively, but also subjectively. For example, despite the fact that very few people in the community were concerned about increasing rodent infestation, those who were all lived in the same sub-locality. This recognition influenced the team to keep the issue "on the table" even though it affected a statistically insignificant segment of the population. Their solution shows the importance of defining and characterizing the community culturally as well as statistically.



"Our health department serves a multi-county, primarily rural population. We originally defined the community as the entire region, thinking that environmental health issues tend not to stop at county lines.

But we then realized that future action planning will likely be better approached on a county or sub-county level.

Also, because our rural residents tend to have a strong county identification, data collected on the county level (as opposed to the regional level) will likely result in greater acceptance and ownership by residents. We discovered that decisions about how to define the community have implications for the entire process."

- PACE EH Field Coordinator





“How long should the assessment take? Our philosophy was to make community-based environmental health assessment a permanent tool for meeting our public health responsibilities. Our Board of Health established a permanent EH Leadership Team when we began the PACE EH process. Certain aspects of the process are operating in very-long-term mode, as we move in and out of cycles—a process woven from different streams of activities moving at different paces. The result? We never leave the PACE EH process, but are incorporating its methodologies into our basic operation.”

- PACE EH Field Coordinator



At the completion of this task, the process facilitator(s) should have:

- ▶ Defined the community
- ▶ Described the community’s characteristics, composition, organization, and leadership
- ▶ Considered the implications of how the community is defined

TASK 3: Assemble a Community-based Environmental Health Assessment Team

- ▶ Clarify expectations of team members
- ▶ Identify and invite individuals to help design and carry out the assessment
- ▶ Determine a governing structure, decision-making structure, and ground rules

The information gathered in Tasks 1 and 2 will help determine the initial composition of the assessment team. The team should comprise a broad cross-section of the community and should include individuals who represent local economic interests, political structures, and organizational institutions.

Clarify expectations of team members

Before assembling the team, decide on a basic set of expectations for the members. Ensuring that members of the team understand the roles, responsibilities, and rights of all participants will help build the communication and trust essential for a well-functioning team. Prospective members will also need this information before accepting a position on the team.

Identify and invite individuals to help design and carry out the assessment

The assessment team plays a crucial role in the success of the project. The composition of the team is important in ensuring that needed resources, perspectives, and representatives are engaged. A team typically consists of program managers in the local health and environmental agencies working in partnership with community members. Representation should be sought from key community groups, such as: healthcare providers/facilities, educational institutions, news media, government agencies, economic/commercial organizations, labor organizations, professional and trade groups, faith groups, and voluntary and private organizations. Strong consideration should be given to establishing linkages with schools of public health and other local colleges or universities, as academic institutions are an abundant source of information, expertise, and student assistance – benefiting not only the assessment process, but also the professional development of the student (see Box: Membership Categories for PACE EH Assessment Teams, page 20).

Select the team by approaching potential members and explaining the purpose of the project and the commitment required for membership. Once the team is assembled, participants may nominate additional members to fill in gaps in expertise or experience. To be effective, the team should be small enough to be manageable and large enough to adequately represent the community and to ensure a reasonable workload for participants.

Determine a governing structure, decision-making structure, and ground rules

Next, specify how the work will be done. What will team members be expected to do? Will all team members have the same responsibilities, or will some have special

responsibilities? Correspondingly, will all team members have the same rights?

Explicitly state how the team will be governed and how decisions will be made. Will there be a chair? If so, what are the chair's responsibilities and rights? Will specialized committees or work teams be needed for certain tasks? Will these subgroups have an advisory or decision-making role?

Clarify how decisions will be made. Will all members of the team have an equal voice? Will decisions be made by consensus? By voting? When and how will outside voices be considered in decisions?

Establish ground rules for participation. Although ground rules are often used in the context of a meeting, they can also be used throughout a project to keep meetings moving, relationships positive, and purposes clear. Potential ground rules include: participate actively, honor time limits, and respect the opinions of others (see Box: Guidelines for Interaction, next page). However, to be effective, ground rules should be developed jointly by all members of the team.

Specify needed and available resources, including time, money, personnel for data collection and analysis, and sources of technical assistance. The team, and the community, must have reasonable expectations about the timeframe, content, and costs of the assessment. Share as much information as possible about the limitations of the process and the amount of financial support committed by the local health agency. Not all resources must come from the health agency. Although the agency might have initiated the project, this is a collaborative effort designed to draw on the strengths and resources of community partners.



NOTES FROM THE FIELD

Diversity in the Assessment Team

Overwhelmingly, pilot-site coordinators found diversity to be the most important element of a successful assessment team. A community-based environmental health assessment is a complex process. Teams cannot predict at the outset which issues will become the focus. A successful assessment team will be prepared to investigate a plethora of environmental health issues. This requires ensuring that members represent as many local interests as possible. A diverse team has two distinct advantages: 1) it reliably reflects the community, and 2) it incorporates a system of checks and balances. Coordinators had these suggestions:

- ▶ Build an assessment team as diverse as the community it represents.
- ▶ Include a range of citizens groups (e.g., from high school civics clubs to the local AARP).
- ▶ Seek volunteers from minority groups and local “equal rights” organizations.
- ▶ Incorporate both ecological interest groups and local business/industry concerns.
- ▶ Include persons representing no specific interests. Citizens without an “axe to grind” provide a “reality check” for the assessment team. They balance the viewpoints of single-issue advocates for whom a community-based environmental health assessment is a potential vehicle for pre-formed priorities.

In short, bring to the table persons and groups that you would never expect to see sitting together.



“It is important to recognize that the success of the team will depend, in large part, upon the engagement of all members, the comfort of the individuals involved, and the relationships that are developed among team members. Attention should be paid to creating an environment that fosters trust, communication, and fun.”

- PACE EH Field Coordinator





Membership Categories for *PACE EH* Assessment Teams

- ▶ Minority, disadvantaged, and typically underrepresented segments of the community
- ▶ Environmental justice organizations
- ▶ Neighborhood associations
- ▶ Local business organizations (e.g. Chamber of Commerce)
- ▶ Consulting agencies specializing in environmental quality, environmental health, community assessment, health statistics
- ▶ Environmental organizations and associations
- ▶ Research institutes
- ▶ Local medical and dental societies
- ▶ First responders
- ▶ Religious organizations
- ▶ Schools, colleges, and universities (including schools of public health)
- ▶ Cooperative extension service
- ▶ Law enforcement agencies
- ▶ Volunteer organizations
- ▶ Senior citizen programs
- ▶ Civic organizations
- ▶ Board of health or other administrative/policy board
- ▶ Hospitals, community health centers, and other health and human service agencies
- ▶ Federal, state, and local environmental protection, environmental quality, environmental planning, and natural resource agencies and organizations
- ▶ Health maintenance and managed care organizations
- ▶ Local elected officials

Guidelines for Interaction

- ▶ Participate actively.
- ▶ Honor time limits.
- ▶ Listen to, consider, and respect the experiences and opinions of others; focus discussion on content and not the individual.
- ▶ Keep comments brief and on-topic.
- ▶ Remember that everyone's opinion is legitimate.
- ▶ Support positive confrontation; encourage each other to explore issues more deeply.
- ▶ Give voice to differences; do not be afraid to say things that you anticipate will be controversial. Acknowledging and explaining differences promotes understanding.
- ▶ Be clear on fact versus opinion.
- ▶ Do not be afraid to express your view up front.
- ▶ Try to contribute things that work toward the goal.
- ▶ Do not quote others. Give each other the freedom to explore ideas with trust.
- ▶ Become an observer of self. Adopt an attitude of learning.
- ▶ All participants share responsibility for enforcing the guidelines for interaction.
- ▶ Recognize that we are unlikely to change each others' core beliefs, although we can try to understand them.
- ▶ Find and work on common ground; acknowledge where there is *not* common ground.
- ▶ Avoid non-negotiable positions.
- ▶ Suspend assumptions.
- ▶ Do not assume that individuals represent organizational policy.
- ▶ Bring up facts relevant to the discussion at the beginning of the meeting, not at the end.



NOTES FROM THE FIELD

Team/Meeting Management

Field-test coordinators suggest these tips for managing the assessment team and running effective meetings:

- ▶ Include a Steering Committee of lead agency staff and several community representatives as a subset of the team.
- ▶ Give the Steering Committee responsibility for drafting meeting agendas, documenting decisions and areas of debate, and holding team members accountable for their commitments.
- ▶ Ensure buy-in from the full group on the agenda for each meeting.
- ▶ Develop skills in meeting facilitation.
- ▶ Minimize “burnout” by allowing for additional and/or substitute team members during the course of the assessment.
- ▶ Maintain a team size of 16-25. Ensure that a workable number attends each meeting.
- ▶ Limit meetings to two hours. Longer meetings designated for a particular purpose should be agreed upon by the group.
- ▶ Provide food at meetings to increase attendance and morale.
- ▶ Start and end meetings on time. Meetings should not run later than 8:00 pm.
- ▶ Invite guest speakers to meetings to help keep participants motivated.
- ▶ Craft an agenda that allows for networking, sharing time, and socializing.
- ▶ Assign “homework” and provide team members with time on the agenda.
- ▶ Develop bylaws to clarify expectations and roles of team members.
- ▶ Use subcommittees to help maintain interest and prevent burnout.
- ▶ Do not let “dropouts” upset the process. Maintain a list of potential replacements.



NOTES FROM THE FIELD

Community Process

Although most field-test sites worked on assessments for up to two years, they discovered that payoffs—increased collaboration among governmental agencies, increased awareness, identification of community strengths—can be realized quickly. The shared these lessons:

- ▶ Ask for feedback throughout the process.
- ▶ Be clear about commitments (e.g., expected number of hours, expected number of meetings) up front.
- ▶ Celebrate early accomplishments. A three-to five-year plan is good, but do not wait until the end to acknowledge all achievements.
- ▶ Be flexible. The structure can change at different points in the process. For example, the community might take the lead in identifying environmental issues of concern, whereas staff may have a stronger role in developing indicators.
- ▶ Display “pomp and circumstance” around the process and the selection of members to the assessment team (e.g., press releases, letters of invitation from the Board of Health, etc.).



“Regarding keeping the assessment team active and engaged: Laugh! Any cooperative and volunteer process such as PACE EH is much stronger if the work includes an element of fun. Make sure participants laugh with each other and have opportunities to enjoy each other as people.”

- PACE EH Field Coordinator



“Throughout the PACE process we have made a significant effort to see that participants are rewarded for their contributions by identifying ways that PACE EH processes and products can help them meet personal or organizational needs, as well as assessment team objectives. Individual team members who recognize the professional – and personal – benefits of involvement are more likely to remain active.”

- PACE EH Field Coordinator





“One of our biggest controversies has been the definition – and limitation – of ‘environmental health’ as opposed to ‘public,’ ‘community,’ and ‘personal’ health and to ‘ecology.’ Having a diverse team has probably contributed to some of this; however, it also has pushed us to see beyond traditional public health issues and environmental programs. Once we began working on them, we found that some of the seemingly non-traditional issues were not so far afield after all.”

- PACE EH Field Coordinator



At the completion of this task, the process facilitator(s) and/or the assessment team should have:

- ▶ Detailed the expectations of team members
- ▶ Invited individuals to help design and carry out the assessment
- ▶ Determined the governing structure, decision-making structure, and ground rules for the assessment



TASK 4:

Define the Goals, Objectives, and Scope of the Assessment

- ▶ Establish goals and objectives for the assessment
- ▶ Describe the vision that will guide the process
- ▶ Describe the scope of issues to be addressed by the assessment
- ▶ Define key terms

The assessment team should clearly delineate the goals, objectives, and scope of the process. Involvement of the community (as represented on the assessment team) in this task will help strengthen support for the assessment and ensure ownership of the process.

Establish goals and objectives for the assessment

Goals define desired outcomes. They represent what people with a shared vision have committed themselves to accomplishing. **Objectives** state the action required to achieve the goals. The following are examples of goals and objectives:

- | | |
|--------------------|---|
| Goal: | Engage the community in a process to characterize environmental conditions as they contribute to health, premature death, unnecessary disease and injury, or quality of life among at-risk populations. |
| Objectives: | Select a community-based methodology for performing an assessment that ensures full representation of community interests.

Within three months of its inception, convene a team that includes representatives from at least 20 groups, organizations, or interests in the community. |
| Goal: | Investigate the relationships between environmental conditions and human health in the community. |
| Objectives: | Define community-acceptable standards for measuring environmental health status.

Assemble available information pertaining to the relationships between health and environmental factors. |

The more thorough the work done to this point, the easier it will be to define goals and objectives. Review Task 1, and consider how agency and community strengths can be used, what barriers must be overcome, what resources are available, and what related efforts may affect the problem. Because each member of the assessment team will bring his or her own priorities and values to the process, establishing consensus

among team members about the goals and objectives of the assessment will make later decisions easier.

Describe the vision that will guide the process

Development of a shared vision for the process will provide focus, purpose and direction throughout the assessment and help people set goals. A vision expresses a statement about the desired future that is held mutually by assessment team members. It provides a concrete picture of the end results of the assessment by illustrating what the community will look like if the process is successful. Additionally, a vision can serve as a means to communicate the goals of the process to others. Further, a compelling vision can serve as a source of inspiration and motivation for completing the process.

FOR FURTHER INFORMATION:

-  *Creating Community Health Visions: A Guide for Local Leaders* (Institute for Alternative Futures, 1994)
-  *Community Visioning and Strategic Planning Handbook* (National Civic League, 1995)

Describe the scope of issues to be addressed by the assessment

It is important to ground the process in a shared understanding of the scope of environmental health. It is essential to spend time early in the process clarifying the boundaries of the assessment and the kind of issues that will and will not be considered part of “environmental health.” This will help keep the effort focused and reduce frustration and confusion throughout the process.

NOTES FROM THE FIELD

Scope of the Assessment

Does environmental health just include human health effects from environmental sources? Does it include the health of the environment (ecology)? Does it include health and well-being of the community – including quality of life, economic viability/prosperity, social health? Team members will enter the process with completely different assumptions and opinions.

The following graphic may be helpful in focusing the group throughout the process:



Scope of the assessment - the exact size of the circle must be set by the team, and may be changed during the process.



“The agreed-upon scope comes into play at many stages of the project, and not just when the original issue list is developed.

Scope will also affect the criteria for ranking, the rankings themselves, your team’s values, and even the action plans that are ultimately developed.”

- PAGE EH Field Coordinator





Environmental Health focuses on the health interrelationships between people and their environment, promotes human health and well-being, and fosters a safe and healthful environment.



Define key terms

Define terms like *health*, *health status*, and *environmental health*. There is the potential for disagreement among assessment team members about the definition of even basic concepts, such as *environment*. For instance, “environment” may refer strictly to one’s physical surroundings, or it may include social conditions as well. Problems such as homicide, intentional injury, and depression or suicide are examples of health outcomes that may be strongly influenced by one’s social environment. In these cases, living in a high-crime neighborhood represents a major risk factor and may be considered as significant a part of one’s environment as the more traditional considerations of clean water and air.

