State of Illinois
Illinois Environmental Protection Agency

Illinois
Air Quality Report

2019

ILLINOIS ANNUAL AIR QUALITY REPORT 2019

Illinois Environmental Protection Agency
Bureau of Air
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Illinois Annual Air Quality Report 2019

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Executive Summary

This report presents a summary of air quality data collected throughout the State of Illinois during calendar year 2019. Data is presented for the six criteria pollutants (those for which air quality standards have been developed – particulate matter (PM_{10} and $PM_{2.5}$), ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide, and lead – along with some heavy metals, volatile organic compounds and toxic compounds. Monitoring was conducted at 64 different site locations collecting data from 145 instruments.

In terms of the Air Quality Index (AQI) air quality during 2019 was either good or moderate 96% of the time throughout Illinois. There were three days when air quality was considered unhealthy (category red). This compares with seven unhealthy days in 2018. The unhealthy days were due to elevated ozone concentrations in July and August. There were 13 days (12 for ozone and one for a combination of fine particulates and ozone) when air quality in some part of Illinois was considered Unhealthy for Sensitive Groups (category orange). This compares with 22 Unhealthy for Sensitive Groups days reported in 2018. Air quality trends for most of the criteria pollutants are continuing to show downward or stable trends below the level of the standards.

Stationary point source emission data has again been included. The data in the report reflects information contained in Illinois EPA's Integrated Comprehensive Environmental Management System (ICEMAN) as of December 31, 2019. Emission estimates are for the calendar year 2019 and are for the pollutants: particulate matter, volatile organic material, sulfur dioxide, nitrogen oxides, and carbon monoxide. Emission trends of these pollutants have been given for the years 1998 to the present. Emissions reported with the Annual Emissions Report have been provided starting with 1998 and are currently available through 2018. There has been a trend toward decreasing emissions over this time period.

Ozone (O_3)

Photochemical oxidants result from a complex series of atmospheric reactions initiated by sunlight. When reactive (non-methane) hydrocarbons and nitrogen oxides accumulate in the atmosphere and are exposed to the ultraviolet component of sunlight, the formation of new compounds, including ozone and peroxyacetylnitrate, takes place.

Absorption of ultraviolet light energy by nitrogen dioxide results in its dissociation into nitric oxide and an oxygen atom. The oxygen atoms, for the most part, react with atmospheric molecular oxygen (O_2) to form ozone (O_3). In general, nitric oxide will react with ozone to re-form nitrogen dioxide, completing the cycle. A build-up of ozone above the equilibrium concentration, which is defined by the reaction cycle, results when nitrogen oxide reacts with non-methane hydrocarbons. Oxygen atoms from the hydrocarbon radical oxidize nitric oxide to nitrogen dioxide without ozone being used up. Thus, ozone concentrations are not depleted and can build up quickly.

Ozone can also be formed naturally in the atmosphere by electrical discharge and in the stratosphere by solar radiation. The former process is not capable of producing significant urban concentrations of this pollutant; however, there is some belief that incursion of ozone from the stratosphere can contribute significantly to elevated ground level concentrations of ozone under certain meteorological conditions.

Injury to vegetation is one of the earliest manifestations of photochemical air pollution, and sensitive plants are useful biological indicators of this type of pollution. The visible symptoms of photochemical oxidant produced injury to plants may be classified as:

- Acute injury, identified by cell collapse with subsequent development of necrotic patterns.
- Chronic injury, identified by necrotic patterns or with other pigmented patterns.
- Physiological effects, identified by growth alterations, reduced yields, and changes in the quality of plant products. The acute symptoms are generally characteristic of a specific photochemical oxidant, though chronic injury patterns are not. Ozone injury to leaves is identified as a stripling or flecking. Adverse effects on sensitive vegetation have been observed from exposure to photochemical oxidant concentrations of about 100 micrograms per cubic meter (0.05 parts per million) for 4 hours.

Adverse effects on materials (rubber products and fabrics) from exposure to photochemical oxidants have not been precisely quantified, but have been observed at the levels presently occurring in many urban atmospheres.

Ozone accelerates the aging of many materials, resulting in rubber cracking, dye fading, and paint erosion. These effects are linearly related to the total dose of ozone and can occur at very low levels, given long duration exposures.

Ozone is a pulmonary irritant that affects the respiratory mucous membranes, other lung tissues, and respiratory functions. Clinical and epidemiological studies have demonstrated that ozone impairs the normal mechanical function of the lung, causing alterations in respiration – the most characteristic of which are shallow, rapid breathing and a decrease in pulmonary compliance. Exposure to ozone results in clinical symptoms such as chest tightness, coughing, and wheezing. Alterations in airway resistance can occur, especially to those with respiratory diseases (asthma, bronchitis, emphysema). These effects may occur in sensitive individuals, as well as in healthy exercising persons, at short-term ozone concentrations between 0.15 and 0.25 ppm.

Ozone exposure increases the sensitivity of the lung to bronchoconstrictive agents such as histamine, acetylcholine, and allergens, as well as increasing the individual's susceptibility to bacterial infection. Simultaneous exposure to ozone and sulfur dioxide can produce larger changes in pulmonary function than exposure to either pollutant alone.

Peroxyacetylnitrate (PAN) is an eye irritant, and its effects often occur in conjunction with the effects of ozone.

Two characteristics of ozone and photochemical oxidant exposures should be cited:

- Ozone itself is a primary cause of most of the health effects reported in toxicological and experimental human studies and the evidence for attributing many health effects to this substance alone is very compelling.

- Atmospheric photochemical substances are known to produce health effects, some of which are not attributable to pure ozone but may be caused by other photochemical substances in combination with ozone.

Particulate Matter (PM)

Not all air pollutants are in the gaseous form. Small solid particles and liquid droplets, collectively called particulates or aerosols, are also present in the air in great numbers and may constitute a pollution problem. Particulates entering the atmosphere differ in size and chemical composition. The effects of particulates on health and welfare are directly related to their size and chemical composition.

Particulate matter in the atmosphere consists of solids, liquids, and liquids-solids in combination. Suspended particulates generally refer to particles less than 100 micrometers in diameter (human hair is typically 100 micrometers thick). Particles larger than 100 micrometers will settle out of the air under the influence of gravity in a short period of time.

Typical sources emitting particles into the atmosphere are combustion of fossil fuels (ash and soot), industrial processes (metals, fibers, etc.), fugitive dust (wind and mechanical erosion of local soil), and photochemically produced particles (complex chain reactions between sunlight and gaseous pollutants). Combustion and photochemical products tend to be smaller in size (less than 1 micrometer); fugitive dust and industrial products are typically larger in size (greater than 1 micrometer).

Particles which cause the most health and visibility difficulties are those less than 1.0 micrometer in size. These particles are also the most difficult to reduce in numbers by the various industrial removal techniques. Rainfall accounts for the major removal of these smaller particles from the air.

One of the major problems associated with high concentrations of particulates is that the interaction between the particles, sunlight, and atmospheric moisture can potentially result in the climatic effects and diminished visibility (haze). Particles play a key role in the formation of clouds, and emissions of large numbers of particles can, in some instances, result in local increases in cloud formation and, possibly, precipitation. Particles in the size range of 0.1 to 1.0 micrometers are the most efficient in scattering visible light (wave length 0.4 to 0.7 micrometers) thereby reducing visibility. Particles combined with high humidity can result in the formation of haze which can cause hazardous conditions for the operation of motor vehicles and aircraft.

Particulate pollutants enter the human body by way of the respiratory system and their most immediate effects are upon this system. The size of the particle determines its depth of penetration into the respiratory system. Particles over 5 micrometers are generally deposited in the nose and throat. Those that do penetrate deeper in the respiratory system to the air ducts (bronchi) are often removed by ciliary action. Particles ranging in size from 0.5 - 5.0 micrometers in diameter can be deposited in the bronchi, with few reaching the air sacs (alveoli). Most particles deposited in the bronchi are removed by the cilia within hours. Particles less than 0.5 micrometer in diameter reach and may settle in the alveoli. The removal of particles from the alveoli is much less rapid and complete than from the larger passages. Some of the particles retained in the alveoli are absorbed into the blood.

Besides particulate size, the oxidation state, chemical composition, concentration, and length of time in the respiratory system

contribute to the health effects of particulates. Particulates have been associated with increased respiratory diseases (asthma, bronchitis, and emphysema), cardio-pulmonary disease (heart attack), and cancer.

Plant surfaces and growth rates may be adversely affected by particulate matter. Particulate air pollution also causes a wide range of damage to materials including corrosion of metals and electrical equipment and the soiling of textiles and buildings.

Sulfur Dioxide (SO_2)

Sulfur dioxide, (SO_2) is an atmospheric pollutant which results from combustion processes (mainly burning of fossil fuels containing sulfur compounds), refining of petroleum, manufacture of sulfuric acid, and smelting of ores containing sulfur. Reduction of sulfur dioxide pollution levels can generally be achieved through the use of low- sulfur content fuels or the use of chemical sulfur removal systems.

Once in the atmosphere, some sulfur dioxide can be oxidized (either photochemically or in the presence of a catalyst) to SO_3 (sulfur trioxide). In the presence of water vapor, SO_3 is readily converted to sulfuric acid (H_2SO_4) mist. Other basic oxides combine with SO_3 to form sulfate aerosols. Sulfuric acid droplets and other sulfates are thought to account for about 5 to 20 percent of the total suspended particulate matter in urban air. These compounds can be transported large distances and come back to earth as a major constituent of acid precipitation. Many of the resultant health problems attributed to SO_2 may be a result of the oxidation of SO_2 to other compounds.

The effects of SO_2 on health are irritation and inflammation of tissue that it directly contacts. Inhalation of SO_2 causes bronchial constriction resulting in an increased resistance to air flow, reduction of air volume, and an increase of respiratory rate and heart rate.

SO_2 can exacerbate pre-existing respiratory diseases (asthma, bronchitis, emphysema). The enhancement (synergism) by particulate matter of the toxic response to SO_2 has been observed under conditions which would promote the conversion of SO_2 to H_2SO_4. The degree of enhancement is related to the concentration of particulate matter. A twofold to threefold increase of the irritant response to SO_2 is observed in the presence of particulate matter capable of oxidizing SO_2 to H_2SO_4.

H_2SO_4 inhalation causes an increase in the respiratory system's mucous secretions, which reduces the system's ability to remove particulates via mucociliary clearance. This can result in an increased incidence of respiratory infection.

Carbon Monoxide (CO)

The major source of carbon monoxide (CO) is motor vehicles. The USEPA has kept under its jurisdiction the regulation of emission control equipment on new motor vehicles while the State's responsibility for reducing excessive ambient carbon monoxide levels is exercised by developing transportation plans for congested urban areas.

The toxic effects of high concentrations of CO on the body are well known. Carbon monoxide is absorbed by the lungs and reacts with hemoglobin (the oxygen-carrying molecule in the blood) to form carboxyhemoglobin (COHb). This reaction reduces the oxygen-carrying capacity of blood because the affinity of hemoglobin for CO is over 200 times that for oxygen. The higher the percentage of hemoglobin bound up in the form of carboxyhemoglobin, the more serious is the health effect.

The level of COHb in the blood is directly related to the CO concentration of the inhaled air. For a given ambient air CO concentration, the COHb level in the blood will reach an equilibrium concentration after a sufficient time period. This equilibrium COHb level will be maintained in the blood as long as the ambient air CO level remains unchanged. However, the COHb level will slowly change in the same direction as the CO concentration of the ambient air as a new equilibrium of CO in the blood is established.

The lowest CO concentrations shown to produce adverse health effects result in aggravation of cardiovascular disease. Studies demonstrate that these concentrations have resulted in decreased exercise time before the onset of pain in the chest and extremities of individuals with heart or circulatory disease. Slightly higher CO levels have been associated with decreases in vigilance, the ability to discriminate time intervals, and exercise performance.

Evidence also exists indicating a possible relationship between CO and heart attacks, the development of cardiovascular disease, and irregular fetal development.

Studies on the existing ambient levels of CO do not indicate any adverse effects on vegetation, materials, or other aspects of human welfare.

Nitrogen Dioxide (NO_2)

Nitrogen gas (N_2) is an abundant and inert gas which makes up almost 80 percent of the Earth's atmosphere. In this form, it is harmless to humans and essential to plant metabolism. Due to its abundance in the air, it is a frequent reactant in many combustion processes. When combustion temperatures are extremely high, as in the burning of coal, oil, natural gas, and gasoline, atmospheric nitrogen gas may combine with molecular oxygen (O_2) to form various oxides of nitrogen (NO_x). Of these, nitric oxide (NO) and nitrogen dioxide (NO_2) are the most important contributors to air pollution; NO_x generally is used to represent these. Nitric oxide is a colorless and odorless gas. It is the primary form of NO_x resulting from the combustion process. NO_x contributes to haze and visibility reduction. NO_x is also known to cause deterioration and fading of certain fabrics and damage to vegetation. Depending on concentration and extent of exposure, plants may suffer leaf lesions and reduced crop yield.

Sensitivity of plants to NO_x depends on a variety of factors including species, time of day, light, stage of maturity, and the presence or absence of other air pollutants such as sulfur dioxide and ozone.

There is a lack of strong evidence associating health effects with most NO_x compounds. NO_2, a secondary derivative of atmospheric nitric oxide, however, has been clearly established as exerting detrimental effects on human health and welfare.

NO_2 can cause eye irritation at concentrations as low as 0.07 ppm. NO_2 can cause an increase in airway resistance, an increase in respiratory rate, an increase in sensitivity to bronchoconstrictors, a decrease in lung compliance, and an enhanced susceptibility to respiratory infections. NO_2 is a deep lung irritant capable of producing pulmonary edema if inhaled in sufficient concentrations. When NO_2 is inhaled in concentrations with other pollutants, the effects are additive.

NO_x may also react with water to form corrosive nitric acids, a major component of acid precipitation. Additionally, NO_x and various other pollutants (e.g., hydrocarbons) may react in the presence of sunlight to product photochemical oxidants.

Lead (Pb)

Historically, atmospheric lead came primarily from combustion of leaded gasoline. However, the use of unleaded gas since 1975 has reduced mobile source lead emissions by over 90%. Currently stationary sources, such as lead smelters, battery manufacturers, and iron and steel producers can contribute significant amounts of lead to their immediate vicinity.

Lead is a stable compound which persists and accumulates both in the environment and in the human body. Lead enters the human body through ingestion and inhalation with consequent absorption into the blood stream and distribution to all body tissues. No safe level of lead in the blood has been identified. Clinical, epidemiological and toxicological studies have demonstrated exposure to lead has a broad range of health effects.

Since 1990, over 6,000 new health studies have been conducted. These studies have shown that children are the most susceptible to the

damaging effects of lead because they are more likely to ingest lead due to hand-to-mouth activity and early body development. Lead exposure has been found to interfere with the developing nervous system including the brain. This can potentially lead to intelligence quotient loss, poor academic achievement, permanent learning disabilities, and behavioral problems. These effects can persist into early adulthood.

Kidney and neurological cell damage has also been associated with lead exposure. Animal studies have demonstrated that lead can contribute to reduced fertility and birth defects.

Other potential effects from lead exposure are weakened immune systems, restlessness, headaches, increased blood pressure, and cardiovascular disease.

Illinois Ambient Air Quality Standards and Episode Levels

Consistent with the intent of the Environmental Protection Act of the State of Illinois, Illinois has adopted ambient air quality and episode standards that specify maximum permissible short-term and long-term concentrations of various contaminants in the atmosphere. Ambient air quality and episode standards are limits on atmospheric concentrations of air contaminants established for the purpose of protecting the public health and welfare.

The Illinois and National Ambient Air Quality Standards (NAAQS) consist of a primary and secondary standard for each pollutant (contaminant) as presented in **Table 1**. The Illinois Air Pollution Episode Levels are presented in **Table 2**. The primary standard and episode criterion represents the level of air quality which is necessary to protect the public health. Air entering the respiratory tract must not jeopardize health. Therefore, the air quality standards must, as a minimum, provide air which will not adversely affect, through acute or chronic symptoms, the public health.

The secondary standard defines the level of air quality which is necessary to protect the public welfare. This includes, among other things, effects on crops, vegetation, wildlife, visibility, and climate, as well as effects on materials, economic values, and on personal comfort and well-being. The standards are legally enforceable limitations, and any person causing or contributing to a violation of the standards is subject to enforcement proceedings under the Environmental Protection Act. The standards have also been designed for use as a basis for the development of implementation plans by State and local agencies for the abatement and control of pollutant emissions from existing sources, and for the determination of air contaminant emission limitations to ensure that population, industry, and economic growth trends do not add to the region's air pollution problems.

Table 1: Summary of National and Illinois Ambient Air Quality Standards					
Pollutant		**Primary/ Secondary**	**Averaging Time**	**Level**	**Form**
Carbon Monoxide		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead		primary and secondary	Rolling 3-month average	0.15 µg/m^3	Not to be exceeded
Nitrogen Dioxide		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb	Annual Mean
Ozone		primary and secondary	8-hour	0.070 ppm	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution	$PM_{2.5}$	primary	Annual	12.0 µg/m^3	Annual mean, averaged over 3 years
		secondary	Annual	15.0 µg/m^3	Annual mean, averaged over 3 years
		primary and secondary	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide		primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year
$PM_{2.5}$ standards are referenced to local conditions of temperature and pressure rather than standard conditions (760 mmHg and 25 degrees Celsius).					

Table 2: Illinois Air Pollution Episode Levels				
Pollutant	**Advisory**	**Yellow Alert**	**Red Alert**	**Emergency**
Particulate Matter (µg/m^3)	2-hour 420	24-hour 350	24-hour 420	24-hour 500
Sulfur Dioxide (ppm)	2-hour 0.30	4-hour 0.30	4-hour 0.35	4-hour 0.40
Carbon Monoxide (ppm)	2-hour 30	8-hour 15	8-hour 30	8-hour 40
Nitrogen Dioxide (ppm)	2-hour 0.40	1-hour 0.60 or 24-hour 0.15	1-hour 1.20 or 24-hour 0.30	1-hour 1.60 or 24-hour 0.40
Ozone (ppm)	1-hour 0.12	1-hour 0.20	1-hour 0.30	1-hour 0.50

OZONE

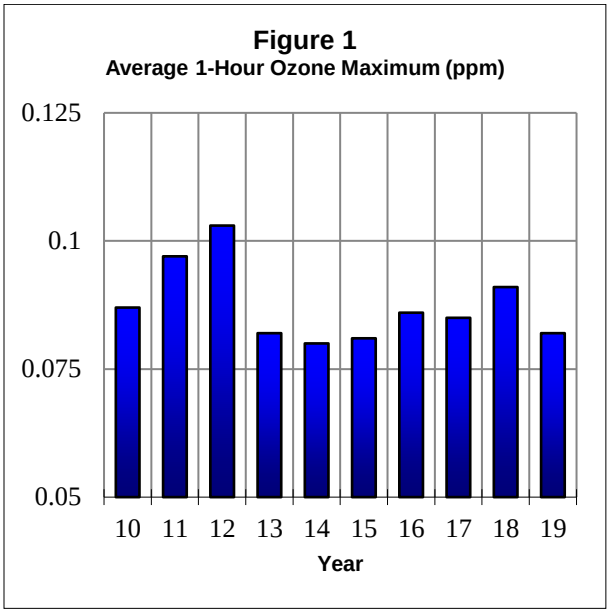
Monitoring was conducted at 37 locations during the March-October "ozone season" and at least 75 percent data capture was obtained at all 37 sites.

Lisle recorded the highest 1-hour concentration of 0.112 ppm. This compares with the highest concentration of 0.108 ppm in 2018 at Evanston. The highest value in the Metro-East area in 2019 was 0.108 ppm recorded at Wood River, compared with a high in 2018 of 0.116 ppm at Alton and East St. Louis.

Data are also presented to compare with the current 8-hour standard as of 2016 of 0.070 ppm. The appropriate statistic for comparison with the 8-hour standard is the fourth highest value, which is averaged over a three-year period. There were two sites in Illinois that had a fourth-high value above 0.070 ppm in 2019 compared with 19 sites in 2018. The highest fourth-high value was 0.071 ppm at Elgin and Chicago's Southwater Filtration Plant. The highest level in the Metro-East area was 0.070 ppm at Wood River. For the three-year period 2017-2019, eight sites had a fourth-high average above 0.070 ppm (Table B4).

Figure 1 shows for each year the statewide average of each site's highest hourly ozone value for the ten-year period 2010-2019. The graph shows some year-to-year fluctuation with high years occurring during summers more favorable for ozone formation and low years in summers less conducive for ozone formation. The statewide average for 2019 was 0.082 ppm compared with 0.091 ppm in 2018 and 0.085 ppm in 2017.

Statewide, the total number of 1-hour excursion days in 2019 was zero compared with zero in 2018 and zero in 2017.



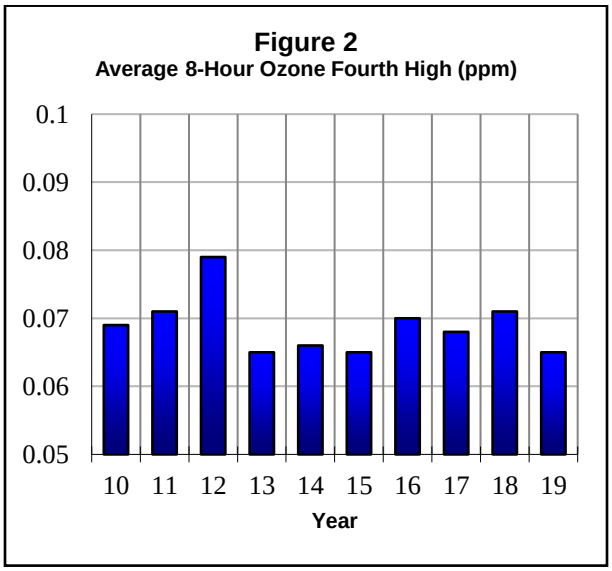


Figure 2 shows for each year the statewide annual average of the fourth highest 8-hour ozone value for the same period 2010-2019. The statewide average for 2018 was 0.065 ppm compared with 0.071 ppm in 2018 and 0.0768 in 2017.

PARTICULATE MATTER

Monitoring was conducted at 34 sites for $PM_{2.5}$. In 2019, no sites recorded an average above 12.0 ug/m^3, the level of the annual standard. The statewide average of the annual averages was 9.0 ug/m^3 in 2018 compared to 9.3 ug/m^3 in 2018.

Figure 3 shows the trend of the statewide annual averages for $PM_{2.5}$ for the period 2010-2019. There was one exceedance of the 24-hour standard of 35 ug/m^3 in 2019 compared with two exceedances in 2018 and two exceedances in 2017. The statewide peak of 35.9 ug/m^3 was recorded at Rockford. In 2019, the statewide 24-hour average was 21.4 ug/m^3. This compares with 21.3 ug/m^3 in 2018 and 20.1 ug/m^3 in 2017.

In 2019 there were four sites monitoring PM_{10}. The statewide annual average was 27 ug/m^3 compared with 24 ug/m^3 in 2018 and 23 ug/m^3 in 2017. The highest annual average was 35 ug/m^3 in Granite City. The lowest annual was 14 ug/m^3 at Northbrook.

For PM_{10}, the statewide average of the maximum 24-hour averages in 2019 was 77 ug/m^3 compared with 81 ug/m^3 in 2018 and 81 ug/m^3 in 2017. **Figure 4** depicts this information for the period 2010-2019.

There were no exceedances of the 24-hour primary standard of 150 ug/m^3. The highest 24-hour average was recorded in Granite City with a value of 104 ug/m^3 compared with a high 24-hour value of 103 ug/m^3 in Granite City in 2018.

