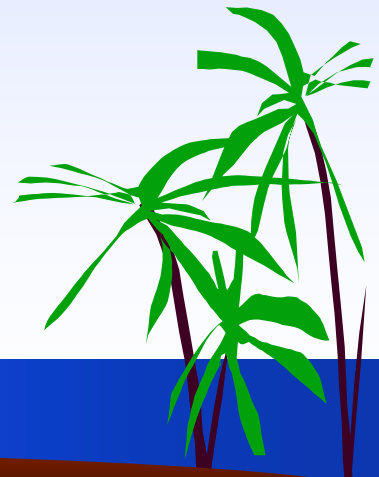
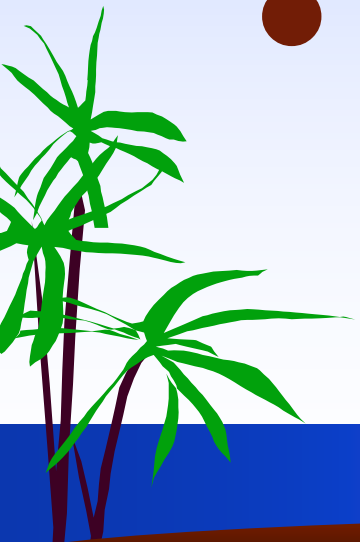


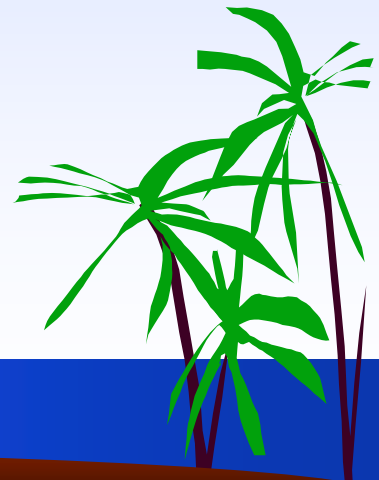
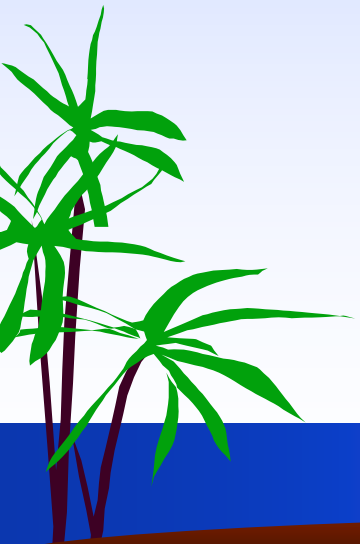
AIR POLLUTION

- **History of Clean Air Act**
- **Clean Air Update**
- **The Role of APCD**



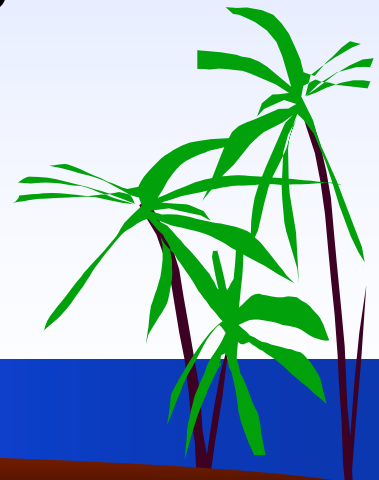
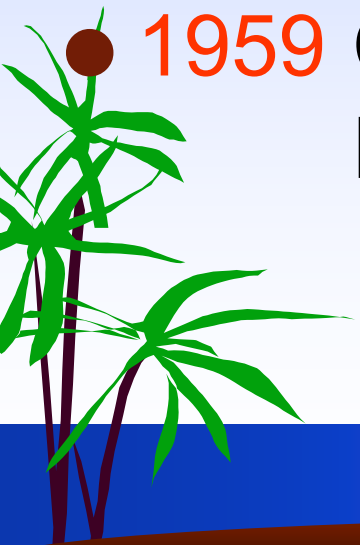
History ● 1940-1959

- **1947** California Air Pollution Control Act
 - First state legislation
 - Permitted APCD's
- **1945** City of Los Angeles
Bureau of Smoke Control



