



Environmental Health

Environmental Health: The National Challenge*

Environmental factors play a central role in human development, health, and disease. 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. Poor environmental quality is estimated to be directly responsible for approximately 25 percent of all preventable ill health in the world, with diarrheal diseases and respiratory infections heading the list. Ill health resulting from poor environmental quality varies considerably among countries.

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

This issue:

Environmental Health: The National Challenge	1
Food Safety: The National Challenge	1
Jacksonville Environmental Health: Report Card	2
Florida's Healthy Beaches Program	3
Ground Water Program	3
The Air We Breathe	4
Planning Communities	5
Childhood Lead Poisoning Prevention	6
Foodborne Diseases	7

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. The problem of air pollution is national—even international—in scope.

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.

Water quality. Providing drinking water free of disease-causing agents, whether biological or chemical, is the primary goal of all water supply systems. However, 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, 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

Food Safety: The National Challenge*

From 1988 through 1992, foodborne disease outbreaks caused an annual average of more than 15,000 cases of illness in the United States. The actual illness rate may be higher because a count is taken only when the microorganism that caused the illness is identified by a laboratory and reported by a physician. When unreported cases are taken into account, an estimated 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths each year may be associated with microorganisms in food. Hospitalizations due to foodborne illnesses are estimated to cost over \$3 billion each year. The cost of lost productivity is estimated at between \$20 billion and \$40 billion each year. In addition to acute illness, some microorganisms can cause delayed or chronic illness. Foodborne chemical contaminants may cause chronic rather than acute problems, and specific estimates of their impact on health and the economy are not available.

Since 1996, selected State and local health departments, the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), and the Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture (USDA) have been cooperating in FoodNet to produce better national estimates of food-

*From Healthy People 2010, U.S. Department of Health and Human Services

Jacksonville Environmental Health Report Card

2002 Indicators for Progress' Environmental Objectives

Objective	Duval (1995)	Duval (2002)	2005 Target
PRESERVING THE NATURAL ENVIRONMENT			
Air Quality			
Days the Duval County Air Quality Index is in the "good" range.	282	337	335
Gallons of motor fuel sold per person in North East Florida.	Not Collected	620.9	573
Water Quality			
St. Johns River compliance with dissolved oxygen standards.	98.3% river 68.2% tributary	98% river 59% tributary	100% river 87% tributary
St. Johns River compliance with fecal-coliform bacteria standards	Not Collected	99% River 63% tributary	None set for river 78% tributary
Average water consumption in Duval County	867 cubic feet	870 cubic feet	840 cubic feet
Water level in Floridian Aquifer	37.5 feet	32.1 feet	32.0 feet
Toxics and Waste			
Tons per person of solid waste recycled in Duval County	Not Collected	.66 tons	1.0 tons
New septic-tank permits issued in Duval County	556	573	400

Source: 2002 Indicators for Progress, Jacksonville Community Council Inc.

In past Center for Health Statistic reports, Healthy People (HP) 2010 objectives were typically used to compare local, state and national data. However, environmental health data are sparsely available at the local and state levels. Therefore another source of objectives with obtainable local data were needed.

Locally, the Jacksonville Commu-

nity Council Inc. (JCCI) produces an annual Indicators for Progress Report containing a section called "Preserving the Environment".

In this section, the JCCI report has eight objectives related to the environment. These can be divided up into three sections: Air Quality, Water Quality and Toxic and Waste. For this report, current data

(2002) are compared to 1995 and its target goals for 2005.

The table above shows that Duval County has exceeded only one of the 2005 targets (number of Air Quality Index days in the 'good' range). For more information on JCCI, please visit their web-site at www.jcci.org.

Florida's Healthy Beaches Program

James E. Salzer, Beaches Water Supervisor

The health and conservation of coastal and marine resources are vital for the environment and economy of our nation. As the state with the second longest coastline in the continental U.S., Florida is taking collective and proactive steps toward protecting this prized natural resource.

Under the new Florida Healthy Beaches Program (Senate Bill 14112 and House Bill 2145), Florida's 34 coastal counties are now testing for fecal coliform and enterococci bacteria, both of which are enteric bacteria normally found in the intestinal tract of human and animals. Fecal coliform, which is used by the Florida Department of Environmental Protection (DEP) to determine water quality in fresh, brackish and marine water environments, has long been Florida's preferred indicator organism to detect pollution in these waters.

