



Forgotten quotation

"In Our Every Deliberation, We Must Consider the Impact of Our Decisions on the next Seven Generations."

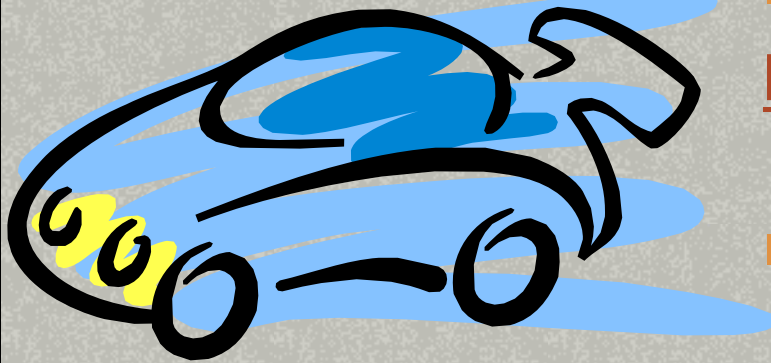
From the Great Law of the Iroquois Nation

Homework



- Review the automotive section of any Valley newspaper in next two weeks and record any examples of consumer information on air pollutant emissions from various makes & models of vehicles
- Bring examples to next class for discussion

Where do you find clean cars?



- California DRIVECLEAN:

<http://www.driveclean.ca.gov/en/gv/home/index.asp>

- Environmental Working Group:

<http://www.ewg.org/sites/asthma/index/>

- US EPA:

<http://www.epa.gov/emissweb/>

Day 2

Certificate Program in Air Quality Management



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Day 2 Outline--Introduction

- History
- Clean Air Act
- Regulatory structure
- Air quality planning
- Upcoming plans
- Changing the process
- Challenges and issues

Key Legislative Acts

- 1273: Sea Coal ban (King Edward I)



- 1963: Clean Air Act signed (Pres Johnson)
- 1970: CAA Amendments;EPA created (Pres Nixon)
- 1977: CAA Amendments (Pres Carter)
- 1990: Clean Air Act Amendments (Pres Bush)

1970 CAA Amendments

- NAAQS
- SIPs to achieve NAAQS
- NSPS & NESHAPS
- Emission standards
- State standards more stringent
- Citizen suits





1977 CAA Amendments

- Protect clean air areas (PSD)
- Offsets/banking
- LAER for nonattainment
- Visibility protection
- Delayed 1970 auto emissions standards



Clean Air Act (1990)

- Title V permits
- Phase out ozone-depleting chemicals
- Acid rain & toxics control
- Mobile source emissions:
Clean/alternative fuels
- Non-attainment area
classifications and requirements

http://www.epa.gov/oar/oaqps/peg_caa/pegcaain.html (Plain English Guide to the Clean Air Act)





State Implementation Plan

- State documents for implementing CAA
 - Attainment demonstration plans
 - Reasonable further progress plans
 - Local rules, regulations, incentives
 - Rules are federally enforceable

- Requires EPA approval
 - Penalties if don't submit or implement
 - Sanctions and possible federal plan





California Clean Air Act

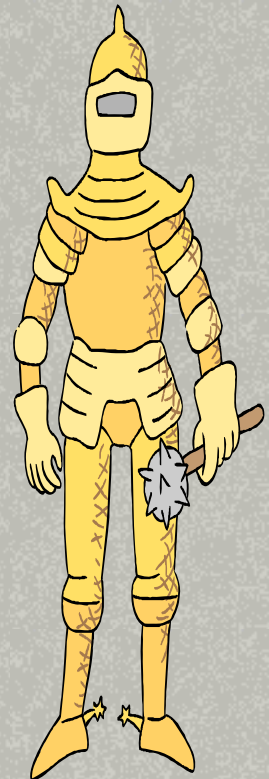
- Enacted 1988 – Gov George Deukmejian



- State air standards to be attained by earliest practical date
- Standards to protect public health
- 1991 AQAP with 3-yr updates

California Air Pollution Law

- CCAA was codified in the “Bluebook”
- California Health and Safety Code
 - Division 26. Air Pollution
 - Grants authority for special districts and list powers and duties
 - Specifies requirements for non-attainment areas (BACT, offsets, public notice, etc)
 - Generally more stringent than the federal CAA and addresses smaller sources



Regulatory Structure

USEPA

Cal/EPA

Local Agencies



US EPA Roles

- Implements CAA through regulations (CFR).
- Identifies both “criteria” and hazardous air contaminants to be regulated
- Oversees SIP development for CAA consistency.
- Develops and certifies equipment, procedures and test methods
- Operates and oversees ambient air monitoring
- Controls emissions from mobile sources (trains, ships, aircraft, etc.)



