

Connecticut Healthy Homes Data Book



A Healthy Homes Initiative
www.ct.gov/dph/healthyhomes



July 2012

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH



Jewel Mullen, M.D., M.P.H., M.P.A.
Commissioner

Dannel Malloy
Governor

August 1, 2012

Dear colleagues:

Access to affordable, stable, well-constructed and well-managed housing in safe neighborhoods is critical to our health. A growing body of evidence links poor housing conditions to asthma, lead poisoning, lung cancer, and unintentional injuries. The consequences of "unhealthy" housing include increased health care costs, poor school performance, and missed school and work days.

Ensuring a healthy home for Connecticut residents is a fundamental component of public health. Any home may have health hazards, and there are effective interventions that can mitigate these hazards to protect the health of residents. Moreover, creating healthier housing promotes the growth and development of our children and can save billions of dollars in health care costs.

The Connecticut Department of Public Health (DPH) formed the Healthy Homes Initiative to promote safe and healthy home environments by addressing physical, chemical, and toxic hazards in the home. As part of this initiative, several of our programs integrate a healthy homes approach in their work through a combination of education and outreach, workforce development, and home-based interventions that address the underlying causes of multiple home hazards.

The quality of housing affects the quality of our life. DPH and its partners are committed to informing public policy to address this important connection between housing and health. We are pleased to present the *Connecticut Healthy Homes Data Book* to help move this work forward.

Sincerely,

A handwritten signature in blue ink that reads "Jewel Mullen".

Jewel Mullen, M.D., M.P.H., M.P.A.
Commissioner

JM/sm
attachment



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Introduction

Recognizing the need for a more integrated approach to improving home-based health outcomes, the Connecticut Department of Public Health (CTDPH) launched a Healthy Homes Initiative (HHI) with the mission “to develop statewide partnerships and implement comprehensive policies and coordinated program activities that foster a healthy and safe home environment, reduce housing related health disparities, and improve the public's health.” The vision of the HHI is that “Every Connecticut resident lives in a healthy and safe home environment.”

The CTDPH HHI developed six core goals to achieve this mission. They address 1) public education; 2) optimization of policies and standardization of practices for prevention, assessment, and remediation of home-based hazards; 3) state-wide adoption of integrated healthy homes programs; 4) workforce development; 5) sustainable funding; and 6) impact assessment. HHI enlisted the support for implementing shared goals among an extensive list of external, multi-disciplinary partners who represent local and state governmental and non-governmental housing and health-related agencies and organizations.

The HHI has defined a healthy home as a home that supports the physical and mental health of the residents. A healthy home promotes good health and quality of life for all individuals and families, including vulnerable populations, such as children, pregnant women, elderly and disabled people.

The National Center for Housing Policy has long recognized the connection between housing and health. Access to affordable, stable, well-constructed and well-managed housing in safe neighborhoods can affect health outcomes for children and families in many ways. Health problems associated with poor quality housing are reduced by limiting exposure to allergens, neurotoxins and other dangers associated with safety. Stressors and the associated physical and mental health problems are reduced; infectious diseases from overcrowding and unsanitary conditions are less frequent. Improved neighborhoods with access to health care services and social support networks improve health outcomes for individuals with chronic illnesses and disabilities and seniors.

A healthy home is structurally sound, is free of environmental hazards, and complies with all applicable housing, building, and fire safety codes. It incorporates seven features:

- Clean: to reduce pests, dangerous chemicals, and asthma triggers
- Dry: to reduce pests and mold
- Safe: to reduce accidents and injuries
- Free of pests: to prevent diseases and reduce asthma triggers
- Well ventilated: to provide fresh air and reduce breathing problems

- Free of dangerous chemicals (such as lead, radon, asbestos, and environmental tobacco smoke): to reduce poisonings, injuries, and other harmful effects
- Well maintained: to keep small problems from becoming big problems

Moreover, for a home to be truly healthy, it must be located in a healthy neighborhood.

As part of the strategic planning process, CTDPH compiled data on housing conditions and housing-related health issues to produce this Connecticut Healthy Homes Data Book. The data book compares Connecticut housing data to national housing data and addresses ten specific environmental hazards in the home, specifically what it is, related health issues, how it is relevant to housing, associated housing data, and CTDPH efforts to address the hazard.

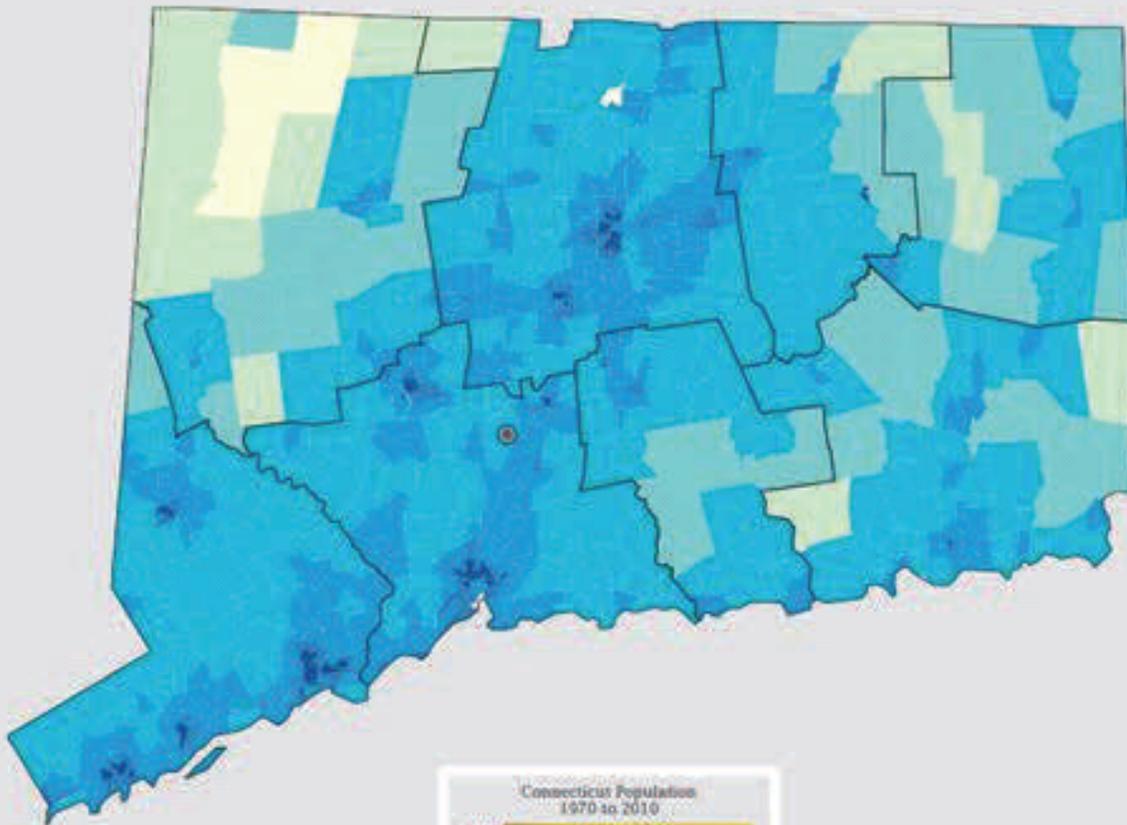
This baseline data can serve to foster understanding about the breadth of health and safety issues that can be alleviated by addressing substandard housing, occupied disproportionately by minority and poor populations. It can also serve as a baseline to compare progress as more standardized approaches to assessment; remediation and prevention are implemented and identify opportunities for increased coordination and integration of healthy homes into existing work.

Connecticut Demographics

Connecticut is characterized by high social and economic contrast, and racial and ethnic diversity. It is the third smallest state in the U.S. in terms of area, but it has the 29th highest population and is the fourth most densely populated. Approximately 88% of Connecticut's population lives in urban areas. Whether in terms of health status, income, poverty, racial composition, or almost any other factor, statewide averages for Connecticut often are misleading. Striking disparities exist across town lines, among racial and ethnic groups, and between urban and rural populations. These differences have engendered the concept of *Two Connecticut's*; one comprising people who live in the wealthiest state in the nation, and the other consisting of those who live in some of the most severe and concentrated pockets of poverty in the U.S. The overall health of Connecticut's people varies dramatically between its wealthiest and poorest communities.

2010 Census: Connecticut Profile

Population Density by Census Tract

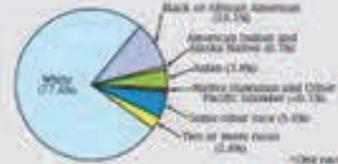


Connecticut Population 1970 to 2010	
2010	3,574,097
2000	3,405,565
1990	3,287,116
1980	3,107,576
1970	3,031,709



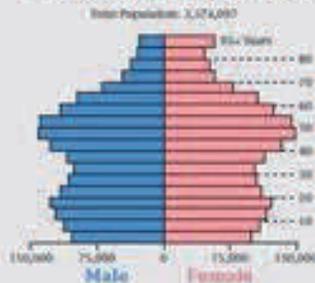
U.S. Department of Commerce, Economic and Statistics Administration, U.S. CENSUS BUREAU

State Race² Breakdown



Hispanic or Latino (of any race) makes up **13.4%** of the state population.

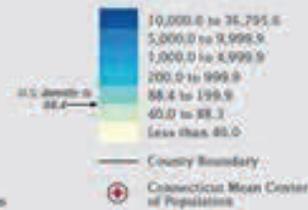
Population by Sex and Age



Housing Tenure



People per Square Mile by Census Tract



Country Boundary
 Connecticut Mean Center of Population

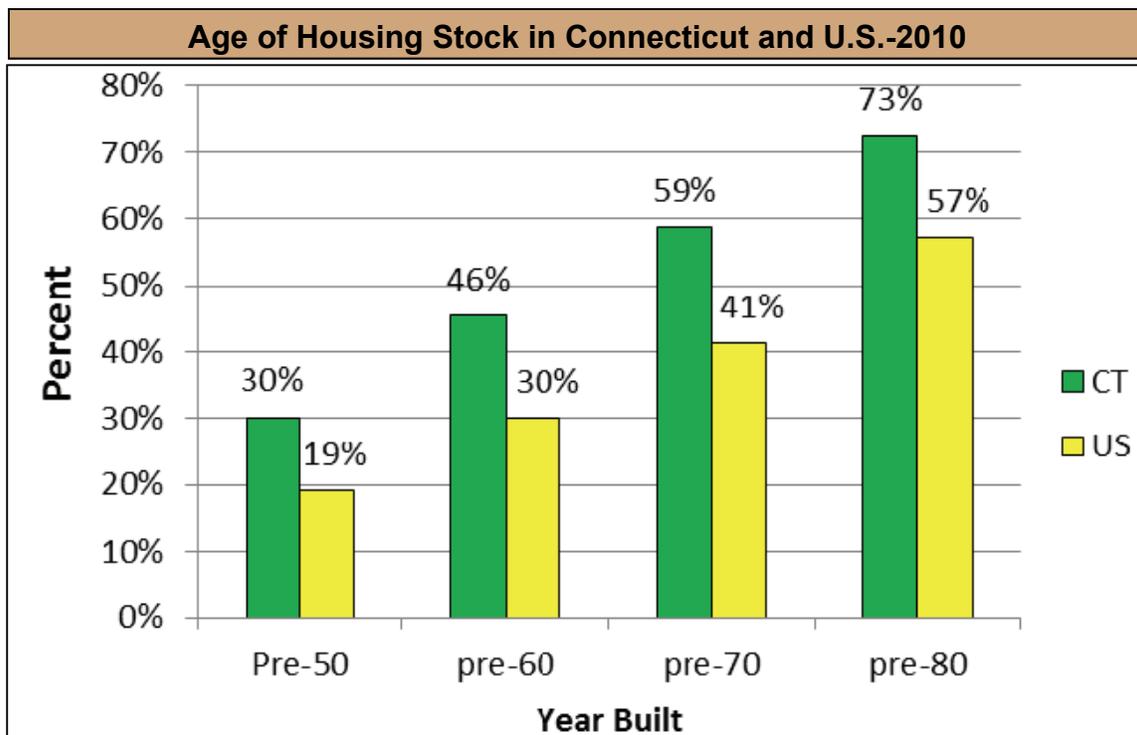
Housing Stock in Connecticut

Connecticut’s housing stock is considerably older than the national average. (2010 American Community Survey, US Census, 2011)

