

EXECUTIVE SUMMARY

Madison and Dane County Environmental Health Report Card - 2008

November 2, 2009

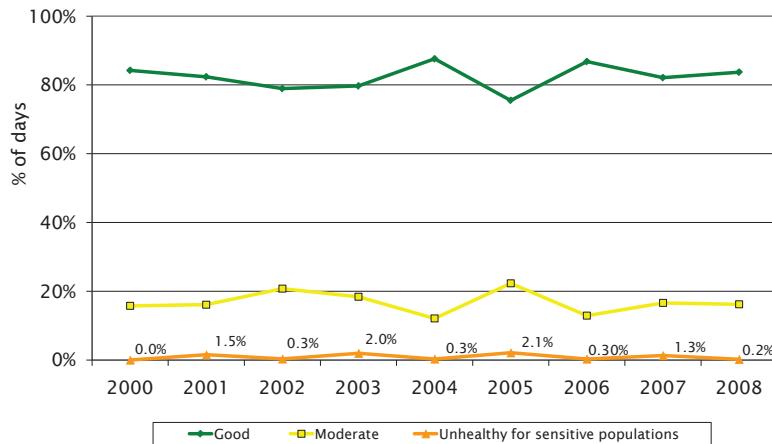
The 2008 edition of the Madison and Dane County Environmental Health Report Card provides the most recent data analysis available of environmental health issues impacting Dane County. Common examples of these issues include manganese and nitrates in drinking water, fine particulates and carbon dioxide in the air, lead paint in homes, the contamination of food with microbial contaminants, and sustainable usage of water and land resources. This report is composed of data from many sources throughout the county, state, and federal levels and compiled to provide an accurate and accessible document for health professionals, academics, and the general public. The full report is available from the Public Health – Madison and Dane County (PHMDC) website at www.publichealthmdc.com.

AIR QUALITY

Air quality was assessed by the review of measured levels of ozone, fine particulate matter (PM 2.5), and reported Air Quality Index (AQI) values during 2007 and 2008 and compared with values recorded during the past decade. Although the values of these air quality indicators have remained relatively stable, challenges remain. As shown in the figure below the vast majority of days have good air quality; however there are still a number of days that are recorded with levels of air pollution that are unhealthy for the most sensitive members of our communities.

Figure 1

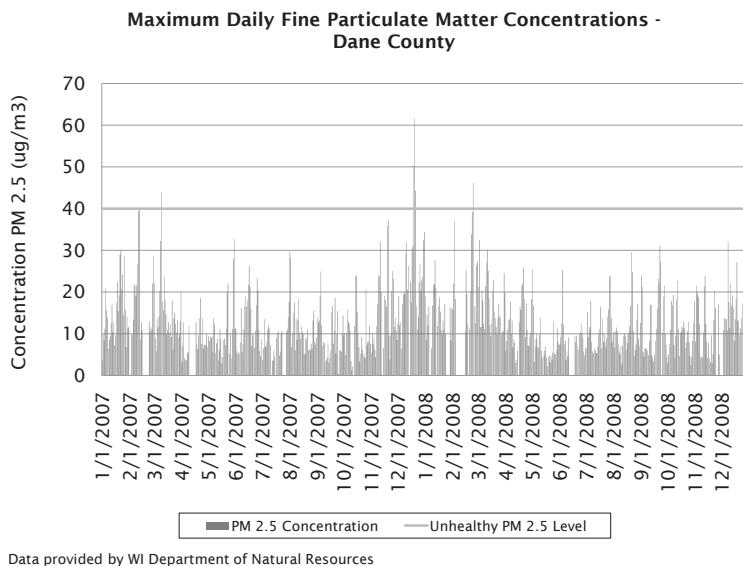
Air Quality in Madison and Dane Co according to the
Air Quality Index (AQI)



