

The Local Board of Health

Environmental Health

Primer



National Association of Local Boards of Health
(NALBOH)



National Environmental Health Science &
Protection Accreditation Council (EHAC)



Centers for Disease Control and Prevention
(CDC)



A Message from Dr. Henry Falk

*Director, National Center for Environmental Health
and Agency for Toxic Substances and Disease Registry*

The CDC National Center for Environmental Health is pleased to sponsor and provide technical support for *The Local Board of Health Environmental Health Primer*. Local boards of health are of vital importance to the public health of our nation. Boards of health are on the front lines, dealing with numerous public health issues, establishing health policies and promoting public health initiatives where it counts the most -- at the local level.

Environmental public health is by far, the broadest field of public health and is often, the most technically challenging. Local boards of health are routinely required to make decisions regarding complex and often controversial environmental public health issues. As the role of environmental public health continues to expand, so will the role of local boards of health. In addition to the traditional issues of food safety, on-site wastewater disposal, and private water supply protection, boards of health are becoming much more involved in issues such as solid and hazardous waste management, mold and other indoor air quality issues, land use planning and terrorism preparedness. Emerging pathogens such as West Nile virus have required boards of health to devote much more time to mosquito and other vector control issues.

The Local Board of Health Environmental Health Primer is an excellent resource guide that will help to provide a basic understanding of the environmental public health sciences. Through an awareness of the environmental public health concepts and principles provided in the *Primer*, members of local boards of health will be better prepared to make decisions that will help to ensure the health and safety of the communities they serve. I encourage board members along with others who are involved in environmental public health to read the *Primer* and refer to it regularly.

I would like to commend the many authors from the accredited environmental health programs who contributed their expertise to the development of the *Primer*. I would also like to express my appreciation to the staff of the NCEH Division of Emergency and Environmental Health Services, Environmental Health Services Branch who worked closely with NALBOH and provided technical support and oversight for this important project. Finally, I would like to commend the National Association of Local Boards of Health for assisting in carrying out a vision that will result in an outstanding resource for local board of health members as well as others in the environmental public health community.

The Local Board of Health Environmental Health Primer

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Foreword

The National Association of Local Boards of Health (NALBOH) and the National Environmental Health Science and Protection Accreditation Council (EHAC) are pleased to provide the *Local Board of Health Environmental Health Primer*. NALBOH and EHAC identified faculty of environmental health programs to develop the *Primer* that NALBOH is providing to local board of health members. The Environmental Health Services Branch of the Centers for Disease Control and Prevention (CDC), National Center for Environmental Health (NCEH) encouraged the project and provided technical oversight and support.

Local boards of health are responsible for assuring the provision of adequate public health services in their communities, including protecting a community from environmental health risks. A board of health's role is to:

- **Assess** a community's environmental health needs
- **Develop or recommend** policies and programs to meet a community's environmental health needs
- **Assure** that the personnel, training, and resources are available to support necessary environmental health programs.

This responsibility is a dynamic one. Needs change, the scientific knowledge base grows, and regulatory requirements are modified. Periodic evaluation and implementation of responsive program modifications are vital to ensure that community environmental health needs are met.

Reference Materials

At the end of each chapter, the authors provide references for a variety of technical and regulatory documents. Of particular importance are the following resource guides and tools.

First, the *Healthy People 2010* national health objectives, published by the U.S. Department of Health and Human Services, include a range of environmental health goals for both local and national communities. The chapters on environmental health, food safety, and injury and violence prevention, among others, may help local boards of health set appropriate objectives for environmental health promotion and disease prevention. *Healthy People 2010* and related publications, including comparative health data, may be downloaded or ordered from the U.S. Department of Health and Human Services' Healthy People website, <www.healthypeople.gov/>.

Second, boards of health may wish to explore the environmental health assessment tool developed by the National Association of County and City Health Officials (NACCHO). The Protocol for Assessing Community Excellence in Environmental Health (PACE-EH) is designed to help local boards of health and local public health agencies measure a community's environmental health status and needs. PACE-EH may be ordered from the NACCHO website, <www.naccho.org>.

Finally, the Environmental Health Competency Project, sponsored by NCEH, brought together thirteen national environmental and public health organizations to establish recommended core competencies for local environmental health practitioners. These competencies address three of the primary responsibilities of local environmental health programs: assessment, management, and communication. Descriptions of these competencies and the project's activities can be obtained from NCEH's Environmental Health Services website, <www.cdc.gov/nceh/ehs>. NALBOH encourages boards of health to become familiar with these competencies and to consider incorporating the project's recommendations into local environmental health programs and staff position descriptions.

