Environmental Health

The first significant efforts to improve the health of populations came from the sanitary movement that stressed, among other things, clean and safe food, beverages, and water, protection from contamination whether natural or made-made, and decent housing. Many of the efforts of the sanitary movement resulted in the interruption of communicable and infectious diseases. That linkage to protection from disease persists today in programs such as restaurant inspection and drinking water safety. Other efforts sought to make the environment cleaner and safer through the removal and proper disposal of garbage, industrial wastes, etc. And still others concentrated on living and working conditions in the home, in lodging facilities, and on the job. While most of these efforts were the focus of early public health departments, many of them eventually were separated from those agencies and the responsibilities assigned to others, such as garbage disposal, provision of safe drinking water, and weed control. Today, in Kansas City, multiple City agencies have responsibility for environmental programs that protect the health of the residents and visitors to the community.

The *2006 Health Assessment Survey* commissioned by the Kansas City Health Department found that 27% of respondents felt that felt that environmental services should receive the most emphasis by the Health Department.

Reportable conditions

The same City ordinances that require the reporting of infectious and communicable diseases also require the reporting of cases of injury, illness, or death due to environmental contaminants and weather-related health problems. For the purposes of this report, the only reportable conditions that will be discussed are heat related illnesses and lead poisoning.

Heat-related illness

In July 1980, Kansas City experienced a heat wave that led to 443 reported cases of heat related illnesses including 75 cases of heatstroke.[613] [614] Of these 443 cases, 157 persons (35.4%) died from hyperthermia. Since that time, the Health Department has monitored weather conditions and alerted the citizens when the risk of heat-related illnesses could be expected to increase. Over the past 10 years, 49 Kansas Citians have died from heat-related illnesses (Figure 149). Monitoring heat related illnesses has proven difficult as the majority of persons who visit an emergency department for a heat-related illness are not reported to the Health Department (Figure 150). Often even persons with heat-stroke are not reported. The age distribution of heat-related injuries during 2006 is shown in Figure 151. In 2006, males

[613] Donnell HD et al. Heatstroke – United States, 1980. *MMWR Morb Mort Wkly Rep* 1981;30:277-279.

[614] Jones TS et al. Morbidity and mortality associated with the July 1980 heat wave in St Louis and Kansas City, Mo. *J Am Med Ass* 1982;247:3327-3331.

accounted for 78.6% of the persons experiencing a heat-related injury. Non-Hispanic whites constituted 52.9% of the patients, non-Hispanic blacks 40.0%, and Hispanics 4.3%.