- 73% of Connecticut’s housing stock was built prior to 1980 compared to 57% nationally
- 59% of Connecticut’s housing stock was built prior to 1970 compared to 41% nationally
- 46% of Connecticut’s housing stock was built prior to 1960 compared to 30% nationally
- 30% of Connecticut’s housing stock was built before 1950 compared to 19% nationally

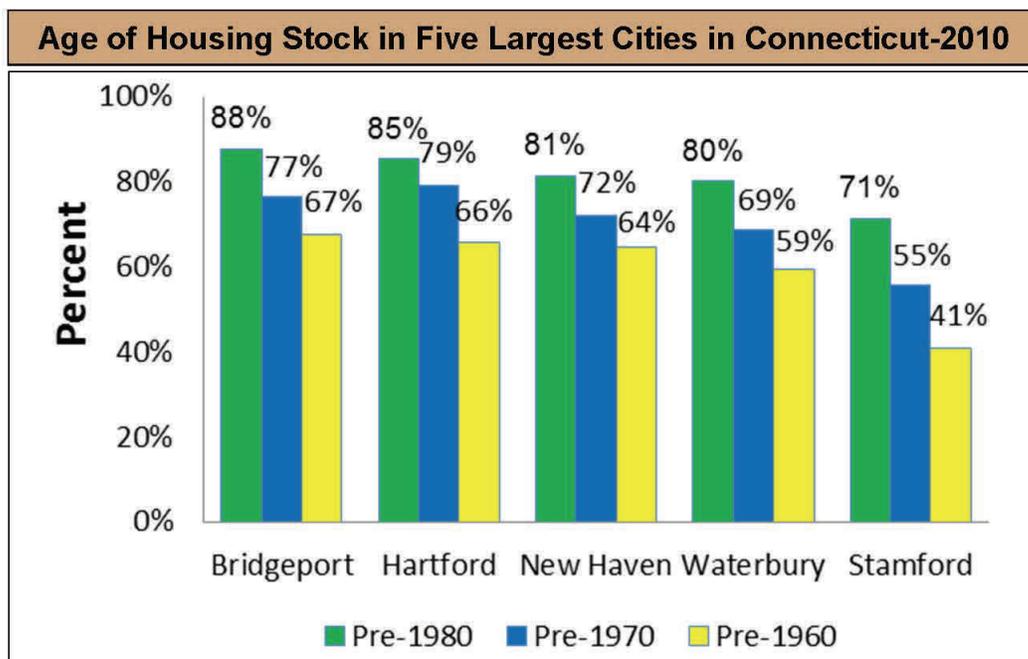
Nearly a quarter (24%) of CT homes were built 1939 or earlier.

Source: US Census, 2010



Source: 2010 American Community Survey 1-Year Estimates. US Census, 2011

Compared to national and statewide data, certain towns in Connecticut have a larger number of homes built before 1980. In Hartford, 85% of the housing was built before 1980, and 66% built before 1960. In New Haven and Waterbury, 81% and 80% of housing stock was built before 1980, respectively. Further, in Bridgeport, 88% of homes were built before 1980, with 67% of those homes built before 1960.



Source: 2010 American Community Survey 1-Year Estimates. US Census, 2011

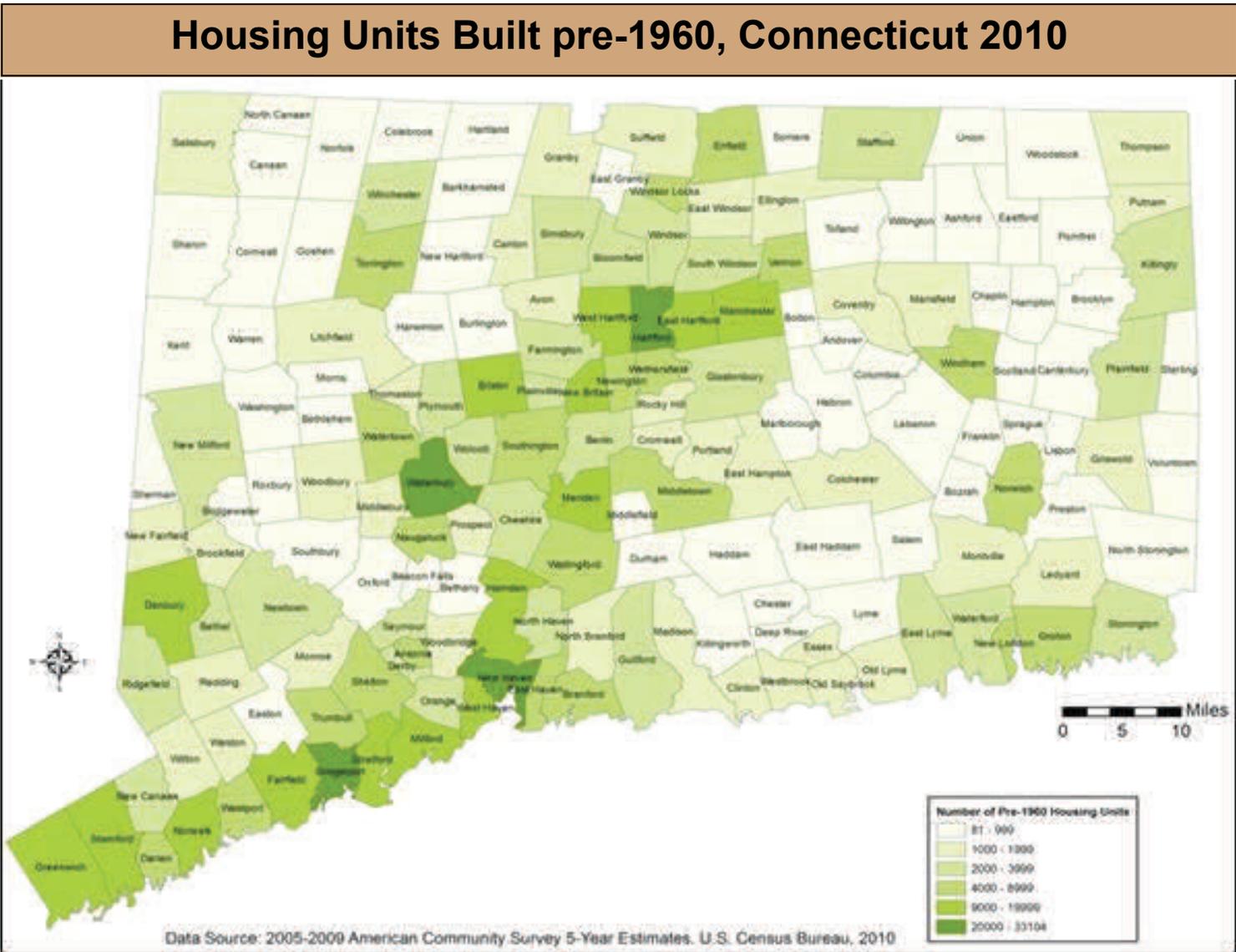
Connecticut’s older housing stock is concentrated in the urban areas of the state.

Housing Occupancy (2010)				
	Number	Percent	Individuals	Percent
Total housing units	1,487,891		3,455,945	
Occupied	1,371,087	92.1%		
Owned	925,286	67.5%	2,443,707	70.7%
Rented	445,801	32.5%	1,012,238	29.3%
Vacant	116,804	7.9%		

There are a total of 1,487,891 housing units in Connecticut.

In 2010, 92.1% of the 1,487,891 available housing units were occupied. Of these, 67.5% were owner-occupied and 32.5 % were renter-occupied. (US Census, American Community Survey, 2010)

Connecticut's older housing stock is concentrated in the urban areas of the state.



Connecticut Population

- Connecticut is the fourth most densely populated state in the nation, with 88% of residents living in urban areas
- Striking disparities exist across town lines, among racial and ethnic groups, and between urban and rural populations which is found in [The 2009 Connecticut Health Disparities Report](#)
- Poverty rates increased from 9.4% of Connecticut residents in 2009 to 10.1% in 2010
- In 2010, 12.8% of Connecticut’s children lived in families with incomes below the Federal Poverty Level. (US Census, American Community Survey, 2010)



Connecticut Population		
Total population (2010)	3,574,097	3,574,097
Under 5 years	202,106	5.7%
5 to 9 years	222,571	6.2%
10 to 14 years	240,265	6.7%
15 to 19 years	250,834	7.0%
20 to 24	227,898	6.4%
25 to 34	420,377	11.8%
35 to 49	775,710	21.7%
50 to 64	727,777	20.4%
65 & over	506,559	14.2%

Source: US Census 2010

Households by Type (2010)		
Total households	1,358,809	
Family households	890,770	65.6%
With own children under 18 years	407,963	30.0%
Married-couple family	656,629	48.3%
With own children under 18 years	280,390	20.6%
Male householder, no wife present, family	58,325	4.3%
With own children under 18 years	25,390	1.9%
Female householder, no husband present, family	175,816	12.9%
With own children under 18 years	102,183	7.5%
Nonfamily households	468,039	34.4%
Householder living alone	384,382	28.3%
65 years and over	144,656	10.6%
Households with one or more people under 18 years	443,077	32.6%
Households with one or more people 65 years and over	358,831	26.4%

Source: US Census 2010

Heat Assistance Homes

Low Income Home Energy Assistance Program (LIHEAP): Ninety percent of LIHEAP recipients in CT have an elderly household member, a disabled household member, or a child in the home. Only 36% of LIHEAP recipients in CT own their homes as compared to 45% in the Northeast and 46% in the U.S. The lower rate of home ownership in CT probably relates to the high cost of housing in the state.

