

UNLOCK THE MYSTERIES TO AIR QUALITY



Presenters:

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6 Keys to Understanding Air Quality

1. **Pollution**
2. **Congress – Clean Air Act**
3. **Environmental Protection Agency**
4. **Local Air Agency**
5. **State Department of Transportation**
6. **Funding Sources**



1st Key to Understanding: **POLLUTION**

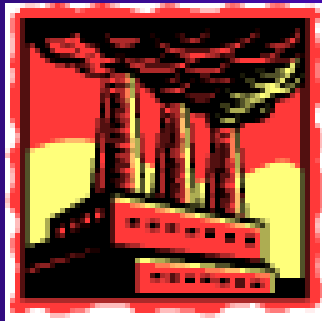
Sources

- ◆ Stationary
- ◆ Area
- ◆ Mobile
 - On-Road
 - Off-Road



1st Key to Understanding: Pollution

Stationary Sources



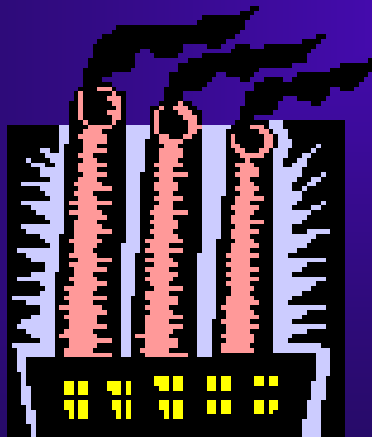
**Fixed facilities such
as:**

Factories

Power Plants

**Chemical Process
Industries**

Petroleum Refineries



1st Key to Understanding: Pollution

Area Sources

Small Stationary, Non-transportation Sources such as:

- **Dry Cleaners**
- **Bakeries**
- **Surface Coating Operations**
- **Home Furnaces**
- **Crop Burning**



1st Key to Understanding: Pollution

Mobile Sources – On-Road

On-Road Vehicles such as:

- Cars
- Trucks
- Buses



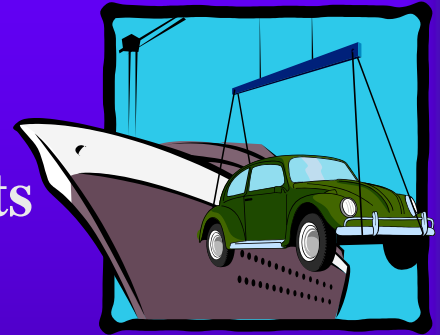
1st Key to Understanding: Pollution

Mobile Source – Off-Road



Trains

Ships and Boats



Airplanes



Lawnmowers

Construction Equipment



Farm Equipment



2nd Key to Understanding: CONGRESS

- ◆ **CLEAN AIR ACT (CAA) 1990**
 - Identified actions necessary to **REDUCE** emissions from on-road sources
- ◆ **Conformity Rule 1993**





3rd Key to Understanding: **ENVIRONMENTAL PROTECTION AGENCY**



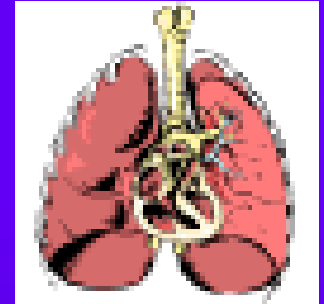
- ◆ Sets National Ambient Air Quality Standards (NAAQS)
- ◆ Mandated to review NAAQS every 5 years

3rd Key to Understanding: EPA

Pollution Standards:

◆ Primary Standard

- Public Health (children, elderly, asthmatics)



◆ Secondary Standard

- Public Welfare
- Soils, Water, Crops, Vegetation
- Buildings, Property
- Animals, Wildlife
- Weather, Visibility
- Transportation

