

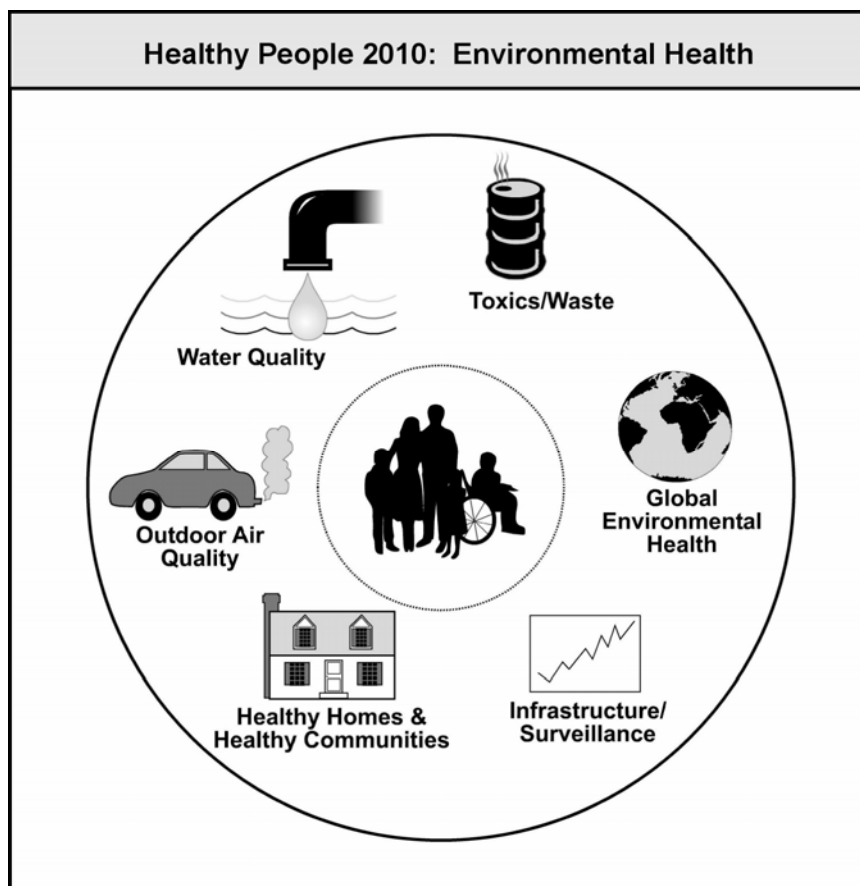
Getting People Healthy in New Orleans



Point 5: Environmental Health Lead Exposure

Goal: Promote health for all through a healthy environment.

Figure 8.1: *Healthy People 2010*: Elements of Environmental Health



OVERVIEW

According to the World Health Organization, “In its broadest sense, environmental health comprises those aspects of human health, disease, and injury that are determined or influenced by factors in the environment. This includes the study of both the direct pathological effects of various chemical, physical, and biological agents, as well as the effects on health of the broad physical and social environment, which includes housing, urban development, land-use and transportation, industry, and agriculture.”¹ The term “environment” also may be used to refer to air, water, and soil. This more narrow definition ignores the manmade environment created by a society. Where and how a society

chooses to grow and develop affects the quality of life by determining how long people spend traveling to work, shopping, or going to school. Where and how a society builds its houses, schools, parks, and roadways can also limit the ability of some people to move about and lead a normal life. Because the impact of the environment on human health is so great, protecting the environment has long been a mainstay of public health practice. National, state, and local efforts to ensure clean air and safe supplies of food and water, to manage sewage and municipal wastes, and to control or eliminate vector-borne illnesses have contributed a great deal to improvements in public health in the United States. Unfortunately, in spite of the billions of dollars spent to manage and clean up hazardous waste sites in the Nation each year, little money has been spent evaluating the health risks associated with chronic, low-level exposures to hazardous substances. This imbalance results in an inadequate amount of useful information to evaluate and manage these sites effectively and to evaluate the health status of people who live near the sites.² In the past, research in environmental epidemiology and toxicology has often been based on limited information. New knowledge about the interactions between specific genetic variations among individuals and specific environmental factors provides enormous opportunity for further developing modifications in environmental exposures that contribute to disease. Further research is needed to address these and other problems and to improve the science and management of health effects on people exposed to environmental hazards.³

Environmental factors play a central role in human development, health, and disease. Broadly defined, the environment, including infectious agents, is one of three primary factors that affect human health. The other two are genetic factors and personal behavior.

Human exposures to hazardous agents in the air, water, soil, and food and to physical hazards in the environment are major contributors to illness, disability, and death worldwide. Furthermore, deterioration of environmental conditions in many parts of the world slows sustainable development. Poor environmental quality is estimated to be directly responsible for approximately 25% of all preventable ill health in the world, with diarrheal diseases and respiratory infections heading the list.⁴ Ill health resulting from poor environmental quality varies considerably among countries. Poor environmental quality has its greatest impact on people whose health status already may be at risk. Because the effect of the environment on human health is so great, protecting the environment has been a mainstay of public health practice since 1878.⁵ National, tribal, state, and local efforts to ensure clean air and safe supplies of food and water, to manage sewage and municipal wastes, and to control or eliminate vector-borne illnesses have contributed significantly to improvements in public health in the United States. However, the public's awareness of the environment's role in health is more recent. Publication of Rachel Carson's *Silent Spring* in the early 1960s, followed by the well-publicized poor health of residents of Love Canal in western New York, a significant toxic waste site, awakened public consciousness to environmental issues. The result of these and other similar events is the so-called environmental movement that has led to the introduction into everyday life of such terms as Superfund sites, water quality, clean air, ozone, urban sprawl, and agricultural runoff. In 1993 alone, over \$109 billion was spent on pollution abatement and control in the United States.⁶ However, many hazardous sites still remain. Minimal research has been done to evaluate the health risks associated with chronic low-level exposures to hazardous substances, resulting in an inability to evaluate and manage such sites effectively and to evaluate the health status of residents living near such sites. Further environmental epidemiology and toxicology research is needed to address such problems and to improve the science and public health management of the health effects on people exposed to environmental hazards.