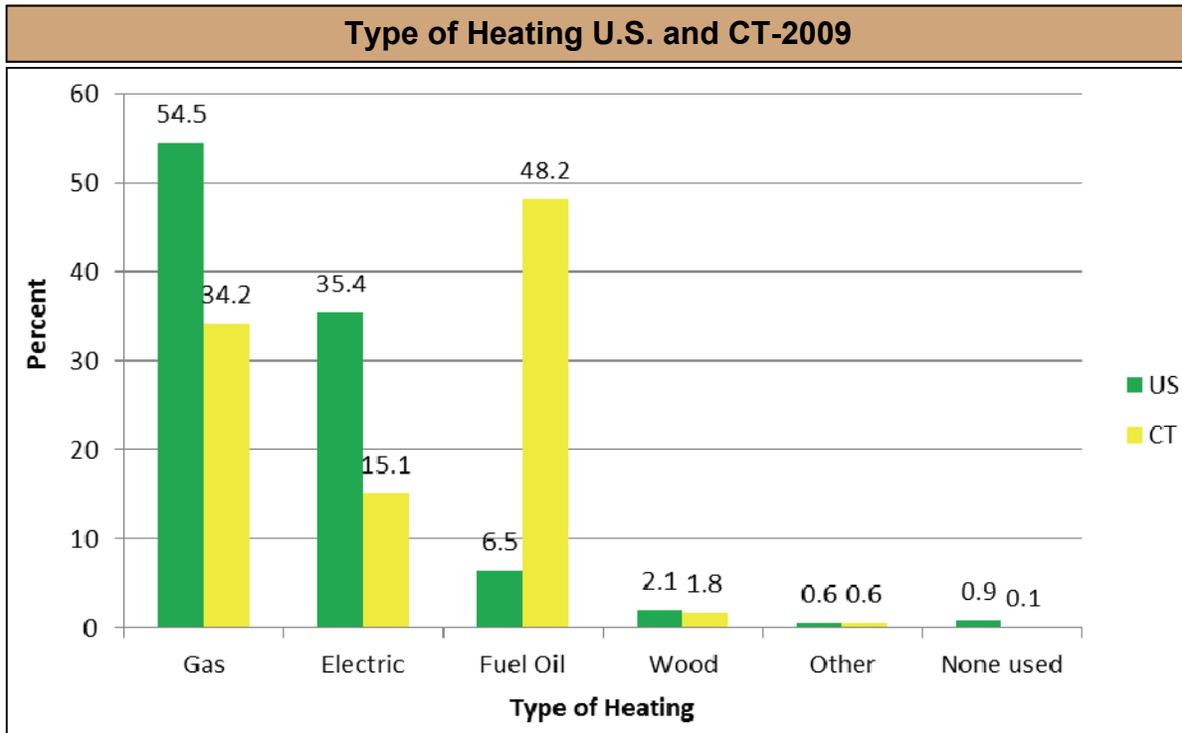
LIHEAP recipients in CT had medical and health problems during the previous five years as a result of their energy bills.

- 25% said that they went without food for at least one day
- 29% said that they went without medical or dental care
- 31% said that they did not take their prescription medication
- 12% became sick and needed to go to the doctor or hospital because their home was too cold

Source: [2011 National Energy Assistance Survey- Connecticut Study](#)

House Heating Fuel

Connecticut is predominantly dependent on fuel oil and kerosene for heating - 48.2% of households in Connecticut rely on fuel oil for heat while the national average is 6.5%. Gas (utility, bottled, tank, or LP) and electricity serve as sources for 34.2% and 15.1% of households in CT respectively, both below the national average.



Source: US Census 2010

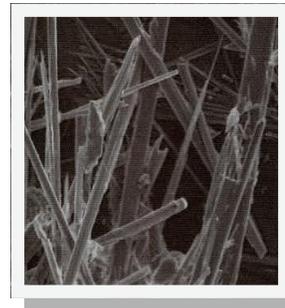


Program Descriptions

Asbestos

What is asbestos?

Asbestos is the name given to a group of minerals that occur naturally in the environment as bundles of fibers that can be separated into thin, durable threads. These fibers are resistant to heat, fire, and chemicals and do not conduct electricity. For these reasons, asbestos has been used in many building products.



What are the related health issues?

Exposure to asbestos increases your risk of developing lung diseases. In general, there is a greater chance of developing these diseases if there is a greater exposure to asbestos. Smoking increases the risk of developing illness from asbestos exposure. Disease symptoms may take several years to develop following exposure. Three of the major health effects associated with asbestos exposure include: lung cancer, asbestosis, and mesothelioma.

How is it related to housing?

It is estimated that asbestos was used at one time in approximately 3,000 building products. Most products made today do not contain asbestos. Those few products made which still contain asbestos that could be inhaled are required to be labeled as such. However, many types of building products and insulation materials used in homes in the past may be present in existing homes, particularly in homes built before the mid-1970s. Common products found in the home that might have contained asbestos in the past include:

- Steam pipes, boilers, and furnace ducts insulated with an asbestos blanket or asbestos paper
- Resilient floor tiles (vinyl asbestos, asphalt, and rubber), the backing on vinyl sheet flooring, and adhesive used for installing floor tile
- Cement sheet, millboard, and paper used as insulation around furnaces and wood burning stoves
- Door gaskets in furnaces and wood stoves, and coal stoves
- Soundproofing or decorative material sprayed on walls and ceilings
- Patching and joint compounds for walls and ceiling, and textured paints
- Asbestos cement roofing, shingles, and siding
- Attic and wall insulation using vermiculite ore, particularly ore that originated from a Libby, Montana mine

Data

The Connecticut Department of Public Health (CTDPH) Asbestos Program must be notified of any asbestos abatement project involving more than 10 linear feet or more than 25 square feet of asbestos-containing material.

The CTDPH Asbestos Program received 3,345 notifications for asbestos abatement for the period July 1, 2010 to June 30, 2011. A total of 1,926 of these notifications (58%) involved asbestos abatement in residential facilities.

CTDPH efforts to address asbestos

The goal of the CTDPH Asbestos Program is to reduce the chance of exposure to asbestos. The CTDPH is responsible for the licensure of asbestos abatement contractors and asbestos consultants. Regulations administered by the CTDPH establish specific work practice requirements for the performance of asbestos abatement and include criteria for re-occupancy following the completion of asbestos abatement. These regulations apply to asbestos abatement performed in various types of facilities, including single family homes.

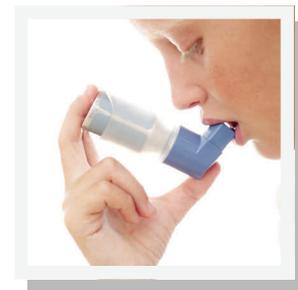
Resources:

- [U.S. Environmental Protection Agency: Asbestos](#)
- [Agency for Toxic Substances and Disease Registry: Asbestos](#)
- [CTDPH Asbestos Program](#)

Asthma

What is asthma?

Asthma is a chronic respiratory disease that is characterized by symptoms of wheezing, coughing, and shortness of breath but it can be controlled. Uncontrolled asthma symptoms lead to increased asthma hospitalizations, emergency department visits, and increased healthcare costs.



What are the related health issues?

People with asthma may be exposed to many asthmagens or triggers in the home environment. Exposure to pets, dust mites, cockroaches, rodents, and molds, as well as particulate matter from cooking exhaust, wood-burning stoves, and environmental tobacco smoke (ETS) can worsen asthma symptoms.

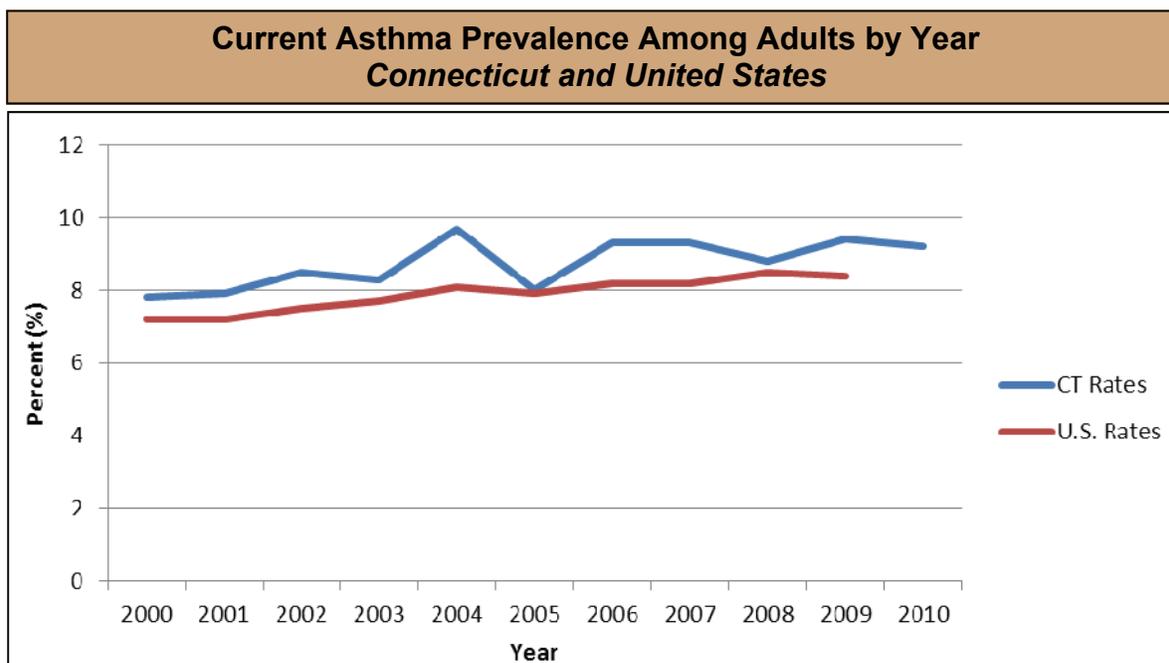
How it is related to housing?

Connecticut is one of the wealthiest states in the nation, but the residents of its five largest cities (Bridgeport, Hartford, New Haven, Stamford, and Waterbury) live in some of the most severe and concentrated pockets of poverty in the United States. Older housing stock in these largest cities is an issue. These residents experience disproportionately higher rates of asthma morbidity, mortality, and cost. Many of these residents may not be receiving adequate asthma self-management education on how to avoid environmental exposures to asthma triggers leading to increased healthcare costs. These residents accounted for 41% (\$46 million) of the \$112 million acute asthma care costs in 2009.

Data

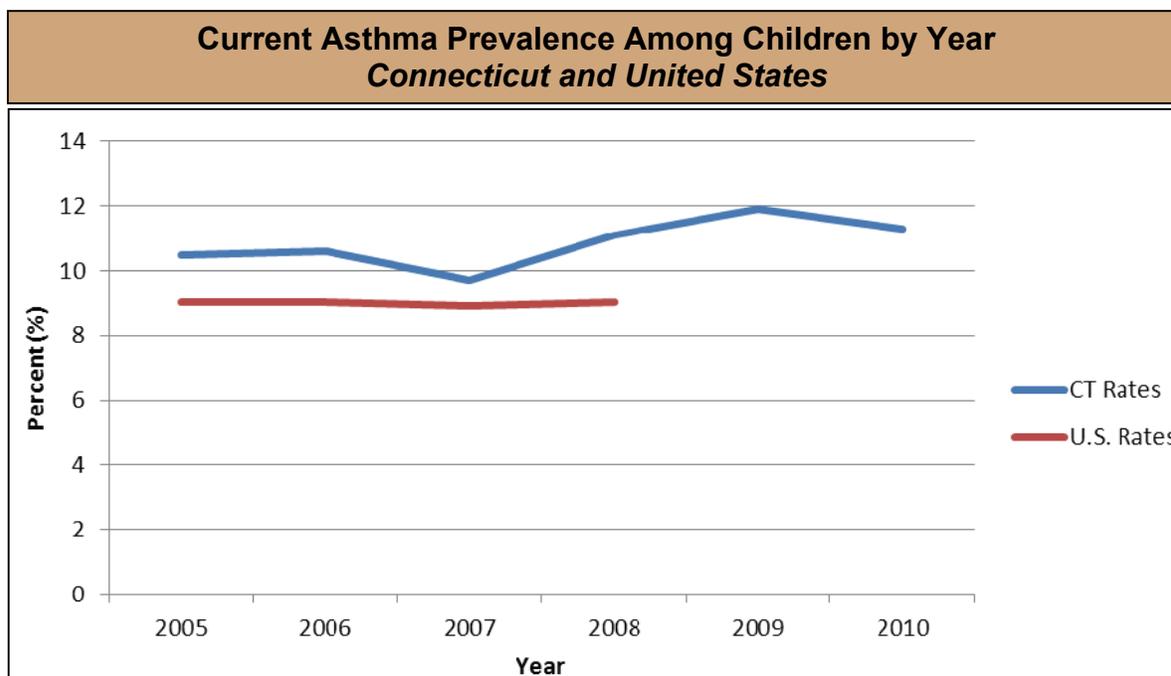
According to the most recent CTDPH Asthma Surveillance Report in 2009, the median prevalence of adult asthma (10.2%) in the New England states was higher than the US (8.8%). Furthermore, the prevalence of current asthma among CT adults increased from 7.8% in 2000 to 9.4% in 2009. In 2009, the estimated prevalence diagnosed asthma in CT children was 11.9%.