How to Use This Primer

Your health department employs or contracts with professional staff to carry out board of health policies and regulations. In some cases, board members themselves may be called upon to implement policies. It is our belief that the *Primer* will provide useful assistance as you address your community's environmental health issues.

As issues emerge, the *Primer* should serve as a resource to identify key responsibilities and concerns related to boards of health. For more comprehensive coverage of these issues, technical resources should be consulted. The *Primer* has been designed in a loose-leaf form so that as NALBOH develops revisions, current information, and new chapters, you can easily update your copy.

We hope you find it helpful reading!

Neil Baker
NALBOH

Gary J. Silverman
EHAC

Acknowledgements

The National Association of Local Boards of Health (NALBOH) and the National Environmental Health Sciences and Protection Accreditation Council (EHAC) would like to acknowledge the many individuals and organizations that contributed to the development of the *Local Board of Health Environmental Health Primer*. The NALBOH-EHAC review committee included:

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Third, NALBOH and EHAC would like to recognize Daryl Rowe for his chapter on bioterrorism. The terrorist events in the fall of 2001 occurred before the publication of this document. NALBOH and EHAC felt it necessary that these events be included in future chapters. Daryl Rowe's original contribution to the document, however, was greatly appreciated.

Fourth, anonymous reviewers from health boards and public health agencies across the country played a key role by submitting practice-based editorial comments. E. Page Pratt must also be thanked for serving as a copy editor for the final document. NALBOH and EHAC appreciate all these efforts as this lengthy review process has resulted in a training manual that is tailored to meet the specific environmental health education needs of local board of health members.

Finally, NALBOH and EHAC thank the Environmental Health Services Branch of the Centers for Disease Control and Prevention, National Center for Environmental Health for funding this project and providing on-going support for local board of health environmental health training. Patrick Bohan should be recognized for his initial assistance in the development and oversight of this project. Michael Herring provided additional critical technical advice and oversight during the final stages of the project

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Executive Summaries

Based on extensive consultations with board of health members and environmental health experts, NALBOH initially identified twelve topics as basic areas to include in this first primer. Because of the terrorist events in the fall of 2001, the chapter originally intended to address bioterrorism was removed from this document. NALBOH plans to publish a chapter on emergency preparedness that will address such issues as nuclear, biological, and chemical terrorism.

Each chapter serves as a stand-alone resource. The chapters are not in-depth or technical, as their intended audience is policy makers rather than technical staff. A brief summary of each chapter follows.

Air Quality

Ambient (outdoor) air quality standard setting and regulatory enforcement are primarily federal and state level responsibilities. National standards have been established for six ambient air contaminants. All local areas must ultimately be in compliance with those standards. Local health departments may be actively involved in helping to implement and maintain community programs to meet specific air quality objectives. Additionally, local health departments can proactively identify and address specific concerns within their jurisdictions, including issues that fall outside of any formal regulatory programs.

Much less comprehensive regulatory programs govern indoor air quality, making local board of health involvement an important factor in protecting public health. For example, few programs provide effective governance of ventilation systems in schools. Yet the prevalence of asthma among children has been increasing dramatically - a disease that some believe *may* be linked to old buildings and inadequately maintained ventilation systems. Radon gas, animal and farm odors, and sick building syndrome are all examples of problems that can be serious, yet have no comprehensive regulatory control. The decisions of local boards of health determine the level of involvement by their health departments, directly affecting the quality of air in their communities.

Food Safety

Local health departments play a central role in protecting the public from food-borne illnesses. A local health department is usually responsible for licensing and inspecting food service facilities. Food safety programs tend to be most successful when they use a comprehensive approach toward the food safety education of food service managers, food

service personnel, and consumers. Furthermore, adoption of a systems approach to inspection, monitoring and surveillance of food safety, such as using the Hazard Analysis Critical Control Points (HACCP) tool, is particularly effective in protecting the public from food-borne illnesses.

Local boards of health directly influence food safety within their communities through the design and effectiveness of their regulatory programs. In addition, non-regulatory contributions can be made through such activities as directing health department staff to 1) provide educational programs, 2) prepare for food-borne illness investigations, and 3) work with related agencies having additional responsibilities for food safety.

Drinking Water

Preventing waterborne disease is a key public health concern. A fundamental need is to separate drinking water supplies from wastewater containing microbiological contaminants. Chemical and radiological contamination also can adversely affect water supplies and present unique problems for detection and mitigation efforts.