FOR FURTHER INFORMATION:

 *Glossary (page 67)*

At the completion of this task, the assessment team should have:

- ▶ Delineated the goals and expected outcomes of the assessment
- ▶ Described the vision that will guide the process
- ▶ Described the scope of issues to be addressed by the assessment
- ▶ Agreed-on definitions for terms likely to be used during the course of the assessment



TASK 5:

Generate a List of Environmental Health Issues

- ▶ Evaluate and select data-gathering method(s)
- ▶ Collect data on community concerns
- ▶ Collect data on community knowledge, attitudes, behaviors, and perceptions
- ▶ Create a manageable list of issues

In this task, the team will collect descriptive information about perceived community concerns. The intent is to identify concerns that are most relevant to community members and to determine how prevalent or widespread these concerns are in the community. Statistical information about the community’s environmental health status is combined with this descriptive information to generate issue profiles in Task 9. A comprehensive list of environmental health issues should be generated, as these will be used to develop community-specific standards and indicators, draft issue profiles, rank concerns, and set priorities for action.

Evaluate and select data-gathering methods

Community assessments are simultaneously research projects and efforts to engage the community around environmental health issues. Therefore, the process of gathering information on the community’s concerns needs to do more than build on the existing base of knowledge and gather additional community-specific information. It should also foster the community’s understanding of the project and provide opportunities for community engagement. These considerations will affect the choice of a data-

gathering method. If the project is to involve the community, build new relationships, establish a presence for the project sponsors, and educate members of the community, then the team needs to consider the degree to which a research method will contribute to or impede these goals. Some questions to consider are:

- ▶ Does the method provide an opportunity to engage citizens in learning about the project, the community, or environmental health?
- ▶ Does the method provide an opportunity to introduce the project's sponsors to key constituents?
- ▶ Does the method provide an opportunity to enhance the visibility of the project and the sponsors?

An assessment of community concerns can be done formally or informally. A formal assessment collects data that are representative and valid. Data can be collected by one of two methods: population survey or sample survey. In a population survey, all possible respondents are identified and approached to provide information. In a sample survey, a segment of the population is carefully selected and approached to provide information. A sample survey tool is included at the end of the guidebook. An informal assessment collects data that may be useful but may not stand up to scientific scrutiny. The main advantage is the ability to collect basic information quickly. Informal methods recognize the possibility of bias and can actually use it to their advantage, i.e., to collect specific data from a targeted audience. For example, a community chapter of the Audubon Society might be surveyed on local environmental conditions.

Formal assessments are generally more costly and time-consuming than informal assessments. Ensuring either full community participation in a population survey or true “randomness” in a sample survey is difficult. A census, the only assessment technique that attempts to involve the entire population of a given study area, is costly to produce and distribute and is very labor-intensive. It requires not only a great financial outlay but also a relatively long response and analysis period because of the sheer number of respondents, even if the population is relatively small.

Sample surveys, while not as costly as population-based methods, are still considerably more expensive than informal assessment methods. The process of creating and implementing a truly “random” survey is complex. A social scientist will likely need to be consulted to review (if not design) the assessment tool.

Informal assessments, not required to adhere to the strictures of scientific accuracy, can be both inexpensive and technically simple to execute. They need not be random nor representative of the entire community. As such, an informal assessment may simply consist of a series of opportunistic interviews (or observations) producing results useful to the work of the assessment team. Some specific informal assessment methodologies employed by *PACE EH* users are cited in the Notes from the Field box: Soliciting Community Input.

Of course, the more closely the assessment team approximates conditions of scientific accuracy and validity, the more valid and reliable the data procured will be. At the very least, when using informal assessment methodologies, the assessment team needs to be aware of the possible biases involved, and interpret the results accordingly.



“Community concerns should not be approached with pre-determined value judgments or assumptions based on existing data (which may be incomplete or inaccurate). All community concerns are relevant and must be taken into account. It may help to remember that acknowledging a concern does not necessarily mean that the local public health agency has responsibility for its solution.”

- PACE EH Field Coordinator





“It is entirely possible to pull off this step, as intimidating as it may seem, with enough dedicated staff or team members, a little bit of organization, and a lot of energy. If you have a few extra dollars, paying a consultant to do focus groups will give you a scientific representation of your defined community.”

- PACE EH Field Coordinator



“Our assessment team encouraged people to complete our environmental health issue survey by awarding ‘prizes’ to randomly selected respondents.”

- PACE EH Field Coordinator



FOR FURTHER INFORMATION:

☞ Sample Survey Tool (page 71)

Collect data on community concerns

Solicit opinions from the community at large via the selected method(s). Be sure to tap into knowledge contained within the team by having each member list any information he or she has about issues of importance to the community. As this list will be influenced by assumptions that may or may not be valid, consider designing a data-collection method capable of generating information to support or clarify these assertions.

NOTES FROM THE FIELD

Soliciting Community Input

In pilot-testing *PACE EH*, assessment teams developed an array of informal methods to capture local perceptions of environmental health: focus groups, key-informant interviews, person-on-the-street interviews, facilitated discussion groups, and surveys.

Many teams distributed surveys at community events, such as fairs and school programs. Others used the networks of their diverse assessment team membership to distribute surveys. One team received permission from local government authorities to distribute surveys to potential jurors awaiting assignment in the jury pool. Another team developed a “windshield” survey, in which residents drove around the community, documented what they saw, and considered what it meant in the context of environmental health. All of these techniques alerted the assessment teams to community members’ perceptions of and opinions about local environmental health conditions.

Collect data on community knowledge, perceptions, attitudes, and behaviors

Part of the community-based assessment is understanding: 1) what community members know, do not know, and want to know about environmental health conditions; 2) attitudes or beliefs that can affect how community members interpret information about environmental health, and 3) behaviors that can put residents at risk, or that can protect them, from environmental health hazards.

Information on risk perceptions is important to facilitate effective communication about environmental health risks, determine options for action, and identify community priorities. A person’s perception of risk or safety can be influenced by a number of factors (see box: Characteristics of Risk, next page). In addition, risk perception often contradicts “scientific” descriptions of risk. Simply providing “expert” information to the community is not likely to alter personal beliefs. An understanding of *why* community members are likely to feel the way they do may help the assessment team devise effective community input strategies and interpret results meaningfully.

Create a manageable list of issues

The list of issues generated at this point will be the focus of the rest of the assessment process. The process will be most effective and useful if the list of issues is manageable. Evaluate the proposed list of issues according to these criteria:

- ▶ Does the issue fall within the intended scope of the assessment?
- ▶ Does the issue represent a relationship between the environment and human health?
- ▶ Is it a local concern?

To condense the list further, consider these questions:

- ▶ Was this an issue identified by a significant majority of the public?
- ▶ Can other information from the community support the inclusion of this issue?

The issue list can be further streamlined during Task 6 (analyzing the issues with a systems framework).

Characteristics of Risk

(Factors on right increase perception of riskiness.)

VOLUNTARY

Driving in a car

NATURAL

Radon in basement

FAMILIAR

Household cleaners

CHRONIC

Routine small releases of chemicals from a facility

VISIBLE BENEFITS

Dyeing hair

CONTROLLED BY INDIVIDUALS

Driving

FAIR

INVOLUNTARY

Breathing air polluted by a neighboring factory

MAN MADE

Industrial chemicals

EXOTIC

Genetically engineered organism

CATASTROPHIC

Large accidental release of chlorine gas from a plant

NO VISIBLE BENEFITS

Incinerator effluents

CONTROLLED BY OTHERS

Industrial Pollution

UNFAIR

From Risk Communication About Chemicals in Your Community, (US EPA, 1994)



“Keep in mind that community survey results will need to be analyzed to be meaningful. Consider the community’s capabilities for data analysis – including hardware and software needs, as well as technical abilities – in the design phase of data collection strategies.”

- PACE EH Field Coordinator



“We found that packaging a survey as a return-postage-paid mailer, while expensive, ensured a high response rate.”

- PACE EH Field Coordinator





“Our assessment team stressed from the beginning that they wanted highly valid and reliable data from our community to generate our issue list. They were already thinking ahead to the implementation stage when we have to substantiate our prioritized list to the community.”

- PACE EH Field Coordinator



At the completion of this task, the assessment team should have:

- ▶ Data on community knowledge, attitudes, behaviors, and perceptions related to environmental health
- ▶ A manageable list of community-identified environmental health concerns



TASK 6:

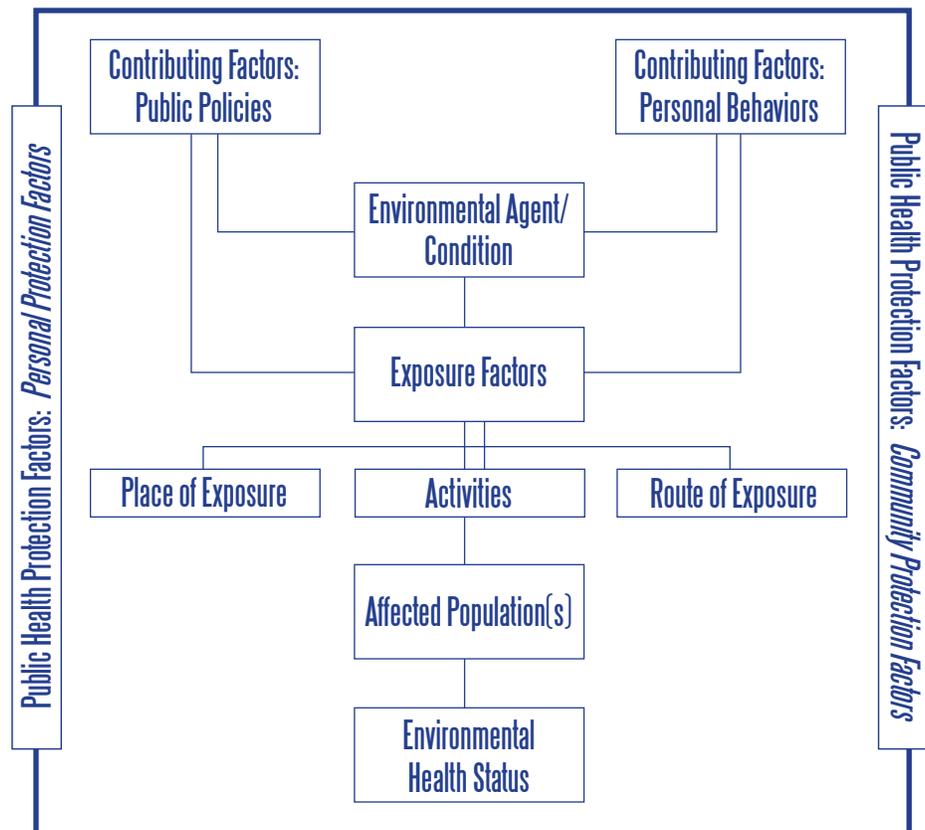
Analyze the Issues with a Systems Framework

- ▶ Understand the framework
- ▶ Identify the connections among health status, affected populations, exposure factors, environmental agents/conditions, contributing factors and behaviors, and public health protection factors for selected environmental health issues

Task 5 yielded a preliminary list of environmental health issues of importance to the community. Task 6 centers on understanding: 1) the relationship between these issues and health, environmental conditions, and quality of life; 2) the connections among issues; and 3) the public health protection factors currently in place within the community that affect the status of these issues. The approach for achieving this understanding is to systematically analyze the components of the issues by use of the following framework:

Analyzing Framework

Topic: _____



Understand the framework

Environmental health in a community results from many interconnected factors. The complex nature of a community environmental health issue will be better understood after a systematic “mapping” process. Mapping clarifies the connections between the health of the community and the health of the environment. It shows the relationships between environmental conditions, the public policies or personal behaviors that influence the conditions, the characteristics of populations most affected by exposure and the dynamics of their exposure, and the health and quality-of-life outcomes that result from exposure.

In the framework, **environmental health status** is described by linking **contributing factors** – public policy decisions and personal behaviors – with **exposure factors** that describe how and where **affected populations** are exposed to **environmental agents/conditions** and the **public health protection factors** that are implemented by individuals or communities and reflect the collective capacity to address environmental health issues.

Contributing Factors

Contributing factors are the activities, practices, or behaviors of society or individuals that affect environmental conditions or that place individuals at potential health risk.

For example, basic demographic and societal changes can alter environmental conditions, as demonstrated by the impact of increased population density on the availability of clean water and air. Certain personal and institutional behaviors increase the emissions of pollutants into the air, land, food, and water. Activities and policies such as the following can affect – either negatively or positively – the environment and human health:

- ▶ Economic development policies (including zoning, taxation, land use, and development)
- ▶ Economic activities (including agriculture, mining, transportation, road construction, and energy production)
- ▶ Industrial activities and byproducts (including landfills and Superfund sites)
- ▶ Natural disasters (including flooding and heat waves)
- ▶ New technologies (including clean-up methods and new fuel sources)

Environmental Agents/Conditions

Environmental agents and conditions are chemicals, biologic agents, radiation, and other physical conditions in the built or natural environment that may be connected to human health, environmental quality, or quality of life. Examples are:

- | | |
|---|---|
| <ul style="list-style-type: none">▶ Chemicals<ul style="list-style-type: none">Carbon monoxideSulfur dioxideSmogOzoneAsbestosLeadToxic materials in waterPesticides▶ Radiation<ul style="list-style-type: none">Radon | <ul style="list-style-type: none">▶ Biologic agents<ul style="list-style-type: none">Bacteria/viruses in water or foodVector insects/rodents/otherAnimalsPollens▶ Physical conditions<ul style="list-style-type: none">Dusts/fumesFirearmsPolluted swimming beachesWaterways not meeting Clean Water Act standards |
|---|---|





Exposure Factors

Exposure factors describe how and where people are exposed to potentially hazardous environmental agents or conditions. These include the place of exposure, activities that can lead to exposure, and route of exposure. For example:

- ▶ **Place of exposure**
 - Workplace
 - Home
 - School
 - Institution
 - Recreational facility
 - Natural environment/outdoors
- ▶ **Activities that lead to exposure**
 - Occupation
 - Food preparation
 - Swimming
- ▶ **Route of Exposure**
 - Ingestion
 - Inhalation
 - Absorption
 - Injection

Affected Populations

Affected populations are groups who may be at risk of exposure. They are any segment of the community that is likely to experience the health state of interest or to be affected by the environmental condition. In some cases, the affected population may be the general population. In other instances, it may be a specific sub-population. Possible descriptors include age, gender, race, ethnicity, occupation, special status (e.g., pregnant women, immunocompromised persons, handicapped persons, persons with a genetic predisposition to a condition), income, education, and geographic and site-specific considerations (e.g., home, school, work). Examples are:

- ▶ Neonates
- ▶ Children aged 3 and younger
- ▶ Youth aged 12-18
- ▶ Young adults aged 19-34
- ▶ Adults
- ▶ Persons over age 65
- ▶ Nursing home residents
- ▶ Specific racial and ethnic groups
- ▶ Agricultural workers
- ▶ Mining workers
- ▶ Construction workers
- ▶ Persons working with lead
- ▶ Mentally ill persons
- ▶ Consumers
- ▶ Patients
- ▶ Athletes
- ▶ Inmates
- ▶ Caregivers
- ▶ Students
- ▶ Persons of low socioeconomic status
- ▶ Inner-city residents
- ▶ Rural residents
- ▶ Suburban residents
- ▶ Urban residents

Public Health Protection Factors

These are the *personal protection factors* (individual behaviors) and *community protection factors* (community actions or systems) that can either modify or prevent an environmental health concern, or maintain an area of environmental health quality in the community.