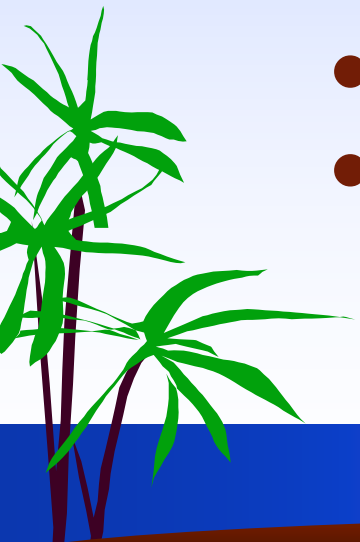
History ● 1940-1959 *(continued)*

- **1955** First federal effort
 - Authorized funds for research
 - Authorized the Surgeon General
 - Air pollution control authority rested with states
 - Air pollution control & technical assistance
- **1959** California formed Motor Vehicle Pollution Control Board



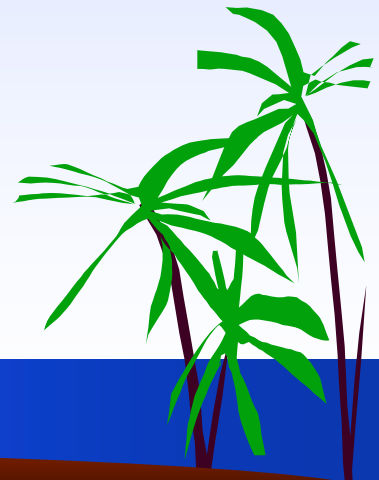
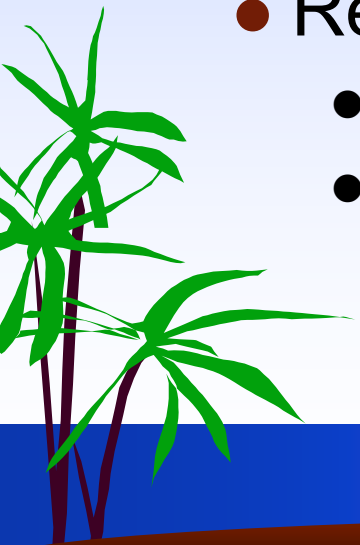
History • 1960's

- **1963** Federal Clean Air Act
 - Authorized HEW to work with state
- **1965** Amended Clean Air Act to add Title II
- **1966** State adopts first HC & CO standard
- **1967** California forms Air Resources Board
 - Air quality programs by local government
 - Set motor vehicle emission standard



History • 1960's *(continued)*

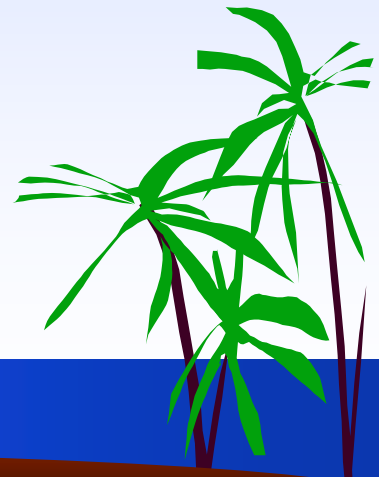
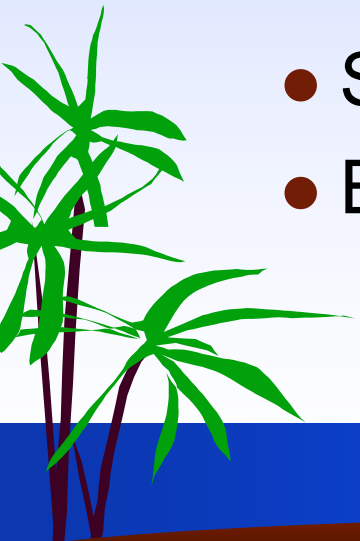
- Federal Air Quality Act of 1967
 - Required HEW to:
 - Define atmospheric areas
 - Publish air quality criteria & control documents for states
 - Federal government to set mobile sources standard
 - Required states to:
 - Establish SIP's to improve air quality
 - Establish & adopt AQ standards