Federal Agencies

United States Environmental Protection Agency (US EPA)

- U.S. EPA's Office of Air and Radiation (OAR)
- Region 9 – San Francisco



State Agencies

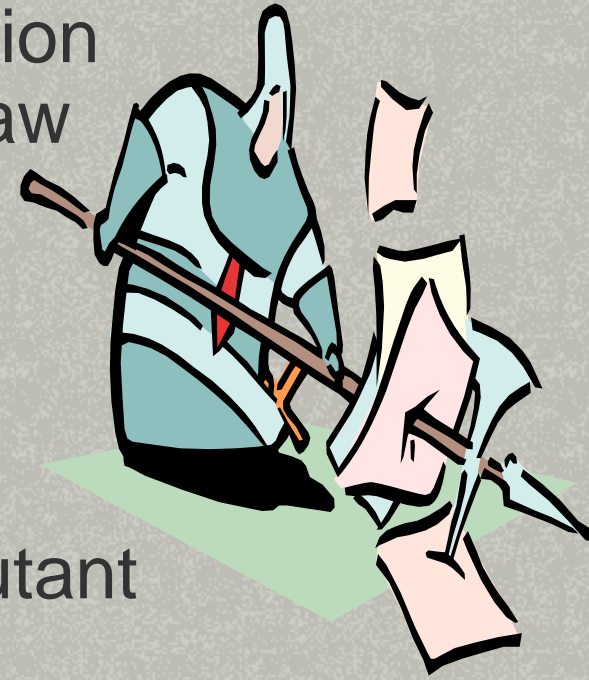


- California / EPA 1973
 - Air Resources Board (ARB)
 - Also Dept. of Pesticide Regulation (DPR) and Bureau of Auto. Repair (BAR)
- Local Air Pollution Control Districts



California Air Resources Board

- Oversees District implementation of SIP and state air pollution law
- Sets state ambient air quality standards
- Maintains inventory of air pollutant emissions in each air basin
- Monitors ambient levels of air contaminants



California Air Resources Board

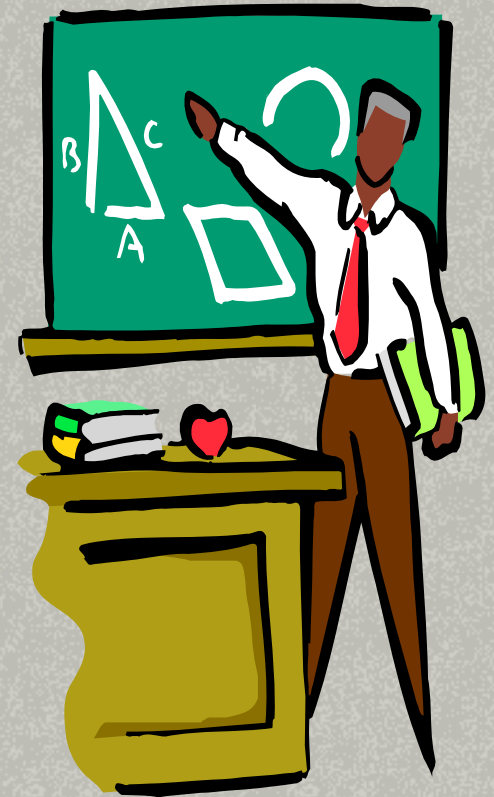
- Regulates emissions from vehicles operated in the state, from some off-road sources, and consumer products (spray paint, hairspray, cleaners, etc.)
- Administers state funded air pollution research and coordinates collection of data
- Provides training and technical support (e.g., pollution modeling for SIPs) to local Districts and industry