To address the broad range of human health issues affected by the environment, this chapter discusses six topics: outdoor air quality, water quality, toxics and waste, healthy homes and healthy communities, infrastructure and surveillance, and global environmental health issues.

Outdoor air quality: Air pollution continues to be a widespread public health and environmental problem in the United States, causing premature death, cancer, and long-term damage to respiratory and cardiovascular systems. Air pollution also reduces visibility, damages crops and buildings, and

deposits pollutants on the soil and in bodies of water where they affect the chemistry of the water and the organisms living there. Approximately 113 million people live in U.S. areas designated as non-attainment areas by the U.S. Environmental Protection Agency (EPA) for one or more of the six commonly found air pollutants for which the Federal Government has established health-based standards.⁷ The problem of air pollution is national—even international—in scope. Most of the U.S. population lives in expanding urban areas where air pollution crosses local and State lines and, in some cases, crosses U.S. borders with Canada and Mexico.^{8, 9}

Although some progress toward reducing unhealthy air emissions has been made, a substantial air pollution problem remains, with millions of tons of toxic air pollutants released into the air each year.¹⁰ The presence of unacceptable levels of ground-level ozone is the largest problem, as determined by the number of people affected and the number of areas not meeting Federal standards.

Motor vehicles contribute approximately one-fourth of all emissions that produce ozone and one-third of all nitrogen oxide emissions. Particulate and sulfur dioxide emissions from motor vehicles represent approximately 20% and 4%, respectively. Some 76.6% of carbon monoxide emissions are produced each year by transportation sources (for example, motor vehicles).

Unhealthy air is expensive. The estimated annual health costs of human exposure to all outdoor air pollutants from all sources range from \$40 billion to \$50 billion, with an associated 50,000 premature deaths.¹¹

Water quality: Providing drinking water free of disease-causing agents, whether biological or chemical, is the primary goal of all water supply systems. During the first half of the 20th Century, the causes for most waterborne disease outbreaks were bacteria; beginning in the 1970s protozoa and chemicals became the dominant causes.¹² Most outbreaks involve only a few individuals.^{13, 14, 15} In 1993, however, more than 403,000 people became sick during a single episode of water-borne cryptosporidiosis.

One problem in evaluating the relationship between drinking water and infectious diseases is the lack of adequate technology to detect parasitic contamination and to determine whether the organisms detected are alive and infectious. The development of new molecular technologies to detect and monitor water contamination will enhance water quality monitoring and surveillance.

Contamination of water can come from both point (for example, industrial sites) and non-point (for example, agricultural runoff) sources. Biological and chemical contamination significantly reduces the value of surface waters (streams, lakes, and estuaries) for fishing, swimming, and other recreational activities. For example, during the summer of 1997, blooms of *Pfiesteria piscicida* were implicated as the likely cause of fish kills in North Carolina and Maryland. The development of intensive animal feeding operations has worsened the discharge of improperly or inadequately treated wastes,¹⁶ which presents an increased health threat in waters used either for recreation or for producing fish and shellfish.

Toxics and waste: Critical information on the levels of exposure to hazardous substances in the environment and their associated health effects often is lacking. As a result, efficient health-outcome measures of progress in eliminating health hazards in the environment are unavailable. The identification of toxic substances and waste, whether hazardous, industrial, or municipal, that pose an environmental health risk represents a significant achievement in itself. Public health strategies are aimed at tracking the Nation's success in eliminating these substances or minimizing their effects. Toxic and hazardous substances, including low-level radioactive wastes, deposited on land often are carried far from their sources by air, groundwater, and surface water runoff into streams, lakes, and rivers where they can accumulate in the sediments beneath the waters. Ultimate decisions about the cleanup and management of these sites must be made, keeping public health concerns in mind.

The introduction and widespread use of pesticides in the American landscape continues in agricultural, commercial, recreational, and home settings. As a result, these often very toxic substances pose a potential threat to people using them, especially if they are handled, mixed, or applied inappropriately or excessively. Furthermore, children are at increased risk for pesticide poisoning because of their smaller size and because pesticides may be stored improperly or applied to surfaces that are more readily accessible by children.