Local health departments are often called upon to respond to perceptions of inadequate water quality, independent of regulatory responsibilities. Rural areas supplied by wells and other local water supplies typically lack routine quality monitoring programs. Local health departments are often responsible for regulating wells and other local sources prior to new construction, but have no regular system for maintaining adequate quality after an initial inspection. People are often surprised to learn that there is no formal protection governing contaminants possibly present in the water used in their homes. Local boards of health have an opportunity to make an enormous contribution by developing policies that provide individuals without access to a municipal system with the education and tools needed to protect their individual water systems.

In municipal areas, water treatment plants usually provide the domestic source of water. These municipal supplies are controlled through a comprehensive federal and state regulatory structure. Local boards of health, again, can play an instrumental role in ensuring a safe water supply and working with the community. For example, health departments must be prepared to respond to emergency situations, to investigate disease outbreaks that may be water linked, and to provide leadership about drinking water issues, such as fluoridation. Community planning and development should consider the adequacy of the water supply. Boards of health can be key players in determining the character of future growth. Active involvement of local boards of health is essential to providing the high quality water supply necessary to maintain excellent public health.

Wastewater

Local boards of health are often responsible for providing oversight, assessment and evaluation of private home sanitary wastewater treatment programs. In rural areas, local health departments are often the only direct regulatory authority. However, this direct control is typically limited to initial on-site wastewater disposal (septic) system permitting and installation. Following installation, operations usually are not systematically monitored and maintenance is voluntary. Unsurprisingly, performance tends to vary widely. Health departments are often the lead agency responding to nuisances created by malfunctioning local systems.

In urban areas, sanitary wastewater is usually managed through a centralized system that incorporates the use of a wastewater treatment plant. Regulatory responsibilities are primarily those of the municipality following state and federal rules. Local health departments typically do not have a formal role in municipal wastewater management. However, should a real or perceived problem occur, a local health department often will be called first. Thus, it is important for local health departments to be familiar with the wastewater treatment systems in their communities. Moreover, if a health problem occurs, it is vital for local health departments to identify potential illness sources, including exposure to wastewater.

Economic development carries with it a burden to plan for wastewater disposal. Local boards of health have much to offer the planning process. Many communities now face problems related to wastewater control where a lack of planning has resulted in adverse situations with no simple remedies. Local boards of health have the opportunity to lead their departments in proactively addressing wastewater generation, treatment, and disposal issues.

Solid Waste

Local boards of health often have a primary role in assuring the proper management of solid wastes. These responsibilities can include regulation and licensure of waste management facilities. In addition, health departments may partner with other agencies, companies and the public in providing services affecting solid waste. These may include programs to increase recycling, to encourage the reduction of waste being generated, and to help obtain support (or at least minimize opposition) to new waste management facilities being located in a community. Frequently, boards of health play a key role in the development of new solid waste facilities, landfills and transfer stations. Providing

appropriate information to the public and a proper hearing process to allow for comment and review of the permit process is essential.

An important policy decision for a board of health is the appropriateness of moving beyond mandated regulatory roles and working as a community leader in promoting comprehensive waste management systems.

Hazardous Waste

Hazardous waste can be found almost anywhere in a community. A complex regulatory structure formally governs hazardous waste management and largely excludes local health departments from having primary responsibility. Yet, numerous incidents of exposure resulting in substantial adverse health effects demonstrate the need for local health department involvement.

Local boards of health help provide leadership in protecting their communities from hazardous waste. This may include such activities as:

- Contributing to pollution prevention and waste minimization programs,
- Implementing or supporting household hazardous waste collection programs,
- Being a partner during emergency response incidents,
- Investigating disease outbreaks that may be linked to hazardous waste exposure,
- Helping with zoning and other methods for encouraging compatible land uses, and
- Working with the community to ensure proportionate distribution of chemical pollution and waste treatment facilities within a community (e.g. not disproportionately affecting minority or low-income neighborhoods).

Vector Control

Vectors transmit disease-causing agents by mechanical or biological mechanisms. For example, mosquitoes act as vectors to transmit West Nile Virus, and fleas on rats may transmit bubonic plague. Local health department vector control programs involve surveillance of outbreaks (or potential outbreaks), public education about disease vectors, prevention of vector growth and development, reduction of adult vector populations, and, occasionally, immunization of susceptible hosts. It is critical that local boards of health provide resources for their health departments to fully accomplish the objectives of these programs.

