

Stop disease
clusters.
Protect people.
Control toxic
chemicals.

Health Alert: Disease Clusters Spotlight the Need to Protect People from Toxic Chemicals



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www.nrdc.org



NDCA

National Disease Clusters Alliance

www.clusteralliance.org

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About NRDC

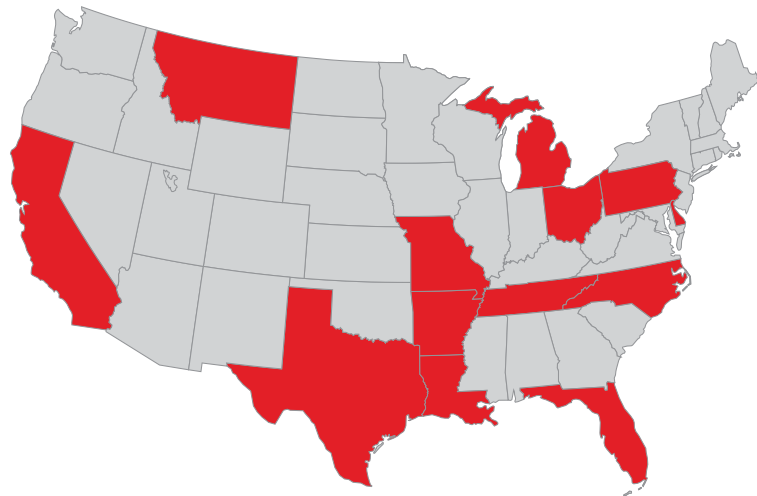
The Natural Resources Defense Council (NRDC) is an international nonprofit environmental organization with more than 1.3 million members and online activists. Since 1970, our lawyers, scientists, and other environmental specialists have worked to protect the world's natural resources, public health, and the environment. NRDC has offices in New York City, Washington D.C., Los Angeles, San Francisco, Chicago, Livingston, Montana, and Beijing. Visit us at www.nrdc.org.

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Health Alert: Cancer Clusters, Disease, and the need to Protect People from Toxic Chemicals

An unusually large number of people sickened by a disease in a certain place and time is known as a 'disease cluster'. Clusters of cancer, birth defects, and other chronic illnesses have sometimes been linked to chemicals or other toxic pollutants in local communities, although these links can be controversial. There is a need for better documentation and investigation of disease clusters to identify and address possible causes. Meanwhile, toxic chemicals should be identified and controlled through reform of the Toxic Substances Control Act, so these chemicals don't pollute communities and sicken people.



Due to a lack of resources, the limited statistical power in doing investigations of small communities or rare diseases, and a lack of knowledge about exposures, it has been difficult for state and federal agencies to shed light on most disease clusters and their causes. There is a need for better documentation and investigation of disease clusters and their causes. Senators Barbara Boxer (D-CA) and Michael Crapo (R-ID), have introduced legislation that would address at least some of these problems, by ensuring that the Environmental Protection Agency and other federal agencies can, and will, provide the resources necessary for investigations and other support, where state-level expertise or resources are not available.

In the United States, the Toxic Substances Control Act (TSCA) is the primary law that ensures the safety of industrial chemicals used in commercial and consumer products by regulating their use, from manufacturing to eventual disposal. Unfortunately, because of major flaws in the law the regulation of toxic chemicals in the United States has been a failure. As a result, dangerous chemicals, including those known to cause cancer, birth defects, and learning and developmental disabilities are still used widely with few, if any, restrictions. These include many of the chemicals which have been linked to some disease clusters, including TCE, dioxins, and asbestos. Better testing and regulation of the thousands of toxic chemicals

that can come into our homes, our workplaces and our schools is critical for reducing the cancer and other chronic illnesses and disease that affect our communities.

An issue paper about disease clusters in particular states was developed by the Natural Resources Defense Council and the National Disease Cluster Alliance to inform people about disease clusters affecting communities across the country. All of these disease clusters have been confirmed or are currently undergoing an official investigation, though in most cases the cause of the cluster is unknown.

The disease clusters spotlighted in the factsheet series illustrate the need for:

1. Directing and funding federal agencies to swiftly assist state and local officials, and investigate community concerns about potential disease clusters and their causes;
2. Reducing or eliminating toxic releases into air, water, soil and food through stronger environmental controls and tough enforcement of those requirements; and
3. Requiring chemical manufacturers to ensure the safety of their products.

Methods

Thirteen states, Texas, California, Michigan, North Carolina, Pennsylvania, Florida, Ohio, Delaware, Louisiana, Montana, Tennessee, Missouri, and Arkansas, were chosen for analysis based on the occurrence of known clusters in the state, geographic diversity, or community concerns about a disease cluster in their area. From May 2010 to July 2010, clusters in each state were identified by searching the websites Google, Proquest, Pubmed, and Web of Science using the name of the state and the words "cluster", "cancer cluster", or "birth defects cluster" as search terms.

The criteria for inclusion in the search were:

1. The clusters occurred after 1976, when TSCA legislation was initially passed and was intended to regulate toxic chemicals.
2. The cluster was confirmed or is currently being investigated by a federal, state or local government agency. Clusters were also included if they were identified by academic researchers and published in a peer-reviewed journal. Sources for each of the described clusters are available on NRDC's website.

When possible, contaminants discussed in investigations and news reports are identified, though in most cases no definitive cause for the cluster has been identified. In addition, industries, hazardous waste sites, or other locations which were identified by community members as being of concern are also referenced in the cluster description.

All the fact sheets were externally peer-reviewed by scientists and community members in the National Disease Clusters Alliance.

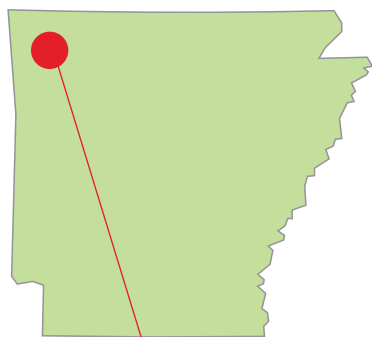
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Disease Clusters in Arkansas

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Investigations of disease clusters are complex, expensive, and often inconclusive, partly due to limitations in scientific tools for investigating cause-and-effect in small populations. Preventing pollution is the best way to avoid creating additional disease clusters. Strategies for prevention include: (1) Directing and funding federal agencies to swiftly assist state and local officials, and investigate community concerns about potential disease clusters and their causes; (2) Reducing or eliminating toxic releases into air, water, soil and food through stronger environmental controls and tough enforcement of those requirements; and (3) Requiring chemical manufacturers to ensure the safety of their products.

Arkansas has suffered from at least one confirmed disease cluster. Although environmental contaminants are implicated, experts have been unable to pinpoint an exact cause. Regardless of the cause, disease clusters can devastate communities with anxiety and emotional and financial difficulties including high medical costs and lowered property values, as well as the tremendous burden of the disease itself.



LOCATION:
**PRAIRIE GROVE,
WASHINGTON COUNTY**

DISEASE:
Testicular cancer

LOCATION: **Prairie Grove,
Washington County**
DISEASE: **Testicular cancer**

In 2001, the Arkansas Department of Health identified a cluster of testicular cancer from 1997 to 2001; three of the cases were in 14-year-old boys. Though no cause was identified, the town of 2,500 people lies near a now-closed nuclear reactor, a low-level radioactive landfill, a poultry plant, and a manufacturer of poultry feed containing arsenic. Local residents were concerned that the poultry factories were contributing to the high rates of cancer and other health problems because arsenic-contaminated chicken manure was used as fertilizer and spread on fields beside schools and homes in Prairie Grove. In 2004, residents sued one of the poultry farms and the poultry feed manufacturer for spreading the contaminated manure throughout Prairie Grove. However, the court did not rule in favor of the residents and the true cause of the cluster has never been determined.