Healthy homes and communities: The public's health, particularly its environmental health, depends on the interaction of many factors. To provide a healthy environment within the Nation's communities, the places people spend the most time—their homes, schools, and offices—must be considered. Potential risks include indoor air pollution; inadequate heating, cooling, and sanitation; structural problems; electrical and fire hazards; and lead-based paint hazards. More than six million housing units across the country meet the Federal Government's definition of substandard housing.¹⁷

Many factors—including air quality; lead-based paint on walls, trim, floors, ceilings, etc.; and hazardous household substances such as cleaning products and pesticides—can affect health and safety. In 1996, the American Association of Poison Control Centers reported more than two million poison exposures from 67 participating poison control centers. The site of exposure was a residence in 91% of cases.¹⁸

Infrastructure and surveillance: Preventing health problems caused by environmental hazards requires:

- (1) having enough personnel and resources to investigate and respond to diseases and injuries potentially caused by environmental hazards;
- (2) monitoring the population and its environment to detect hazards, exposure of the public and individuals to hazards, and diseases potentially caused by these hazards;
- (3) monitoring the population and its environment to assess the effectiveness of prevention programs;
- (4) educating the public and select populations on the relationship between health and the environment;
- (5) ensuring that laws, regulations, and practices protect the public and the environment from hazardous agents;
- (6) providing public access to understandable and useful information on hazards and their sources, distribution, and health effects;
- (7) coordinating the efforts of government agencies and nongovernmental groups responsible for environmental health; and
- (8) providing adequate resources to accomplish these tasks.

Development of additional methods to measure environmental hazards in people will permit more careful assessments of exposures and health effects.

Global environmental health: Increased international travel and improvements in telecommunications and computer technology are making the world a smaller place. The term “global community” has real significance, as shared resources—air, water, and soil—draw people together. Actions in every country affect the environment and influence events around the world.

Undoubtedly, the environment affects everyone's health. Sometimes benefits in one area inadvertently create worse conditions for people in different areas of the world. For example, in 1996, the United States exported more than \$2.5 billion worth of pesticides.¹⁹ Exported pesticides that are not registered, or pesticides that are restricted for use in the United States, are often used by developing countries. Their use not only endangers populations in those countries but also can contaminate food being exported from those countries to the United States. Sensitive populations, such as children and pregnant women, may be at risk from these environmental exposures. The United States can contribute to improving the health of people internationally, not only as part of a

shared goal for humanity, but also because a healthy global population has positive social and economic benefits throughout the world.

Additionally, a number of countries have resources available to protect their populations from adverse health impacts, but because of inadequate information they are unable to do so. Lead abatement technology, for example, is one area where the United States can provide information to other countries. Likewise, consultation and assistance on numerous environmental health issues from lead poisoning to disaster preparedness will help reduce illness, disability, and death in countries with these problems, which can lead to a healthier global community.

The Nation should expand its efforts for improving environmental conditions to enhance the health of developing countries. It should also increase collaboration, coordination, and outreach efforts with the rest of the world to help close the gap between existing and attainable health status.

During the 1990s, progress in improving environmental health was mixed. The decline in childhood **lead** poisoning in the United States represents a public health success. In 1984, between 2 million and 3 million children aged 6 months to 5 years had blood lead levels (BLLs) greater than 15 µg/dL, and almost a quarter of a million had BLLs above 25 µg/dL,²⁰ a level that can affect vital organs and the brain. (Blood levels are measured in micrograms of lead found in a deciliter of blood.) By the early 1990s, fewer than 900,000 children had BLLs above 10 µg/dL, the current standard for identifying children at risk.²¹ This dramatic reduction is the result of research to identify persons at risk, professional and public education campaigns to “spread the word,” broad-based screening measures to find those at risk, and effective community efforts to clean up problem areas, namely, substandard housing units. However, despite the success achieved, more remains to be done before childhood lead poisoning becomes a disease of the past. Although childhood lead poisoning occurred in all population groups, the risk was higher for persons having low income, living in older housing, and belonging to certain racial and ethnic groups. For example, among non-Hispanic black children living in homes built before 1946, 22% had elevated BLLs. Because the risk for lead poisoning is not spread evenly throughout the population, efforts are continuing to identify children at risk and ensure that they receive preventive interventions.²²

Unfortunately, not all trends for environmental health issues are as encouraging. Since the mid-1980s, **asthma** rates in the United States have risen to the level of an epidemic.²³ Asthma and other respiratory conditions often are triggered or worsened by substances found in the air, such as tobacco smoke, ozone, and other particles or chemicals. Based on existing data, an estimated 14.9 million people in the United States had asthma in 1995,²⁴ including more than five million children aged 17 years and under.²⁵ Between 1980 and 1993, the overall death rate for asthma increased 57%, from 12.8 to 20.1 deaths per million population; for people aged 17 years and under, the death rate increased 67%, from 1.8 to 3.0 deaths per million population.²⁶ The direct economic and health care costs of asthma and other respiratory conditions can be large. In 1990, the estimated total cost of asthma was \$6.2 billion; the total cost was projected to rise to \$14.5 billion by the year 2000.²⁷ The indirect costs of asthma, measured in reduced quality of life and lost productivity, include the estimated 10 million school days each year that children miss. Lost productivity from missed work days of parents caring for children with asthma is estimated to be \$1 billion—not including the cost of lost productivity from adults with asthma who miss work.²⁷ (See *Healthy People 2010* Focus Area 24. Respiratory Diseases.)

Although successes in environmental public health are possible, they are difficult to achieve. Infectious and chemical agents still contaminate food and water. Animals continue to carry diseases to human populations, and outbreaks of once-common intestinal diseases (for example, typhoid fever), although less frequent, still occur. (See *Healthy People 2010* Focus Area 10. Food Safety.) These outbreaks underscore the need to maintain and improve programs developed in the first half of the 20th Century to ensure the safety of food and water. The challenge is to retain these basic capacities in the 21st Century, with the added responsibilities for dealing with emerging hazards. The control of well-known hazards must coexist with ongoing research and the development of strategies and

methods to understand and control new hazards. Another challenge is the need to help the public understand the link between human activity and the destruction of the environment.