History • 1970's

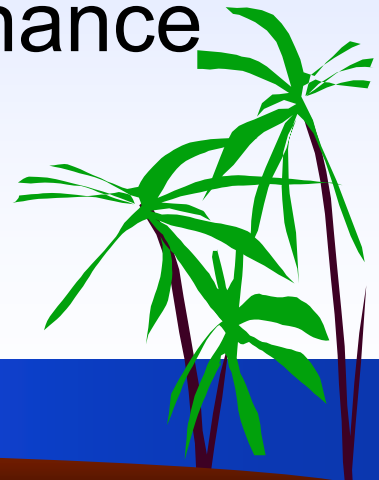
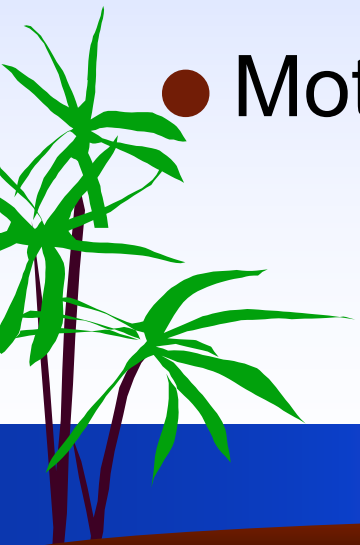
A Turning Point

- EPA was created
- Clean Air Act of 1970
 - NAAQS set for non-hazardous pollutants
 - NESHAPS set for hazardous pollutants
 - States responsible for NAAQS
 - States to adopt & submit SIP
 - EPA promulgates FIP



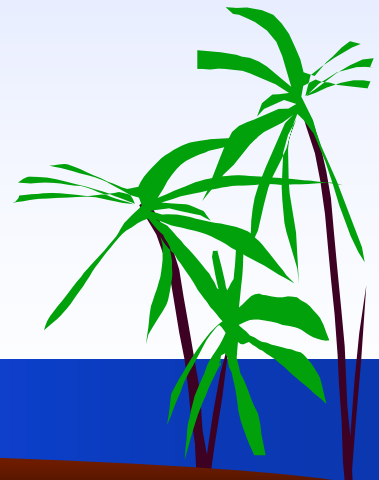
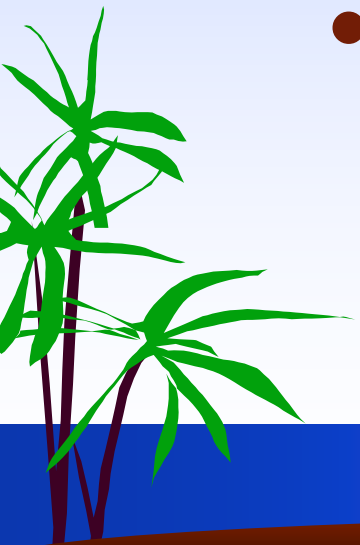
1970 Act SIP Content

- Ambient air quality monitoring
- Attainment & implementation of NAAQS
- Transportation control measures
- New source review
- Pollutant transport
- Motor vehicle inspection & maintenance



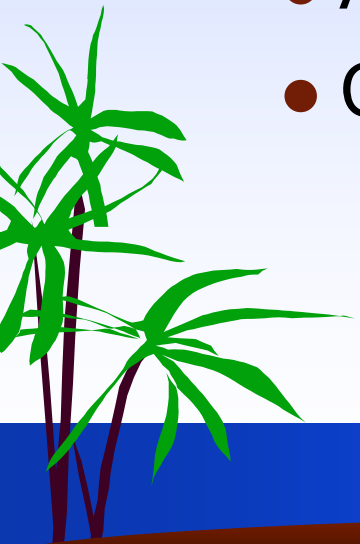
History ● 1970's *(continued)*

- Federal Clean Air Act Amendments of 1977
 - All standards attained by 1983
 - Ozone & CO deadline extended to 1987
 - SIP changes – sources to pay permitting costs
 - Non-compliance penalties based on economic value



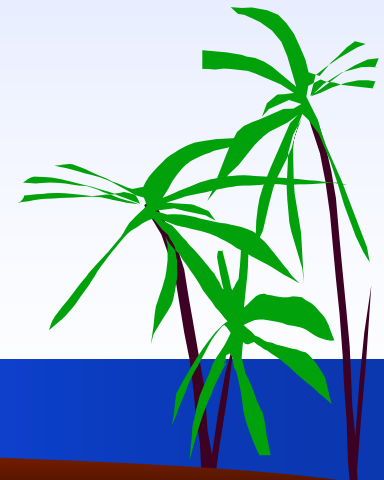
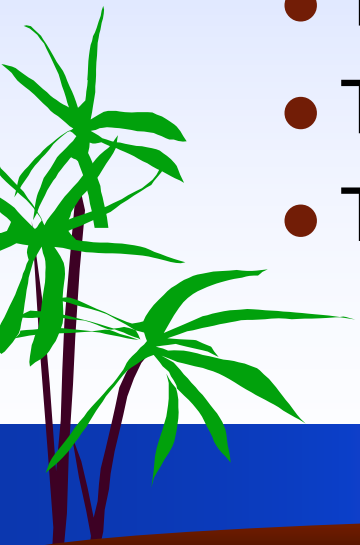
History ● 1980-1992

