

Earth Day Network - Urban Environment Report

AIR QUALITY: What, Why, and Where?

Ind. ID	Indicator for AIR QUALITY	What is this Indicator?	Why is this Indicator Included?	Notes	Source (Where does this Indicator Come From?)
B.0.1	Air Quality EDN FINAL				
B.0.3	Air Quality EDN VI Risk				
B.0.7	Air Quality EDN RANK				
B.0.8	Air Quality EDN VI Risk				
B.1.1	High Ozone Days - Wgt Avg (Annual # of days)	<p>http://lungaction.org/reports/sota06_methodology.html</p> <p><u>Ozone Data Analysis</u> The 2002, 2003, and 2004 AQS hourly ozone data were used to calculate the daily 8-hour maximum concentration for each ozone-monitoring site. The data were considered for a 3-year period for the same reason that EPA uses 3 years of data to determine compliance with the ozone: to prevent a situation in any single year, where anomalies of weather or other factors create air pollution levels, which inaccurately reflect the normal conditions. The highest 8-hour daily maximum concentration in each county for 2002, 2003, and 2004, based on the EPA-defined ozone season, was identified.</p> <p><u>Using these results, A.S.L. & Associates prepared a table by county that summarized, for each of the 3 years, the number of days the ozone level was within the ranges identified by EPA based on the EPA Air Quality Index:</u></p> <p><u>0.000 – 0.064 ppm Good (Green)</u> <u>0.065 – 0.084 ppm Moderate (Yellow)</u></p>	<p>According to the U.S. Environmental Protection Agency, one out of every three people in the U.S is at a high risk of experiencing ozone-related health effects. High ozone levels can lead to further respiratory distress, and even hospitalization. At these levels, ozone can irritate the respiratory system, causing symptoms such as coughing, throat irritation, and chest tightness. Lung function is reduced, air intake can feel strained, and breathing, especially outside, can become shallow, rapid, and uncomfortable.</p>		American Lung Association. State of the Air 2005 Report. New York: Hard Copy Printing, 2005.

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B.1	High Ozone Days - Grade SCORE	Grade given to cities by EDN according to the number of high ozone days. Cities with less high ozone days receive a better score.	According to the U.S. Environmental Protection Agency, one out of every three people in the U.S is at a high risk of experiencing ozone-related health effects. high ozone levels can lead to further respiratory distress, and even hospitalization. At these levels, ozone can irritate the respiratory system, causing symptoms such as coughing, throat irritation, and chest tightness. Lung function is reduced, air intake can feel strained, and breathing, especially outside, can become shallow, rapid, and uncomfortable.		American Lung Association. State of the Air 2005 Report. New York: Hard Copy Printing, 2005.
B.2.1	Sulfur Dioxide (SO ₂) Tons in 2002	The quantity (in tons) of sulfur dioxide released into the atmosphere by power plants in a given metropolitan area. A criteria air pollutant. Sulfur dioxide is a gas produced by burning coal, most notably in power plants. Some industrial processes, such as production of paper and smelting of metals, produce sulfur dioxide. Sulfur dioxide is closely related to sulfuric acid, a strong acid. Sulfur dioxide plays an important role in the production of acid rain. Resource: www.nescaum.org/glossary.html	This is included because excessive levels of sulfur dioxide in the air can lead to lung problems, impair the respiratory system, aggravate heart and lung problems and create other health ailments especially in children and the elderly.		National Campaign against Dirty Power and The Clean Air Task Force. Clear The Air: Dirty Air Dirty Power - All State Data. 2004. 29 November 2005. < http://www.cleartheair.org/dirtypower/map.html >.
B.2.2	Sulfur Dioxide (SO ₂) Tons in 2002 Rank	Distribution of cities based upon the amount of Sulfur Dioxide tons. The city with the least SO ₂ ranks 1st.	Shows how much SO ₂ the cities have in relation to one another.		EDN Calculation: based on increasing order of (B.2.1)
B.2	Sulfur Dioxide (SO ₂) Tons in 2002 SCORE	Cities were given a score of 1-5 based upon the amount of SO ₂ . Cities with a low amount of SO ₂ received a 1, the ones with the highest amount received a 5.	Gives an indication of how the cities rank in the amount of SO ₂ general, not just in relation to one another.		EDN Calculation: based on distribution, with low ~ 1 ~ better and high ~ 5 ~ worse