Figure 149 Heat-related deaths, Kansas City, Mo, by year

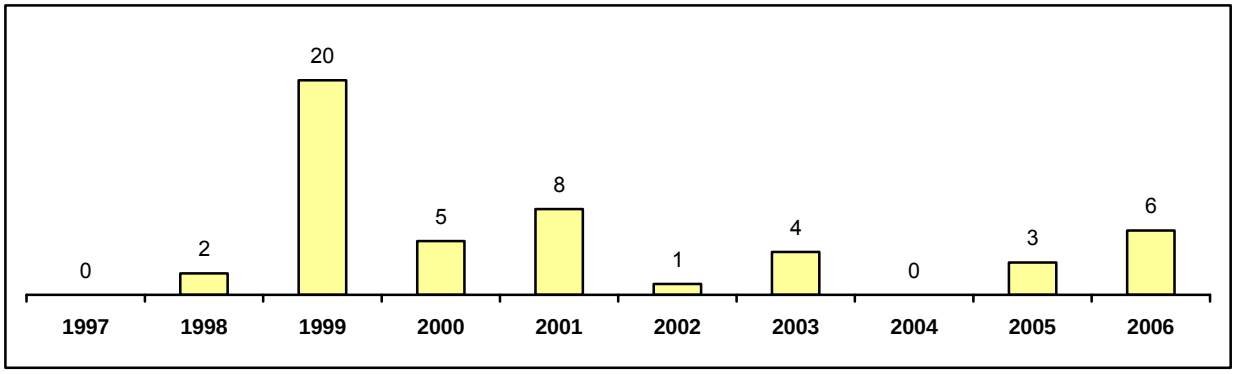
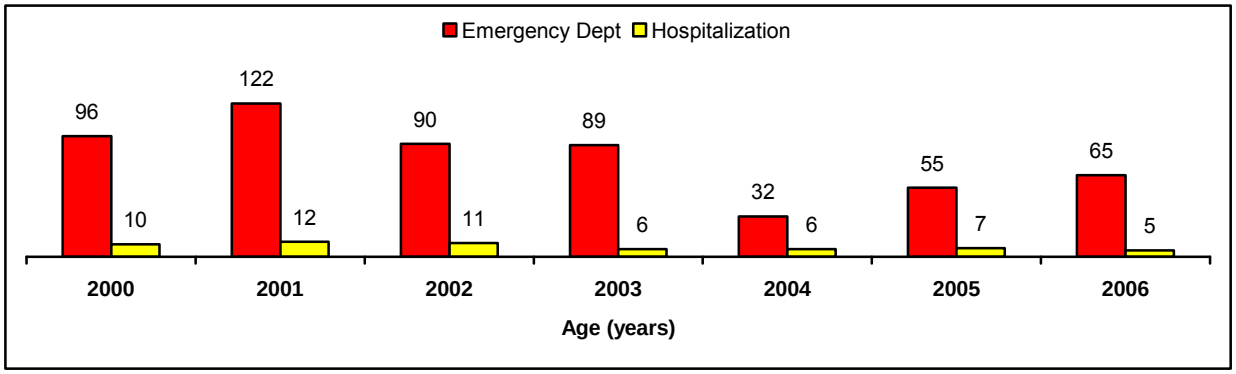


Figure 150 Emergency department visits and hospitalization due to hyperthermia, Kansas City, Mo, 2006

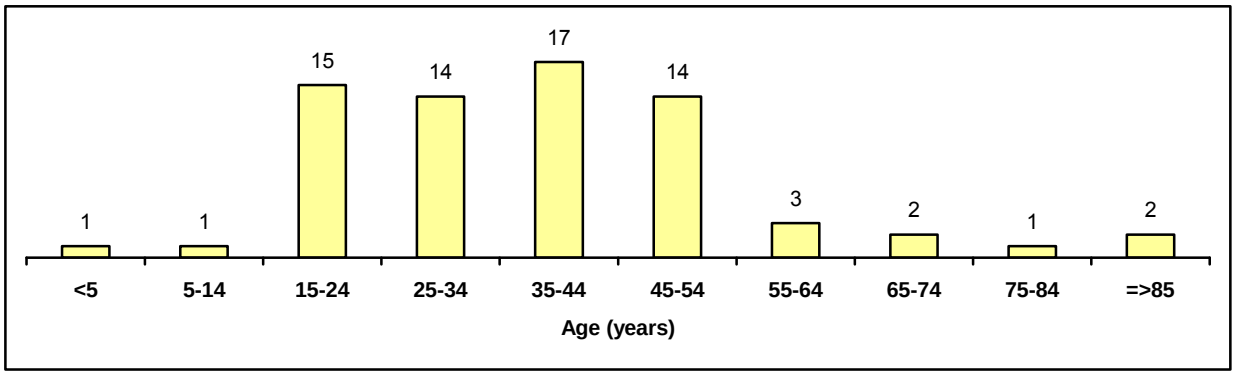


Slightly more than half of Missouri's heat-related deaths have occurred in the urban, more densely populated areas of St. Louis City, St Louis County and Jackson County (Kansas City). From 2000 through 2006, 94 (58.8%) of the 160 deaths statewide occurred in these metropolitan areas. During 1999-2003, Missouri had the 3rd highest average annual hyperthermia-related death rate (0.6 deaths per 100,000 population) in the nation behind Arizona (1.7) and Nevada (0.8).[615] In Missouri, white males are

[615] Luber GE, Sanchez CA. Heat-related deaths – United States, 1999-2003. *MMWR Morb Mortal Wkly Rep* 2006;55:796-798.

the most frequent victims of heat-related illness resulting in death; there were 79 (49.4%) white male deaths from 2000-2006. The greatest number of deaths during 2000-2006 were among people ≥65 years old (88, 55.0%). On average, approximately half of the hyperthermia deaths in any given year occur in the month of July.