Figure 3
Particulate Matter ($PM_{2.5}$) Annual Trends (ug/m^3)

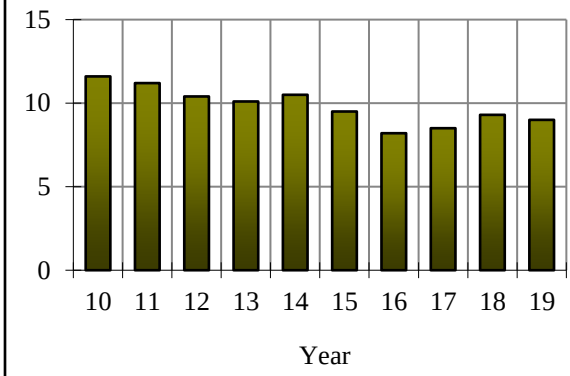
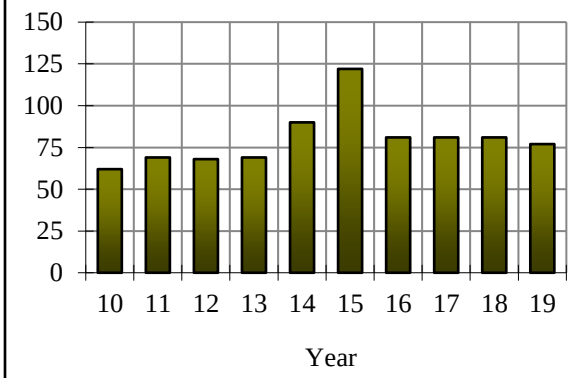


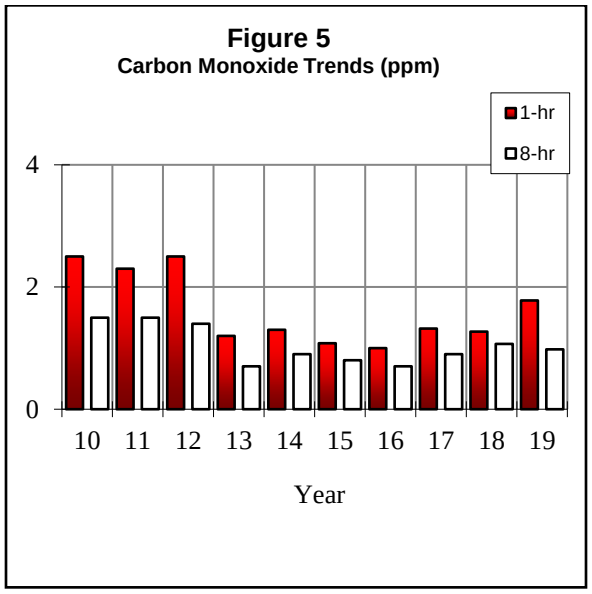
Figure 4
Particulate Matter (PM_{10}) 24-Hour Trends (ug/m^3)



CARBON MONOXIDE

There were no exceedances of either the 1-hour primary standard of 35 ppm or the 8-hour primary standard of 9 ppm in 2019. The highest 1-hour average was 3.1 ppm recorded at the Lansing near-road location. The highest 8-hour average was 1.8 ppm also recorded at the Lansing near-road location.

Figure 5 shows the trend for the period 2010-2019 for the statewide average of the 1-hour and 8-hour high CO values. The statewide average of the 1-hour high was 1.8 ppm in 2018 compared with 1.3 ppm in 2018. The statewide average for the 8-hour high was 1.0 ppm in 2019 compared with 1.1 ppm in 2018.



SULFUR DIOXIDE

There were no exceedances of the 1-hour primary standard of 75 ppb in 2019 compared with 11 exceedances in 2018. There were no exceedances of the 3-hour secondary standard of 500 ppb in 2019. The highest 1-hour average was 61 ppb recorded in Mount Carmel compared with 115 ppb in Decatur in 2018. The statewide average of the 1-hour high in 2019 was 26 ppb. This compares with 34 ppb in 2018 and 35 ppb in 2017. The highest 3-hour average of 45 ppb was recorded in Decatur in 2019 compared with 72 ppb in Decatur in 2018. There were no sites over the primary 1-hour standard of 75 ppb for the 2017-2019 period (Table B17).

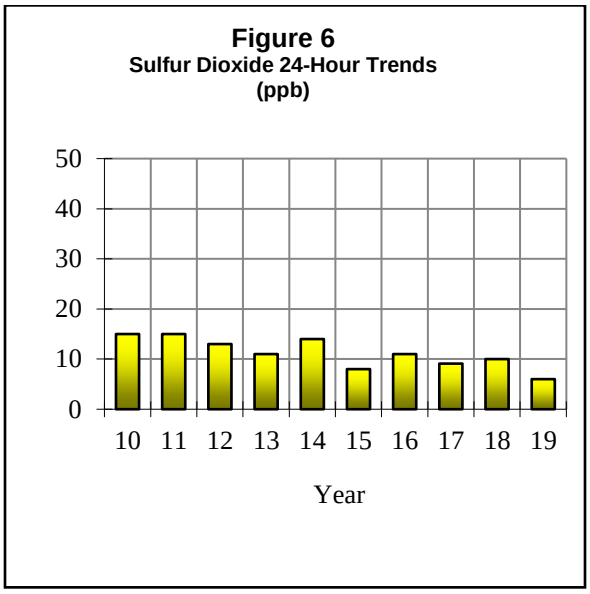
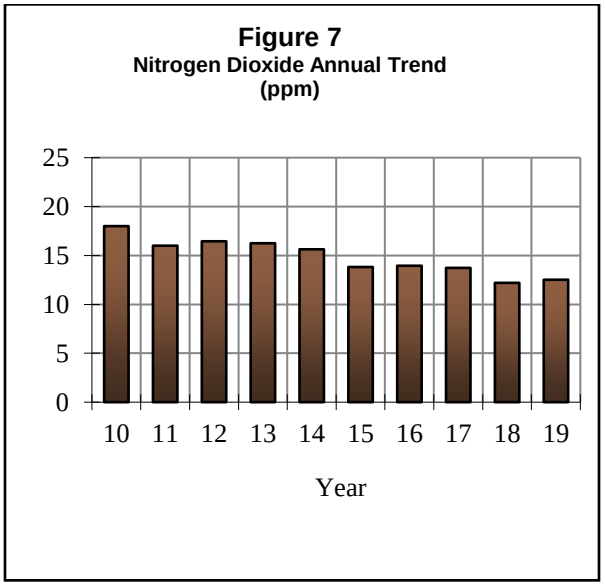


Figure 6 shows the statewide trend for the maximum 24-hour averages for the period 2010-2019. The statewide average for 2019 was 6 ppb compared with the 2018 average of 10 ppb.

NITROGEN DIOXIDE

There were no violations of the annual primary standard of 53 ppb recorded in Illinois during 2019. The highest annual average of 17 ppb was recorded at Schiller Park. The statewide average for 2019 was 12.5 ppb compared with 12.2 ppb in 2018 and 13.7 ppb in 2017. There were no violations of the 1-hour primary standard, and there were also no violations in 2018. There were no sites over the 1-hour primary standard of 100 ppb for the 2017-2019 period compared to zero sites for the 2016-2018 period (Table B20).

Figure 7 depicts the trend of statewide averages from 2010-2019. There have been no violations of the annual standard since 1980.



LEAD

Perhaps the greatest success story in controlling criteria pollutants is lead. As a direct result of the federal motor vehicle control program, which has required the use of unleaded gas in automobiles since 1975, lead levels have decreased by more than 90 percent statewide. Based on health studies, the lead standard was revised in 2008 from a quarterly mean of 1.5 ug/m^3 to a rolling three-month maximum mean of 0.15 ug/m^3.

There were no violations of the rolling three-month maximum mean standard for the 2017 to 2019 period (Table B23).

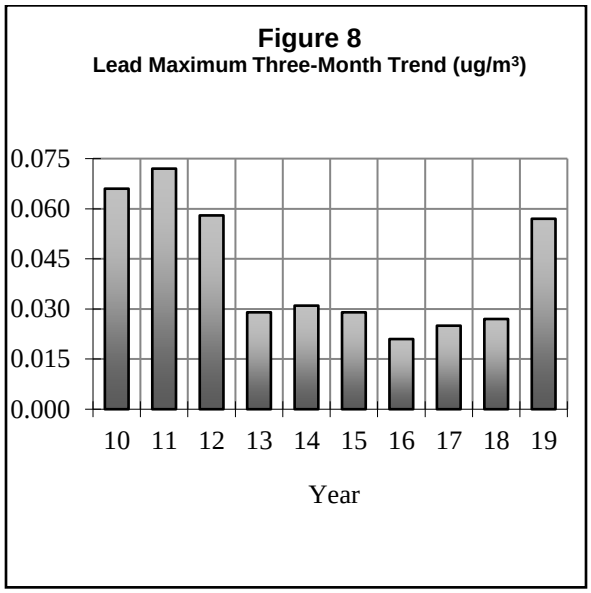


Figure 8 shows the trend of the statewide maximum rolling three-month averages from 2010-2019. The decrease in 2013 was due to various controls having been implemented at facilities that have source-oriented monitors. The increase in 2019 was due to lead emission control problems at one facility in Granite City. The problems were discussed with the facility and corrective actions taken. All monitoring locations in the State have three-year maximum averages under the national standard for lead (Table B23). The statewide average for all sites was 0.057 ug/m^3 in 2019 compared to 0.027 ug/m^3 in 2018 and 0.025 ug/m^3 in 2017.

FILTER ANALYSIS RESULTS

The total suspended particulate samples were analyzed, in addition to lead, for specific metals. Several of the metals analyzed (arsenic, beryllium, cadmium, chromium, manganese, and nickel) have known toxic properties. Other metals such as iron can be used as tracers to help identify sources of high particulate values. There are currently no state or federal ambient air quality standards for these parameters.

The areas with the highest metals concentrations in Illinois are generally the heavily-industrialized areas of the Metro-East (Granite City and East St. Louis), south Chicago, and near source-oriented monitors. The highest 24-hour average for arsenic was 0.020 ug/m^3 measured in Granite City. There were no measurable beryllium 24-hour averages recorded statewide. The monitor at Washington High School in Chicago recorded the highest cadmium concentrations with a 24-hour average of 0.011 ug/m^3. The highest 24-hour chromium average was 0.031 ug/m^3 recorded at Washington High School in Chicago. The highest iron, manganese, and nickel values were recorded in Granite City..

TOXIC COMPOUNDS

Sampling for toxic compounds other than metals (see Filter Analysis Section, **Table B24**) was conducted at Northbrook and Schiller Park. Most compounds were below the method detection limits. **Table B25** has a listing of various toxic compound maximums and annual averages.

The Air Quality Index (AQI) is the national standard method for reporting air pollution levels to the public. An index such as the AQI is necessary because there are several air pollutants, each with different typical ambient concentrations and each with different levels of harm, and to report actual concentrations for all of them would be confusing. The AQI uses a single number and a short descriptor to define the air quality in an easy-to-remember and easy-to-understand way, taking all the pollutants into account.

The AQI is based on the short-term federal National Ambient Air Quality Standards (NAAQS), for six of the criteria pollutants, namely:

- Ozone (O_3)
- Sulfur dioxide (SO_2)
- Carbon monoxide (CO)
- Particulate matter (PM_{10})
- Particulate matter ($PM_{2.5}$)
- Nitrogen dioxide (NO_2)

In each case, the short-term primary NAAQS corresponds to 100 on the AQI scale – the top end of the Moderate category. The next concentration above the NAAQS would begin the Unhealthy for Sensitive Groups category at 101 on the AQI scale. **Table 3** lists all the AQI ranges and their descriptor categories. Each category corresponds to a different level of health concern. **Table 4** lists each AQI category and its corresponding meaning.

Unhealthy for Sensitive Groups occurs on occasion for 8-hour ozone, $PM_{2.5}$, and downwind of certain SO_2 sources. Unhealthy air quality is uncommon in Illinois, and Very Unhealthful air quality is rare. There has never been an occurrence of Hazardous air quality in Illinois.

The AQI is computed as follows: data from pollution monitors in an area are collected, and the AQI sub index for each pollutant is computed using formulas derived from the index and concentration relations. Nomograms and tables are also available for this purpose. The data used are:

- O_3 estimate of the highest 8-hour average for that calendar day
- SO_2 the highest 1-hour or most recent 24-hour average
- CO the highest 8-hour average so far that calendar day
- PM_{10} the most recent 24-hour average
- $PM_{2.5}$ estimate of the 24-hour average for that calendar day
- NO_2 the highest 1-hour average

Continuous monitors are utilized for all the pollutants, including PM_{10} and $PM_{2.5}$.

Once all the sub-indices for the various pollutants have been computed, the highest is chosen by inspection. That is the AQI for the area and the pollutant giving rise to it is the "critical pollutant." Thus if, for Anytown, Illinois, the following sub-indices were obtained:

O_3 = 45
SO_2 = 23
CO = 19
PM_{10} = 41
$PM_{2.5}$ = 61

Anytown's AQI for that day would be 61, which is in the Moderate category, and the critical pollutant would be particulates ($PM_{2.5}$). If data for one of the pollutants used in computing AQI is missing, the AQI is computed using the data available, ignoring the missing data. It occasionally happens that two pollutants have the same sub index; in such cases there are two critical pollutants.

The Illinois EPA issues an AQI forecast for 14 areas, or sectors, in Illinois (**Table 5**). These correspond to metropolitan areas with populations greater than 100,000.

Table 3: Air Quality Index Categories		
AQI Values	**AQI Descriptor**	**Colors**
***When the AQI is in this range*:**	***...air quality conditions are:***	***...as symbolized by this color:***
0-50	Good	Green
51-100	Moderate	Yellow
101-150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

Table 4: Air Quality Index Health Concerns		
Air Quality Index Levels of Health Concern	**Numerical Value**	**Meaning**
Good	0 to 50	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	51 to 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151 to 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 to 300	Health warnings of emergency conditions. The entire population is more likely to be affected.
Hazardous	301 to 500	Health alert: everyone may experience more serious health effects.

Table 5: Air Quality Index Sectors in Illinois	
Sector	**Coverage Area**
Lake County	Lake County only
Chicago	All areas within the city limits of Chicago
North and West Suburbs	Parts of Cook, Du Page, and McHenry Counties north of I-290 (Eisenhower Expressway) and outside of the Chicago city limits
South and West Suburbs	Parts of Cook and Du Page Counties south of I-290 and outside of Chicago city limits
Will County/Joliet	Will County only
Aurora-Elgin	The eastern part of Kane County
Rockford	Approximately 10-mile diameter circle centered on downtown Rockford
Quad Cities	The Illinois portion of the Quad Cities area
Peoria	Approximately 10-mile diameter circle centered on downtown Peoria in parts of Peoria, Woodford, and Tazewell Counties
Champaign	Champaign-Urbana Metropolitan Area
Normal	Bloomington-Normal Metropolitan Area
Decatur	Decatur Metropolitan Area
Springfield	Springfield Metropolitan Area
Metro-East St. Louis	The Illinois portion of the St. Louis Metropolitan Area. Approximately 15 miles wide east of the Mississippi River in Madison and St. Clair Counties

Illinois EPA AQI forecasts and AQI information can be obtained on EPA's AirNow website at http://www.airnow.gov. The AirNow website shows estimated real-time AQI levels for all sectors in Illinois as well as other areas around the country. AQI information can further be obtained via e-mail and/or cell phones through the EnviroFlash program located at http://illinois.enviroflash.info/signup.cfm. The AirNow website and residents subscribed to EnviroFlash program can also receive alerts when high pollution levels are occurring or expected to occur. Additionally, Illinois AQI forecasts and current AQI levels are picked up and reported by various media outlets, weather websites, and electronic application programs.

2019 Illinois AQI Sector Summary

In order to present a more representative AQI, 24-hour calendar day FRM $PM_{2.5}$ and PM_{10} values from the total network were used to determine the percentages in **Figure 9** even though some of these values were not available for issuing the daily AQI.

Air quality was still in the "Good" and "Moderate" categories most often in 2019. Most sectors had a higher frequency of "Good" than "Moderate", and all sectors had a higher frequency of "Moderate" than "Unhealthy for Sensitive Groups." Lake County, Aurora-Elgin, Joliet/Will County, Quad Cities, Peoria, Champaign, Normal, Decatur, and Springfield sectors had 65 percent or more of the days in the "Good" category.

Within AQI sectors there were 28 occurrences of "Unhealthy for Sensitive Groups" air quality and 3 occurrences of "Unhealthy" air quality in 2019. The sector breakdown for "Unhealthy for Sensitive Groups" was two in Lake County, five in Chicago, four in North & West Suburbs, four in South & West, four in Aurora-Elgin, three in Will County, one in Rockford, two in Quad Cities, two in Peoria and one in Metro-East. The sector breakdown for "Unhealthy" was one in South & West Suburbs and two in Metro-East. **Figure 9** presents the AQI statistics for each sector. The pie chart shows the percent of days each sector was in a particular category.

In 2019, there were no ozone advisories issued in Illinois. An advisory is declared when ozone levels have reached the level of the former 1-hour standard (0.125 ppm) on a particular day. In the Chicago MSA there were zero Air Pollution Action Days issued in 2019. This compares with eight in 2018.

Figure 9: 2019 Air Quality Index Summaries by Sector

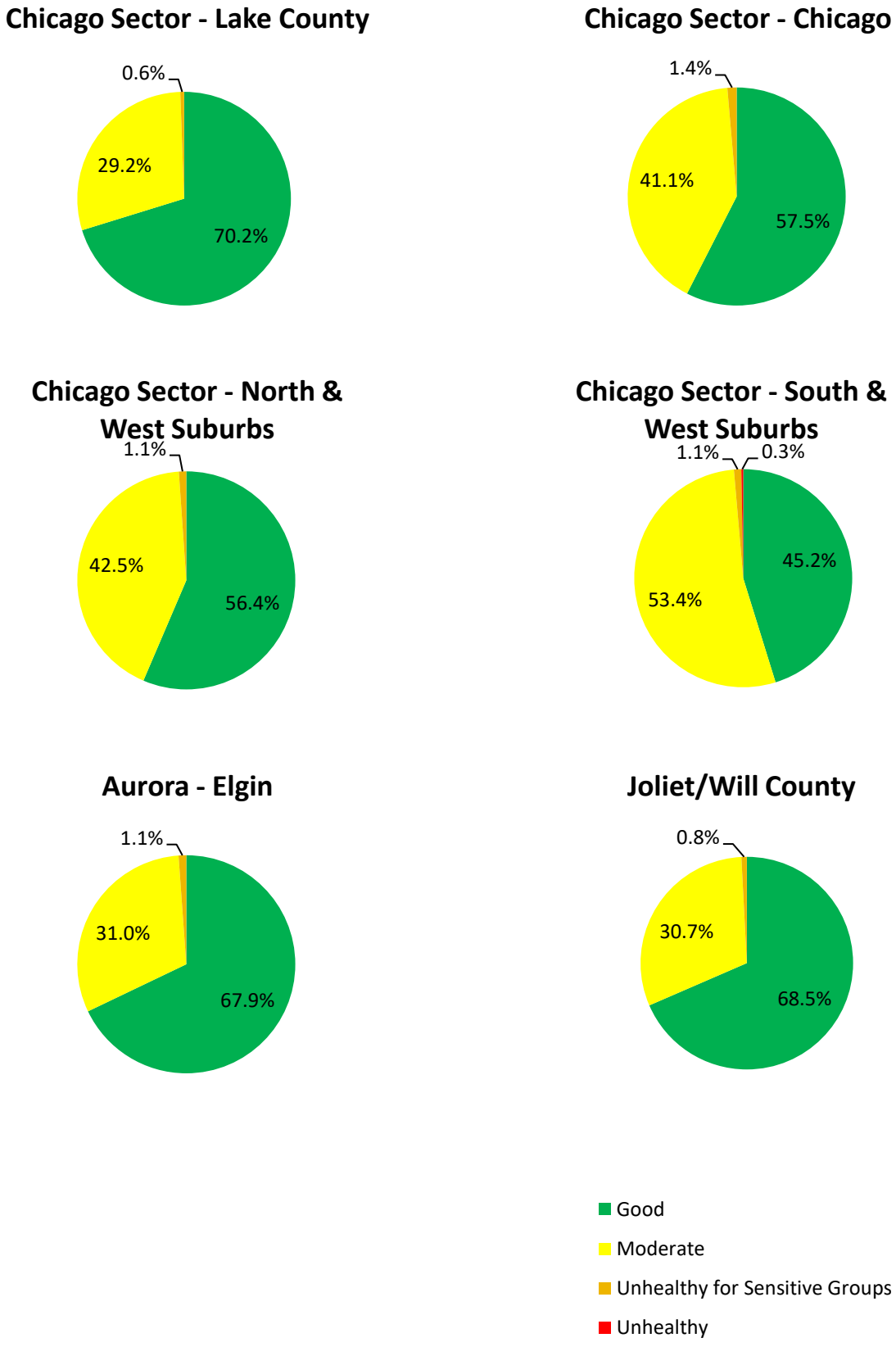


Figure 9: 2019 Air Quality Index Summaries by Sector

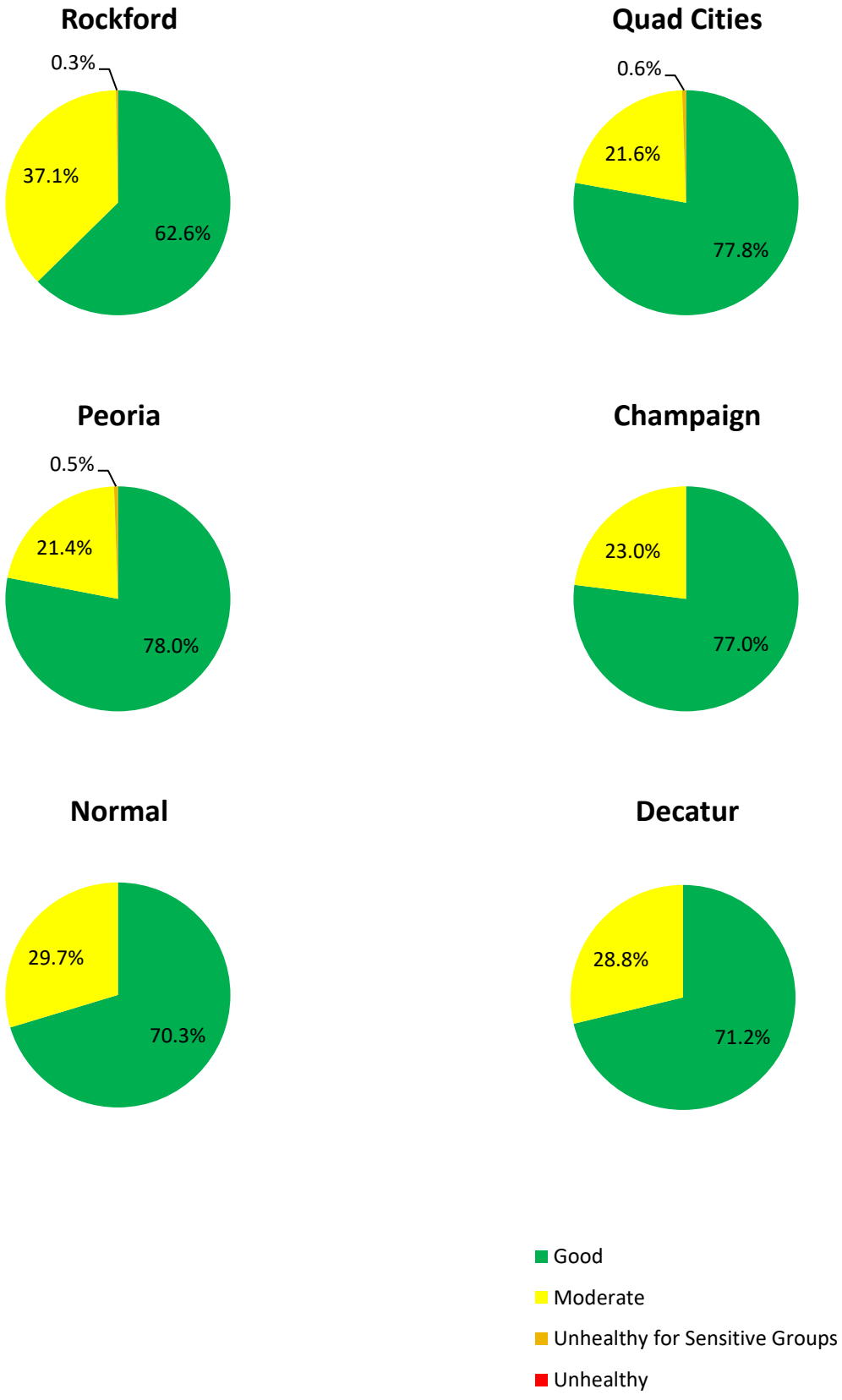
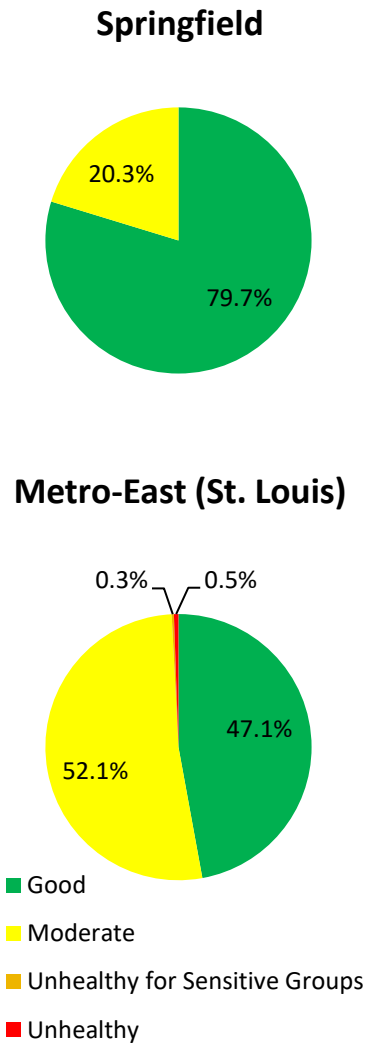


Figure 9: 2019 Air Quality Index Summaries by Sector



Since the late 1970s, the Illinois EPA's Division of Air Pollution Control has maintained a database of stationary point source emissions for the entire State. 40 CFR 51.211 requires Illinois to include in its State Implementation Plan "... procedures for requiring owners or operators of stationary sources to maintain records of... a) Information on the nature and amount of emissions from the stationary source and b) other information as may be necessary..." The emission database maintained by the Division of Air Pollution Control has changed over time.