Personal protection factors are interventions that are intended to either prevent exposure or limit the severity of illness or injury, such as:

- ▶ Hearing loss screening
- ▶ Use of personal protective devices (e.g., ear plugs, masks)
- ▶ Immunization
- ▶ Exercise drills

Community protection factors are local policies, programs, institutions, and activities that are already in place or could easily be implemented to help ensure the environmental health of the community. Examples are:

- ▶ Surveillance systems (local, state, national)
- ▶ Registries
- ▶ Disease outbreak investigations
- ▶ Disease prevention and control programs
- ▶ Animal and vector control programs
- ▶ Inspection programs
- ▶ Licensing of restaurants and other public facilities
- ▶ Trained and competent staff
- ▶ Pollution controls and prevention programs
- ▶ Hazardous site clean-up
- ▶ Emergency response capacity
- ▶ Laboratory infrastructure
- ▶ Plans, protocols, and standard operating procedures
- ▶ Utilization reviews
- ▶ Community development and conservation plans
- ▶ Maintenance of medical records

Environmental Health Status

Environmental health status can be described in terms of an acute or chronic health condition or quality of life concern that is known or suspected to be environmentally related. Issues may reflect existing concerns or potential future concerns if preventive measures are not maintained or initiated. Examples are:

- ▶ Respiratory infections
- ▶ Injuries
- ▶ Asthma
- ▶ Diarrheal illness
- ▶ Carbon monoxide poisoning
- ▶ Food poisoning outbreaks
- ▶ Fire deaths
- ▶ Injury deaths
- ▶ Suicide
- ▶ Homicide
- ▶ Lung disease
- ▶ Hyperactivity
- ▶ Learning disabilities
- ▶ Intoxication
- ▶ Hearing loss
- ▶ Heart failure
- ▶ Allergies
- ▶ Traumas
- ▶ Lead poisoning
- ▶ Bites
- ▶ Rabies
- ▶ Stroke
- ▶ Burns
- ▶ Cancers (e.g., lung, skin)
- ▶ Reproductive disorders
- ▶ Vector-borne diseases
- ▶ Lack of recreation opportunities
- ▶ Aesthetic quality
- ▶ Lack of sense of community
- ▶ Lack of open space
- ▶ Lack of parks
- ▶ Poor visibility (e.g., smog)





The framework allows users to begin with community-identified environmental health concerns, map out the components of the issue, and ultimately generate a list of indicators to move the process from theory to action (in Task 7). The value of the framework lies in the analysis that occurs in considering the many dimensions of each environmental health issue. Working with the framework will help the assessment team identify and describe why people care about an issue, the linkages between issues of concern, relevant contributors, and opportunities for intervention.

As a tool for organizing information and analyzing the system, the framework allows the assessment team to start anywhere depending on initial areas of interest. In some communities, health status (e.g., rate of asthma) may be a major concern, whereas environmental characteristics (e.g., air quality) might be the focus in others. The framework is designed to be flexible and adaptable to the values and preferences of the community. Assessment teams should use caution, however, in allowing public health protection factors to be the initiating concern. This places an overemphasis on existing programs rather than on community-identified interests.

Identify the connections among health status, affected populations, exposure factors, environmental agents/conditions, contributing factors and behaviors, and public health protection factors for selected environmental health issues

To use the framework, select one issue of concern to the community. Then, map out the reasons why the community cares about that issue. Some potential questions to consider are:

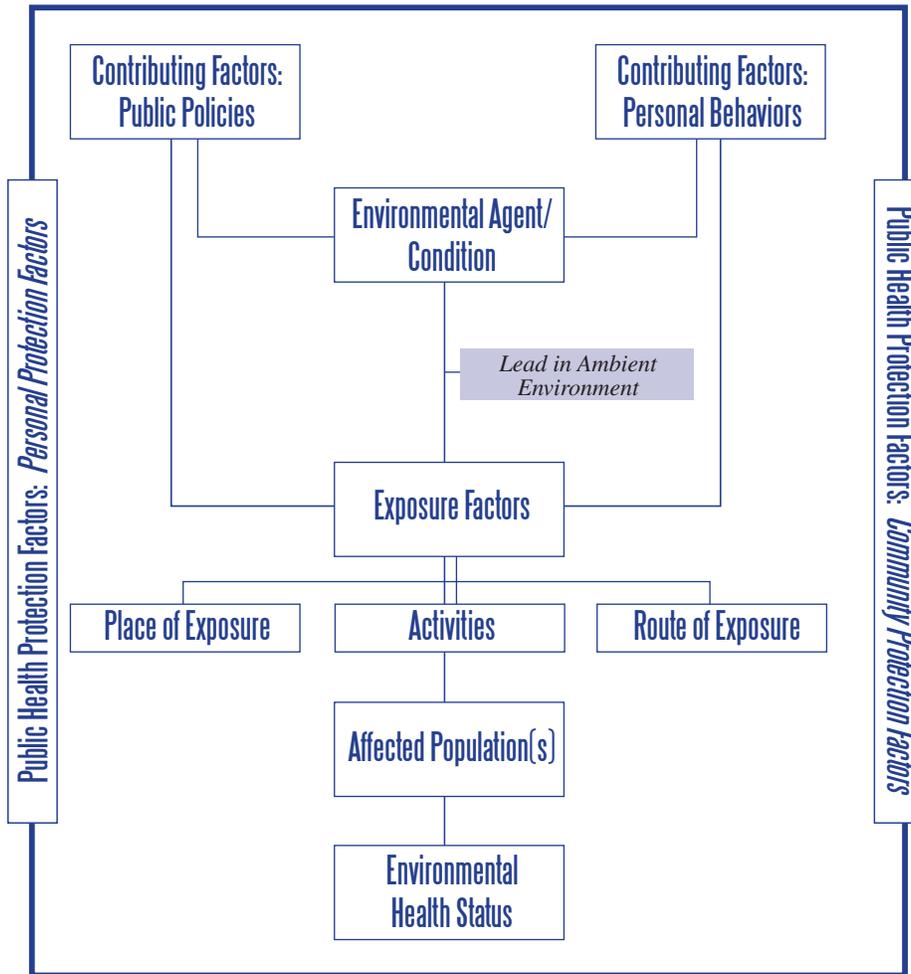
- ▶ Why is this important?
- ▶ Why do citizens care about this issue?
- ▶ Are they concerned about health impacts and particular populations or environmental endpoints?

After thinking through these considerations, plug them into the framework. Here is an example from a community that was concerned about lead in the environment. The team entered this issue into the framework first.



Analyzing Framework

Topic: Lead

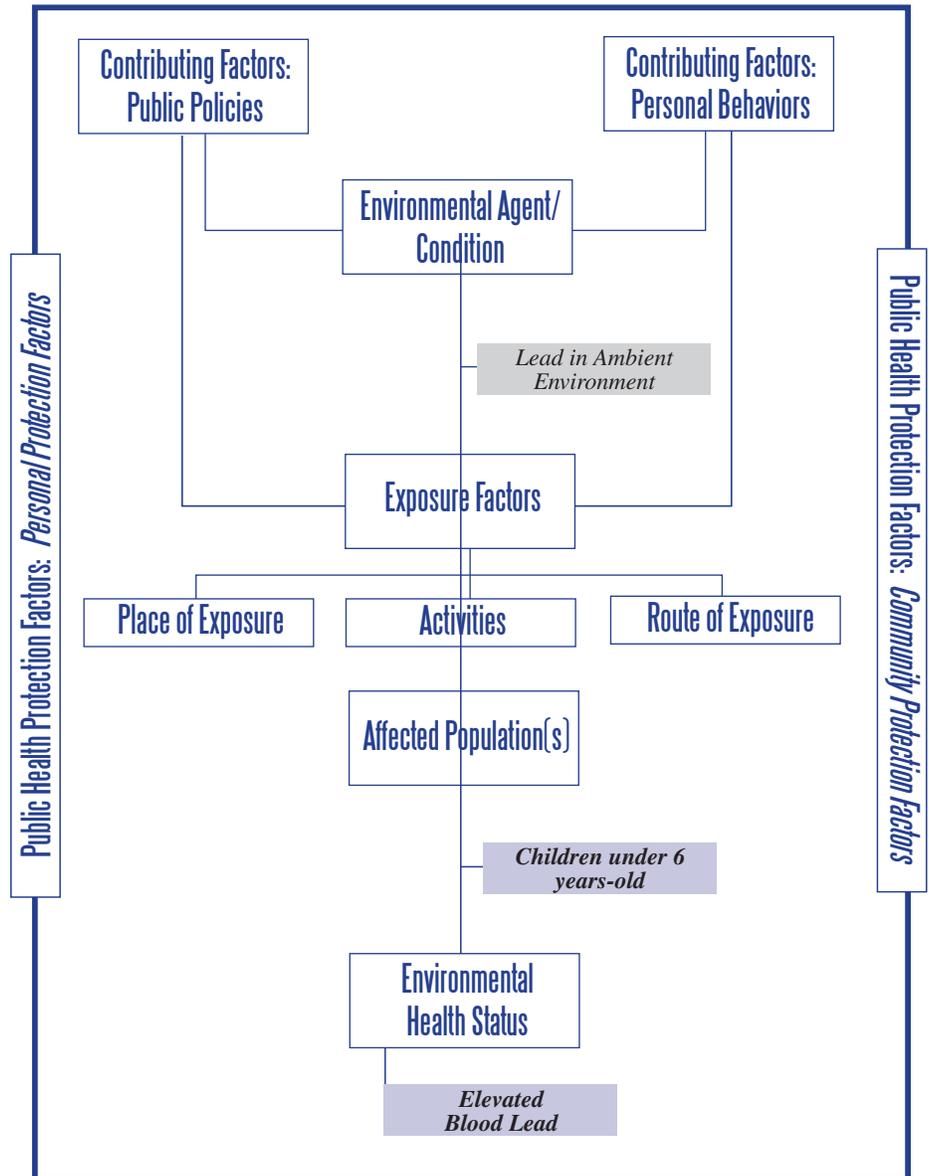




Next, the team considered why lead was a concern. They determined that the community was concerned about lead poisoning, i.e., elevated blood lead, and the high risk to children under age 6 (*affected population*). They placed these components into the framework.

Analyzing Framework

Topic: Lead

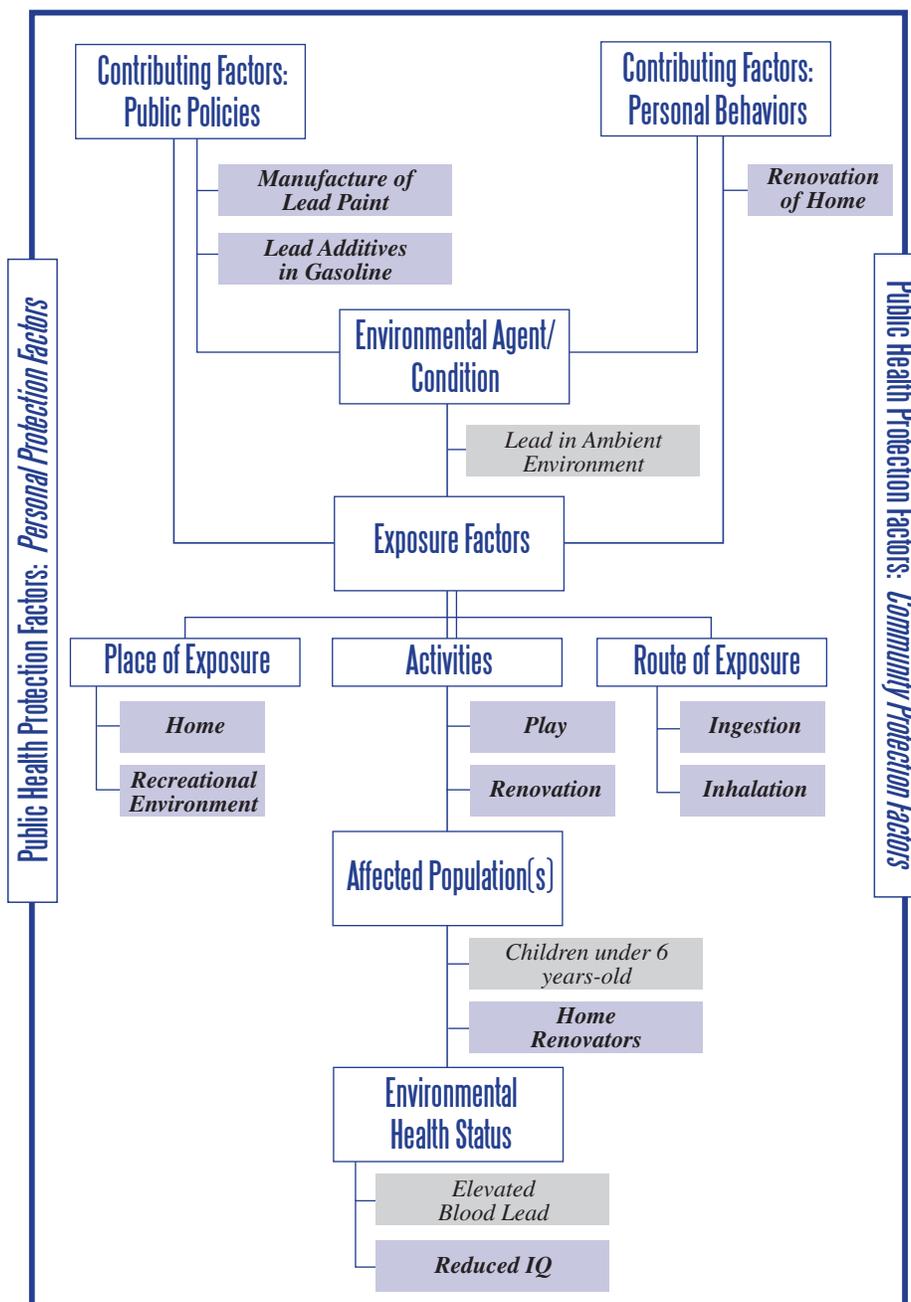


The next step is to describe where and how a child might be exposed to lead in the environment (*exposure factors*). For example, a child in an old house with lead-based paint on the walls might ingest paint chips or inhale lead-containing dust. Then the team identified and mapped some *contributing factors*. The use of lead in gasoline and the creation of lead dust from sanding house exteriors are important underlying sources of lead in the environment. Contributing factors would therefore be public policies related to paint manufacturing and adding lead to gasoline and personal behaviors related to home renovation. The team then explored *exposure factors* related to home renovation and occupational exposure to lead, identified an additional *affected population*, and listed an additional preventable health condition under *environmental health status*.