Figure 151 Age distribution of hyperthermia injuries, Kansas City, Mo, 2006



Lead poisoning

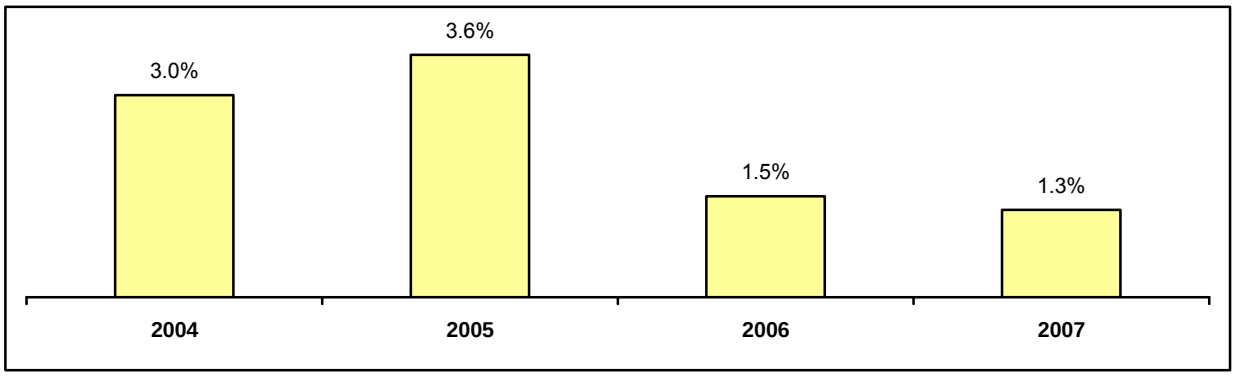
Increasing amounts of lead in the body can cause impaired neuro-behavioral development in children, increased blood pressure, kidney damage, and anemia. For children, the major sources of exposure to lead are from deteriorated lead-based paint and the resulting dust and soil contamination. In addition, uncommon sources of lead exist, including unglazed low-temperature-fired ceramic pottery, pewter drinking vessels, plumbing systems with lead-soldered joints, old paint removal, indoor gun ranges, jewelry, some imported candy, and nearby mining and smelting operations. In 2003, the Centers for Disease Control and Prevention lowered the national average for childhood lead poisoning from 4% to 2.2%.[616]

Missouri requires annual lead testing for children 6 months to 6 years of age who live in designated high risk areas and targeted screening in other zip codes. Day care centers in high risk zip codes are required to keep annual records proving children were tested. The high risk zip codes designated in Kansas City include: 64101, 64102, 64108, 64105, 64106, 64109, 64110, 64111, 64112, 64113, 64114, 64116, 64120, 64123, 64124, 64125, 64126, 64128, 64129, 64131, 64132, 64139, 64149, 64161, and 64165.

[616] Center for Disease Control and Prevention. 2nd National Report on Human Exposure to Environmental Chemicals. 2003. www.cdc.gov.

The national prevalence rate for lead poisoning in children <6 years of age is 1.6%[617] and the *Healthy People 2010* national objective is that no children have an elevated blood lead level. In 2006, 1,257 children <6 years of age in Missouri (1.47% of children tested) had confirmed elevated levels of blood lead (www.cdc.gov); data for Kansas City children is shown in Figure 152. The distribution of children with elevated blood levels by zip code is shown in Figure 153 and Figure 154 shows the zip codes with levels exceeding the citywide average. In 2007, the Lead Poisoning Prevention Program of the Kansas City Health Department estimated that 52,243 children had not been tested for blood lead levels.