The statewide testing program also includes testing for enterococci that has been recommended by the United States Environmental Protection Agency (EPA) as a better saltwater quality indicator. This is due to the fact that it has a greater correlation with swimming associated gastrointestinal illness in both fresh and marine waters and is less likely to die off in saltwater.

The presence of high concentrations of enteric bacteria such as these is an indication of fecal pollution. The source of that pollution may be storm water runoff, pets and wildlife, and/or human sewage. If ingested while swimming or if introduced through the skin as a result of a cut or sore, they may cause infection, rashes or illness.

As indicated in Graph 1, Duval County's results show our beaches to be some of the best in Florida. Duval County has issued only 2 advisories related to this monitoring program. Both were issued

for site-specific sampling incidents that were resolved within a 24-hour period. That measures well when you consider that nearly 900 advisories were issued throughout the state during the same time frame. Also of the most popular Florida beaches, Duval had the lowest percent of positive enterococcus poors (See Graph 1).

Additional information can be obtained from the web site: www.doh.state.fl.us, then click Healthy Beaches from the drop-down at the top of the page.

Ground Water Program

Grazyna Pawlowicz, Ground Water Supervisor

The Duval County Health Department (DCHD), Ground Water Program, is the only agency performing the potable well water quality investigations near potential ground water contamination sources in Duval County. In addition, DCHD is the only agency responding to residents' concerns and complaints about the possibility of contamination of their private potable well water. All other federal, state, and local agencies refer the public concerned about their potable well water quality to the DCHD Ground Water Program.

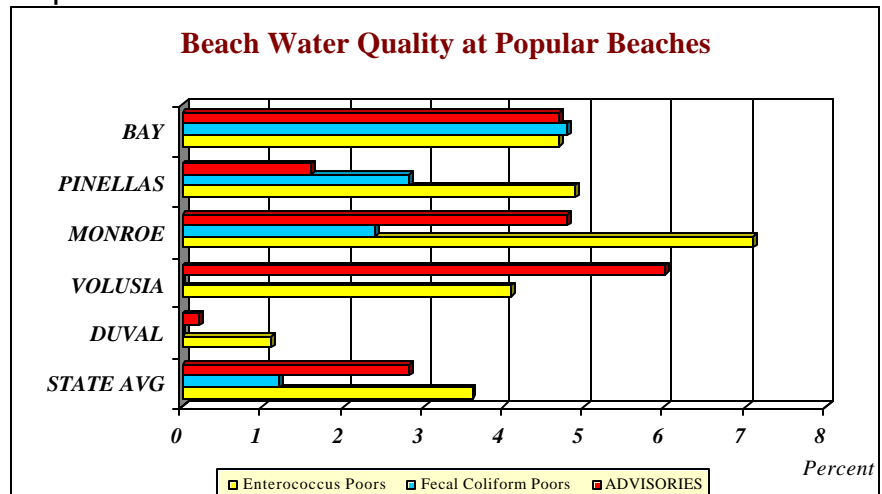
Implementation of statewide programs

gave the Ground Water Program additional responsibilities of site investigation and potable well water testing near gasoline stations under the State Underground Petroleum Environmental Response Act, dry-cleaning facilities under the Dry-Cleaning Solvent Surveillance Program, and in delineated areas of contamination under the Delineated Area Well Permitting Program.

The scope of the program was expanded further by a locally sponsored collaborative initiative of the DCHD, Department of Environmental Protection (DEP), and City of Jacksonville. The initiative focuses on identifying drinking water wells that are contaminated and those that are near dumpsites and former landfills.

Since late 1999, the Ground Water Program sampled 3,464 potable water wells located near various sources of environmental contamination. The results show approximately 33% (1,136) of tested wells were affected by ground water contamination. Over 20% (232) of these contaminated potable water wells had at least one contaminant above the drinking water standard. For more information on ground water contact Grazyna Pawlowicz at 665-2455.

