

# Criteria Pollutant and Toxic Trade Offs

SCAQMD Symposium on VOCs and  
Toxics Risks  
October 29, 2014

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# Why Control VOCs?

- EPA and States regulate the emissions of VOCs as precursors to ozone formation
- Section 302 of the CAA enables the EPA Administrator to “define” VOC
- 40CFR51.100(s) definition:

*“Volatile organic compounds (VOC) means any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions.”*

... and lists organic compounds “which have been determined to have negligible photochemical reactivity.”

# VOC Exemptions and Criteria

Approximately 60 compounds/classes of compounds have been exempted to date

## 1977 – Original VOC policy

Exemptions based on ozone forming potential, but also mentions health/environmental impacts of some low reactivity compounds.

## 9/13/2005 Interim Guidance

Exemptions will continue to be based solely on a compound's contribution to ozone formation. However, EPA reserves the right to exercise its judgment on whether to grant an exemption.

# VOC Exemptions and Criteria

States and Districts can be more stringent (i.e. not exempt a compound), but cannot be less stringent than EPA's list.

## California ARB exemptions

Includes VOC exemptions for consumer products and auto exhaust rulemaking.

## South Coast AQMD exemptions

Has a definitions rule. Applies to rulemakings such as architectural coatings, autobody refinishing, boats, wood coatings, graphic arts, aerospace.