Figure 152 Percent of children <6 years of age tested for elevated blood lead levels who had a level ≥10 µg/dl, Kansas City, Mo



[617] Schwemberger JG et al. Blood lead levels – United States, 2003. *MMWR Morb Mort Wkly Rep*. 2005; 54:513-516.

Figure 153 Percent of children <6 years of age with elevated blood lead levels by zip code, Kansas City, Mo, 2004-2007

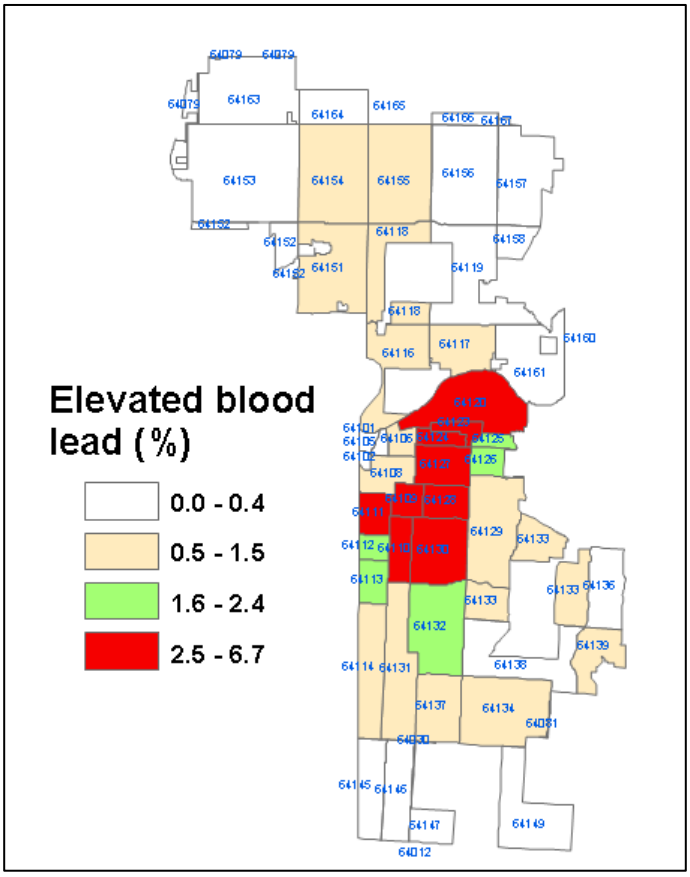
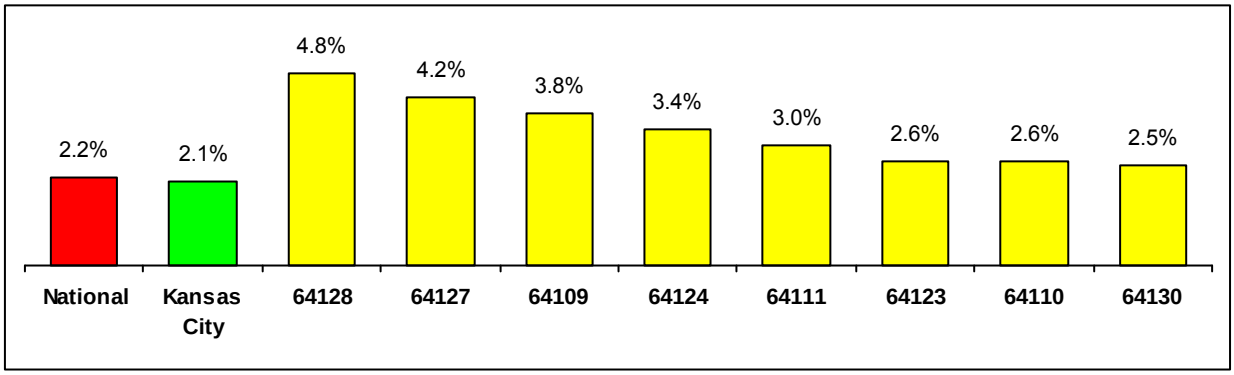


Figure 154 National and Kansas City averages for children <6 years of age tested who had elevated blood lead levels and the zip codes exceeding the local average, Kansas City, Mo, 2004-2007



Food protection

The Food Protection Program of the Kansas City Health Department is responsible for inspecting all food establishments including restaurants, grocery stores, convenience stores, mobile units, push carts, temporary events, school cafeterias, hospital cafeterias, food pantries, and summer food service sites. There are over 3,000 permits issued each year for food service of which approximately 10% are for temporary events. In addition, annually, there are 70 summer feeding sites.