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B.3.1	Nitrogen Oxides (NOx) Tons in 2002	The quantity (in tons) of Nitrogen oxide released into the atmosphere by power plants in a given metropolitan area. A criteria air pollutant. Nitrogen oxides (collectively known as NOx) are produced from burning fossil fuels, including gasoline and coal. Nitrogen oxides react with volatile organic compounds to form smog. Nitrogen oxides are also major components of acid rain. They may be harmful to the lungs and aggravate asthmatic symptoms. Resource: www.healthy.hartford.gov/OutdoorAir_Quality/OAQGlossary.htm	This is included because excessive levels of NO2 can be harmful to human and animal lung tissue, kill delicate plants, corrode metals, etc		National Campaign against Dirty Power and The Clean Air Task Force. Clear The Air: Dirty Air Dirty Power - All State Data. 2004. 29 November 2005. < http://www.cleartheair.org/dirtypower/map.html >
B.3	Nitrogen Oxides (NOx) Tons in 2002 SCORE	Cities were given a score of 1-5 based upon the amount of NOx. Cities with a low amount of NOx received a 1, the ones with the highest amount received a 5.	Gives an indication of which cities are producing too much NOx.		EDN Calculation: based on distribution
B.4.1	Carbon Dioxide (CO2) Tons in 2002	The quantity (in tons) of Carbon Dioxide released by power plants in a given metropolitan area. A colorless, odorless, non-poisonous gas that is a normal part of the ambient air. Carbon dioxide is a product of fossil fuel combustion. Although carbon dioxide does not directly impair human health, it is a greenhouse gas that traps terrestrial (ie, infrared) radiation and contributes to the potential for global warming. Resource: www.natsource.com/markets/index.asp	As we yield unprecedented levels of CO2 in our industrial society, which then gets trapped in the earths atmosphere, the greenhouse gases trap heat and cause the earth's temperature to steadily rise.		National Campaign against Dirty Power and The Clean Air Task Force. Clear The Air: Dirty Air Dirty Power - All State Data. 2004. 29 November 2005. < http://www.cleartheair.org/dirtypower/map.html >
B.4	Carbon Dioxide (CO2) Tons in 2002 SCORE	Cities were given a score of 1-5 based upon the amount of CO2. Cities with a low amount of CO2 received a 1, the ones with the highest amount received a 5.	Gives an indication of which cities are producing too much CO2.		EDN Calculation: based on distribution

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B.5.1	Mercury Pounds in 2002	The quantity (in tons) of Mercury released by power plants in a given metropolitan area. Also known as "quicksilver," this metal is used in the paper pulp and chemical industries, in the manufacture of thermometers, and thermostats, and in fungicides. Mercury exists in three biologically important forms, elemental, inorganic and organic. It is highly toxic and affects the nervous system, kidneys and other organs. It also accumulates in animals that are high in the food chain (predators). ... Resource: www.sbcfire.org/hazmat/env_terms.asp	Mercury, if ingested, can cause neurological damage. The neurotoxin effects of mercury exposure are similar to the effects of lead toxicity in children and include delayed development and cognitive deficits, language difficulties, and problems with motor function, attention, and memory. we typically ingest mercury by eating fish who have been poisoned by it.		National Campaign against Dirty Power and The Clean Air Task Force. Clear The Air: Dirty Air Dirty Power - All State Data. 2004. 29 November 2005. < http://www.cleartheair.org/dirtypower/map.html >
B.5	Mercury Pounds in 2002 SCORE	Cities were given a score of 1-5 based upon the amount of Mercury. Cities with a low amount of Mercury received a 1, the ones with the highest amount received a 5.	Gives an indication of which cities are producing too much Mercury.		EDN Calculation: based on distribution