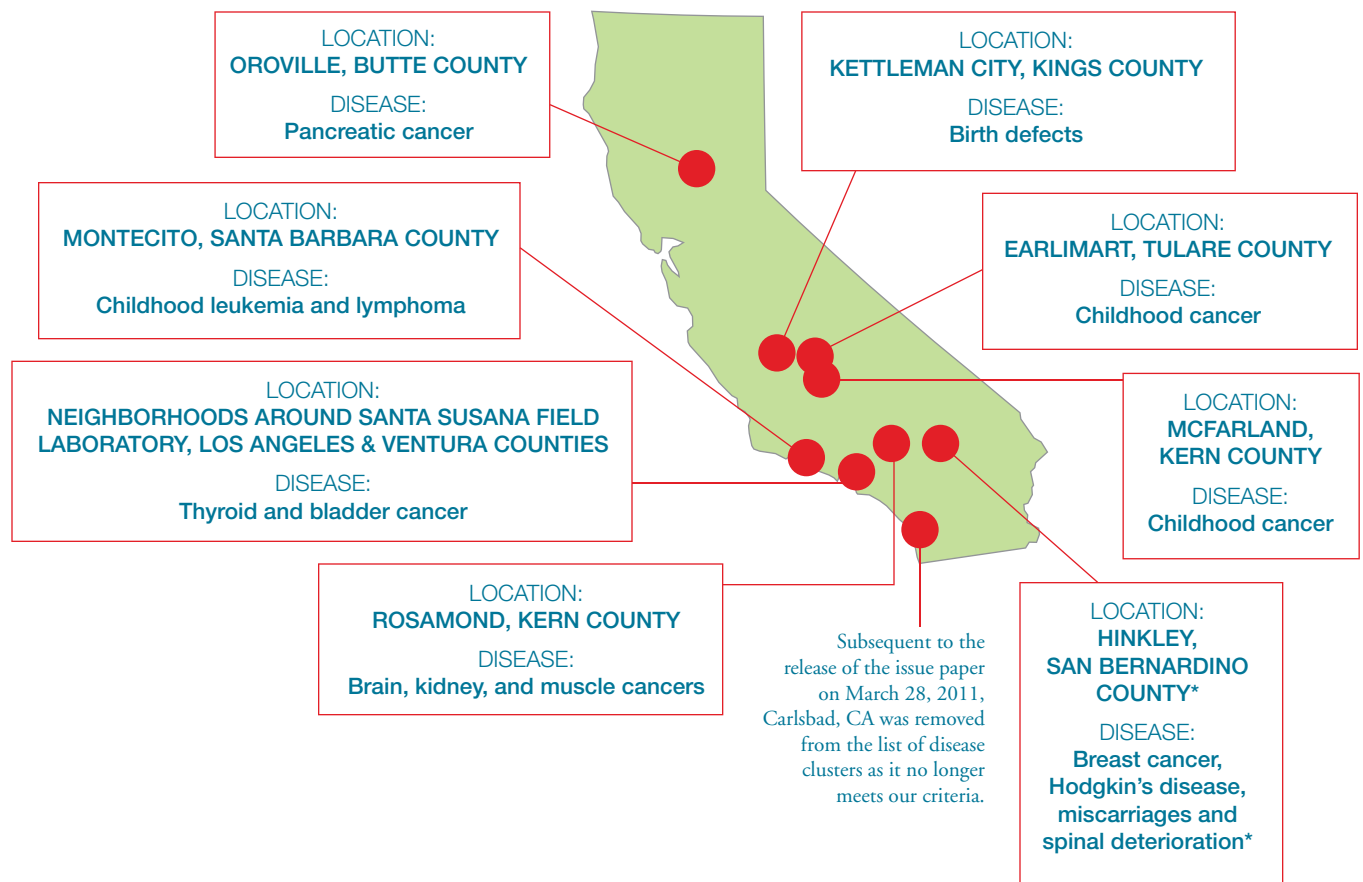
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Disease Clusters in California

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California has suffered from at least seven confirmed disease clusters. Most have afflicted children with cancers or birth defects. Although environmental contaminants are implicated, experts have been unable to pinpoint an exact cause. Regardless of the cause, disease clusters can devastate communities with anxiety and emotional and financial difficulties, including high medical costs and lowered property values, as well as the tremendous burden of the disease itself.



LOCATION: Earlimart, Tulare County

The California Department of Health Services (DHS) concluded there was a cluster of childhood cancer cases diagnosed between 1986 and 1989 in Earlimart. All of the Earlimart children with cancer were from families of farm workers.

LOCATION: Kettleman City, Kings County

The California Department of Public Health identified a birth defects cluster in Kettleman City from 2007 to 2010. Children were born with cleft palates and other severe birth defects such as facial deformities, heart and brain problems, and limb defects. Some of those children have since died. Many residents blame the hazardous waste disposal facility, the largest in the western United States, that is just 3.5 miles southwest of town.

LOCATION: McFarland, Kern County

DHS confirmed that McFarland has suffered from a childhood cancer rate three to four times higher than normal. Prior to 1990, there was significant under reporting of the amount of restricted pesticide use, which may have included known cancer-causing compounds. This under reporting has stymied efforts to pinpoint environmental causes of this disease cluster.

LOCATION: Montecito, Santa Barbara County

DHS confirmed a cluster of childhood leukemia and lymphoma in Montecito from 1981 to 1988 at a rate 5 times higher than would be expected during an eight-year period in a city of its size. DHS has been unable to pinpoint a specific environmental cause. Community members were concerned about possible health effects from electromagnetic fields (EMF) levels coming from the transformer station near the elementary school and DHS did find elevated EMF at the school.

LOCATION: Oroville, Butte County

Oroville had a cluster of pancreatic cancers from 2004 to 2005, confirmed by researchers at the California Cancer Registry. A chemical explosion and fire that occurred in 1987 at the Koppers wood treatment facility in town has been investigated as a possible cause, as well as other Koppers facilities that have historically contaminated residential wells with pentachlorophenol and other toxic chemicals.

LOCATION: Rosamond, Kern County

The Kern County Health Department and DHS identified a cluster of childhood cancer in Rosamond. During the years 1975 to 1984, eight cases of childhood cancer occurred in Rosamond. Four of those cases were medulloblastoma (a rare type of brain cancer); two were rhabdomyosarcomas (a rare muscular cancer), one Hodgkin's lymphoma, and a Wilm's tumor (childhood kidney cancer). Although DHS identified several locations in Rosamond that were contaminated with dioxins, furans, and other chemicals that cause cancer, they did not identify how the children could have been in contact with these chemicals.

LOCATION: Neighborhoods around Santa Susana Field Laboratory, Los Angeles & Ventura Counties

A 1991 study by DHS confirmed a cluster of bladder cancers in areas in Los Angeles County closest to the Santa Susana Field Laboratory (SSFL) in nearby Ventura County. Additionally, a study performed by researchers at the University of Michigan found that risk of thyroid cancer was linked to distance from SSFL, a notorious source of widespread radioactive and chemical contamination. Currently, the California Department of Toxic Substances Control is overseeing an investigation and cleanup of contaminated soil and groundwater at the site.

*** LOCATION: Hinkley****DISEASE: Breast cancer, Hodgkin's disease, miscarriages and spinal deterioration**

In the case made famous by the film, Erin Brockovich, community members won a \$333 million settlement from Pacific Gas & Electric (PG&E) in 1996. Hexavalent chromium leached from PG&E ponds into the town's drinking water supply and community members experienced health effects, such as breast cancer, Hodgkin's disease, miscarriages and spinal deterioration. Although the California Cancer Registry has completed three studies and concluded that cancer rates were not elevated from 1988 to 2008, other state officials have noted that the population is too small for a cancer survey to yield meaningful results. This case is an example of why disease clusters are difficult to prove.

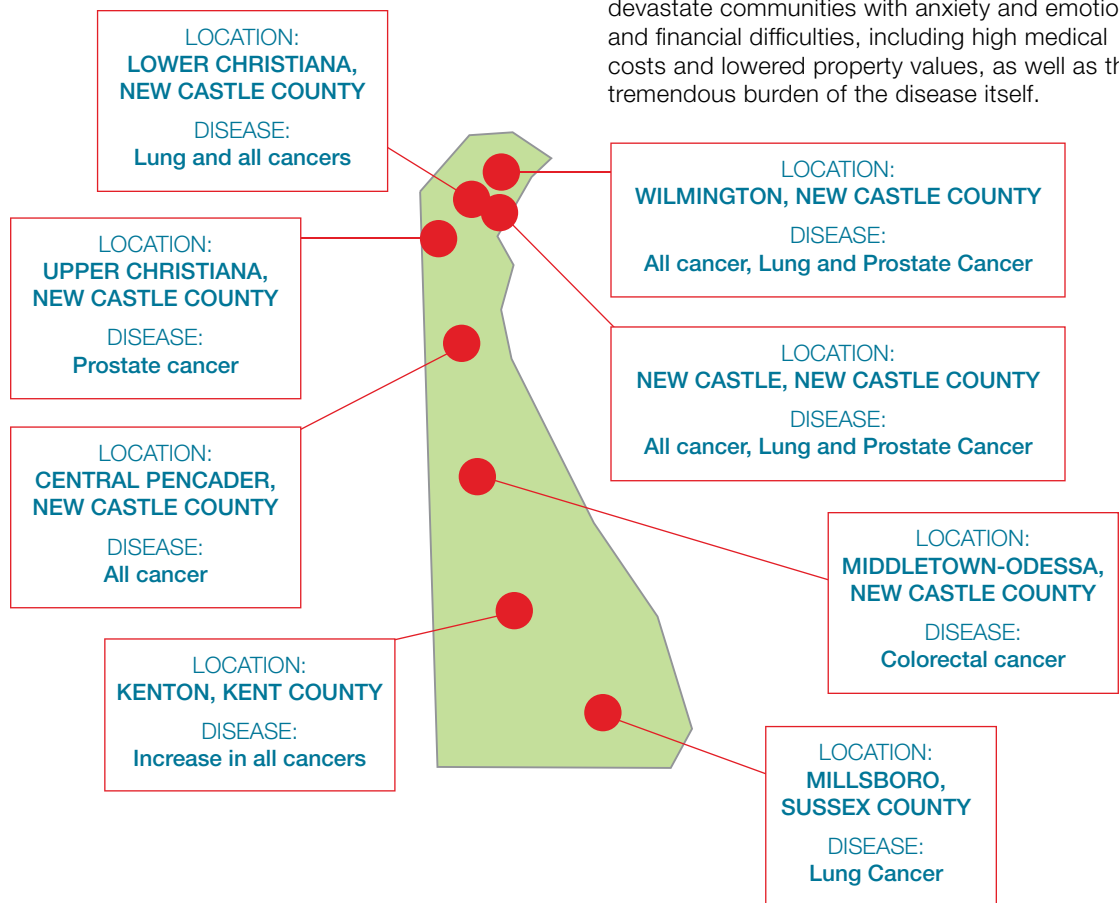
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Disease Clusters in Delaware

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In 2008, the Delaware Department of Health and Social Services published a unique report which identified eight cancer clusters in the state. This was the result of a sub-county level analysis of cancer registry data from the years 2000 through 2004. The analysis was limited to four types of cancer and all cancer cases only. This process is unique in that Delaware is required to release publicly the information from its cancer registry and only one of the clusters was brought to the attention of the state by concerned residents. Although environmental contaminants are often suspected and sometimes implicated, in this instance the investigation did not attempt to determine the cause of the disease clusters. Regardless of the cause, disease clusters can devastate communities with anxiety and emotional and financial difficulties, including high medical costs and lowered property values, as well as the tremendous burden of the disease itself.