The current emissions inventory is known as the Integrated Comprehensive Environmental Management System (ICEMAN) and includes emission data on approximately 6,200 active sources (including 3,631 in the Registration of Smaller Sources, or ROSS, program) throughout the State. The ICEMAN data includes source addresses; source emission totals; permit data such as expiration date and status; emission unit data such as name, hours of operation, operating rate, fuel parameters, and emissions; control equipment data such as control device name, type, and removal efficiencies; and stack parameters. Reported emissions and Agency-calculated emissions are stored separately.

The group responsible for the entry of emission inventory data is the Inventory Unit of the Air Quality Planning Section, and uses permit applications, the issued permit, and data reported on annual emissions reports to compile the inventory.

The following tables and graphs are an analysis of the emissions data contained in ICEMAN at the end of 2019. It is important to note emissions contained in the ICEMAN are not necessarily the actual emissions that entered the atmosphere. This is due to the fact that when an air pollution permit is applied for, the applicant provides maximum and average emission rates. The maximum emission rate reflects what the applicant believes the emission rate would be at maximum production. The average emission rate reflects emissions at the applicant's most probable production rate. The Inventory Unit has been updating its estimated emissions to more accurately reflect the reported emissions.

To calculate the distribution of emissions for the individual categories, the source classification code (SCC) field was used from the ICEMAN. The SCC is an eight-digit code that breaks emission units into logical categories. SCCs are provided by the USEPA.

To produce the following tables, the first three digits of the SCC were used. Only categories that contributed significantly to the overall total are listed in the following sections. The complete category breakdown can be found in Appendix C.

Volatile Organic Material

Figure 10
Volatile Organic Material
Emission Trend (1000s of Tons/Year)

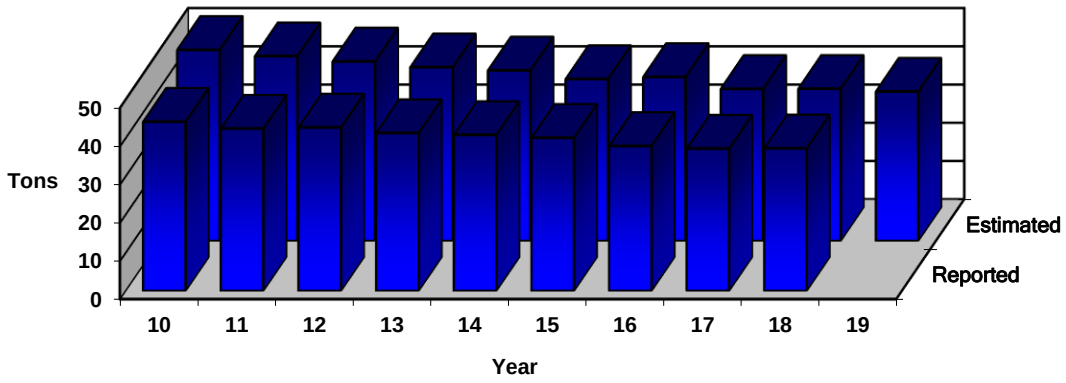


Table 6: Volatile Organic Material Emissions - 2019			
Category	**Estimated Emissions (tons)**	**Category Contribution**	**Cumulative Percent**
Food/Agriculture	9,432.5	24.14%	24.14%
Surface Coating Operations	6,064.1	15.52%	39.66%
Chemical Manufacturing	5,679.5	14.54%	54.20%
Petroleum Product Storage	2,492.5	6.38%	60.58%
Fuel Combustion	2,481.5	6.35%	66.93%
Printing/Publishing	2,382.2	6.10%	73.03%
Petroleum Industry	1,748.7	4.48%	77.50%
Rubber and Plastic Products	1,603.5	4.10%	81.61%
Bulk Terminal/Plants	1,052.0	2.69%	84.30%
Mineral Products	999.7	2.56%	86.86%
Organic Chemical Storage	775.3	1.98%	88.84%
Secondary Metal Production	760.1	1.95%	90.79%
Fabricated Metal Products	667.7	1.71%	92.50%
Solid Waste Disposal	572.1	1.46%	93.96%
Organic Solvent Use	502.0	1.28%	95.25%
Petroleum Marketing/Transport	358.5	0.92%	96.17%
Organic Solvent Evaporation	354.5	0.91%	97.07%
All Other Categories	1,143.7	2.93%	100.00%

PM_{10}

Figure 11
PM_{10} Emission Trend
(1000s of Tons/Year)

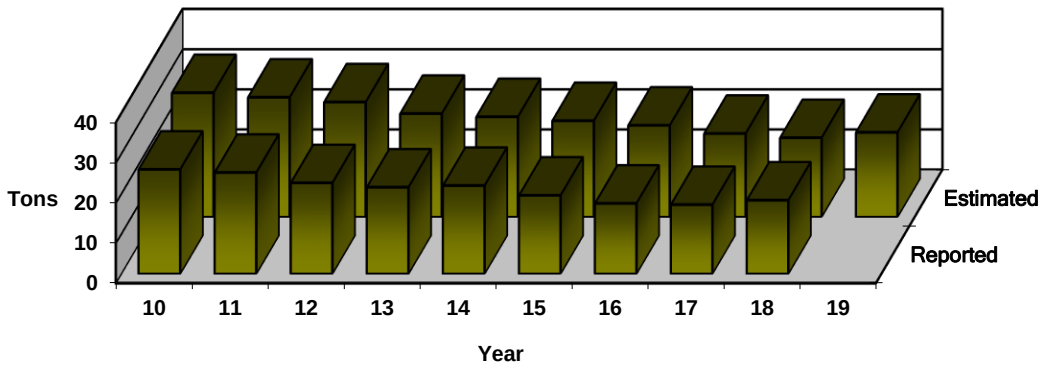


Table 7: Distribution of PM_{10} Emissions – 2019

Category	Estimated Emissions (tons)	Category Contribution	Cumulative Percent
Fuel Combustion	5,597.8	26.57%	26.57%
Food/Agriculture	5,497.3	26.10%	52.67%
Mineral Products	4,093.1	19.43%	72.10%
Petroleum Industry	1,234.2	5.86%	77.96%
Chemical Manufacturing	1,023.5	4.86%	82.81%
Primary Metal Production	882.7	4.19%	87.00%
Secondary Metal Production	869.2	4.13%	91.13%
Solid Waste Disposal	530.0	2.52%	93.65%
Fabricated Metal Products	270.0	1.28%	94.93%
Surface Coating Operations	239.9	1.14%	96.07%
Process Cooling	237.7	1.13%	97.19%
All Other Categories	591.0	2.81%	100.00%

Carbon Monoxide

Figure 12
Carbon Monoxide Emission
Trend (1000s of Tons/Year)

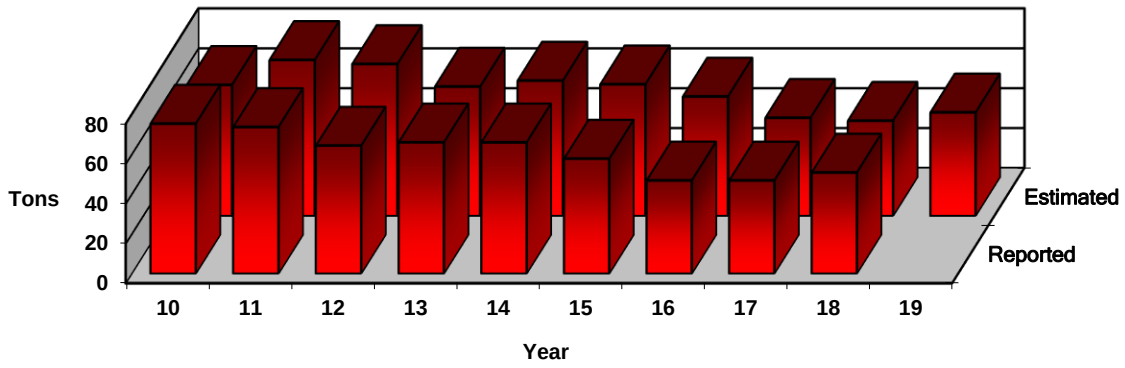


Table 8: Distribution of Carbon Monoxide Emissions - 2019

Category	Estimated Emissions (tons)	Category Contribution	Cumulative Percent
Fuel Combustion	25,238.0	48.57%	48.57%
Primary Metal Production	12,408.3	23.88%	72.45%
Mineral Products	3,334.4	6.42%	78.87%
Petroleum Industry	2,477.7	4.77%	83.64%
Solid Waste Disposal	2,385.8	4.59%	88.23%
Secondary Metal Production	1,906.6	3.67%	91.90%
Chemical Manufacturing	1,827.2	3.52%	95.41%
Food/Agriculture	1,189.6	2.29%	97.70%
Oil and Gas Production	244.4	0.47%	98.17%
Surface Coating Operations	233.0	0.45%	98.62%
Fabricated Metal Products	191.7	0.37%	98.99%
All Other Categories	524.3	1.01%	100.00%

Sulfur Dioxide

Figure 13
Sulfur Dioxide Emission
Trend (1000s of Tons/Year)

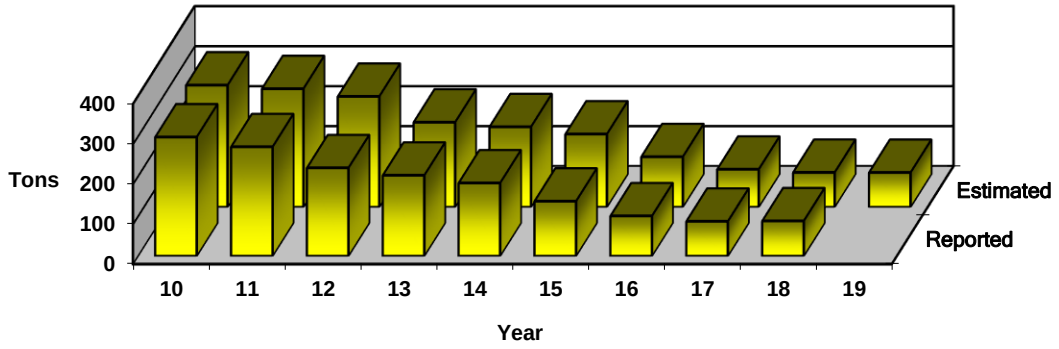


Table 9: Distribution of Sulfur Dioxide Emissions - 2019

Category	Estimated Emissions (tons)	Category Contribution	Cumulative Percent
Fuel Combustion	72,361.7	84.02%	84.02%
Mineral Products	6,261.1	7.27%	91.29%
Primary Metal Production	2,533.5	2.94%	94.23%
Food/Agriculture	1,436.7	1.67%	95.90%
Petroleum Industry	1,299.7	1.51%	97.41%
Solid Waste Disposal	1,122.2	1.30%	98.71%
Chemical Manufacturing	912.3	1.06%	99.77%
All Other Categories	198.4	0.23%	100.00%

Nitrogen Oxides

Figure 14
Nitrogen Oxide Emission
Trend (1000s of Tons/Year)

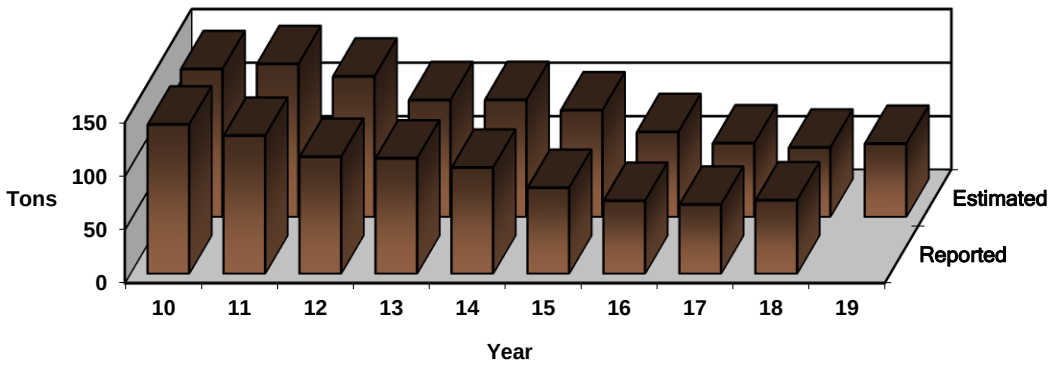


Table 10: Distribution of Nitrogen Oxide Emissions - 2019

Category	Estimated Emissions (tons)	Category Contribution	Cumulative Percent
Fuel Combustion	51,165.9	74.69%	74.69%
Mineral Products	6,699.2	9.78%	84.47%
Petroleum Industry	3,771.5	5.51%	89.97%
Chemical Manufacturing	1,468.9	2.14%	92.12%
Primary Metal Production	1,208.4	1.76%	93.88%
Food/Agriculture	1,137.9	1.66%	95.54%
Solid Waste Disposal	788.2	1.15%	96.69%
Secondary Metal Production	629.5	0.92%	97.61%
Oil and Gas Production	627.8	0.92%	98.53%
Surface Coating Operations	473.6	0.69%	99.22%
All Other Categories	536.1	0.78%	100.00%

Description of the Air Sampling Network

The Illinois air monitoring network is composed of instrumentation owned and operated by both the Illinois EPA and by cooperating local agencies. This network has been designed to measure ambient air quality levels throughout the State of Illinois following federal guidelines.

The network contains both continuous and non-continuous instruments. The continuous instruments operate throughout the year, while non-continuous instruments operate intermittently based on the schedule shown in **Table A1**. This is the official non-continuous sampling schedule used by the Illinois EPA during 2019.

The Illinois network is deployed along the lines described in the Illinois State Implementation Plan. An updated air monitoring plan is submitted to USEPA each year for review.

In accordance with USEPA air quality monitoring requirements as set forth in Title 40 of the Code of Federal Regulations, Part 58 (40 CFR 58), five types of monitoring stations are used to collect ambient air data. These include State and Local Air Monitoring Stations (SLAMS), National Air Monitoring Stations (NAMS), Photochemical Assessment Monitoring Stations (PAMS), Special Purpose Monitoring Stations (SPMS), and National Core Monitoring Stations (NCore). The types of stations are distinguished from one another on the basis of the general monitoring objectives they are designed to meet.

The SLAMS, NAMS, PAMS, SPMS, and NCORE designations for the sites operated within the State of Illinois are provided in the Annual Network Plan, which can be found at epa.state.il.us/air/monitoring/index.html. All of the industrial sites are considered to be SPMS. **Table A2** is a summary of the distribution of pollutants through the years along with the total number of instruments and the total number of sites. The site directory is listed in **Table A3** and the monitoring directory is listed in **Table A4**

Table A1
2019 Noncontinuous Sampling Schedule

JANUARY						
S	M	T	W	R	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

FEBRUARY						
S	M	T	W	R	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

MARCH						
S	M	T	W	R	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

APRIL						
S	M	T	W	R	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

MAY						
S	M	T	W	R	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

JUNE						
S	M	T	W	R	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

JULY						
S	M	T	W	R	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

AUGUST						
S	M	T	W	R	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

SEPTEMBER						
S	M	T	W	R	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

OCTOBER						
S	M	T	W	R	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

NOVEMBER						
S	M	T	W	R	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

DECEMBER						
S	M	T	W	R	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

13 Every 6 Day Sampling Schedule 22 Every 3 Day Sampling Schedule

1. **State/Local Air Monitoring Station (SLAMS) Network -** The SLAMS network is designed to meet a minimum of four basis monitoring objectives:

   a. To determine the highest concentrations expected to occur in the area covered by the network.

   b. To determine representative concentrations in areas of high population density.

   c. To determine the air quality impact of significant sources or source categories.

   d. To determine general background concentration levels.

2. **National Air Monitoring Station (NAMS) Network -** The NAMS network is a subset of stations selected from the SLAMS network with emphasis given to urban and multisource areas. The primary objectives of the NAMS network are:

   a. To measure expected maximum concentrations.

   b. To measure concentrations in areas where poor air quality is combined with high population exposure.

   c. To provide data useable for the determination of national trends.

   d. To provide data necessary to allow the development of nationwide control strategies.

3. **Photochemical Assessment Monitoring Station (PAMS) Network -** The PAMS network is required in serious, severe, and extreme ozone nonattainment areas to obtain detailed data for ozone, precursors (NOx and VOC), and meteorology. NO_X and VOC sampling is required for the period June - August each year. Ozone sampling occurs during the ozone season, March - October. Network design is based on four monitoring types. In Illinois, PAMS are required in the Chicago metropolitan area only.

   a. Type 1 sites are located upwind of the nonattainment area and are located to measure background levels of ozone and precursors coming into the area

   b. Type 2 sites are located slightly downwind of the major source areas of ozone precursors.

   c. Type 3 sites are located at the area of maximum ozone concentrations.

   d. Type 4 sites are located at the domain edge of the nonattainment area and measure ozone and precursors leaving the area.

4. **Special Purpose Monitoring Station (SPMS) Network -** Any monitoring site that is not a designated SLAMS or NAMS is considered a special purpose monitoring station. Some of the SPMS network objectives are as follows:

   a. To provide data as a supplement to stations used in developing local control strategies, including enforcement actions.

b. To verify the maintenance of ambient standards in areas not covered by the SLAMS/NAMS network.

c. To provide data on non-criteria pollutants.

5. National Core Station (NCore) Network - NCore is a multi-pollutant network that integrates several advanced measurement systems. In Illinois, Northbrook and Bondville are considered NCore sites. A few of the NCore network objectives are as follows:

a. Support for development of emission strategies and accountability of emission strategy progress through tracking long-term trends of pollutants and their precursors.

b. Support of long-term health assessments that contribute to review of national standards.

c. Support to scientific studies ranging across technological, health, and atmospheric process disciplines.

d. Support to ecosystem assessments recognizing that national air quality networks benefit ecosystems assessments.