Analyzing Framework

Topic: Lead

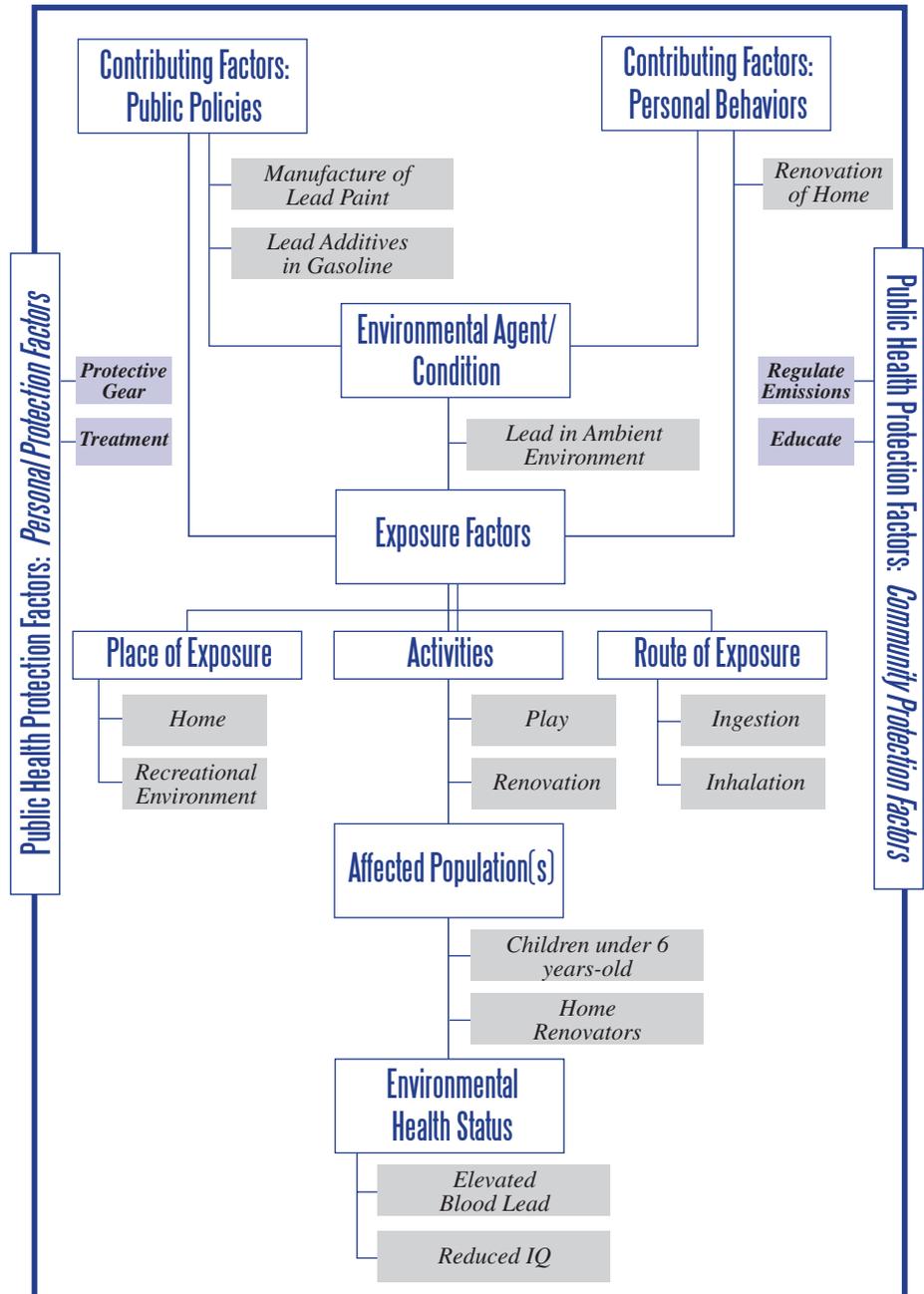




Identifying contributing factors, potential opportunities for exposure, and high-risk populations helps identify possible *protection factors*.

Analyzing Framework

Topic: Lead



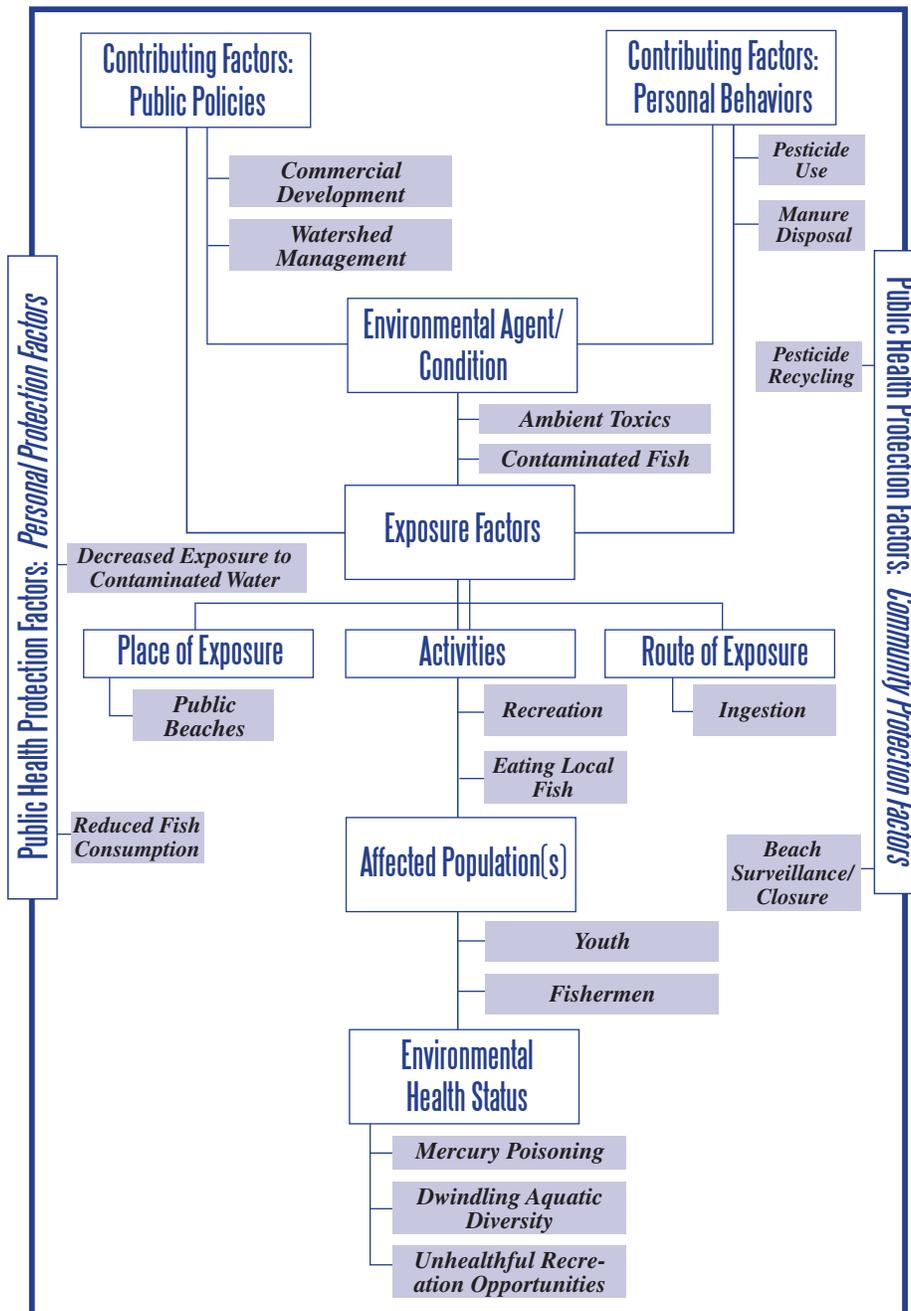
As this example demonstrates, the framework can accommodate the generation of many layers of information, depending on the level of detail desired by the assessment team. Any environmental health issue can affect several population groups or involve numerous environmental agents or conditions. Likewise, prevention or control might require multiple protection factors.

Environmental health is considered broadly in this guidebook. Some communities may identify issues based on concerns about ecological or quality-of-life outcomes rather than concerns about human health. For some issues, such as Lyme disease, the framework might reveal important connections between environmental conditions and health effects. For others, quality-of-life or ecological status may be the community’s primary focus. The mapping exercise might be challenging for these types of issues, but the process will still be valuable in identifying connections among components. The example below demonstrates the use of the framework for “surface water quality,” with a focus on the status of recreational opportunities (quality of life) and aquatic health (biodiversity/ecological health).



Analyzing Framework

Topic: Surface Water Quality





Indicators are tools for quantifying, through direct or indirect measures, a significant aspect of an environmental health issue.

They can be used to assess and communicate the status of and trends in overall environmental health.

- PACE EH



Having mapped the system related to the identified environmental health issues, the assessment team is now ready to develop a set of potential indicators – quantitative measures – that describe the status of an issue.

At the completion of this task, the assessment team should have:

- ▶ Mapped the connections among health status, affected populations, exposure factors, environmental agents/conditions, contributing factors and behaviors, and public health protection factors for selected environmental health issues



TASK 7:

Develop Locally Appropriate Indicators

- ▶ Develop list of potential indicators
- ▶ Identify key indicators based on selected criteria

The mapping process in Task 6 analyzed and described the qualitative relationship among components of an environmental health issue. Task 7 translates that information into quantitative measures. Indicators are tools for quantifying, through direct or indirect measures, a significant aspect of an environmental health issue. They may be used to describe and communicate overall environmental health status and to track trends. In the *PACE EH* process, indicators are used in developing issue profiles (Task 9), ranking and prioritizing the community's environmental health concerns (Tasks 10 and 11), and ongoing evaluation (Task 13).

Due in part to local variability, scientific uncertainty, and differing values, there is no national or scientific consensus on a set of environmental health indicators that are most appropriate for use in all communities. This section therefore guides the user in developing environmental health indicators that reflect local conditions and concerns. The process of devising indicators will also provide important opportunities for discussion about the collection, interpretation, and application of data. The development of indicators is not a one-time exercise. Indicators should be adjusted as needed to reflect the availability of new data, changes in local conditions, and changes in community priorities.

Development of an indicator list is one of the most important aspects of the assessment process for ensuring long-term success and results, for several reasons:

- ▶ Local environmental health assessment and the process of making measurable improvement in local status are most effective and best supported over the long term when meaningful measurements are available to help define areas of concern and to mark change. Well developed and clearly communicated indicators will help sustain the effort, despite inevitable turnover among participants.
- ▶ The process of establishing indicators will highlight any pre-existing issues related to the availability of and the quality of locally useful data. It can also, in turn, draw attention to the need for improved or increased data collection as a local priority.
- ▶ Many members of the public, including local policy-makers, respond best to a simple, clear, easy-to-understand message. A good indicator with reliable data is a very effective communication tool for this audience.

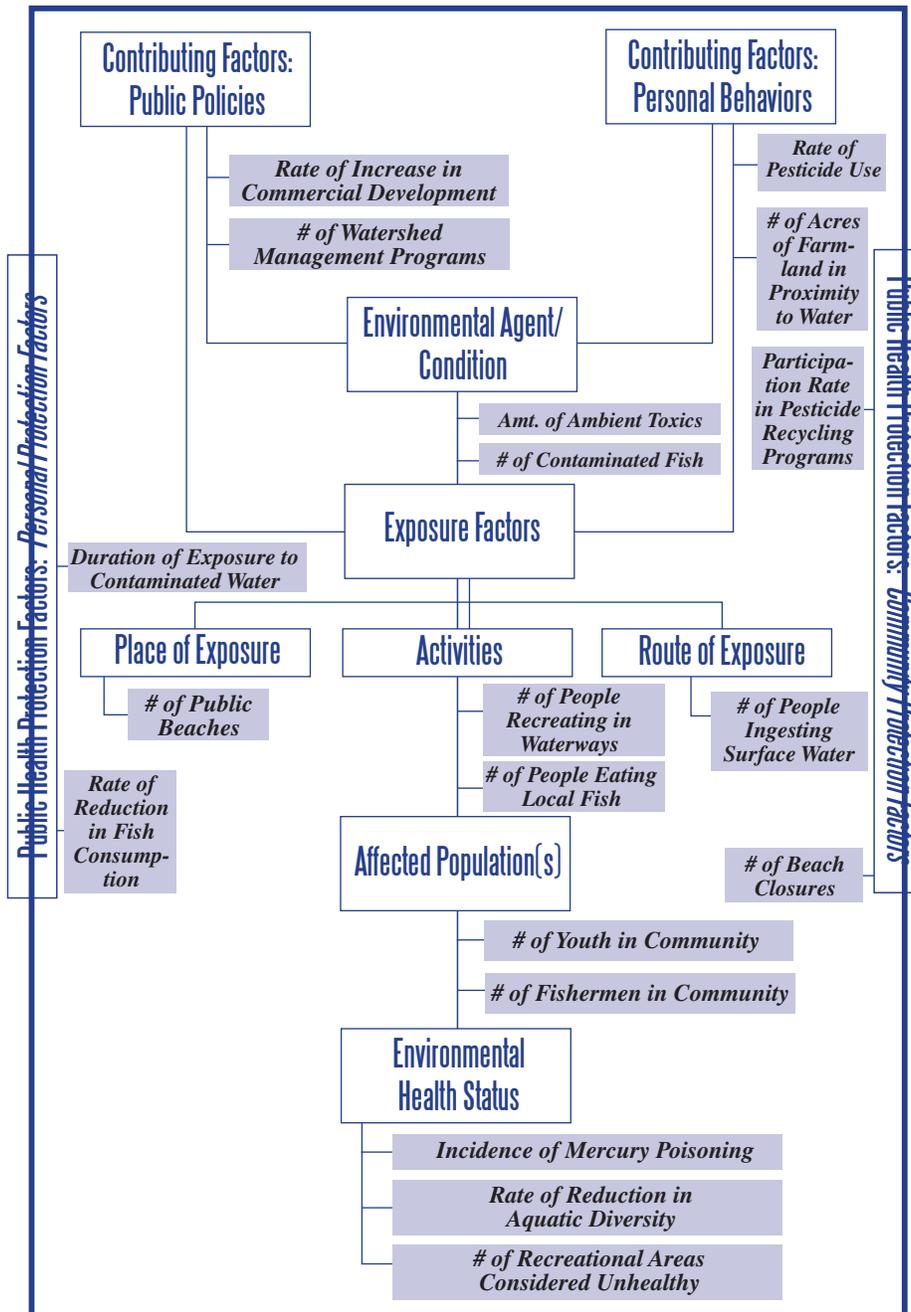
Develop list of potential indicators

The mapping process in Task 6 organized the relevant components from which indicators can now be derived. An example is provided below.



