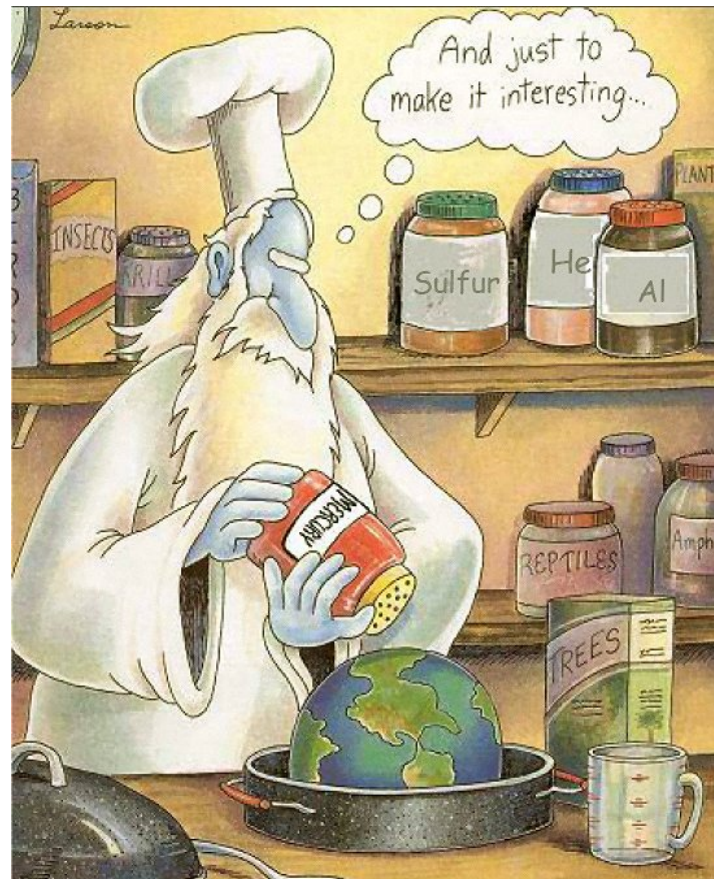


# Air Toxics Emissions Inventories

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Air Toxics are a Public Health Concern

# Air Toxics

- Pollutants capable of causing serious illnesses (e.g., cancer, birth defects) or even death
- Health effects are typically irreversible
- Health effects generally associated with years of exposure rather than hours or days
- Some persist in the environment, either remaining in the air or depositing on soil and in waterways
- Toxic in small amounts

# Air Toxics

- We often think of air toxics and criteria pollutants as being separate (e.g., PM and VOCs)
- Air toxics comprise a significant percentage of criteria pollutants (e.g., volatiles and metals)
- Criteria air pollutants and air toxics affect the same populations

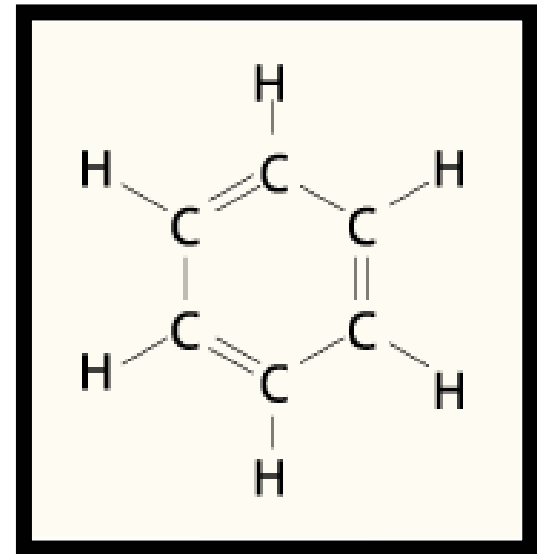
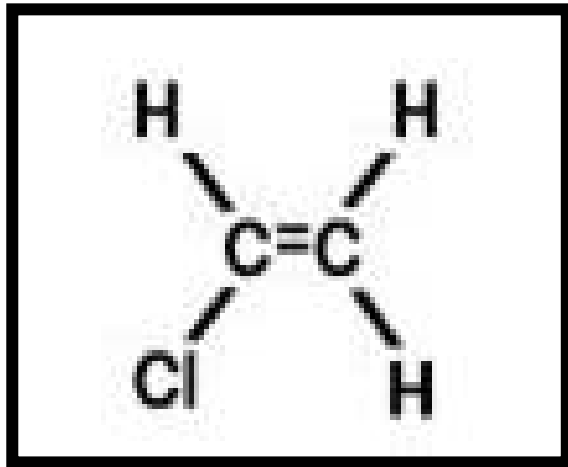
# What Is an Air Toxics Emission Inventory?