Data provided by WI Department of Natural Resources

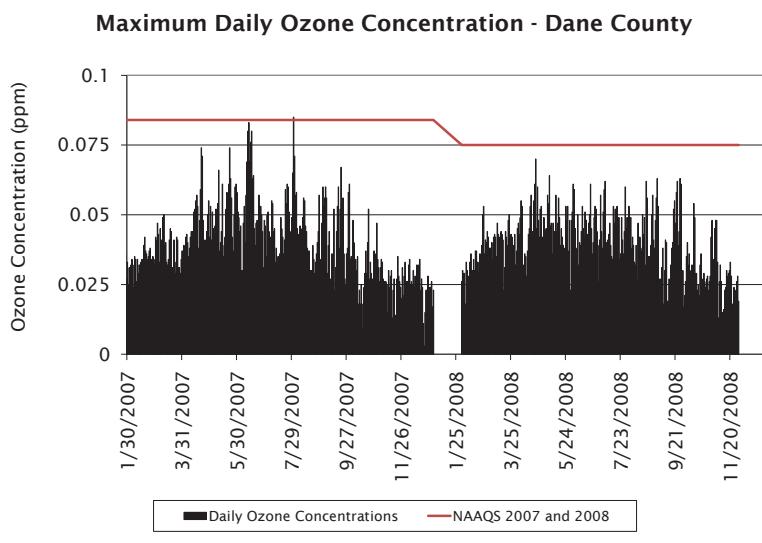
In recent years, the United States Environmental Protection Agency has adopted more stringent standards for both the levels of PM 2.5 and ozone. In 2006, the federal air quality standard was lowered from 65 parts per million (ppm) to 35 ppm. Although Dane County met this new regulatory requirement following the submission of air PM 2.5 data collected in 2008, poor grades were issued to the county from the American Lung Association State of the Air report for the 2007 and 2008 reporting periods.

Figure 2



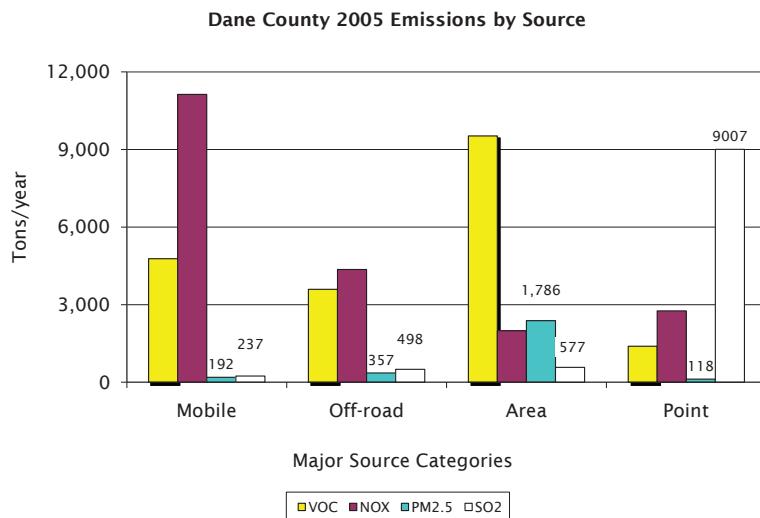
In 2008, the federal standards for ozone level concentrations were lowered from 0.084 ppm to 0.075 ppm averaged over an eight hour period. Despite the relative consistency in the reported ozone levels during 2007 and 2008 (Figure 3), poor grades for this variable were also issued by the American Lung Association. The issuance of these poor grades for ozone and PM 2.5 does not necessarily indicate poorer air quality in Dane County, but likely a reflection of the adoption of stricter public health air quality standards by the US EPA. Regardless, the results of the State of the Air reports demonstrate the need for continuing improvement.

Figure 3



The air quality in Dane County is heavily dependent upon emissions from vehicular traffic. Recent estimates from the Wisconsin Department of Natural Resources (WI DNR) have shown that cars and trucks are the largest contributors of nitrogen oxides (NOXs) and the second largest contributor of volatile organic chemicals (VOCs); both of which combine to form ozone during warm sunny days (Figure 4). These emissions are also significant sources of hazardous air pollutants such as benzene, formaldehyde, and others.