Within the United States, significant strides toward a reduction in harmful air emissions can be achieved through individuals choosing not to drive their cars. People need to use public transit, walk, or bicycle more often. Laws can help improve street and highway design to facilitate pedestrians and bicyclists, and employers can embrace telecommuting, but the choice remains with the individual. Encouraging individuals to walk or bike also may play a role in reducing the problems of obesity and overweight individuals, which have risen to alarming levels in the U.S. population.

Urban sprawl has become an increasingly important concern in the United States for several reasons: increased outdoor air pollution in major urban areas, reduced quality of life due to the loss of free time and the stress of increased commuting time, and less green space in major metropolitan areas. Between 1983 and 1995, the average annual vehicle miles traveled increased 80%.²⁸ These conditions lead to negative health conditions, such as asthma and injuries from road rage due to traffic-related stress.²⁹ In addition, sprawl diminishes the amount of land available for prime recreational and agricultural uses and can bring two land uses together that do not coexist well. For example, a residential development in an area that was previously agricultural may expose residents to environmental hazards, such as pesticides, which may pose a threat to their health.

On a global scale, the U.S.-Mexico border area illustrates how human activity can contribute to damaging the environment, affecting generations to come. Over the past 30 years, this region has experienced a dramatic surge in population and industrialization. The region has had great difficulty in supporting this growth and suffers from a lack of resources and expertise to manage solid waste properly, handle and store pesticides and other hazardous materials, supply sufficient drinking water, and support other sustainable development efforts. Nations need to make choices about how to deal with such regions; offering technical assistance is an option to speed knowledge transfer and reduce environmental harm.

Studies have linked race and socioeconomic status to increased exposure to environmental hazards, and information about gene-environment interactions improves the ability to determine who has increased risk of disease from these exposures. Table 8-1 and Table 8-2 summarize some inequities in the United States regarding exposure to selected potential environmental hazards.

Table 8-1. Proportions of African American, Hispanic, and white populations living in air-quality non-attainment areas, 1992.³⁰

Pollutant	Demographic Breakdowns		
	African Americans	Hispanics	Whites
	Percent Living in Air-Quality Non-attainment Areas		
Particulates	16.5	34.0	14.7
Carbon monoxide	46.0	57.1	33.6
Ozone	62.2	71.2	52.5
Sulfur dioxide	12.1	5.7	7.0
Lead	9.2	18.5	6.0

Table 8-2. Proportions of certain racial and ethnic and lower socioeconomic populations in census tracts surrounding waste treatment, storage, and disposal facilities (TSDF) compared with the proportions of these groups in other census tracts, 1994.

Location of TSDFs	Demographic Breakdowns		
	African Americans	Hispanics	Persons Living Below the Poverty Line
	Percent		
Census tracts with either TSDFs or at least 50% of their area within 2.5 miles of a tract with TSDF	24.7	10.7	19.0
Census tracts without TSDFs	13.6	7.3	13.1

Disparities exist in the environmental exposures certain populations face and in the health status of these populations. For example, in New York City, African American, Hispanic, and low-income populations have been found to have hospitalization and death rates from asthma three to five times higher than those for all New York City residents. African American children have been found to be three times more likely than white children to be hospitalized for asthma and asthma-related conditions and four to six times more likely to die from asthma. (See *Healthy People 2010* Focus Area 24. Respiratory Diseases.) With respect to BLL, children from certain racial and ethnic groups are disproportionately affected. While there are no studies to show rural and frontier dwellers are at increased risk to exposure to contaminated drinking water, the preponderance of this population depends on unregulated private wells for their drinking water. The U.S. Geological Survey (USGS) reports that 42.8 million persons in the United States (17% of the total population) were served by their own (self-supplied) water systems in 1990.³¹

OPPORTUNITIES

An increase in public awareness of environmental health issues is key to achieving this chapter's goal and objectives. Education—at all levels—is a cornerstone of broad prevention efforts. Improving the availability of environmental health data also will help meet the objectives. The Internet has dramatically increased access to environmental information. Databases such as TOXNET (at <http://toxnet.nlm.nih.gov/>),³² Internet Grateful Med (at <http://igm.nlm.nih.gov/>),³³ and TRI (the Toxics Release Inventory www.epa.gov/ceisweb1/ceishome/ceisdata/xplorer-tri/explorer.htm) may provide useful information about environmental hazards or other environmental problems in communities to health care providers, policymakers, and the public. Moreover, better dissemination of global environmental health information may reduce the occurrence of disease or exposure to harmful environmental agents for U.S. citizens traveling abroad.

To be successful, programs to improve environmental health must be based on scientific evidence. The complex relationship between human health and the acute and long-term effects of environmental exposures must be studied so prevention measures can be developed. Surveillance systems to track exposures to toxic substances such as commonly used pesticides and heavy metals must be developed and maintained. To the extent possible, these systems should use bio-monitoring data, which provide measurements of toxic substances in the human body. A mechanism is needed for tracking the export of pesticides restricted or not registered for use in the United States.

Environmental hazards are not limited by political boundaries. The scope of public and environmental health must be global if the Nation is to achieve good health for all persons in the United States. A global scope will help develop and achieve effective ways to prevent disease

worldwide as well. The United States must work with other governments, nongovernmental organizations, and international organizations to help improve human health on a global scale.