Inventory - current comprehensive listing by sources of air pollutant emissions in a geographic area during a specific time period



# Why Do We Need Air Toxics Inventories?

- Public interest in clean air
- To identify sources and problem areas
- As a baseline for future planning
- Tracking trends/progress towards cleaner air
- Determining compliance with regulations
- Projecting control strategy impacts
- For use in air quality modeling and risk assessments
- To help site ambient monitors



## Pollutant Definitions

# Pollutant Definitions – Identifying HAPs

- Clean Air Act list of 188 HAPs –Handout 1
- NEI List of HAPs – Handout 2

# Issues to Consider With HAPs

- Important to use CAS #s
- Keep in mind that toxicity varies by chemical
  - Carcinogens
  - Non-carcinogens
- HAP Groups in the CAA

# Chemical Abstracts Service (CAS) #s

- <http://www.epa.gov/ttn/chief/nif/index.html#ver3>
- EPA's Office of Environmental Information Substance Registry System  
[www.epa.gov/srs/](http://www.epa.gov/srs/)

# Toxicity Information

- [http://www.epa.gov/ttn/fera/risk\\_atoxic.html](http://www.epa.gov/ttn/fera/risk_atoxic.html)
- “Chronic Inhalation” can be used to prioritize HAPs in inventories and quantify effects
  - URE (Unit Risk Estimate): cancer
    - | Higher URE means higher risk at same dose
  - RfC (Reference Concentration): noncancer
    - | Lower RfC means response can be caused by smaller dose

# HAP Groups in the Clean Air Act

- Polycyclic organic matter (POM) & naphthalene
  - Individual PAHs
- Dioxins and furans
  - Individual congeners
- Metals
  - Antimony, Arsenic, Beryllium, Cadmium, Cobalt, Manganese, Selenium
  - Chromium - Hexavalent and trivalent
  - Lead - Organic and inorganic
  - Mercury - Particulate, gaseous elemental, and gaseous divalent
  - Nickel - Nickel subsulfide and other nickel compounds
- Cyanide compounds
- Glycol Ethers
- Xylenes
- Cresols



# Source Category Definitions

Point, Nonpoint, and Mobile  
Sources are Needed for a  
Complete Air Toxics  
Inventory

# Point Sources

The background of the slide is a photograph of an industrial facility at sunset. Several tall smokestacks are visible, each emitting a thick plume of dark smoke that rises into the sky. The sun is low on the horizon, creating a bright orange and yellow glow that illuminates the smoke and the sky. The overall scene is dark and atmospheric, with the smokestacks silhouetted against the bright sky.

- Major Sources: Stationary sources that have the potential to release 10 tons per year (TPY) of any one HAP or 25 TPY of a combination of HAPs
- Area Sources: Stationary sources that have the potential to release less than 10/25 TPY
- Emissions may be released from equipment leaks, when materials are transferred from one location to another, or during discharge through emissions stacks or vents

# Point Source Considerations

- Point source cutoffs/local thresholds
- Major vs Area definition
- MACT vs Non-MACT source categories
- Other federal regulations, state and local regs
- Detail needed:
  - Plant, unit, process, stack (emission release point)
  - Location, stack parameters, control device info, SCCS, NAICS

# Nonpoint Sources

- Called “area” sources in a criteria pollutant inventory and in some emission processing tools (SMOKE)
- Include smaller point source facilities grouped by source category
  - ✓ Gasoline stations
  - ✓ Dry cleaners
  - ✓ Car painting shops
  - ✓ Small electroplaters



# Other Nonpoint Sources

- Sources such as wildfires and prescribed burnings that may be more appropriately addressed by other programs rather than through regulations developed under certain air toxics provisions (section 112 or 129) in the Clean Air Act. For example, wildfires and prescribed burning are being addressed through the burning policy agreed to by the Interim Federal Wildland Policy.
- Other examples
  - Residential wood combustion
  - Residential combustion of household waste (backyard barrel burning)



# Nonpoint Source Considerations

- Includes source categories that overlap with point source inventory
- HAP point source inventories often include small sources such as dry cleaners and gas stations (treated as area sources in a criteria inventory)
- MACT vs non-MACT source categories
- Other federal regulations, state and local regs
- Detail needed:
  - Tribe
  - SCCs, NAICS