During 2007, the Food Protection Program conducted 4,175 routine inspections of food establishments and 865 reinspections. During these inspections 10,418 critical and 10,908 non-critical violations were found resulting in 97 permits being suspended (Figures 155 to 157).

Figure 155 Food establishment inspections, Kansas City, Mo

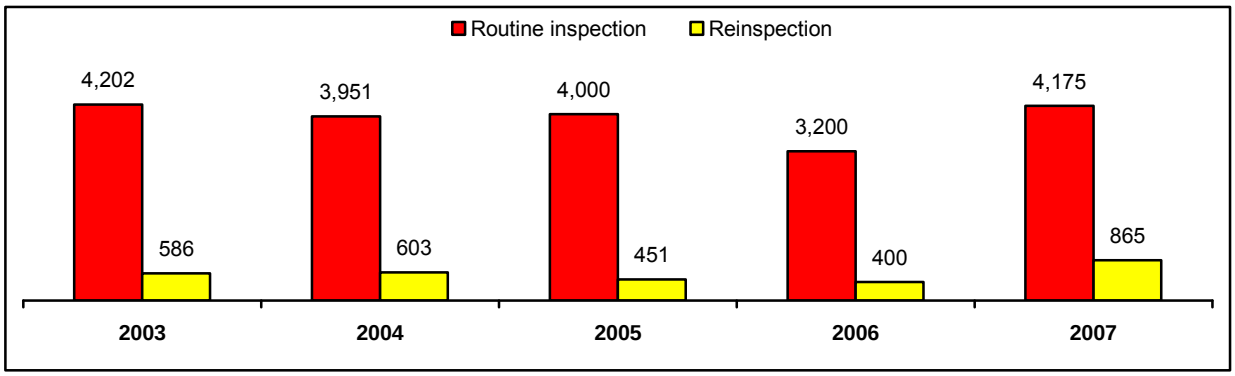


Figure 156 Type of violations found upon inspection of food establishments, Kansas City, Mo