LOCATION: Lower Christiana, New Castle County

DISEASE: Lung and all cancers

State officials found that Lower Christiana had higher rates of all cancers and also identified a cluster of lung cancer with rates above the state average from 2000-2004. The state investigation did not include research into possible environmental causes of the cluster.

LOCATION: Upper Christiana, New Castle County

DISEASE: Prostate cancer

A cluster of prostate cancer in Upper Christiana was confirmed by state officials who found rates of this cancer were 45 percent higher than the state average from 2000 to 2004. State officials did not look for an environmental link to the increase in prostate cancer.

LOCATION: Central Pencader, New Castle County

DISEASE: All cancer

State officials found that Central Pencader had a higher rate of all types of cancer compared to the state average from 2000 to 2004. State health officials did not investigate any specific environmental link to the increase in cancer rates.

LOCATION: Middletown-Odessa, New Castle County

DISEASE: Colorectal cancer

State health officials found that there was a cluster of colorectal cancer from 2000 to 2004 in Middletown-Odessa where rates were 45 percent higher than the state average. The state investigation did not include research into possible environmental causes of the cluster.

LOCATION: Wilmington, New Castle County

DISEASE: All cancer, lung and prostate cancer

State officials reported that from 2000 to 2004 there were elevated rates of all cancer and, in particular, identified a cluster of lung and prostate cancer with rates in the area higher than the state average. The state investigation did not include research into possible environmental causes of the clusters.

LOCATION: New Castle, New Castle County

DISEASE: All cancer, lung and prostate cancer

From 2000 to 2004, state health officials discovered that New Castle had above average rates of all cancers and specifically identified clusters of lung and prostate cancer with rates higher than the state average. The state investigation did not include research into possible environmental causes of the clusters.

LOCATION: Kenton, Kent County

DISEASE: All cancer

The state health department found a higher rate of all types of cancer in Kenton from 2000 to 2004. The state investigation did not include research into possible environmental causes of the cluster.

LOCATION: Millsboro, Sussex County

DISEASE: Lung Cancer

State officials identified a cluster of lung cancer in Millsboro from 2000-2004. The state investigation did not include research into possible environmental causes of the clusters. However, the state investigation into possible disease clusters was prompted by local residents who were concerned about contamination at the nearby coal ash landfill operated by the Indian River Power Plant. Elevated levels of arsenic, chromium, and thallium in groundwater have been reported to be above federal primary drinking water standards. Arsenic is associated with increased risk of lung cancer.

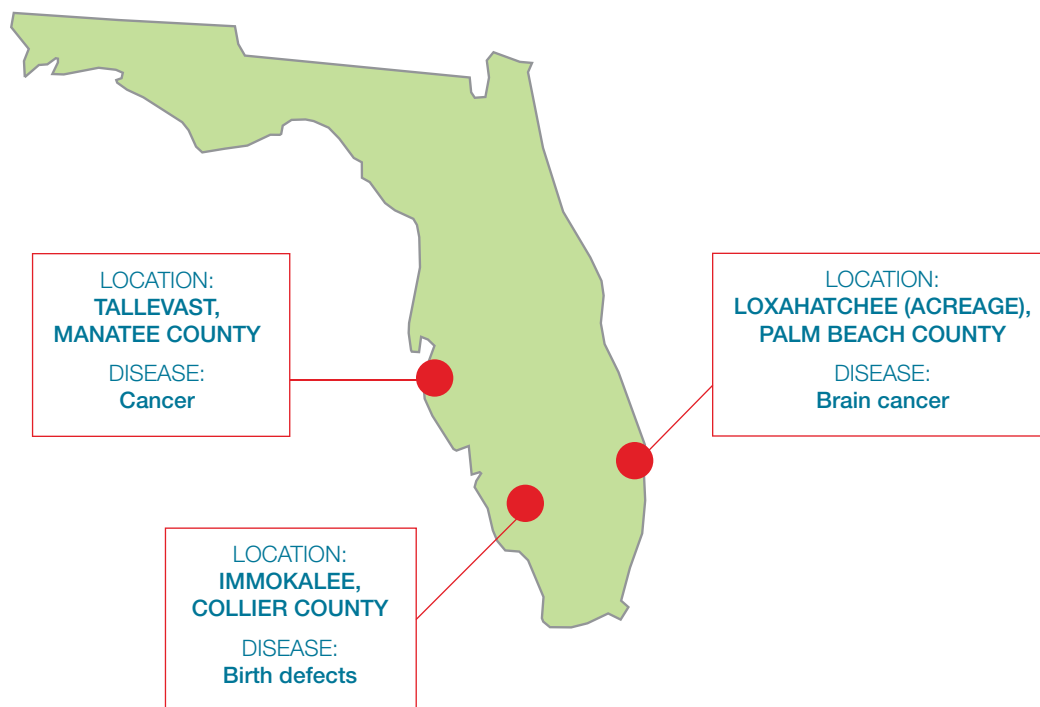
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Florida has suffered from at least three confirmed disease clusters, two of which afflicted children. Although environmental contaminants are implicated, experts have been unable to pinpoint an exact cause. Regardless of the cause, disease clusters can devastate communities with anxiety and emotional and financial difficulties, including high medical costs and lowered property values, as well as the tremendous burden of the disease itself.



LOCATION: Loxahatchee (Acreage), Palm Beach County

DISEASE: Brain cancer

The Florida Department of Health has confirmed a pediatric brain cancer cluster in a rural community called The Acreage. A community group has counted 18 children with brain cancer and 3 children with brain cysts since 1996. Some residents have blamed Pratt & Whitney, the rocket and jet engine company located nearby, which has been responsible for leaks and spills of chemicals, such as solvents and pesticides on its 7,000 acres for the last 30 years.

LOCATION: Immokalee, Collier County

DISEASE: Birth defects

In 2004, the National Institute of Occupational and Safety and Health and state health officials in North Carolina and Florida identified three women employed by AgMart who gave birth to children with birth defects during a seven week period. All six parents worked on the same tomato fields in North Carolina and Florida. Exposure to pesticides was a suspected cause. In 2005, the North Carolina Department of Agriculture and Consumer Services alleged that Ag Mart had 369 pesticide violations. These violations included (1) the use of six pesticides classified by the Environmental Protection Agency as among the most dangerous to workers and (2) applying a dangerous pesticide three times more often than allowed by law.

LOCATION: Tallevast, Manatee County

DISEASE: Cancer

In 2008, the Agency for Toxic Substances and Disease Registry determined that prior long-term use of groundwater for drinking and other household purposes in Tallevast, Florida was a public health hazard. Residents who drank the most highly contaminated groundwater every day for 42 years were more at risk for developing kidney cancer, liver cancer, leukemia, and lymphoma. From 1962 to 1996, the American Beryllium Company manufactured machine parts in the community. During the manufacturing process, cancer-causing solvents such as trichloroethylene were improperly disposed of, resulting in groundwater contamination.

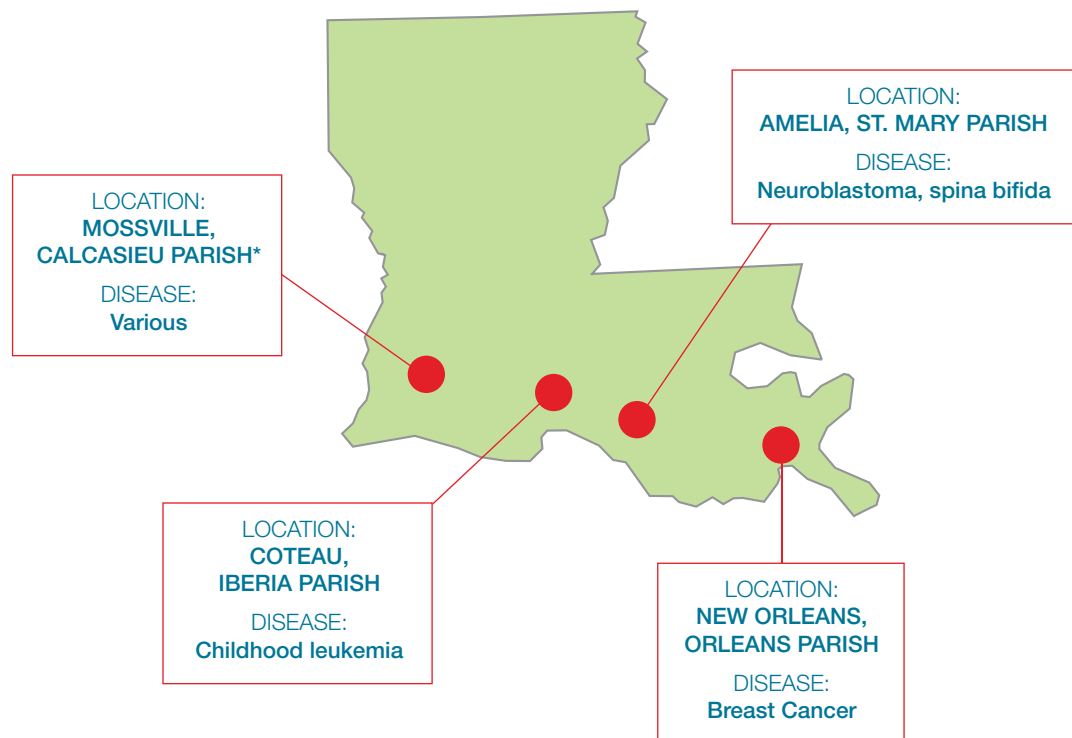
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Disease Clusters in Louisiana

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Louisiana has suffered from at least three confirmed disease clusters, two of which afflicted children. Although environmental contaminants are implicated, experts have been unable to pinpoint an exact cause. Regardless of the cause, disease clusters can devastate communities with anxiety and emotional and financial difficulties including high medical costs and lowered property values, as well as the tremendous burden of the disease itself.