Analyzing Framework

Topic: Surface Water Quality



It may seem that the identification of indicators should come *after* the collection of data (Task 9). The authors, in fact, struggled with that question. Although indicators become more valuable as a measure of environmental health when the necessary data exist, relying on existing data to dictate the scope of a community’s environmental health assessment is far too limiting. From a philosophical standpoint, it is important that community values and concerns, not the availability of data, drive the development of indicators.



“The development of indicators may well be the most difficult and frustrating part of this process. At the same time, it is the most necessary and rewarding step. The indicators and related data can be used to identify priorities, analyze issues to develop a plan, and track progress after a plan is implemented. Communities should be discouraged from attempting to define all possible indicators and should select only a few of the most important issues to begin with.”

– PACE EH Field Coordinator



After using the framework to characterize the environmental health issue, statements can be constructed that describe the connections among the components. These statements can then be turned into indicators, or measures, which, when substantiated with data (in Task 9), can be used to document current conditions and trends.

Identify key indicators based on selected criteria

The previous step likely generated a lengthy list of options for possible indicators. The job now is to select from among these and choose a few that are robust and effectively describe the key elements of concern related to an environmental health issue. Selection criteria will facilitate this process. Use selection criteria to “screen” possible indicators. The following is a list of suggested criteria for selecting indicators of environmental health status. Amend this list to reflect the community’s values and interests.

Criteria for Selecting Environmental Health Indicators

1. SIMPLE:
 - ✓ Measures one item
 - ✓ Is clear
2. UNDERSTANDABLE:
 - ✓ Makes sense to users, general public, and policy makers
 - ✓ Reflects agreement among assessment team/community
3. ACCEPTABLE:
 - ✓ Acceptable to the community
 - ✓ Reflects community concerns
4. MEASURABLE:
 - ✓ Comparable
 - ✓ Quantifiable
5. DEFENSIBLE:
 - ✓ Supports a relationship between environmental factors and health status



NOTES FROM THE FIELD

Indicator Development

Pilot-site teams approached the indicator development stage in a variety of ways. One team generated reports containing basic information about human health effects, causes/contributors, pathways, and current public health protection factors, related to the issue under investigation. The team then organized three technical “subcommittees” to consider and report back on potential measurements (indicators) related to the issues and to choose three or four indicators they considered most meaningful locally. These were compiled into a “B” list of indicators. After discussion with the team, each subcommittee was tasked with choosing one or two “primary” indicators for each issue. These were compiled into an “A” list of indicators. In general, indicators were included on the “A” list only if data were currently collected

and were available. Where data were not being collected or made available, the item was added to a “Data Wish List.” The assessment team intends to circulate the wish list to relevant agencies and individuals to encourage increased data availability and development of new data sources.

At the completion of this task, the assessment team should have:

- ▶ An agreed-upon list of indicator selection criteria
- ▶ A set of key environmental health indicators



TASK 8:

Select Standards Against Which Local Status Can be Compared

- ▶ Identify externally driven standards
- ▶ Agree upon locally appropriate standards

The next step is to determine what the indicators tell about the *relative* status of the community’s environmental health. Standards, or benchmarks, provide a point of comparison for the community’s environmental health status. They may come from the state or national level, from a peer community, or from the community itself as it seeks to document attainment of goals over time.

Identify externally driven standards

As with indicators, there are no nationally agreed-upon standards for local environmental health status. The two most widely used standards in the public health community are 1) *Healthy People 2000-Objectives for the Nation* (HHS, 1990) and 2) *Healthy Communities 2000-Model Standards* (APHA, 1991). Although these publications may be helpful for broad community health application, neither is particularly robust in environmental health or reflective of community-developed priorities. Several state and local jurisdictions have attempted to address the inadequacies of these two national models by developing environmental health standards. The U.S. EPA also has developed environmental goals and benchmarks for 2005 (US EPA, 1996). In the absence of other standards, these resources may be useful in providing a national context.



FOR FURTHER INFORMATION:

- 📖 *Healthy Communities 2000: Model Standards* (APHA, 1991)
- 📖 *Healthy People 2000: National Health Promotion and Disease Prevention Objectives* (HHS, 1990)
- 📖 *Environmental Goals for America with Milestones for 2005* (US EPA, 1996)

Agree upon locally appropriate standards

Ideally, standards used to interpret local status (and benchmarks used to track progress) should reflect community-based goals and values. Community-driven standards can be derived from the work completed in Tasks 7 and 9. The assessment team can review the selected indicators, irrespective of existing data, and agree upon acceptable or desired data points to describe the issue. These then become standards





that can be used (in Task 9) to determine whether actual community data calls for significant attention to be paid to the issue. Similarly, indicators complete with data representing current status can serve as benchmarks (or starting points) against which progress over time can be demonstrated. These can be used to determine if public health protection factors or other intervention activities are, in fact, effective.

A local standard is not an end in itself. It can, and should, be changed over time as a community's environmental health status changes. Some issues may warrant the development of increasingly ambitious standards, as when new information about the prevalence of a particular health condition is generated; others, such as those pertaining to particular at-risk populations, may become less relevant locally as the community's demographics fluctuate.

At the completion of this task, the assessment team should have:

- ▶ Appropriate standards—national, state, local, and community-driven—against which environmental health status can be compared



TASK 9:

Create Issue Profiles

- ▶ Adopt a standardized format for organizing information
- ▶ Gather information
- ▶ Collect data for locally developed indicators
- ▶ Develop a summary statement

This task results in a profile for each identified issue. Profiles are simply a way to format information into succinct narrative reports. These reports will be used in Task 10 to rank the community-specific environmental health issues. The profiles can be prepared by one person, or the responsibility can be divided among team members, community volunteers, professional staff, and/or students. Whatever the process, the goal is to generate a comparable set of information about each issue.

Adopt a standardized format for organizing information

Adopt a uniform format for describing each environmental health issue. This will facilitate comparable analysis and future data collection efforts. An example of a format follows:

Environmental Health Issue Profile

Issue: _____

Scope:

Background:

Brief summary of Local Conditions (information known to the local health agency, including community-input results):

Standards:

- ▶ Locally appropriate (community-specified) goals/standards
- ▶ Healthy People 2010 objectives (if available)
- ▶ Healthy Communities 2000: Model Standards (if available)

Community-specific Indicators:

- ▶ Environmental health status
- ▶ Affected populations
- ▶ Exposure factors
- ▶ Environmental agents/conditions
- ▶ Contributing factors and behaviors
- ▶ Public health protection factors

Data Sources:

Evaluation (Assessment team's analysis):



Gather information

Collect comparable information on each issue. Profiles that include the same type of information and the same level of detail will provide a common basis for ranking and priority setting. Describing the *scope* allows the team to articulate a definition of the issue of concern and to ensure clarity for team members about what is being evaluated. General information about the issue, including national statistics if available, is listed in the *background* section. In developing a *brief summary of local conditions*, the team lists information known to the local health agency and other organizations/institutions represented on the assessment team, as well as impressions gathered through community-input efforts, related to the issue. By listing relevant *standards*, the team compiles local and national data reflecting both the current and the desired status of the issue.



NOTES FROM THE FIELD

Issue Profile Development

Preparation of issue profiles represents an excellent opportunity to spread the work of the assessment across team members. There will likely be several assessment team members who are authorities in specific scientific or technical fields and who can



prepare a profile fairly easily. (Some of these experts will be local health agency staff who might not be directly involved as team members.) What is the health official's role at this stage, aside from coordination? It is quite useful for someone to serve as a non-technical editor of profiles and ensure clarity for other non-expert team members or to the general public.

Collect data for locally developed indicators

Data gathering takes considerable time and effort. Work with a range of local, state, federal, and private agencies to obtain the most recent community-specific data. Familiarize the team with the limitations of environmental health data. For example, data collected for other purposes may not always be applicable to the environmental health context. The lack of quality assurance may necessitate an extra data evaluation step. Also, when the local population is small, such techniques as averaging three or more years of data, making estimates, or analyzing individual cases or events may be required. Consult with an epidemiologist or other specialist (perhaps at the state level or through local universities) for assistance in analyzing and interpreting data, as needed. Possible data sources for each type of indicator are described below.

FOR FURTHER INFORMATION:

📖 *Using Chronic Disease Data: A Handbook for Public Health* (Centers for Disease Control and Prevention, 1992).

Environmental health status

► Mortality data

These data provide the initial basis for assessing the health of the community. They can be obtained from state and local health agencies. Typically, incidence data are provided for each cause of death, and the total number of deaths by cause is expressed as a percentage of total deaths in each of nine age groups. Secondary contributors to death (e.g., workplace exposures) may not be noted.

► Reportable disease data

Reportable disease data are also available from state and local health agencies. Reporting requirements differ from state to state, and not all reportable diseases have environmental implications. Find out about reporting requirements in the target community, and try to obtain at least five years of data for diseases that may be related to environmental exposures or endpoints. Evaluate and interpret trends or variations in annual incidence.

► Hospital discharge data

Hospital discharge data constitute an important source of morbidity information. Aggregated data sets usually provide information on age, race, sex, method of payment for services, and length of hospital stay. Unfortunately, not all states or hospitals collect discharge data. If the data are available, they will be coded by the International Classification of Diseases (ICD) system.

► **Injury data**

Injury data may be available from hospital emergency departments, state and local transportation departments, and emergency medical and ambulance services. In addition, the Consumer Product Safety Commission (www.cpsc.gov) collects national data about injuries linked to specific products. Information on unintentional poisonings is available from local or regional poison control centers.

► **Data on environmental or quality-of-life endpoints**

When the community's environmental health status is described in terms of quality-of-life and ecological outcomes, morbidity and mortality data will need to be supplemented with data that reflects physical, biological, and even social attributes (e.g., information on pollutants, land use, endangered species, open space and parks, surface water quality). Data sources will therefore extend beyond health agencies to other levels of government and other sectors.

Federal agencies typically maintain data for programmatic or statutory reasons. For example, EPA maintains data from a national network of ambient air monitors as required by the Clean Air Act (Aerometric Information and Retrieval System [AIRS]). EPA also compiles state and national information on water quality, as required by the Clean Water Act. Generally, municipal services (e.g., parks and recreation, sewers, noise abatement) are the domain of local governments. Because responsibilities often overlap, however, starting with a municipal department may lead to a state natural resource agency with responsibility (and data) for natural areas and wildlife or a federal agency like EPA that tracks compliance of wastewater treatment facilities. In some cases, data collected by non-government organizations (e.g., local land trusts) can supplement the inventories of public authorities. Statistics on issues such as crime, education, and substance abuse will be available from local police departments, service providers, and institutions.

Affected populations

The most accessible and detailed information sources on populations are the U.S. Census of Housing and the U.S. Census of Population. These provide statistics on households and individuals aggregated in most cases by block or census tract, as well as by zip code, town, state, and nation. Hundreds of demographic data fields (e.g., age, ethnicity, income) as well as behaviors such as commuting times and shopping are included. Census data are available in hard copy, on CD-ROM, and online (www.census.gov). The information is limited, however, by the 10-year intervals between data collection periods.

Other data sources on high-risk populations include the various departments and institutions that work with specific groups (e.g., schools, prisons). If national data do not provide an adequate level of detail, try state agencies or municipal departments of planning, taxation, or community development.

Exposure dynamics

Look for information on exposure factors in the literature on that topic or from professionals in the field.





Environmental agents/conditions

Data on environmental agents and conditions are available from both the EPA and state/local environmental agencies, natural resources agencies, pollution control agencies, and health departments.

EPA maintains several monitoring systems to track ambient pollutants in water and air:

- ▶ Data on water quality are provided in the biennial *State of the Nation's Waters*, a compilation of reports required of each state under the Clean Water Act.
- ▶ Ambient air monitoring and emissions data are compiled in the annual *Air Quality and Emissions Trends Report*.
- ▶ Data on ambient air quality (concentrations of six major “constituent pollutants”), collected via a national network of monitors, are available from the Aerometric Information and Retrieval System (AIRS).
- ▶ Data on drinking water are derived from state Safe Drinking Water Information System (SDWIS) databases, which include information on violations of drinking water standards for levels of selected contaminants.

Most of these national data sets are based on reports from states, municipalities, or even individual facilities. If the level of detail is inadequate, seek more specific data from the corresponding state or local agencies. Other sources of data on local conditions include the municipal or state agencies with responsibilities for particular agents such as waste or noise. Private organizations and institutions also might collect data for specific purposes; for example, a local land trust might maintain an open space inventory or database of forest cover.

Contributing factors and behaviors

A wide range of factors might contribute to a particular environmental health issue. Data sources therefore will be similarly diverse. Direct factors, such as emissions of pollutants into the environment, can be described by use of EPA data collected under various regulatory programs. Potential sources are the Toxics Release Inventory (an annual report from selected industrial sectors on release and transfer of certain chemicals) and the annual Air Quality and Emission Trends Report. EPA and some delegated states maintain permitting programs for point-source releases to surface waters. Contact EPA or the state department of environmental quality/protection regarding the national pollutant discharge elimination system (NPDES) and associated data. Other state and local government programs may track data relevant to their responsibilities (e.g., solid waste, hazardous waste generation, driving distances and traffic counts, land use, population growth, economic contributors, backyard burning).

Public health protection factors

Community protection factors encompass a range of responses and activities (e.g., licensing and inspection, staff training, surveillance, hazard control). Assessment teams will therefore need to extend their data search to multiple public and private sector institutions. Personal protection factors can be explored through use of a “behavioral risk factor survey,” designed to identify relationships between environmental factors and human health. Review the inventory of local environmental health resources (Task 1), and check the list of organizations, data sources, and contacts.

The local public health agency should be able to identify key information sources for environmental health data and assemble a description of the type and quality

of information available. Most other state and municipal agencies maintain some measure of their own activities (e.g., permits issued, compliance rates, number of training seminars conducted) or of community actions (e.g., recycling rates, carpooling statistics). When thinking beyond governmental responses, consider what organizations or groups in the community might be involved in certain activities. For example, a litter cleanup program might track the number of volunteers or the amount of trash picked up; a YMCA might document the utilization of its educational offerings or outreach programs.

Suggested Starting Points for Data Collection:

Federal

Environmental Protection Agency (EPA) (www.epa.gov/)
Centers for Disease Control and Prevention (CDC) (www.cdc.gov/)
National Forest Service (www.fs.fed.us/)
National Institutes of Health (NIH) (www.nih.gov/)

State

Environmental quality/protection agency
Natural resources agency
Forests and parks

Local

Municipal departments (waste, water, pollution control, parks and recreation)
Planning department/commissions
Institutions (schools, prisons, etc.)