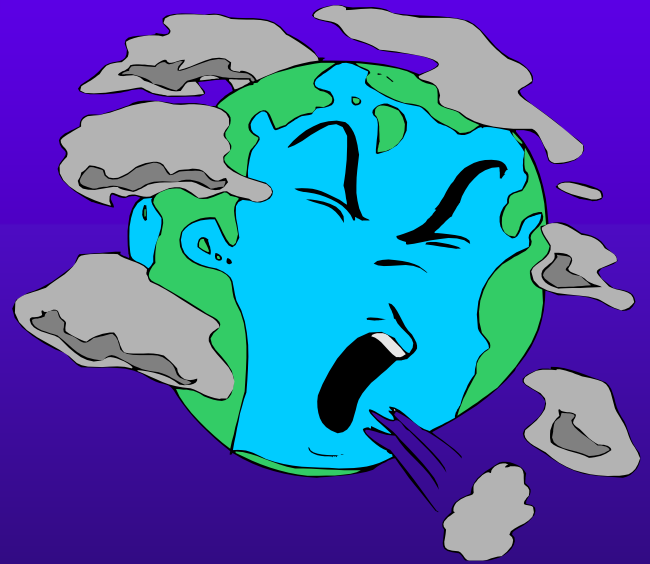


3rd Key to Understanding: EPA

National Ambient Air Quality Standards (NAAQS)

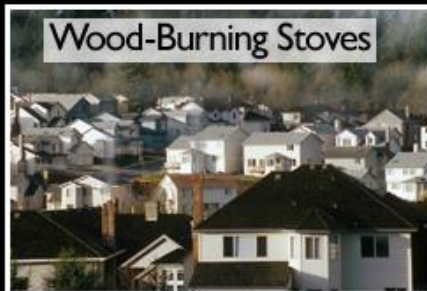
Transportation Related Pollutants include:

- ◆ Carbon Monoxide (CO)
- ◆ Particulate Matter (PM-10)
 - PM-2.5 December 2003
- ◆ Ground Level Ozone (becomes Smog)
 - Nitrogen Oxides (NO_x)
 - Volatile Organic Compounds (VOC)

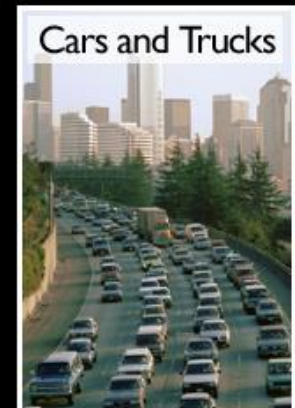


3rd Key to Understanding: EPA

Particulate Matter



**Fine Particles Can Be
Emitted Directly or Formed
in the Air from Gases**



3rd Key to Understanding: EPA

Fine Particles Reduce Visibility



Chicago - Summer 2000.

Clear Day : $\text{PM}_{2.5} < 5 \mu\text{g}/\text{m}^3$

3rd Key to Understanding: EPA

Fine Particles Reduce Visibility



Chicago - Summer 2000.

Hazy Day : $\text{PM}_{2.5} < 35 \mu\text{g}/\text{m}^3$

3rd Key to Understanding: EPA

Fine Particles Reduce Visibility



Atlanta

3rd Key to Understanding: EPA

OZONE: The Good, The Bad, and The Ugly

◆ Good Ozone

- ozone layer
- screens out harmful
- UV rays

◆ Bad Ozone

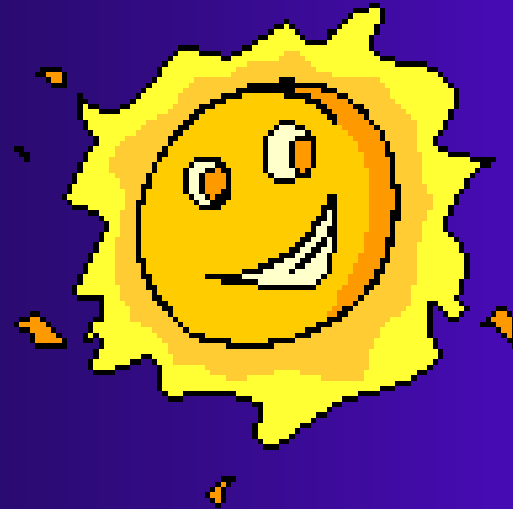
- smog/haze
- harmful to elderly, children, people at risk