LOCATION: New Orleans, Orleans Parish

DISEASE: Breast cancer

A cluster of breast cancer in an urban census tract at the Agricultural Street Landfill Superfund Site was identified by the Agency for Toxic Substances and Disease Registry (ATSDR) in 2003. The contaminated landfill was in operation between 1909 and 1962 and was the area's main dump for both residential and industrial waste. In 1976, the landfill was covered with a light layer of soil and sand, and redeveloped for residential use. Residents in the area began to discover trash only a few inches below the soil surface and in 1993 the site was designated as a hazardous waste site (Superfund). According to ATSDR, the site and the neighborhood is contaminated with metals, polyaromatic hydrocarbons (PAHs), volatile organic compounds, and pesticides. There is evidence that PAHs can increase the risk of developing breast cancer.

LOCATION: Amelia, St. Mary Parish

DISEASE: Neuroblastoma

Over the period of 1986 through 1987, a cluster of neuroblastoma, a type of brain cancer, was identified by researchers at Louisiana State University Medical School. City government and state health officials petitioned the Agency for Toxic Substances and Disease Registry to conduct a public health assessment of Marine Shale Processor (MSP) due to regulatory scrutiny and public concern over MSP's operations. In 1994, ATSDR concluded that there was evidence to suggest that adverse health outcomes in the community could be related to environmental exposures. However, there was insufficient data to link a hazardous waste incinerator at MSP to adverse health outcomes in the community. In 2006, MSP and its owner paid the state government a settlement of \$7 million for the closure and remediation of the site.

LOCATION: Coteau, Iberia Parish

DISEASE: Childhood leukemia

State health officials confirmed a cluster of childhood leukemia in the tiny community of Coteau after four children were diagnosed with leukemia. In 2000, the Louisiana Office of Public Health began conducting a case-control study of 40 children diagnosed with leukemia between 1983 and 1997 in the four-parish area of Lafayette, Vermilion, St. Martin, and Iberia to identify risk factors associated with childhood leukemia in the area. Due to the small size of the study, state epidemiologists were not able to make any clear conclusions about environmental factors that may have caused the cluster of leukemia.

*** LOCATION: Mossville, Calcasieu Parish**

DISEASE: Various

A health survey by researchers at the University of Texas Medical Branch at Galveston in 1998 found that 91 percent of Mossville residents suffered from health problems, including a high incidence of ear, nose, and throat illnesses, central nervous system disturbances, cardiovascular problems, and increased skin, digestive, immune, and endocrine disorders.

Calcasieu Parish is the site of a large number of companies that produce petroleum-based chemicals, chlorinated hydrocarbon solvents, and other organic chemicals. In 1998, the Agency for Toxic Substances and Disease Registry (ATSDR) tested for dioxin in the blood of 28 Mossville residents and reported elevated levels.

The existence of a cluster was not confirmed by the ATSDR, however they only focused on cancer rates in the community and did not look at other health problems, including those investigated by the University of Texas researchers. The illnesses identified in Mossville are not tracked in any disease surveillance program, highlighting how difficult it is to identify clusters of these types of diseases, since there is no existing information against which to compare.

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Disease Clusters in Michigan

Ongoing investigations are occurring in the state

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Michigan has experienced at least one confirmed disease cluster spanning several different counties, and another is under investigation. Although environmental contaminants are implicated, experts have been unable to pinpoint an exact cause. Regardless of the cause, disease clusters can devastate communities with anxiety and emotional and financial difficulties, including high medical costs and lowered property values, as well as the tremendous burden of the disease itself.

LOCATION: Midland, Saginaw, and Bay Counties

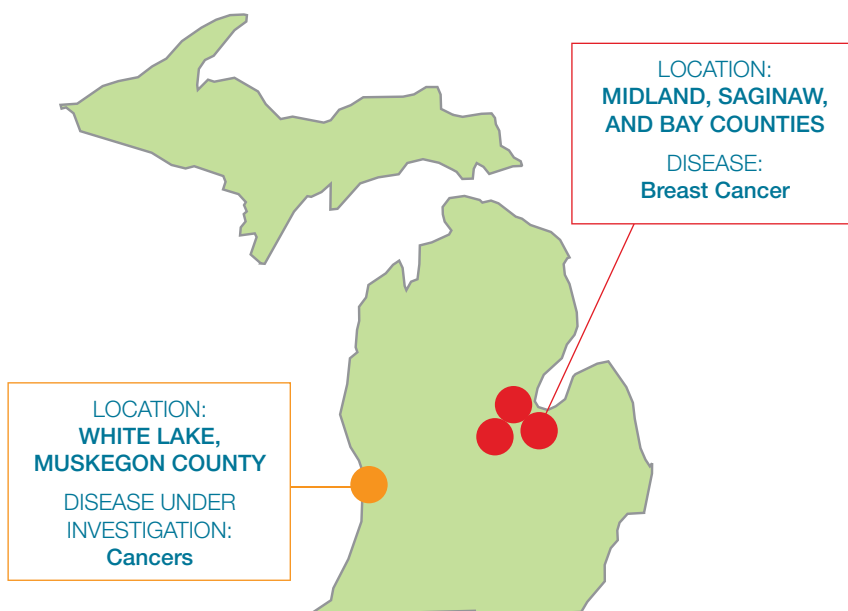
DISEASE: Breast Cancer

Researchers found a cluster of breast cancer in Midland, Saginaw, and Bay counties between 1985 and 2002. High levels of dioxins and other contaminants in soil and higher-than average body burdens of dioxins in local residents, particularly those who lived in the region prior to 1980, have also been found in the city of Midland and the Tittabawassee and Saginaw River floodplains in Michigan. A 2008 study found increased breast cancer incidence was spatially associated with dioxin contamination. Researchers believed that the source of dioxins in the river came from industrial processes at the Dow Chemical Company Midland plant.

LOCATION: White Lake, Muskegon County

DISEASE UNDER INVESTIGATION: Cancers

Concerned residents are compiling information on the residential and occupational history of people with cancer in the White Lake area for review by the Muskegon County Health Department. Companies such as Hooker/Occidental Chemical, DuPont and the Whitehall Leather tannery have previously contaminated White Lake with heavy metals and volatile organic compounds.



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Disease Clusters in Missouri

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Missouri has suffered from at least one confirmed disease cluster. Although environmental contaminants are implicated, experts have been unable to pinpoint an exact cause. Regardless of the cause, disease clusters can devastate communities with anxiety and emotional and financial difficulties including high medical costs and lowered property values, as well as the tremendous burden of the disease itself.



**LOCATION: Herculaneum,
Jefferson County**
**DISEASE: Amyotrophic Lateral
Sclerosis (ALS)**

In 2007, the Missouri Department of Health and Senior Services (MDHSS) identified a cluster of Amyotrophic Lateral Sclerosis cases, a nervous system disorder also known as Lou Gehrig’s disease, around a lead smelter in Herculaneum. The MDHSS stated that the lead contamination in Herculaneum presented “a clear and present risk to public health”. MDHSS worked with the Missouri Department of Natural Resources on a settlement that resulted in the purchase of 160 homes by the company that operated the lead smelter due to lead contamination in 2002. The MDHSS reported that the lead smelter also produced pollutants such as zinc, lead, copper, chromium, and cadmium as part of the manufacturing process. Also, slag from the smelter has long been dumped in an enormous pile near the Mississippi River.

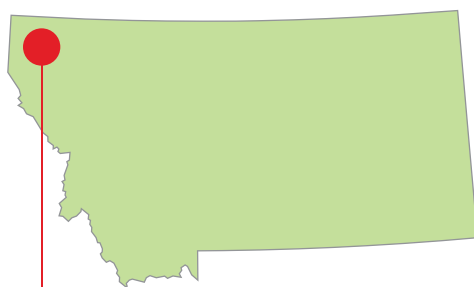
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Disease Clusters in Montana

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Montana has suffered from at least one confirmed disease cluster. Although the environmental contaminant that caused this cluster is known, experts researching other disease clusters have generally been unable to pinpoint exact causes. Regardless of the cause, disease clusters can devastate communities with anxiety and emotional and financial difficulties including high medical costs and lowered property values, as well as the tremendous burden of the disease itself.



LOCATION:
**LIBBY,
LINCOLN COUNTY**

DISEASE:
**Respiratory diseases
and cancers**

LOCATION: **Libby, Lincoln County**
DISEASE: **Respiratory diseases**

In 2008, the Agency for Toxic Substances and Disease Registry (ATSDR) identified a cluster of malignant cancers and respiratory diseases from 1979 to 1998 in Libby, Montana. From the 1920's to 1990, vermiculite was mined in and near Libby, Montana and contaminated the entire community and surrounding area. The vermiculite was contaminated with tremolite asbestos, a known carcinogen and cause of non-malignant respiratory illness. Since 1999, the EPA has been working with the community to clean up contamination and reduce exposure.

Stop disease clusters.
Protect people.
Control toxic chemicals.