Graph 1



Source: DCHD, Environmental Health Division, 2002
Prepared by: DCHD, Environmental Health Division, 2002

The Air We Breathe

Dawn Carney, MSPH Epidemiologist

The Air Quality Index (AQI) reports daily how clean or polluted the air is and what associated health effects might be of concern for sensitive populations. The Environmental Protection Agency (EPA) calculates the AQI for five major air pollutants as regulated by the Clean Air Act: ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. When the AQI is in the range of 0 to 50, air quality conditions are considered to be good. When the range is 151 to 200, conditions are considered unhealthy and when the range is 301 to 500, conditions are considered hazardous. In 2002, Duval County's AQI was in the "good" range a total of 305 days, below the 2005 target of 335 days. As of September 16, 2003, the number of "good" days has been 236, with 21 days in the "moderate" range, and 1 day in the "unhealthy" range. Due to variance in the number of urban centers within a state, there are no state or national standards by which to compare Duval County. Therefore this report used data from the past sixteen years, 1987 to 2002. Duval had a low of 236 days in 1987 and a high of 337 in 2000 (See Graph 2).

According to the EPA, when the AQI is in the moderate range, active children and adults, and people with lung disease, including asthma, should reduce prolonged or heavy exertion outdoors. In particular, people suffering pediatric asthma, adult asthma, chronic bronchitis and emphysema are at risk for worsened health symptoms when the AQI goes below the good range. According to the American Lung Association's State of the Air Report, the total population of Duval County in 2002 was 738,483. Of this number, almost 10% (71,739) were diagnosed with one or more of the aforementioned conditions.

AQI values can vary from one season to another. In winter for example, carbon monoxide may be high in some areas because cold weather affects car emission control systems' operation. In summer, ozone may be a significant air pollutant because it forms in the presence of heat and sunlight. AQI values also can vary depending on the time of day. Ozone levels often peak in the afternoon, while carbon monoxide is usually a problem during morning or evening rush hours. Particle pollution can be high at any time of day or during any season. Other indicators that affect the AQI include net employment growth and new housing starts.

Although much of the pollution in our air comes from power plants, industrial sources and motor vehicles, the daily choices individuals make can increase or decrease air pollution. Habits such as turning off appliances and lights in rooms not in use, insulating homes, and properly maintaining appliances such as refrigerators are a few ways to make a difference. Contact the City of Jacksonville regulatory and environmental services at 630-7373 or view the EPA's web sites at www.epa.gov for additional information.

Food Safety: The National Challenge*

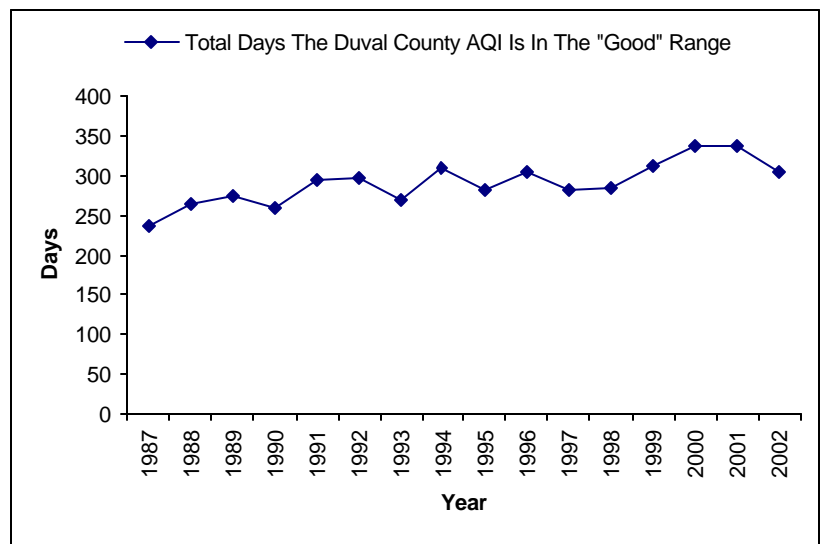
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borne disease. The focus is on organisms that cause the highest number of foodborne illnesses and on new or emerging foodborne pathogens. Active surveillance, based on laboratory data, is being conducted at FoodNet sites.

The success of improvements in food production, processing, preparation, and storage practices can be measured through the reduction in outbreaks of disease caused by foodborne pathogens. An outbreak occurs when two or more cases of a similar illness result from eating the same food. Smaller outbreaks—those with fewer cases—may be a direct result of improved food preparation practices and better epidemiologic follow-up once cases are identified.

