Outdoor Air Quality

This metadata page provides a brief summary of this dataset. Please refer to the detailed metadata provided by the US Centers for Disease Control and Prevention (CDC) for more information on data methods and limitations.

Definitions

Outdoor air quality in this case refers to the air outside buildings, from ground level to several miles above the Earth's surface. ***Ambient Air*** has been defined by the US Environmental Protection Agency (EPA) as 'that portion of the atmosphere, external to buildings, to which the general public has access.' Outdoor air provides the essential gases to sustain life and shields the Earth from harmful radiation.

The Louisiana Department of Health (LDH) Tracking Program presents air quality data on monitored and modeled ground level ozone (O_3) and particulate matter (PM) that is 2.5 micrometers or smaller known as $PM_{2.5}$.

Ozone (O3). Ozone is a highly reactive gas composed of three oxygen atoms. It is both a natural and a man-made product that occurs in the Earth's upper atmosphere (US EPA, 2023). While the "ozone layer," approximately 6 through 30 miles above the Earth's surface, reduces the amount of harmful UV radiation reaching the Earth's surface, ground-level ozone contributes to "smog" or haze often as the result of reactions of man-made compounds and gases. Ground Level Ozone is a gas that is created by chemical reactions between pollutants from cars, power plants, or other sources in presence of sunlight.

Particulate Matter ($PM_{2.5}$). Particulate Matter (also called particle pollution) is the term for a mixture of solid particles and liquid droplets found in the air (US EPA, 2023). While humans require oxygen to breathe, particles such as dust, dirt, soot, or smoke entering the airways and lungs can be harmful. Human health is affected by breathing in particles of varying diameters, for example 10 micrometers and smaller (PM_{10}); and $PM_{2.5}$ which includes finer inhalable particles, with diameters <2.5 micrometers.

Monitored + Modeled Data. For these data, concentrations were derived from reference-grade air quality monitors acquired from the USEPA Air Quality System (AQS). Where US counties and census tracts do not have sufficient air quality monitoring to derive concentration estimates from monitor data alone, to fill these gaps, monitor data are supplemented with modeled estimates derived from the Downscaler (DS) model, which is a statistical fusion of monitoring data and Community Multiscale Air Quality (CMAQ) modeled outputs (CDC Tracking, 2023). Outdoor Air Quality measures included on the LDH Health Data Explorer include CDC-acquired data of monitor data in counties with sufficient monitor observations plus DS modeled estimates for locations lacking monitor data. Data which include modeled values are shown with a cross-hatch on graphs and maps.

Data Sources

- US CDC—Environmental Public Health Tracking Data Explorer Tool
- US EPA —Air Quality System (AQS), National Ambient Air Quality Standards (NAAQS)

The Louisiana Department of Health (LDH) Environmental Public Health Tracking Program downloads these data from the CDC's Data Explorer Tool by Louisiana Census Tract (US Census Bureau, USCB). The data are processed and added to the Health Data Explorer which can be viewed next to other health, environmental hazard, exposure and population health (sociodemographic or other USCB) data.

Vintage: The latest dataset available from the CDC as of June 2025: data year **2020**. Data provided from 2010-2020.

Data Measure(s)

CDC Tracking's Data Explorer Tool provides several measures for Outdoor Air Quality, several which have been selected and shared on the LD cking Data Explorer to provide environmental data.

- Fine Particle, Particulate Matter ($PM_{2.5}$) – **PM2.5: Percent of Days Over the Air Quality Standard (Monitored + Modeled data) by Census Tract by Year**
- Ozone (O_3) – **Number of days over the Air Quality Standard (Monitored + Modeled data) by Census Tract by Year**

Louisiana Department of Environmental Quality (LDEQ) Stationary monitors, other USEPA data products and satellite-derived datasets are under review or in progress. These and other types of supplemental data can provide additional information on the air quality in Louisiana.

Explore Data

The LDH Health Data Explorer (http://ldh.la.gov/tracking) is an online query tool which allows health, environmental hazard, exposure and population data to be explored and viewed side-by-side in tables, charts, and maps. These data can be downloaded, viewed and further analyzed.

To *Explore Data* for Outdoor Air Quality on the query tool:
Step 1: Select Criteria
Category: Environmental Quality
Topic**:** Outdoor Air
Focus: Particulate Matter (PM 2.5) - Days Above Regulatory Standard <or> Ozone (O3) - Days Above Regulatory Standard

Outdoor Air Quality and the Environment

Outdoor air quality can be affected by a wide variety of pollutants from many different sources. These can be gaseous chemicals as well as tiny solid and liquid particles. It is challenging to conceptualize the true pollutant burden on communities since so many sources may overlap. In addition to ozone and particulate matter, there are additional outdoor air pollutants which the US EPA monitors. The National Ambient Air Quality Standards (NAAQS) are standards that were established by the United States Environmental Protection Agency (EPA) under the authority of the Clean Air Act (42 U.S.C. 7401 et seq.). These standards are designed to protect human health and include an adequate margin of safety that account for the needs of sensitive populations. The Clean Air Act requires the EPA to regulate toxic air

pollutants, also known as air toxics, from large industrial facilities in two phases. You can read more about these technology-based and risk-based standards here.