In 2009, Connecticut spent over \$112 million for acute care due to asthma as a primary diagnosis, \$80.3 million on hospitalization charges, and \$32.6 million on emergency department (ED) visit charges. Three out of four (74.5%) asthma hospitalizations by residents of the five large cities were paid by public funds (Medicaid or Medicare), compared to about half (52.7%) by residents from the rest of Connecticut. Two out of three (64.5%) asthma ED visits by residents of the five large cities were paid by public funds, compared to about two out of five (40.2%) by residents from the rest of Connecticut.



Source: CDC Behavioral Risk Factor Surveillance System

People with asthma may be exposed to many asthmagens or triggers in the home environment.



Source: CDC Behavioral Risk Factor Surveillance System

CTDPH efforts to address asthma

The Connecticut Department of Public Health has implemented “*Putting on AIRS*” - an Asthma Indoor Risk Strategies (*AIRS*) program. *AIRS* is an in-home asthma education and environmental assessment program. It was developed to reduce acute asthma episodes and improve asthma control through improved patient asthma self-management skills and elimination or reduction of exposures to environmental asthmagens and other asthma triggers. *AIRS* is provided statewide using a regional approach coordinated through local health departments. This evidenced-based intervention has significantly decreased unscheduled acute care visits, missed school/work days, rescue inhaler use, and symptoms among patients with asthma.

In a quality-of-life and cost-benefit analysis of the *AIRS* home environmental assessment program in Connecticut, the following environmental factors were noted:

- 70% reported having any one of the following sanitation tools: broom, mop, or vacuum
- 60% reported cleaning on a weekly basis, which includes changing bedding, dusting, sweeping, or vacuuming
- Almost half (46%) reported using scented aerosolized products (i.e., scented candles, perfumes, or cleaning chemicals)
- 21% reported evidence of rodents or cockroaches in the home and 40% reported having pets in the bedroom
- 28% of participants had mold/mildew on walls or ceilings, water damage in any room or surface inside or outside, or water in basement or crawl spaces
- 25% of participants had a gas stove
- 45% reported being exposed to ETS in the home

TABLE 3.—Household characteristics by level of asthma control (AIRS, 2009).

Household characteristics ^a	Number	Percent ^b	Level of asthma control		
			Well controlled	Not well controlled	Very poorly controlled
Any sanitation tools (i.e., vacuum, broom, mop)*					
Yes	316	69.6	69.7	74.6	82.0
No	138	30.4	31.3	25.4	18.0
Weekly cleaning**					
Yes	274	60.4	53.8	66.7	72.4
No	180	39.6	46.2	33.3	27.6
Scented aerosolized products*					
Yes	206	45.4	40.0	42.9	56.4
No	248	54.6	60.0	57.1	43.6
Pests					
Yes	97	21.4	18.8	20.6	26.8
No	356	78.6	81.2	79.4	73.2
Pest management					
Yes	20	4.4	7.5	6.4	4.0
No	434	95.6	92.5	93.6	96.0
Pets					
Yes	182	40.1	42.5	46.0	46.4
No	272	59.9	57.5	64.0	53.6
Dust mites					
Yes	263	57.9	57.5	66.7	66.0
No	191	42.1	42.5	33.3	34.0
Mold/moisture*					
Yes	127	28.0	21.3	28.6	36.0
No	327	72.0	78.7	71.4	64.0
Gas stove*					
Yes	113	24.9	25.0	15.9	32.4
No	341	75.1	75.0	84.1	67.6
Environmental tobacco smoke (ETS)					
Yes	145	44.6	38.5	56.8	45.3
No	180	55.4	61.5	43.2	54.7

^aLack of sanitary tools is defined as absence of a vacuum, broom, and mop. Weekly cleaning is defined as whether one changed bedding, dusted, swept, or vacuumed at least once per week. Scented aerosolized products are defined as using any cleaning chemicals, scented candles, or perfumes. Pests are defined as having any cockroach or rodent exposure. Cockroach is defined as having any evidence of cockroaches or seeing any cockroaches in the past month. Rodent is defined as having any evidence of rodents or seeing any rodents in the past month. Pest management is defined as using aerosols, insecticide bombs, or organic pesticides. Pets are defined as having any pets in the home. Dust mites are defined as having any stuffed animals or extra pillows on bed or any carpeting in the bedroom or living room. Mold/moisture is defined as having any mold/mildew on walls or ceilings, water damage in any room or surface inside or outside, or water in basement or crawl spaces in the past 12 months. Gas stove is defined as having a gas stove in the home. ETS is defined as reporting a person(s) in household who smokes or having any visible ashtray or tobacco products in the home.

^bPercent based on participants with home visits only.

* $p < .05$;

** $p < .01$;

Source: Nguyen K, Boulay E, and Peng J. Quality-of-Life and Cost-Benefit Analysis of a Home Environmental Assessment Program in Connecticut, *Journal of Asthma*, 2010.

Resources:

- Nguyen K, Boulay E, and Peng J. [Quality-of-Life and Cost–Benefit Analysis of a Home Environmental Assessment Program in Connecticut](#), *Journal of Asthma*, 2010
- [U.S. Environmental Protection Agency: Asthma](#)
- [Centers for Disease Control and Prevention: Healthy Homes](#)

Unintentional Injuries**What are unintentional injuries?**

Unintentional injuries are defined as physical damage to the body that is not inflicted by deliberate means (i.e. there was not intent to cause harm). Major causes of injury-related deaths and non-fatal injury include motor vehicle crashes, falls, fire/burns, poisoning, choking/suffocation and drowning.

**What are the related health issues?**

Unintentional injuries are the leading cause of death for Connecticut residents between the ages of 1 and 44 years of age and the 5th leading cause for all ages. Injuries are also a leading cause of hospitalization, emergency department visits and long term disability for Connecticut residents.

How are unintentional injuries related to housing?

Injuries caused by falls, poisonings, fire/burns, choking/suffocation, and drowning frequently occur in the home environment. Prevention measures such as installing handrails, removing tripping hazards, installing smoke and carbon monoxide alarms, maintaining heating systems, and safe storage/use of medications and household products can prevent many of these injuries. Other important prevention steps include lowering hot water temperatures, supervising children around water and sources of heat, maintaining steps and stairs, checking for product recalls and replacing recalled products.

Data

The five leading causes of residential injury (falls, fire/burns, poisoning, choking/suffocation and drowning) cause approximately 45% of Connecticut's injury-related deaths. These five causes are responsible for on average 730 deaths, 10,158 inpatient hospitalizations, and 106,483 emergency department visits among state residents each year. The direct inpatient hospitalization charges for these five causes totaled over \$695 million from 2005-2007, not including physician fees, rehabilitation or long-term care costs. Falls are the leading cause of non-fatal injury across the life span and the leading cause of injury death for older adults in Connecticut. Unintentional poisoning is Connecticut's leading cause of injury-related death.

Average Annual Connecticut Data, 2005-2007			
Injury Cause	Deaths	Inpatient Hospitalizations	Emergency Dept. (ED) visits
Falls	247	8,804	96,516
Unintentional Poisoning	327	952	4,332
Fire/Burns	25	318	5,202
Choking/suffocation	102	70	369
Drowning	29	14	64
Total (5 leading residential causes)	730	10,158	106,483

Source: CTDPH Vital Statistics, CT Hospital Association, Hospital Discharge Data Set. Note: CT data does not distinguish between residential and non-residential settings, so it is not possible to determine how many of these actually occurred in the home environment.

CTDPH efforts to address unintentional injury in the home setting

The CTDPH collaborates with the CT Department of Social Services (DSS) and the CT Collaboration for Fall Prevention/Yale School of Medicine to implement older adult fall prevention activities. The Department also works with local health departments to address older adult falls and childhood home injuries. Activities include exercise programs, home safety assessments, medication safety reviews and educational programs.

Resources:

- [Centers for Disease Control and Prevention Injury Prevention & Control: Home and Recreational Safety](#)
- [Centers for Disease Control and Prevention: Healthy Homes](#)
- [U.S. Consumer Product Safety Commission](#)

Lead Poisoning

What is lead poisoning?

Lead poisoning is a medical condition caused by having lead, a heavy metal, in the body. When lead is absorbed into the body, it can cause serious damage to vital organs like the brain, kidneys, nerves, and blood cells. Lead poisoning is especially harmful to children under the age of six. Childhood lead poisoning is one of the most common pediatric public health problems in

Connecticut. Lead poisoning can strike any child, regardless of nationality, race, geographic location, or economic status. Children may be exposed to lead dust and lead paint chips in older homes and can become lead poisoned from ingestion of lead dust or paint chips or inhalation of lead dust. Adults typically become poisoned through their work or hobbies.

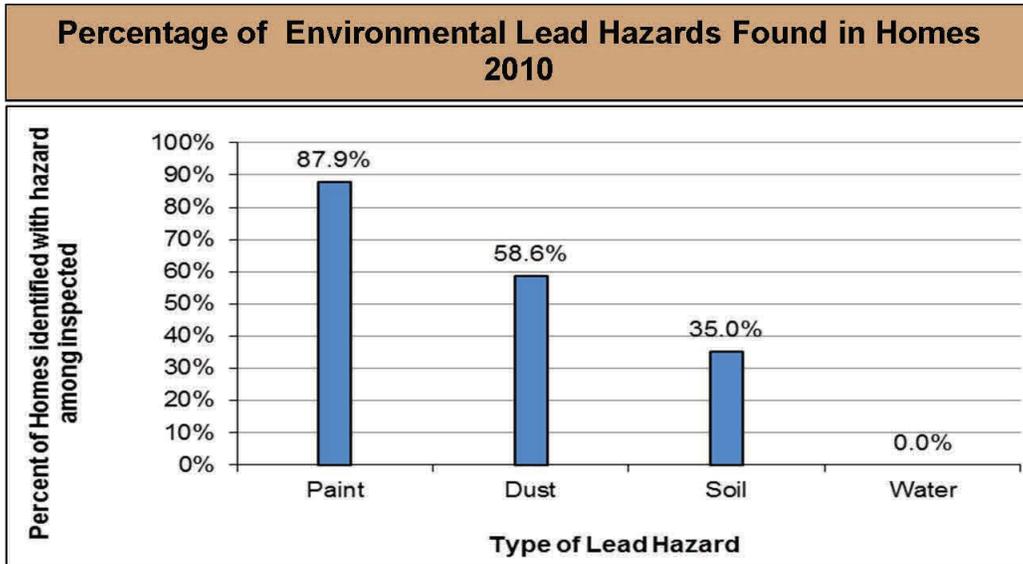


What are the related health issues?

Lead poisoning is a serious but preventable disease that can cause lifelong learning, behavior, and medical problems and is especially dangerous to children under six years old. Any amount of lead in the body is unsafe and can cause permanent damage to a child. Often children with lead poisoning show no symptoms or the symptoms are attributed to other conditions. Some general symptoms can include restlessness, irritability, stomachache, constipation, vomiting, loss of consciousness, and in acute cases, coma or death. In adults, behavioral symptoms can include irritability, mood and personality changes, difficulty concentrating, changes in sleep patterns, and memory loss. At high levels, lead can affect the central nervous system, leading to poor coordination, weakness in hands and feet, headaches, and in severe cases, convulsions, paralysis, and coma. Lead poisoning can result in hospitalizations, emergency department visits, and extreme health care costs.

How is it related to housing?