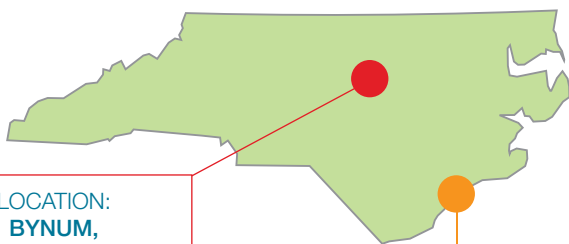
Disease Clusters in North Carolina

Ongoing investigations are occurring in the state

An unusually large number of people sickened by a disease in a certain place and time is known as a 'disease cluster'. Clusters of cancer, birth defects, and other chronic illnesses have sometimes been linked to chemicals or other toxic pollutants in local communities, although these links can be controversial. There is a need for better documentation and investigation of disease clusters to identify and address possible causes. Meanwhile, toxic chemicals should be identified and controlled through reform of the Toxic Substances Control Act, so these chemicals don't pollute communities and sicken people.

Investigations of disease clusters are complex, expensive, and often inconclusive, partly due to limitations in scientific tools for investigating cause-and-effect in small populations. Preventing pollution is the best way to avoid creating additional disease clusters. Strategies for prevention include: (1) Directing and funding federal agencies to swiftly assist state and local officials, and investigate community concerns about potential disease clusters and their causes; (2) Reducing or eliminating toxic releases into air, water, soil and food through stronger environmental controls and tough enforcement of those requirements; and (3) Requiring chemical manufacturers to ensure the safety of their products.

North Carolina has suffered from at least one confirmed disease cluster and another is under investigation. Although environmental contaminants are implicated, experts have been unable to pinpoint an exact cause. Regardless of the cause, disease clusters can devastate communities with anxiety and emotional and financial difficulties, including high medical costs and lowered property values, as well as the tremendous burden of the disease itself.



LOCATION:
**BYNUM,
CHATHAM COUNTY**

DISEASE:
Various cancers

LOCATION:
**CAMP LEJEUNE,
ONSWLOW COUNTY**

DISEASE UNDER INVESTIGATION:
**Birth defects, childhood cancer,
and male breast cancer**

LOCATION: **Bynum, Chatham County**
DISEASE: **Various cancers**

In 1986, researchers at The University of North Carolina, Chapel Hill, found that residents of Bynum, a small cotton mill village, had a disproportionately high death rate due to cancer, compared to the overall NC rate. Results indicated that the percentage of deaths involving cancer increased steadily to a high of 58 percent from 1980 to 1985. From 1947 to 1976, about two-thirds of the residents drank water from the river which was later found to contain a variety of pollutants, including carcinogens. Bynum is downstream from significant sources of industrial and agricultural contaminants. The community now receives treated drinking water from the county water supply.

LOCATION: **Camp Lejeune,
Onslow County**

DISEASE UNDER INVESTIGATION:
**Birth defects, childhood cancer,
and male breast cancer**

For nearly 40 years, the groundwater at Camp Lejeune was contaminated with perchloroethylene from an off-base dry cleaner; with trichloroethylene from industrial solvents used on base; and with benzene from fuel tank leaks on the Marine Corps Base. The Agency for Toxic Substances and Disease Registry (ATSDR) is currently conducting a study on various birth defects, childhood leukemia and non-Hodgkin's lymphoma in children born to mothers who lived on base at Camp Lejeune any time during their pregnancies. Newspapers also reported that about 60 men who had lived on the base have been diagnosed with male breast cancer. ATSDR will also be conducting a health survey that will investigate the incidence of cancer and other diseases, including breast cancer, which is expected to begin in the spring of 2011.

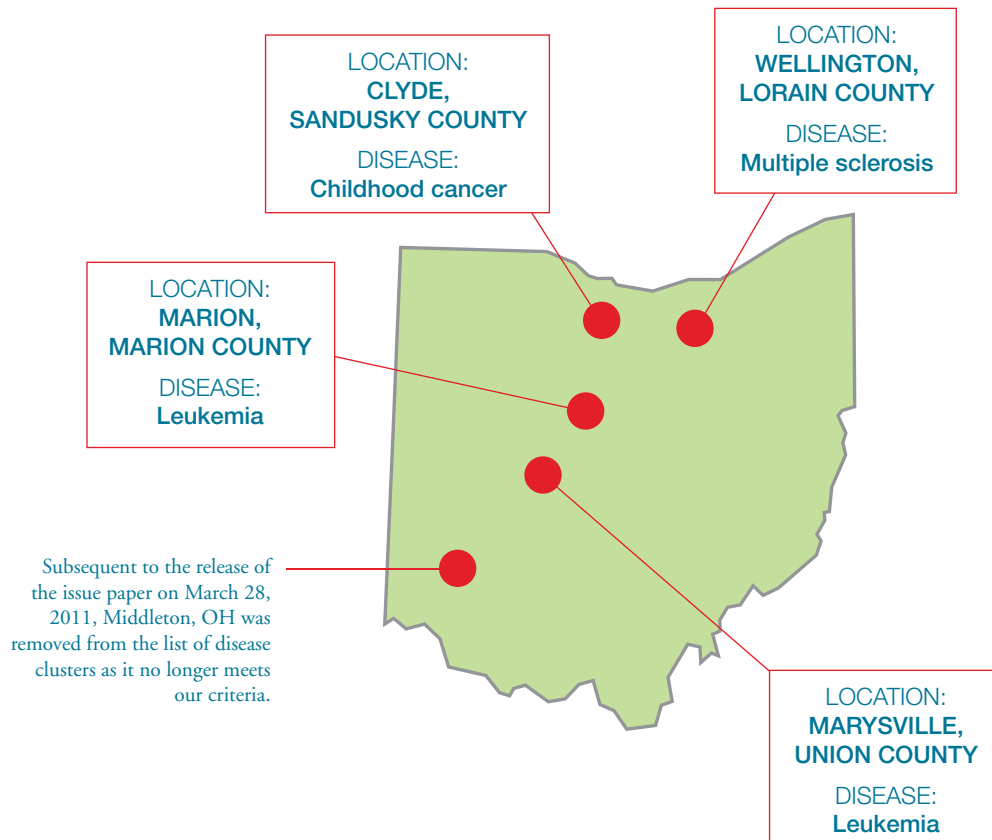
**Stop disease clusters.
Protect people.
Control toxic chemicals.**

Disease Clusters in Ohio

An unusually large number of people sickened by a disease in a certain place and time is known as a 'disease cluster'. Clusters of cancer, birth defects, and other chronic illnesses have sometimes been linked to chemicals or other toxic pollutants in local communities, although these links can be controversial. There is a need for better documentation and investigation of disease clusters to identify and address possible causes. Meanwhile, toxic chemicals should be identified and controlled through reform of the Toxic Substances Control Act, so these chemicals don't pollute communities and sicken people.

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Ohio has suffered from at least four confirmed disease clusters, two of which afflicted children. Although environmental contaminants are implicated, experts have been unable to pinpoint an exact cause. Regardless of the cause, disease clusters can devastate communities with anxiety and emotional and financial difficulties, including high medical costs and lowered property values, as well as the tremendous burden of the disease itself.



LOCATION: Clyde, Sandusky County

DISEASE: Childhood cancer

In 2009, the Ohio Department of Health (ODH) and Sandusky County Health Department confirmed a cancer cluster in the city of Clyde and Green Creek Township area. The analysis found brain and other central nervous system cancers to be the most common cancer types. State and local agencies are continuing to investigate the cause of the higher than expected number of childhood cancer diagnoses in the county.

LOCATION: Wellington, Lorain County

DISEASE: Multiple sclerosis

A 1998 study by state and local health departments found residents of Wellington were three times more likely to develop multiple sclerosis (MS) than the rest of the country. The Agency for Toxic Substances and Disease Registry found that there had been a release of chemical contaminants in the environment surrounding a former foundry, the LESCO facility, and the still operating Forest City Technologies plant. The LESCO facility was a distributor and formulator of fertilizer and Forest City Technologies manufactures seals and gaskets for the automotive industry. Although the causes of MS are unknown, the disease is believed to be caused by a combination of genetic and environmental factors.

LOCATION: Marysville, Union County

DISEASE: Leukemia

The ODH has preliminarily concluded that there was a cluster of leukemia cases in this small town. Between 1992 and 2001, eight boys and young men were diagnosed with leukemia, a number that is significantly higher than expected when compared to national rates for a town this size.

LOCATION: Marion, Marion County

DISEASE: Leukemia

In 1999, the ODH found a cluster of leukemia and esophageal cancer in Marion. River Valley High School was built in the early 1960's on top of an Army depot used for cleaning and repairs of vehicles and heavy machinery. The Ohio EPA discovered several carcinogenic substances at the site at dangerous levels. In 1997, the Army Corp of Engineers began investigating and cleaning up arsenic and lead at the former depot; they expect to complete all clean-up projects in June 2013.