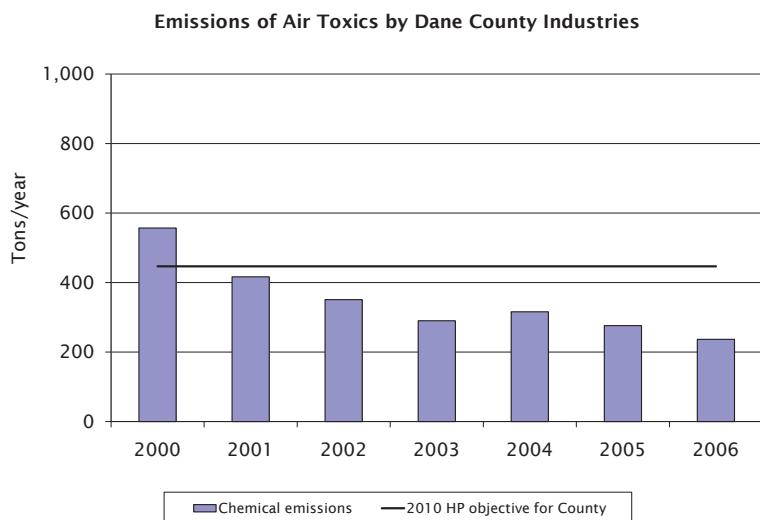
Figure 4



Data provided by WI Department of Natural Resources

Industrial emissions are also an important factor impacting Dane County air quality. However, in the last decade the emission of air toxics from these sources has decreased dramatically; an approximate 57% since the year 2000 (Figure 5).

Figure 5



Data provided by US Environmental Protection Agency

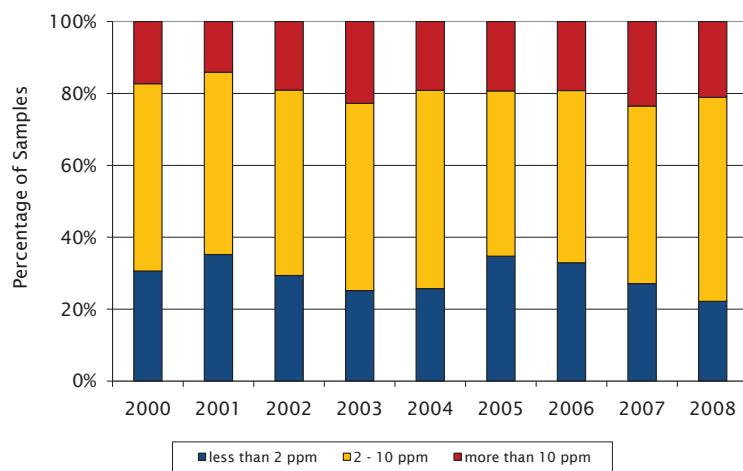
Individual and community action is essential to improve air quality of Dane County. Individual actions including walking, biking, carpooling, and using Madison Metro reduce vehicular emissions. In addition, many individuals are making decisions to conserve energy, purchasing more fuel-efficient vehicles, and purchasing renewable energy for homes and businesses. Current community actions including the Healthy Air Initiative, Clean Air Action Days, and the coordination and sponsorship of voluntary organizations are also excellent tools to reduce air pollution and improve the air quality of Dane County.

WATER QUALITY

The residents of Dane County continue to benefit from high quality drinking water supplied from two substantial underground aquifers; however human activity continues to impact the quality of drinking water resources. Nitrate levels exceed recommended public health standards in 19% of the private wells reported to WI DNR (Figure 6). Unfortunately, the vast majority of the estimated 22,000 private wells are not routinely tested. The lack of consistent testing may obscure a potential health risk because private wells usually tap shallower groundwater aquifers that are more vulnerable to contamination; high nitrate levels are less prevalent in municipal wells. Additional water quality concerns include manganese concentrations and the increasing levels of chloride in specific municipal wells.