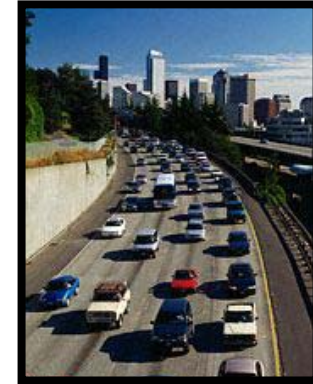
# Mobile Sources

■ **Onroad** - Vehicles found on roads and highways (e.g., cars, trucks, buses)

- 20 volatile organic compounds and metals
- Diesel particulate matter and diesel exhaust organic gases

■ **Nonroad** - Mobile sources not found on roads and highways

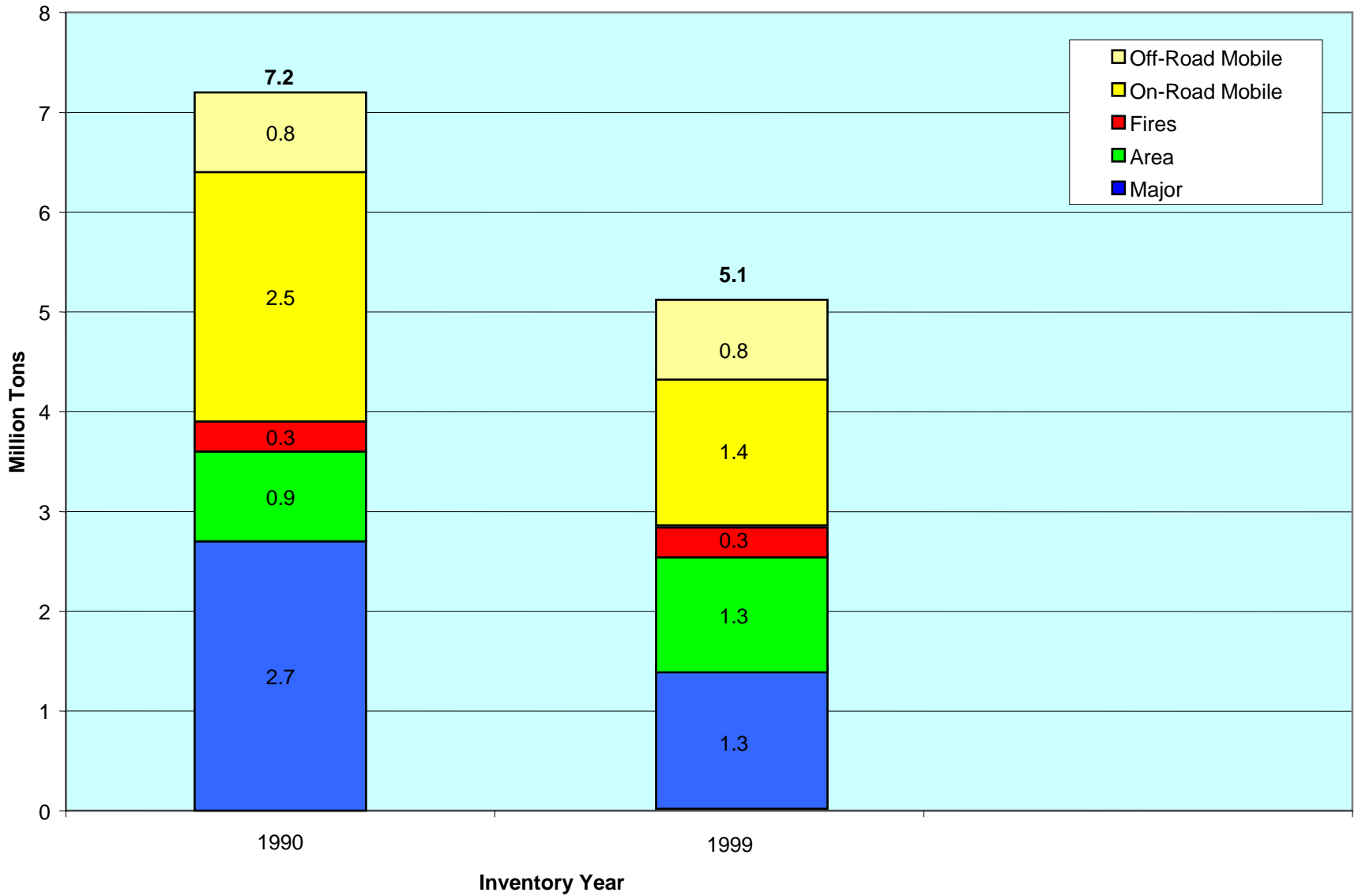
- 2/4 stroke engines in lawn mowers, construction vehicles, farm machinery
- Aircraft
- Locomotives
- Commercial marine vessels