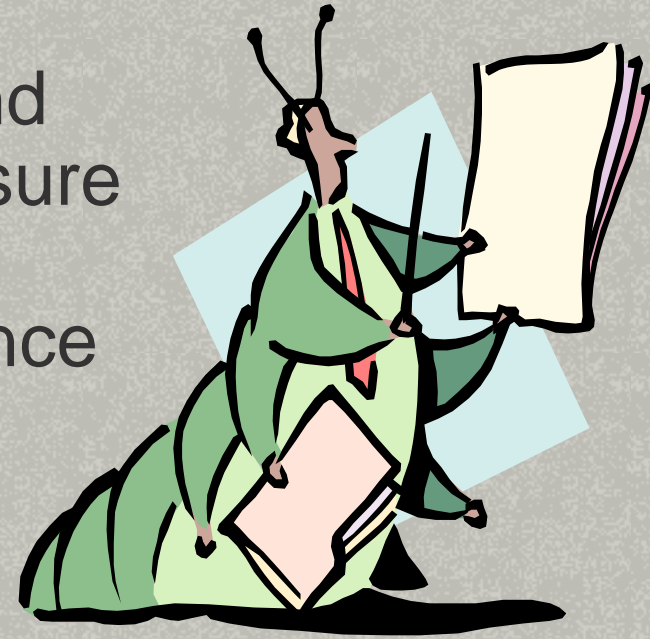
California Air Resources Board

- Establishes air pollution measurement standards and certifies testing laboratories
- Sets fuel standards
- Climate change (2006)



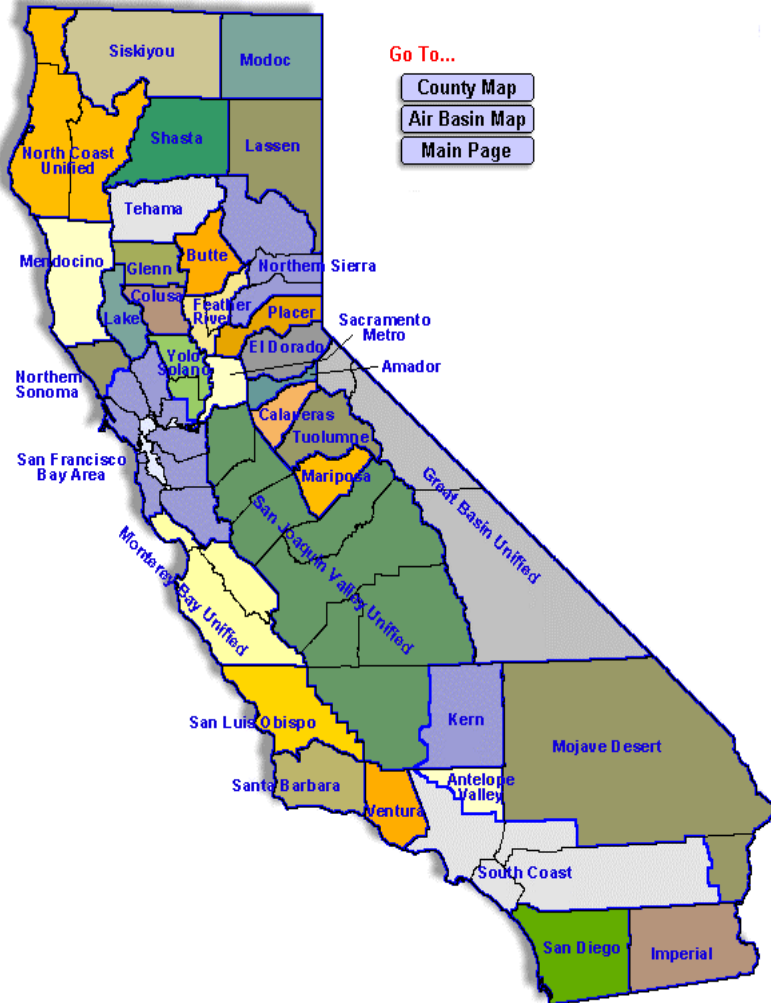
California Air Resources Board

- Maintains investigative and enforcement staff to measure emissions and take legal action when non-compliance is documented
- Reviews local District Hearing Board decisions for consistency with air pollution regulations



Local Agencies

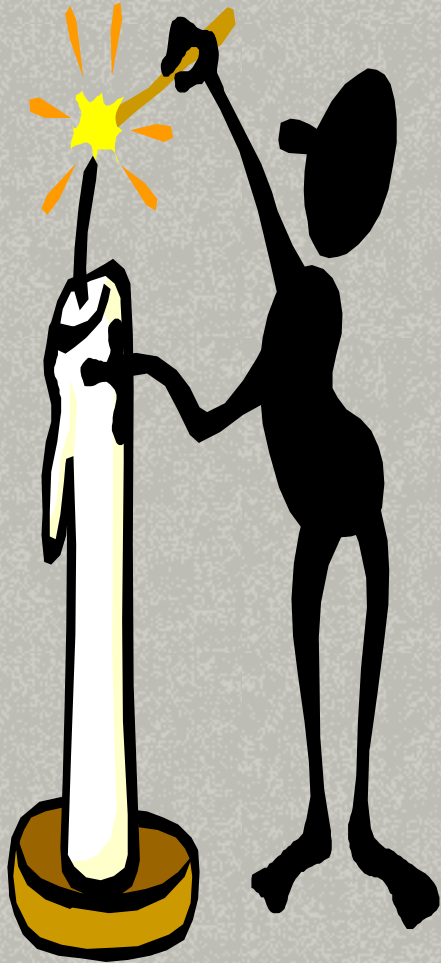
California Air Districts



- County
- Regional
- Unified APCDs
- Air Quality Management Districts



Local Agency Roles



- Study the problem.
- Develop a solution.
- Implement the solution.