Figure 6

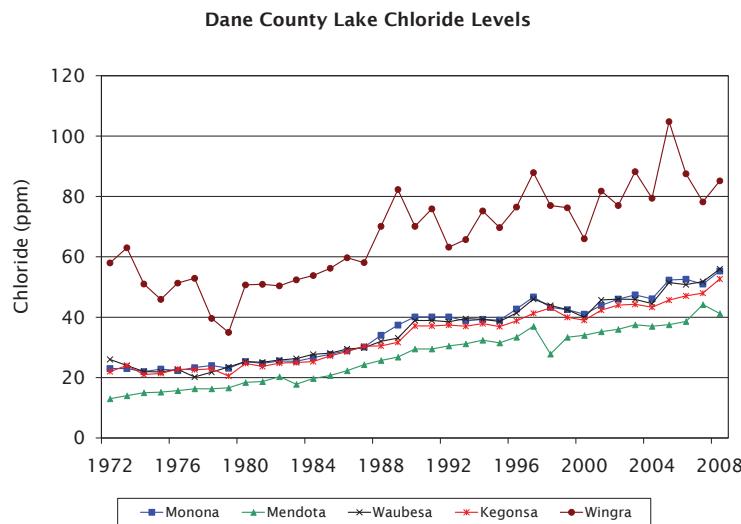
Results of Nitrate Testing in Private Wells, Dane County



Data provided by WI Department of Natural Resources

Local lakes, rivers, and streams are some of the defining characteristics of the City of Madison and Dane County topography. However, the rising levels of chloride (Figure 7) resulting from winter salt application and subsequent snow melt and increasing phosphate concentration from agricultural run-off and poor handling of lawn debris continue to pose a challenge. Additional areas of concern to water quality include weed and algae growth, bacteria, and mercury (Hg) and polychlorinated biphenyls (PCBs) contamination of local surface waters.

Figure 7



Data provided by Public Health - Madison and Dane County

Progress is being made at both the individual and community level to protect Dane County ground and surface waters resources but more work is needed. Appropriate use and disposal of chemicals and other contaminants is essential to prevent or reduce their potential impact to water quality. Mercury and PCBs are long-lasting examples; both of these contaminants tend to accumulate in the aquatic environment and are difficult and costly to remove. Therefore, it is important that anglers understand the fish consumption advisories to limit exposure to these pollutants. In addition, a continued effort to limit the amount of storm water that enters Dane County surface waters is also necessary. By infiltrating these waters into the ground, they are less able to carry damaging pollutants to surface waters and better replenish ground water aquifers. Continued testing of drinking water, ground and surface waters, and fish are vital components of pollution prevention and control efforts designed to protect human health and the environment.

FOOD PROTECTION

Food contamination with bacteria, viruses, parasites, and/or harmful chemicals can occur at multiple points along the food supply chain including processing, transportation, storage, and/or preparation. These points of risk where food supplies are the most vulnerable are the focus of food safety inspections to prevent and/or control foodborne illness. The results of these inspections indicate that improper food handling temperature and inadequate hand washing were the most common risk factor violations in Dane County food establishments (Table 1). In addition, the handling of food by ill workers also contributed to the onset of foodborne illness outbreaks (Figure 8).