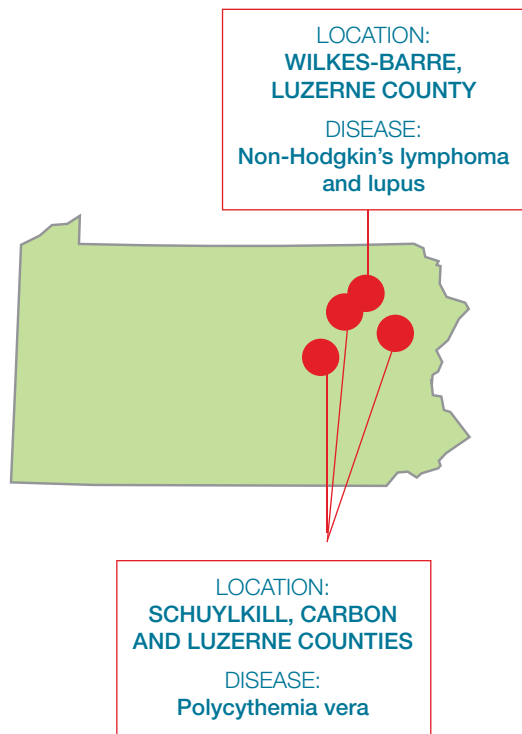
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Disease Clusters in Pennsylvania

An unusually large number of people sickened by a disease in a certain place and time is known as a 'disease cluster'. Clusters of cancer, birth defects, and other chronic illnesses have sometimes been linked to chemicals or other toxic pollutants in local communities, although these links can be controversial. There is a need for better documentation and investigation of disease clusters to identify and address possible causes. Meanwhile, toxic chemicals should be identified and controlled through reform of the Toxic Substances Control Act, so these chemicals don't pollute communities and sicken people.

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Pennsylvania has suffered from at least two confirmed disease clusters spanning several different counties. Although environmental contaminants are implicated, experts have been unable to pinpoint an exact cause. Regardless of the cause, disease clusters can devastate communities with anxiety and emotional and financial difficulties, including high medical costs and lowered property values, as well as the tremendous burden of the disease itself.



LOCATION: Wilkes-Barre, Luzerne County
DISEASE: Non-Hodgkin's lymphoma and lupus

In 2004, researchers at Pennsylvania State University found health hazards associated with workplace exposure to trichloroethylene (TCE) at a Wilkes-Barre special education school in the school district's main administrative building. Twelve employees have been diagnosed with non-Hodgkin's lymphoma and lupus. The researchers found TCE exposures were 10,000 times higher than what the Environmental Protection Agency considers an acceptable cancer risk for someone working in the building for at least 10 years. TCE, a probable human carcinogen, was used by the staff to clean the two printing presses.

LOCATION: Schuylkill, Carbon and Luzerne Counties
DISEASE: Polycythemia vera

In 2008, the Agency for Toxic Substances and Disease Registry confirmed a cluster of polycythemia vera (PV) cases in Schuylkill, Luzerne, and Carbon counties. PV is a rare blood disorder in which the bone marrow makes too many red blood cells. Some residents blame their illness on a nearby coal-fired power plant and a recycling facility that accepted thousands of gallons of paint, sludge, waste oils, used solvents, PCBs, cyanide, pesticides, and many other known or suspected carcinogens.

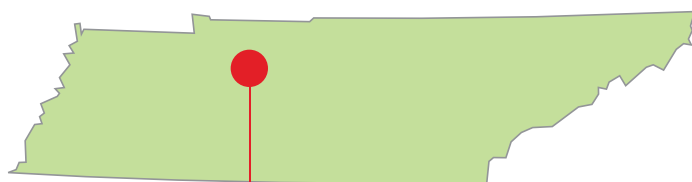
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Disease Clusters in Tennessee

An unusually large number of people sickened by a disease in a certain place and time is known as a 'disease cluster'. Clusters of cancer, birth defects, and other chronic illnesses have sometimes been linked to chemicals or other toxic pollutants in local communities, although these links can be controversial. There is a need for better documentation and investigation of disease clusters to identify and address possible causes. Meanwhile, toxic chemicals should be identified and controlled through reform of the Toxic Substances Control Act, so these chemicals don't pollute communities and sicken people.

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Tennessee has suffered from at least one confirmed disease cluster which afflicted children. Environmental contaminants are implicated in this cluster. Regardless of the cause, disease clusters can devastate communities with anxiety and emotional and financial difficulties, including high medical costs and lowered property values, as well as the tremendous burden of the disease itself.



LOCATION:
**DICKSON,
DICKSON COUNTY**

DISEASE:
Oral cleft birth defects

LOCATION: **Dickson, Dickson County** DISEASE: **Oral cleft birth defects**

A cluster of oral cleft (cleft lip and cleft palate) birth defects in Dickson, Tennessee from 1997 to 2000 was identified by the Centers for Disease Control and Prevention. The investigation revealed that in 1997, trichloroethylene (TCE) and toluene were found in a private well, public well, and in the public water supply. Both chemicals have been associated with causing birth defects. Prior to stringent landfill regulations and guidelines, containers of TCE were buried in the Dickson County landfill in Dickson. Additionally, according to the EPA's Toxic Release Inventory in 1997 Quebecor Printing released 1.4 million pounds of toluene into the air in Dickson.

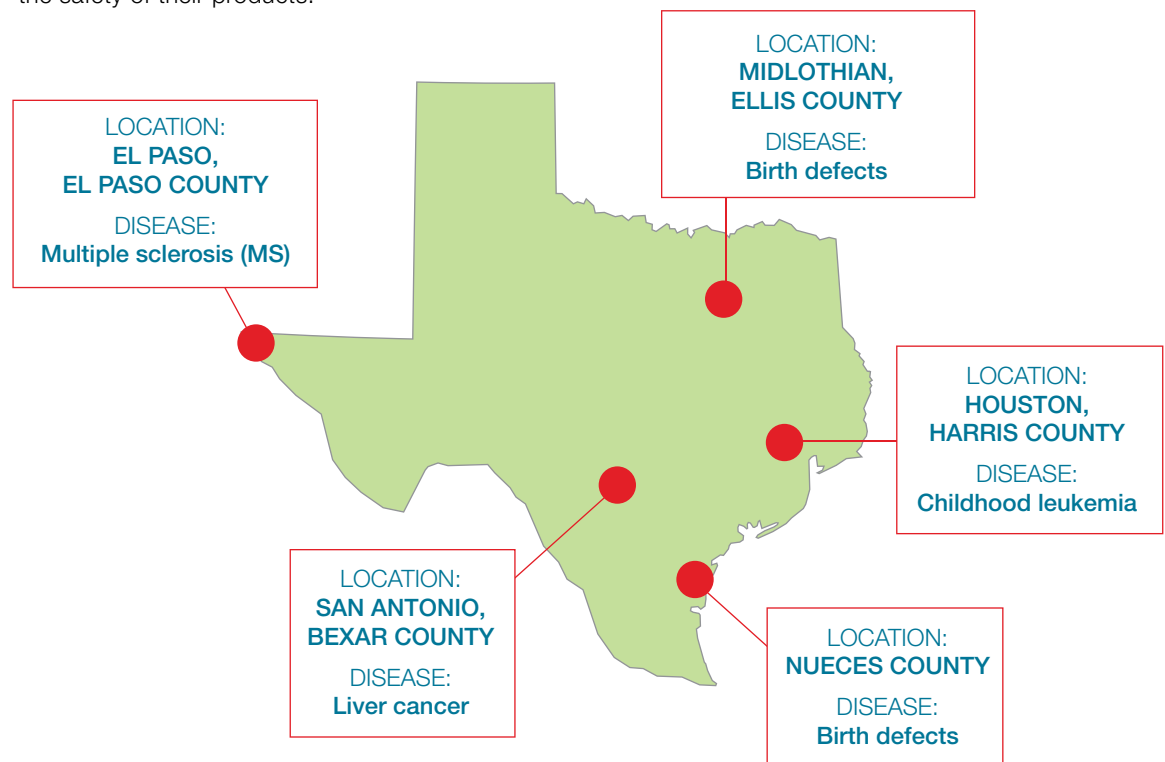
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Disease Clusters in Texas

An unusually large number of people sickened by a disease in a certain place and time is known as a 'disease cluster'. Clusters of cancer, birth defects, and other chronic illnesses have sometimes been linked to chemicals or other toxic pollutants in local communities, although these links can be controversial. There is a need for better documentation and investigation of disease clusters to identify and address possible causes. Meanwhile, toxic chemicals should be identified and controlled through reform of the Toxic Substances Control Act, so these chemicals don't pollute communities and sicken people.

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Texas has suffered from at least five disease clusters confirmed by health authorities. Most have afflicted children with cancers or birth defects. Although environmental contaminants are implicated, experts have been unable to pinpoint an exact cause. Regardless of the cause, disease clusters can devastate communities with anxiety and emotional and financial difficulties, including high medical costs and lowered property values, as well as the tremendous burden of the disease itself.



LOCATION: El Paso, El Paso County

DISEASE: Multiple sclerosis (MS)

In 1996, the Agency for Toxic Substances and Disease Registry (ATSDR) and the Texas Department of State Health Services (TDSHS) found a two-fold increased risk of developing multiple sclerosis (MS) in people who had attended Mesita Elementary School in El Paso. The school is located one mile from an ASARCO smelter facility. Environmental sampling has shown elevated levels of lead, zinc, arsenic, cadmium, and SO₂ in many areas of El Paso. Although the causes of MS are unknown, the disease is believed to be caused by a combination of genetic and environmental factors.

LOCATION: Houston, Harris County

DISEASE: Childhood leukemia

Researchers from the University of Texas's School of Public Health found that children who live within two miles of the Houston Ship Channel have a 56 percent greater chance of getting leukemia than children living elsewhere. The elevated rates of childhood leukemia were found in census tracts with the highest benzene and 1,3-butadiene levels in the air. The Houston Ship Channel is the largest petrochemical complex in the United States and a Rice University study released in 2006 showed that Houston had the highest air concentration of benzene and 1,3-butadiene in the country. Benzene and 1,3-butadiene are known to be human carcinogens.