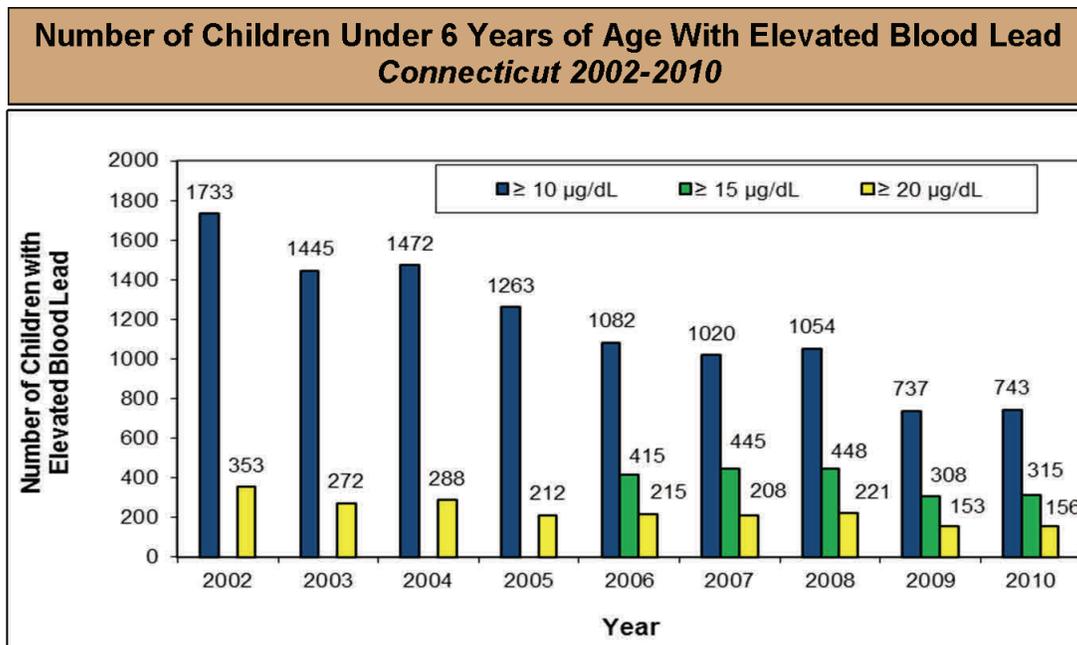
Two major sources of lead exposure remain a significant health threat for children: (1) deteriorated lead-based paint in older housing, and (2) urban dust and soil that has been contaminated by the previous use of leaded gasoline and the deterioration of exterior lead-based paint on homes. Housing built prior to 1978 and particularly those units built prior to 1950 pose the greatest risk of exposure for children since housing of this age is most likely to contain lead-based paint. Additionally, paint manufactured before 1950 contained a higher percentage of lead than paints produced in subsequent years. Age of housing stock continues to be a major risk factor. The high proportion of rental housing in the major urban areas coupled with the fact that Connecticut has an extremely high proportion of housing stock built before 1950 ranks Connecticut among the top 10 states with the highest levels of at-risk housing. According to the 2010 American Community Survey, US Census, 2011, 30% of Connecticut's housing stock was built before 1950.



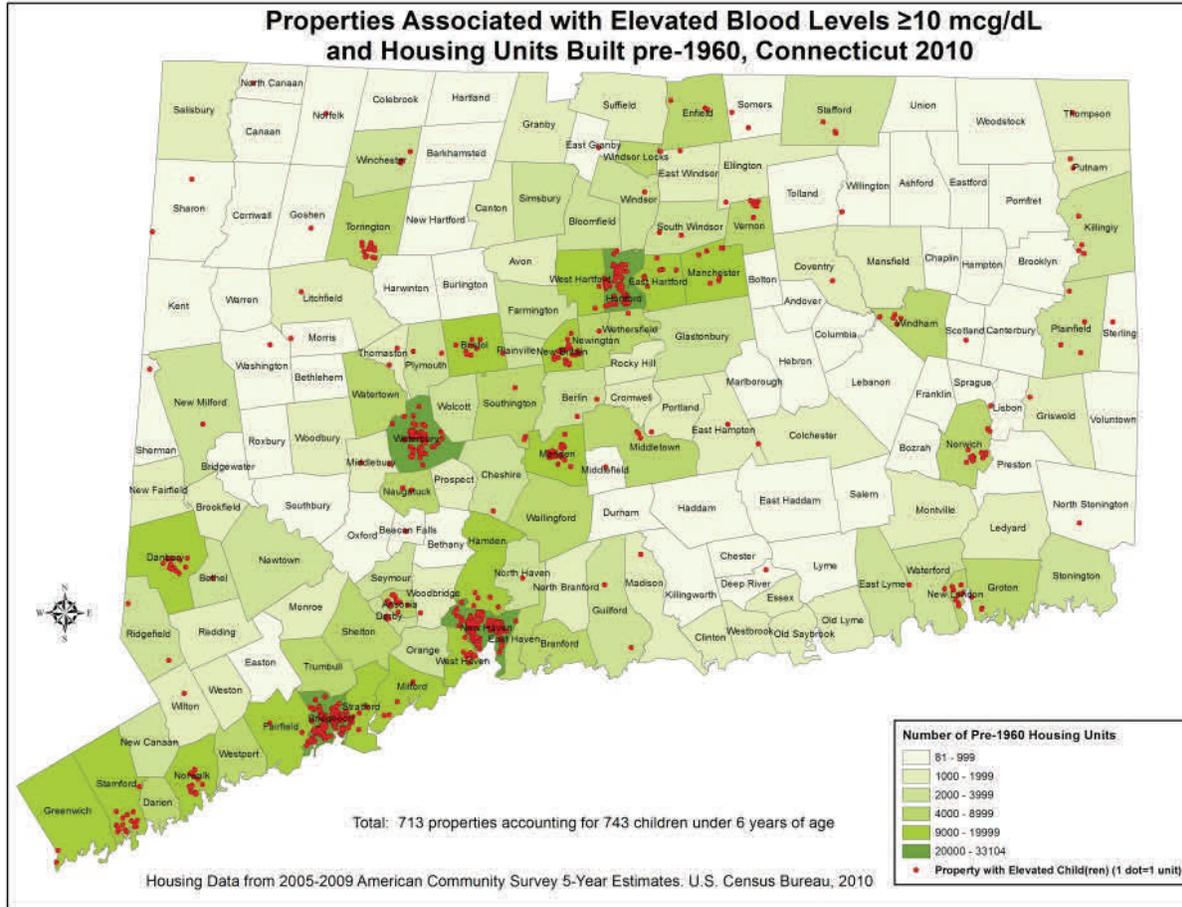
Source: CTDPH L&HHP, 2011

Data

In calendar year 2010, 743 children under six had blood lead levels of greater than or equal to 10µg/dL. The primary focus of the Lead and Healthy Homes Program is preventing childhood lead poisoning among high risk populations. Analysis of Connecticut data reveals that Black and Hispanic children in urban areas represent the population at highest risk. In CY2010 Blacks (1.6%) were more likely to have elevated blood lead levels (EBLLs) of greater than or equal to 10µg/dL than Whites (0.8%); Hispanics (1.5%) were more likely to have EBLLs of greater than or equal to 10µg/dL than Non-Hispanics (0.8%).



Source: CT DPH L&HHP, 2011



CTDPH efforts to address lead poisoning

The Connecticut Department of Public Health Lead and Healthy Homes Program has focused its efforts on attaining the national and state goal of reducing lead poisoning in children to less than 1% by 2010. This goal was reached through a combination of primary prevention strategies that included environmental and child case management, education and outreach, and data management.

Resources:

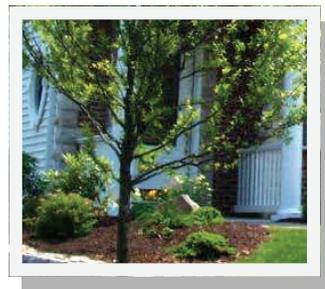
- [US Environmental Protection Agency](#)
- [Centers for Disease Control and Prevention](#)
- [U.S. Department of Housing and Urban Development](#)

Lead poisoning is a serious but preventable disease that can cause lifelong learning, behavior, and medical problems and is especially dangerous to children under six years old.

Radon

What is Radon?

Radon is a naturally-occurring radioactive gas that is a product of uranium decay. It is an odorless, colorless gas that is found all over the United States. Radon can enter homes from the surrounding soil and rock, and accumulate to unhealthy levels inside any home or building. It can also enter buildings through groundwater sources.



What are the related health issues?

Exposure to radon is associated with an increased risk of developing lung cancer. Approximately 22,000 radon-induced lung cancer deaths occur each year in the U.S., making radon the second leading cause of lung cancer nationally.

How it is related to housing?

One in five homes in CT has elevated levels of radon in the indoor air. Reducing radon in homes reduces the risk of lung cancer. The CTDPH recommends that all homeowners test for indoor radon levels, and that they take steps to reduce radon when airborne radon is equal to or greater than 4 picocuries per liter (pCi/L), or when radon in water exceeds 5,000 pCi/L.

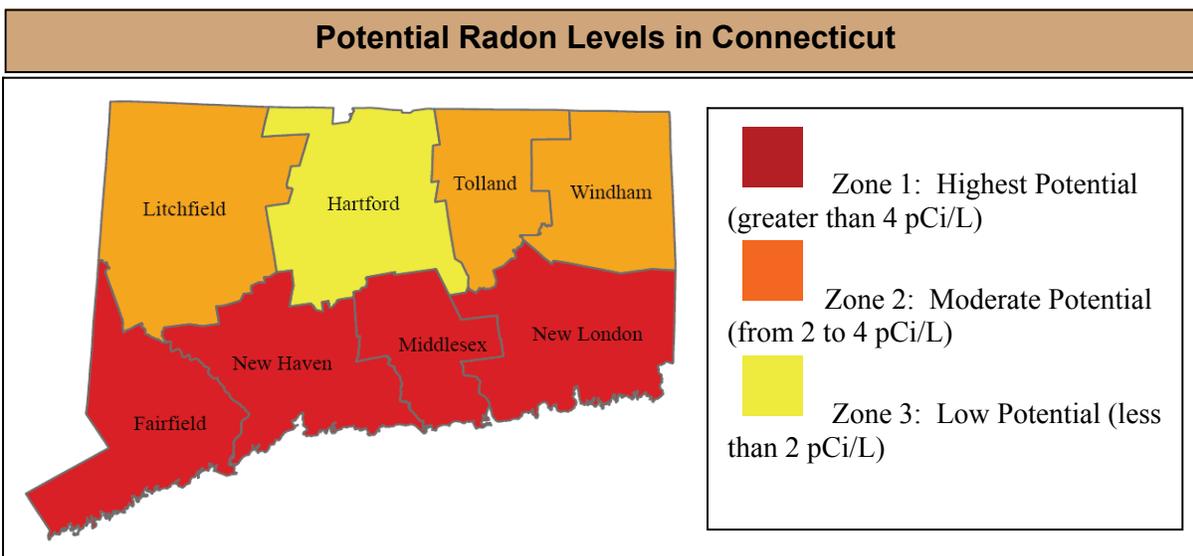
Data

The CTDPH Radon Program collects a limited amount of radon data as follows:

- Between 2008 and 2010, 1,714 child day care centers and group day care homes that use the basement or ground floor of a building were tested for radon as a requirement for licensure by the CTDPH Day Care Licensing Program
 - 285 of these child day care centers and group day care homes had radon levels between 2 and 4 pCi/L
 - 18 of these centers and homes had radon levels over 4 pCi/L and were reduced by active radon mitigation systems
- Between June 1, 2009 and May 31, 2011, qualified radon mitigation contractors reported installation of 850 mitigation systems for air and 217 radon mitigation systems for water in CT homes
- Between January 2009 and January 2011, thirty-five (35) Local Health Departments and Districts received 3,450 radon test devices from the CTDPH Radon Program. The test devices were distributed to CT residents at no charge as part of the US EPA National Radon Action Month campaign

Connecticut’s Radon Potential Map predicts the potential indoor radon levels for each county. The map was developed to encourage builders in moderate and high potential zones to build new homes with Radon-Resistant New Construction (RRNC) features. RRNC techniques use simple technology and common radon reduction techniques to help keep radon from entering the home by directing the radon gas outdoors.