Often the extent and method of implementing vector control programs is quite controversial. For example, a board of health must determine the appropriateness of using active control measures. Should chemicals be used to reduce a mosquito population, or is the risk from chemicals greater than the risk from mosquitoes? Local health department staff can provide important information regarding the outcomes of specific interventions for targeted pests, but broad social implications are more appropriately considered under the purview of boards of health.

Injury Prevention, Housing, Occupational Health, Recreational Water and Radiation Programs

Boards of health have regular involvement with a diverse number of programs, both through regulatory responsibilities and because of the need to provide protection for unregulated activities or conditions. In this chapter, discussion focuses on programs that also are important to the role of the health department. Specifically, attention is turned to programs for injury prevention, housing, occupational health and safety, recreational waters, and radiation.

In addition, recognition is given to the need for local boards' vigilance in ensuring that their departments respond to new threats to public health. For example, the recent popularity of tattoos and body piercing has led to an increased role in providing for protection from needles that potentially harbor disease-causing organisms. Health food and ethnic stores and restaurants, with their great diversity of products unfamiliar to most health department staff, provide new challenges for many health departments. Threats to public health can be very localized, and boards of health face challenges in ensuring that they provide the leadership necessary to meet the particular needs of their communities.

Risk Assessment, Management, and Communication

People often turn to health departments to learn if something is "safe." While apparently a simple question, it really involves the process of integrating the likelihood of an event with the consequences of that event. But knowing the probability that something will happen is only a first step (albeit an important one) toward understanding risk. Risk assessment must be followed by risk management, or the process of identifying, evaluating, and implementing intervention strategies.

Local boards of health have a responsibility to assure their health departments are correctly addressing their communities' most critical problems. Risk assessment is a vital tool in determining priorities. Moreover, the public often wants to be an integral part of that

prioritization process and the board of health plays a key role in providing the opportunity for meaningful input.

Investigation Tools: Epidemiology, Microbiology, and Toxicology

Local health departments need to investigate disease outbreaks, prevent environmental conditions conducive to adverse health outcomes, and thoroughly understand the relationship between environmental conditions and public health outcomes. To accomplish these missions, environmental health staff needs to have a thorough understanding of microbiology and toxicology, and be able to use the science of epidemiology as a research tool.

Local boards of health, in setting policy and overseeing health department activities, should have an understanding of the capabilities and limitations of these research tools. Epidemiology is particularly useful in determining statistically valid relationships between disease and environmental conditions. Toxicology is the science dealing with the effects of agents - biological, chemical, and physical - on living organisms. Local boards of health should ensure that these tools are used appropriately in decision-making and policy development.

Management Tools: Environmental Policy, Law, and Administration

Local health departments help their communities primarily through programs and policies that prevent disease and promote good health. Regulatory activities must be based on a thorough understanding of the law. Laws, statutes, regulations, and ordinances are all useful mechanisms for protecting the environment. Local health departments must have a clear understanding of their role and these legal devices. Local health departments are obligated to follow or enforce many standards affecting their communities, but also have opportunities to develop and implement their own community protections governing a host of environmental health (and other public health) issues.

Board of health members are actively involved in the process of creating new or revising existing public health policies. This is a difficult process requiring considerable knowledge of both the topical area and the community. Equally critical is involving the public in the process. One of the essential services of health departments is to “inform, educate, and empower people about health issues.” Boards of health must evaluate environmental health risks and manage those risks in such a way that public health threats are eliminated, minimized, or kept at acceptable levels. It is a difficult challenge, but critical to the success of a health department.

Conclusion

Through their roles in developing, recommending and implementing policy, local boards of health have a primary responsibility to protect the health of the public. These policies may involve providing regulatory services, including direct permitting and inspection of facilities. Many environmental health problems fall under the control of other agencies at state and national levels. However, lacking formal responsibility for an environmental health program does not eliminate the need for active local health department involvement.

Boards of health provide leadership in enabling their departments to meet specific regulatory obligations and in fulfilling a more holistic mission of comprehensive protection of their communities' health. Focusing only on the first of these roles would leave no agency with the comprehensive responsibility for the health of the public within a community. Assuming a broader role not limited to regulatory mandates gives the public confidence that their local health department is working in their best interest and is a good community partner.

Boards of health influence how ambitious local health departments are in protecting their communities. Some boards may choose to do the minimum - responding to regulatory requirements and reacting only as requirements change. However, health departments are well suited to understand emerging problems and to respond proactively. In addition, most state and federal environmental agencies have regulatory programs that are limited in scope to particular issues (e.g., air quality or water quality) or have limited objectives. Local boards of health can act across a variety of issues, work within a network of interests, and keep health, rather than the attainment of regulatory standards, as their primary objective.

