

Children’s Environmental Health Air Quality Study: Wilmington

Wilmington Air Monitoring Study

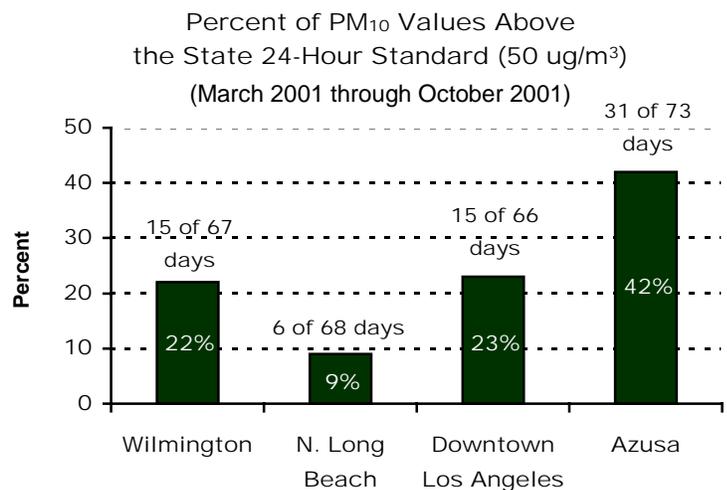
- The Air Resources Board (ARB) conducted air monitoring in Wilmington from May 2001 to July 2002 as part of the Children’s Environmental Health Program. The data collected was compared to measurements at long-term monitoring sites in downtown Los Angeles (Los Angeles) and North Long Beach (Long Beach). The purpose was to determine if the air monitoring network adequately reflects children’s exposure to outdoor air pollution.
- Wilmington was selected as a study site for several reasons: the area is home to many schools and children; it is the location of multiple oil refineries; and it is near shipping ports with bulk transport activity.
- The main causes of air pollution in Wilmington are automobiles, diesel trucks, oil refineries, and port facilities.
- Over 50 air pollutants were monitored at the study’s primary site adjacent to Wilmington Park Elementary School (Wilmington).
- In addition, air monitoring for small particles (PM₁₀) was conducted between November 2001 and May 2002 at Hawaiian Avenue Elementary School.
- Despite being the home of many large air pollution sources, pollution levels monitored in Wilmington did not violate any air quality standards other than the State 24-hour PM₁₀ standard. Coastal winds appear to keep air pollution from building up in the area.

Key Pollutants Measured

- Particulate matter (PM₁₀) is made up of small particles in the air that may be breathed deep into the lungs. PM₁₀ can cause breathing difficulties, lung damage, and premature death.
- Ozone is a key component of what is commonly referred to as smog. It can cause breathing difficulties and lung damage.
- Toxic air pollutants include many substances that can cause health effects such as cancer, respiratory problems, and other serious illnesses. Many were measured in Wilmington study including benzene and 1,3-butadiene.

Particulate Matter (PM₁₀)

- The 24-hr federal PM₁₀ standard (150 ug/m³) was not exceeded at either of the Wilmington sites.
- The number of exceedances of the State PM₁₀ standard (50 ug/m³) at Wilmington is comparable to the Downtown Los Angeles site for the May 2001 to July 2002 time period. North Long Beach, which is located near Wilmington, had fewer exceedances than the Wilmington site.
- Violations of the State PM₁₀ standard were much more common at the Azusa monitoring site.

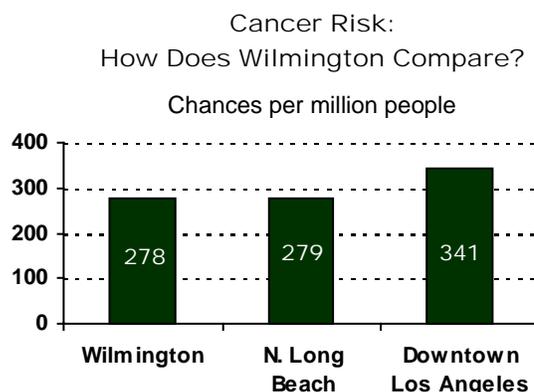


Ozone

- Neither the State nor federal one-hour ozone standards were violated at Wilmington during the study. During that same time period, the State standard was not violated at Long Beach, but was violated on 8 days at the Los Angeles site.

Toxic Air Pollutants

- In general, the levels of major toxic air pollutants measured in Wilmington were comparable to what was observed in Wilmington during the MATES II study in 1999.
- The cumulative cancer health risk from air pollution calculated for Wilmington was nearly identical to that calculated for Long Beach. The cancer risk for downtown Los Angeles was 22 percent higher than Wilmington or Long Beach.



Diesel Exhaust Particulate

- Because of the large number of diesel ships, trucks, and trains, operating in the Wilmington area, the health risk posed by diesel exhaust particulate is of concern. There is currently no generally accepted method for measuring diesel exhaust particulate in the ambient air. The difficulty is that diesel exhaust particulate is composed of hundreds of compounds, and most are not unique to diesel engines. As a result, the cancer risk from diesel exhaust particulate in the Wilmington area was not calculated as part of this study. The average cancer risk from diesel particulate in the Los Angeles area is estimated to be 720 in a million.
- Elemental carbon has been used as a marker for diesel exhaust particulate, but with new cleaner diesel engines, interference from non-diesel sources of elemental carbon such as fireplaces, gasoline engines, and power plants make it a much less reliable marker. Elemental carbon was measured at Wilmington Park Elementary School during this monitoring study, but 71 % of the samples collected were below the detection limit. The maximum elemental carbon level measured during this study was $4\mu\text{g}/\text{m}^3$.

Key Findings

- Based on the measurements collected in this study, the air quality around Wilmington Park Elementary School is similar to other parts of the Los Angeles urban area.
- Local meteorology patterns in Wilmington appear to favor dispersion of local air pollution.
- While similar for most pollutants, PM_{10} levels measured in Wilmington were noticeably higher than in nearby Long Beach.

For More Information

For more information about the Community Environmental Health Air Quality Study in Wilmington, contact ARB's Community Health Program at (916) 324-7156 or go to the Community Health pages on the ARB web site at www.arb.ca.gov.