The map below shows a potential for high levels (>4 pCi/L) of radon in the shoreline counties (Fairfield, New Haven, Middlesex, New London) and moderate levels (2-4 pCi/L) in the northeast and northwest counties (Windham, Tolland, Litchfield). The majority of CT is located in a high or moderate potential radon zone, making it especially important for residents to test their homes.



Source: U.S. EPA, 1988

CTDPH efforts to address radon

In order to reduce the number of radon-induced lung cancer deaths in Connecticut, CTDPH provides technical assistance and collaborates with local health departments, private industry, other state agencies, and non-profit organizations to promote radon awareness, testing, mitigation and radon-resistant new construction activities throughout Connecticut. The radon program conducts education and outreach campaigns throughout the year, particularly during January, which is designated as National Radon Action Month.

*One in five homes in CT has elevated levels of radon in the indoor air.
Reducing radon in homes reduces the risk of lung cancer.*

Resources:

- [US Environmental Protection Agency: Radon](#)
- [Centers for Disease Control and Prevention: Radon in the Home](#)
- [U.S. Department of Housing and Urban Development: About Radon](#)

Private Wells

There are approximately 400,000 private wells in Connecticut. Nearly 15% of the State's population, approximately 510,000 people, are served by their own drinking water supply.

Groundwater in Connecticut can be affected by chemical contamination from a variety of sources such as leaking underground fuel storage tanks, surface spills and homeowner activities. Depending on the volume spilled, local conditions, and chemical nature of the substance, the result can be groundwater contamination.



Private (domestic) wells are not currently regulated by the US Environmental Protection Agency (EPA); therefore, private well owners are responsible for the quality of their own drinking water.

What are the related health issues?

A good source of drinking water is critical to good health. Contamination of private well water may present a health risk to those who use private wells as a source of water for drinking, bathing, washing, or cooking. Organic compounds as well as naturally occurring metals such as arsenic; and radiological compounds, such as radon and uranium, are also a concern for citizens who obtain their drinking water from private wells.

Toxic doses of chemicals cause either acute or chronic health effects. An acute effect usually follows exposure to a large dose of a chemical and occurs almost immediately. Examples of acute health effects are gastro-intestinal illness, nausea, vomiting, lung irritation, skin rash, dizziness, and even death.

The levels of contaminants found in drinking water are seldom high enough to cause acute health effects. Levels of some contaminants may cause chronic health effects, which occur long after exposure to small amounts of a contaminant. Examples of chronic health effects include cancer, birth defects, organ damage, disorders of the nervous system, and damage to immune system.

Ground water pollution can be caused by seepage through landfills, failed septic tanks, underground fuel tanks, fertilizers and pesticides, and runoff from urban areas.

How is it related to housing?

Private wells must be sited properly on the property. There should be an adequate supply for normal household use and the water should be of good quality (taste, odor, staining, clarity). Private well owners are responsible for the quality of their own drinking water. The well should be tested periodically for bacteria, nitrates and other contaminants and maintained properly. Tests should be done by an approved laboratory.

Data

CTDPH is collecting and entering historical data from several local health departments and districts as part of a grant to develop and implement a Private Well Tracking system. There are over 30,000 private drinking water wells in the system, with more to be entered. In the near future CTDPH will be publishing private well indicators on the [Connecticut Environmental Public Health Tracking Portal](#).

CTDPH efforts to address private well water

The CTDPH Private well program provides technical assistance to local health authorities as well as to private well owners. The local health department is the first responder to private well issues for quality and quantity.

Resources:

- [Centers for Disease Control and Prevention: Private Ground Water Wells](#)

Public Water

Public water systems (PWS) are required to monitor and test their drinking water. Community PWS, which serve at least 25 year round residents, monitor and test for all regulated microbiological, chemical and radionuclide contaminants. Non-transient non-community PWS, which serve at least 25 of the same individuals, other than year round residents, for more than six months per year, monitor and test for all regulated microbiological and chemical contaminants. Transient non-community PWS, which provide drinking water to places like restaurants and campgrounds, are required to monitor and test for microbiological contaminants and two chemical contaminants (nitrate and nitrite). EPA sets a national limit or standard known as the Maximum Contaminant Level (“MCL”) for each regulated contaminant. The MCL represents the maximum permissible level of a contaminant in the water.

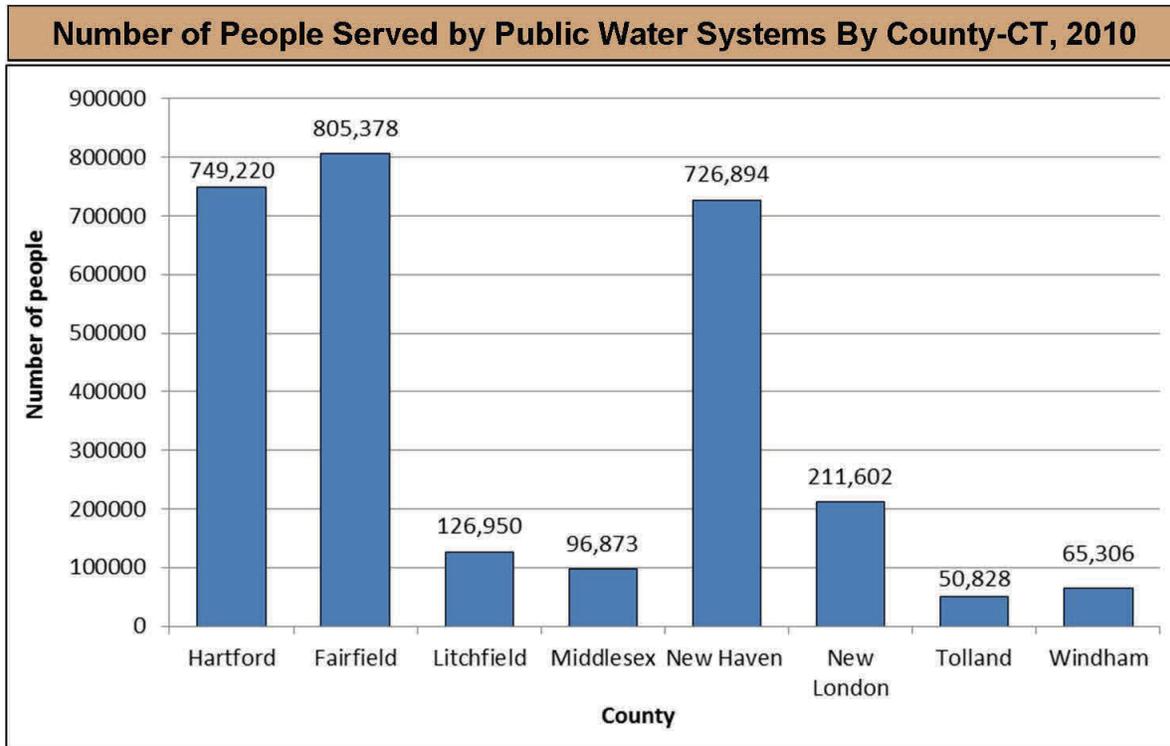
**What are the related health issues?**

The most common drinking water emergency is contamination by disease-causing bacteria. These can cause gastro-intestinal related illnesses.

How is it related to housing?

Residents should be aware of their water source and supplier:

- Who is your water supplier?
- Has your water been tested recently?
- Is it tested regularly?
- How is it treated and protected from contamination?
- Have water shortages occurred in your community?



Source: CT CTDPH DWS

Data

In 2010, 2,833,051 people in Connecticut were served by public water systems.

There are approximately 2,605 PWS throughout Connecticut

- 558 community PWS. In Connecticut, approximately 77% of the state’s population of 3.5 million people obtain their drinking water from community water systems
- 582 non-transient non-community PWS. Examples of non-transient non-community PWS are schools, day care centers, and factories
- 1,465 transient non-community PWS. Examples of transient non-community PWS are campgrounds and restaurants

Public Water System Violations: For calendar year 2010, CTDPH issued 310 formal enforcement actions to PWS.

Source: CT CTDPH DWS 2010 Compliance Report

CTDPH efforts to address public water

The CTDPH Drinking Water Section (DWS) is responsible for the administration of state and federal drinking water regulations and is dedicated to assuring the quality and adequacy of our State's public drinking water sources. DWS maintains a continuing commitment to drinking water treatment and monitoring, drinking water source protection, and consumer education in order to assure and maintain the high standard of drinking water. CTDPH has regulatory oversight of public water systems (PWS) throughout Connecticut. When a PWS has a violation, the DWS provides technical assistance to the PWS to ensure that it implements all required procedures associated with the violation, such as public notification and any necessary corrective action, such as the installation of appropriate treatment.

Resources:

- [The CT Section of the American Water Works Association](#) or 203-757-1855
- [The Association of State Drinking Water Administrators](#) or 202-293-7655
- [The American Ground Water Trust](#) or 603-228-5444
- [The State Department of Public Utility Control \(DPUC\)](#) or 800-382-4586
- [The Atlantic States Rural Water and Wastewater Association](#) or 860-889-6373

Indoor Environmental Quality (IEQ)

What is IEQ?

The indoor air can be many times more polluted than the outside air. Since people spend 90% of their time inside this is an important issue. Indoor air pollutants include: dust/dirt, mold, bacteria/viruses, carbon monoxide (CO), chemicals such as mercury and formaldehyde, chemicals found in pesticides and household cleaners, and allergens such as pollen and animal dander.



What are the related health issues?

Indoor air pollutants can impact health, in particular, by exacerbating asthma and other respiratory diseases, irritating eyes, nose and lungs, and causing headaches, dizziness, fatigue and carbon monoxide poisoning.

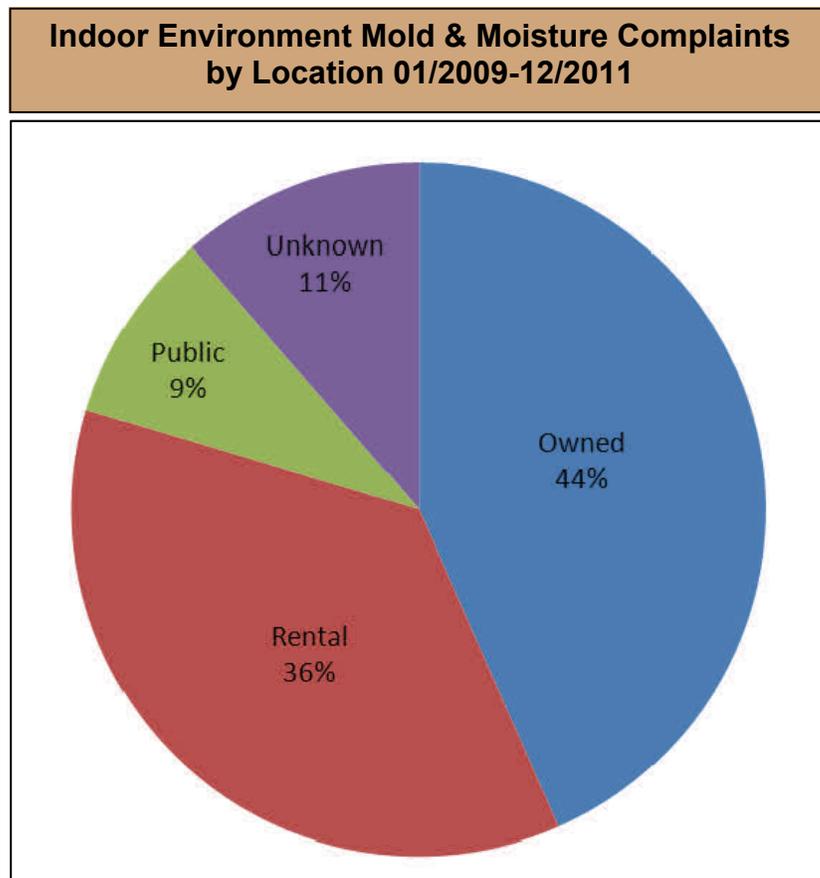
The majority of telephone calls received by the Environmental & Occupational Health Assessment (EOHA) program are related to IEQ issues. Of these, most concern mold and moisture complaints.