Who does what????

- The District controls emissions from stationary sources and some area/mobile sources
- Local governments (cities and counties) develop measures that affect how vehicles are used (e.g., traffic light synchronization, turn lanes, etc.)

Who does what???(cont.)

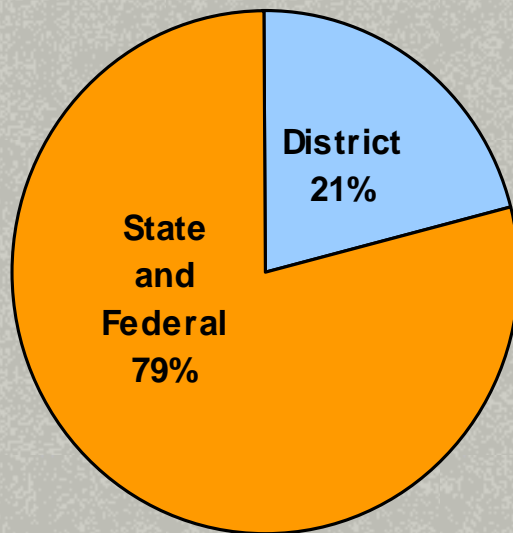


- The District is responsible for preparing plans for clean air
- The state formally submits plans and the federal government approves plans
- BUT—the District does not have authority to implement all of the measures identified in plans to produce clean air

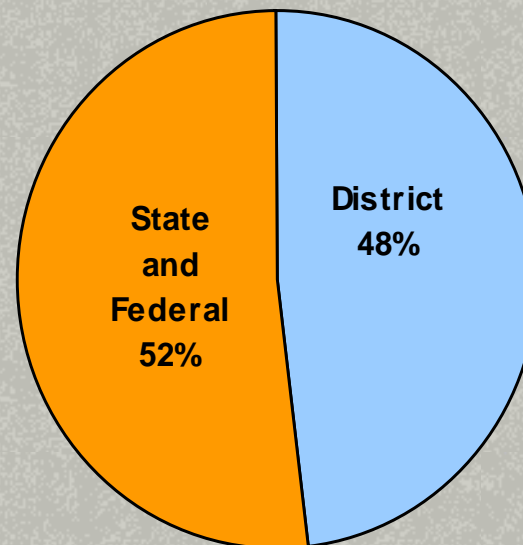


Jurisdictional Puzzle

Oxides of Nitrogen (NO_x)



Volatile Organic Compounds (VOC)