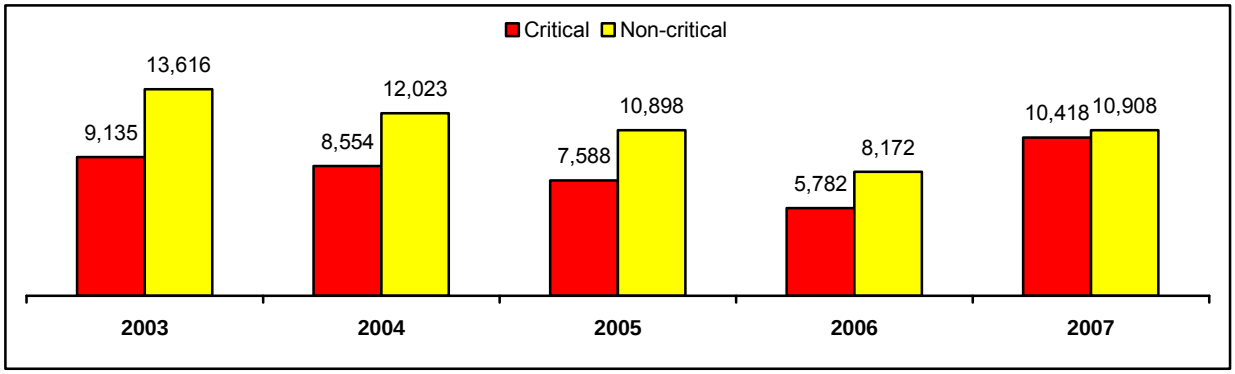
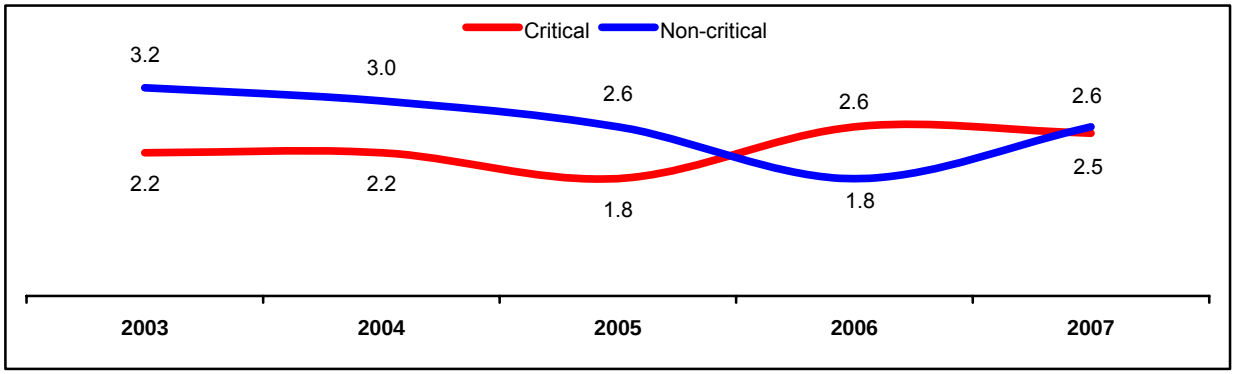
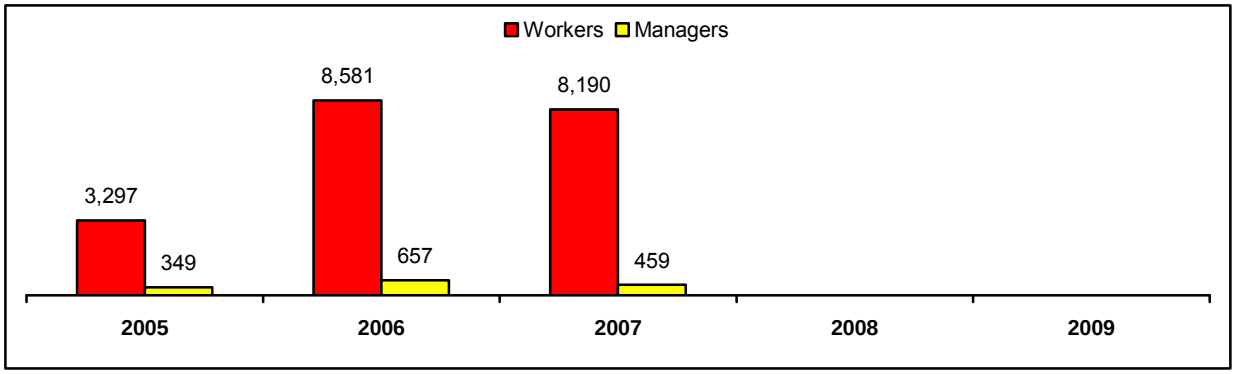


Figure 157 Number and type of violations per routine inspection of food establishments, Kansas City, Mo



The 2001 Food Code requires that 90% of food handling staff have a food handler card; food handler training became mandatory on January 1, 2005. The purpose of the training is to reduce the possibility of foodborne illness by ensuring that food workers are properly trained and knowledgeable about food safety, foodborne illness and food handling. The training was phased in over three years and in 2007 the 90% level had to be attained. All new employees must be trained within 30 days of employment. In 2007, 8,190 food handlers and 459 food managers underwent training (Figure 158).