INTERIM PROGRESS TOWARD YEAR 2000 OBJECTIVES

Healthy People 2000 targets have been met for objectives dealing with outbreaks of waterborne diseases, with solid wastes, and with toxic substances released through industrial processes. Substantial progress has been made in objectives involving the proportion of people who live in counties that meet EPA air standards for air pollution, the number of states that require radon disclosures with real estate transactions, and the recycling of household hazardous waste. More moderate progress has taken place for the objectives involving radon and lead-based paint testing in homes, asthma hospitalizations, and states with laws to track environmental diseases. Mixed progress or movement away from the targets is being seen in objectives dealing with mental retardation and impaired surface waters (rivers, lakes, and estuaries). Data have been mixed or difficult to assess for the cleanup of hazardous waste sites. The target for blood lead levels in children has not been met, though some progress has been made.

Note: Unless otherwise noted, data are from the Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy People 2000 Review, 1998–99*.

HEALTHY PEOPLE 2010 ENVIRONMENTAL HEALTH OBJECTIVES:

Thirty objectives have been established related to environmental health, all of which are being considered by the New Orleans Health Department as it re-invents itself. These are listed on the following pages, and **more detailed information can be found in Appendix H.**

Healthy Louisiana 2010 has adopted the *Healthy People 2010* objectives shown below to measure impact in this area. Louisiana current statistics and projected targets are included, where available, as well as specific strategies to achieve these objectives.

Healthy Louisiana 2010: Environmental Quality Goals and Strategies

27-10	Reduce proportion of nonsmokers to environmental tobacco smoke.		
	USA: 65 %	LA: <i>Not available</i>	Target: 45 %
Strategies:			
<ul style="list-style-type: none"> • Create and promote smoke-free laws for all public buildings and areas. • Develop a curriculum for children in schools regarding exposure to second hand smoke. • Evaluate and develop remediation plan for child care centers, school buildings and grounds to ensure proper environmental quality. • Develop a partnership with state government and the restaurant association on eliminating smoking in all restaurants and bars. 			
8-1a	Reduce the proportion of persons exposed to air that does not meet the US EPA's health-based standards for ozone.		
	USA: 43 %	LA: <i>Not available</i>	Target: 0 %
Strategies:			
<ul style="list-style-type: none"> • Develop partnerships with all business with state agencies to protect the environment and comply with regulations. • Utilize open/land management and reforestation practices. • Evaluate new ways to design ordinances for more environmentally friendly communities. • Develop curriculum for grades pre-school through college. 			

Please see Appendix H for more detailed information about each of the *Healthy People 2010* objectives, including specific interventions to achieve the objectives.

HEALTHY PEOPLE 2010—SUMMARY OF OBJECTIVES

Goal: Promote health for all through a healthy environment.

Number	Objective Short Title
Outdoor Air Quality	
8-1	Harmful air pollutants
8-2	Alternative modes of transportation
8-3	Cleaner alternative fuels
8-4	Airborne toxins
Water Quality	
8-5	Safe drinking water
8-6	Waterborne disease outbreaks
8-7	Water conservation
8-8	Surface water health risks
8-9	Beach closings
8-10	Fish contamination
Toxics and Waste	
8-11	Elevated blood lead levels in children
8-12	Risks posed by hazardous sites
8-13	Pesticide exposures
8-14	Toxic pollutants
8-15	Recycled municipal solid waste
Healthy Homes and Healthy Communities	
8-16	Indoor allergens
8-17	Office building air quality
8-18	Homes tested for radon
8-19	Radon-resistant new home construction
8-20	School policies to protect against environmental hazards
8-21	Disaster preparedness plans and protocols
8-22	Lead-based paint testing
8-23	Substandard housing
Infrastructure and Surveillance	
8-24	Exposure to pesticides
8-25	Exposure to heavy metals and other toxic chemicals
8-26	Information systems used for environmental health
8-27	Monitoring environmentally related diseases
8-28	Local agencies using surveillance data for vector control
Global Environmental Health	
8-29	Global burden of disease
8-30	Water quality in the U.S.–Mexico border region



Lead poisoning is a considerable environmental threat to the public health of the citizens of New Orleans, especially its youngest children. Lead is a highly toxic substance, exposure to which can produce a wide range of adverse health effects.³⁴ Lead poisoning can affect both adults and children; however, childhood lead poisoning is much more frequent and much more damaging. The National Center for Health Statistics at the Centers for Disease Control and Prevention estimates that in 2000, more than 430,000 children had an Elevated Blood Lead Level (EBLL) of greater than 10 micrograms per deciliter of blood ($\mu\text{g}/\text{dl}$).³⁵ While this number has been decreasing across the nation, it remains a significant environmental threat.