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B.6.1	Short-term Particle Pollution - Wgt. Avg (24-Hr PM2.5)	Air pollution caused by fine particles of soot (as from power plants or diesel engines) http://dictionary.laborlawtalk.com/small-particle_pollution "They are too small to be filtered out from the human respiratory system and when inhaled are absorbed by the lungs and can easily enter the bloodstream." Resource: American Lung Association (ALA), State of the Air 2005 Report, Spring 2005.	particle standard is critical to limit spikes in fine particle pollution. Exposure to the high, short levels of fine particles can result in illness and death even when the year-round average is within the current standard". http://www.environmentcolorado.org/reports/DangerintheAir.pdf#search=%22American%20Lung%20Association%20(ALA)%2C%20State%20of%20the%20Air%202005%20Report%2C%20Spring%202005.%20short%20term%20particle%20pollution%20definition%22 Many scientific studies have found an association between exposure to particulate matter and a series of significant health problems, including: aggravated asthma; chronic bronchitis; reduced lung function; irregular heartbeat; heart attack; and premature death in people with heart or lung disease. Particulate matter is also the main cause of visibility impairment in the nation's cities and national parks. http://www.epa.gov/air/particlepollution/fs20051220pm.html , American Lung Association (ALA), State of the Air 2005 Report, Spring 2005.		American Lung Association. State of the Air 2005 Report. New York: Hard Copy Printing, 2005.
B.6	Short-term Particle Pollution - Grade SCORE	EDN's calculation; counties with the lowest average receive a 1 (A), counties with the highest average receive a 5 (F).	Indicates which cities have too high an average weight of particle pollution.		American Lung Association. State of the Air 2005 Report. New York: Hard Copy Printing, 2005.

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B.7.1	Year-Round Particle Pollution Design Value (Annual PM2.5)	Air pollution caused by fine particles of soot (as from power plants or diesel engines) http://dictionary.laborlawtalk.com/small-particle_pollution "They are too small to be filtered out from the human respiratory system and when inhaled are absorbed by the lungs and can easily enter the bloodstream." Resource: American Lung Association (ALA), State of the Air 2005 Report, Spring 2005.	Informs for groups at risk for respiratory problems in urban areas. Breathing high levels of particle pollution day in and day out can be deadly. Chronic exposure to particle pollution can shorten life by one to three years, can cause premature births, and serious respiratory disorders-even when the particle levels are very low. People at risk include those with lung disease such as asthma and chronic obstructive pulmonary disease-chronic bronchitis and emphysema; people with sensitive airways, the elderly; people with heart disease; and children; diabetics are also at high risk from particle pollution. http://www.epa.gov/air/particlepollution/fs20051220pm.html , American Lung Association (ALA), State of the Air 2005 Report, Spring 2005.		American Lung Association. State of the Air 2005 Report. New York: Hard Copy Printing, 2005.
B.7	Year-Round Particle Pollution Pass/Fail SCORE	Cities received a score of 1 or 5. The ones that received a 5 fail.	Shows which cities have an unacceptable amount of particle pollution.		American Lung Association. State of the Air 2005 Report. New York: Hard Copy Printing, 2005.