Figure 158 Food handler training by job category, Kansas City, Mo



Water

The Kansas City Water Services Department is responsible for drinking water, wastewater, industrial waste, and storm water. The primary source of drinking water is the Missouri River (94%), with the balance from wells in the Missouri River aquifer. The Water Services Department processes and delivers 115 million gallons of high-quality water that exceeds all federal and state water quality standards. The Environmental Protection Agency requires testing for >180 regulated compounds, yet the Water Department tests for >300 compounds; performing >25,000 tests monthly. There never has been a violation of contamination levels or other water quality regulations.

The Water Services Department functions as a regional water provider selling water to a number of communities in both Missouri and Kansas. Thus, the quality of the water produced for the City has regional implications. The March 2007 issue of *Men's Health Magazine* ranked Kansas City's tap water as grade A and placed it in the top 10% of communities surveyed. In 2006, the Water Services Department received a #1 ranking for tap water quality from SustainLane.com.

The City is served by 8 waste water treatment plants, 5 staffed and 3 automated. These plants serve the City proper and some neighboring communities. The only interconnected plants are the main facility (70 million gallons per day capacity) and two smaller staffed facilities (20 million gallons per day capacity, each). The reclaimed water is purified and returned to local waterways. Some sewage sludge (biosolids) is applied to crop lands that are then leased to local farmers. This sludge meets the Environmental Protection Agency's standards for protecting the public's health. In addition to the municipal waste water system, approximately 6,000 private septic systems exist in Kansas City.

Water recreational facilities

Water recreational facilities that are open to the public are permitted and inspected by the Community Environmental Health Program of the Kansas City Health Department. There are

approximately 135 facilities that operate year around and 391 that operate during the spring and summer. Water quality at swimming beaches of lakes and ponds within the City is not monitored.

Environmental management

Environmental issues such as garbage, trash, recycling, hazardous materials, and property abatement, are handled by various City departments. The Office of Environmental Quality in the City Manager's Office ensures all City government actions are performed in an environmentally responsible manner; promote City policies that encourage the private sector to preserve and enhance the environment; and collaborate with public and private partners on projects that preserve and enhance the environment.

Air quality

Beginning in September 2003, the Missouri Department of Natural Resources assumed the responsibility for operating air quality monitors in the Kansas City area. The Air Quality Program of the Kansas City Health Department' continues to permit and inspect two hundred sources that emit a variety of pollutants into the metropolitan area air shed to ensure that pollution levels are kept as low as possible; 195 notices of violation were issued in 2007.

The priority air pollutant is ozone which has been linked to premature deaths.[618] The Environmental Protection Agency (EPA) has changed the ground level ozone standard from 84 parts per billion (ppb) averaged over eight hours; to a new standard of 75 ppb. This change is expected to result in the Kansas City region losing its clean air status. The EPA is expected to classify areas that do not meet the new standard by March 2010. States will then have three years to develop regulatory plans for those areas. Compounding the issue for the region is the State of Missouri requirement that gasoline contain bioethanol. Burning such fuel will hamper ozone reduction more than burning fuel without bioethanol.

The Air Quality Program also regulates the removal of asbestos from commercial structures and facilities.

Indoor air quality issues (including enforcement of Kansas City's prohibitions on smoking) and noise complaints are handled by the Health Department's Community Environmental Health Program.

Childcare & lodging facilities

Childcare and lodging facilities are both regulated and permitted by the State of Missouri. Under a contract from the Missouri Department of Health and Senior Services, the Community Environmental Health Program of the Kansas City Health Department inspects these establishments.

[618] Committee on Estimating Mortality Risk Reduction Benefits from Decreasing Tropospheric Ozone Exposure, Natural Research Council. *Estimating mortality risk reduction and economic benefits from controlling ozone air pollution*. Washington: National Academies Press, 2008, 206.p.

Rat control

The Health Department operates a Rat Control program that provides rat extermination to residents living in single family homes and duplexes as well for vacant houses, vacant lots, City construction sites, around City blocks and in sewers. Of the 1,563 rat complaints in 2007, 1,331 (85%) resulted in service.