How is this related to housing?

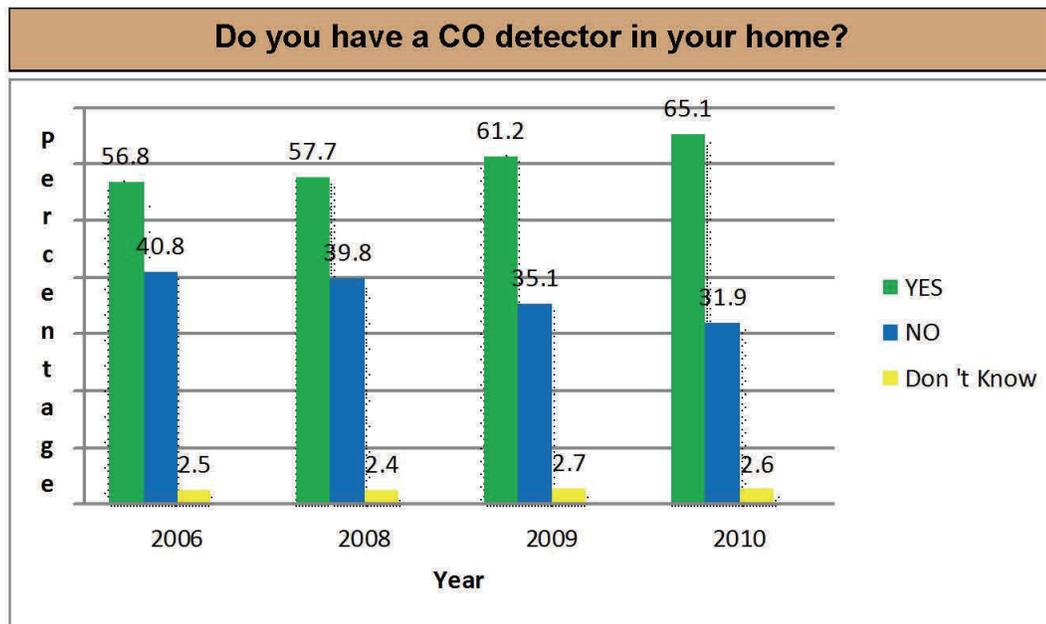
The presence of mold and moisture in a home is directly connected to water incursion from leaking pipes, roofs and windows, and flooding. Water that remains in the home will foster mold growth on porous surfaces such as carpets and drywall. Dust and dirt, volatile organic compounds found in many household products, dander from pets in the home, and rodent dropping are all asthma triggers. Malfunctioning combustion appliances such as furnaces, water heaters, and gas stoves can introduce deadly carbon monoxide into the home.

Data

The majority of telephone calls received by the Environmental & Occupational Health Assessment (EOHA) program are related to IEQ issues. Of these, most concern mold and moisture complaints. Private residences & residential rental properties account for 80% of the complaints.



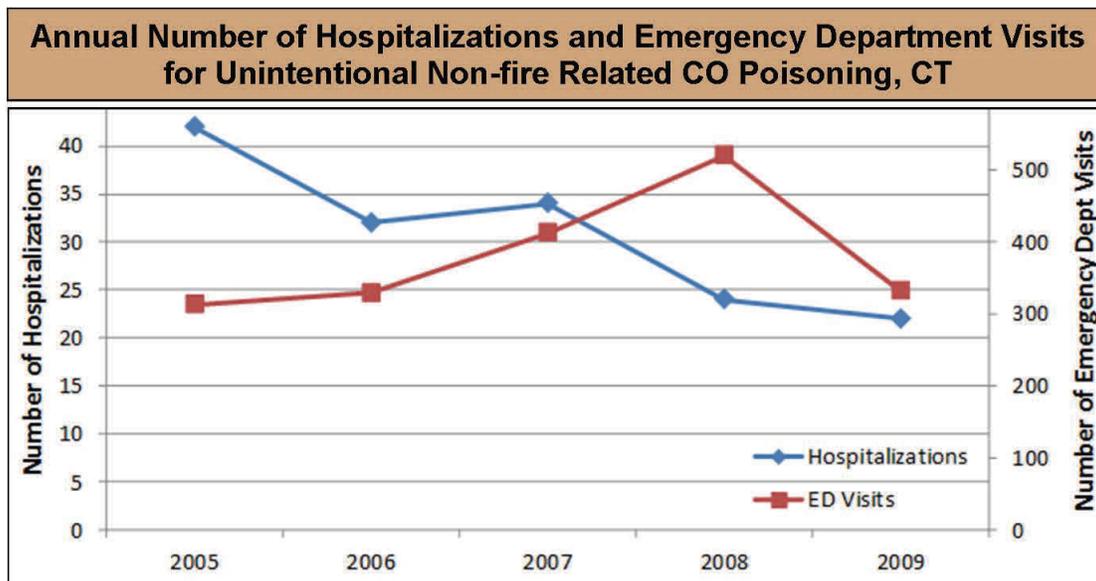
Source: CT CTDPH, EOHA Telephone Database



Source: CDC Behavioral Risk Factor Surveillance Survey

When asked, “Do you have a CO detector in your home?”, the number of respondents in CT answering “yes” has been steadily increasing.

The Behavioral Risk Factor Surveillance System (BRFSS) is a state-based system of health surveys that collects information on health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. For many states, the BRFSS is the only available source of timely, accurate data on health-related behaviors.



Source: Connecticut Hospital Association - CHIME Data

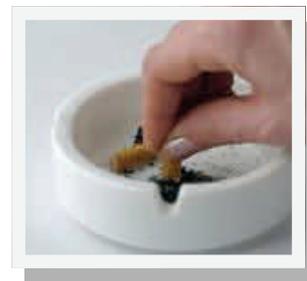
The number of hospitalizations for CO poisoning has been steadily decreasing; the number of emergency department visits have recently decreased after a steady increase.

CTDPH efforts to address IEQ issues

CTDPH has an IEQ unit that focuses on educating the public about the hazards that may be found in the indoor environment and how they can reduce their exposure to them. The IEQ Unit provides consultation, technical assistance, education, and training to local health departments, housing code enforcement officials, other state agencies, health care providers, and the public regarding environmental conditions in homes, schools and workplaces that can lead to poor IEQ and impact health.

Tobacco

Secondhand smoke (SHS), also known as Environmental Tobacco Smoke (ETS), is the smoke that is emitted from a burning cigarette or other tobacco product and the smoke exhaled by a smoker. The smoke from the end of a burning cigarette is unfiltered and contains twice as much tar and nicotine as the smoke inhaled through a filter. No amount of exposure to secondhand smoke is safe for your health. Third hand smoke, the residue of tobacco smoke that settles into the environment and coats surfaces, staying there long after a cigarette is extinguished, is also a concern. This particulate matter contaminates the environment with poisonous substances that contain toxic metals, cancer causing chemicals and poisonous gases. It clings to clothes, hair, drapes and upholstery. The exposure to these toxins has many of the same health effects as secondhand smoke.



What are the related health issues?

The U.S. Surgeon General released a report in 2010 stating there is no safe level of exposure to tobacco smoke. Infants, children, pregnant women, the elderly and individuals with heart or breathing problems are at the highest risk of developing severe medical problems due to SHS exposure.

- SHS causes irritation to the skin, eyes, nose, throat and lungs
- Even short exposure can cause blood platelets to become stickier, damage the lining of blood vessels, decrease blood flow and reduce heart rate variability, potentially increasing the risk of heart attack
- Children exposed are more likely to have respiratory infections, ear infections, severe asthma, bronchitis, wheezing, coughing and pneumonia
- SHS is a known cause of Sudden Infant Death Syndrome (SIDS)
- Chemicals found in SHS (and third hand smoke) are known to cause lung cancer, respiratory illness, heart disease, and cardiovascular disease

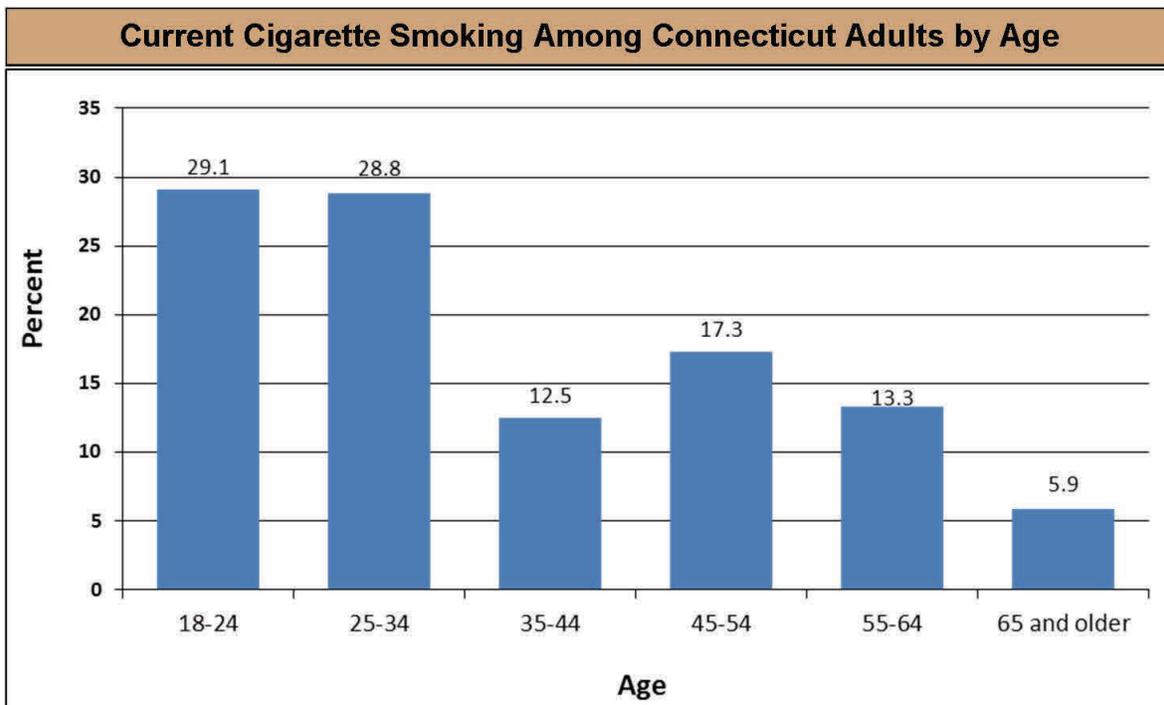
How is it related to housing?