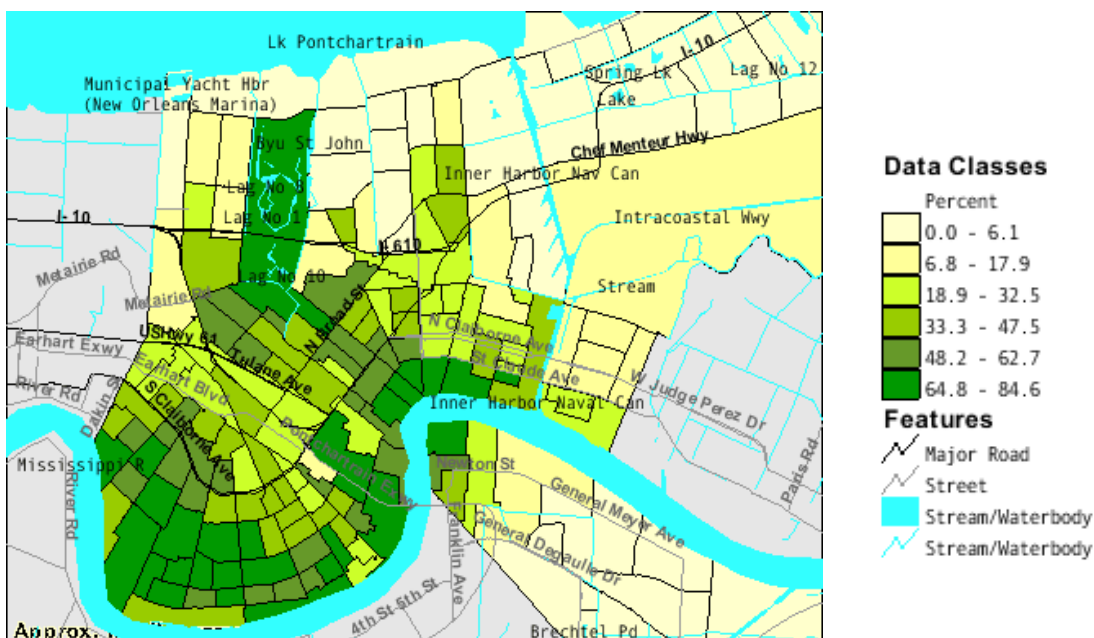
There are a number of health effects associated with elevated blood lead levels. The most vulnerable population is **young children under the age of six**. Because their brains and central nervous system are still being developed, even very low levels of exposure can result in reduced IQ, learning disabilities, attention deficit disorders, behavioral problems, stunted growth, impaired hearing, and kidney damage. At high levels of exposure, a child may become mentally retarded, fall into a coma, and even die from lead poisoning.

Lead poisoning is not as great a concern for adults, due to the high levels of exposure required to cause any noticeable symptoms. But this does not mean that lead exposure is not a concern. In adults, lead exposure can increase blood pressure and cause male infertility, nerve disorders, muscle and joint pain, irritability, and memory or concentration problems. **Most adults who are lead poisoned get exposed to lead at work.** Occupations related to house painting, welding, renovation and remodeling activities, smelters, firing ranges, the manufacture and disposal of car batteries, and the maintenance and repair of bridges and water towers, are particularly at risk for lead exposure. Workers in these occupations must also take care not to leave their work site with potentially contaminated clothing, tools, and facial hair, or with unwashed hands. Otherwise, they can spread the lead to their family vehicles and ultimately to other family members.

Pregnant women need to be concerned with lead poisoning. A pregnant woman who has an elevated blood lead level can easily transfer the lead to her fetus, as lead can cross the placenta. In fact, pregnancy itself can cause lead to be released from the bone, where lead is stored—often for decades—after it first enters the blood stream. (The same process can occur with the onset of menopause.) Once the lead is released from the mother's bones, it re-enters the blood stream and can end up in the fetus. In other words, if a woman had been exposed to enough lead as a child for some of the lead to be stored in her bones, the mere fact of pregnancy can trigger the release of that lead and can cause the fetus to be exposed. In such cases, the baby is born with an elevated blood lead level.

There are a number of sources of lead exposure in the environment, as lead, for many years, was a main component in a number of everyday items. Lead was a key component of water pipes, gasoline, firearms, welding supplies, pottery, and even children's toy jewelry. An additional source of lead in the environment is lead-based paint. Prior to being banned in 1978, lead-based paint was commonly used in both the interior and exterior of homes, school, churches and other buildings. In New Orleans, many of the buildings, both public and private, have lead-based paint. It is estimated that 83% of the housing stock in New Orleans was built prior to the establishment of the ban in 1978. In fact, much of the housing stock in New Orleans pre-dates 1950. The following map displays the distribution of pre-1950 housing stock in the city of New Orleans.

Figure 8.2 Distribution of Pre-1950 Housing Stock



As the map indicates, the areas with the highest prevalence of pre-1950 housing stock are concentrated in neighborhoods adjacent to the Mississippi River. These neighborhoods include the French Quarter, Irish Channel, Lower Garden District, Garden District, Central City, Bywater, Faubourg Marginy, Faubourg St. John, Esplanade Ridge, and Gert Town. The demographics of these neighborhoods differ widely, leading to a differentiation in the incidence of elevated blood lead levels amongst children in these neighborhoods. When overlaid on a map reflecting poverty, these neighborhoods become very obvious.



CITY OF NEW ORLEANS

GETTING PEOPLE HEALTHY IN NEW ORLEANS: STRATEGIES AND ACTIVITIES

HEALTH DEPARTMENT PROGRAMS

The Environmental Health Division is responsible for addressing environmental issues that negatively impact health of individuals and the community. The three sections of this division are listed below, followed by a list of on-going accomplishments for the division and its programs.

ENVIRONMENTAL ENFORCEMENT responds to complaints relative to adverse health, housing and environmental conditions via an administrative hearing body, thereby enforcing applicable City codes and statutes and taking legal action against violators in non-compliant cases.