*From Healthy People 2010, U.S. Department of Health and Human Services

Graph 2



Source: City of Jacksonville, Air and Water Quality Division, 2002
Prepared by: Jacksonville Community Council Inc., 2002

Planning Communities: A Holistic Health Approach

Stephen McCloskey, Injury Prevention Program Manager

Recent reports from the Institute of Medicine encourage ecological approaches to many of our health problems. These approaches recognize that numerous social and environmental factors contribute to premature death, disability and disease. Many of our most pressing health problems such as heart disease, diabetes, obesity and injuries would be reduced through an ecological approach.

National health and safety guidelines such as The CDC's Active Community Environments Initiative, The Association of State and Territorial Public Health Nutrition Directors', *Guidelines for Comprehensive Programs to Promote Healthy Eating and Physical Activity (Environmental, Systems, and Policy Change)* and The Robert Wood Johnson Foundation's *Active Living by Design* grant projects encourage communities to plan social and environmental changes. These initiatives address chronic disease prevention issues as they relate to physical activity by promoting active forms of transportation like walking and bicycling.

Creating a healthy environment through a community planned around multi-modal transit pathways means sharing safe roads, pedestrian walkways, and bike lanes to support more outdoor activities. A "greenway" design will add an aesthetic value that may entice people to reacquaint with the great outdoors by engaging in walking or biking to work or school a few times per week. This lifestyle change through environ-

mental planning achieves more efficient use of our time by accomplishing three activities: 1) commuting to work or school, 2) promoting health and fitness, and 3) interacting with neighbors.

Cleaner air benefits will follow by reducing the use of fossil fuels by being in vehicles less. More greenways will also assist in cleaning the air, as the plants and trees use carbon dioxide.

Safety benefits will be realized through construction of safer pathways for children traveling from neighborhoods to their schools and/or recreational facilities. Additional engineering designs will add traffic calming mechanisms, pedestrian overpasses, barriers segregating bike and pedestrians from vehicles, and good signage. This will also help lower the community's risk to injury.

Jacksonville is well on its way on this approach. Under the leadership of former Mayor John Delaney, Jacksonville embraced this new vision for a planned community through the *Better Jacksonville Plan*.

The Better Jacksonville Plan is a comprehensive growth management strategy that provides road and infrastructure improvements, environmental preservation and targeted economic development. It also will create and improve public facilities. The cost of this plan is \$2.25 billion dollars. It will be funded through a half-penny sales tax and by leveraging existing revenue sources. Neighbors in all parts of the city will also see a di-

rect benefit from the plan.

The Better Jacksonville Plan also includes funding to improve the environment. Land preservation, enhancing neighborhood parks and sewer infrastructure are a few ways the plan will improve the environment. Furthermore, the plan also seeks to provide residents with quality public facilities including funds for improved neighborhood libraries, a sports and entertainment arena, a baseball park, and a county courthouse. The key element of The Better Jacksonville Plan is to create a better quality of life for all of Jacksonville's residents by combining all of these elements into a design that will encourage and support responsible and managed growth.

The Duval County Health Department has aligned itself with the Better Jacksonville Plan by supporting the goals and augmenting specific health and safety objectives that are shared as a result of our mission and vision.

For more information on building healthier communities, please visit the following web-sites:

CDC's Active Community Environments Initiative web-site at www.cdc.gov/nccdphp/dnpa/aces.htm

or the Robert Wood Johnson Foundation's Active Living by Design National Program, web-site at <http://www.activelivingbydesign.org>.

Childhood Lead Poisoning Prevention Program

By Dr. Tiffany Turner, Toxicologist

Jacksonville is located in northeastern Florida and is categorized as an urban and rural area consisting of 841 sq. miles. According to the 2001 US Census Bureau, Jacksonville has a residential population of approximately 792,434 citizens. There are a total of 329,778 housing units in Duval County where 43,982 (13.3%) of the homes were built before 1950 and 136,338 (41.3%) were built prior to 1970.

The State of Florida has recommended that target areas for lead poisoning risk be identified as zip codes containing census block areas with $\geq 27\%$ of the homes built before 1950 or $\geq 74\%$ of the homes built before 1970. Duval County has a total of 25 zip codes that meet this criteria falling into the high-risk category. These zip codes primarily consist of pre-1978 housing units, which have an increased risk of lead hazards and exposures. It is estimated that 36,400 pre-1950 homes are located in these affected neighborhoods, and 67% of children less than 6 years of age reside in the targeted areas.