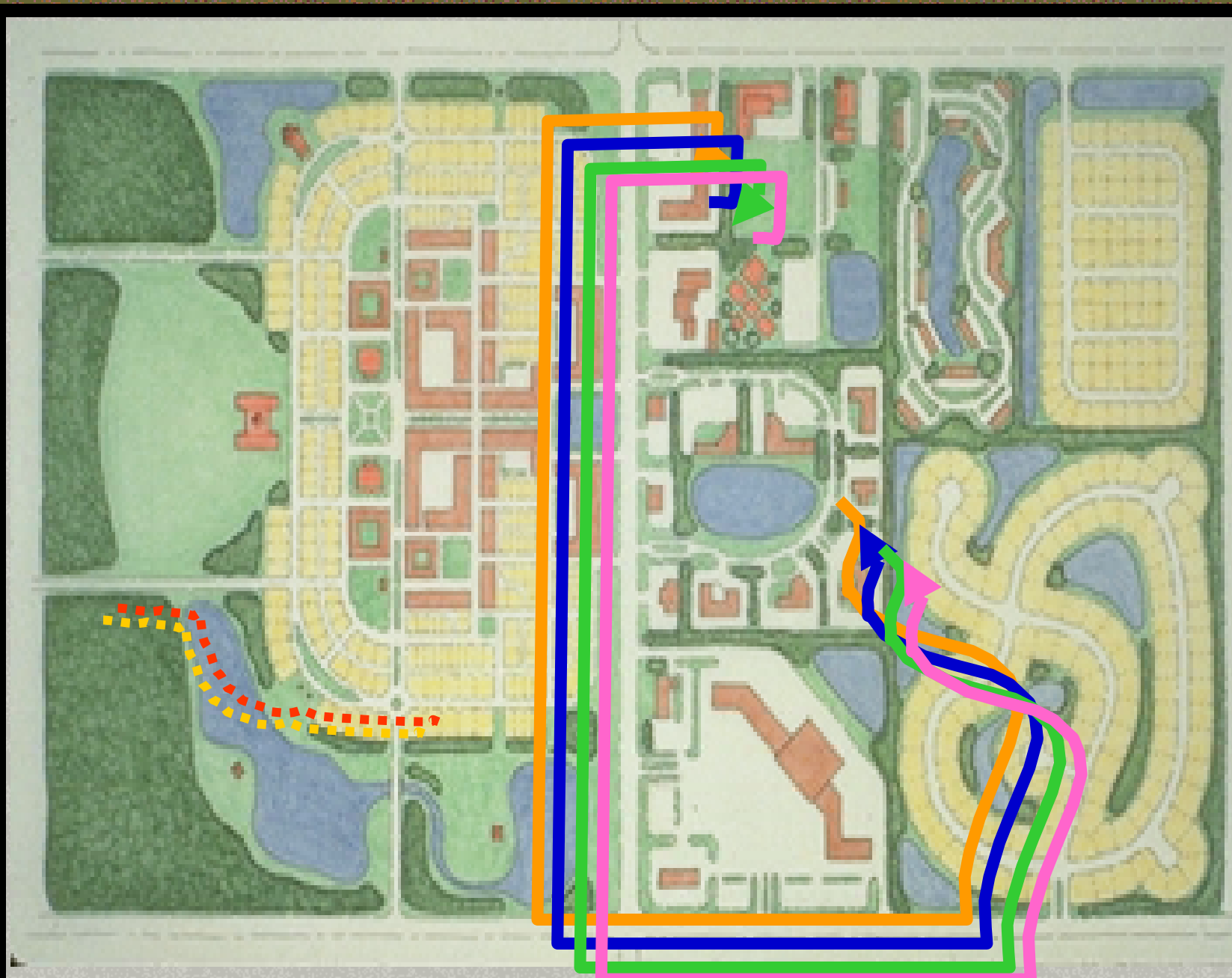
Regulatory Structure: Valley Air District

- Responsible for regulating stationary sources such as power plants and manufacturing facilities
- Responsible for some area sources such as agricultural operations
- Develops plans and rules for reaching attainment of criteria pollutant standard levels
- Permits facilities
- Ensures compliance
- Comments on development projects through CEQA
- Disperses incentive funding
- Facilitates educational campaigns
- Gives land-use guidance
- Works cooperatively with Study Agency to further air-quality research



Regulatory Structure: Local Level

- Local agencies influence land-use and transportation planning
- They can address and mitigate air quality impacts from increases in vehicle miles traveled (VMT) due to Valley population growth through actions such as
 - Urban sprawl reduction
 - Increase street connectivity
 - Mixed use development
 - Mass transit access
 - Bike paths, sidewalks, trails