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B.8.1	2006 High Ozone Days - Wgt Avg (Annual # of days)	Days when the amount of ozone is more concentrated, most likely causing more smog, and endangering peoples' health. Resource: (http://dictionary.laborlawtalk.com/Tropospheric_Ozone)`	According to the U.S. Environmental Protection Agency, one out of every three people in the U.S is at a high risk of experiencing ozone-related health effects. high ozone levels can lead to further respiratory distress, and even hospitalization. At these levels, ozone can irritate the respiratory system, causing symptoms such as coughing, throat irritation, and chest tightness. Lung function is reduced, air intake can feel strained, and breathing, especially outside, can become shallow, rapid, and uncomfortable.		American Lung Association. State of the Air 2006 Report. New York: Hard Copy Printing, 2006.
B.8.1	2006 High Ozone Days - Grade SCORE	EDN's calculation; counties with a low number of high ozone days receive a 1 (A), counties with a high number of days receive a 5 (F).	Indicates which counties have an unacceptable amount of high ozone days.		American Lung Association. State of the Air 2006 Report. New York: Hard Copy Printing, 2006.
B.9.1	Short-term Particle Pollution 2006 - Wgt. Avg (24-Hr PM2.5)	An unusually high amount of particle pollution caused by an infrequent event. (<i>ALA State of the Air 2006</i>)	Particle pollution is one of the most dangerous pollutants, and short term particle pollution has higher levels of particles, making the air quality much worse.		American Lung Association. State of the Air 2006 Report. New York: Hard Copy Printing, 2006.
B.9	Short-term Particle Pollution 2006 - Grade SCORE	EDN's calculation; counties with a low average receive a 1 (A), counties with a high average receive a 5 (F).	Indicates which cities have an unacceptable amount of short-term particle pollution.		American Lung Association. State of the Air 2006 Report. New York: Hard Copy Printing, 2006.
B.10.1	Year-Round Particle Pollution 2006 - Design Value (Annual PM2.5)	The amount of particle pollution generated over the course of one year, measured in PM2.5, also known as fine particulates.	Particle pollution is one of the most dangerous pollutants, and short term particle pollution has higher levels of particles, making the air quality much worse. This has a profound affect on human health especially for those living in low-income urban areas.		American Lung Association. State of the Air 2006 Report. New York: Hard Copy Printing, 2006.
B.10	Year-Round Particle Pollution 2006 - Pass/Fail SCORE	Cities received a score of 1 or 5. The ones that received a 5 fail.	Shows which cities have an unacceptable amount of particle pollution.		American Lung Association. State of the Air 2006 Report. New York: Hard Copy Printing, 2006.

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B.11.1	Ambient Carbon Monoxide (CO) 2003 EPA (8-hr ppm)	Carbon Monoxide is a colorless, odorless gas that is formed when carbon in fuel is not burned completely, ambient carbon monoxide refers to carbon monoxide that is in outside air. Reference: http://www.epa.gov/air/urbanair/co/what1.html	Carbon Monoxide is poisonous even to healthy people at high levels in the air. It may affect people with heart disease and it may affect the central nervous system. http://www.epa.gov/air/urbanair/co/chf1.html		US Environmental Protection Agency. Air Quality statistics. 2003. 23 June 2006. < http://www.epa.gov/airtrends/factbook.html >.
B.11	Ambient Carbon Monoxide (CO) 2003 EPA (8-hr ppm) SCORE	Cities were given a score of 1-5 based upon the amount of ambient CO. Cities with a low amount of ambient CO received a 1, the ones with the highest amount received a 5.	Gives an indication of which cities have too much ambient CO.		EDN Calculation: based on distribution.
B.12.1	EPA Ambient Lead (PB) Q Max (ug/m ³)	Lead is a metal found naturally in the environment as well as in manufactured products. Ambient lead refers to lead in the outside air. Reference: http://www.epa.gov/air/urbanair/lead/what.html	Infants and young children still have the highest blood lead levels. Children and others can be exposed to lead not only through the air, but also through accidentally or intentionally eating soil or paint chips, as well as food or water contaminated with lead. http://www.epa.gov/air/urbanair/lead/chf.html		US Environmental Protection Agency. Air Quality statistics. 2003. 23 June 2006. < http://www.epa.gov/airtrends/factbook.html >.
B.12	EPA Ambient Lead (PB) Q Max (ug/m ³) SCORE	Cities were given a score of 1-5 based based upon the amount of ambient lead. Cities with a low amount of ambient lead received a 1, the ones with the highest amount received a 5.	Gives an indication of which cities have too much ambient lead.		EDN Calculation: based on distribution.
B.13.1	EPA mean ambient Nitrogen Dioxide (NO ₂ ppm)	Nitrogen Dioxide is a highly reactive gas and is formed when fuel is burned at high temperatures. Ambient nitrogen dioxide refers to levels of nitrogen dioxide in outside air. Reference: http://www.epa.gov/air/urbanair/nox/what.html	Nitrogen Dioxide is one of the main ingredients involved in the formation of ground-level ozone, which can trigger serious respiratory problems, and contributes to global warming. http://www.epa.gov/air/urbanair/nox/chf.html		US Environmental Protection Agency. Air Quality statistics. 2003. 23 June 2006. < http://www.epa.gov/airtrends/factbook.html >.
B.13	EPA mean ambient Nitrogen Dioxide (NO ₂ ppm) SCORE	Cities were given a score of 1-5 based upon the amount of ambient NO ₂ . Cities with a low amount of ambient NO ₂ received a 1, the ones with the highest amount received a 5.	Gives an indication of which cities have too much ambient NO ₂ .		EDN Calculation: based on distribution.

