Fighting for Healthy Lungs - Health Impacts of Air Pollution

JoAnna Strother, RWJF Fellow
Regional Director of Public Policy
American Lung Association of the Southwest
Our 18th Annual Report

• Puts air pollution into everyday language
• Gives public local information
• Focuses attention on ozone and particle pollution
Why tell people about air quality?

Someone in every family faces higher risk from air pollution.
Children, teens face higher risk

Children, teens have growing **lungs**, spend more time outdoors, inhale more air per pound.
Aging brings a gradual decline in the body’s systems that makes us more vulnerable.

Older adults face higher risk
Chronic diseases increase risk from air pollution

Having asthma or other lung diseases, cardiovascular disease or diabetes puts you at higher risk.
Even healthy adults can face increased risk.

Working or exercising outdoors increases exposure, especially near highways.
People with low incomes face increased risk.

Poorer people often live closer to sources of pollution, may have higher incidence of disease, and less access to care.
What are these pollutants and how do they hurt us?
Ozone is a gas, sometimes called smog. It is created in the atmosphere.

\[ \text{NOx + VOC + CO} + \text{Sun} = \text{Ozone (O}_3) \]
Where does ozone come from?

Comes from many sources, including—
Particles are microscopic

Solids and aerosols bypass the body’s defenses to lodge in lungs.
Reports on the two most widespread pollutants

Ozone and particle pollution can shorten life.
The News in “State of the Air” 2017

- Best progress – lower year-round particles and fewer high ozone days
- Many places had more/worse unhealthy particle pollution days
- 125+ million people live where unhealthy air earned an F for ozone or particle pollution.
- 18+ million live where the air got all Fs
In 2013-2015, nearly 4 people in 10 live in counties with an “F” for air quality.
The **Clean Air Act** tools at work:

- New emissions control equipment on coal-fired power plants
- Retirement of fleets of old, dirty diesel trucks, buses, trains, barges, tractors and heavy equipment
More spikes in particle pollution, \textit{again}

- 15 of the cities most polluted by short-term levels had more high particle days in 2013-2015
  - 8 had their worst averages on record
- 7 of the cities on the list did better than in 2012-2014
  - 1 had its lowest average on record
- Two were unchanged
Reason for more particles?

- Weather changes, including warmer temperatures, less rainfall
  - Drought, forest fires, grassfires, dust
- Weather inversions trapping particles
- High woodstove smoke
  - Wintertime episodes
Progress continues

Comparison of Growth Areas and Emissions, 1970-2015

- Gross Domestic Product: 246%
- Vehicle Miles Traveled: 184%
- Population: 57%
- Energy Consumption: 44%
- CO₂ Emissions: 28%
- Aggregate Emissions (Six Common Pollutants): -71%
Where did we get the data?
Where we got the data for 2017 report

States Collect Air Pollution Data in 2013, 2014 & 2015

EPA Reviews & Posts Data Online

Our Consultant Downloads the Data from EPA for Us

We Calculate Grades & Rankings
Once we get the data

1. We Calculate Grades & Share with Charters
2. Charters Share Grades With State/Local Air Agencies for their Review
3. We Confirm Grades, Calculate Rankings
What we grade

- **Ozone (8-hour)**
- **Particle pollution (PM\(_{2.5}\))**
  - Short-term (24-hour) measures “spikes”
  - Year-round (annual average) measures “day-in and day-out”
- Only counties with monitors get grades
- Grade only air quality—not “effort to clean up”
How we grade

Ozone

A - F Grades

Particle Pollution

Short-term (24-hour averages)

Year-round (annual average)

A - F Grades

Pass/Fail
A-F Grades are Based on the Air Quality Index

<table>
<thead>
<tr>
<th>Air Quality Index (AQI) Values</th>
<th>Levels of Health Concern</th>
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</thead>
<tbody>
<tr>
<td><strong>When the AQI is in this range:</strong></td>
<td><strong>air quality conditions are:</strong></td>
</tr>
<tr>
<td>0-50</td>
<td>Good</td>
</tr>
<tr>
<td>51-100</td>
<td>Moderate</td>
</tr>
<tr>
<td>101-150</td>
<td>Unhealthy for Sensitive Groups</td>
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<tr>
<td>151 to 200</td>
<td>Unhealthy</td>
</tr>
<tr>
<td>201 to 300</td>
<td>Very Unhealthy</td>
</tr>
<tr>
<td>301 to 500</td>
<td>Hazardous</td>
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</tbody>
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- Familiar EPA yardstick used nationwide
  - Ozone uses 2015 AQI
  - PM 2.5 (24-hour) uses 2006 AQII
- Higher pollution levels receive more weight, then 3 years are averaged for grades
- Rankings trends based on weighted averages.
Year-round particle pollution is different

- We use the EPA-reported design value
- Grades are compared to national standard and either Pass or Fail
- Fail means county has more than official limit of 12.0 µg/m³
For 18 years, the American Lung Association has analyzed data from official air quality monitors to compile the "State of the Air" report. The more you learn about the air you breathe, the more you can protect your health and take steps to make our air cleaner and healthier.
So how did Pima County and Tucson do?
Our report examined air quality in the Tucson-Nogales, AZ MSA, including Pima County and Santa Cruz County.

While we have separate grades for each county, we do rankings based on the county with the worst problem.
Ozone

• Fewer days of high ozone, best on record

• Fewer days.
  • Pima County had weighted average of 2.3 days, its fewest ever, a big improvement from the 4.3 days on average in the 2016 report.
  • No ozone monitors in Santa Cruz County.

• Ranked tied for 71st most polluted for ozone out of 228 cities.
Ozone

Progress shows in this downward trend of wgt. avg. ozone days,

Worst in 1996-1998 with 19 days
Short-term Particle Pollution

• Santa Cruz County had the most days of unhealthy short-term particle pollution ever in 2013-2015
• Metro area ranked 26th most polluted.
• Santa Cruz County increased to a weighted average of 3.8 days (an F)
• Pima County had zero high particle pollution days (an A)
Short-term Particle Pollution

We grade F for 3.3 days on average.
Annual Particle Pollution

• Metro area reached the lowest year-round average; still meets the national standard.
• Ranked tied 80th most polluted for year-round particle pollution.
• Santa Cruz County had 9.1 µg/m3, its best annual level yet.
• Pima County had 5.5 µg/m3, its best annual level yet.
Annual Particle Pollution

The National Ambient Air Quality Standard for Annual PM2.5.
Why do we publish “State of the Air”? 

Millions of reasons