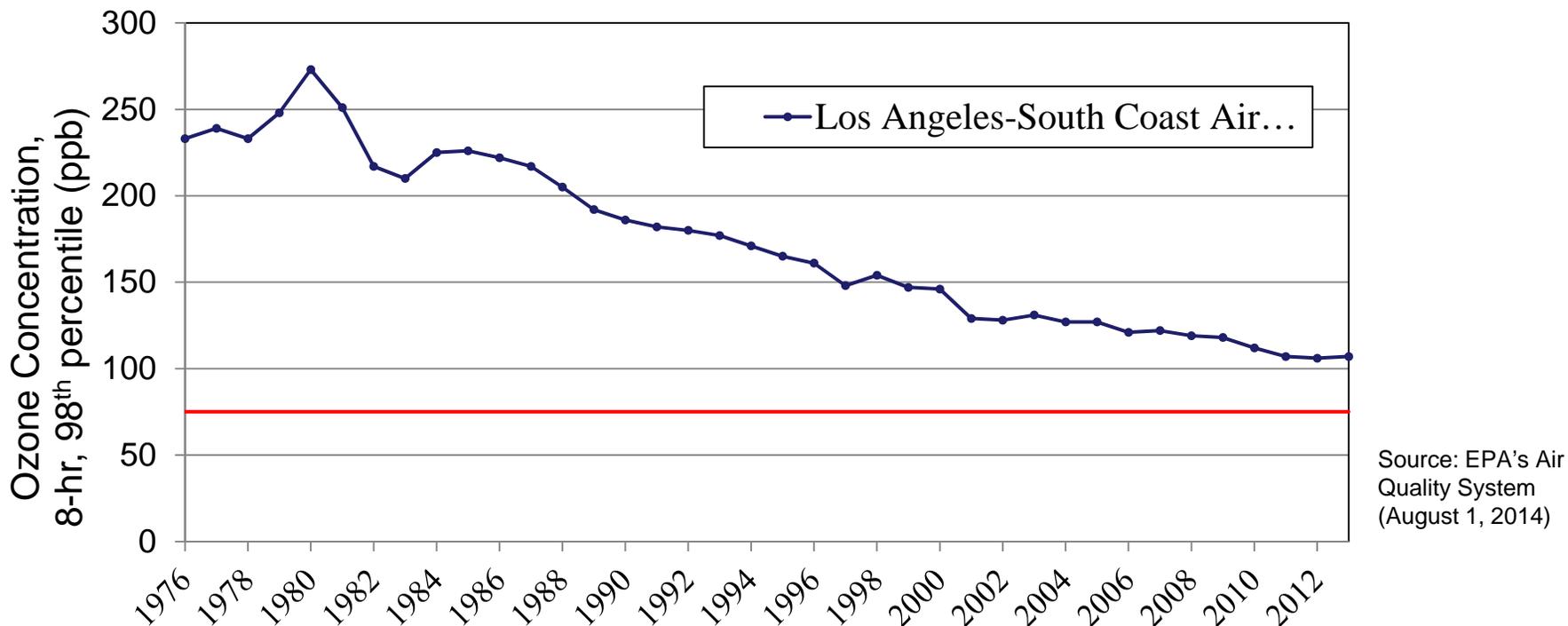
# Considering VOC Toxicity

## VOC Rules and Exemptions:

For compounds with low ozone forming potential but significant toxicity or other concerns, could

- Continue controlling as a VOC.
- Set usage limits (daily/monthly/annual).
- Set workplace exposure limits.

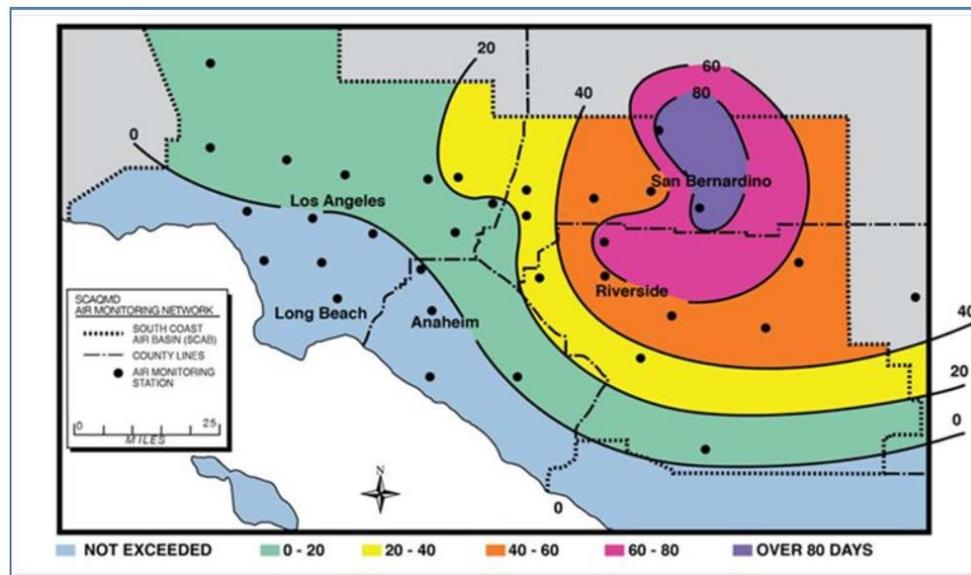
# Ozone in the South Coast Air Basin



- Ozone is a very real, every-day health impact for the 17 million people living in the South Coast air basin.
- Control of ozone precursors, VOC and NOx, have been extremely effective in reducing ozone exposures for people living in Los Angeles. But LA continues to have the worst ozone in the U.S.

# Flexibility in Attainment Plans

- Clean Air Act Requirements: the entire area must achieve air quality better than the national ambient air quality standards (notably: ozone and PM2.5).
- In general, an air basin/nonattainment area has (a) disparities in impacts and (b) co-benefits for control strategies.



**FIGURE 2-25**

Number of Days in 2011 Exceeding the Current (2008) Federal 8-Hour Ozone Standard (8-hour average Ozone standard > 0.075 ppm)

Source:  
2012 AQMP

# Flexibility in Attainment Plans

- Example: Detroit Multi-Pollutant Pilot Project
  - Focused on attainment of PM<sub>2.5</sub> and ozone standards.
  - In Detroit, there were many source control options.
  - Leveraged trade-offs: more VOC and direct PM<sub>2.5</sub> controls in close proximity to densely populated areas.
  - Considered toxics impacts.
  - For a similar cost, nearly doubled health benefits compared to traditional approach.



# Considering VOC Toxicity

## Air Quality Plans:

Where there is flexibility (i.e. choice of source categories or VOC), in addition to ozone forming potential, could consider:

- toxicity.
- secondary-organic aerosol formation.
- impact disparities (environmental justice).
- other endpoints (e.g. climate).