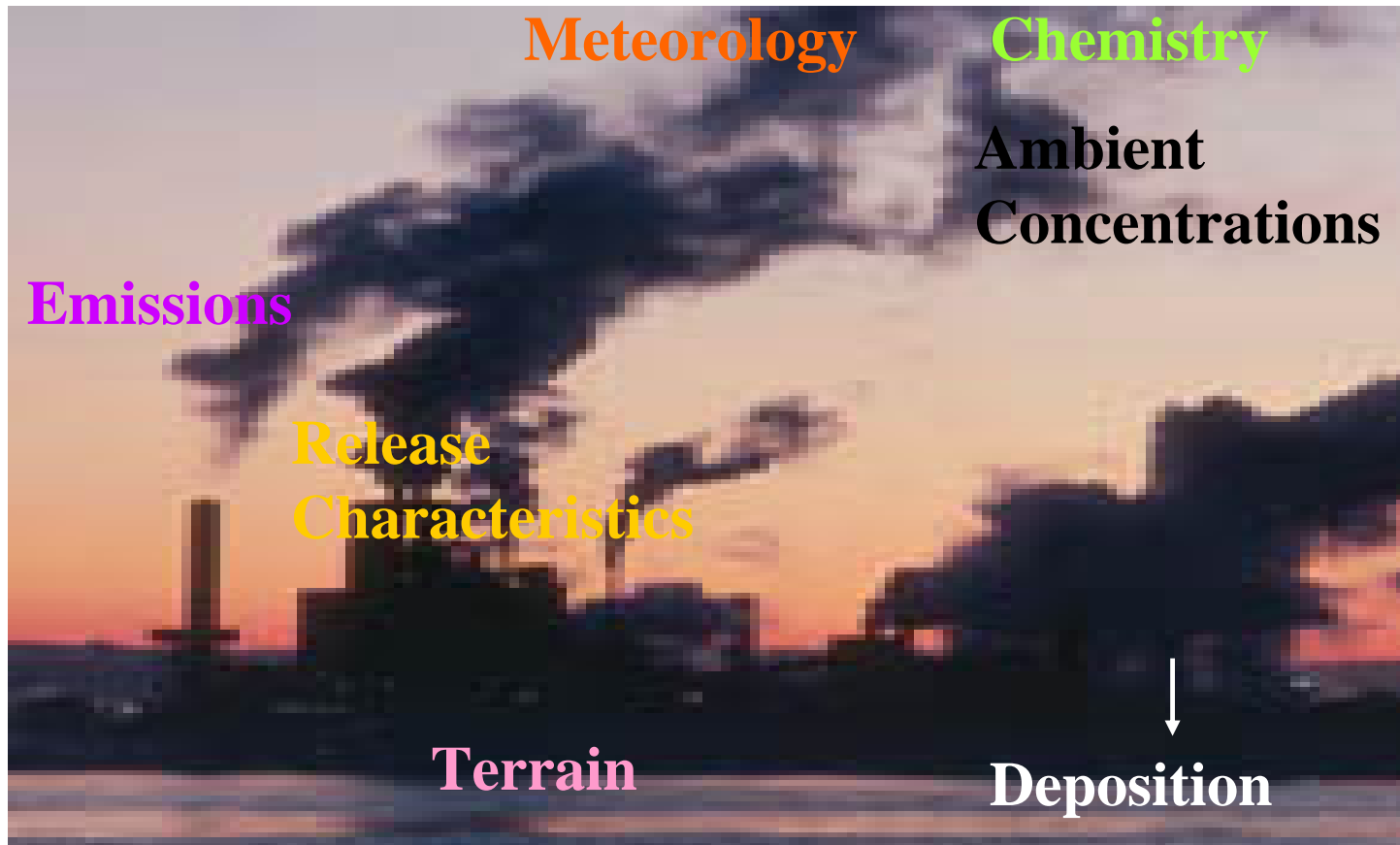
# Mobile Source Considerations

- Contribution by source category varies geographically
- Federal and tribal regulations