Non-governmental

Land trusts
Watershed groups
Non-profit or advocacy organizations

Applying data to indicators

Once sources of data have been identified, the next challenge is to revisit the indicators developed in Task 7 and locate specific corresponding data. A suggested methodology is to:

- ▶ Review the wording. What does the indicator measure? What does this mean?
- ▶ Identify relevant data sources. What data sets support the indicator?
- ▶ Develop or modify a data-screening tool. What are the key data characteristics (scale, units)? How much information is needed?
- ▶ Screen potential data. Do the data fit the indicator?
- ▶ Identify gaps in data. How can data availability problems be resolved? (See box: Building Indicators without Data)
- ▶ Set up a data acquisition and management system. How will the data be stored, manipulated, and represented visually?



“Data that are unavailable or non-existent today can be made available to you and your partners in the future—but probably not until they are first designated as important to the community. PACE EH is an excellent mechanism for sparking change in the way the community addresses environmental health issues and how it gathers relevant environmental health data. Your team’s ‘call for data’ could be an excellent justification in a grant application to improve local surveillance and reporting systems. It also could be an opportunity for students to undertake a project in conjunction with local technical experts—data for you and a learning experience for them.”

- PACE EH Field Coordinator





Building Indicators without Data:

If indicators are selected for which no data exist, then the team has a number of options:

- ▶ Revisit the indicator. Is there a surrogate indicator that could be used? Is this measure necessary?
- ▶ Revisit the data sources. Can data from other data sets be manipulated? Are there other sources of information that could be tapped?
- ▶ Develop new data sources. Can existing monitoring systems be modified? Can the necessary data be generated?

A completed profile might look like the following.

SAMPLE ENVIRONMENTAL HEALTH ISSUE PROFILE: Recreational Environments

Scope:

This category addresses the availability of and access to parks and recreational facilities such as swimming pools and playgrounds. It includes issues relating to the continued safety, maintenance, growth, and sanitation of those facilities.

Background:

Each year more than 7,000 people drown in the U.S. Drowning is the second leading cause of injury-related death for children aged 1 to 19 (1995 data). Outbreaks of waterborne disease transmitted through recreational pools or spas can also be a health hazard. According to the U.S. Consumer Product Safety Commission, about 200,000 children 15 years of age or younger are treated each year at hospital emergency rooms for injuries suffered using playground equipment. Nationally, 10-20 children die from injuries involving playground equipment each year.

Brief Summary of Local Conditions (information known to the local health agency):

With x bathing places and an estimated x people swimming in public pools per year, a potential health hazard exists via inadequately treated water, lack of properly trained lifeguards, failure to provide adequate safety measures, and the presence of vectors. In addition, the recent proliferation of specialty facilities, such as spas and hot tubs, with elevated water temperatures, agitated pools, and water slide facilities pose increased problems in maintaining adequate water quality and safety standards.

There are x public playgrounds and x children under the age of 15 in the community. Emergency room records indicate x children are treated each year for playground-related injuries. A recent death of a young child at a playground in the county brought the issue of playground safety to the forefront of public attention.

Standards:

Appropriate goals/standards (e.g., locally defined):
(specify local rules, regulations, or other relevant guidelines)

Healthy People 2010 objectives:

Reduce potential risks to human health from surface water, as measured by a decrease to no more than 15 percent in the proportion of assessed rivers, lakes, and estuaries that do not support beneficial uses such as fishing and swimming.

Provide academic instruction on injury prevention and control, preferably as part of quality school health education, in at least 50 percent of public school systems (K-12).

Healthy Communities 2000: Model Standards:

By _____ there will be no more than _____ deaths per year that are attributable to the recreational environment among persons using controlled recreational areas.

By _____ the incidence of preventable injuries that are attributable to controlled recreational areas will not exceed _____ per year.

By _____ all controlled recreational areas will be free of known health and safety hazards.

Suggested indicators:

- ▶ **Environmental Health Status (existing or potential):** number of drowning deaths per year
- ▶ **Affected Population:** individuals using public swimming and/or boating areas
- ▶ **Exposure Factors:** number of unsafe public swimming and/or boating areas
- ▶ **Environmental Agent/Condition:** pollutants in swimming and/or boating areas
- ▶ **Contributing Factors and Behaviors:** pesticide use and run-off in surrounding areas
- ▶ **Public Health Protection Factors:** existence of surveying and sampling programs for public swimming and water recreation areas

Data sources:

city, county and state health agencies; local injury prevention agency; hospital records

Evaluation (Assessment Team's analysis):

(review of local data; summary of magnitude of problem in the community)



“One really important contribution of PACE EH to our health department has been the focus on data and indicators. Without local data, it is difficult to show local need regarding an environmental health issue, and to demonstrate when (or if) change has been effected. These data are beyond our ability to find and gather without cooperative help from local partners. By assembling a group of community partners with an agreed-upon mission, health department staff can take advantage of the collective expertise and the combined resources.”

- PACE EH Field Coordinator





NOTES FROM THE FIELD

Decision Making in the Face of Incomplete Data

Several pilot-site coordinators encountered a lack of data relevant to the environmental health issues identified by the community. The dearth of data almost derailed one assessment process because it left the team uncertain about how to proceed. Interviews with site coordinators generated three coping strategies for avoiding this potential pitfall.

1. Be aware of the possibility that sound environmental health data on specific issues selected by the team may not exist, and prepare the team. Remind the team that their work will, among other things, help to remedy the problem of insufficient data for future assessment activities. Stress that information on local perceptions of environmental health, ascertained through community outreach, is itself useful data.
2. Be prepared to pursue data sources not usually used by local public health agencies. Assessment team members represent diverse professional and personal interests. They should be queried about the availability of relevant data. Many field-test sites found that relevant data were available; they just did not know where to look. Possible sources include: local environmental protection agencies, Audubon Society chapters, local bird-watching groups, senior citizen groups, youth organizations, and local science clubs.
3. Use the lack of data for a given issue to inspire an action step in the assessment process. If the community and assessment team identify an issue for which no data exist, then there is a clear need to begin collecting data on that topic. Organizing a system for data collection is a worthwhile component of an environmental health action plan.

At the completion of this task, the assessment team should have:

- ▶ Developed profiles for each environmental health issue



TASK 10: RANK ISSUES

- ▶ Determine the purpose of ranking
- ▶ Decide on ranking criteria
- ▶ Select a method for ranking
- ▶ Rank the issues

At this point, the team uses the profiles developed in Task 9 to compare issues according to *the relative importance* of each issue against all other environmental health issues identified by the community. This section describes a technique for undertaking a standardized ranking process. The technique can be adapted as needed to suit the needs and goals of the team. Explicit discussions about why one issue is more important than another will contribute both to a collective appreciation for community values and a greater understanding of the issues themselves. The following steps focus on developing criteria, selecting a ranking method, and carrying out the ranking process.

Determine the purpose of ranking

The first step in designing a ranking process that is tailored to the community is deciding what the team hopes to achieve through the process and how the results will be used. Two questions to consider are: 1) What outcomes are expected from the process? and 2) How will the results of the ranking be used?

If the desired outcome is to build community support, then the assessment team might choose to use a tool that emphasizes community values over technical information. One way to do this is to calculate additional weight for criteria that the community has said are especially important, such as impact on children. Other purposes might include educating the public, changing departmental priorities, and cataloguing technical information for a range of future uses. This decision has implications for who should be engaged in the process, what information should be considered, and how the information should be packaged and presented.

Decide on ranking criteria

Although individual judgment plays a role in the ranking process, the use of clear and agreed-upon criteria will ensure that the participants view the process as fair and valid. The process can be facilitated by use of a worksheet that standardizes the criteria, summarizes the team's knowledge and attitudes about a given issue, and alerts members to additional data needs. The information to complete the worksheet is derived from the corresponding issue profile developed in Task 9.

Use the sample worksheet on the following page as a starting point in the discussion of criteria. In the sample worksheet, each environmental health issue is characterized according to: magnitude of risk, distribution of risk in the community, and severity of risk. Discuss these criteria. Do they make sense for the community being assessed? Will they help in the ranking process? Are there other criteria that would help in discriminating among the issues? The set of criteria chosen by the team may be similar to those on the sample worksheet or completely different. What matters is that the participants agree on a set of criteria and consider these criteria as they evaluate each issue.



“Group discussions were pertinent and essential during the ranking process.”

- PACE EH Field Coordinator





“During the ranking process, members’ preconceived perceptions needed to be addressed. Those with particular backgrounds had strong motivation for that area, regardless of data. In addition, committee members relied on members with particular strengths for guidance. They then based a value judgment on the opinion, their perceptions, and the data.”

- PACE EH Field Coordinator



ENVIRONMENTAL HEALTH ISSUE RANKING WORKSHEET

Environmental Health Issue _____

GEOGRAPHIC:

Does this issue affect our community more than it does the following?

	YES	NO	UNKNOWN	RATIONALE/SCORE (Indicate score last)
National				
State				
City				
County				
Municipality				
Other region: _____				
(specify)				

MAGNITUDE: How many people does it affect in this community?

<500 people				
500 - 999				
1,000 - 9,999				
10,000 - 99,000				
100,000 - 1 Million				
1 Million+				

LOCATION: What areas of the community are affected?

Home or apartment				
School or day care				
Institution				
Workplace				



SENSITIVE POPULATIONS: Who in this community is most affected?				
	YES	NO	UNKNOWN	RATIONALE/SCORE (Indicate score last)
Pregnant Women				
Immuno-compromised persons				
Persons with asthma				
Children				
Elderly				
Other: _____				
REASON FOR CONCERN: Is the issue/risk associated with the following?				
High mortality (death) rate				
High morbidity (disease or injury) rate				
High disability /loss of mobility				
Reduced potential life expectancy (YPLL)				
Global implications				
Negative impact on ecosystem				
High castastrophic potential (large number of deaths and injuries in a shaort time)				
Delayed effects				
Irreversible harm to exposed population				
Possible harm to future generations(s)				
Involuntary risk				
An impact on me, personally				
Not sure why – but I am concerned				





TREND: Is the condition or risk changing? How?				
	YES	NO	UNKNOWN	RATIONALE/SCORE (Indicate score last)
Improving				
Staying the same				
Worsening				
OVERALL: Is this issue/risk of high, medium or low concern?				
HIGH CONCERN	MEDIUM CONCERN	LOW CONCERN	SCORING: Go back to the top of this column and place a number 1 in the section that most influenced why you evaluated this issue/risk the way you did. Indicate your top three or four reasons by adding numbers 2, 3 and 4 at the second, third and fourth most influential criteria.	

Select a method for ranking

After deciding on the criteria, adapt/revise the sample worksheet, or design another. Fill out the worksheets as a group or individually, using information from the issue profiles created in Task 9. Develop a composite of individual scores through discussion and consensus building and/or use of group decision-making techniques. For example, assign numerical weights and values to the criteria and to the qualitative column headings. Quantify each row (by multiplying the weight assigned to the criteria by the numerical equivalent of the column heading), and calculate an overall numerical score to represent each person's opinion. The resulting scores are easily comparable and can be averaged or mathematically manipulated in any way the team considers appropriate.

For example, in evaluating environmental lead in the community, the assessment team (or one team member) may feel that environmental lead poisoning is of great concern: 1) in the older homes prevalent in the community, 2) in areas where children spend a great deal of time, and 3) in occupational settings. This opinion is represented on the worksheet as follows:

LOCATION: What areas of the community are affected?				
	YES	NO	UNKNOWN	RATIONALE/SCORE (Indicate score last)
Home or apartment	X			
School or day care	X			
Institution		X		
Workplace	X			

The team may then agree that a “yes” warrants three times the consideration of a “no” and that “unknown” warrants twice the consideration of “no.” The team may also decide that the lives of children in their community are of utmost concern and therefore assign the second criteria a weight of 2. Thus, the following numerical scores could be applied:

LOCATION: What areas of the community are affected?				
	YES (x3)	NO	UNKNOWN (x2)	RATIONALE/SCORE (Indicate score last)
Home or apartment	X=3			
School or day care (x2)	X=6			
Institution		X		
Workplace	X=3			

If team members work on this task independently and then wish to generate a group score, the results can be added (or averaged). Participants can also vote to reach group consensus. If there is discrepancy in individual evaluations, the team would listen to the arguments of those in support of each option and then vote for the more compelling “answer.” Continued, unresolved debate or controversy indicates a need to collect more information.

Rank the issues

At the end of the worksheet, participants are asked to summarize the importance of the issue (high, medium, or low concern). This step involves judgment and is therefore an expression of personal values. When translated into concrete and explicit criteria, these expressions of values provide fertile ground for developing mutually acceptable plans and defining a community’s priorities. This step therefore forms the foundation for the priority-setting task presented next. A potential pitfall at this point is assuming that all participants understand the professional judgments and public health “value” systems used to rank environmental health issues. Explicit articulation of these values will facilitate the process and minimize frustration, confusion, and non-productive debate. Participants should continually ask themselves: Why did I score this risk as I did? For example, is the risk of environmental lead exposure scored “high” because:

- ▶ The risk is unfairly distributed according to race?
- ▶ It affects the development of children rather than adults?
- ▶ It affects lower income persons who may not be able to choose lead-safe housing and thus may be more exposed to a health risk?
- ▶ It is particularly dangerous to pregnant women and their babies?
- ▶ All of the above?

All participants may not base their decisions on the same reasons or values. The underlying value systems on which health policies are based are generally unstated. By explicitly stating reasons for their rankings, participants at least can have a common basis for discussing values and policies and an opportunity to gain consensus on community health actions.





Whether summarized quantitatively or qualitatively, the final scores will allow the issues to be ranked relative to one another, with regard to the agreed-upon criteria. Issues found to be of “high concern” (or meeting some other agreed-upon cutoff point) will be evaluated in terms of overall community priorities in Task 11.

NOTES FROM THE FIELD

The Value of Local Process

Although the tools were found to be useful, and most pilot communities did not alter them significantly, many coordinators reported that their teams needed to put aside the supplied tools and think through locally appropriate ranking and prioritizing processes.

Ranking and prioritizing are complex and difficult processes, made more so because they require assessment team members to examine their own values, opinions and judgments. Thus, teams must understand the rationale behind any system for ranking and prioritizing the issues before participating in the exercise. Users of *PACE EH* may find the tools included here useful for beginning a discussion about their own ranking and prioritizing processes. This approach reflects the philosophical intent of the authors: users are encouraged to adopt included tools where helpful, alter them where necessary, or jettison them altogether if the team advocates a more locally appropriate approach.

At the completion of this task, the assessment team should have:

- ▶ A list of environmental health issues, ranked according to locally defined criteria



TASK 11:

SET PRIORITIES FOR ACTION

- ▶ Determine local priority-setting criteria
- ▶ Select a method for prioritizing
- ▶ Determine priorities

Once issues have been ranked, it still may be necessary to determine which are most important *for action*. Again, locally specific criteria that reflect community values can be used. Prioritizing issues allows the community to direct resources, time, and energy to those issues that are deemed most critical and practical to address.