- California Clean Air Act
 - Adopted in 1988
 - Amended in 1992
 - Required attainment & maintenance of state & federal standards
 - Authorized local TCM & indirect SRC
 - Classified areas for ozone nonattainment



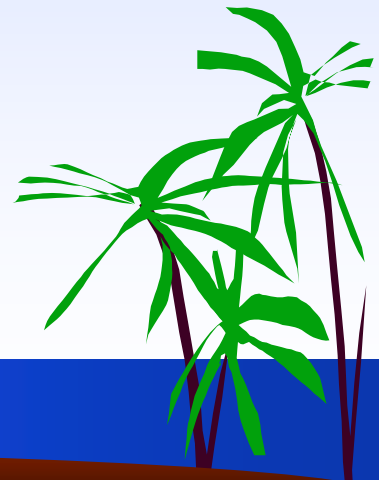
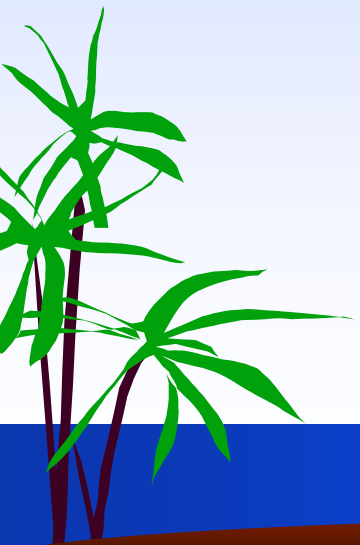
History ● 1980-1992 *(continued)*

- Federal Clean Air Act of 1990
 - Attainment deadlines based on severity classification (design value)
 - NESHAPS significantly amended
 - Title II – Title VI
 - Title II – Mobile Source Control
 - Title IV – Acid Deposition Control
 - Title V - Permits



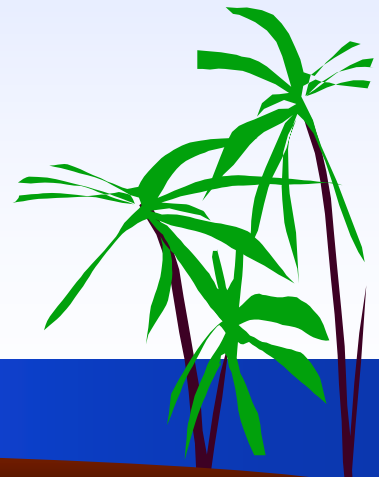
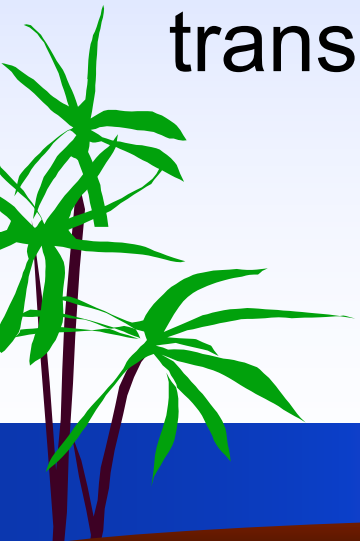
History ● 1997

- Revised ozone standard
- New particulate standard – PM_{2.5}
- Secondary standards for ozone & particulate matter to match primary



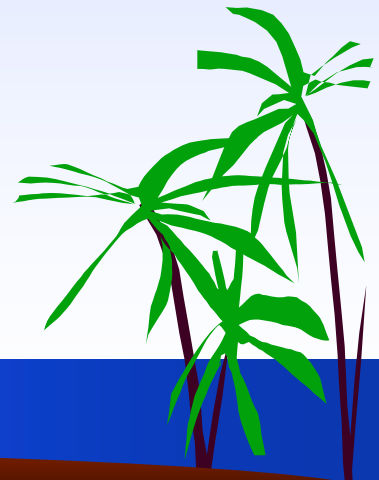
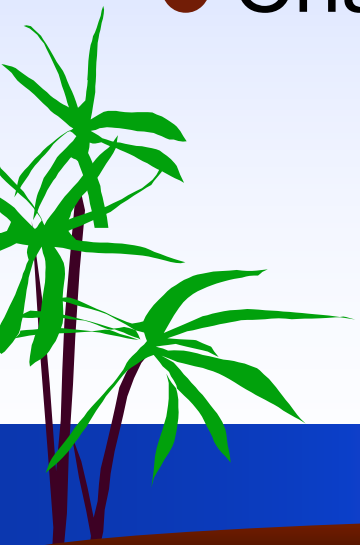
NAAQS for Ozone

