**Los Angeles Air Quality**

During hot months, Los Angeles occasionally suffers from temperature inversion

* + Under normal conditions the air cools with distance from earth’s surface
  + Emissions normally dissipates into the atmosphere, rising through progressively cooler air
  + Sometimes layer of cooler air from ocean slides under layer of warmer air
  + Under these conditions, polluted air trapped by layer warm air
  + Instead of spreading upward, polluted air spreads laterally
  + Ocean breeze doesn’t allow westward expansion
  + San Gabriel Mountains trap air; causing pollution accumulate in foothills
  + Ocean breeze doesn’t allow westward expansion

[LA MAP](http://milesfinney.net/434/handouts/LA_MAP.pdf)

Most famous case of temperature inversion is the [1952 Great Smog in London](http://en.wikipedia.org/wiki/Great_Smog)

LA Air quality began to decline as population grew

|  |  |
| --- | --- |
| Year | LA County population |
| 1910 | 504,131 |
| 1930 | 2,208,492 |
| 1950 | 4,151,687 |
| 1970 | 7,041,980 |
| 2010 | 9,818,605 |

Problems of smog became prominent by 1940’s

Episodes occurred in which people suffered stinging eyes and runny noses; visibility also decreased ([illustration](http://milesfinney.net/434/handouts/Picture1.jpg))

Los Angeles County Air Pollution Control District created through state legislation in 1947

Agencyattacked stationary sources believed to be primary cause of problem.

For example:

* banned backyard garbage incinerators
* mandated emission controls for area steel and iron mills

In 1967, the state created the [Air Resources Board](http://www.arb.ca.gov/homepage.htm)

The regional air quality district AQMD covering the counties in Los Angeles metropolitan areas created in 1975

The source of LA’s primary air quality problem was discovered in late 1940’s

Ozone, a gas found in the upper atmosphere, was forming near ground level

Ground level ozone is more likely to form on hot days that experience temperature inversion

Research showed most of the emissions producing ozone came from car exhaust

Auto companies reluctant to develop emissions reduction technology

Over the years, the state of California grew to confront auto industry

In mid-1960’s auto industry began equipping cars with emissions control gear

Over 15 years after science indicated cars were the problem

What was the reason for reluctance of the industry?

* Clean air is public good
* Market incentives are not strong to produce the good
* Market incentives to alter other aspects of autos much stronger