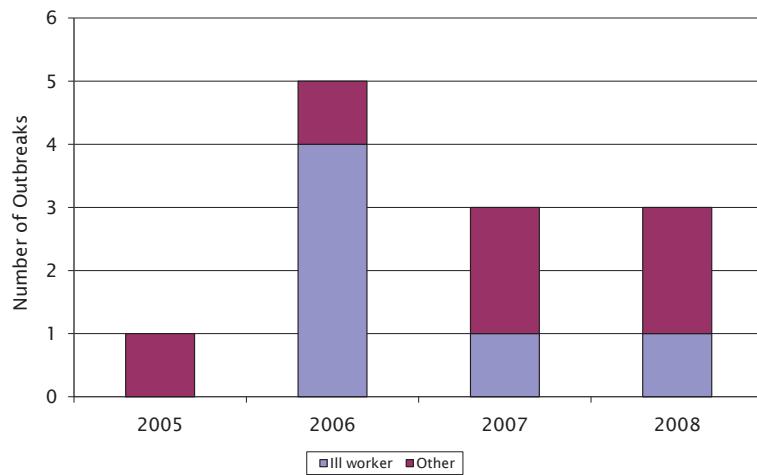
Table 1

CDC Risk Factor Violations Recorded During Inspections of Dane County Restaurants, 2008*									
Restaurant Type	Unsafe Sources of Food	Inadequate Cooking	Improper Food Holding Temp	Cross Contamination	Lack of Handwashing	Other CDC Factors	Total CDC Risk Factor Violations	Number of Inspections	Number of Risk Factor Violations/Inspection
Simple	0	2	66	45	84	106	303	370	0.8
Moderate	19	11	625	500	630	505	2290	827	2.8
Complex	3	1	218	162	173	110	667	408	1.6
Total	22	14	909	707	887	721	3260	1605	

*This table does not include retail food establishments.

Figure 8

Number of Foodborne Outbreaks in Dane County Establishments



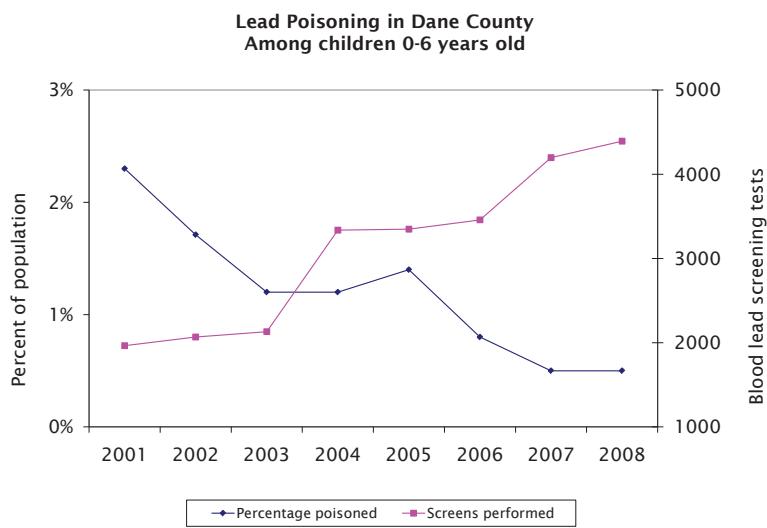
Data provided by Public Health - Madison and Dane County

The City of Madison and Dane County both benefit from safe, high-quality food establishments and vendors. However, continued safe food handling training and assurance efforts are essential to prevent and control foodborne illness. In addition, because foodborne illness also occurs in the home, safe food handling practices should be understood and practiced by everyone when preparing and/or storing food products.

HEALTHY HOMES AND COMMUNITIES

The environmental hazards of lead persist in many Dane County homes and may lead to human illness and disease. The number of children tested for blood lead levels continues to increase while the number of children identified as lead poisoned continued to decrease (Figure 9). However, despite these efforts only a portion of the children deemed at risk have been tested for lead poisoning. In addition, Dane County continues to have a large number of older homes, approximately 21% of the total housing stock, which may still have lead hazards such as lead-based paints and plumbing.

Figure 9



Data provided by Public Health – Madison and Dane County

Radon has been found at elevated levels in homes and businesses throughout Dane County. Individuals exposed to these high levels over time have a greater risk of developing lung cancer. However, despite this risk only 25% of Dane County homes have been tested for radon.

Exposure to environmental tobacco smoke (ETS) also remains a prominent contaminant of indoor air quality in many Dane County homes despite its well established association to respiratory diseases, lung cancer, and cardiovascular disease. In 2005, an ordinance prohibiting smoking in all workplaces, restaurants, and bars/ taverns went into effect in the City of Madison. In Dane County an ordinance for the unincorporated areas took effect in August of 2009; the recently passed statewide smoking law will take effect in 2010.