- Health-based 1-hour standard of 0.12 ppm
- New concentration-based 8-hour standard
 - 4th highest average in 3 years -.085 ppm
 - To protect against longer exposure periods
- 1-hour retained until achieved to smooth transition



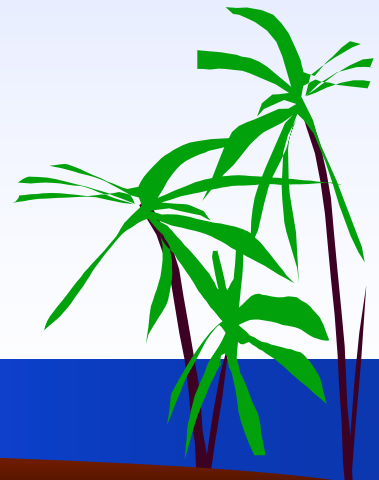
NAAQS for Particulates

- Particulate standards last revised in 1987
- Adding new standard for $PM_{2.5}$
- Retaining current annual PM_{10} standard
- Changing form of 24-hour PM_{10} standard



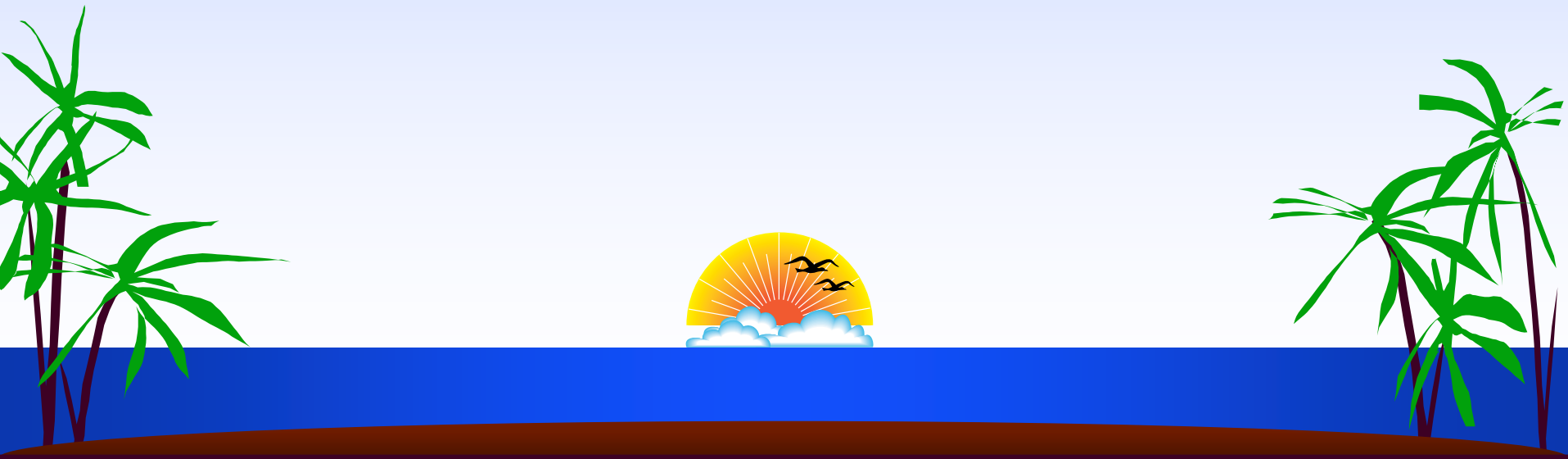
NAAQS for Particulates

- PM_{10}
 - Annual 3-year average $\leq 50 \mu\text{g}/\text{m}^3$
 - 24-hour 3-year average of 99th percentile $\leq 150 \mu\text{g}/\text{m}^3$
- $PM_{2.5}$
 - Annual 3-year average $\leq 15 \mu\text{g}/\text{m}^3$
 - 24-hour 3-year average of 98th percentile $\leq 65 \mu\text{g}/\text{m}^3$