◆ Ugly

- designations



3rd Key to Understanding: EPA OZONE Ingredients



Sunlight
+Heat
+VOC
+ NO_x
= Ozone



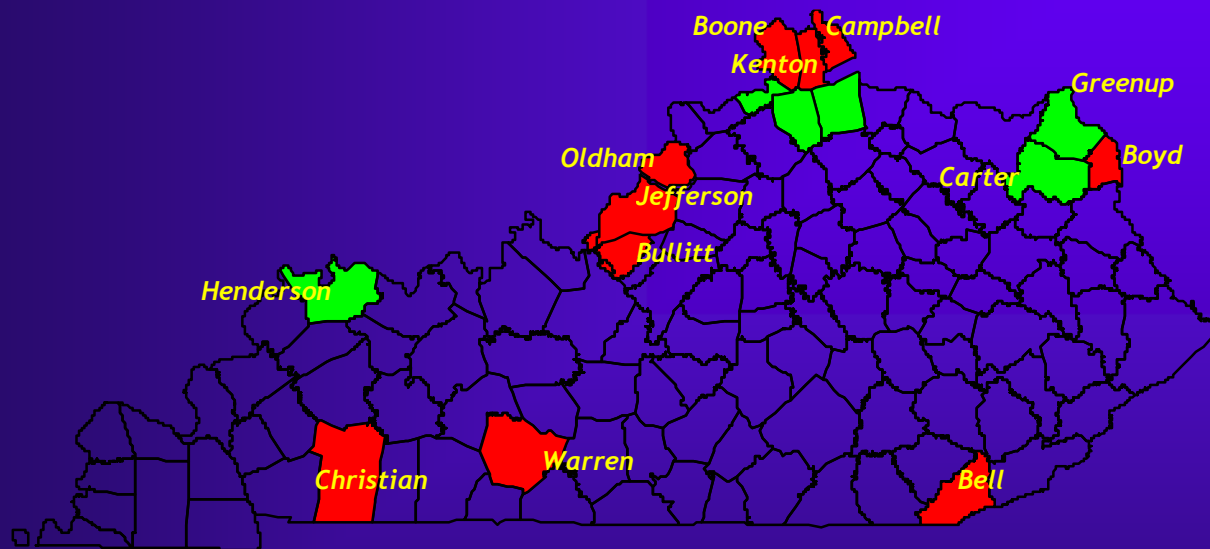


3rd Key to Understanding: EPA 8-hour Ozone

- ◆ 4th highest reading
- ◆ in an 8-hr period
- ◆ over past three years (2000,2001,2002)
- ◆ Average those readings
- ◆ Average $> .084$ ppm = violation of standard
 - (1-hr was 0.12 ppm over 1 hour average)
 - (8-hr is 0.08 ppm on an 8-hr average)
- ◆ 36,502 tons for KY
- ◆ 67% reduction
- ◆ more restrictive

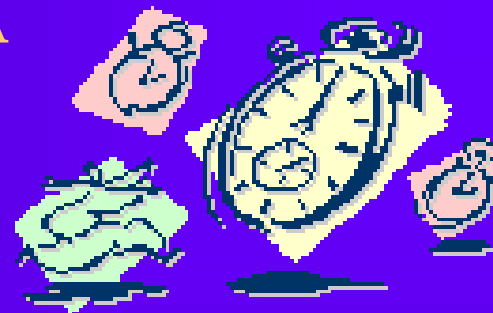
3rd Key to Understanding: EPA

Proposed 8-hr Ozone Designations



1. Bell
2. Boone
3. Boyd
4. Bullitt
5. Campbell
6. Christian
7. Kenton
8. Oldham
9. Jefferson
10. Warren

3rd Key to Understanding: EPA Deadlines



◆ 8-hr OZONE

- 7/15/03 - Governor's recommendations
- 10/15/03 – Deadline for EPA to complete review and notify states of modifications
- 4/15/04 – Final rule issued by EPA announcing final designations

◆ PM 2.5

- 2/15/04 - Governor's recommendations
- 12/15/04 – Final rule issued by EPA announcing final designations

3rd Key to Understanding: EPA

Air Quality Classifications

- ◆ Attainment
 - Has NEVER violated the NAAQS
- ◆ Non-Attainment
 - Is in violation of the NAAQS
- ◆ Maintenance
 - Has violated the NAAQS BUT has once again attained the NAAQS
 - Has a maintenance plan