With support from the Centers for Disease Control and Prevention, NALBOH and EHAC prepared this *Primer* to provide boards of health with essential information useful in guiding and developing the capacity of their health departments to protect the public's health. The success of local health departments is enhanced greatly by the informed leadership of their boards. Local health departments historically have played key roles in protecting their communities - new challenges have only increased the need for their active local involvement. This *Primer* will help local board members make a difference within their own communities and make a difference in people's lives by providing an environment promoting good health.

Abbreviations and Acronyms

ACM	Asbestos containing material
AIDS	Acquired Immune Deficiency Syndrome
APA	Administrative Procedures Act
APHA	American Public Health Association
AQI	Air Quality Index
ATSDR	Agency for Toxic Substances and Disease Registry
BOD	Biochemical oxygen demand
BRI	Building-related illness
CAA	Clean Air Act
CCP	Critical control points
CDC	Centers for Disease Control and Prevention
CERCLA	Comprehensive Environment Response, Compensation, and Liability Act
CESQG	Conditionally exempt small quantity generator
CO	Carbon monoxide
CSO	Combined sewer overflows
CWA	Clean Water Act
DO	Dissolved oxygen
EHAC	National Environmental Health Science and Protection Accreditation Council
EMT	Emergency Medical Technicians
ERS	Economic Research Service, United State Department of Agriculture
FDA	Food and Drug Administration
FOIA	Freedom of Information Act
GI	Gastrointestinal
GIS	Geographic Information Systems
HACCP	Hazard Analysis Critical Control Points
HAP	Hazardous Air Pollutants
Haz-Mat	Hazardous Materials
HHS	U.S. Department of Health and Human Services
HIV	Human Immunodeficiency Virus
IAQ	Indoor Air Quality
IR	Incidence rate
LBP	Lead-based paints
LEPCs	Local Emergency Planning Committees
LQG	Large quantity generators
MR	Mortality rate
MSW	Municipal solid waste
NAAQS	National Ambient Air Quality Standards
NACCHO	National Association of County and City Health Officials
NALBOH	National Association of Local Boards of Health
NASA	National Aeronautics and Space Administration
NCEH	National Center for Environmental Health
NEHA	National Environmental Health Association

NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
NRC	Nuclear Regulatory Commission
NSFC	National Small Flows Clearinghouse
OR	Odds ratio
OSHA	Occupational Safety and Health Administration
PACE-EH	Protocol for Assessing Community Excellence in Environmental Health
POTW	Publicly owned treatment works
PR	Prevalence rate
PSA	Public service announcements
RCRA	Resource Conservation and Recovery Act
RD	Rate difference
RR	Rate ratio
SARA Title III	Emergency Planning and Community Right-to-Know Act
SBS	Sick building syndrome
SERC	State Emergency Response Commission
SIP	State implementation plan
SQG	Small quantity generators
THM	Trihalomethanes
TMDL	Total maximum daily load
TSDF	Treatment, storage, and disposal facility
TSS	Total suspended solids
USDA	United States Department of Agriculture
USEPA	Environmental Protection Agency
WNV	West Nile Virus
YPLL	Years of Potential Lost Life