Air Quality Standards

Comparison of State & Federal Ambient Air Quality Standards



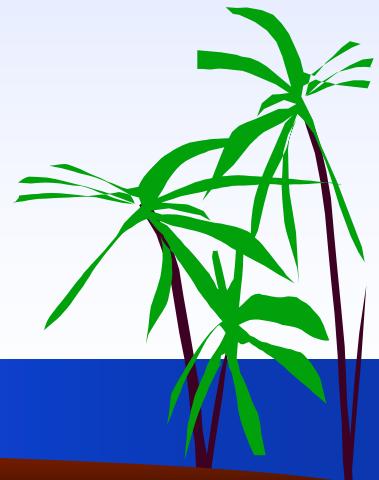
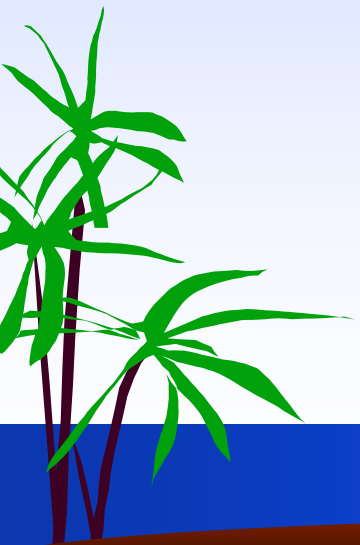
Ozone

- California

- 1-hour .09 ppm
- Ultra-violet Photometry

- National

- 1-hour .12 ppm
- 8-hour .08 ppm
- Ethylene Chemiluminescence



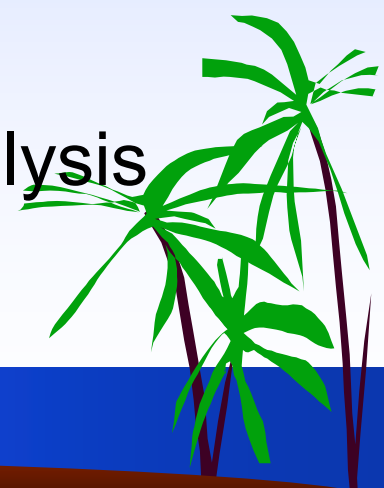
Particulate Matter (PM₁₀)

- California

- Annual geometric mean 30 $\mu\text{g}/\text{m}^3$
- 24-hour 50 $\mu\text{g}/\text{m}^3$
- Size Selective Inlet Sampler ARB Method P

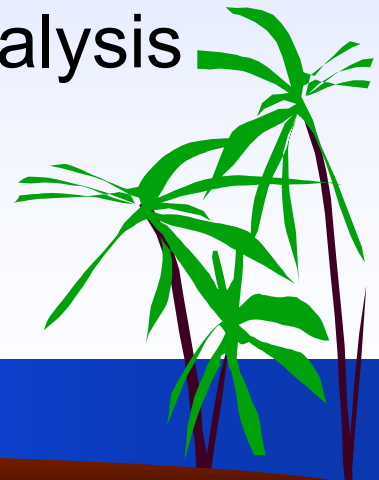
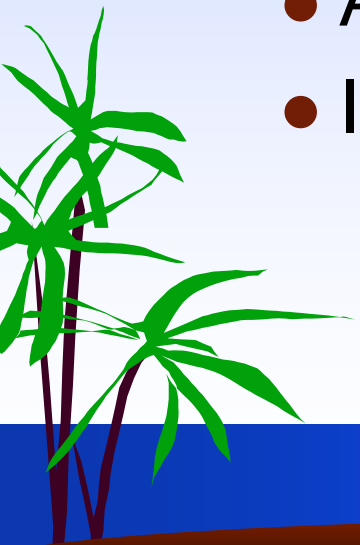
- National

- 24-hour 150 $\mu\text{g}/\text{m}^3$
- Annual arithmetic mean 50 $\mu\text{g}/\text{m}^3$
- Inertial Separation & Gravimetric Analysis



Particulate Matter (PM_{2.5})

- California
 - No separate state standard
- National
 - 24-hour $65 \mu\text{g}/\text{m}^3$
 - Annual arithmetic mean $15 \mu\text{g}/\text{m}^3$
 - Inertial Separation & Gravimetric Analysis