4th Key to Understanding:

LOCAL AIR AGENCY



◆ Division of Air Quality (DAQ)

- Develops State Implementation Plan (SIP)
- Set Emission Budgets for each of the 120 counties in Kentucky



4th Key to Understanding: DAQ



State Implementation Plan (SIP)

- ◆ **States HOW the state will meet NAAQS for each pollutant**
- ◆ **Performs a Regional Analysis on each county**
- ◆ **Sets Emission Budgets for each type of pollutant in every county**
- ◆ **Each Pollution Source is assigned an emission reduction target**

4th Key to Understanding: DAQ



Example Emission Budgets

Pollution is measured in TONS PER DAY!!!

Fayette County (Urban) and Scott County (Rural)

- NO_x (Fayette): 17.28 Tons/Day
- NO_x (Scott): 3.57 Tons/Day
- VOC(Fayette): 21.71 Tons/Day
- VOC (Scott): 3.42 Tons/Day
- CO and PM are in attainment



5th Key to Understanding:

STATE DEPARTMENT OF TRANSPORTATION



Responsible for:

- ◆ **Coordination of Metropolitan Planning Organizations**
- ◆ **Building Transportation Projects**
- ◆ **NOT exceeding the On-Road Motor Vehicle Emissions Budgets**
- ◆ **Transportation Planning**

5th Key to Understanding: KYTC

Conformity Process



- ◆ **CAA and TEA-21 require that:**
 - **Non-Attainment and Maintenance Areas integrate transportation and air quality planning.**
- ◆ **Conformity Rule 1993**

5th Key to Understanding: KYTC

Conformity Process and NAAQS



- ◆ Uses Key Documents to ensure that transportation projects meet air quality goals
- ◆ An area that meets the requirements is in **CONFORMITY**
- ◆ Projects can then be approved for federal funding

5th Key to Understanding: KYTC



Metropolitan Planning Organizations (MPO)

- ◆ **Federal Surface Transportation Assistance Act of 1973**
 - Populations > 50,000 must have an MPO
 - Populations > 200,000 are called Transportation Management Areas (TMA)
 - Consists of representatives from Local Governments and Transportation Authorities

5th Key to Understanding: KYTC

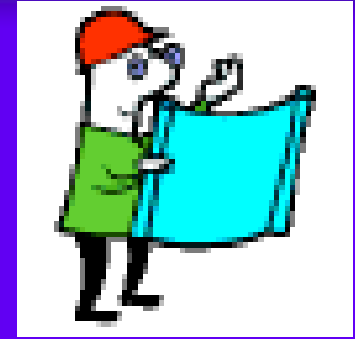


Metropolitan Planning Organizations (MPO)

- ◆ Ashland (FIVCO)
- ◆ Bowling Green
- ◆ Clarksville/Montgomery (Ft. Campbell)
- ◆ Evansville/Henderson (EUTS)
- ◆ Lexington Area (LAMPO)
- ◆ Louisville Area (KIPDA)
- ◆ Northern Kentucky (OKI)
- ◆ Owensboro (GRADD)
- ◆ Radcliffe/Elizabethtown

5th Key to Understanding: KYTC

MPO's Core Functions



- ◆ **Establish a fair and impartial setting to make regional decisions**
- ◆ **Evaluate transportation alternatives**
- ◆ **Involve the Public**
- ◆ **Participate in Air Quality Planning**
- ◆ **Develop and Update 3 Key Documents:**
 - **Unified Planning Work Program (UPWP)**
 - **Long Range Transportation Plan (LRTP)**
 - **Transportation Improvement Program (TIP)**





5th Key to Understanding: KYTC

Importance of Key Documents

◆ LRTP or the Plan

- Future Goals, Strategies and Projects
- Updated every 5 years or every 3 for non-attainment and maintenance
- Projected Emissions must be less than those identified in SIP
- Otherwise, there is a LAPSE and projects will not receive Federal funding.