Minority and low-income families are at a greater risk of living in high-risk housing units, which puts a child at a higher risk of becoming lead poisoned. Minorities are disproportionately represented

among the impoverished in Duval County. According to the US Census for Duval County, 72% of minorities are living in pre-1950 homes and 68% of minority children less than 6 years old live below poverty. Of this number, African-American children make up a large portion of children living below poverty.

The Duval County Health Department's Childhood Lead Poisoning Prevention Program (CLPPP) has been in operation since 1995 and has screened thousands of children within the targeted zip codes. Screenings are conducted in WIC clinics, Head Starts, and at health fairs. Data indicates that 47% of all children found with blood elevated lead levels (defined as ≥ 10 ug/dL by the CDC) live in the targeted zip codes. Cases identified by the CLPPP are provided case management, nutritional counseling, follow up services, educational information, and environmental inspections of their primary and secondary residence.

In 1994 Duval had 334 children with elevated blood lead levels. In 2002 Duval reduced that number to 59 (See Graph 3). For more information on lead poisoning and screening contact the Duval County Health's Environmental Health's CLPPP at 630-3260.

Environmental Health: The National Challenge

(Continued from page 1)

substances in the environment and their associated health effects often is lacking. Public health strategies are aimed at tracking the Nation's success in eliminating toxic substances or minimizing their effects. Toxic and hazardous substances deposited on land often are carried far from their sources 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.

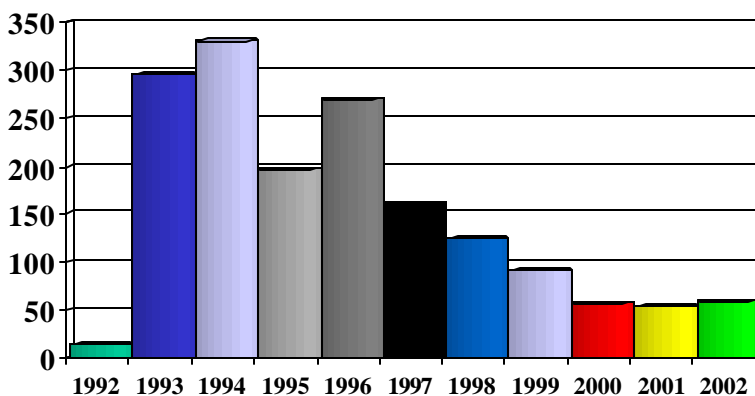
Healthy homes and communities.

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. In 1996, the American Association of Poison Control Centers reported more than 2 million poison exposures from 67 participating poison control centers. The site of exposure was a residence in 91 percent of cases.

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

Graph 3 Number of Children with Elevated Lead Levels



Source: DCHD, Environmental Health Division, 2002
Prepared by: DCHD, Environmental Health Division, 2002

(Continued on page 7)

Enteric/Foodborne Diseases DCHD, Epidemiology Division

Enteric (foodborne or waterborne) illnesses are typically caused by consumption of food or water that is contaminated with a bacterial, viral or parasitic agent. Some of the most common types are giardiasis, salmonellosis, campylobacteriosis and cryptosporidiosis.

Giardiasis is a diarrheal illness caused by a one-celled, microscopic parasite that lives in the intestine of people and animals. During the past decade, giardia has become recognized as one of the most common causes of waterborne disease in human in the United States.

Salmonellosis is another foodborne or enteric disease. There are many different types of Salmonella bacteria. Typhimurium and enteritidis are the most common in the United States. The elderly, infants and those impaired immune systems are more likely to have a severe or life-threatening illness when infected with this bacteria.

There were more reports of people with salmonellosis than any other reportable disease in Duval County dur-

ing the five-year reporting period (See Table 1).

Another commonly reported foodborne disease is campylobacteriosis, which is contracted through the ingestion of contaminated raw meat. It is also the most common bacterial cause of diarrheal illness in the United States.

Cryptosporidiosis is another diarrheal illness in people infected with a microscopic protozoan parasite. The disease may result in life-threatening diarrhea and dehydration in immunocompromised people.

In 2001, six food-related outbreaks occurred in Duval County: five involved food consumed at restaurants and one was provided by a caterer. Foodborne illnesses are still a major concern in public health even though much could be prevented by cooking meats to a temperature of 180 degrees Fahrenheit, basic hygiene preparation and cooking area and hand washing. Other issues that may impact food safety are emerging pathogens, food preparation and practices and a global food supply.