Internet Resources

Website	Organization
www.atsdr.cdc.gov	Agency for Toxic Substances and Disease Registry (ATSDR)
www.acgih.org	American Conference of Governmental Industrial Hygienists (ACGIH)
www.ahma.com	American Hotel & Lodging Associations (AH&LA)
www.aiha.org	American Industrial Hygiene Association (AIHA)
www.lungusa.org	American Lung Association
www.asmtusa.org	American Society of Microbiology (ASM)
www.awwa.org	American Water Works Association (AWWA)
www.afdo.org	Association of Food and Drug Officials (AFDO)
www.cdc.gov/ncidod/dpd	CDC Division of Parasitic Diseases
www.cdc.gov/ncidod/dvrd/disinfo/disease.htm	CDC Division of Viral and Rickettsial Diseases
www.cdc.gov/nceh	CDC National Center for Environmental Health (NCEH)
www.cdc.gov/ncipc	CDC National Center for Injury Prevention and Control
www.cdc.gov/ncidod/dvrd/spb/index.htm	CDC Special Pathogens Branch
http://wonder.cdc.gov	CDC WONDER database
www.cfsan.fda.gov/list.html	Center for Food Safety & Applied Nutrition
www.publichealthlaw.net	Center for Law and the Public's Health
www.cdc.gov	Centers for Disease Control and Prevention (CDC)
www.psychology.nottingham.ac.uk/research/credit/projects/modelling_decision_making	Communication and Decision Making
www.cpssc.gov	Consumer Product Safety Commission
www.reeusda.gov	Cooperative State Research, Education and Extension Service
www.eli.org	Environmental Law Institute
www.cfsan.fda.gov/~dms/ret-toc.html	FDA Recommend National Retail Food Regulatory Program Standards
www.fedworld.gov	FedWorld
www.fda.gov	Food and Drug Administration (FDA)
http://vm.cfsan.fda.gov/~lrd/foodteam.html	Food Safety Teams (FDA)
www.epa.gov/epaoswer/osw/hazwaste.htm	Hazardous Wastes
www.uwex.edu/healthyhome	Healthy Homes Partnership
www.healthypeople.gov	<i>Healthy People 2010</i>
www.epa.gov/epaoswer/non-hw/household/hhw.htm	Household Hazardous Waste
www.epa.gov/iaq	Indoor Air - EPA
http://icma.org/go.cfm	International City/County Management Association (ICMA)
http://ifc.org	International Food Information Council (IFIC)
www.hud.gov/offices/lead/index.cfm	Lead-based paint site
www.naccho.org	National Association of County and City Health Officials

Website

www.nalboh.org
www.uni.edu/playground/home.html
www.neha.org
www.ehacoffice.org

www.nfpa.org
www.cdc.gov/niosh/homepage.html

www.epa.gov/superfund/sites/npl/npl.htm
www.nrc.uscg.mil
www.restaurant.org
http://vm.cfsan.fda.gov/~dms/ret-toc.html
www.nesc.wvu.edu/nsfc/nsfc_index.htm
www.nsf.org
www.nrc.gov/
www.osha.gov
www.pprc.org
http://fightbac.org
www.safekids.org
http://seafood.nmfs.gov
http://toxnet.nlm.nih.gov
www.ul.com
www.unep.org
www.usda.gov
www.gpo.gov
www.uh.edu/admin/srmd
www.USCGBoating.org
www.fsis.usda.gov
www.epa.gov/airnow
www.epa.gov/ceisweb1/ceishome/sitemap.html
www.epa.gov/epaoswer/osw/generate.htm
www.epa.gov/epahome/rules.html
www.epa.gov/airs/criteria.html
www.epa.gov/oar
www.epa.gov/oar/oaqps
www.epa.gov/safewater
www.epa.gov/chemfact
www.epa.gov/epaoswer/osw
www.epa.gov/OWM

www.epa.gov/owm/mtb/decent/index.htm

Organization

(NACCHO)

National Association of Local Boards of Health (NALBOH)
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Partnership for Food Safety Education
Safe Kids
Seafood Inspection Program, NOAA
Toxicology Data Network, NLM
Underwriters Laboratory, Inc. (UL)
United Nations Environment Programme
United States Department of Agriculture (USDA)
United States Government Printing Office
University of Houston. Safety and Risk Management
US Coast Guard - Boating Safety
USDA Food Safety Inspection Service.
USEPA AIRNOW
USEPA Environmental Quality Website
USEPA Generate and Transport
USEPA Laws & Regulations
USEPA National Ambient Air Quality Standards
USEPA Office of Air and Radiation
USEPA Office of Air Quality Planning and Standards
USEPA Office of Ground Water and Drinking Water
USEPA Office of Pollution Prevention and Toxics
USEPA Office of Solid Waste
USEPA Office of Wastewater Management (OWM)

USEPA On-site/Decentralized Wastewater Treatment Systems

Website

www.epa.gov/oar/oaqps/permits/index.html
www.epa.gov/iaq/pubs
www.epa.gov/docs/iedweb00/radon/index.html
www.epa.gov/epahome/slate.htm

www.epa.gov/trs/index.htm
www.epa.gov/tri
www.epa.gov/ttn/atw/hapindex.html
www.epa.gov/enviro/wme
www.wef.org
www.wqa.org
www.law.indiana.edu/v-lib

Organization

USEPA Operating Permits Program
USEPA Publications
USEPA Radon
USEPA SLATE Networks - State, Local, and Tribal
Environmental Networks
USEPA Terminology Reference System
USEPA Toxic Release Inventory
USEPA Unified Air Toxics Website
USEPA Window to My Environment
Water Environment Federation (WEF)
Water Quality Association
World Wide Web Virtual Library: Law