LOCATION: Midlothian, Ellis County

DISEASE: Birth defects

An investigation by TDSHS confirmed a cluster of Downs Syndrome in Ellis County from 1991 to 1994. Residents are concerned about air pollution from three cement plants and one steel-recycling mill and are also documenting birth defects in animals born in the area. The ATSDR is restarting a second health assessment after the first was criticized by academic scientists for using inadequate air monitoring information, discounting evidence showing that some airborne chemicals exceeded federal health standards, and disregarding residents' respiratory complaints. The health assessment is investigating the higher rates of health problems, including leukemia, birth defects and childhood total cancer and the high incidence of respiratory problems in Ellis County when compared to the rest of the state.

LOCATION: Nueces County, including Corpus Christi

DISEASE: Birth defects

In 2006, the TDSHS found that Nueces County had a birth defect rate that was 84 percent higher than the rest of Texas. A follow-up study explored the relationship between the rate of birth defects and several industrial sites in the county. Researchers were not able to find a direct link to a particular site, but they found that mothers living near refineries and chemical plants had babies with high rates of life-threatening birth defects of the abdominal wall and diaphragm. Living near an old incinerator was linked to other serious birth defects such as narrow anal and intestinal canals or obstructed or narrow urinary tracts. Additionally, researchers found mothers living near a battery plant had higher rates of five different birth defects.

LOCATION: San Antonio, Bexar County

DISEASE: Liver cancer

Researchers at Southwest Texas State University found a cluster of liver cancer deaths in Bexar County and its adjacent counties using statewide cancer mortality data from 1990 through 1997. About 14 zip codes in San Antonio encompass a plume of polluted groundwater linked to Kelly Air Force Base. Local groups allege that the groundwater was polluted with waste containing benzene, perchloroethylene, and trichloroethylene, all known carcinogens. ATSDR is investigating and has stated that the community may have been exposed to higher levels of contaminants in the past.

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SOURCES

Arkansas

E-Magazine, "Arsenic and Old Studies" <http://www.emagazine.com/archive/5064> February 28, 2010
Wright, A., Arkansas Department of Health. "Health Department Reports Low Cancer Rates, Except for Testicular, in Prelim Report to Prairie Grove Citizens April 9" http://web.archive.org/web/20020613083905/www.healthylarkansas.com/news/pr_prairiegrove_update_040902.html

California Sources

California Department of Public Health, Environmental Health Investigations Branch, "Investigation of the Montecito Leukemia and Lymphoma Cluster," www.ehib.org/paper.jsp?paper_key=MONTECITO_1990.

California Department of Public Health, Environmental Health Investigations Branch, "Questions and Answers About Childhood Cancer in Rosamond," www.ehib.org/papers/rosamond_cancer.pdf.

California Environmental Protection Agency and California Department of Public Health, "Investigation of Birth Defects and Community Exposures in Kettleman City, Ca" www.calepa.ca.gov/EnvJustice/Documents/2010/KCDocs/ReportFinal/FinalReport.pdf.

Carlsbad Cancer Connection, www.carlsbadcancerconnection.com.

Coye, M., and L. R. Goldman, "Summary of Environmental Data: McFarland Childhood Cancer Cluster Investigation," Environmental Epidemiology and Toxicology Program, California Department of Health Services," www.ehib.org/papers/10_Coye_1991_McFarland.pdf.

Kreutzer, R., "Investigation of the Earlimart Childhood Cancer Cluster," California Department of Health Services, Environmental Health Investigations Branch, www.ehib.org/papers/19_Kreutzer_1993_Invest_F24.pdf.

Kreutzer, R., R. Schlag, E. Glazer, G. Micarelli, E. Blake, and L. R. Goldman, "Investigation of the Montecito Leukemia and Lymphoma Cluster, Final Report," Environmental Epidemiology and Toxicology Program, California Department of Health Services, www.ehib.org/papers/29_Kreutzer_1990_Invest_059.pdf.

Morgenstern, H., J. Beebe-Dimmer, and S. Yu, "Cancer Incidence in the Community Surrounding the Rocketdyne Facility in Southern California," www.ph.ucla.edu/erg/final_epi_report.pdf.

Santa Susana Field Laboratory Advisory Panel "Report of the Santa Susana Field Laboratory Advisory Panel," www.ssflpanel.org/files/SSFLPanelReport.pdf.

Schwartz, Noaki, "Survey Shows Unremarkable Cancer Rate in CA Town," Boston.com, www.boston.com/news/nation/articles/2010/12/13/survey_shows_unremarkable_cancer_rate_in_ca_town/.

Shin, Tony, "State Opens Carlsbad Cancer Probe," NBC San Diego, www.nbcsandiego.com/news/health/State-Launches-Cancer-Investigation-In-Carlsbad-89489372.html.

Smith, D., S. Hoshiko, K. Naik, C. Fan, K. Fitzsimmons, and T. Rojas-Cheatham, "Pancreatic Cancer Follow-up Investigation Report," California Department of Public Health, Environmental Health Investigations Branch, www.ehib.org/projects/OrovillePancreaticCancerInvestigation.pdf.

Vojtko, Greg, "For Town Made Famous by 'Erin Brockovich,' a Toxic Sequel?" *Christian Science Monitor*, www.csmonitor.com/Environment/2011/0104/For-town-made-famous-by-Erin-Brockovich-a-toxic-sequel.

Delaware

Barrish, Chris, "Eight Cancer Clusters Discovered in Delaware: 10 percent to 45 percent more cases in those areas than rest of state, study finds" *Wilmington News Journal*, April 24, 2008.

Delaware Health and Social Services Division of Public Health, "Average Annual Age-Adjusted Cancer Incidence Rates, 2000-2004, at the Delaware Sub-County Level"

http://www.dhss.delaware.gov/dhss/dph/dpc/files/subcounty_cancerincidence_report.pdf April, 2008

Environmental Integrity Project and Earthjustice, "Out of Control: Mounting Damages From Coal Ash Waste Sites - Thirty-one New Damage Cases of Contamination from Improperly Disposed Coal Combustion Waste"

http://www.environmentalintegrity.org/news_reports/documents/OutofControl-MountingDamagesFromCoalAshWasteSites.pdf February 24, 2010

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Florida Sources

The Acreage Cancer Study, www.theacreagecancerstudy.com/.

Acreage Investigation Letter from Michael A. McGeehin, Centers for Disease Control and Prevention, to Lisa Conti, Division of Environmental Health, Florida Department of Health, accessed at www.pbchd.com/spotlight/acreage/cancer_cluster.html.

Agency for Toxic Substances and Disease Registry, Public Health Assessment for Former American Beryllium Co., www.atsdr.cdc.gov/HAC/pha/FormerAmericanBeryllium/American_Beryllium_Company%20PHA%209-30-2008.pdf.

Calvert, Geoffrey M., W. A. Alarcon, A. Chelminski, M. S. Crowley, R. Barrett, A. Correa, S. Higgins, H. L. Leon, J. Correia, A. Becker, R. H. Allen, and E. Evans, "Case Report: Three Farmworkers Who Gave Birth to Infants With Birth Defects Closely Grouped in Time and Place—Florida and North Carolina, 2004–2005," *Environ. Health Perspect.* May 2007, Vol. 115, No. 5, www.ncbi.nlm.nih.gov/pmc/articles/PMC1867963/.

Collins, Kristin, "Grower Faces Record Fines for Pesticides," *Charlotte News & Observer*, Feb. 19, 2006, accessed at www.smfws.com/articles2006/2006januaryfebruarymarch/art02192006.htm.

Lerner, Steve, "Tallevast, Florida: Rural Residents Live Atop Groundwater Contaminated by High-Tech Weapons Company," Collaborative on Health and the Environment, www.healthandenvironment.org/articles/homepage/3829.

Malek, Mitra, "Acreage Residents Worry Pratt & Whitney Contaminants Played Role in Brain Tumors," *Palm Beach Post*, July 27, 2009, www.palmbeachpost.com/health/content/local_news/epaper/2009/07/27/0723pratt.html.

Occupational and Environmental Epidemiology Branch Division of Public Health North Carolina Department of Health and Human Services Pesticide Section. "Assessment of Maternal Occupational Pesticide Exposures during Pregnancy and Three Children with Birth Defects: North Carolina, 2004" <http://www.epi.state.nc.us/epi/oii/Agmartreleasereport.pdf>.

Palm Beach County Health Department, "DOH & DEP Announce Initial Findings in Cancer Review Investigation for the Acreage Community," www.pbchd.com/press/2009/aug/augnews42009.html.

Louisiana

Agency for Toxic Substances and Disease Registry, "ATSDR Study Finds Dioxin Levels in Calcasieu Parish Residents Similar to National Levels" <http://www.atsdr.cdc.gov/news/displaynews.asp?PRid=1847>

Agency for Toxic Substances and Disease Registry, Health Assessment AGRICULTURE STREET LANDFILL <http://www.atsdr.cdc.gov/HAC/pha/pha.asp?docid=707&pg=1>.