Traditional

Conventional

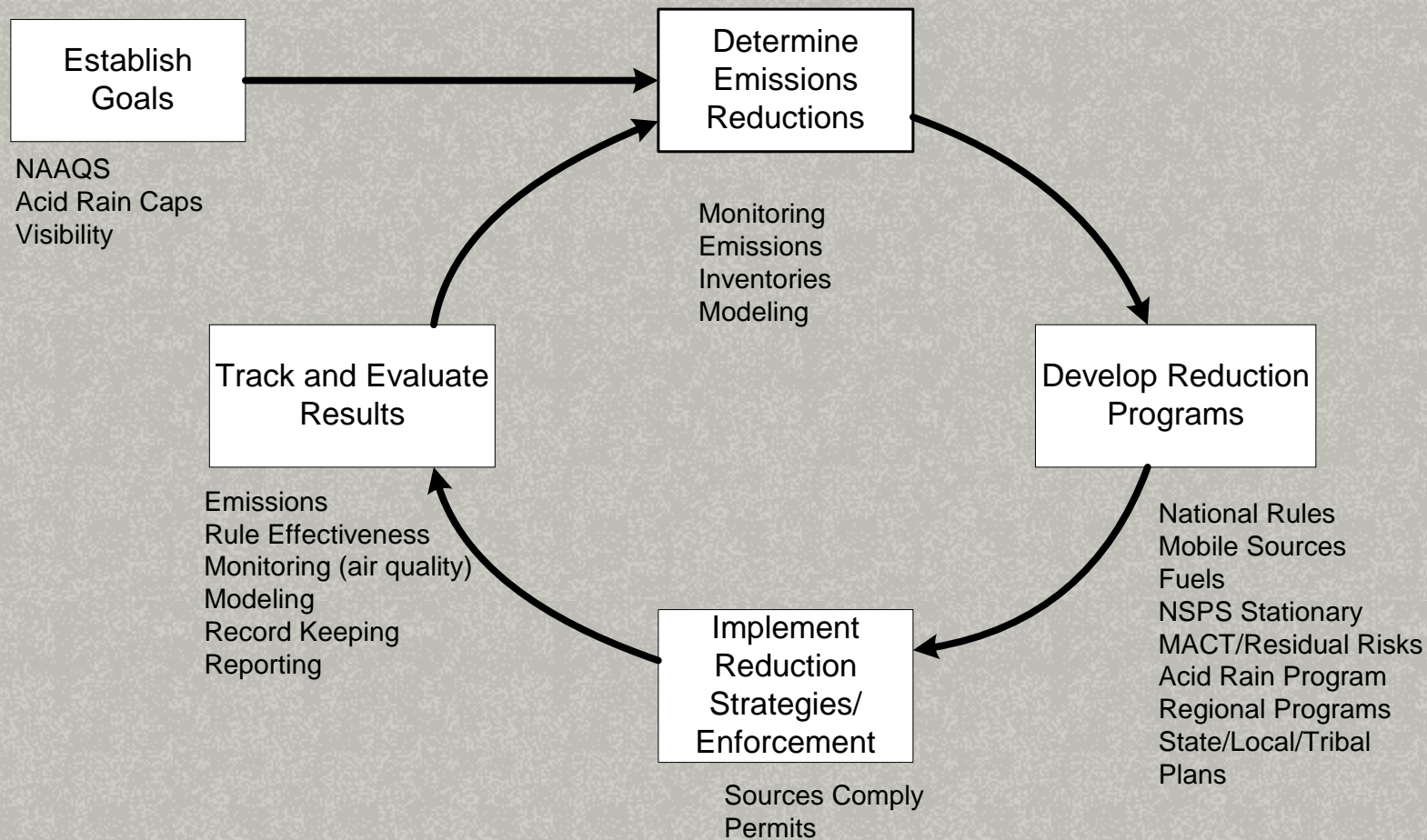
Providing clean air

THE WIZARD OF ID





Air Quality Management



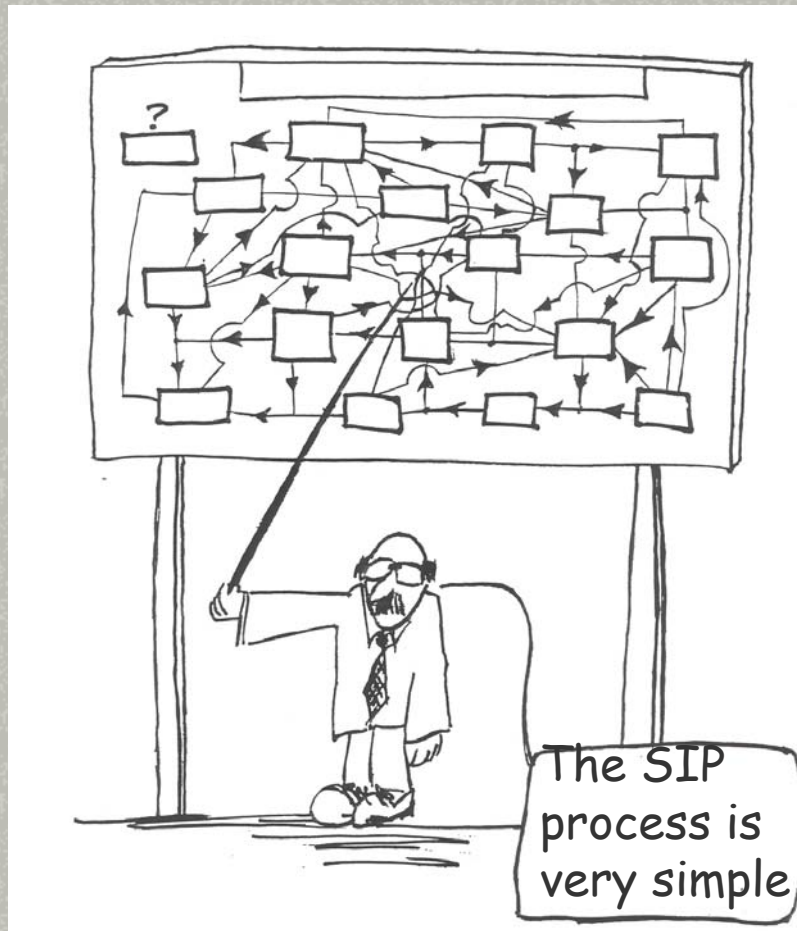


“Out of intense complexities
intense simplicities emerge.”

Winston Churchill



Air Quality Planning Simplified



- Do you have an air quality problem?
- Prepare plan to fix it
- Monitor to see if plan works.
- Repeat as needed

<http://www.smogcity.com/welcome.htm>

What goes in a plan?

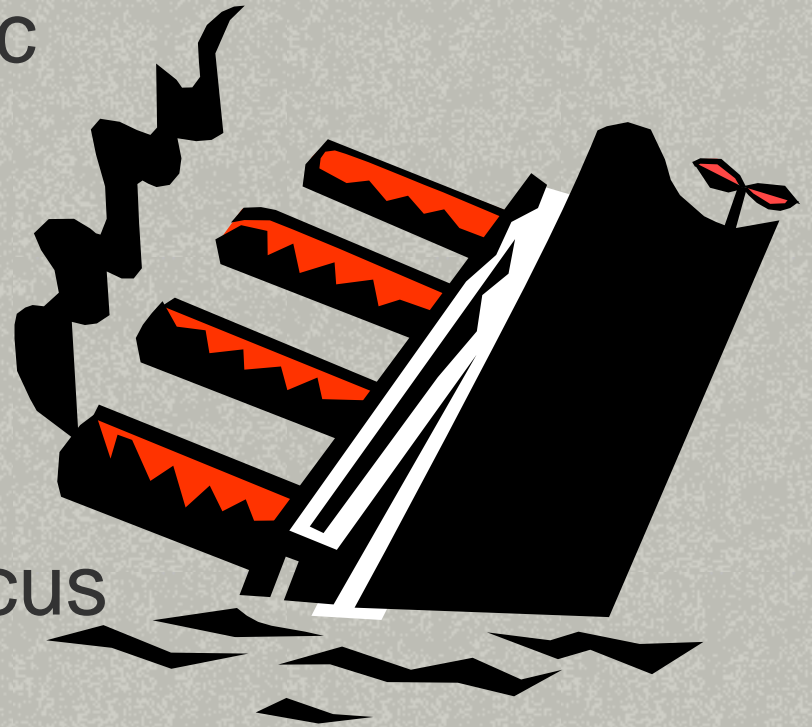


- Statement of problem
- What goes into the air, when, and by whom
- Relation between what goes in air and the problem
- Proposals to solve the problem & their effects on the problem
- Follow-up



Problems with SIP Process

- Overly bureaucratic process
- Overemphasis on attainment demonstrations
- Single pollutant focus



Source: *Air Quality Management in the United States*, National Research Council, Washington, DC (2004)



Changing the SIP process?

“the current system is sometimes overly driven by rules and procedures, focusing too much time on paperwork and not enough time on tracking the efficacy of the statutes, rules, and methods that were enforced.”

Source: *Air Quality Management in the United States*,
National Research Council, Washington, DC (2004)

Revising the SIP process



- Transform SIP into Air Quality Management Plan
- Focus on tracking & assessing performance; use attainment demo as a tool not THE tool
- Conduct frequent reviews & assessments
- Encourage innovative strategies

Source: *Air Quality Management in the United States*, National Research Council, Washington, DC (2004)