For more information on foodborne illnesses please call the DCHD's Epidemiology Division at 630-3246.

Environmental Health: The National Challenge

(Continued from page 6)

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.

Global environmental health. 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. 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. Exported pesticides that are not registered, or pesticides that are restricted for use in the United States, are often used by developing countries. 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.

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.

Table 1

Reported Foodborne (Enteric) Disease Averages and Rates Per 100,000 in Duval County, 1997-2001

Disease	5-Year Average	5-Year Rate Per 100,00
Giardiasis	139	18.4
Salmonellosis	234	30.9
Campylobacteriosis	66	8.8
Cryptosporidiosis	14	1.9
Shigellosis	160	21.2
Hepatitis A	19	2.5

Source: DCHD, Division of Epidemiology, 2002

Prepared by: DCHD, Institute for Health, Policy and Evaluation Research, October 2003

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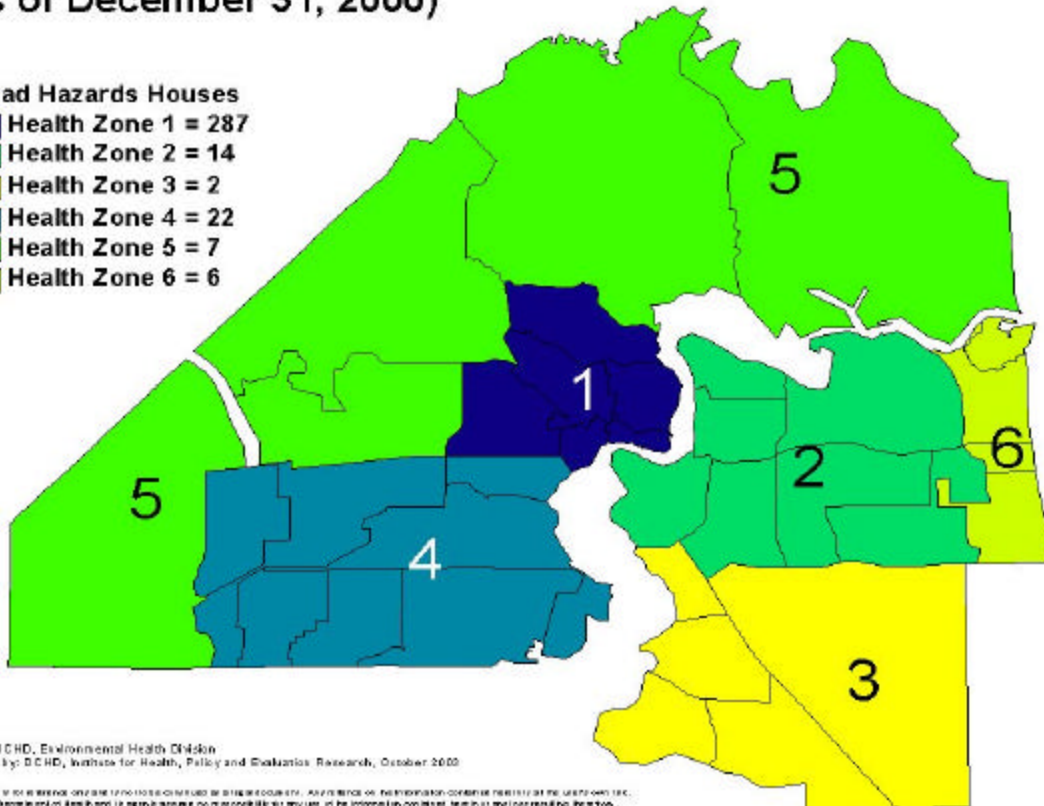
Phone: 904-630-3255
Fax: 904-665-3111



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Duval County Houses with Lead Hazards by Health Zone (as of December 31, 2000)

- Lead Hazards Houses**
-  Health Zone 1 = 287
 -  Health Zone 2 = 14
 -  Health Zone 3 = 2
 -  Health Zone 4 = 22
 -  Health Zone 5 = 7
 -  Health Zone 6 = 6



Source: DCHD, Environmental Health Division
Prepared by: DCHD, Institute for Health, Policy and Evaluation Research, October 2000

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