SUSTAINABILITY

Efforts to improve sustainability are essential to meet the current needs of Dane County without compromising the future growth, success, and health of the county and its residents. Current challenges to these efforts facing the City of Madison and Dane County include greenhouse gas emission, waste production and recycling, water use and conservation, and appropriate land usage.

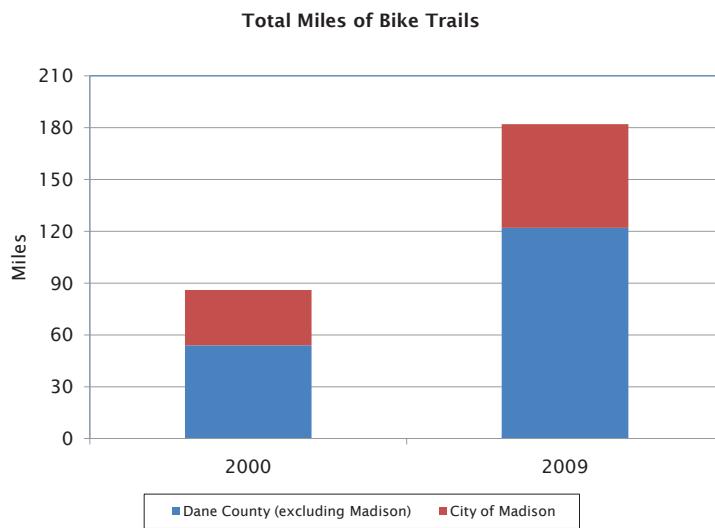
Carbon dioxide (CO_2) is the most common greenhouse gas released into the atmosphere by human activity; increasing levels of this pollutant ultimately contribute to climate change. However, the estimated CO_2 point source emissions for Dane County have been reduced during the past decade. Changes in energy use behavior, usage of energy-efficient products, and the purchase and/or generation of renewable-source electricity at the individual and/or community level continue to aid in the reduction of greenhouse gas emissions.

The amount of waste delivered to the Dane County landfill has increased by approximately 36% since 2000. Increases in materials that are recycled or reused were also reported during the past decade but still only compose an estimated 23% of the average waste produced. Both Dane County and the City of Madison have initiatives designed to provide alternatives to landfilling waste materials such as appropriate disposal of hazardous waste and pharmaceuticals, product and material exchanges to facilitate product recycling and reuse, and composting sites for yard and lawn debris. However, changes in individual behavior are also essential to improve appropriate waste disposal and recycling efforts; purchasing of recycled material drives the incentives to continue this market and builds demand for these products, reusing and/or donating usable products, and increase recycling efforts in the home are all excellent examples.

Appropriate water use is also essential to the sustainability efforts of Dane County and the City of Madison. The overuse and/or inefficient use of groundwater ultimately lead to reduced availability of this valuable resource to meet current and future demands. The purchase of more water efficient products including toilets, faucets, and showerheads allows improved water conservation at the household level; financial incentives such as the toilet rebate program initiated in 2009 attempt to increase the purchase of these products.

Similarly, demand for land resources for housing and industry has impacted the availability of these resources for agriculture, natural and preservation, and recreation acreage. Appropriate zoning and the continued incorporation of Smart Growth standards in land development projects support the development of “economically, environmentally, and socially sound” communities. One notable example of these efforts is the expansion of lands devoted to walking and biking trails. During the last decade the total miles of bike paths/ trails in Dane County has more than doubled from approximately 86 miles in 2000 to 182 miles currently; these totals include City of Madison bike trails which totaled 32 miles in 2000 and 60 miles in 2009 (Figure 10). The quality of these biking trails has gained Dane County a reputation for being one of the top bicycling areas in the country and earned the City of Madison a Gold award from the League of American Bicyclists.

Figure 10



Data provided by the Madison Area Transportation Planning Board