The air quality data on the Louisiana Department of Health (LDH) Health Data Portal is sourced from the EPA Air Quality System (AQS), which obtains data for Louisiana from the Louisiana Department of Environmental Quality (LDEQ). The Louisiana Ambient Air Monitoring Network consists of air monitoring stations throughout certain parishes in Louisiana. Louisiana's Department of Environmental Quality currently maintains 41 stationary air monitors across the state (LDEQ, 2023); not all of those monitor for ozone or particulate matter.

Outdoor Air Quality and your Health

The Tracking Program and partners provide data to the public on Ozone (O_3) and Particulate Matter ($PM_{2.5}$) due to the harmful health effects associated with exposure to these pollutants by inhaling them in outdoor air. Particles bigger than 10 micrometers can irritate the eyes, nose and throat, but do not usually reach the lungs. Smaller particulates like $PM_{2.5}$ can get deep into the lungs and even the bloodstream. Increased respiratory effects may include worsening asthma, Chronic Obstructive Pulmonary Disease (COPD), and Emphysema, a lung condition that causes shortness of breath.

Ground Level Ozone is a gas that is created by chemical reactions between pollutants from cars, power plants, or other sources in presence of sunlight. Ground level ozone and $PM_{2.5}$ are believed to be the main cause of poor air quality in much of the country and have been linked to both adverse respiratory and cardiovascular health effects.

Data Methods, Limitations and Important Considerations

- Variation within parishes that do have monitors may exist, but are not captured in these measures. For parishes that have multiple monitors, the monitor with the highest reading on any day is used in the measure for the entire parish.
- AQS Data Mart data are obtained only from monitors designated as Federal Reference Methods or equivalent. Values are computed only for monitors that satisfy the completeness criteria.
- Spatial gaps exist in the air quality monitoring network, especially in rural areas, since the air quality monitoring network is designed to focus on measurement of pollutant concentrations in high population density areas. Some variability may result from environmental conditions. For example, the number of high ozone days is related to temperature, therefore there tends to be more high ozone days during the warmer summer months.
- Although modeled data is presented with measured data, these two datasets should not be compared with one another because modeled data is inherently less accurate than data that has been measured.

Please refer to the CDC Tracking website and Data Explorer Tool for the most current information, recent updates and Metadata.

Data Re-release

This is a public dataset which can be freely shared.

Data Citations

Please cite the US CDC and LDH Environmental Public Health Tracking Program Cooperative Agreement NUE1EH001490, and the data source(s) listed on Page 1 when applying these data in analyses, projects and publications.

Disclaimer

Data are intended to spur further research and should be used only as a starting point to understanding how the environment and other contributing factors may be connected to disease. Datasets presented on the LDH Health Data Explorer site are intended to answer some basic questions, but should ultimately lead to further inquiry and more detailed study.

Data limitations should be noted if conducting exploratory ecological studies with these data. Limitations may include data gaps, reporting discrepancies (for example, a disruption of reporting or instrument recording) and insufficient data on all potentially confounding factors. There are numerous additional factors which may contribute to disease onset. These include genetics, access to health care, existing health conditions, medicines, other chemical substances we come into contact with or ingest, nutrition, route and duration of exposure, level of activity, level of stress, and others.

Responsible use of this data requires exercising caution when drawing conclusions based solely on views of the limited available data. Any perceived relationship, trend, or pattern apparent in the data should not be interpreted to imply causation; may in fact be unrelated; and should be regarded as preliminary, and potentially erroneous, until more in-depth study and if applicable, statistical evaluation, can be applied.

The LDH Bureau of Health Informatics and Environmental Public Health Tracking Program cannot guarantee the completeness of the information contained in these datasets and expressly disclaim liability for errors and omissions in their content.

Additional Information

Please visit the following links for more information:

- LDEQ Air
- U.S. EPA AirNow
- U.S. EPA National Ambient Air Quality Standards Table
- U.S. EPA Particulate Matter (PM) Pollution
- National Institute of Environmental Health Sciences – Air Pollution
- U.S. EPA Ozone Pollution
- National Institute of Environmental Health Sciences – Ozone
- National Institute for Occupational Safety and Health – Ozone

Questions?

- Email: healthdata@la.gov
- Website: http://ldh.la.gov/tracking
- Toll free Phone: 1-888-293-7020