Table A2
Distribution of Air Monitoring Equipment

Parameter	2019	2018	2017	2016	2015
Particulate Matter Federal Reference Method ($PM_{2.5}$ FRM)	25	24	27	27	33
$PM_{2.5}$ Federal Equivalent Method ($PM_{2.5}$ FEM)	17	16	8	8	1
$PM_{10\text{-}2.5}$ (PM Coarse)	1	1	0	0	0
$PM_{2.5}$ Air Quality Index (non-FEM)	7	7	9	9	11
$PM_{2.5}$ Speciation	4	4	4	5	5
Particulate Matter (PM_{10})	5	5	5	5	5
Lead (Pb)	5	5	7	7	7
Sulfur Dioxide (SO_2)	14	14	10	13	15
Nitrogen Dioxide (NO_2)	7	5	5	6	6
Total Reactive Nitrogen (NO_y)	2	2	2	2	2
Ozone (O_3)	37	37	37	37	37
Carbon Monoxide (CO)	4	3	3	3	3
Volatile Organic Compounds	2	2	2	2	2
Semi Volatile Organic Compounds	1	1	1	1	1
Semi Non Methane Organic Compounds	1	1	1	1	1
Carbonyls	2	2	2	2	2
Meteorology	11	17	19	20	20
Total Instruments	145	146	142	148	151
Total Sites	64	63	64	64	65

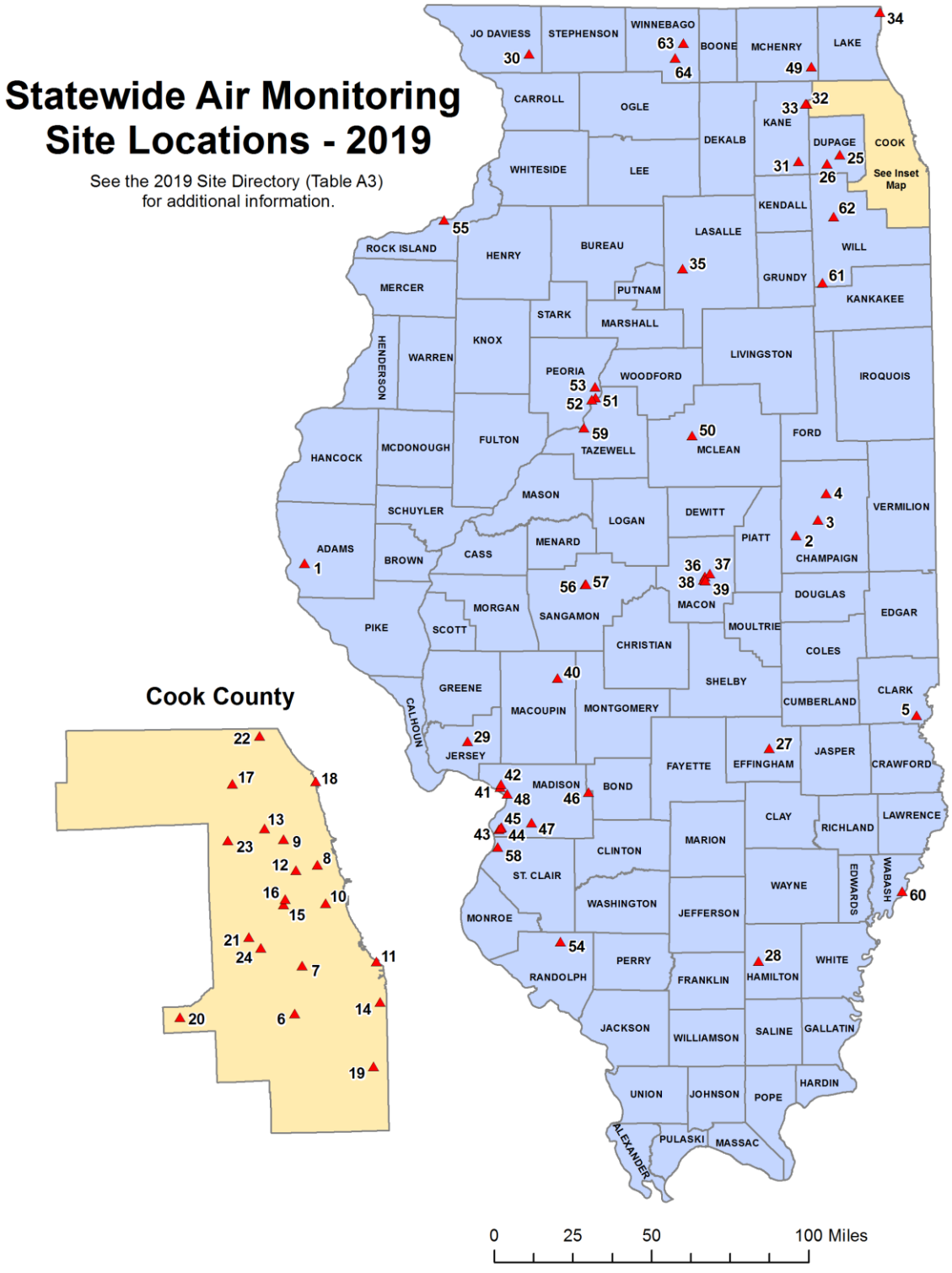

Statewide Air Monitoring Site Locations - 2019
See the 2019 Site Directory (Table A3) for additional information.
Cook County
See Inset Map
JO DAVIESS
STEPHENSON
WINNEBAGO
BOONE
MCHENRY
LAKE
CARROLL
OGLE
KANE
DUPAGE
COOK
WHITESIDE
LEE
DEKALB
KENDALL
ROCK ISLAND
HENRY
BUREAU
LASALLE
WILL
MERCER
PUTNAM
GRUNDY
KANKAKEE
STARK
MARSHALL
KNOX
HENDERSON
WARREN
LIVINGSTON
PEORIA
WOODFORD
IROQUOIS
HANCOCK
MCDONOUGH
FULTON
TAZEWELL
MCLEAN
FORD
MASON
SCHUYLER
LOGAN
DEWITT
VERMILION
ADAMS
BROWN
CASS
MENARD
PIATT
CHAMPAIGN
MORGAN
SANGAMON
MACON
DOUGLAS
PIKE
SCOTT
CHRISTIAN
MOULTRIE
EDGAR
GREENE
MACOUPIN
MONTGOMERY
SHELBY
COLES
CALHOUN
CUMBERLAND
CLARK
JERSEY
FAYETTE
EFFINGHAM
JASPER
CRAWFORD
MADISON
BOND
CLAY
RICHLAND
LAWRENCE
CLINTON
MARION
ST. CLAIR
WAYNE
EDWARDS
WABASH
WASHINGTON
JEFFERSON
MONROE
PERRY
RANDOLPH
FRANKLIN
HAMILTON
WHITE
JACKSON
WILLIAMSON
SALINE
GALLATIN
UNION
JOHNSON
POPE
HARDIN
ALEXANDER
PULASKI
MASSAC
0
25
50
100 Miles

Table A3
Site Directory

Site Map ID	AQS ID	County	City	Address	Latitude Longitude	Owner / Operator
1	17-001-0007	Adams	Quincy	John Wood Comm. College 1301 South 48th St.	+39.91540937 -91.33586832	IL EPA
2	17-019-1001	Champaign	Bondville	State Water Survey Township Rd. 500 E.	+40.052780 -88.372510	IL EPA/US EPA
3	17-019-0006	Champaign	Champaign	Ameren Substation 904 N. Walnut	+40.1237962 -88.229531	IL EPA
4	17-019-0007	Champaign	Thomasboro	North Thomas St.	+40.244913 -88.188519	IL EPA
5	17-023-0001	Clark	West Union	416 S. State Highway 1 & West Union	+39.210883 -87.668416	Indiana DEP
6	17-031-0001	Cook	Alsip	Village Garage 4500 W. 123rd St.	+41.6709919 -87.7324569	CCDES
7	17-031-0076	Cook	Chicago	Com Ed Maintenance Bldg. 7801 Lawndale	+41.75139998 -87.71348815	CCDES
8	17-031-0219	Cook	Chicago	Kennedy Near-road #2 Kennedy Expy. & W. Webster Ave.	+41.920681 -87.674425	IL EPA
9	17-031-0052	Cook	Chicago	Mayfair Pump Station 4850 Wilson Ave.	+41.96548483 -87.74992806	CCDES
10	17-031-0110	Cook	Chicago	Perez Elementary School 1241 19th St.	+41.855771 -87.657932	CCDES
11	17-031-0032	Cook	Chicago	South Water Filtration Plant 3300 E. Cheltenham Pl.	+41.75583241 -87.54534967	CCDES
12	17-031-0057	Cook	Chicago	Springfield Pump Station 1745 N. Springfield Ave.	+41.912739 -87.722673	CCDES
13	17-031-1003	Cook	Chicago	Taft High School 6545 W. Hurlbut St	+41.98433233 -87.7920017	CCDES
14	17-031-0022	Cook	Chicago	Washington High School 3535 E. 114th St.	+41.68716544 -87.53931548	CCDES
15	17-031-4002	Cook	Cicero	Cook County Trailer 1820 S. 51st Ave	+41.85524313 -87.7524697	CCDES
16	17-031-6005	Cook	Cicero	Liberty School 13th St. & 50th Ave.	+41.86442642 -87.74890238	CCDES
17	17-031-4007	Cook	Des Plaines	Regional Office Building 9511 W. Harrison St	+42.06028469 -87.86322543	IL EPA
18	17-031-7002	Cook	Evanston	Water Pumping Station 531 E. Lincoln	+42.062053 -87.675254	IL EPA
19	17-031-0119	Cook	Lansing	Kingery Near-road #1 Kingery Expy. & Torrence Ave.	+41.578603 -87.557392	IL EPA
20	17-031-1601	Cook	Lemont	Cook County Trailer 729 Houston	+41.66812034 -87.99056969	CCDES
21	17-031-1016	Cook	Lyons Township	Village Hall 50th St & Glencoe	+41.801180 -87.832349	IL EPA
22	17-031-4201	Cook	Northbrook	Northbrook Water Plant 750 Dundee Rd.	+42.13999619 -87.79922692	IL EPA
23	17-031-3103	Cook	Schiller Park	IEPA Trailer 4743 Mannheim Rd.	+41.96519348 -87.87626473	IL EPA
24	17-031-3301	Cook	Summit	Graves Elementary School 60th St. & 74th Ave.	+41.78276601 -87.80537679	CCDES

Table A3
Site Directory

Site Map ID	AQS ID	County	City	Address	Latitude Longitude	Owner / Operator
25	17-043-6001	DuPage	Lisle	Morton Arboretum Route 53	+41.81304939 -88.0728269	IL EPA
26	17-043-4002	DuPage	Naperville	City Hall 400 S. Eagle St.	+41.77107094 -88.15253365	IL EPA
27	17-049-1001	Effingham	Effingham	Central Grade School 10421 N. US Hwy. 45	+39.06715932 -88.54893401	IL EPA
28	17-065-0002	Hamilton	Knight Prairie	Ten Mile Creek DNR Office State Route 14	+38.08215516 -88.6249434	IL EPA
29	17-083-0117	Jerseyville	Jerseyville	21965 Maple Summit Rd.	+39.101439 -90.344494	IL EPA
30	17-085-9991	Jo Daviess	Stockton	10952 E. Parker Rd.	+42.2869 -89.9997	US EPA
31	17-089-0007	Kane	Aurora	Health Department 1240 N. Highland	+41.78471651 -88.32937361	IL EPA
32	17-089-0005	Kane	Elgin	Larsen Junior High School 665 Dundee Rd.	+42.04914776 -88.27302929	IL EPA
33	17-089-0003	Kane	Elgin	McKinley School 258 Lovell St.	+42.050403 -88.28001471	IL EPA
34	17-097-1007	Lake	Zion	Camp Logan Illinois Beach State Park	+42.4675733 -87.81004705	IL EPA
35	17-099-0007	La Salle	Oglesby	308 Portland Ave.	+41.29301454 -89.04942498	IL EPA
36	17-115-0013	Macon	Decatur	IEPA Trailer 2200 N. 22nd	+39.866933 -88.925452	IL EPA
37	17-115-0117	Macon	Decatur	ADM 2550 N. Brush College Rd.	+39.880404 -88.894488	ERM Inc.
38	17-115-0217	Macon	Decatur	Tate & Lyle North 899 N. Folk St.	+39.850712 -88.933635	ERM Inc.
39	17-115-0317	Macon	Decatur	Tate & Lyle South 2200 E. El Dorado St.	+39.846856 -88.923323	ERM Inc.
40	17-117-0002	Macoupin	Nilwood	IEPA Trailer Heaton & Dubois	+39.39607533 -89.80973892	IL EPA
41	17-119-0008	Madison	Alton	Clara Barton School 409 Main St.	+38.89018605 -90.14803114	IL EPA
42	17-119-2009	Madison	Alton	SIU Dental Clinic 1700 Annex St.	+38.90308534 -90.14316803	IL EPA
43	17-119-0010	Madison	Granite City	Air Products 15th & Madison	+38.69443831 -90.15395426	IL EPA
44	17-119-1007	Madison	Granite City	Fire Station #1 23rd & Madison	+38.70453426 -90.13967484	IL EPA
45	17-119-0024	Madison	Granite City	Gateway Medical Center 2100 Madison Ave.	+38.7006315 -90.14476267	IL EPA
46	17-119-9991	Madison	Highland	5403 State Rd. 160	+38.8690 -89.6228	US EPA
47	17-119-1009	Madison	Maryville	Southwest Cable TV 200 W. Division	+38.72657262 -89.95996251	IL EPA
48	17-119-3007	Madison	Wood River	Water Treatment Plant 54 N. Walcott	+38.86066947 -90.10585111	IL EPA
49	17-111-0001	McHenry	Cary	Cary Grove High School 1st St. & Three Oaks Rd.	+42.22144166 -88.24220734	IL EPA

Table A3
Site Directory

Site Map ID	AQS ID	County	City	Address	Latitude Longitude	Owner / Operator
50	17-113-2003	McLean	Normal	ISU Physical Plant Main & Gregory	+40.51873537 -88.99689571	IL EPA
51	17-143-0037	Peoria	Peoria	City Office Building 613 N.E. Jefferson	+40.697326 -89.584084	IL EPA
52	17-143-0024	Peoria	Peoria	Fire Station #8 MacArthur & Hurlburt	+40.68742038 -89.60694277	IL EPA
53	17-143-1001	Peoria	Peoria Heights	Peoria Heights High School 508 E. Glen Ave.	+40.74550393 -89.58586902	IL EPA
54	17-157-0001	Randolph	Houston	IEPA Trailer Hickory Grove & Fallview	+38.17627761 -89.78845862	IL EPA
55	17-161-3002	Rock Island	Rock Island	Rock Island Arsenal 32 Rodman Ave.	+41.51472697 -90.51735026	IL EPA
56	17-167-0012	Sangamon	Springfield	Agricultural Building State Fair Grounds	+39.83192087 -89.64416359	IL EPA
57	17-167-0014	Sangamon	Springfield	Illinois Building State Fair Grounds	+39.831522 -89.640926	IL EPA
58	17-163-0010	St. Clair	East St. Louis	RAPS Trailer 13th & Tudor	+38.61203448 -90.16047663	IL EPA
59	17-179-0004	Tazewell	Pekin	Fire Station #3 272 Derby	+40.55643203 -89.65402083	IL EPA
60	17-185-0001	Wabash	Mount Carmel	Division St.	+38.397276 -87.773631	Indiana DEP
61	17-197-1011	Will	Braidwood	Com Ed Training Center 36400 S. Essex Rd.	+41.22153707 -88.19096718	IL EPA
62	17-197-1002	Will	Joliet	Pershing Elementary School Midland & Campbell Sts.	+41.52688509 -88.11647381	IL EPA
63	17-201-2001	Winnebago	Loves Park	Maple Elementary School 1405 Maple Ave.	+42.33498222 -89.0377748	IL EPA
64	17-201-0118	Winnebago	Rockford	Fire Department 204 S. 1st St.	+42.2670002 -89.089170	IL EPA

Table A4
Monitoring Directory

AQS ID	City	CO	NOy	NO2	Ozone	PM10	PM Coarse	PM2.5 FRM	PM2.5 FEM	PM2.5 AQI	PM2.5 Speciation	SO2	VOC	Toxics	TSP Pb, Metals	Meteorological
17-001-0007	Quincy															
17-019-0006	Champaign N. Walnut															
17-019-0007	Thomasboro															
17-019-1001	Bondville	T										T				
17-023-0001	West Union															
17-031-0001	Alsip															
17-031-0022	Chicago Washington High School					C										
17-031-0032	Chicago South Water Filtration															
17-031-0052	Chicago Mayfair Pump Station															
17-031-0057	Chicago Springfield Pump Station															
17-031-0076	Chicago Com Ed Maintenance															
17-031-0110	Chicago Perez Elementary															
17-031-0119	Lansing Kingery near-road #1															
17-031-0219	Chicago Kennedy near-road #2															
17-031-1003	Chicago Taft High School															
17-031-1016	Lyons Township					C										
17-031-1601	Lemont															
17-031-3103	Schiller Park															
17-031-3301	Summit															
17-031-4002	Cicero Cook County Trailer															

Active Monitor	Site/Monitor Installed	Site/Monitor Removed	C = Continuous PM_{10}, T = Trace level

Table A4
Monitoring Directory

AQS ID	City	CO	NOy	NO2	Ozone	PM10	PM Coarse	PM2.5 FRM	PM2.5 FEM	PM2.5 AQI	PM2.5 Speciation	SO2	VOC	Toxics	TSP Pb, Metals	Meteorological
17-031-4007	Des Plaines				■				■							
17-031-4201	Northbrook	T	■		■	■	■	■	■		■	T	■	■		■
17-031-6005	Cicero Liberty School							■		■						
17-031-7002	Evanston				■											
17-043-4002	Naperville								■							
17-043-6001	Lisle				■											
17-049-1001	Effingham				■											
17-065-0002	Knight Prairie				■				■							
17-083-0117	Jerseyville				■				■							
17-085-9991	Stockton				■											
17-089-0003	Elgin McKinley School							■								
17-089-0005	Elgin Larsen Jr. High School				■											
17-089-0007	Aurora							■								
17-097-1007	Zion				■											
17-099-0007	Oglesby											■				
17-111-0001	Cary				■			■		■						
17-113-2003	Normal				■				■							
17-115-0013	Decatur IEPA Trailer				■				■			■				
17-115-0117	Decatur ADM											■				■
17-115-0217	Decatur Tate & Lyle North											■				

Active Monitor	Site/Monitor Installed	Site/Monitor Removed	T = Trace level

Table A4
Monitoring Directory

AQS ID	City	CO	NOy	NO2	Ozone	PM10	PM Coarse	PM2.5 FRM	PM2.5 FEM	PM2.5 AQI	PM2.5 Speciation	SO2	VOC	Toxics	TSP Pb, Metals	Meteorological
17-115-0317	Decatur Tate & Lyle South											■				
17-117-0002	Nilwood			■	■							■				
17-119-0008	Alton Clara Barton Elementary				■											
17-119-2009	Alton SIU Dental Clinic							■								
17-119-0010	Granite City Air Products														■	
17-119-0024	Granite City Gateway Medical Center							■			■					
17-119-1007	Granite City Fire Station #1					■		■		■						
17-119-1009	Maryville				■											
17-119-3007	Wood River				■			■				■				
17-119-9991	Highland				■											
17-143-0024	Peoria Fire Station #8				■											
17-143-0037	Peoria City Office Building								■							
17-143-1001	Peoria Heights				■											
17-157-0001	Houston				■				■							
17-161-3002	Rock Island				■				■							
17-163-0010	East St. Louis	■		■	■			■		■		■				
17-167-0012	Springfield Agricultural Building								■							
17-167-0014	Springfield Illinois Building				■											
17-179-0004	Pekin											■				
17-185-0001	Mount Carmel											■				
Active Monitor	Site/Monitor Installed	Site/Monitor Removed														

Table A4
Monitoring Directory

AQS ID	City	CO	NOy	NO2	Ozone	PM10	PM Coarse	PM2.5 FRM	PM2.5 FEM	PM2.5 AQI	PM2.5 Speciation	SO2	VOC	Toxics	TSP Pb, Metals	Meteorological
17-197-1002	Joliet Pershing Elementary															
17-197-1011	Braidwood															
17-201-0118	Rockford Fire Department															
17-201-2001	Loves Park															

Active Monitor	Site/Monitor Installed	Site/Monitor Removed

Air Quality Data Interpretation

In order to provide a uniform procedure for determining whether a sufficient amount of air quality data has been collected by a sensor in a given time period (year, quarter, month, day, etc.) to accurately represent air quality during that time period, a minimum statistical selection criteria was developed.

In order to calculate an annual average for non-continuous parameters, a minimum of 75% of the data that was scheduled to be collected must be available, i.e., 45 samples per year for an every-six-day schedule (total possible of 60 or 61 samples). Additionally, in order to have proper quarterly balance, each site on an every sixth day schedule should have at least 10 samples per calendar quarter. This provides for a 20% balance in each quarter if the minimum required annual sampling is achieved.

PM_{10} and $PM_{2.5}$ samplers operate on one of three sampling frequencies:

- Every-day sampling (68 samples required each quarter for 75% data capture)
- Every-third-day sampling (23 samples required each quarter for 75% data capture)
- Every-six-day sampling (12 samples required each quarter for 75% data capture).

To calculate an annual PM_{10} or $PM_{2.5}$ mean, arithmetic means are calculated for each quarter in which valid data is recorded in at least 75% of the possible sampling periods. The annual mean is then the arithmetic average of the four quarterly means.

To determine an annual average for continuous data 75% of the total possible yearly observations are necessary, i.e., a minimum of 6570 hours (75% of the hours available) are needed. In order to provide a balance between the respective quarters, each quarter should have at least 1300 hours which is 20% of the 75% minimum annual requirement. To calculate quarterly averages at sites which do not meet the annual criteria, 75% of the total possible observations in a quarter are needed, i.e., a minimum of 1647 hours of 2200 hours available. Monthly averages also require 75% of the total possible observations in a month, i.e., 540 hours as a minimum. Additionally, for short-term running averages (24-hour, 8-hour, and 3-hour) 75% of the data during the particular time period is needed, i.e., 18 hours for a 24-hour average, six hours for an 8-hour average and three hours for a 3-hour average.

For ozone, a valid 8-hour average has at least six valid 1-hour averages within the 8-hour period. The daily maximum 8-hour ozone concentration is based on 17 consecutive moving 8-hour periods in each day, beginning with the 8-hour period from 7:00 a.m. to 3:00 p.m. and ending with the 8-hour period from 11:00 p.m. to 7:00 a.m. The daily maximum value is considered valid if 8-hour averages are available for at least 13 of the 17 consecutive moving 8-hour periods, or if the daily maximum value is greater than the level of the NAAQS. Complete sampling over a three-year period requires an average of 90% valid days with each year having at least 75% valid days.

Data listed as not meeting the minimum statistical selection criteria in this report were so noted after evaluation using the criteria above. Although short term averages (3, 8, 24 hours) have been computed for certain sites not meeting the annual criteria, these averages may not be representative of an entire year's air quality. In certain circumstances where even the 75% criteria is met, the number and/or magnitude of short-term averages may not be directly comparable from one year to the next because of seasonal distributional differences.

For summary purposes, the data is expressed in the number of figures to which the raw data is validated. Extra figures may be carried in the averaging technique, but the result is rounded to the appropriate number of figures. For example, the values 9, 9, and 10 are

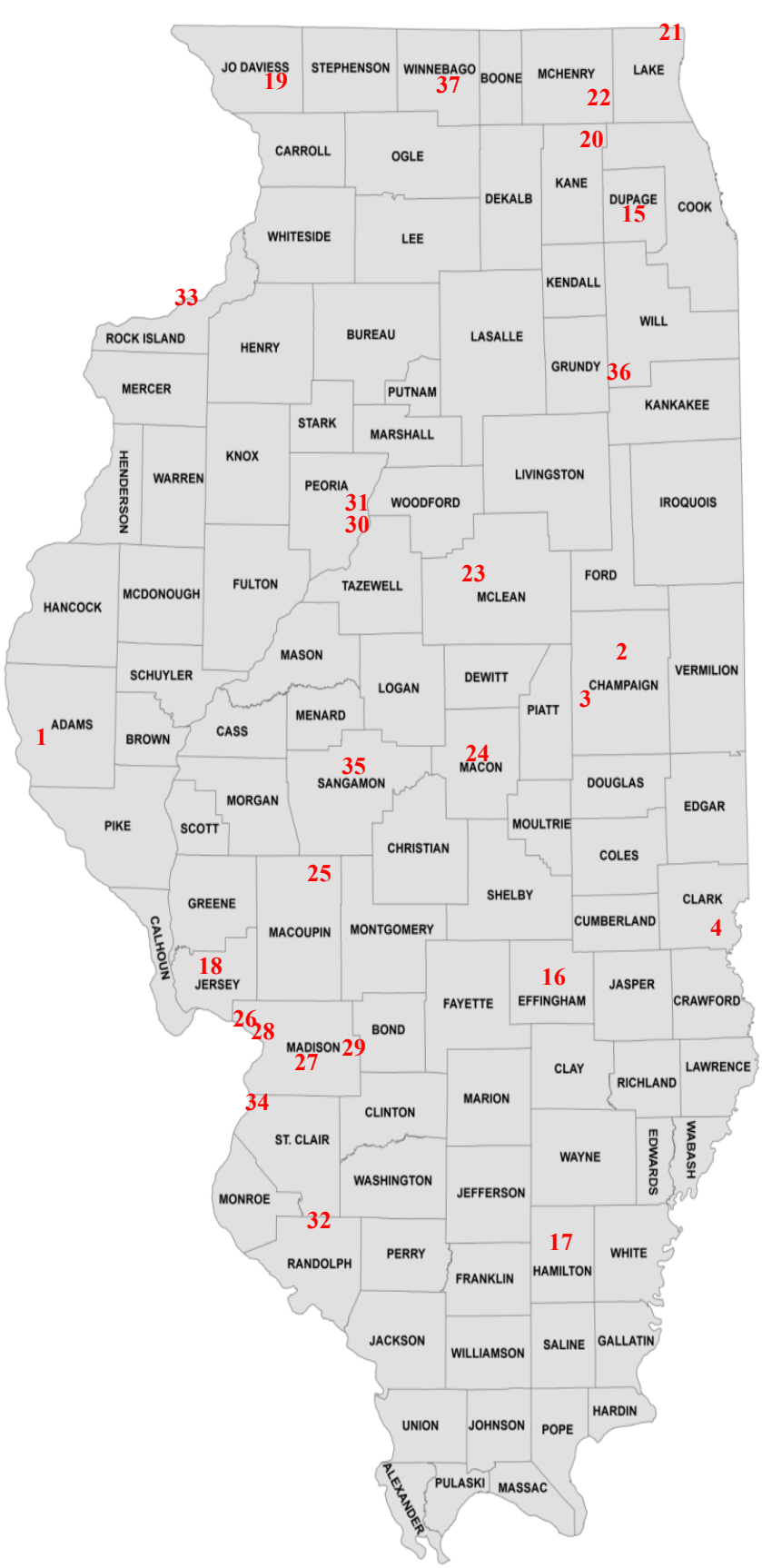
averaged to give 9; whereas the values 9.0, 9.0, and 10.0 are averaged to 9.3. The raw data itself should not be expressed to more significant figures than the sensitivity of the monitoring methodology allows.