Improving air quality management

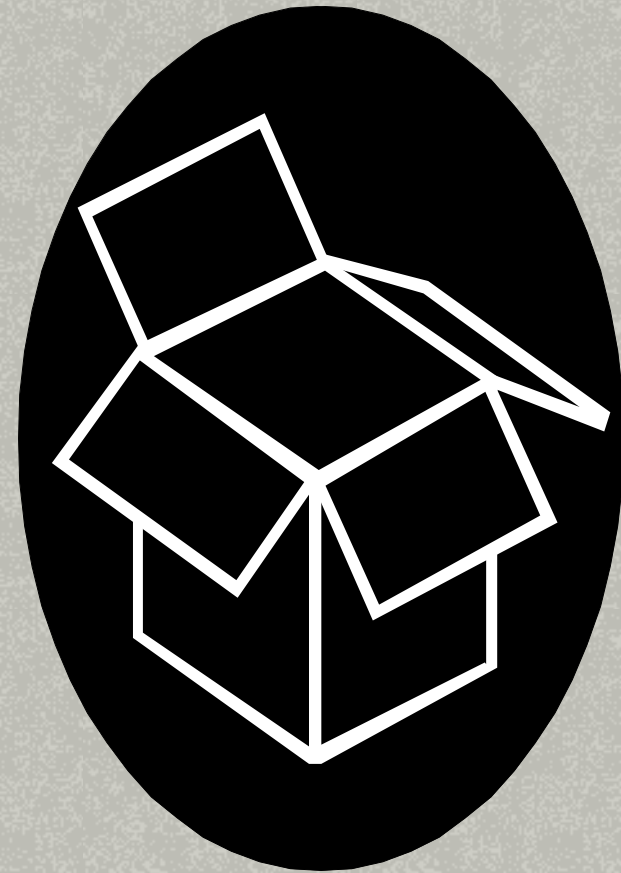
- Identify the most significant exposures, risks and uncertainties
- Take an integrated multi-pollutant approach to address the most significant exposures and risks
- Take an airshed-based approach
- Take a performance-oriented approach

National Research Council, 2004



Outside the box

- Thinking outside the box can be good unless:
 - Working in process-dominated field
 - Working in a litigious environment
- Can be detrimental to progress in some cases
 - Staff time spent defending the past rather than moving forward
 - Emphasis on old/revoked standards



Types of air standards



- **Ambient standards**
 - Represent levels of pollution in the air we breathe (e.g., micrograms of pollutant/m³ of air)
 - Goals of a Plan
- **Emissions standards** govern pollutant releases at point of discharge (e.g., tons/year of pollutant emissions)



Criteria pollutants/NAAQS

- Criteria pollutants are those accompanied by criteria documents describing science behind the numbers in the standards
 - Particulate matter
 - Sulfur oxides
 - Nitrogen oxides
 - Ozone
 - Carbon monoxide
 - Lead
- National Ambient Air Quality Standards (Federal Clean Air Act) are set to protect public health and welfare; atmospheric concentrations of these substances at or below standards are safe



NAAQS elements

- Specify the pollutant
- Specify the averaging time
- Give the numeric concentration below which the air quality is safe
- Give the statistical form of the standard for determining noncompliance
- Federal standards can also be primary (human health) and secondary (welfare)

Units of measurement

- *Parts per million* ("ppm") roughly equivalent to one drop of ink in a 40 gallon drum of water, or one second per 280 hours.
- *Parts per billion* ("ppb") roughly equivalent to one drop of ink in an Olympic-sized swimming pool, or one second per 32 years.
- Micrograms per cubic meter: mass per unit volume. 1 grain of sand in the cabinet under a kitchen sink is about 3 micrograms/cubic meter.





Examples of standards

Pollutant	Averaging Time	Numeric Limit	Form
Federal Ozone	8-hr	0.08 ppm	3yr avg, annual 4 th hi daily max.
Federal Ozone (revoked)	1-hr	0.12 ppm	4 exceedances in 3 yrs
California Ozone	8-hr	0.070 ppm	Not to be exceeded



Redefining clean air

- Federal Clean Air Act requires EPA to reexamine ambient standards every 5 yrs; EPA can revise or reaffirm existing standards
- Changes to standards redefine clean air and trigger new planning requirements
- EPA completed revisions to PM standards on September 21, 2006
 - Lower PM_{2.5} 24-hr, reaffirm PM_{2.5} annual, reaffirm PM₁₀ 24-hr, revoke PM₁₀ annual
 - Next 5 yr cycle starts November 2006
- EPA must complete revisions to 8-hr ozone standards by December 19, 2007



Challenges Ahead

- Finding future reductions given that most large sources are regulated
- Reducing emissions from mobile and indirect sources given projected rapid growth in population
- Getting state and federal emissions reductions
- Securing sustained funding for incentives
- Meeting evolving requirements for 8-hr ozone & PM_{2.5} standards (changing standards and rules implementing them)

Upcoming plans



- 8-hr ozone plan (released 10/2/06; due 06/15/07)
- PM2.5 plan for 1997 standard (due 4/5/08)
- PM2.5 plan for 2006 standard (due 4/5/13)



“rules and regulations,
who needs them?”

Crosby, Stills, Nash and Young

“Chicago”