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B.14.1	EPA Larger particle (PM10) 24-hr (ug/m ³)	Includes a mixture of solids and liquid droplets. Some particles are emitted directly; others are formed in the atmosphere when other pollutants react. Larger particles are between 2.5 and 10 micrometers in size. Reference: http://airnow.gov/index.cfm?action=aqibroch.aqi#aqipar	Particle pollution is one of the most dangerous pollutants, and short term particle pollution has higher levels of particles, making the air quality much worse.		US Environmental Protection Agency. Air Quality statistics. 2003. 23 June 2006. < http://www.epa.gov/airtrends/factbook.html >.
B.14	EPA Larger particle (PM10) 24-hr (ug/m ³) SCORE	Cities were given a score of 1-5 based upon the amount of larger particle pollution. Cities with a low amount of particle pollution received a 1, the ones with the highest amount received a 5.	Gives an indication of which cities have too much larger particle pollution.		EDN Calculation: based on distribution, with low ~ 1 ~ better and high ~ 5 ~ worse
B.15.1	EPA mean ambient Sulfur Dioxide (SO2 ppm)	Sulfur dioxide belongs to the family of sulfur oxide gases. Sulfur is prevalent in all raw materials, including crude oil, coal, and ore. Ambient sulfur dioxide refers to levels of sulfur dioxide in outside air. Reference: http://www.epa.gov/air/urbanair/so2/what1.html	Sulfur dioxide contributes to respiratory illness, particularly in children and the elderly, and aggravates existing heart and lung diseases. Sulfur dioxide contributes to the formation of acid rain, which damages trees, crops, and makes soils, lakes, and streams acidic, and contributes to the formation of atmospheric particles that cause visibility impairment. http://www.epa.gov/air/urbanair/so2/chf1.html		US Environmental Protection Agency. Air Quality statistics. 2003. 23 June 2006. < http://www.epa.gov/airtrends/factbook.html >.
B.15	EPA mean ambient Sulfur Dioxide (SO2 ppm) SCORE	Cities were given a score of 1-5 based upon the amount of ambient SO2. Cities with a low amount of ambient SO2 received a 1, the ones with the highest amount received a 5.	Gives an indication of which cities have too much ambient SO2.		EDN Calculation: based on distribution

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B.16.1	EPA days over 100 AQI (warning level)	Air Quality Index (AQI) measures the quality of air. An AQI value of 100 generally corresponds to the national air quality standard for the pollutant, which is the level EPA has set to protect public health, a score above 100 means that the air quality is not as great. Reference: http://airnow.gov/index.cfm?action=aqibroch.aqi#2	Areas that have AQI over 100 for many days means that they are not complying with the Clean Air Act, and scores over 100 start to endanger people's health.		US Environmental Protection Agency. Air Quality statistics. 2003. 23 June 2006. < http://www.epa.gov/airtrends/factbook.html >.
B.16	EPA days over 100 AQI (warning level) SCORE	Cities were given a score of 1-5 based on the number of days that they were over the 100 AQI. Cities that went over the least number of days received a 1, the ones that went over the most received a 5.	Gives an indication of which cities have gone over the 100 AQI an unacceptable amount of times.		EDN Calculation: based on distribution