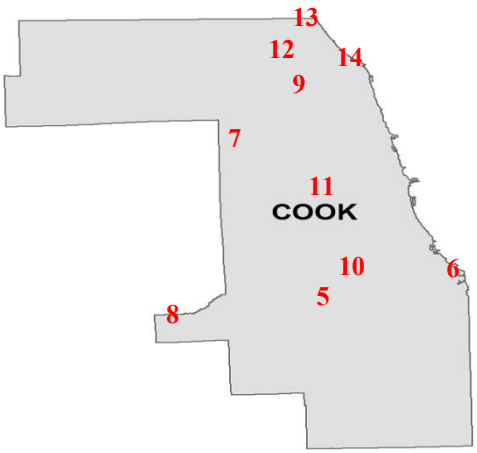
In comparing data to the various air quality standards, the data are implicitly rounded to the number of significant figures specified by that standard. For example, to exceed the 0.15 ug/m^3 three-month lead standard, a three-month average value must be 0.155 ug/m^3 or higher; to exceed the 9 ppm CO 8-hour standard, an 8-hour average must be 9.5 ppm or higher. Peak averages, though, will be expressed to the number of significant figures appropriate to that monitoring methodology.

The NAAQS for CO has a short-term standard for ambient air concentrations not to be exceeded more than once per year. SO_2 has a 1-hour standard which is the three-year average of each year's 99^{th} percentile values. NO_2 has a 1-hour standard which is the three-year average of each year's 98^{th} percentile values. PM_{10} has a 24-hour standard which cannot average more than one exceedance over a three-year period (in three years). $PM_{2.5}$ has a 24-hour standard which is a three-year average of each year's 98^{th} percentile values. In the case of ozone, the 8-hour standard is concentration-based and as such is the average of the fourth highest value each year over a three-year period. The standards are promulgated in this manner in order to protect the public from excessive levels of pollution both in terms of acute and chronic health effects.

The following data tables detail and summarize air quality in Illinois. The tables of short-term exceedances list those sites which exceeded any of the short-term primary standards (24 hours or less). The detailed data tables list averages and peak concentrations for all monitoring sites in Illinois.

Ozone Monitoring Sites





	Site ID	Site Name
1.	170010007	Quincy
2.	170190007	Thomasboro
3.	170191001	Bondville
4.	170230001	West Union
5.	170310001	Alsip
6.	170310032	Chicago – South Water Filtration
7.	170313103	Schiller Park
8.	170311601	Lemont
9.	170311003	Chicago – Taft High School
10.	170310076	Chicago – Com Ed Maint. Bldg.
11.	170314002	Cicero
12.	170314007	Des Plaines
13.	170314201	Northbrook
14.	170317002	Evanston
15.	170436001	Lisle
16.	170491001	Effingham
17.	170650002	Knight Prairie
18.	170831001	Jerseyville
19.	170859991	Stockton
20.	170890005	Elgin
21.	170971007	Zion
22.	171110001	Cary
23.	171132003	Normal
24.	171150013	Decatur
25.	171170002	Nilwood
26.	171190008	Alton
27.	171191009	Maryville
28.	171193007	Wood River
29	171199991	Highland
30.	171430024	Peoria
31.	171431001	Peoria Heights
32.	171570001	Houston
33.	171613002	Rock Island
34.	171630010	East St. Louis
35.	171670014	Springfield
36.	171971011	Braidwood
37.	172012001	Loves Park

Table B1
1-Hour Ozone Exceedances

EXCEEDANCES OF THE FORMER 1-HOUR PRIMARY STANDARD OF 0.12 PPM		
Date	**City**	**Concentration**
None	None	None
Total Over 0.12 ppm	0	
Total Days Over 0.12 ppm	0	

Table B2
8-Hour Ozone Exceedances

EXCEEDANCES OF THE 8-HOUR PRIMARY STANDARD OF 0.070 PPM						
Date	**City**	**Concentration**		**Date**	**City**	**Concentration**
6/5	Chicago-SWFP	0.075				
6/7	Rock Island	0.072				
6/26	Chicago-Taft	0.072				
6/28	Evanston	0.071				
6/29	Wood River	0.083				
	Alsip	0.079				
	Lemont	0.076				
	Alton	0.075				
	Cary	0.071				
	Elgin	0.071				
	Chicago-SWFP	0.071				
7/3	Lemont	0.073				
	Lisle	0.071				
7/5	Evanston	0.071				
7/8	Elgin	0.071				
7/9	Alsip	0.079				
	Cary	0.078				
	Chicago-Taft	0.077				
	Des Plaines	0.077				
	Schiller Park	0.076				
	Zion	0.075				
	Chicago-ComEd	0.074				
	Elgin	0.074				
	Chicago-SWFP	0.072				
	Evanston	0.071				
7/13	Alton	0.086				
	Wood River	0.086				
	Jerseyville	0.074				
	E. St. Louis	0.073				
	Chicago-SWFP	0.072				
	Knight Prairie	0.072				
7/14	Peoria Heights	0.071				
7/25	Zion	0.072				
8/2	Lisle	0.073				
	Elgin	0.072				
8/3	Lisle	0.095				
	Lemont	0.080				
	Rock Island	0.075				
	Alsip	0.074				
	Peoria	0.071				
8/5	Wood River	0.088				
	Alton	0.080				
9/19	Jerseyville	0.076				
Total Over 0.070 ppm				43		
Total Days Over 0.070 ppm				16		

Table B3
Ozone Highs

AQS ID	City	Number Of Days 8-Hour Greater Than 0.070 ppm			Fourth Highest Samples 1-Hour (ppm)				Fourth Highest Samples 8-Hour (ppm)			
		2019	2018	2017								
17-001-0007	Quincy	0	0	1	0.074	0.068	0.068	0.067	0.068	0.066	0.064	0.062
17-019-0007	Thomasboro	0	4	0	0.079	0.073	0.070	0.069	0.070	0.068	0.066	0.062
17-019-1001	Bondville	0	1	1	0.065	0.065	0.063	0.063	0.062	0.060	0.059	0.058
17-023-0001	West Union	0	1	1	0.070	0.066	0.066	0.064	0.062	0.060	0.060	0.060
17-031-0001	Alsip	3	10	10	0.093	0.090	0.087	0.084	0.079	0.079	0.074	0.070
17-031-0032	Chicago South Water Filtration	4	7	10	0.081	0.080	0.079	0.079	0.075	0.072	0.072	0.071
17-031-0076	Chicago Com Ed Maintenance	1	8	11	0.082	0.081	0.080	0.074	0.074	0.069	0.066	0.065
17-031-1003	Chicago Taft High School	2	6	0	0.083	0.080	0.079	0.078	0.077	0.072	0.070	0.069
17-031-1601	Lemont	3	2	3	0.100	0.086	0.085	0.083	0.080	0.076	0.073	0.068
17-031-3103	Schiller Park	1	1	0	0.082	0.081	0.078	0.078	0.076	0.068	0.065	0.064
17-031-4002	Cicero Cook County Trailer	0	5	2	0.080	0.079	0.074	0.073	0.068	0.068	0.066	0.064
17-031-4007	Des Plaines	1	10	4	0.085	0.078	0.078	0.077	0.077	0.068	0.066	0.066
17-031-4201	Northbrook	0	10	3	0.082	0.079	0.077	0.075	0.070	0.070	0.069	0.069
17-031-7002	Evanston	3	12	9	0.083	0.079	0.079	0.077	0.071	0.071	0.071	0.069
17-043-6001	Lisle	3	6	2	0.112	0.086	0.084	0.084	0.095	0.073	0.071	0.070
17-049-1001	Effingham	0	1	3	0.075	0.071	0.069	0.069	0.065	0.065	0.065	0.063
17-065-0002	Knight Prairie	1	3	0	0.079	0.072	0.070	0.069	0.072	0.068	0.066	0.064
17-083-1001	Jerseyville	2	3	3	0.094	0.087	0.087	0.080	0.076	0.074	0.070	0.069
17-085-9991	Stockton	0	2	0	0.068	0.064	0.063	0.063	0.062	0.059	0.059	0.059
17-089-0005	Elgin Larsen Jr. High School	4	5	1	0.082	0.082	0.080	0.077	0.074	0.072	0.071	0.071
17-097-1007	Zion	2	8	7	0.088	0.079	0.078	0.073	0.075	0.072	0.067	0.066
17-111-0001	Cary	2	8	3	0.084	0.082	0.079	0.078	0.078	0.071	0.070	0.070
17-113-2003	Normal	0	1	0	0.074	0.071	0.070	0.068	0.070	0.067	0.065	0.063
17-115-0013	Decatur IEPA Trailer	0	3	3	0.079	0.072	0.068	0.067	0.068	0.065	0.064	0.063
17-117-0002	Nilwood	0	3	0	0.076	0.074	0.073	0.070	0.066	0.064	0.063	0.063

Table B3
Ozone Highs

AQS ID	City	Number Of Days 8-Hour Greater Than 0.070 ppm			Fourth Highest Samples 1-Hour (ppm)				Fourth Highest Samples 8-Hour (ppm)			
		2019	2018	2017								
17-119-0008	Alton Clara Barton School	3	5	2	0.098	0.097	0.084	0.077	0.086	0.080	0.075	0.067
17-119-1009	Maryville	0	6	7	0.081	0.075	0.074	0.074	0.070	0.068	0.064	0.064
17-119-3007	Wood River	3	4	3	0.108	0.095	0.090	0.084	0.088	0.086	0.083	0.070
17-119-9991	Highland	0	4	0	0.080	0.070	0.068	0.067	0.068	0.064	0.063	0.062
17-143-0024	Peoria Fire Station #8	1	2	3	0.076	0.073	0.069	0.067	0.071	0.067	0.065	0.062
17-143-1001	Peoria Heights	1	3	2	0.080	0.075	0.073	0.071	0.071	0.070	0.066	0.064
17-157-0001	Houston	0	1	1	0.076	0.076	0.068	0.067	0.069	0.065	0.061	0.060
17-161-3002	Rock Island	2	1	0	0.080	0.079	0.072	0.070	0.075	0.072	0.069	0.066
17-163-0010	East St. Louis	1	5	1	0.078	0.078	0.074	0.072	0.073	0.070	0.064	0.064
17-167-0014	Springfield	0	1	2	0.070	0.069	0.069	0.069	0.066	0.063	0.063	0.062
17-197-1011	Braidwood	0	4	0	0.079	0.072	0.069	0.068	0.065	0.063	0.062	0.060
17-201-2001	Loves Park	0	3	0	0.071	0.070	0.070	0.069	0.066	0.066	0.066	0.066
Statewide Average					0.082	0.077	0.075	0.073	0.072	0.069	0.067	0.065
Total Over 0.070 ppm		43	159	96								
Total Days Over 0.070 ppm		16	26	27								

Table B4
Ozone Design Values

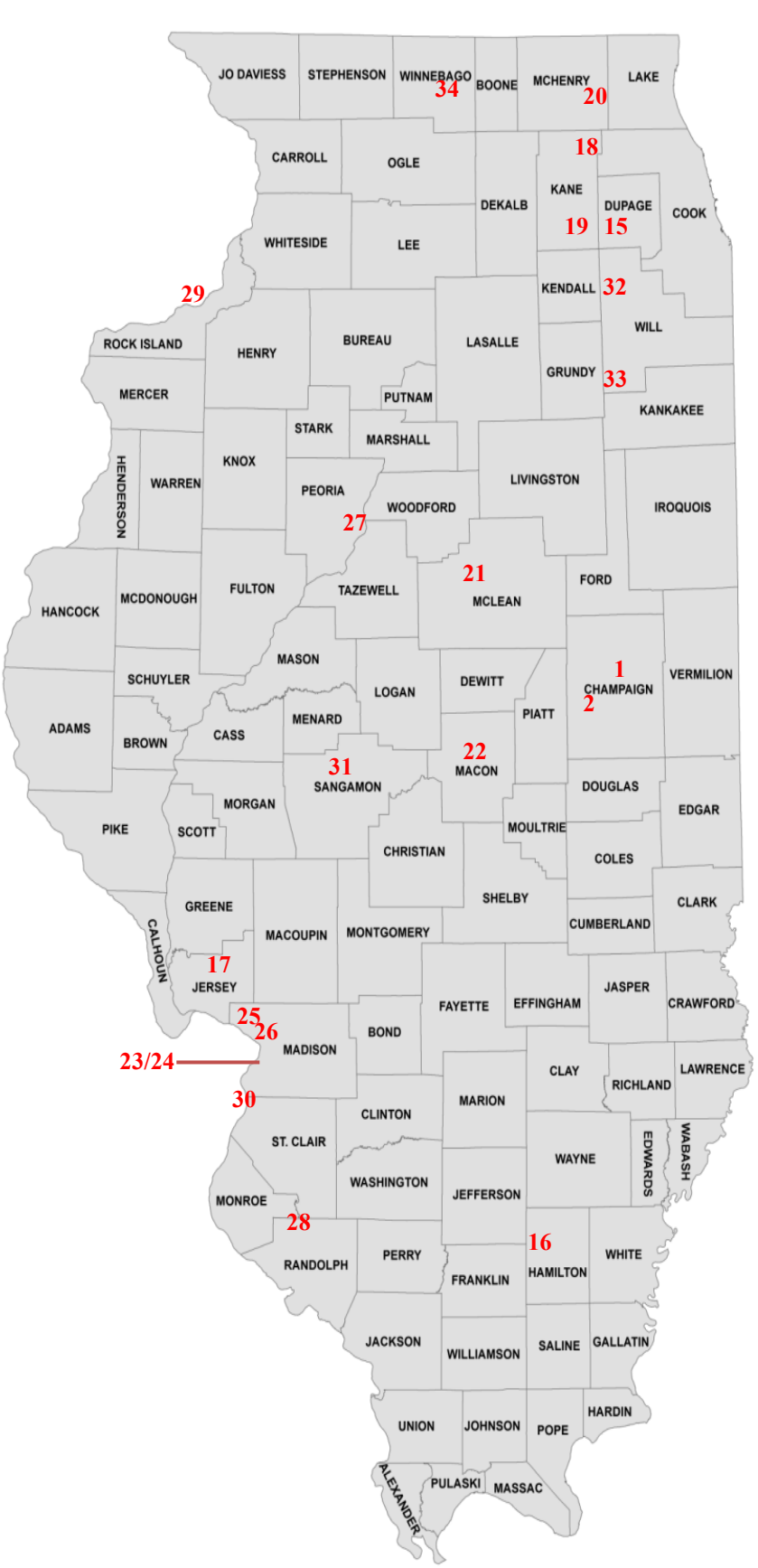
AQS ID	City	Fourth High 8-Hour Concentrations (ppm)					Design Values* (ppm)		
		2019	2018	2017	2016	2015	2017-2019	2016-2018	2015-2017
17-001-0007	Quincy	0.062	0.063	0.065	0.061	0.064	0.063	0.063	0.063
17-019-0007	Thomasboro	0.062	0.072	0.067	0.066	0.062	0.067	0.068	0.065
17-019-1001	Bondville	0.058	0.064	0.067	0.066	0.065	0.063	0.065	0.066
17-023-0001	West Union	0.060	0.066	0.067	0.066	0.064	0.064	0.066	0.065
17-031-0001	Alsip	0.070	0.079	0.078	0.075	0.066	**0.075**	**0.077**	**0.073**
17-031-0032	Chicago South Water Filtration	0.071	0.076	0.074	0.077	0.066	**0.073**	**0.075**	**0.072**
17-031-0076	Chicago Com Ed Maintenance	0.065	0.074	0.078	0.075	0.065	**0.072**	**0.075**	**0.072**
17-031-1003	Chicago Taft High School	0.069	0.073	0.060	0.075	0.068	0.067	0.069	0.067
17-031-1601	Lemont	0.068	0.068	0.070	0.073	0.066	0.068	0.070	0.069
17-031-3103	Schiller Park	0.064	0.065	0.061	0.067	0.058	0.063	0.064	0.062
17-031-4002	Cicero Cook County Trailer	0.064	0.072	0.068	0.076	0.061	0.068	**0.072**	0.068
17-031-4007	Des Plaines	0.066	0.075	0.071	0.076	0.068	0.070	**0.074**	**0.071**
17-031-4201	Northbrook	0.069	0.083	0.070	0.079	0.068	**0.074**	**0.077**	**0.072**
17-031-7002	Evanston	0.069	0.084	0.073	0.076	0.070	**0.075**	**0.077**	**0.073**
17-043-6001	Lisle	0.070	0.071	0.069	0.074	0.067	0.070	**0.071**	0.070
17-049-1001	Effingham	0.063	0.066	0.070	0.066	0.064	0.066	0.067	0.066
17-065-0002	Knight Prairie	0.064	0.069	0.064	0.068	0.064	0.065	0.067	0.065
17-083-1001	Jerseyville	0.069	-	0.067	0.074	0.067	0.068	0.070	0.069
17-085-9991	Stockton	0.059	0.067	0.063	0.067	0.062	0.063	0.065	0.064
17-089-0005	Elgin Larsen Jr. High School	0.071	0.072	0.069	0.074	0.065	0.070	**0.071**	0.069
17-097-1007	Zion	0.066	0.074	0.074	0.077	0.070	**0.071**	**0.075**	**0.073**
17-111-0001	Cary	0.070	0.074	0.070	0.073	0.064	**0.071**	**0.072**	0.069
17-113-2003	Normal	0.063	0.068	0.064	0.065	0.063	0.065	0.065	0.064
17-115-0013	Decatur Illinois EPA Trailer	0.063	0.069	0.068	0.066	0.066	0.066	0.067	0.066
17-117-0002	Nilwood	0.063	0.066	0.066	0.067	0.064	0.065	0.066	0.065

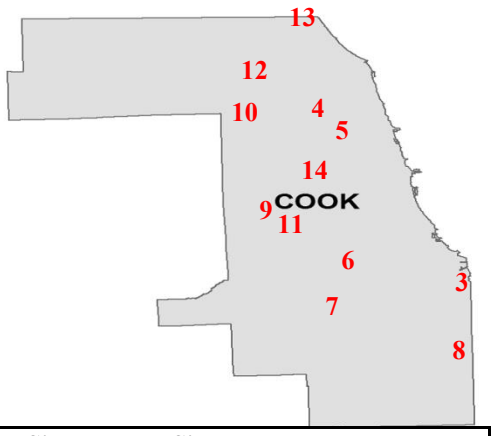
Table B4
Ozone Design Values

AQS ID	City	Fourth High 8-Hour Concentrations (ppm)					Design Values* (ppm)		
		2019	2018	2017	2016	2015	2017-2019	2016-2018	2015-2017
17-119-0008	Alton Clara Barton Elementary	0.067	0.072	0.066	0.073	0.069	0.068	0.070	0.069
17-119-1009	Maryville	0.064	0.075	0.074	0.067	0.064	**0.071**	**0.072**	0.068
17-119-3007	Wood River	0.070	0.072	0.067	0.075	0.069	0.069	**0.071**	0.070
17-119-9991	Highland	0.062	0.071	0.067	0.068	0.067	0.066	0.068	0.065
17-143-0024	Peoria Fire Station #8	0.062	0.069	0.065	0.068	0.060	0.065	0.067	0.064
17-143-1001	Peoria Heights	0.064	0.070	0.066	0.066	0.064	0.066	0.067	0.065
17-157-0001	Houston	0.060	0.065	0.069	0.066	0.065	0.064	0.066	0.066
17-161-3002	Rock Island	0.066	0.067	0.066	0.064	0.060	0.066	0.065	0.063
17-163-0010	East St. Louis	0.064	0.073	0.067	0.073	0.066	0.068	**0.071**	0.068
17-167-0014	Springfield State Fairgrounds	0.062	0.069	0.069	0.068	0.064	0.066	0.068	0.067
17-197-1011	Braidwood	0.060	0.071	0.068	0.064	0.064	0.066	0.067	0.065
17-201-2001	Loves Park	0.066	0.070	0.064	0.070	0.066	0.066	0.068	0.066
Statewide Average		0.065	0.071	0.068	0.070	0.065	0.068	0.069	0.067

*The design value is the three-year average of the fourth high concentration. Design value greater than 0.070 ppm is a violation of the National Ambient Air Quality Standard.