Agency for Toxic Substances and Disease Registry, Petitioned Public Health Assessment Marine Shale Processors, Inc. <http://www.atsdr.cdc.gov/HAC/pha/PHA.asp?docid=725&pg=0>

Alicia Lyttle, "Agriculture Street Landfill Environmental Justice Case Study" <http://www.umich.edu/~snre492/Jones/agstreet.htm>. January 2003

Breast Cancer Fund, "Polycyclic Aromatic Hydrocarbons (PAHs)" <http://www.breastcancerfund.org/clear-science/chemicals-glossary/polycyclic-aromatic-hydrocarbons.html>

US Department of Justice, "U.S. V. Marine Shale Processors, Inc. (W.D. LA.)" <http://www.justice.gov/enrd/3639.htm>

Louisiana Department of Health and Hospitals, "2000 Louisiana Health Report Card: Health Assessment Programs" <http://www.dhh.louisiana.gov/offices/miscdocs/docs-275/recordsstatistics/statistics/docs/reportcards/2000/III.%20Health%20Assessment%20Programs.doc>

Michigan Sources

Dai, Dajun, and T.J. Oyana, "Spatial Variations in the Incidence of Breast Cancer and Potential Risks Associated With Soil Dioxin Contamination in Midland, Saginaw, and Bay Counties, Michigan, USA" *Environmental Health* 2008, 7:49, accessed at www.ncbi.nlm.nih.gov/pubmed/18939976.

Hausman, John S., "Cancer Crisis? Muskegon County Group Seeks Answers in White Lake," *Muskegon Chronicle*, Sept. 10, 2010, accessed at www.mlive.com/news/muskegon/index.ssf/2010/09/cancer_crisis_muskegon_county.html.

Agency for Toxic Substances and Disease Registry "ATSDR Studies on Chemical Releases in the Great Lakes Region" www.atsdr.cdc.gov/grtlakes/pdfs/2008/final/Chapter5_GreatLakesAOCFinal.pdf.

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Missouri

Missouri Department of Health and Senior Services Office of Epidemiology, "DETERMINING BASELINE PREVALENCE FOR PROVIDER- DIAGNOSED MULTIPLE SCLEROSIS (MS) AND AMYOTROPHIC LATERAL SCLEROSIS (ALS) IN HERCULANEUM AND JEFFERSON COUNTY, MISSOURI" http://www.dhss.mo.gov/living/environment/hazsubstancesites/pdf/FinalReport_Herculaneum.pdf

Missouri Department of Natural Resources, Herculaneum Lead Contamination <http://www.dnr.mo.gov/env/herc/index.html#buyout>

Montana

Agency for Toxic Substances and Disease Registry, "Mortality Review - Mortality in Libby, Montana, 1979 to 1998" http://www.atsdr.cdc.gov/asbestos/sites/libby_montana/mortality_review.html

North Carolina Sources

Agency for Toxic Substances and Disease, "Study on Birth Defects and Childhood Cancers," www.atsdr.cdc.gov/sites/lejeune/update.html.

Agency for Toxic Substances and Disease, "Health Study Activities Frequently Asked Questions (FAQs)- Health Survey," http://www.atsdr.cdc.gov/sites/lejeune/qa_healthstudyactivities.html#2

Levesque, William, "Camp Lejeune Breast Cancer Survivors Try to Raise Awareness," *St. Petersburg Times*, Sept. 7, 2010, accessed at www.tampabay.com/news/military/camp-lejeune-breast-cancer-survivors-try-to-raise-awareness/1119926.

Osbourne, J. Scott II, Carl M. Shy, and Berton H. Kaplan, "Epidemiologic Analysis of Reported Cancer Cluster in a Small Rural Population," *Am. J. Epidemiol.* 1990, Vol. 132, Suppl., No. 1, accessed at www.ncbi.nlm.nih.gov/pubmed/2356841.

Ohio Sources

Agency for Toxic Substances and Disease Registry, Health Consultation: Village of Wellington, www.atsdr.cdc.gov/hac/pha/VillageofWellington031705-OH/VillageofWellington031705-OH.pdf.

Dutzik, Tony, and Jeremiah Baumann, "Health Tracking & Disease Clusters," *The Lack of Data on Chronic Disease Incidence and Its Impact on Cluster Investigations*, U.S. PIRG Education Fund, September 2002.

Heffner, Jessica, "Dicks Creek Cleanup to Begin," *Middletown Journal*, April 27, 2010, www.middletownjournal.com/news/middletown-news/dicks-creek-cleanup-to-begin-674708.html?showComments=true.

Hunt, Spencer, "Land Near Toxic River Valley Campus Cleaned Up Enough for Army Training," *Columbus Dispatch*, Sept. 26, 2008, www.dispatch.com/live/content/local_news/stories/2008/09/26/RiverValley_ART_ART_09-26-08_B1_BKBEC72.html?sid=101.

Latta, Tiffany Y., "Area Families Say There's 'Something in the Air,'" *Middletown Journal*, Oct. 25, 2009, www.middletownjournal.com/lifestyle/pink/area-families-say-theres-something-in-the-air-366582.html.

Ohio Department of Health, Sandusky County Health Department, and Ohio Environmental Protection Agency, "Childhood Cancer Among Residents of Eastern Sandusky County," Progress Report, October 30, 2009, <http://www.epa.state.oh.us/LinkClick.aspx?fileticket=UyvHDgC4wG8%3D&tabid=3253>.

Personal communication with Holly L. Sobotka, M.S., Ohio Department of Health. Case Review of Leukemia in Marysville (working draft).

US Army Corp of Engineers- Marion Engineer Depot - Marion, Ohio. <http://www.lrl.usace.army.mil/poi/default.asp?mycategory=255>.

Pennsylvania Sources

Agency for Toxic Substances and Disease Registry, Community Health Screening Report:

Luzerne, Schuylkill, and Carbon Counties, Pennsylvania, www.atsdr.cdc.gov/HAC/pha/CommunityHealthScreeninginPA2010/CommunityHealthScreeningReport.pdf.

"Cancer Cluster Confirmed Near Pa. Superfund Sites," *USA Today*, Aug. 26, 2008, www.usatoday.com/news/health/2008-08-26-toxic-cancer_N.htm.

"TCE Solvent May Be Linked to NHL," reposting of Jim Morris, "Widely Used Chemical Might Have Cancer Link," forums.lymphoma.com/archive/index.php/t-14669.html.

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Tennessee

Letter from Dana C. Crawford, EIS Officer to Director, Division of Training, EPO. Re: Epi-Aid Trip Report: Possible Cluster of Orofacial Clefts (EPI-2001-08) http://www.epa.gov/region4/foia/readingroom/dickson_county/documents/epi_aid_trip_report_jan_2000_2.pdf
US EPA, TRI Explorer—Chemical Report [http://www.epa.gov/triexplorer/Conner, Kim, "Study Points to Birth Defects Cluster" *The Dickson Herald*, September 27, 2000](http://www.epa.gov/triexplorer/Conner, Kim,)
http://www.epa.gov/region4/foia/readingroom/dickson_county/documents/article_sept_2000_29.pdf

Texas Sources

Agency for Toxic Substances and Disease Registry, Executive Summary: Health Consultation, Midlothian Area Air Quality, Part 1: Volatile Organic Compounds & Metals, Midlothian, Ellis County, Texas, http://www.dshs.state.tx.us/epitox/midlothian/executive_summary.pdf.
Agency for Toxic Substances and Disease Registry, Health Consultation, Midlothian Area Air Quality Part 1: Volatile Organic Compounds & Metals, Midlothian, Ellis County, Texas, http://www.dshs.state.tx.us/epitox/midlothian/midlothian_airquality_consult_121107.pdf.
Agency for Toxic Substances and Disease Registry, "Midlothian, Texas," <http://www.atsdr.cdc.gov/sites/midlothian/>.
Agency for Toxic Substances and Disease Registry, Public Health Response Plan, Midlothian, Texas, http://www.atsdr.cdc.gov/sites/midlothian/docs/Midlothian_Public_Comment%201_25_10.pdf.
Dutzik, Tony, and Jeremiah Baumann, Health Tracking & Disease Clusters, *The Lack of Data on Chronic Disease Incidence and Its Impact on Cluster Investigations*, U.S. PIRG Education Fund, September 2002.
Dan Kelley, "Birth Defects 84 Percent Higher in Nueces Co.," *Corpus Christi Caller Times*, Jan. 25, 2008, <http://www.caller.com/news/2008/jan/25/birth-defects-84-percent-higher-nueces-co/>.
Langlois, Peter, Texas Department of State Health Services, "A Case-Control Study of the Association Between Birth Defects Elevated in Nueces County and Sites of Concern to Citizens for Environmental Justice," <http://www.caller2.com/2008/pdf/0125defectsn2.pdf>.
Langlois, Peter, Texas Department of State Health Services, Table 1 in "A Case-Control Study of the Association Between Birth Defects Elevated in Nueces County and Sites of Concern to Citizens for Environmental Justice," <http://www.caller2.com/2008/pdf/0125defectsn2.pdf>.
Linder, Stephen H., D. Marko, and K. Sexton, "Cumulative Cancer Risk From Air Pollution in Houston: Disparities in Risk Burden and Social Disadvantage," *Environmental Science & Technology*, Vol. 42, No. 12, 2008.
Renner, Rebecca, "Health Agency Accused of Overlooking Environmental Threats to Public," *Environ. Sci. Technol.*, 2009, Vol. 43, No. 11, April 22, 2009, accessed at <http://pubs.acs.org/doi/full/10.1021/es900987y>.
Texas Department of State Health Services, "El Paso Multiple Sclerosis Study," www.dshs.state.tx.us/epitox/elpasostudy.shtm.
Toxic Texas, "Kelly Air Force Base: San Antonio's Dumping Ground," <http://www.txpeer.org/toxictour/kelly.html>.
Zhan, F. B., "Are Deaths From Liver Cancer, Kidney Cancer, and Leukemia Clustered in San Antonio?" *Tex. Med.*, October 2002, Vol. 98, No. 10, accessed at http://uweb.txstate.edu/~fz01/Reprints/Zhan_2002_TexMed.pdf.



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