Carbon Monoxide

- California

- 8-hour 9.0 ppm
- 1-hour 20 ppm
- Non-Dispersive Infrared Photometry

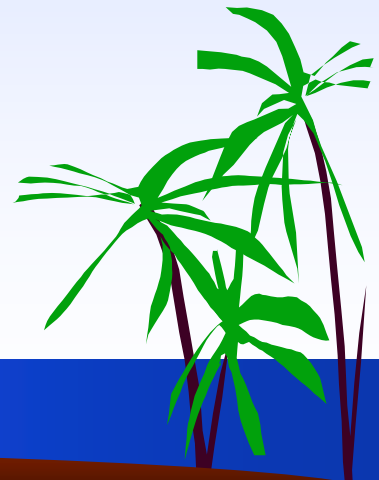
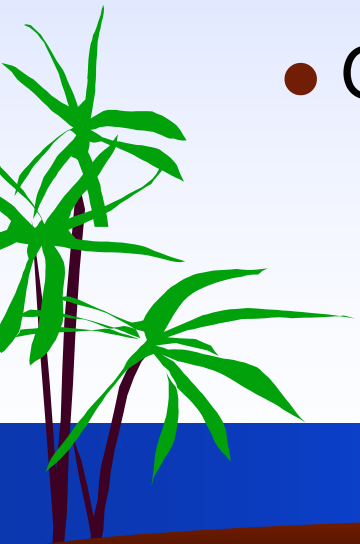
- National

- 8-hour 9 ppm
- 1-hour 35 ppm
- Non-Dispersive Infrared Photometry



Nitrogen Dioxide

- California
 - 1-hour .25 ppm
 - Gas Phase Chemiluminescence
- National
 - Annual arithmetic mean .053 ppm
 - Gas Phase Chemiluminescence



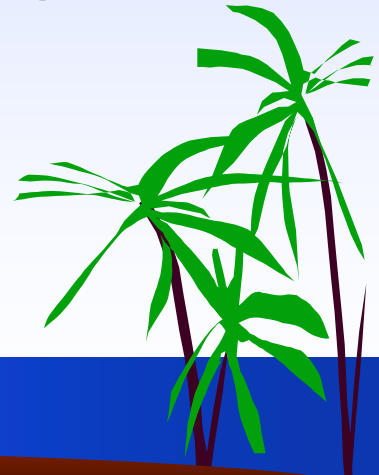
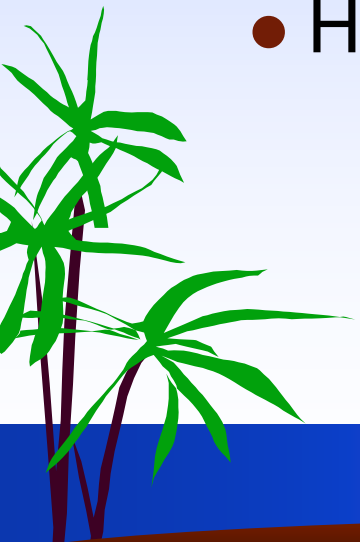
Lead

- California

- 30-day average $1.5 \mu\text{g}/\text{m}^3$
- AIHL Method 54 Atomic Absorption

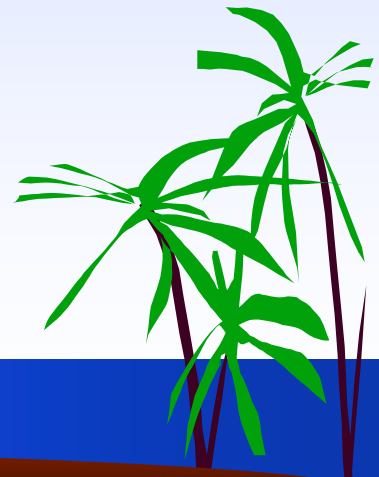
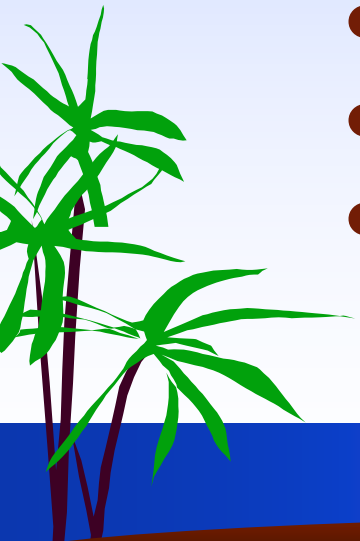
- National