$PM_{2.5}$ FRM and FEM Monitoring Sites





	Site ID	Site Name
1.	170190006	Champaign
2.	170191001	Bondville
3.	170310022	Chicago – Washington High School
4.	170310052	Chicago – Mayfair Pump Station
5.	170310057	Chicago – Springfield Pump Station
6.	170310076	Chicago – Com Ed Maint. Bldg.
7.	170310001	Alsip
8.	170310119	Lansing – Kingery near-road
9.	170311016	Lyons Township
10.	170313103	Schiller Park
10.	170313301	Summit
12.	170314007	Des Plaines
13.	170314201	Northbrook
14.	170316005	Cicero
15.	170434002	Naperville
16.	170650002	Knight Prairie
17.	170831001	Jerseyville
18.	170890003	Elgin
19.	170890007	Aurora
20.	171110001	Cary
21.	171132003	Normal
22.	171150013	Decatur
23.	171190024	Granite City – Gateway Medical
24.	171191007	Granite City – 23rd and Madison
25.	171192009	Alton
26.	171193007	Wood River
27.	171430037	Peoria
28.	171570001	Houston
29.	171613002	Rock Island
30.	171630010	East St. Louis
31.	171670012	Springfield
32.	171971002	Joliet
33.	171971011	Braidwood
34.	172010118	Rockford

Table B5
$PM_{2.5}$ 24-Hour Exceedances

EXCEEDANCES OF THE 24-HOUR PRIMARY STANDARD OF 35 ug/m3		
Date	**Location**	**Concentration (ug/m3)**
7/8/19	Rockford	35.9
Total Over 35 ug/m3	1	
Total Days Over 35 ug/m3	1	

Table B6
$PM_{2.5}$ Highs

AQS ID	City	Total Samples	Samples Greater Than 35 ug/m3			Highest Samples							
			2019	2018	2017	1st	2nd	3rd	4th	5th	6th	7th	8th
17-019-0006	Champaign	95	0	0	0	20.1	19.9	19.8	18.5	17.5	15.9	14.8	14.4
17-019-1001	Bondville	354	0	0	0	22.7	22.2	20.5	20.4	19.4	19.0	18.7	18.7
17-031-0001	Alsip	53	0	0	0	17.1	16.0	14.2	14.0	13.6	13.1	11.8	11.7
17-031-0022	Chicago Washington High School	99	0	1	0	33.4	25.0	24.8	23.9	23.5	21.5	21.0	19.7
17-031-0052	Chicago Mayfair Pump Station	110	0	0	0	33.2	29.6	24.7	24.7	23.0	18.7	18.2	18.0
17-031-0057	Chicago Springfield Pump Station	56	0	0	0	26.7	18.6	16.5	15.9	14.1	14.0	13.3	13.1
17-031-0076	Chicago Com Ed Maintenance	58	0	0	0	25.4	24.9	24.7	18.0	16.7	13.6	13.5	13.1
17-031-0119	Lansing Kingery near-road #1	304	0	0	0	26.8	25.9	24.8	24.0	24.0	23.2	21.6	21.4
17-031-1016	Lyons Township	116	0	0	0	29.7	27.3	25.8	25.6	23.4	20.8	18.7	18.3
17-031-3103	Schiller Park	114	0	0	0	33.9	29.4	26.3	26.3	24.1	20.8	20.7	19.8
17-031-3301	Summit	115	0	0	0	30.7	25.1	19.3	18.6	17.7	17.5	17.2	17.1
17-031-4007	Des Plaines	176	0	0	1	30.5	29.7	29.5	29.0	25.2	23.1	21.7	21.5
17-031-4201	Northbrook	359	0	0	1	29.3	27.3	27.0	22.6	21.9	21.8	21.3	20.7
17-031-6005	Cicero Liberty School	59	0	0	0	26.5	19.3	16.9	16.8	15.7	15.7	14.7	14.5
17-043-4002	Naperville	261	0	0	0	29.6	27.4	26.2	25.7	25.1	22.8	22.1	21.6
17-065-0002	Knight Prairie	339	0	0	0	23.0	20.3	20.1	19.4	19.1	18.6	17.3	17.3
17-083-0117	Jerseyville	320	0	0	0	20.6	19.6	18.9	18.8	17.8	17.7	16.9	16.7
17-089-0003	Elgin McKinley School	113	0	0	0	27.3	25.4	24.9	22.1	21.7	19.4	18.3	18.0
17-089-0007	Aurora	106	0	0	0	30.2	26.3	24.5	20.5	20.5	20.3	20.2	17.7
17-111-0001	Cary	59	0	0	0	25.2	18.6	16.6	15.6	13.6	13.5	11.2	11.1
17-113-2003	Normal	360	0	0	0	25.0	23.8	22.9	22.2	22.0	21.0	21.0	20.6
17-115-0013	Decatur Illinois EPA Trailer	360	0	0	0	25.7	23.6	23.4	23.1	22.6	21.2	21.1	20.4
17-119-0024	Granite City Gateway Medical Center	112	0	1	0	24.7	28.0	25.0	22.4	20.2	20.0	19.4	18.8
17-119-1007	Granite City Fire Station #1	61	0	0	0	29.1	23.8	20.8	18.3	18.2	18.2	17.4	16.3
17-119-2009	Alton SIU Dental Clinic	110	0	0	0	22.6	22.2	19.2	19.0	18.5	17.9	16.3	16.1
17-119-3007	Wood River	112	0	0	0	28.5	26.0	22.7	19.5	17.7	17.4	15.7	15.3
17-143-0037	Peoria	351	0	0	0	23.6	23.5	21.8	21.5	20.8	20.1	19.7	19.3

Table B6
$PM_{2.5}$ Highs

AQS ID	City	Total Samples	Samples Greater Than 35 ug/m3			Highest Samples							
			2019	2018	2017	1st	2nd	3rd	4th	5th	6th	7th	8th
17-157-0001	Houston	241	0	0	0	21.6	19.3	18.8	18.1	16.9	16.4	16.2	15.5
17-161-3002	Rock Island	360	0	0	0	31.8	24.7	23.5	22.6	21.8	21.1	20.1	20.1
17-163-0010	East St. Louis	56	0	0	0	27.1	22.9	17.7	16.6	15.8	15.4	14.4	13.8
17-167-0012	Springfield Agricultural Building	354	0	0	0	22.2	22.2	21.4	20.4	19.4	19.0	18.2	17.9
17-197-1002	Joliet Pershing Elementary	361	0	0	0	26.2	25.7	25.2	23.1	22.8	22.3	21.9	21.4
17-197-1011	Braidwood	353	0	0	0	24.1	23.4	22.8	21.3	21.0	20.9	20.8	20.6
17-201-0118	Rockford Fire Dept.	288	1	0	0	35.8	26.5	26.4	26.1	25.1	23.4	23.2	22.0
Statewide Average						26.8	23.9	22.3	21.0	20.0	19.0	18.2	17.7
Total Over 35 ug/m3			1	2	2								
Total Days Over 35 ug/m3			1	2	1								

Table B7
$PM_{2.5}$ 24-Hour Design Values

AQS ID	City	98th Percentile Concentrations (ug/m3)					Design Values* (ug/m3)		
		2019	2018	2017	2016	2015	2017-2019	2016-2018	2015-2017
17-019-0006	Champaign	19.8	16.8	17.4	15.0	18.8	18.0	16.4	17.1
17-019-1001	Bondville	18.7	17.8	16.7	15.3	17.6	17.7	16.6	16.5
17-031-0001	Alsip	16.0	21.9	20.5	16.9	23.4	19.5	19.8	20.3
17-031-0022	Chicago Washington High School	24.8	27.0	18.3	17.7	24.8	23.4	21.0	20.3
17-031-0052	Chicago Mayfair Pump Station	24.7	25.2	23.3	17.9	24.0	24.4	22.1	21.7
17-031-0057	Chicago Springfield Pump Station	18.6	25.3	20.9	17.5	37.1	21.6	21.2	25.2
17-031-0076	Chicago Com Ed Maintenance	24.9	17.8	23.0	19.0	24.7	21.9	19.9	22.2
17-031-0119	Lansing Kingery near-road #1	21.6	-	-	-	-	-	-	-
17-031-1016	Lyons Township	25.8	23.5	23.8	19.9	24.0	24.4	22.4	22.6
17-031-3103	Schiller Park	26.3	25.5	23.8	17.6	25.1	25.2	22.3	22.2
17-031-3301	Summit	19.3	22.5	25.1	17.0	27.1	22.3	21.5	23.1
17-031-4007	Des Plaines	29.0	25.7	22.9	18.9	25.3	25.9	22.5	22.4
17-031-4201	Northbrook	20.7	22.7	20.9	18.4	22.4	21.4	20.7	20.6
17-031-6005	Cicero Liberty School	19.3	22.8	23.6	18.8	30.1	21.9	21.7	24.2
17-043-4002	Naperville	22.8	23.6	22.0	14.8	22.5	22.8	20.1	19.8
17-065-0002	Knight Prairie	17.3	20.6	15.7	16.0	22.1	17.9	17.4	17.9
17-083-0117	Jerseyville	16.9	19.2	19.0	-	17.7	18.4	19.1	18.5
17-089-0003	Elgin McKinley School	24.9	19.5	20.5	15.7	19.6	21.6	18.6	18.6
17-089-0007	Aurora	24.5	21.3	19.8	17.4	18.8	21.9	19.5	18.7
17-111-0001	Cary	18.6	19.0	17.1	14.7	34.9	18.2	16.9	22.2
17-113-2003	Normal	20.6	19.5	18.5	16.3	18.3	19.5	18.1	17.7
17-115-0013	Decatur Illinois EPA Trailer	20.4	22.4	21.6	14.6	16.2	21.5	19.5	17.5
17-119-0024	Granite City Gateway Medical Center	25.0	20.9	16.9	24.7	24.8	20.9	20.8	22.1
17-119-1007	Granite City Fire Station #1	23.8	22.8	21.2	16.2	19.5	22.6	20.1	19.0
17-119-2009	Alton SIU Dental Clinic	19.2	21.8	18.9	20.3	19.0	20.0	20.3	19.4

Table B7
$PM_{2.5}$ 24-Hour Design Values

AQS ID	City	98th Percentile Concentrations (ug/m3)					Design Values* (ug/m3)		
		2019	2018	2017	2016	2015	2017-2019	2016-2018	2015-2017
17-119-3007	Wood River	22.7	22.2	17.6	20.7	23.0	20.8	20.2	20.4
17-143-0037	Peoria City Office Building	19.3	20.4	22.4	14.3	15.7	20.7	19.0	17.5
17-157-0001	Houston	16.9	19.1	17.7	18.4	17.3	17.9	19.9	17.8
17-161-3002	Rock Island	20.1	19.4	20.4	17.7	22.8	20.0	19.2	20.3
17-163-0010	East St. Louis	22.9	22.6	18.3	18.4	21.7	21.3	19.8	19.5
17-167-0012	Springfield Agricultural Building	17.9	19.8	20.6	19.1	21.0	19.4	19.8	20.2
17-197-1002	Joliet Pershing Elementary	21.4	20.9	19.6	16.6	19.6	20.6	19.0	18.6
17-197-1011	Braidwood	20.6	19.5	18.5	18.0	16.3	19.5	18.7	17.6
17-201-0118	Rockford Fire Department	23.4	10.6	-	-	-	-	-	-
17-201-0013	Rockford Health Department	-	23.0	17.1	14.8	22.2	-	18.3	18.0
Statewide Average		21.4	21.3	20.1	17.5	22.3	21.0	19.8	20.0

*The design value is the three-year average of the 98th percentile concentration. Design value greater than or equal to 35.5 ug/m^3 is a violation of the National Ambient Air Quality Standard.

Table B8
$PM_{2.5}$ Annual Design Values

AQS ID	City	Annual Arithmetic Mean Concentrations (ug/m3)					Design Values* (ug/m3)		
		2019	2018	2017	2016	2015	2017-2019	2016-2018	2015-2017
17-019-0006	Champaign	7.5	7.6	7.4	7.6	8.6	7.5	7.5	7.9
17-019-1001	Bondville	7.8	8.0	7.7	7.3	8.5	7.8	7.6	7.8
17-031-0001	Alsip	7.9	9.0	8.7	8.6	11.1	8.5	8.8	9.5
17-031-0022	Chicago Washington High School	10.3	9.6	8.4	8.4	11.0	9.4	8.8	9.3
17-031-0052	Chicago Mayfair Pump Station	9.2	9.8	8.7	8.7	10.0	9.2	9.1	9.1
17-031-0057	Chicago Springfield Pump Station	8.8	9.6	8.9	9.2	12.5	9.1	9.2	10.2
17-031-0076	Chicago Com Ed Maintenance	8.3	9.0	8.4	9.0	11.1	8.6	8.8	9.5
17-031-0119	Lansing Kingery near-road #1	10.8	-	-	-	-	-	-	-
17-031-3103	Schiller Park	10.8	11.2	10.3	9.4	11.8	10.8	10.3	10.5
17-031-3301	Summit	9.3	10.2	8.9	9.1	11.0	9.5	9.4	9.7
17-031-4007	Des Plaines	10.3	11.4	9.3	8.9	9.9	10.3	9.9	9.4
17-031-4201	Northbrook	8.5	8.8	8.1	8.0	9.1	8.5	8.3	8.4
17-031-6005	Cicero Liberty School	9.0	10.0	8.6	8.9	12.5	9.2	9.2	10.0
17-043-4002	Naperville	10.3	10.5	8.2	7.8	9.0	9.7	8.8	8.3
17-065-0002	Knight Prairie	8.3	8.9	8.7	7.8	8.2	8.6	8.4	8.2
17-083-0117	Jerseyville	8.0	8.3	8.8	-	7.7	8.4	8.6	8.2
17-089-0003	Elgin McKinley School	8.5	8.7	8.0	7.9	8.9	8.4	8.2	8.3
17-089-0007	Aurora	8.7	9.0	8.1	8.0	8.9	8.6	8.4	8.3
17-111-0001	Cary	7.8	8.2	7.2	7.3	9.9	7.7	7.6	8.2
17-113-2003	Normal	9.2	9.7	8.8	7.6	7.6	9.5	8.7	8.0
17-115-0013	Decatur IEPA Trailer	9.5	10.4	8.7	7.8	8.7	9.5	9.0	8.4
17-119-1007	Granite City Fire Station #1	10.5	11.0	9.6	9.1	10.4	10.4	9.9	9.7
17-119-2009	Alton SIU Dental Clinic	9.1	9.3	8.7	8.8	9.0	9.0	8.9	8.8
17-119-3007	Wood River	9.1	9.2	8.3	8.7	9.1	8.9	8.7	8.7
17-143-0037	Peoria City Office Building	8.0	9.4	8.3	7.6	8.6	8.6	8.5	8.2

Table B8
$PM_{2.5}$ Annual Design Values

AQS ID	City	Annual Arithmetic Mean Concentrations (ug/m3)					Design Values* (ug/m3)		
		2019	2018	2017	2016	2015	2017-2019	2016-2018	2015-2017
17-157-0001	Houston	7.7	7.8	9.6	8.0	7.9	8.4	8.4	8.5
17-161-3002	Rock Island	8.6	8.9	7.9	7.2	9.1	8.5	8.0	8.1
17-163-0010	East St. Louis	9.1	10.3	8.8	10.0	10.7	9.4	9.7	9.8
17-167-0012	Springfield Agricultural Building	8.2	9.5	8.6	7.7	8.2	8.8	8.6	8.2
17-197-1002	Joliet Pershing Elementary	9.7	9.8	8.7	8.0	7.0	9.4	8.8	7.9
17-197-1011	Braidwood	8.8	7.9	7.8	7.5	8.4	8.2	7.7	7.9
17-201-0118	Rockford Fire Department	10.3	-	-	-	-	-	-	-
17-201-0013	Rockford Health Department	-	7.7	8.1	7.8	9.1	-	7.9	8.3
Statewide Average		9.0	9.3	8.5	8.2	9.5	9.0	8.7	8.8

*The design value is the three-year average of the annual arithmetic mean concentrations. Design value greater than 12.0 ug/m^3 is a violation of the National Ambient Air Quality Standard.

Shaded cells indicate completeness criteria were not met.

PM_{10} Monitoring Sites

	Site ID	Site Name
1.	170310022	Chicago – Washington High School
2.	170311016	Lyons Township
3.	170314201	Northbrook
4.	171190010	Granite City – 23rd and Madison

Table B9
PM_{10} 24-Hour Exceedances

EXCEEDANCES OF THE 24-HOUR PRIMARY STANDARD OF 150 ug/m3		
Date	**City**	**Concentration (ug/m3)**
None	None	None
Total Over 150 ug/m3	0	
Total Days Over 150 ug/m3	0	

Table B10
PM_{10} 24-Hour Highs and Design Values

AQS ID	City	Total Samples	Highest 24-Hour Samples								Samples Greater Than 150 ug/m3			Three-year Exceedance Average*
			1st	2nd	3rd	4th	5th	6th	7th	8th	2019	2018	2017	
17-031-0022	Chicago Washington High School	237	95	70	70	66	63	61	59	56	0	0	0	0.0
17-031-1016	Lyons Township	270	82	70	69	66	66	62	60	60	0	0	0	0.0
17-031-4201	Northbrook	60	28	28	26	26	25	25	23	22	0	0	0	0.0
17-119-1007	Granite City Fire Station #1	59	104	99	99	76	68	62	56	54	0	0	0	0.0
Statewide Average			77	67	66	59	56	53	50	48				
Total Over 150 ug/m3											0	0	0	
Total Days Over 150 ug/m3											0	0	0	

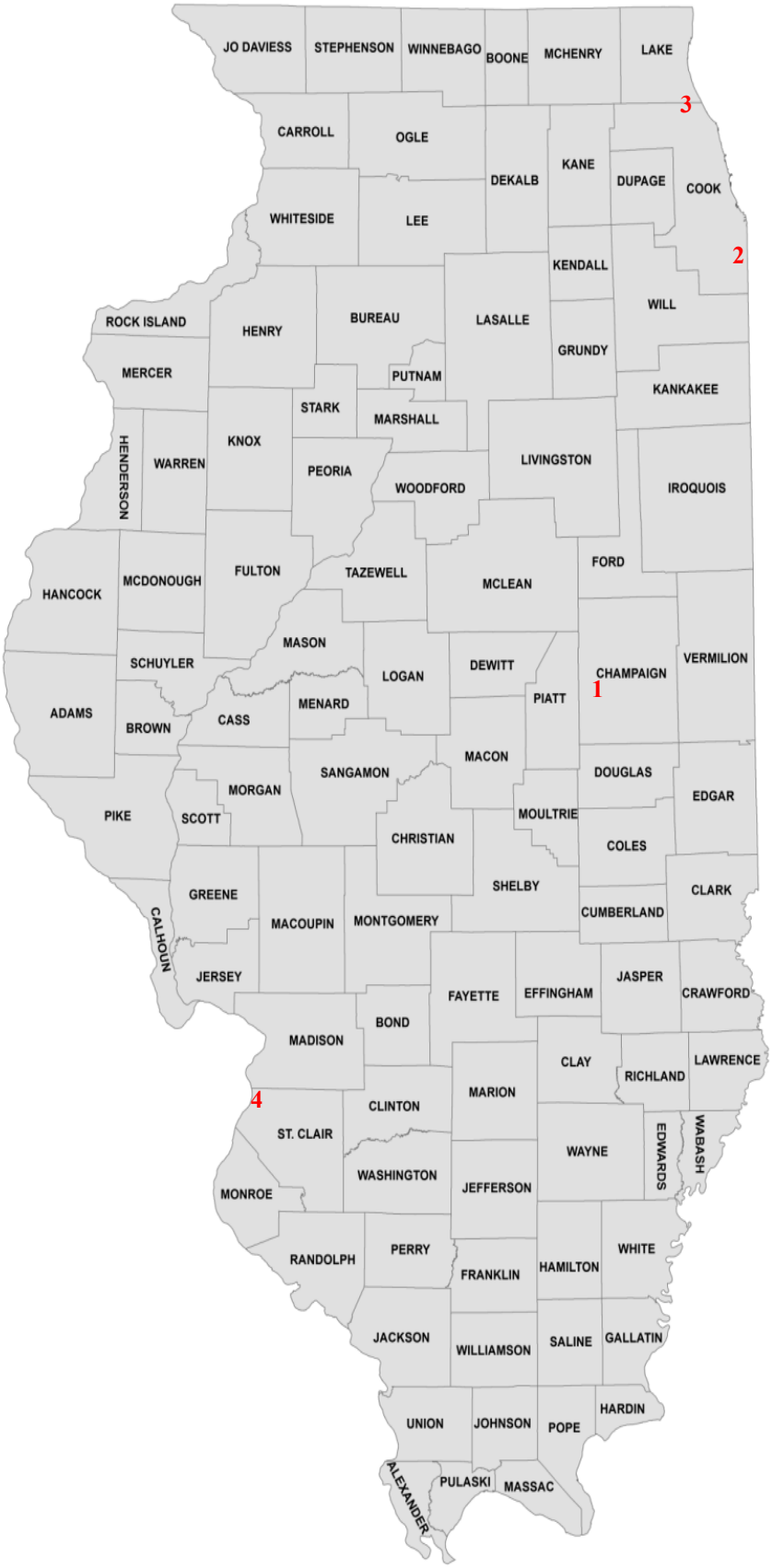
*The 24-hour PM_{10} standard is an exceedance-based standard set at 150 ug/m^3. The level is not to be exceeded more than once per year on average over three years. Three-year averages more than one are a violation of the National Ambient Air Quality Standard.

Table B11
PM_{10} Annual Design Values

AQS ID	City	Annual Arithmetic Mean Concentration (ug/m3)					Design Values* (ug/m3)		
		2019	**2018**	**2017**	**2016**	**2015**	2017-2019	2016-2018	**2015-2017**
17-031-0022	Chicago Washington High School	27	23	24	16	23	25	21	21
17-031-1016	Lyons Township	30	24	25	27	36	26	25	29
17-031-4201	Northbrook	14	14	16	17	20	15	16	18
17-119-1007	Granite City Fire Station #1	35	33	26	28	30	31	29	28
Statewide Average		27	24	23	22	27	25	23	24

*The annual PM_{10} standard was revoked in 2007. Previously the standard was a three-year average of the annual means. Concentrations above 50 ug/m^3 were a violation of the former National Ambient Air Quality Standard. Currently only the 24-hour PM_{10} standard is in place (see Table B10).

Carbon Monoxide Monitoring Sites



	Site ID	Site Name
1.	170191001	Bondville
2.	170310119	Lansing - Kingery near-road
3.	170314201	Northbrook
4.	171630010	East St. Louis

Table B12
Carbon Monoxide Exceedances

EXCEEDANCES OF EITHER THE 1-HOUR (35 PPM) OR 8-HOUR (9 PPM) PRIMARY STANDARDS			
Date	**City**	**Concentration**	**Averaging Period**
None	None	None	None

Total 1-hour Over 35 ppm	0	Total 8-hour Over 9 ppm	0
Total Days 1-hour Over 35 ppm	0	Total Days 8-hour Over 9 ppm	0

Table B13
Carbon Monoxide Highs

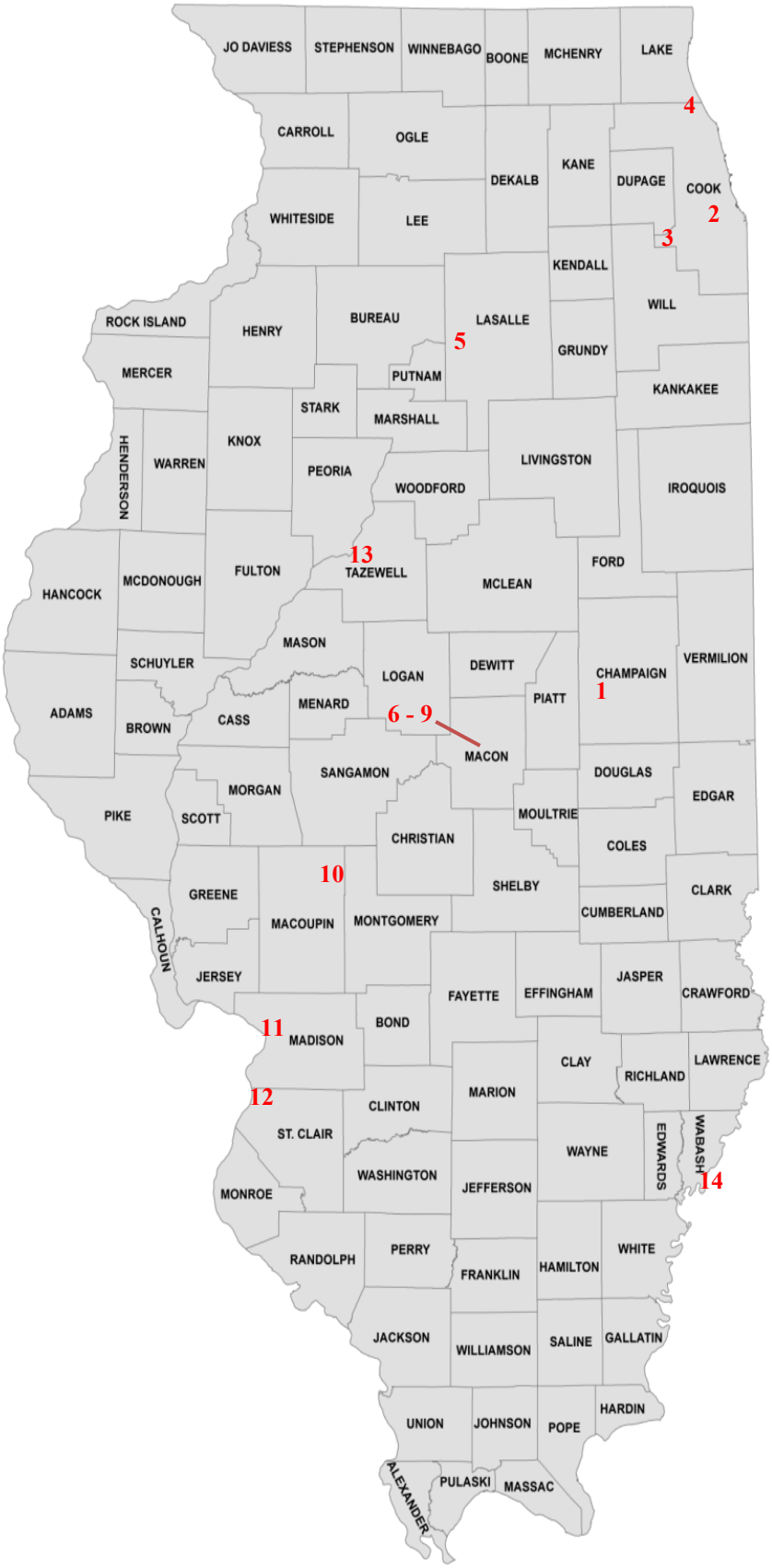
AQS ID	City	Total Hourly Samples	Fourth Highest Daily Samples 1-Hour (ppm)				Fourth Highest Samples 8-Hour (ppm)			
17-019-1001	Bondville	618	0.17	0.14	0.14	0.10	0.1	0.1	0.1	0.1
17-031-0119	Lansing Kingery near-road #1	7025	3.1	2.7	2.3	2.2	1.8	1.5	1.2	1.2
17-031-4201	Northbrook	7668	1.55	1.20	1.10	1.08	0.9	0.9	0.8	0.7
17-163-0010	East St. Louis	5777	2.3	1.8	1.5	1.5	1.1	1.0	0.9	0.8
Statewide Average			1.78	1.46	1.26	1.22	0.98	0.88	0.75	0.70

Table B14
Carbon Monoxide 1-Hour and 8-Hour Design Values

AQS ID	City	1-Hour Samples Greater than 35 (ppm)					8-Hour Samples Greater than 9 (ppm)				
		2019	2018	2017	2016	2015	2019	2018	2017	2016	2015
17-019-1001	Bondville	0	0	0	0	0	0	0	0	0	0
17-031-0119	Lansing Kingery near-road #1	0	-	-	-	-	0	-	-	-	-
17-031-4201	Northbrook	0	0	0	0	0	0	0	0	0	0
17-163-0010	East St. Louis	0	0	0	0	0	0	0	0	0	0

*The 1-hour and 8-hour carbon monoxide standard is an exceedance-based standard. The 1-hour standard is set at 35 ppm and is not to be exceeded more than once per year. The 8-hour standard is set at 9 ppm and is not to be exceeded more than once per year. More than one exceedance in a year is a violation of the National Ambient Air Quality Standard.