The Administrative Adjudication Section adjudicates cases of public health housing and environmental code violations. From these cases, which originate primarily from the Environmental Enforcement Bureau as well as other city and state departments/agencies, fines and hearing costs are collected. These fees comprise the Environmental Improvement Fund, which is in turn utilized in the correction of adverse conditions. Cases adjudicated and assigned for cleanup contracts are processed and monitored through completion by this unit. During the past year, Environmental Enforcement has:

- Received over **8,500 complaints** of adverse environmental conditions on private property such as broken/choked plumbing lines, trash/debris, overgrown grass/weeds, and mosquito breeding areas.
- Performed over **4,500 investigations** to such conditions and over **2,200 follow-up** investigations after notification,
- Taken **legal action against over 2600** property owners who failed to adhere to our enforcement actions,

The overwhelming majority of the complaints received are relative to vacant lots. Often these complaints are repeat call-ins. We depend strongly on these properties being acquired by new owners who will bring them back into commerce. This is achieved through the Blighted Property process. During this period, we were responsible for over **400 of these lots** being **declared Blighted** in our Administrative Adjudication Bureau.

ENFORCEMENT GOALS FOR THE COMING YEAR:

- Establish a vehicle fleet for the Environmental Enforcement section (doing away with mileage reimbursement).
- Enhance our public education program.
- Realize a 5% increase in compliance
- Route and group complaints for each Council District to increase inspector productivity.

ADMINISTRATIVE ADJUDICATION during the past year accomplished the following:

- Processed and adjudicated over **5200 cases**, coming from our Environmental Enforcement unit (2677) and other city and state agencies (2594), resulting in over **\$1,100,000 in fines and costs assessed**.
- **Collected over \$120,000** in actual fines and hearing costs for the Environmental Improvement Fund.
- Ordered and accomplished over **130 corrective actions contracts** by private contractors on properties adjudicated as guilty in administrative proceedings.
- Assisted the Parks and Parkways Department in the maintenance of over **370** combined playgrounds, city parcels, neutral grounds, etc., using payments from the **Environmental Improvement Fund** totaling over **\$173,000**.
- **Declared over 463 structures Blighted**, which were all submitted for hearing by the Division of Housing, making them eligible for expropriation through the New Orleans Redevelopment Authority or for demolition, as a last resort.
- Successfully handled the **first cases** involving individuals violating the recently adopted **dry sanding provision** of the Lead ordinance.

ADMINISTRATIVE ADJUDICATION GOALS FOR THE COMING YEAR:

- Eliminate unnecessary reports (condense, where appropriate).
- Reduce turn-around time on dockets.
- Develop a better system to track files.
- File more liens.

LEAD POISONING PREVENTION

The Lead Poisoning Prevention Program (NOCLPPP), driven by a team of **state-certified Lead Inspectors**, identifies children with EBLLs (ages six months to six year) through screening, education, comprehensive follow-up and environmental assessment/compliance. Prevention is accomplished by providing case management and providing vital support to the lead surveillance system funded through the CDC. This will provide opportunity to increase lead poisoning

prevention initiatives such as the Memorandum of Agreement with the Housing Authority of New Orleans to perform inspections at various Section 8 rental units for compliance with their federal lead mandates.

During the past year, the Lead Poisoning Prevention Section has:

- Conducted over **130 environmental investigations**, of which **102 were positive** and therefore required action plans for corrective action.
- Conducted over **4,200 medical screening** of children, of which **215** were determined to have elevated blood lead levels and requiring follow-up. A total of **86 cases were confirmed** after follow-up.
- Been awarded funding for a second funding period for the program through the CDC in conjunction with the State Health Department. This year's funding includes a grass roots educational initiative, where four (4) Public Health Educators, called **LeadBusters** will be involved in spreading the message of lead poisoning prevention in the community.
- Conducted **emergency screening for Orleans Parish Public Schools** in cases where lead was disturbed during renovations and created hazardous conditions as well as **special screening at Head Start Centers**.
- Implemented an initiative to increase screening among diverse populations (Hispanics, Vietnamese).
- Participated in **over thirty health fairs**, including our annual Lead Awareness fair at City Park.
- Distributed over **4,200 pieces of literature** advancing the lead prevention message.
- Took **legal action** against violators of regulation with resulting **100% compliance**.
- Contributed to the preparation of **2 grants** awarded to the City's Division of Housing for **abatement initiatives** from HUD (\$2.8 million) and a **Safe House** initiative from the US Conference of Mayors (\$100,000).
- Participated as a team member on the task force for **asthma initiatives** in formulating with the recently awarded STEPS grant proposal.
- Performed other functions, including:
 - Rooming/boarding house inspections,
 - Participation on the Lien Waiver Committee,
 - Crisis Intervention involving the Elderly,
 - Facilitating the dog/cat-licensing contract with the Southeast Veterinary Association.

LEAD POISONING PREVENTION GOALS FOR THE COMING YEAR:

- Educate and increase screenings by private physicians (25) with emphasis in target areas.
- Safe House completion
- Continue strategy development related to Asthma Intervention correlation with STEPS.