Priority setting differs from ranking in that it takes into account a range of other factors within the community. Environmental health concerns, if they are to be addressed, must be evaluated within the context of public perception of risk (explored during the ranking process) *as well as* the constraints and opportunities presented by the community’s unique scientific, legal, economic, social, and political systems. It is therefore a more subjective process.

Priority setting also considers local issues in the context of county, state, national, and international influences; for some issues, local *ability* to effectively address the issue may be relatively low, despite significant concern. Understanding the degree to which

local action can effect change, as identified in this task, has implications for action plan development (Task 12). Priority and ranking could be performed simultaneously. The two processes are described separately to illustrate the importance of considering both the scope of the issue and the significance of the issue in the broader context of the community during action plan development.

Determine local priority-setting criteria

The following worksheet is designed to guide the priority-setting process, by using criteria other than magnitude, severity, and distribution (considered in the ranking process) to evaluate the issues deemed most important in Task 10. The goal of the process is to decide the feasibility of addressing each issue. These criteria should be reviewed by the assessment team and revised as needed to reflect the values of the community.

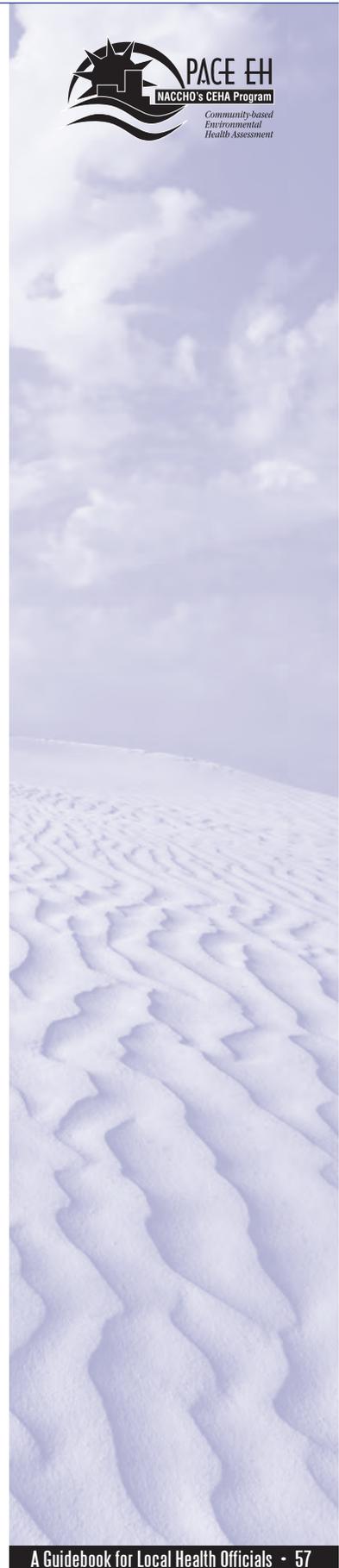


PRIORITY-SETTING WORKSHEET

Environmental Health Issue: _____

Evaluate the following criteria within the community as they relate to the environmental health issue:

	HIGH	MEDIUM	LOW	COMMENTS
Political support to address the issue				
Public demand/acceptability				
Preventability (through personal- and community-based action)				
Effectiveness of available interventions				
Affordability and cost-effectiveness of intervention				
Economic impact if <i>not</i> addressed				
Legal authority/constraints				
Confidence in data				
Other community considerations (specify: _____)				





Select a method for prioritizing

Use the worksheet provided (or one developed by the assessment team) to evaluate issues determined through the ranking process to be of “high concern.” As in the previous task, the worksheet can be filled out as a group or individually. Discussion and consensus building and/or use of group decision-making techniques can be used to develop a composite of individual evaluations. Assign numerical weights to the criteria and to the qualitative column headings as appropriate to reflect the relative importance of each. Then quantify the results of the exercise by multiplying the weight assigned to the criteria by the numerical equivalent of the column heading. Each person’s opinion can then be represented with an overall numerical score. The resulting scores are easily comparable and can be averaged or mathematically manipulated in any way the team considers appropriate.

For example, the assessment team (or a team member) may believe that addressing environmental lead poisoning would enjoy high political support, that environmental lead poisoning is highly preventable, and that reducing or eliminating environmental lead poisoning in the community is possible through known, cost-effective interventions. However, public interest may be undependable, legal authority to act may be questionable, and confidence in the data may be lacking. This opinion is represented on the worksheet as follows:

Evaluate the following criteria within the community as they relate to the environmental health issue:				
	HIGH	MEDIUM	LOW	COMMENTS
Political support to address the issue	X			
Public demand/acceptability		X		
Preventability (through personal- and community-based action)	X			
Effectiveness of available interventions	X			
Affordability and cost-effectiveness of intervention	X			
Economic impact if <i>not</i> addressed				
Legal authority/constraints			X	
Confidence in data			X	
Other community considerations (specify: _____)				

The team may then agree that a “high” warrants three times the consideration of a “low” and that “medium” warrants twice the consideration of “low.” The team may also decide that political support is the most critical factor to success in addressing the issue and therefore assign this criteria a weight of 2. Thus, the following numerical scores could be applied:

Evaluate the following criteria within the community as they relate to the environmental health issue:				
	HIGH (x3)	MEDIUM (x2)	LOW	COMMENTS
Political support to address the issue (x2)	X=6			
Public demand/acceptability		X=2		
Preventability (through personal- and community-based action)	X=3			
Effectiveness of available interventions	X=3			
Affordability and cost-effectiveness of intervention	X=3			
Economic impact if <i>not</i> addressed				
Legal authority/constraints			X=1	
Confidence in data			X=1	
Other community considerations (specify: _____)				

Calculate a cumulative score for each issue. In the example provided, environmental lead poisoning would receive a score of 19. If team members work on this task independently and then wish to generate a group score, the results can be added (or averaged). Participants can also vote to reach group consensus. If there is discrepancy in individual evaluations, the team would listen to the arguments of those in support of each option and then vote for the more compelling one. Continued, unresolved debate or controversy indicates a need to collect more information.

The process may be done mathematically, as described above, or more qualitatively, by simply engaging in discussion about the role of community factors in determining environmental health priorities. Use the above method, or devise an alternate one more appropriate to the community’s needs.





Determine priorities

The method used should result in the identification of a manageable number of priority issues. In the above example, one means of determining the top priorities is to select the three issues receiving the highest scores. In Task 12, action plans will be developed for these top issues only. Alternately, the team may choose to develop action plans for all issues ranked highly in Task 10 and to use the priority-setting process solely as a means of deciding the order in which the issues will be addressed.

At the completion of this task, the assessment team should have:

- ▶ A statement about the community's environmental health priorities for action

TASK 12: DEVELOP AN ACTION PLAN

- ▶ Develop goals and objectives
- ▶ Identify contributing factors
- ▶ Identify possible interventions and prevention activities
- ▶ Identify community assets
- ▶ Identify potential barriers
- ▶ Select an intervention(s)/activity(ies)
- ▶ Determine resource needs
- ▶ Identify potential partners
- ▶ Provide training
- ▶ Develop timeframe
- ▶ Determine measures of success

The outcome of the ranking and prioritizing processes will guide the development of strategies to address the community's most pressing environmental health concerns. For issues considered high priority, strategies should be developed to address the problem or ensure ongoing maintenance of the asset. The collection of strategies for all priority issues constitutes a community action plan for environmental health.

Moving to action planning requires another round of information gathering. More detailed information about the issue, available resources and related current activities, and the effectiveness of various potential interventions is needed. For each issue, the assessment team should engage in a strategic planning process, which could include the following steps.

Develop a goal and objective(s)

- | | |
|---------------------------|--|
| A possible goal might be: | Every child will be protected from blood lead poisoning. |
| A possible objective is: | Reduce by (date) the prevalence of blood lead levels exceeding 10 mcg/dL to zero in children aged 1-5. |

(from Healthy People 2010 Objective: Draft for Public Comment, objective, #5.11)

Evaluate each objective to ensure that it is **SMART** (specific, measurable, agreed upon, realistic, and time-based)*:

- ▶ **Specific** — An objective must be specific to be measurable. For instance, instead of defining an objective as “Educate the community,” a more specific objective would be “Train the community’s parents regarding the health effects of environmental lead and appropriate exposure prevention measures.”
- ▶ **Measurable** — It is easier to demonstrate progress towards objectives that are quantified. For example: “Train 80% of the community’s parents regarding the health effects of environmental lead and appropriate exposure prevention measures.”
- ▶ **Agreed upon** — Objectives should be developed through full involvement of the assessment team if the intent is to assure community commitment to accomplishing them.
- ▶ **Realistic** — “Realistic” is different from simply “feasible.” An objective is feasible if it is capable of being accomplished; it is realistic if it is feasible given time, resource, and technical considerations. For example, “Train 80% of the community’s parents regarding the health effects of environmental lead and appropriate exposure prevention measures” might be technically possible. But if it is not likely to happen in a timely fashion given current staffing limitations, it would not be considered realistic.
- ▶ **Time-based** — Target dates increase motivation, commitment and action. “Within 12 months, train 80% of the community’s parents regarding the health effects of environmental lead and appropriate exposure prevention measures” is more likely to be achieved than an objective without a target date.

*adapted from NACCHO’s *Partnerships for Environmental Education*

Identify contributing factors

Refer to the framework developed in Task 7 in which the team identified exposure factors, environmental agents/conditions, contributing factors and behaviors, and public health protection factors for the issues of concern.

For the issue of environmental lead and blood lead poisoning, contributing factors may include lead in paint, exposure to leaded paint in the home, existence of lead-based paint education programs in the community, and existence of screening programs for potentially at-risk children.

Identify possible interventions and prevention activities

Identify applicable *potential* interventions and activities as well as those *already in place* that should be maintained or enhanced.

There are three main types of interventions (Kansas Department of Health and Environment, 1995).

- ▶ **Individual-based interventions** — These lead to changes in individuals, typically through direct service to clients or residents.
- ▶ **Community-based interventions** — These create changes in populations (e.g., immunizing all children in the community).
- ▶ **System-based interventions** — These create changes in organizations, policies, laws, and structures.



“Assessment teams must be assured by the health department throughout the PACE EH process that the plan will be implemented and that the health department will strive to assure that indicators are tracked and that progress toward achieving long-range goals is realized.”

- PACE EH Field Coordinator





In the context of a community-based environmental health assessment, community-based or system-based interventions are likely the most appropriate options. There are also three types of prevention activities (Kansas Department of Health and Environment, 1995).

- ▶ **Primary prevention activities** — These prevent people from being affected by the problem in the first place, i.e., they prevent a disease, disability, or dysfunction before it occurs. Examples are lead abatement or educational efforts to minimize childhood lead exposure.
- ▶ **Secondary prevention activities** — These prevent a problem from affecting others or from causing serious or long-term effects to the individual or the environment; they focus on early detection and prompt treatment of an existing problem. An example is blood lead screening for at-risk children or chelation therapy for those with excessive blood lead levels.
- ▶ **Tertiary prevention activities** — These prevent an existing problem and its existing consequences from getting worse; they limit further negative effects from a problem. An example is rehabilitation of a child treated for elevated blood lead levels to address attendant attention-deficit disorder and/or learning disabilities.

Primary prevention is usually the best and most cost-effective type of prevention activity and therefore the most desirable intervention.

Identify community assets

These are needed to help implement each proposed intervention. Examples are educational organizations and schools that can disseminate information to parents about recognizing and treating blood lead poisoning. Other assets include resources available at the state and federal levels, such as educational materials or grant funds available through the state health agency, or resources provided from national organizations (e.g., the Alliance to End Childhood Lead Poisoning). Review the community asset work completed in Task 1 for ideas.

Identify potential barriers

Review work completed in Task 2 (identifying and characterizing the community) to identify conditions or aspects of the community that may have implications for implementation of the intervention. Language barriers, for example, may require the dissemination of educational materials in more than one language. Constraints associated with the broad scientific, legal, economic, social, and political systems in the community, as identified in Tasks 9 and 11, may also present barriers to implementing specific interventions or activities.

Select an intervention(s)/activity(ies)

Assess the feasibility of each proposed intervention and activity. Use of the PEARL test is one way to identify acceptable options. The PEARL test evaluates an intervention according to five criteria:

- ▶ **Proper and politically feasible** — Is the intervention suitable? Is any special authority or permission required?
- ▶ **Economic** — Does it make economic sense to use the intervention to address the problem? Are there economic consequences if the intervention is not carried out?

- ▶ **Acceptable** — Will the community accept this intervention? Is it consistent with local norms and values?
- ▶ **Resources** — Are there local resources or expertise? Can resources/expertise be obtained? Is financial support available or potentially available?
- ▶ **Legal** — Do current laws allow this intervention?

If the answer is “no” to any of the above questions, the team will need to develop a plan for getting to “yes” on that criteria. Because the community identified the issue as important, action should be taken. If, for instance, financial support is not available, a means of leveraging resources should be identified.

Determine resource needs

Consider the resources needed to successfully implement the intervention. These may include human, financial, informational, or other resources.

Identify potential partners

Again, the work completed in Task 1 (determining community capacity) on compiling assets within the community should help in identifying appropriate parties to assume/ share responsibility for undertaking or enhancing the activity. Consider health agency staff, other local agencies, community members, academic institutions, and other community organizations.

Provide training

Query persons/organizations identified to assume responsibility for implementation of the intervention about training needs. Provide (or ensure the provision of) needed training. At a minimum, the local public health agency should be able to pinpoint available resources and technical expertise appropriate to the identified need.

Develop timeframe

For purposes of evaluation, design a schedule for completion of identified actions.

Determine measures of success

Ultimately, achievement of the objectives and goals will verify “success.” Additional events or data points to indicate that the issue is being effectively addressed can be identified also. One way to develop appropriate intermediary success points is to divide the objectives into sub-tasks. For example:

Objective: Reduce by the year 2010 the prevalence of blood lead levels exceeding 10 mcg/dL to zero in children aged 1-5

by:

- ▶ Reducing within 12 months the prevalence of blood lead levels exceeding 10 mcg/dL by 5% (relative to current data)
- ▶ Reducing within 24 months the prevalence of blood lead levels exceeding 10 mcg/dL by 10% (relative to current data)



“An action committee can be formed to focus on implementation of the action plan. Members of these committees may or may not be the same individuals who served on the assessment team.”

- PACE EH Field Coordinator





NOTES FROM THE FIELD

Action Planning

Local variability makes it difficult to provide guidance on action planning. It is therefore the least predictable task in the *PACE EH* process. Nevertheless, pilot-site experiences suggest two factors that may affect the success of an action plan: 1) the relative duration of the plan, and 2) the stage(s) at which outcomes will be measured. The most successful plans offer both long- and short-term activities and measure outcomes periodically throughout the lifespan of the plan.