- Calendar quarter $1.5 \mu\text{g}/\text{m}^3$
- High Volume Sampler & Atomic Absorption



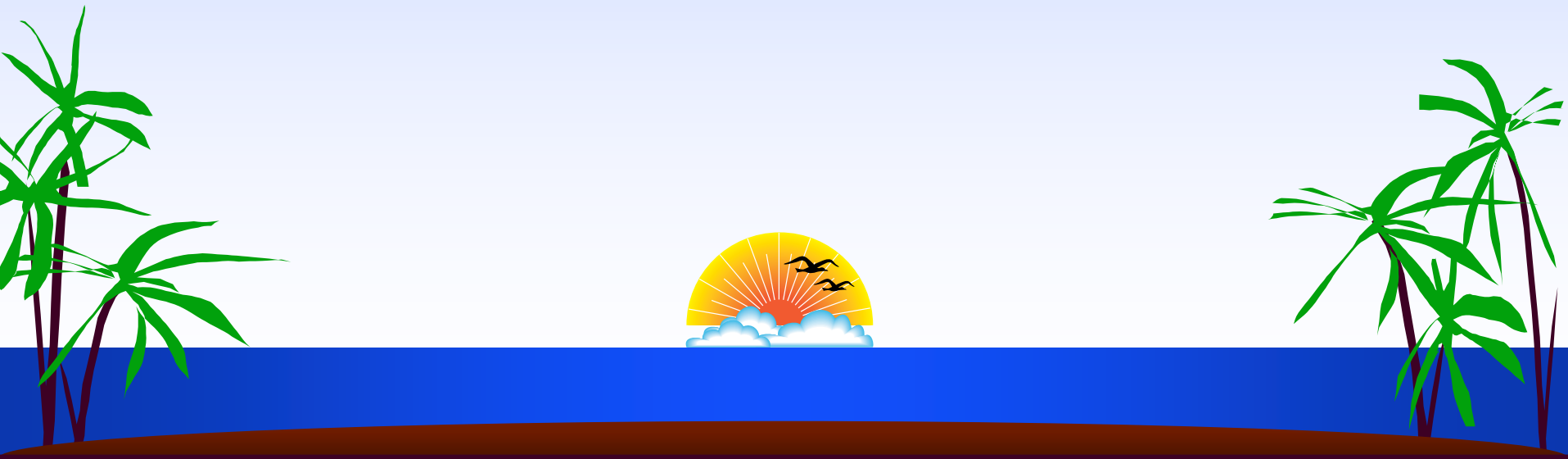
Sulfur Dioxide

- California
 - 24-hour .04 ppm
 - 1-hour .25 ppm
 - Fluorescence
- National
 - Annual average .030 ppm
 - 24-hour .14 ppm
 - Secondary 3-hour .05 ppm
 - Pararosaniline



Additional State Standards

- Visibility reducing particles
- Sulfates
- Hydrogen sulfide

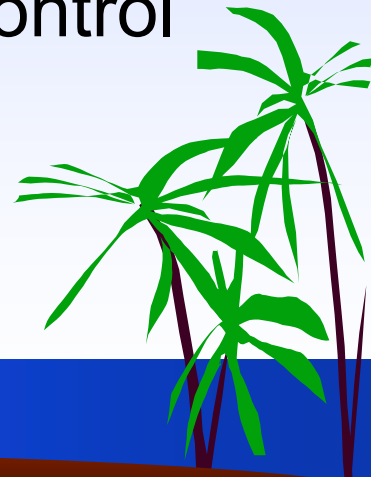


Attainment Status

Criteria Pollutant	Federal Designation	State Designation
Ozone	Nonattainment Serious	Nonattainment Serious
Carbon Monoxide	Attainment	Attainment
PM 10	Unclassifiable	Nonattainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(no federal standard)	Attainment
Hydrogen Sulfide	(no federal standard)	Unclassified
Visibility	(no federal standard)	Unclassified

Role of APCD

- Local regulatory authority
 - Achieve & maintain air quality standards
 - Protect public health
 - Develop & implement programs to meet state and federal mandates
 - Prepare long-term regional plans
 - Develop & implement strategies & control measures



Role of APCD *(continued)*

- Manages a permit system
- Develops air quality rules
- Prepares emissions inventories
- Help industry understand rules & regulations
- Investigates citizen complaints
- Continuous air quality monitoring
- Air quality forecasting