ENDNOTES:

- ¹ World Health Organization (WHO). *Indicators for Policy and Decision Making in Environmental Health*. (Draft). Geneva, Switzerland: WHO, 1997.
- ² National Research Council. *Environmental Epidemiology: Public Health and Hazardous Wastes*. Vol. 1. Washington, DC: National Academy Press, 1991.
- ³ Agency for Toxic Substances and Disease Registry (ATSDR). *Priority Health Conditions—An Integrated Strategy to Evaluate the Relationship Between Illness and Exposure to Hazardous Substances*. Atlanta, GA: U.S. Department of Health and Human Services (HHS), 1993.
- ⁴ WHO. *Fact Sheet 170*. Geneva, Switzerland: WHO, 1997.
- ⁵ Commissioned Corps of the U.S. Public Health Service, HHS. <http://www.os.dhhs.gov/phs/corps/direct1.html#history> June 14, 2000.
- ⁶ U.S. Bureau of Economic Analysis. *Survey of Current Business*. May 1995.
- ⁷ U.S. Environmental Protection Agency (EPA). *National Air Quality and Trends Report*. Washington, DC: EPA, Office of Air and Radiation, 1997.
- ⁸ EPA. *U.S.-Mexico Border XXI Program: Framework Document*. No. EPA 160. R-96-003. Washington, DC: EPA, 1996.
- ⁹ Thurston, G.D.; Gorczynski, J.E.; Currie, J.J.; et al. The nature and origins of acid summer haze air pollution in metropolitan Toronto, Ontario. *Environmental Research* 65(2):254-270, 1994.
- ¹⁰ EPA. *1997 National Toxics Inventory Report*. Washington, DC: EPA, 1997.
- ¹¹ American Lung Association. *Health Costs of Air Pollution*. 1990.
- ¹² Craun, G.F. Statistics of waterborne outbreaks in the U.S. (1920–1980). In: Craun, G.F., ed. *Waterborne Disease Outbreaks in the United States*. Boca Raton, FL: CRC Press, 1986.
- ¹³ Centers for Disease Control and Prevention (CDC). Surveillance for waterborne disease outbreaks—United States, 1991–1992. *Morbidity and Mortality Weekly Report* 42(SS-5):1-22, 1993.
- ¹⁴ CDC. Surveillance for waterborne disease outbreaks—United States, 1989–1990. *Morbidity and Mortality Weekly Report* 40(SS-3):1-21, 1991.
- ¹⁵ CDC. Surveillance for waterborne disease outbreaks—United States, 1993–1994. *Morbidity and Mortality Weekly Report* 45(SS-1):1-33, 1995.
- ¹⁶ *Animal Waste Pollution in America: An Emerging Problem, Environmental Risks of Livestock and Poultry Production*. Minority Staff Report for Senator Tom Harkin (D-IA), Ranking Member, U.S. Senate Committee on Agriculture, Nutrition, and Forestry. 1997.
- ¹⁷ U.S. Bureau of the Census. American Housing Survey for the United States in 1995. In: *Current Housing Reports*. H150/95RV. Washington, DC: U.S. Government Printing Office (GPO), 1997.
- ¹⁸ Litovitz, T.L.; Smilkstein, M.; Felberg, L.; et al. 1996 Annual Report of the American Association of Poison Control Centers: Toxic Exposure Surveillance System. *American Journal of Emergency Medicine* 15:447-500, 1997.
- ¹⁹ Chemical Economics Handbook. SRF International, September 1997. Retrieved April 10, 1998, from DIALOG database (#359).
- ²⁰ ATSDR. *The Nature and Extent of Childhood Lead Poisoning in Children in the United States: A Report to Congress*. Washington, DC: HHS, 1988.
- ²¹ CDC. *Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials*. Atlanta, GA: CDC, 1997.
- ²² CDC. Update: Blood lead levels in the United States, 1991–1994. *Morbidity and Mortality Weekly Report* 46:143, 1997.

-
- ²³ Mannino, D.M.; Homa, D.M.; Pertowski, C.A.; et al. Surveillance for asthma—United States, 1960—1995. In: CDC Surveillance Summaries, April 24, 1998. *Morbidity and Mortality Weekly Report* 47(SS-1):1-27, 1998.
- ²⁴ National Heart, Lung, and Blood Institute. *Data Fact Sheet. Asthma Statistics*. Bethesda, MD: National Institutes of Health, Public Health Service, 1999.
- ²⁵ President's Task Force on Environmental Health Risks and Safety Risks to Children. *Asthma and the Environment: A Strategy to Protect Children*. Washington, DC: the Task Force, 1998.
- ²⁶ Redd, S. Chief, Air and Respiratory Branch, National Centers for Environmental Health, CDC. Personal communication.
- ²⁷ Weiss, K.B.; Gergen, P.J.; and Hodgson, T.A. An economic evaluation of asthma in the United States. *New England Journal of Medicine* 326:862-866, 1992.
- ²⁸ Hu, P.S. *Summary of Travel Trends 1995 Nationwide Personal Transportation Survey*. Washington, DC: U.S. Department of Transportation, 1999, 13.
- ²⁹ Schmidt, C. *Environmental Health Perspectives* 106(6):1998.
- ³⁰ Institute of Medicine. *Toward Environmental Justice—Research, Education, and Health Policy Needs*. Washington, DC: National Academy Press, 1999.
- ³¹ U.S. Geological Survey. U.S. Geological Survey: Estimated use of water in the United States in 1990. *USGS National Circular* 1081. Washington, DC: GPO, 1993.
- ³² Toxnet7, National Library of Medicine, Toxicology and Environmental Health Information Program, Bethesda, MD.
- ³³ Internet Grateful Med, National Library of Medicine, Bethesda, MD.
- ³⁴ National Safety Council. 2005. *Lead Poisoning Fact Sheet*. <http://www.nsc.org/library/facts/lead.htm>.
- ³⁵ Centers for Disease Control and Prevention. 2004. *Children's Blood Lead Levels in the United States*. <<http://www.cdc.gov/nceh/lead/research/kidsBLL.htm>>