◆ TIP

- Transportation Investments
- Updated every 2 years

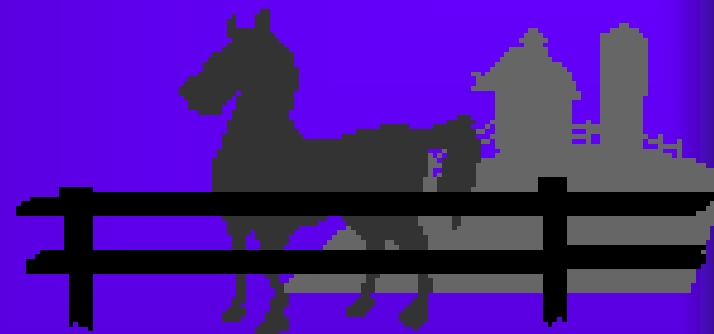


5th Key to Understanding: KYTC

Rural Areas

KYTC Develops the:

- ◆ State Long Range Transportation Plan (STP)
- ◆ State Transportation Improvement Program (STIP)
 - Projected Emissions must be less than those identified in SIP
 - Otherwise, there is a LAPSE and projects are not receive Federal funding.



6th Key to Understanding:

FUNDING SOURCES

- ◆ US Department of Transportation
 - Federal Highway Administration (FHWA)
 - Federal Transit Administration (FTA)
- ◆ Flex Funding
- ◆ EPA Programs
- ◆ US Department of Energy
- ◆ State Funding
- ◆ Local Funding





6th Key to Understanding: Funding



U.S. Department of Transportation

**Federal Highway
Administration**

- ◆ Provides financial assistance to State and MPO's to help reduce mobile emissions

6th Key to Understanding: Funding

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

- ◆ FHWA Program started in 1991
- ◆ Funding for Non-attainment and Maintenance areas
- ◆ Based on severity of Pollution and Population

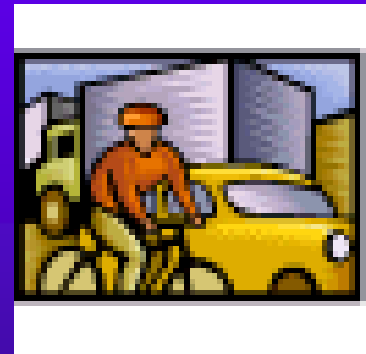


6th Key to Understanding: FHWA

CMAQ Projects

FHWA funding is for projects that reduce congestion and/or improve air quality

- ◆ Transit Improvements
- ◆ Shared-Ride Services
- ◆ Traffic Flow Improvements
- ◆ Pedestrian and Bicycle Programs
- ◆ Construction of High-Occupancy Vehicle (HOV) lanes
- ◆ Inspection and Maintenance (I/M) Programs
- ◆ Transportation Demand Strategies



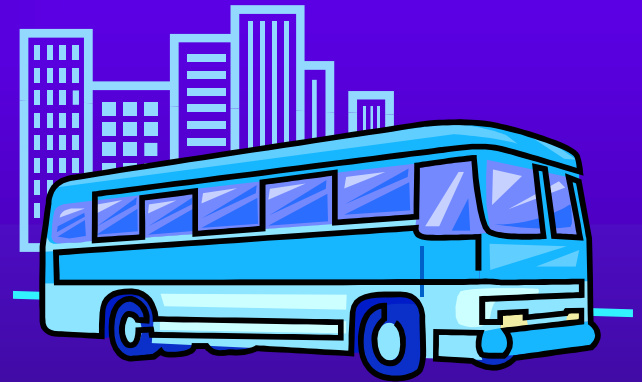


6th Key to Understanding:

FEDERAL TRANSIT (FTA)

Provides funding for:

- ◆ Transit projects
- ◆ Fixed Rail Transit
- ◆ Rail Modernization
- ◆ Buses and Bus Facilities
- ◆ Other Public Transit Projects



6th Key to Understanding: FHWA

Flex Funding

- ◆ Surface Transportation Program (STP) in TEA-21
 - Transit
 - Transportation Demand Management
 - Other Strategies that reduce emissions



CONCLUSION



- ◆ **6 Keys to Understanding Air Quality**
 1. Pollution
 2. Congress
 3. Environmental Protection Agency (EPA)
 4. Division of Air Quality (DAQ)
 5. Kentucky Transportation Cabinet (KYTC)
 6. Funding Sources

- ◆ **Transportation Conformity is Critical to receiving Transportation Funds**