Sulfur Dioxide Monitoring Sites



	Site ID	Site Name
1.	170191001	Bondville
2.	170310076	Chicago – Com Ed Maint. Bldg.
3.	170311601	Lemont
4.	170314201	Northbrook
5.	170990007	Oglesby
6.	171150013	Decatur
7.	171150118	Decatur - Archer Daniel Midlands
8.	171150218	Decatur - Tate & Lyle North
9.	171150318	Decatur - Tate & Lyle South
10.	171170002	Nilwood
11.	171193007	Wood River
12.	171630010	East St. Louis
13.	171790004	Pekin
14.	171850001	Mount Carmel

Table B15
Sulfur Dioxide Exceedances

EXCEEDANCES OF THE 1-HOUR PRIMARY STANDARD OF 75 ppb		
Date	**City**	**Concentration (ppb)**
None	None	None
Total Over 75 ppb	0	
Total Days Over 75 ppb	0	

Table B16
Sulfur Dioxide Highs

AQS ID	City	Total Hourly Samples	Samples Greater Than 75 ppb			Highest Daily 1-Hour Samples (ppb)				Highest 3-Hour Block Averages (ppb)	
			2019	2018	2017	1st	2nd	3rd	4th	1st	2nd
17-019-1001	Bondville	7820	0	0	0	6.6	4.5	4.4	3.8	3.3	2.6
17-031-0076	Chicago Com Ed Maintenance	8675	0	0	0	19.9	14.6	10.5	9.1	15.0	7.9
17-031-1601	Lemont	8516	0	0	0	16.9	9.4	6.8	6.6	10.3	6.9
17-031-4201	Northbrook	8042	0	0	0	5.5	4.5	4.3	4.1	4.4	3.9
17-099-0007	Oglesby	8088	0	0	0	43.8	27.9	25.3	22.4	20.7	17.5
17-115-0013	Decatur Illinois EPA Trailer	8370	0	0	0	37.6	26.6	24.6	23.4	23.7	22.8
17-115-0117	Decatur ADM	8707	0	0	1	19.7	19.4	17.7	17.0	14.5	13.5
17-115-0217	Decatur Tate & Lyle North	8709	0	5	5	50.5	47.6	44.8	41.8	44.7	33.3
17-115-0317	Decatur Tate & Lyle South	8600	0	6	3	47.4	40.0	39.0	34.2	34.0	31.6
17-117-0002	Nilwood	8604	0	0	0	5.5	4.7	4.6	4.6	4.3	2.8
17-119-3007	Wood River	8624	0	0	0	14.6	10.2	9.5	9.3	6.2	5.9
17-163-0010	East St. Louis	8643	0	0	0	15.6	11.8	11.5	10.6	13.1	7.3
17-179-0004	Pekin	8367	0	0	0	25.1	20.6	18.7	17.3	16.0	14.5
17-185-0001	Mount Carmel	8359	0	0	0	61.3	37.7	37.3	30.5	38.5	30.4
Statewide Average						26.4	20.0	18.5	16.8	17.8	14.4
Total Over 75 ppb			0	11	9						
Total Days Over 75 ppb			0	11	9						

Table B17
Sulfur Dioxide 1-Hour Design Values

AQS ID	City	99th Percentile Concentrations (ppb)					Design Values* (ppb)		
		2019	2018	2017	2016	2015	2017-2019	2016-2018	2015-2017
17-019-1001	Bondville	3.8	3.3	3.6	3.7	12.0	4	4	6
17-031-0076	Chicago Com Ed Maintenance	10.5	11.0	11.5	9.3	13.2	11	11	11
17-031-1601	Lemont	6.6	6.3	5.3	12.3	20.3	6	8	13
17-031-4201	Northbrook	4.1	3.4	2.5	4.3	7.7	3	3	5
17-099-0007	Oglesby	22.4	27.4	12.5	14.7	7.0	21	18	11
17-115-0013	Decatur Illinois EPA Trailer	23.4	37.0	39.6	54.3	39.1	33	44	44
17-115-0117	Decatur ADM	17.0	20.8	27.8	-	-	22	24	-
17-115-0217	Decatur Tate & Lyle North	41.8	83.9	76.6	-	-	67	**80**	-
17-115-0317	Decatur Tate & Lyle South	34.2	89.0	74.3	-	-	66	**82**	-
17-117-0002	Nilwood	4.6	4.5	3.8	5.2	6.8	4	5	5
17-119-1010	South Roxana	-	-	-	12.9	12.6	-	-	-
17-119-3007	Wood River	9.3	9.7	10.9	24.2	20.4	10	15	19
17-143-0024	Peoria Fire Station #8	-	-	18.5	27.1	22.2	-	-	23
17-157-0001	Houston	-	-	-	-	11.6	-	-	-
17-163-0010	East St. Louis	10.6	15.9	8.8	19.1	18.9	12	15	16
17-167-0006	Springfield Sewage Treatment Plant	-	-	-	-	7.1	-	-	-
17-179-0004	Pekin	17.3	11.8	-	125.8	116.1	15	69	**95**
17-185-0001	Mount Carmel	30.5	36.8	32.4	42.1	43.0	33	37	39
Statewide Average		16.9	25.8	24.4	27.3	23.9	21	30	24

*The design value is the three-year average of the 99th percentile concentration. Design value greater than 75 ppb is a violation of the National Ambient Air Quality Standard.

Nitrogen Dioxide Monitoring Sites

	Site ID	Site Name
1.	170310076	Chicago - Com Ed Maintenance
2.	170310216	Chicago - Kennedy near-road
3.	170310116	Lansing - Kingery near-road
4.	170313103	Schiller Park
5.	170314002	Cicero
6.	171170002	Nilwood
7.	171630010	East St. Louis

Table B18
Nitrogen Dioxide 1-Hour Exceedances

EXCEEDANCES OF THE 1-HOUR PRIMARY STANDARD OF 100 PPB		
Date	**City**	**Concentration (ppb)**
None	None	None
Total Over 100 ppb	0	
Total Days Over 100 ppb	0	

Table B19
Nitrogen Dioxide Highs

AQS ID	City	Total Hourly Samples	Samples Greater Than 100 ppb			Highest Samples							
			2019	2018	2017	1st	2nd	3rd	4th	5th	6th	7th	8th
17-031-0076	Chicago Com Ed Maintenance	8325	0	0	0	75.2	66.4	54.6	51.9	48.7	48.6	48.1	46.8
17-031-0119	Lansing Kingery near-road #1	7313	0	-	-	58.0	57.7	54.4	52.3	51.8	51.1	51.1	50.3
17-031-0219	Chicago Kennedy near-road #2	3465	0	-	-	55.1	45.2	44.7	44.0	43.2	42.9	42.0	42.0
17-031-3103	Schiller Park	8334	0	0	0	77.3	71.8	68.3	57.6	55.7	55.5	54.9	54.1
17-031-4002	Cicero Cook County Trailer	8663	0	0	0	76.2	71.8	62.6	58.0	57.9	56.6	55.9	55.7
17-117-0002	Nilwood	7769	0	0	0	17.3	17.2	16.8	16.7	16.3	16.3	15.0	14.9
17-163-0010	East St. Louis	7876	0	0	0	43.7	42.9	42.5	42.2	41.8	40.5	39.1	38.4
Statewide Average						57.5	53.3	49.1	46.1	45.1	44.4	43.7	43.2
Total Over 100 ppb			0	0	0								
Total Days Over 100 ppb			0	0	0								

Table B20
Nitrogen Dioxide 1-Hour Design Values

AQS ID	City	98th Percentile Concentrations (ppb)					Design Values* (ppb)		
		2019	2018	2017	2016	2015	2017-2019	2016-2018	2015-2017
17-031-0063	Chicago CTA Building	-	-	52.2	58.4	57.4	-	-	56
17-031-0076	Chicago Com Ed Maintenance	46.8	65.9	54.1	60.8	45.2	56	60	53
17-031-0119	Lansing Kingery near-road #1	51.1	-	-	-	-	-	-	-
17-031-0219	Chicago Kennedy near-road #2	44.7	-	-	-	-	-	-	-
17-031-3103	Schiller Park	54.1	61.0	50.0	56.0	60.8	55	56	56
17-031-4002	Cicero Cook County Trailer	55.7	59.7	55.1	54.7	62.4	57	57	57
17-031-4201	Northbrook	-	-	-	39.7	42.8	-	-	-
17-117-0002	Nilwood	15.0	15.2	-	-	-	15	-	-
17-163-0010	East St. Louis	39.1	38.2	35.9	35.3	39.9	38	36	37
Statewide Average		43.8	48.0	49.5	50.8	51.4	44	52	52

*The design value is the three-year average of the 98th percentile concentration. Design value greater than 100 ppb is a violation of the National Ambient Air Quality Standard.

Table B21
Nitrogen Dioxide Annual Design Values

AQS ID	City	Annual Arithmetic Mean Concentrations* (ppb)				
		2019	2018	2017	2016	2015
17-031-0063	Chicago CTA Building	-	-	15.75	16.85	16.93
17-031-0076	Chicago Com Ed Maintenance	11.89	15.33	12.86	13.49	13.01
17-031-0119	Lansing Kingery near-road #1	16.64	-	-	-	-
17-031-0219	Chicago Kennedy near-road #2	16.37	-	-	-	-
17-031-3103	Schiller Park	17.43	17.91	15.79	17.08	18.20
17-031-4002	Cicero Cook County Trailer	14.14	15.89	15.63	14.07	16.74
17-031-4201	Northbrook	-	-	-	12.10	9.69
17-117-0002	Nilwood	2.37	2.40	-	-	-
17-163-0010	East St. Louis	8.82	9.49	8.63	9.12	8.32
Statewide Average		12.52	12.20	13.73	13.95	13.82

*The design value is the highest annual average concentration during the most recent two years. Design value greater than 53 ppb is a violation of the National Ambient Air Quality Standard.

Lead Monitoring Sites

	Site ID	Site Name
1.	170310022	Chicago – Washington High School
2.	170310110	Chicago – Perez Elementary
3.	171190010	Granite City – 15th and Madison

Table B22
Lead Highs

AQS ID	City	Total Sample Days	Highest Monthly Means					Maximum Three-Month Mean
			1st	2nd	3rd	4th	5th	
17-031-0022	Chicago Washington High School	47	0.013	0.013	0.013	0.010	0.010	0.01
17-031-0110	Chicago Perez Elementary	65	0.015	0.015	0.012	0.012	0.010	0.01
17-119-0010	Granite City Air Products	61	0.344	0.328	0.107	0.081	0.065	0.15
Statewide Average			0.124	0.119	0.044	0.034	0.028	0.06

Table B23
Lead Design Values

AQS ID	City	Maximum Three-Month Rolling Mean (ug/m3)					Design Values* (ug/m3)		
		2019	2018	2017	2016	2015	2017-2019	2016-2018	2015-2017
17-031-0022	Chicago Washington High School	0.01	0.01	0.02	0.02	0.04	0.02	0.02	0.04
17-031-0110	Chicago Perez Elementary	0.01	0.01	0.01	0.01	0.03	0.01	0.01	0.03
17-031-0113	Chicago ArcelorMittal Steel	-	-	-	0.01	0.01		-	-
17-031-4201	Northbrook	-	-	-	0.00	0.01		-	-
17-089-0113	Geneva Johnson Controls	-	-	-	0.05	0.05		-	-
17-115-0110	Decatur Mueller	-	-	0.04	0.04	0.04		-	0.04
17-119-0010	Granite City Air Products	0.15	0.06	0.03	0.02	0.02	0.15	0.06	0.03
Statewide Average		0.06	0.03	0.03	0.02	0.03	0.06	0.03	0.04

*The design value is the maximum three-month rolling mean over the latest three-year period. Design value greater than 0.15 ug/m3 is a violation of the National Ambient Air Quality Standard.

Table B24
Filter Analysis Data

AQS ID	City	Total Samples	Highs		Annual Mean	Total Samples	Highs		Annual Mean	Total Samples	Highs		Annual Mean
			1st	2nd			1st	2nd			1st	2nd	
		Arsenic				Beryllium				Cadmium			
17-031-0022	Chicago Washington High School	-	-	-	-	-	-	-	-	47	0.011	0.006	0.001
17-031-0110	Chicago Perez Elementary	-	-	-	-	-	-	-	-	56	0.001	0.001	0.000
17-119-0010	Granite City Air Products	56	0.020	0.010	0.001	56	0.000	0.000	0.000	56	0.000	0.000	0.000

Table B24
Filter Analysis Data

AQS ID	City	Total Samples	Highs		Annual Mean	Total Samples	Highs		Annual Mean	Total Samples	Highs		Annual Mean
			1st	2nd			1st	2nd			1st	2nd	
		Chromium				Iron				Manganese			
17-031-0022	Chicago Washington High School	47	0.031	0.029	0.012	47	2.18	2.15	0.599	47	0.148	0.129	0.045
17-031-0110	Chicago Perez Elementary	56	0.023	0.022	0.009	56	1.09	0.91	0.344	56	0.055	0.050	0.015
17-119-0010	Granite City Air Products	56	0.024	0.018	0.005	56	5.70	4.94	1.43	56	0.313	0.276	0.082

Table B24
Filter Analysis Data

AQS ID	City	Total Samples	Highs		Annual Mean	Total Samples	Highs		Annual Mean	Total Samples	Highs		Annual Mean
			1st	2nd			1st	2nd			1st	2nd	
		Nickel											
17-031-0022	Chicago Washington High School	47	0.015	0.009	0.004								
17-031-0110	Chicago Perez Elementary	56	0.009	0.009	0.003								
17-119-0010	Granite City Air Products	56	0.074	0.025	0.004								

Table B25
Toxic Compounds

AQS ID	City	Compounds	Highest 24-hour Samples (ppbc)				Annual Average
			1st	2nd	3rd	4th	
17-031-4201	Northbrook	1,3 Butadiene	0.2	0.1	0.1	0.1	0.07
		Dichloromethane	1.3	0.6	0.6	0.5	0.28
		Chloroform	0.6	0.4	0.3	0.3	0.12
		Carbon Tetrachloride	0.1	0.1	0.1	0.1	0.10
		Tetrachloroethylene	0.1	0.1	0.1	0.1	0.01
		Trichloroethylene	0.0	0.0	0.0	0.0	0.00
		1,2 Dichloropropane	0.0	0.0	0.0	0.0	0.00
		Vinyl Chloride	0.0	0.0	0.0	0.0	0.00
		Benzene	1.4	1.3	1.2	1.0	0.72
		Toluene	3.0	2.8	2.5	2.5	1.26
		Formaldehyde	4.7	4.3	4.2	3.2	1.85
		Acetaldehyde	2.5	2.5	2.4	2.3	1.30
		Acrolein	2.6	2.1	2.0	2.0	1.16
17-031-3103	Schiller Park	1,3 Butadiene	0.4	0.4	0.4	0.4	0.16
		Dichloromethane	218.0	172.0	10.6	10.5	8.81
		Chloroform	0.1	0.1	0.1	0.1	0.06
		Carbon Tetrachloride	0.2	0.1	0.1	0.1	0.10
		Tetrachloroethylene	2.8	2.8	2.7	2.7	1.56
		Trichloroethylene	0.9	0.4	0.3	0.2	0.05
		1,2 Dichloropropane	0.0	0.0	0.0	0.0	0.00
		Vinyl Chloride	0.0	0.0	0.0	0.0	0.00
		Benzene	2.3	1.8	1.8	1.8	1.17
		Toluene	6.5	6.2	5.8	5.5	2.92
		Formaldehyde	9.8	9.4	9.1	8.5	5.29
		Acetaldehyde	14.8	9.0	8.9	5.5	3.59
		Acrolein	2.9	2.7	2.6	2.4	1.39

[1] – Toxic metals data (As, Be, Cd, Cr, Mn, Ni) summarized in Table B24 - Filter Analysis Data

Table C1

Carbon Monoxide Point Source Emission Distribution (Tons/Year)

Category	2015	2016	2017	2018	2019
External Fuel Combustion					
Electric Generation	20,092.2	17,065.5	11,188.4	12,253.2	13,628.8
Industrial	5,781.1	5,345.5	5,005.5	4,674.7	4,559.1
Commercial/Institutional	1,498.3	1,493.7	1,345.6	1,433.4	1,445.3
Space Heating	38.9	21.3	16.7	17.7	21.4
Internal Fuel Combustion					
Electric Generation	2,306.4	2,475.6	3,011.5	1,750.4	1,972.8
Industrial	4,684.8	3,552.2	2,847.7	2,648.3	3,188.1
Commercial/Institutional	190.6	226.8	187.8	179.0	213.8
Engine Testing	215.8	168.4	165.7	162.1	208.7
Industrial Processes					
Chemical Manufacturing	1,814.1	1,591.6	1,603.8	1,832.6	1,827.2
Food/Agriculture	1,420.2	1,576.8	1,449.3	1,263.0	1,189.6
Primary Metal Production	15,855.7	13,226.3	10,165.9	9,912.7	12,408.3
Secondary Metal Production	2,041.5	2,492.9	2,105.9	2,103.6	1,906.6
Mineral Products	2,820.9	3,580.7	4,322.5	3,546.7	3,334.4
Petroleum Industry	3,085.2	3,245.9	2,615.6	2,669.7	2,477.7
Paper and Wood Products	1.5	0.5	0.5	0.5	0.5
Rubber and Plastic Products	26.3	24.5	21.5	18.5	21.9
Fabricated Metal Products	203.1	214.2	205.8	218.4	191.7
Oil and Gas Production	274.6	241.6	229.5	241.2	244.4
Miscellaneous Machinery	1.3	1.2	0.6	0.6	0.6
Electrical Equipment	2.0	2.0	1.4	1.4	1.4
Health Services	153.6	175.3	171.4	170.9	168.5
In-Process Fuel Use	946.8	403.2	12.0	10.1	112.9
Miscellaneous Manufacturing	59.5	37.5	52.2	55.0	59.6
Organic Solvent Emissions					
Organic Solvent Use	0.0	0.2	0.1		
Surface Coating Operations	271.2	232.0	235.9	213.4	233.0
Petroleum Product Storage	0.0	0.2	0.2	0.3	0.0
Bulk Terminals/Plants	32.9	26.0	9.9	10.9	17.5
Printing/Publishing	1.1		0.7	0.7	2.1
Petroleum Marketing/Transport	46.9	21.2	21.1	8.4	95.7
Organic Chemical Storage (large)	2.7			0.2	0.0
Organic Chemical Transportation					3.6
Organic Solvent Evaporation	9.8	9.0	53.6	20.4	39.8
Solid Waste Disposal					
Government	1,562.0	1,758.0	1,545.9	1,661.5	1,757.6
Commercial/Institutional	25.0	40.9	41.0	11.8	11.8
Industrial	605.0	691.7	629.7	663.8	597.5
Site Remediation	1.2	2.2	2.2	2.2	3.3
Commercial				28.1	15.5
Institutional					0.1
Totals	**66,072.1**	**59,944.8**	**49,267.3**	**47,785.6**	**51,961.0**

Table C2

Nitrogen Oxides Point Source Emission Distribution (Tons/Year)

Category	2015	2016	2017	2018	2019
External Fuel Combustion					
Electric Generation	45,242.2	33,102.0	27,023.2	28,127.4	29,824.7
Industrial	9,941.2	9,217.5	8,425.8	7,863.4	7,392.7
Commercial/Institutional	2,059.7	1,938.0	1,804.4	1,858.3	1,894.3
Space Heating	96.5	86.6	66.0	71.9	74.0
Internal Fuel Combustion					
Electric Generation	2,229.8	2,409.4	3,531.8	2,046.9	2,522.1
Industrial	20,229.6	14,482.6	9,029.6	7,232.8	8,659.5
Commercial/Institutional	404.0	541.3	431.2	431.3	471.4
Engine Testing	439.4	563.8	476.6	344.5	327.2
Industrial Processes					
Chemical Manufacturing	1,361.0	1,552.0	1,363.9	1,452.3	1,468.9
Food/Agriculture	1,449.6	1,504.3	1,346.0	1,299.1	1,137.9
Primary Metal Production	1,779.1	1,329.7	964.5	1,010.2	1,208.4
Secondary Metal Production	585.3	667.0	779.6	720.5	629.5
Mineral Products	6,275.5	5,410.1	7,619.5	6,405.3	6,699.2
Petroleum Industry	4,636.0	4,191.9	3,749.4	3,640.5	3,771.5
Paper and Wood Products	1.3	0.9	0.9	0.9	0.9
Rubber and Plastic Products	30.6	26.4	24.1	20.6	27.5
Fabricated Metal Products	236.3	269.8	245.9	266.1	244.2
Oil and Gas Production	706.3	620.6	688.7	691.2	627.8
Miscellaneous Machinery	1.8	0.6	0.8	0.8	0.8
Electrical Equipment	2.5	2.5	1.9	1.9	1.7
Health Services	4.0	6.6	6.6	6.6	7.0
Textile Products	0.9	0.9			
In-Process Fuel Use	803.1	190.3	34.0	70.3	165.0
Miscellaneous Manufacturing	18.3	15.7	15.3	18.6	17.9
Organic Solvent Emissions					
Organic Solvent Use	0.0	0.2	0.2		
Surface Coating Operations	375.1	420.7	513.0	475.3	473.6
Petroleum Product Storage				0.2	0.0
Bulk Terminals/Plants	13.5	0.2	0.2	2.9	7.4
Printing/Publishing	1.5	13.3	4.0	0.8	4.0
Petroleum Marketing/Transport	20.1	8.8	0.8	3.5	38.2
Organic Chemical Storage (large)	1.6		8.7	0.2	0.0
Organic Chemical Transportation					1.5
Organic Solvent Evaporation	13.7	11.3	23.2	15.9	20.2
Solid Waste Disposal					
Government	558.9	592.1	521.6	590.5	574.8
Commercial/Institutional	17.2	13.3	13.3	1.3	1.3
Industrial	214.4	245.7	198.4	201.4	195.2
Site Remediation	2.5	2.8	2.8	2.8	5.8
Commercial				11.9	11.0
Institutional					0.1
Totals	**99,752.5**	**79,438.9**	**68,915.9**	**64,888.5**	**68,507.0**