Smoking in the home pollutes the air. Nearly 20% of Connecticut middle and high school students say smoking is allowed in their homes. This smoke can travel and enter other rooms in the home as well as other units in multi-unit housing complexes. Drifting smoke from outside or adjoined properties can enter the home through light fixtures, open windows, ceiling crawl spaces, crevices between plumbing, ventilation shafts and doorways. When there is smoking indoors, even with the windows open, tobacco smoke can take as long as ten hours before the gases and particles escape outside. Tobacco smoke particles settle on surfaces in the home.

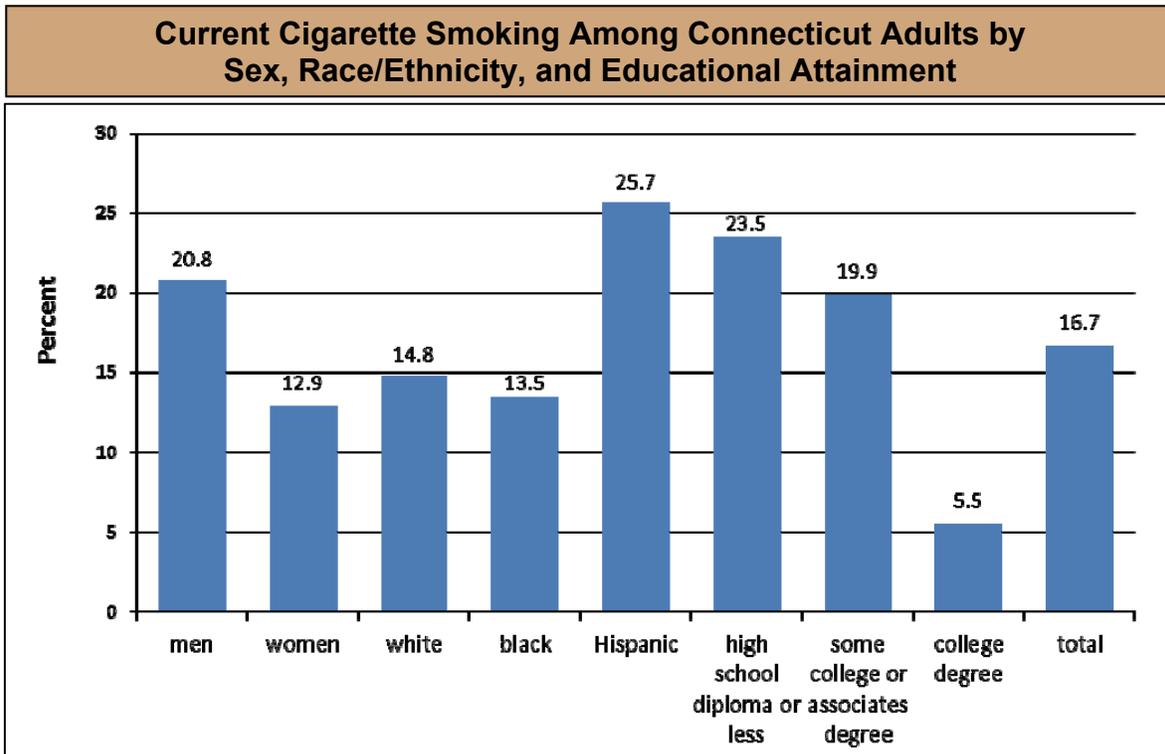
Smoking is also the leading cause of home fires and the number one cause of fire deaths in the United States.

Smoking in Connecticut

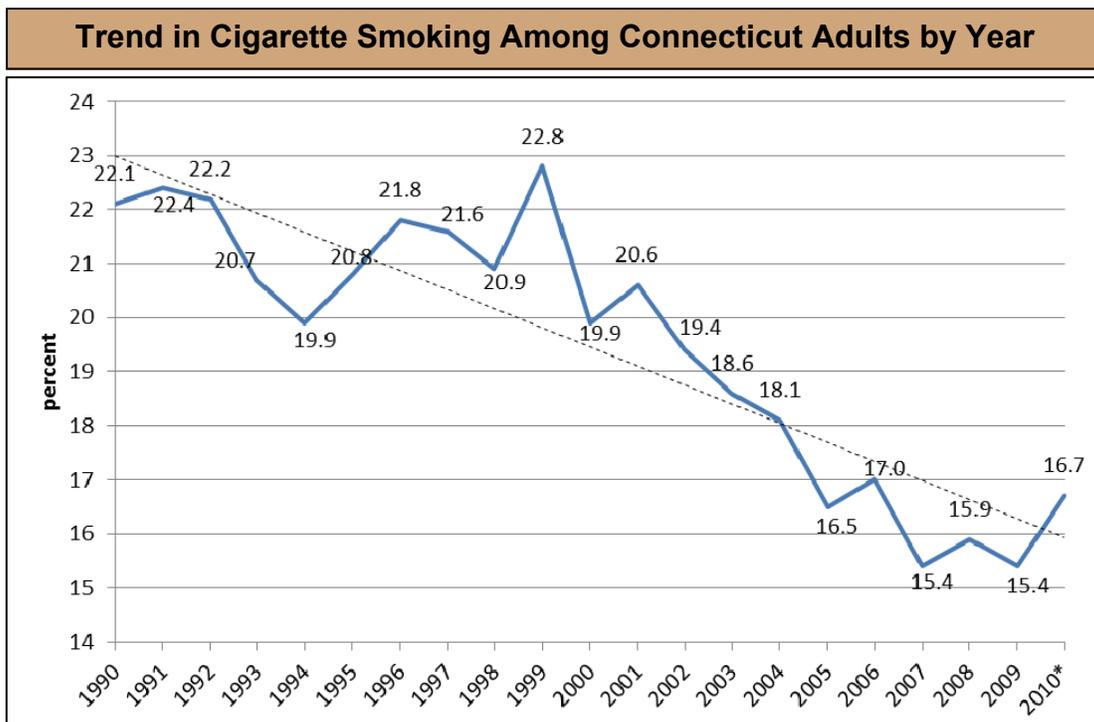
Data from the 2010 Connecticut Adult Tobacco Survey (CATS) estimate that approximately 444,000 adults in Connecticut smoke cigarettes (16.7%): 266,000 men (20.8%) 178,000 women (12.9%).



Source: Connecticut Adult Tobacco Survey, 2010



Source: Connecticut Adult Tobacco Survey, 2010



CTDPH efforts to address tobacco

The Connecticut Department of Public Health's Tobacco Use Prevention and Control Program (TUPAC) follows CDC best practices to administer evidence-based programming in tobacco use prevention and control. Some of the programs activities include a 24-hour telephone-based tobacco use cessation counseling service for any Connecticut resident; tobacco use cessation programs administered through contracts with community providers; media campaigns that include prevention, cessation and SHS components; Tobacco Use Prevention programs for school-aged youth; brief intervention tobacco use cessation counseling and referrals for patients and family members receiving medical care; and initiatives to educate the public, business owners and landlords and owners of multi-unit housing on SHS effects and how to implement smoke free policies in their buildings and homes.

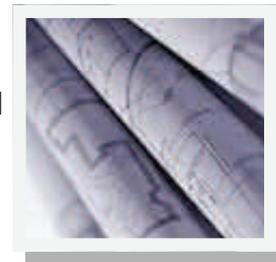
Resources:

- [Centers for Disease Control and Prevention: Tobacco](#)
- [The Health Consequences of Involuntary Exposure to Tobacco Smoke](#)
- [Fair Housing Laws and Presidential Executive Orders](#)
- [Technical Assistance Legal Center \(TALC\)](#)

Sewage

Subsurface sewage disposal systems, commonly known as septic systems, treat and disperse wastewater from individual or small numbers of homes and commercial buildings in areas not serviced by a municipal sewer system. A conventional subsurface sewage disposal system consists of a house sewer, septic tank, and distribution piping followed by a leach field. A community subsurface sewage disposal system consists of one system serving two or more residential buildings regardless of size.

Municipal sewerage systems or sanitary sewers are available in most urban areas.



Approximately 40% of Connecticut's population resides in buildings that dispose of their domestic sewage with on-site sewage disposal systems which are typically conventional septic systems. In addition to serving residential buildings, septic systems also serve schools, restaurants, and other commercial buildings in non-urban areas. A septic system properly designed, installed, and maintained provides a safe and efficient way of disposing domestic sewage. Jurisdiction of subsurface sewage disposal systems for design flows of 5,000 gallons per day (GPD) and less lies with State and Local Health Departments, and is regulated by the Public Health Code (PHC) Section 19-13-B103 and the associated Technical Standards. The Department of Energy & Environment (DEEP) regulates municipal sewerage systems/public sewers, advanced treatment systems, as well as community and larger (greater than 5000 GPD) conventional systems.

What are the related health issues?

Improper sewage disposal can result in health hazards and nuisance conditions. Sewage contains pathogens (disease causing organisms); therefore it is essential that it be disposed of properly. Sewage contains bacteria, viruses, and other germs that can cause disease and make a contaminated house unfit for living. The health risks around sewage are dependent upon the amount of sewage, the types of germs that are in it, the amount of time it has been in contact with materials in the home, and how much and how long an occupant was exposed. Generally, the more solids (human waste) present in the water, the greater the need for prompt and proper clean-up of materials that came into direct contact with it. The most common illnesses resulting from exposure to sewage are gastrointestinal (GI) distress, skin rashes and skin infections.

How is it related to housing?

The age and location of the system, maintenance and repair history, and the adequacy of the system can all impact the operation. Failure or malfunction of a septic system can cause foul odors, blocked drains, surfacing of sewage, and backup of sewage into the house. Designs for new subsurface sewage disposal systems take into consideration fluctuations in the water table that can occur after a severe rainstorm or spring thaw; older systems can sometimes be adversely impacted by such events.

Severe rainstorms, floods, and even spring thaws can put a strain on both sanitary sewers and septic systems. Large volumes of storm water and ground water entering sewage systems can inundate them, causing back-ups into basements and on to private property. Blockages in sewer systems can also cause back-ups. Your health may be impacted if a sewage back-up occurs in your home.

While most sewage back-ups occur from a sanitary sewer on properties also served by public water, a sewage back-up or overflow on a property served by a private or public drinking water supply well can potentially impact the well or pollute surface water such as, lakes, ponds, rivers, streams or reservoirs used for drinking water.

Data

- In sewerred areas there are approximately 2.76 people per housing unit
- 774,666 households statewide are connected to public sewers, based on the 2009 Sewer User Charge Survey
- The sewerred population is estimated at 2,138,078
- 59.7% of the state population is on sewers
- 40.3% of the state has onsite systems

Source: Connecticut Department of Energy and Environmental Protection, Bureau of Water Protection & Land Re-Use, Municipal Facilities Section

CTDPH efforts to address sewage

CTDPH regulates conventional septic systems; DEEP regulates municipal sewerage systems or sanitary sewers, advanced treatment systems, as well as community and larger (greater than 5,000 gallons per day) conventional systems. CTDPH works closely with the DEEP Subsurface Sewage Disposal Program.

Resources:

- [EPA Septic Onsite Systems](#)
- [CTDPH Environmental Engineering Program](#)
- [DEEP](#)
- [Sewage Back-up Fact Sheet](#)

References and Resources:

[U.S. Census 2010](#)

[CT Census profile](#)

[CT Environmental Public Health Tracking Program](#)

[\(a link to environmental & health data\)](#)

[Connecticut Department of Public Health-Healthy Homes Program](#)

CTDPH Programs:

Asbestos:	860-509-7367
Asthma:	860-509-8251
Unintentional Injuries:	860-509-8251
Lead Poisoning:	860-509-7299
Radon:	860-509-7367
Private Wells:	860-509-7296
Public Water:	860-509-7333
Indoor Environmental Quality (IEQ):	860-509-7740
Tobacco:	860-509-8251
Sewage:	860-509-7296