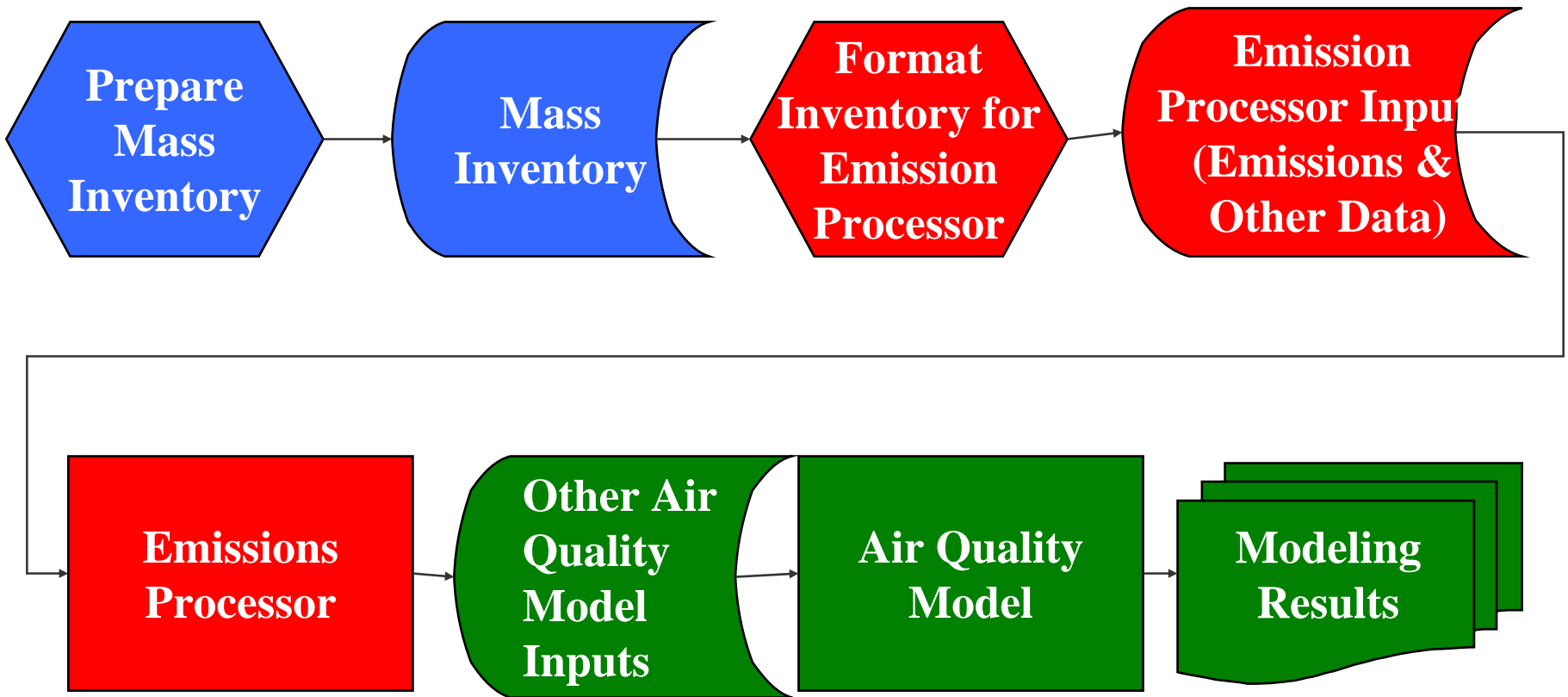
# Air Toxic Emission Trends in the 1990s



# Role of NEI in Air Toxic Modeling



# The Big Picture



# NEI Modeling files

- 3 Types
  - NEI HAP Annual
  - NEI CAP Annual
  - NEI CAP NonAnnual
- Sector formats
  - Point – Handout 3
  - NonPoint – Handout 4
  - Nonroad – Handout 4
  - Onroad – Handout 5