Table C3

PM_{10} Point Source Emission Distribution (Tons/Year)

Category	2015	2016	2017	2018	2019
External Fuel Combustion					
Electric Generation	5,637.2	4,335.2	3,137.0	2,901.5	4,004.8
Industrial	1,304.5	1,180.1	972.9	734.0	715.8
Commercial/Institutional	193.9	186.6	172.4	179.4	180.8
Space Heating	6.6	3.4	2.8	3.0	3.2
Internal Fuel Combustion					
Electric Generation	208.0	358.4	527.0	291.8	382.1
Industrial	303.3	238.0	218.9	228.7	269.3
Commercial/Institutional	25.2	35.2	23.8	21.9	26.3
Engine Testing	15.7	24.0	20.9	14.7	15.5
Industrial Processes					
Chemical Manufacturing	836.6	1,031.2	978.8	985.4	1,023.5
Food/Agriculture	5,677.7	5,846.3	5,718.2	5,600.5	5,497.3
Primary Metal Production	1,233.1	872.1	627.0	634.5	882.7
Secondary Metal Production	1,034.4	955.0	858.6	885.4	869.2
Mineral Products	4,449.2	4,733.0	4,455.1	4,332.8	4,093.1
Petroleum Industry	1,239.5	1,189.0	1,283.0	1,153.0	1,234.2
Paper and Wood Products	93.1	112.7	121.5	130.5	140.9
Rubber and Plastic Products	113.7	168.2	164.6	140.8	162.1
Fabricated Metal Products	220.3	248.4	239.1	258.9	270.0
Oil and Gas Production	7.9	13.4	14.8	14.0	12.0
Building Construction	1.6	0.1	0.0	0.0	0.0
Miscellaneous Machinery	12.2	14.8	15.4	15.2	13.1
Electrical Equipment	4.4	5.1	5.0	5.0	5.1
Transportation Equipment	2.0	0.6	0.1	0.1	0.2
Health Services	63.9	76.9	75.1	79.2	79.0
Leather and Leather Products	2.7	9.7	9.7	11.9	11.9
Textile Products	0.2	0.1	0.0	0.0	0.0
Type Setting			0.5	0.5	0.5
Process Cooling	263.1	271.6	267.7	237.4	237.7
In-Process Fuel Use	181.2	81.4	0.4	2.9	26.0
Miscellaneous Manufacturing	20.1	19.2	19.0	19.0	51.7
Organic Solvent Emissions					
Organic Solvent Use	0.1	2.9	2.7	23.0	21.4
Surface Coating Operations	176.9	257.4	310.1	250.8	239.9
Petroleum Product Storage		1.1	1.1	1.1	0.0
Bulk Terminals/Plants	0.4	1.1	2.5	4.1	1.2
Printing/Publishing	28.9	29.3	28.3	29.9	37.6
Petroleum Marketing/Transport	1.2	1.3	1.3	1.0	4.4
Organic Chemical Storage (large)	1.5	5.8	5.7	5.7	6.1
Dry Cleaning (petroleum based)	0.5	0.7	0.7	0.7	7.4
Organic Solvent Evaporation	3.5	5.7	6.3	3.7	10.4
Solid Waste Disposal					
Government	424.7	355.2	351.8	382.7	426.3
Commercial/Institutional	7.5	7.9	7.4	1.3	0.0
Industrial	95.4	92.0	77.1	201.4	86.7
Site Remediation	14.7	14.2	135.5	2.8	13.7
Commercial				7.2	3.2
Institutional					0.1
Totals	**23,959.2**	**22,820.2**	**20,778.6**	**19,725.7**	**21,066.4**

Table C4

Sulfur Dioxide Point Source Emission Distribution (Tons/Year)

Category	2015	2016	2017	2018	2019
External Fuel Combustion					
Electric Generation	136,043.9	89,806.2	61,147.3	54,066.6	57,192.8
Industrial	24,913.5	19,064.4	16,023.6	13,409.5	12,220.6
Commercial/Institutional	2,665.7	2,582.8	2,405.7	2,486.2	2,606.4
Space Heating	0.6	0.6	0.5	0.5	0.5
Internal Fuel Combustion					
Electric Generation	237.5	223.0	271.9	268.5	248.8
Industrial	65.8	62.8	49.0	42.2	70.6
Commercial/Institutional	15.8	24.0	20.1	15.9	16.8
Engine Testing	3.2	8.1	6.7	4.3	5.2
Industrial Processes					
Chemical Manufacturing	1,333.3	1,330.6	1,000.0	727.9	912.3
Food/Agriculture	1,238.6	1,192.5	1,097.2	1,440.8	1,436.7
Primary Metal Production	2,502.8	2,046.8	1,413.2	1,426.9	2,533.5
Secondary Metal Production	118.6	93.6	92.8	85.7	92.6
Mineral Products	8,183.3	4,816.4	7,806.9	9,107.2	6,261.1
Petroleum Industry	3,026.0	2,498.1	1,568.3	1,635.0	1,299.7
Paper and Wood Products	0.0	0.0	0.0	0.0	0.0
Rubber and Plastic Products	1.5	0.3	0.3	0.2	3.9
Fabricated Metal Products	11.8	15.6	15.1	14.7	12.8
Oil and Gas Production	3.3	1.3	1.2	0.8	0.6
Miscellaneous Machinery	0.0	0.0	0.0	0.0	0.0
Electrical Equipment	0.0	0.0			
Health Services	5.1	7.5	7.5	7.5	7.5
Process Cooling	0.0	0.0	0.0	0.0	0.0
In-Process Fuel Use	419.0	175.4	5.7	5.9	61.7
Miscellaneous Manufacturing	17.1	0.5	0.5	0.4	0.4
Organic Solvent Emissions					
Organic Solvent Use	0.0	0.2	0.0		
Surface Coating Operations	3.6	9.6	4.5	4.5	4.9
Petroleum Product Storage	7.7	8.3	0.9	8.3	8.3
Bulk Terminals/Plants					0.5
Printing/Publishing	0.4	0.8	0.8	0.5	0.0
Petroleum Marketing/Transport	0.0	75.3	0.0	0.0	2.5
Organic Chemical Storage (large)	0.1		0.1	0.1	0.5
Organic Chemical Transportation	0.4	0.1	0.3	1.6	
Organic Solvent Evaporation	25.1	3.5	0.7	0.6	0.9
Solid Waste Disposal					
Government	914.8	949.8	729.9	1,063.8	900.8
Commercial/Institutional	0.4	2.6	2.5	1.5	1.5
Industrial	364.4	342.5	371.8	365.7	218.4
Site Remediation					1.8
Commercial					0.7
Institutional					0.0
Totals	**182,200.0**	**125,421.1**	**94,095.4**	**86,245.4**	**86,125.6**

Table C5

Volatile Organic Material Point Source Emission Distribution (Tons/Year)

Category	2015	2016	2017	2018	2019
External Fuel Combustion					
Electric Generation	1,383.4	1,095.4	973.2	1,111.1	1,128.9
Industrial	341.0	321.4	338.8	314.9	303.9
Commercial/Institutional	92.4	86.7	78.9	83.7	85.5
Space Heating	5.3	4.6	3.5	3.8	3.9
Internal Fuel Combustion					
Electric Generation	256.3	387.6	528.2	352.7	172.2
Industrial	1,025.9	793.6	602.8	519.0	684.8
Commercial/Institutional	31.8	35.1	36.6	36.2	45.6
Engine Testing	77.9	39.1	35.3	45.0	56.7
Industrial Processes					
Chemical Manufacturing	6,487.1	6,261.4	5,752.3	5,769.7	5,679.5
Food/Agriculture	8,855.2	9,461.8	8,917.4	9,316.2	9,432.5
Primary Metal Production	414.7	287.8	141.1	146.8	163.6
Secondary Metal Production	671.9	697.4	672.8	725.7	760.1
Mineral Products	925.9	1,163.9	1,257.7	1,100.6	999.7
Petroleum Industry	1,866.2	1,987.0	1,833.9	1,979.2	1,748.7
Paper and Wood Products	74.6	78.4	64.4	59.5	68.3
Rubber and Plastic Products	1,778.8	1,839.3	1,646.5	1,670.1	1,603.5
Fabricated Metal Products	638.6	689.8	790.5	648.2	667.7
Oil and Gas Production	374.5	327.4	351.3	303.7	288.9
Miscellaneous Machinery	81.5	83.4	83.5	74.2	31.1
Electrical Equipment	38.9	38.9	65.7	68.0	65.2
Transportation Equipment	21.8	18.5	18.5	18.5	18.2
Health Services	16.4	12.6	11.8	10.6	5.8
Photographic Film Manufacturing			1.7	1.7	0.8
Leather and Leather Products	16.2	16.9	16.9	17.9	17.9
Textile Products	2.0	2.3	2.3	2.3	2.3
Process Cooling	77.1	78.9	80.7	80.7	80.7
In-Process Fuel Use	32.7	9.6	6.7	6.7	10.6
Miscellaneous Manufacturing	158.3	139.3	136.2	104.7	67.4
Organic Solvent Emissions					
Organic Solvent Use	386.2	394.	449.4	472.5	502.0
Surface Coating Operations	6,955.5	6,879.4	6,264.5	6,138.0	6,064.1
Petroleum Product Storage	2,487.0	2,524.1	2,482.5	2,517.0	2,492.5
Bulk Terminals/Plants	1,037.7	1,162.7	1,012.2	1,015.6	1,052.0
Printing/Publishing	3,217.7	3,081.6	2,451.1	2,467.7	2,382.2
Petroleum Marketing/Transport	325.1	434.5	450.4	354.7	358.5
Organic Chemical Storage (large)	489.4	705.5	514.01	578.7	775.3
Organic Chemical Transportation	144.8	102.5	101.4	60.6	41.6
Dry Cleaning (petroleum based)	377.3	374.8	318.0	283.5	280.8
Organic Chemical Storage (small)	0.0	0.2	0.2	0.2	
Organic Solvent Evaporation	438.6	416.3	410.9	372.0	354.5

Table C5

Volatile Organic Material Point Source Emission Distribution (Tons/Year)

Category	2015	2016	2017	2018	2019
Solid Waste Disposal					
Government	313.0	359.4	413.9	514.5	407.5
Commercial/Institutional	1.6	3.8	3.8	2.9	2.9
Industrial	38.5	58.2	54.6	61.3	60.3
Site Remediation	116.2	142.2	150.3	139.8	97.5
Commercial					3.9
Institutional					0.0
Totals	**42,344.8**	**42,884.5**	**39,768.0**	**39,785.1**	**39,070.1**

Table C6

2019 Estimated County Stationary Point Source Emissions (Tons/Year)

County	Carbon Monoxide	Nitrogen Oxides	PM_{10}	Sulfur Dioxide	Volatile Organic Material
Adams	189.9	132.6	261.4	469.8	1,163.9
Alexander	58.9	44.9	43.2	0.6	526.9
Bond	18.9	13.0	11.7	1.9	24.4
Boone	55.3	67.5	79.5	1.0	526.6
Brown	0.0	0.0	2.8	0.0	0.0
Bureau	14.8	28.3	64.6	0.4	34.6
Calhoun	0.6	0.7	5.2	0.0	0.1
Carroll	27.9	28.1	29.6	1.1	15.2
Cass	32.9	37.9	44.6	27.1	13.1
Champaign	355.8	711.9	183.2	367.6	422.9
Christian	298.0	1,599.2	177.5	2,244.5	424.3
Clark	40.8	5.0	53.0	1.4	130.3
Clay	4.0	6.1	15.9	0.1	88.8
Clinton	216.3	700.9	65.9	287.0	60.9
Coles	81.9	80.8	83.7	6.7	388.8
Cook	11,681.5	4,511.0	2,421.1	2,177.6	6,663.3
Crawford	949.1	1,523.7	522.8	4,277.1	808.2
Cumberland	13.6	3.2	17.1	1.0	42.3
DeKalb	123.9	80.6	77.0	34.3	124.6
DeWitt	71.7	60.2	108.1	15.2	144.5
Douglas	953.1	1,744.9	104.4	1.3	511.3
DuPage	642.5	713.0	236.2	43.1	1,039.6
Edgar	12.4	19.4	66.2	0.1	86.7
Edwards	1.3	3.9	10.2	0.0	8.7
Effingham	10.0	24.2	51.9	1.7	264.6
Fayette	62.9	220.5	17.5	74.9	24.0
Ford	89.5	163.7	184.2	6.5	692.5
Franklin	47.5	17.5	27.7	0.4	18.3
Fulton	397.0	1,613.6	75.4	24.6	59.8
Gallatin	0.1	0.3	7.7	0.1	0.0
Greene	0.1		19.3		0.2
Grundy	682.0	1,069.3	190.9	36.3	538.6
Hamilton	0.3	0.5	208.7	0.0	0.9
Hancock	15.3	2.9	50.8	0.2	4.7
Hardin	1.6	1.9	13.1	0.0	1.9
Henderson			29.9		
Henry	645.2	1,263.8	163.6	9.2	309.1
Iroquois	49.4	26.9	124.1	4.3	451.3
Jackson	300.1	272.0	46.1	238.5	104.2
Jasper	2,660.2	1,507.1	345.5	4,657.3	119.6
Jefferson	92.4	71.6	30.6	0.9	272.5
Jersey	0.1		6.1		10.3
Jo Daviess	260.7	445.5	127.8	9.6	80.5
Johnson	25.1	24.0	7.8	220.0	5.9
Kane	368.2	368.7	209.5	25.9	1,039.9
Kankakee	524.4	705.0	196.1	44.3	770.1
Kendall	302.6	764.9	263.2	24.4	132.9
Knox	33.2	24.2	59.4	2.0	77.3
Lake	1,883.7	1,731.0	553.0	1,319.3	449.0
La Salle	1,620.5	2,989.9	1,134.7	554.6	1,157.0
Lawrence	8.7	5.1	9.7	0.6	23.2
Lee	178.2	247.1	148.5	13.3	271.0

Table C6

2019 Estimated County Stationary Point Source Emissions (Tons/Year)

County	Carbon Monoxide	Nitrogen Oxides	PM_{10}	Sulfur Dioxide	Volatile Organic Material
Livingston	495.6	247.4	137.9	73.4	329.5
Logan	28.4	38.5	69.9	427.8	8.6
McDonough	39.8	76.9	24.5	4.5	70.2
McHenry	191.5	251.7	109.1	5.2	263.2
McLean	252.7	263.4	163.6	14.1	584.9
Macon	1,229.0	5,088.1	1,845.4	11,486.1	4,212.4
Macoupin	6.2	6.7	34.0	0.0	26.9
Madison	5,849.3	3,226.6	1,083.2	3,520.6	2,591.6
Marion	22.5	38.8	37.2	2.7	572.5
Marshall	30.6	78.2	139.3	265.7	337.9
Mason	414.5	1,128.6	63.7	1,067.4	54.1
Massac	3,862.9	3,611.2	643.4	12,293.7	119.2
Menard	15.1	3.3	16.4	0.0	35.7
Mercer	0.4	0.5	17.0	0.0	14.3
Monroe	2.8	4.1	12.0	0.1	8.2
Montgomery	262.7	2,856.2	145.1	37.6	205.8
Morgan	64.0	190.4	39.1	23.3	27.5
Moultrie	3.1	9.3	28.6	0.0	208.0
Ogle	469.5	360.5	308.0	230.6	359.6
Peoria	1,696.2	3,700.9	474.6	6,910.5	847.0
Perry	27.6	94.1	76.2	0.7	15.3
Piatt	66.8	713.3	52.3	0.2	43.5
Pike	108.6	144.9	80.5	2.3	56.8
Pope					
Pulaski	77.7	15.0	36.5	4.1	7.8
Putnam	458.5	1,674.0	319.2	5,625.1	196.8
Randolph	1,078.7	3,233.6	143.4	2,995.5	239.3
Richland	0.6	2.6	8.3	0.0	9.1
Rock Island	392.5	245.3	132.1	14.0	546.0
St. Clair	406.3	353.4	269.8	179.7	534.5
Saline	76.0	23.9	40.5	3.0	7.7
Sangamon	898.2	1,563.5	240.7	1,807.1	204.3
Schuyler	0.0	0.0	9.3	0.0	20.5
Scott	30.9	27.8	27.6	6.5	3.0
Shelby	35.9	106.2	58.6	2.1	57.3
Stark			21.2		6.6
Stephenson	117.0	122.1	77.4	22.4	128.7
Tazewell	587.6	3,535.8	1,404.5	3,793.8	643.9
Union	40.3	50.1	35.6	713.5	1.8
Vermilion	335.7	486.0	177.6	10.1	1,779.1
Wabash	62.9	20.4	32.2	0.4	6.3
Warren	52.9	22.8	63.2	149.1	12.8
Washington	465.2	3,907.6	1,320.5	9,921.0	130.1
Wayne	30.6	74.5	10.2	4.1	14.5
White	5.4	11.2	2.3	2.6	38.9
Whiteside	828.5	187.1	142.4	22.9	73.1
Will	3,284.1	3,524.0	1,368.6	1,813.8	2,431.9
Williamson	1,086.8	1,083.9	132.3	5,106.3	249.5
Winnebago	357.6	411.6	360.1	255.7	679.0
Woodford	6.8	12.9	44.0	78.5	96.1

Table C7

Annual Source Estimated Emissions Trends (Tons)

Year	Carbon Monoxide	Nitrogen Oxides	PM_{10}	Sulfur Dioxide	Volatile Organic Material
1981	240,421	826,427		1,577,992	270,814
1982	163,704	693,054		1,404,040	233,951
1983	144,622	759,453		1,363,292	207,405
1984	110,922	746,367		1,435,066	197,418
1985	107,876	715,556		1,406,300	191,070
1986	109,777	676,181		1,400,761	180,148
1987	98,213	644,511		1,379,407	176,406
1988	127,758	653,521		1,393,628	165,792
1989	132,214	610,214		1,254,474	193,499
1990	134,744	623,466		1,272,445	170,378
1991	148,667	619,161		1,239,690	154,008
1992	129,054	610,214	181,775	1,228,949	156,867
1993	130,097	556,460	113,482	1,170,549	152,288
1994	127,848	555,893	50,730	1,158,555	140,492
1995	127,661	505,966	48,839	1,273,786	141,381
1996	130,040	495,267	43,950	1,183,278	139,445
1997	117,046	510,729	41,078	1,197,404	136,541
1998	108,117	509,676	43,392	1,196,461	134,924
1999	120,906	421,993	40,598	1,085,828	99,121
2000	122,702	424,609	36,885	1,070,058	101,147
2001	96,970	358,263	34,233	653,797	95,221
2002	99,173	301,216	30,422	531,343	90,014
2003	88,367	289,921	41,589	512,321	89,579
2004	80,479	248,245	42,402	507,142	84,080
2005	83,671	238,026	40,359	522,677	75,690
2006	89,717	219,200	37,979	487,588	70,858
2007	80,969	205,602	34,847	429,976	59,021
2008	80,628	203,014	34,474	406,905	57,135
2009	78,720	198,178	32,551	375,807	54,668
2010	65,797	138,344	30,931	304,709	49,975
2011	78,283	143,035	29,796	295,658	48,323
2012	76,255	131,326	28,624	276,412	46,957
2013	64,915	109,308	25,744	211,873	45,430
2014	67,921	109,444	24,942	200,350	44,610
2015	66,072	99,753	23,959	182,200	42,345
2016	59,945	79,439	22,820	125,421	42,885
2017	49,267	68,916	20,779	94,095	39,768
2018	47,786	64,889	19,726	86,245	39,785
2019	51,961	68,507	21,066	86,126	39,070

Table C8

Annual Source Reported Emissions Trends (Tons)

Year	Carbon Monoxide	Nitrogen Oxides	PM_{10}	Sulfur Dioxide	Volatile Organic Material
1992	112,403	381,938	49,377	1,045,113	143,853
1993	113,781	418,209	36,737	1,001,123	108,847
1994	116,192	404,486	34,086	967,213	108,897
1995	160,256	366,978	31,491	814,229	103,144
1996	84,258	407,683	30,850	914,295	87,271
1997	71,408	404,289	25,648	974,232	76,350
1998	79,147	377,191	31,828	964,262	77,952
1999	91,153	360,850	27,663	863,759	71,514
2000	90,315	329,141	30,482	620,592	71,063
2001	83,453	291,778	28,929	531,504	62,647
2002	83,795	261,202	26,900	498,754	70,703
2003	75,511	230,068	29,939	507,338	63,495
2004	77,847	229,127	31,896	521,808	64,594
2005	85,892	215,366	30,535	486,534	62,251
2006	77,099	200,832	29,367	429,573	53,791
2007	77,211	198,073	28,784	406,405	50,933
2008	75,183	193,637	28,194	376,627	49,112
2009	62,285	134,274	25,988	305,297	41,839
2010	75,277	139,508	25,993	297,254	44,245
2011	73,586	129,058	25,209	272,747	42,430
2012	64,253	109,298	22,631	220,143	42,735
2013	65,879	107,877	21,549	201,509	41,276
2014	65,865	99,230	21,962	182,337	40,767
2015	57,688	80,469	19,557	136,749	40,039
2016	46,864	68,441	17,560	99,907	37,593
2017	46,747	64,673	17,209	86,446	37,206
2018	50,727	68,632	18,316	87,437	37,265

Illinois EPA's Website Information

To access the online version of the Annual Air Quality Report, various pollutant averages and exceedances, the monitoring network plan and emission trends:

- https://www2.illinois.gov/epa/topics/air-quality/Pages/default.aspx

Air Quality Index Information

To view current Air Quality Index numbers and forecasts across the country:

- http://www.airnow.gov

To sign up for air quality information such as forecasts and pollution alerts:

- http://www.illinois.enviroflash.info/signup.cfm

EnviroFlash on Twitter:

- http://www.illinois.enviroflash.info/EnviroFlashTwitter.cfm

Monitoring Data Access Information

To access yearly Air Quality Index summaries, air quality statistics and monitoring concentrations:

- https://www.epa.gov/outdoor-air-quality-data

To access status and trends of key air pollutants:

- https://www.epa.gov/air-trends

To access historical Design Values (statistic to compare to the National Ambient Air Quality Standards):

- https://www.epa.gov/air-trends/air-quality-design-values

Nonattainment Areas and Designations (regions in violation of the various National Ambient Air Quality Standards):

- http://www.epa.gov/green-book

Other

- Ambient Monitoring Technology Information Center: https://www.epa.gov/amtic
- Toxic Release Inventory Search: http://www.epa.gov/enviro/tri-search
- Toxic Release Inventory Data and Tools: https://www.epa.gov/toxics-release-inventory-tri-program/tri-data-and-tools