One coordinator noted that the ideal action plan would provide the assessment team with a method for long-range environmental health planning and assessment, but provide enough positive feedback to ensure the team can celebrate small successes along the way. By way of illustration, one pilot-site assessment team set up an action plan goal to “reduce asthma hospitalization by 10% by the end of 2003.” The long-range goal, however, will be achieved by specific smaller-scale activities beginning in the summer of 1999, such as convening a task force and conducting relevant local workshops. These activities provide concrete action which can be individually lauded and help monitor progress toward the ultimate goal.

At the completion of this task, the assessment team should have:

- ▶ A community-specific environmental health action plan



TASK 13:

EVALUATE PROGRESS AND PLAN FOR THE FUTURE

- ▶ Agree on the questions to be answered by the evaluation
- ▶ Evaluate the success of the assessment process
- ▶ Begin preparations for ongoing community-based environmental health assessment activities

The completion of the first assessment process should be celebrated and the hard work and dedication of the team members acknowledged. Over time, the success of the actions to address priority issues should be evaluated. An evaluation measures and documents the degree to which activities and outcomes are being achieved, within the designated timeframe.

Agree on the questions to be answered by the evaluation

Discuss the definition of “success” for the assessment. It may be based on process (e.g., the quality of interaction among community members), outcomes (e.g., improved health status), or a combination of the two. Discussing the questions the team hopes to answer through the evaluation contributes to the development of an effective evaluation process. These questions may include:

- ▶ Has the goal been achieved completely?
- ▶ Was it achieved in an effective and efficient manner?
- ▶ Did the process raise new issues or concerns?
- ▶ Are there ongoing measures that should be taken to ensure long-term success?

Evaluate the success of the assessment process

Indicators are often used as one tool to evaluate progress. The team may choose to continue reporting on the original indicators or create new ones that describe success in terms of the questions above. These may be mostly indicators of health status, or they may include other pieces such as protection factors to describe what the community is doing to make progress or identify where actions have been inefficient.

Information gathered by tracking indicators can be used to communicate progress to the community and/or to identify the need for additional intervention. Building on success, a community may choose to take on additional issues as priorities for action.

Begin preparations for ongoing community-based environmental health assessment activities

PACE EH is designed to offer a process for ongoing assessment and evaluation and not as a one-time project. Much of the value lies in tracking key environmental health indicators over time, in continuing the relationships developed through the process, and in evaluating the success of the community in addressing selected priorities. The process can be reinvigorated as changes in the community suggest the need for more information, additional community involvement, or a shift in concerns and priorities.

At the completion of this task, the assessment team should have:

- ▶ A plan for ongoing evaluation, both of the progress achieved on the action plan and of the assessment process



“Always remember that you are not necessarily conducting a single or two-year project that will end and be done.

Your PACE EH assessment is setting in motion a new mechanism for community health planning and will almost surely effect some significant long-term changes in the way your health department does business.”

- PACE EH Field Coordinator





“I see this process not as a one-time fix-all community needs assessment, but as an ongoing process of assessment and reassessment. By involving the community in the process we not only were able to gain new insights into community concerns, but we also were able to forge new alliances and advocates for environmental health matters”

- PACE EH Field Coordinator



PART IV: CONCLUSION



As a result of engaging in a community-based environmental health assessment process, information about a range of environmental health issues facing the community is assembled, along with a listing of informational resources available to the community. Because environmental health assessment is expected to be an ongoing activity at the local level, and not a one-time event, this information should be current and updated every three to five years (or as frequently as deemed appropriate by the assessment team).

Through an effective assessment process, a better understanding of community values and priorities is achieved. In addition, agency responsibilities and other locally available resources to address each issue are identified. A repository of supportive data and information and community resources/expertise is developed and made available to facilitate priority setting, policy development, and future program development. Thus, not only are current community issues addressed, but the local health official who capitalizes on this activity as a window of opportunity for developing and fostering positive working relationships with his or her community members, including partner agencies and organizations, will realize long-term, wide-ranging benefits.

In looking to the future, the assessment process outlined here will ultimately contribute to a national core set of locally appropriate environmental health indicators. Based on the work of local health officials and communities as they engage in *PACE EH*, these indicators will be invaluable to future users as a comparable set of data and standards against which they can chart their progress. In addition, *PACE EH* provides a mechanism for the development of a national statement about locally defined environmental health priorities, resulting in more appropriate decisions about programs, policies, and priorities at the local, state, and federal levels.



NOTES FROM THE FIELD

The Value of *PACE EH*

A community-based environmental health assessment is not an easy task. It is work-intensive, time-consuming, and complex. However, *PACE EH* pilot-site coordinators felt the work was well worth it. Indeed, in most pilot communities, the assessment process will be an ongoing community activity. One coordinator identified the changed attitude fostered among his staff and peers as the most valuable outcome of engaging in *PACE EH*. Community-based environmental health assessment is seen not simply as an added “sideline” task, but rather as an integral component of effectively performing the work of the local public health agency.

Pilot-site coordinators also find *PACE EH* invaluable for the many beneficial coalitions it helps communities forge. Through the *PACE EH* process, local health officials form collaborative relationships with a range of community residents and leaders. In many cases, these partnerships have involved the local health agency in community-based projects in which they otherwise would not have been included. “Not only did *PACE EH* bring to the table community players usually absent from health agency activities,” said one coordinator, “but it also provided local health agency staff members with seats at the ‘tables’ of a variety of other community-based initiatives.”

GLOSSARY

Community is an aggregate of persons with common characteristics such as geographic, professional, cultural, racial, religious, or socio-economic similarities; communities can be defined by location, race, ethnicity, age, occupation, interest in particular problems or outcomes, or other common bonds. (adapted from Turnock's *Public Health: What It Is and How It Works*)

Community Health is a perspective on public health that assumes community participation to be an essential ingredient for effective public health practice. It takes into account the tangible and intangible characteristics of the community—its formal and informal networks and support systems, its norms and cultural nuances, and its institutions, politics and belief systems.

Comparative Risk, a technical assistance program of the U.S. EPA, is a cross-media problem assessment and planning effort that can be applied at the federal, state, local or watershed level. The comparative risk process brings together diverse stakeholders to reach consensus on which environmental problems pose the most risk to human health, ecosystem health, and quality of life, and to develop consensus on an action plan to reduce those risks.

Environment is where we live, work, learn, and play.

Environmental Health focuses on the health of interrelationships between people and their environment, promotes human health and well-being, and fosters a safe and healthful environment.

Environmental Justice is the fair treatment and meaningful involvement of all people, regardless of race, ethnicity, culture, income or education level, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies.

Health is “a state of complete well-being, physical, social, and mental, and not merely the absence of disease or infirmity.” (as referenced in the Institute of Medicine's *Future of Public Health*)

Indicators are tools for quantifying, through direct or indirect measures, a significant aspect of an environmental health issue. They can be used to assess and communicate the status of and trends in overall environmental health.

Local Public Health Agency is an administrative and service unit of local or state government that carries out the functions of public health in a defined geographic area smaller than a state.

Local Public Health System consists of a wide array of government and government agencies, private organizations and providers, voluntary organizations, and individual citizens working to improve the health of the local populace.





Public Health is the art and science of protecting and improving community health by means of preventive medicine, health education, communicable disease control, and the application of the social and sanitary sciences.

Risk Assessment is the scientific process of evaluating the adverse effects caused by a substance, activity, lifestyle, or natural phenomenon. It may contain some or all of the following four steps: hazard identification, dose-response assessment, exposure assessment, and risk characterization.

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SAMPLE SURVEY TOOL



(The following tool was designed for Allegheny County's Environmental Comparative Risk Project and is reprinted with permission from Professor Paul S. Fischbeck, Department of Engineering and Public Policy, Carnegie Mellon University, Pittsburgh, PA)

Part 1. As you know, we are interested in evaluating and ranking health and environmental risks in Allegheny County. At the last meeting, many of you filled out a questionnaire listing what you considered some of those risks to be. At this meeting, we would like to find out the answer to a related, but different question: What is it about a particular risk that makes it a concern? We know that we want to consider the impact each risk has on human health, on the eco-system, and on quality of life, but we would like to define these major types of impacts more clearly – to know what specific factors (or impacts) characterize these impacts.

In the spaces below, please list the risk impacts that you consider important under each of these major categories. Please spend about 5 minutes and list as many factors as you can. To help you think about this, you might consider the following questions:

At the end of this project, you will rank issues in the county, with the “worst” risk at the top. What factors do you think will characterize the “worst” risk?

Do not list the risks themselves, instead consider what it is about a risk that makes it a concern.

Imagine that you are being asked to rank two risks that have exactly the same expected health impacts (in terms of fatalities and illnesses). What questions would you ask to help distinguish between these risks? How would you decide which is the greater risk?

Human Health:

Eco-System:





Quality of Life:

Part 2. Below are 18 of the most frequently mentioned risks from the last meeting (in random order). Please look them over and circle the 5 that you consider to be the greatest risks in Allegheny County.

- | | |
|--|---------------------------------|
| Indoor air pollution | Food safety |
| Depletion of natural resources | Water pollution |
| Hazardous waste disposal | Infectious diseases |
| Drinking water quality | Ambient (outdoor) air pollution |
| Motor vehicle accidents | Pesticides |
| Loss of biodiversity | Global climate change |
| Violence | Overpopulation |
| Use/abuse of alcohol & controlled substances | Radon |
| Natural disasters | AIDS |

Now please write down those 5 risks in the numbered spaces below (on the left). In the column on the right, list the factors that distinguish these risks from the other risks listed above. Why do you consider these five to be the most important?

1. _____

2. _____

3. _____

4. _____

5. _____





Part 3. Below you will see several pairs of risks. For each pair, please circle the one that you consider to be the greater risk, and tell us why you feel that it is so. If you do not have an opinion as to which is greater, list what you would like to know about the risks in order to decide.

Indoor air pollution

or

Drinking water quality

Why? _____

Radon in the home

or

Violence

Why? _____

Infectious diseases

or

Loss of habitat

Why? _____

AIDS

or

Natural disasters

Why? _____

Motor vehicle accidents

or

Food safety

Why? _____

Part 4. Now look back at the issues and factors that you considered in thinking about the questions on the previous two pages of this survey. If there are any factors that you did not list on the first page, please feel free to add them to the list. In considering all of these factors, please list what you consider to be the three most important factors in each major category.

Human health Most important factor: _____

Second most important: _____

Third most important: _____

Eco-systems Most important factor: _____

Second most important: _____

Third most important: _____

Quality of Life Most important factor: _____

Second most important: _____

Third most important: _____

Part 5. Below are six risks that have been mentioned on the previous survey. Using the seven-point scales on the right, please rate each risk.



<i>Please circle the appropriate number</i>	When this risk occurs, how likely is it that the consequence will be fatal?	To what extent are the impacts from this risk changing?
Indoor air pollution	1 2 3 4 5 6 7 certain not to be fatal certain to be fatal	1 2 3 4 5 6 7 increasing greatly decreasing greatly
Radon	1 2 3 4 5 6 7 certain not to be fatal certain to be fatal	1 2 3 4 5 6 7 increasing greatly decreasing greatly
Infectious diseases	1 2 3 4 5 6 7 certain not to be fatal certain to be fatal	1 2 3 4 5 6 7 increasing greatly decreasing greatly
Motor vehicle accidents	1 2 3 4 5 6 7 certain not to be fatal certain to be fatal	1 2 3 4 5 6 7 increasing greatly decreasing greatly
Natural disasters	1 2 3 4 5 6 7 certain not to be fatal certain to be fatal	1 2 3 4 5 6 7 increasing greatly decreasing greatly
Drinking water quality	1 2 3 4 5 6 7 certain not to be fatal certain to be fatal	1 2 3 4 5 6 7 increasing greatly decreasing greatly

	To what extent can people, by their actions, prevent mishaps or illnesses from this risk from occurring?	To what extent is the risk of death from this cause immediate—or is death likely to occur at some later time?
Indoor air pollution	1 2 3 4 5 6 7 much control little control	1 2 3 4 5 6 7 effect immediate effect delayed
Radon	1 2 3 4 5 6 7 much control little control	1 2 3 4 5 6 7 effect immediate effect delayed
Infectious diseases	1 2 3 4 5 6 7 much control little control	1 2 3 4 5 6 7 effect immediate effect delayed
Motor vehicle accidents	1 2 3 4 5 6 7 much control little control	1 2 3 4 5 6 7 effect immediate effect delayed





Natural disasters	1 2 3 4 5 6 7 much control	little control	1 2 3 4 5 6 7 effect immediate	effect delayed
Drinking water quality	1 2 3 4 5 6 7 much control	little control	1 2 3 4 5 6 7 effect immediate	effect delayed

	To what extent are these risks understood by science?		How many people are exposed to these risks in Allegheny County?	
Indoor air pollution	1 2 3 4 5 6 7 risk levels known precisely	risk levels not known precisely	1 2 3 4 5 6 7 few	many
Radon	1 2 3 4 5 6 7 risk levels known precisely	risk levels not known precisely	1 2 3 4 5 6 7 few	many
Infectious diseases	1 2 3 4 5 6 7 risk levels known precisely	risk levels not known precisely	1 2 3 4 5 6 7 few	many
Motor vehicle accidents	1 2 3 4 5 6 7 risk levels known precisely	risk levels not known precisely	1 2 3 4 5 6 7 few	many
Natural disasters	1 2 3 4 5 6 7 risk levels known precisely	risk levels not known precisely	1 2 3 4 5 6 7 few	many
Drinking water quality	1 2 3 4 5 6 7 risk levels known precisely	risk levels not known precisely	1 2 3 4 5 6 7 few	many



Part 6. Please complete the following.

- 1. Highest level of formal education: Some high school
 Completed high school
 Some college or trade school
 Completed college
 Graduate school
- 2. Are you: Homeowner Renter
 Live with family or friends without rent

What is your Zipcode: _____

- 3. Number of people who live with you: _____
- 4. Your approximate age is: 20 or under 21-40
 41-60 Over 60
- 5. How would you describe your health over the past few years? Excellent
 Good
 Fair
 Poor
- 6. Your Sex: M F
- 7. What is your present status? Employed Unemployed
 Student Retired
- 8. How would you describe your career? Homemaker
 "White collar"
 "Blue collar"
 Service/clerical/secretarial
- 9. Do you consider yourself to be active in the environmental movement?
 Yes No

- 10. How often do you read newspapers?
 daily, over 30 min. daily, under 30 min. occasionally rarely

How often do you read magazines?
 daily, over 30 min. daily, under 30 min. occasionally rarely

How often do you read books?
 daily, over 30 min. daily, under 30 min. occasionally rarely

- 11. How often do you watch TV?
 daily, over 60 min. daily, under 60 min. occasionally rarely

How often do you watch TV news, news magazines, science or health shows?
 daily, over 30 min. daily, under 30 min. occasionally rarely

Thank you for helping out with the project.



NACCHO

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