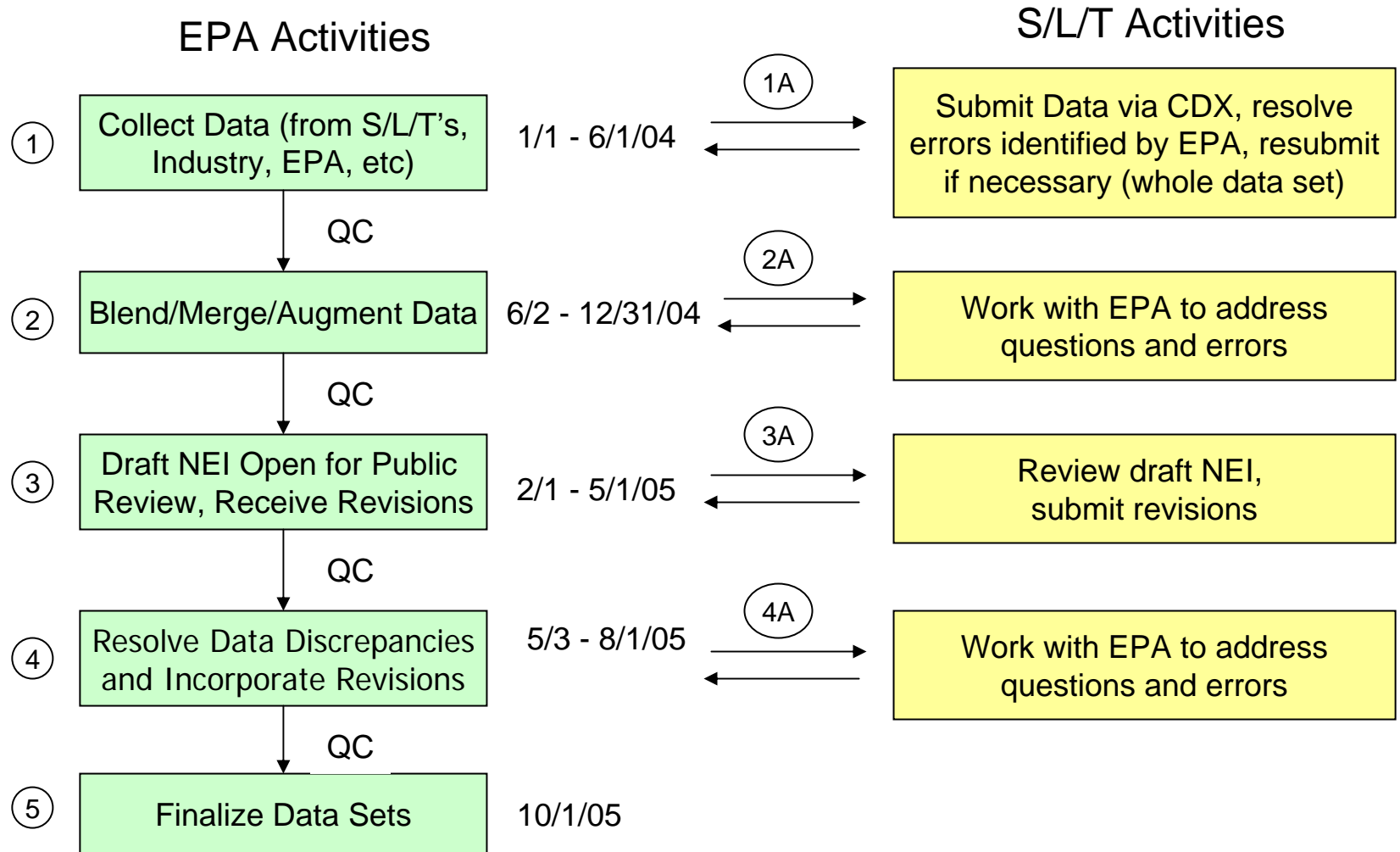
# 2002 NEI



# Goals of 2002 NEI

- Make efficient use of multiple data resources
- Integrate HAPs and CAPs data
- Use updated input formats (NIF 3.0 & XML Schema)
- Provide more feedback to S/L/T earlier on quality of data submitted
- Improve quality of data in the 2002 NEI
- Stick to schedule
- Peer Review methodology and final NEI product

# 2002 NEI Schedule & Activities



# NEI Usergroup Listserv

- EIG will use the listserv to communicate releases of and answers to questions related to NEI documentation, NEI data, and the NEI tools.
- Sign up from the CHIEF Web site:

<http://www.epa.gov/ttn/chief/listserv.html>

To join the NEI UsergroupListserv, send an email to '*join-nei-usergroup@lists.epa.gov*'

You will receive a welcome e-mail and information about using the listserv.

# INVENTORY WISDOM

Inventories are never right and are never complete.

The more you use an inventory, the more accurate it becomes.

Joann Held  
NJ DEP  
April 15, 2004