

CAC Committee Presentation

Air Monitoring Recommendations
to FHR

January 13, 2003



Environmental Committee Members

- Otto Ped
- Frank Knoll
- Greg Schuck
- Gary Stevens
- Joe Krisnik
- Scott Parr
- Jeff Wilkes
- Dave Erlandson



Volatile Organic Compound (VOC)

- Volatile – evaporating readily at normal temperatures and pressures
- Organic – *chemistry* – of or designating carbon compounds
- Compound – substances with 2 or more elements

Examples: benzene, toluene, formaldehyde, acetone, acrolein,



Volatile Organic Compound

- Any chemical compound based on carbon chains or rings (also containing hydrogen) with a vapor pressure of 2 mm of mercury at 25 degrees Centigrade, excluding methane



Criteria Pollutants

- A list of air pollutants identified in the 1970 Clean Air Act
- Criteria pollutants include: sulfur dioxide (SO₂), nitrogen dioxide (NO₂), Volatile Organic Compounds (VOCs), particulate matter, carbon monoxide (CO), and lead (Pb).



Hazardous Air Pollutants (HAPs)

- VOCs
- Ammonia
- Chlorine



Particulate Matter (PM)

- Solid particles dispersed into the air.
 - Most concerned about metals
 - Chromium, Nickel, Cobalt, Zinc, Lead, Manganese, and Barium



Acute Health Criteria

- Concentrations of a chemical in air that the public can be exposed to over a short period of time and not experience any health consequences.
- No more than 1 hour of continuous exposure

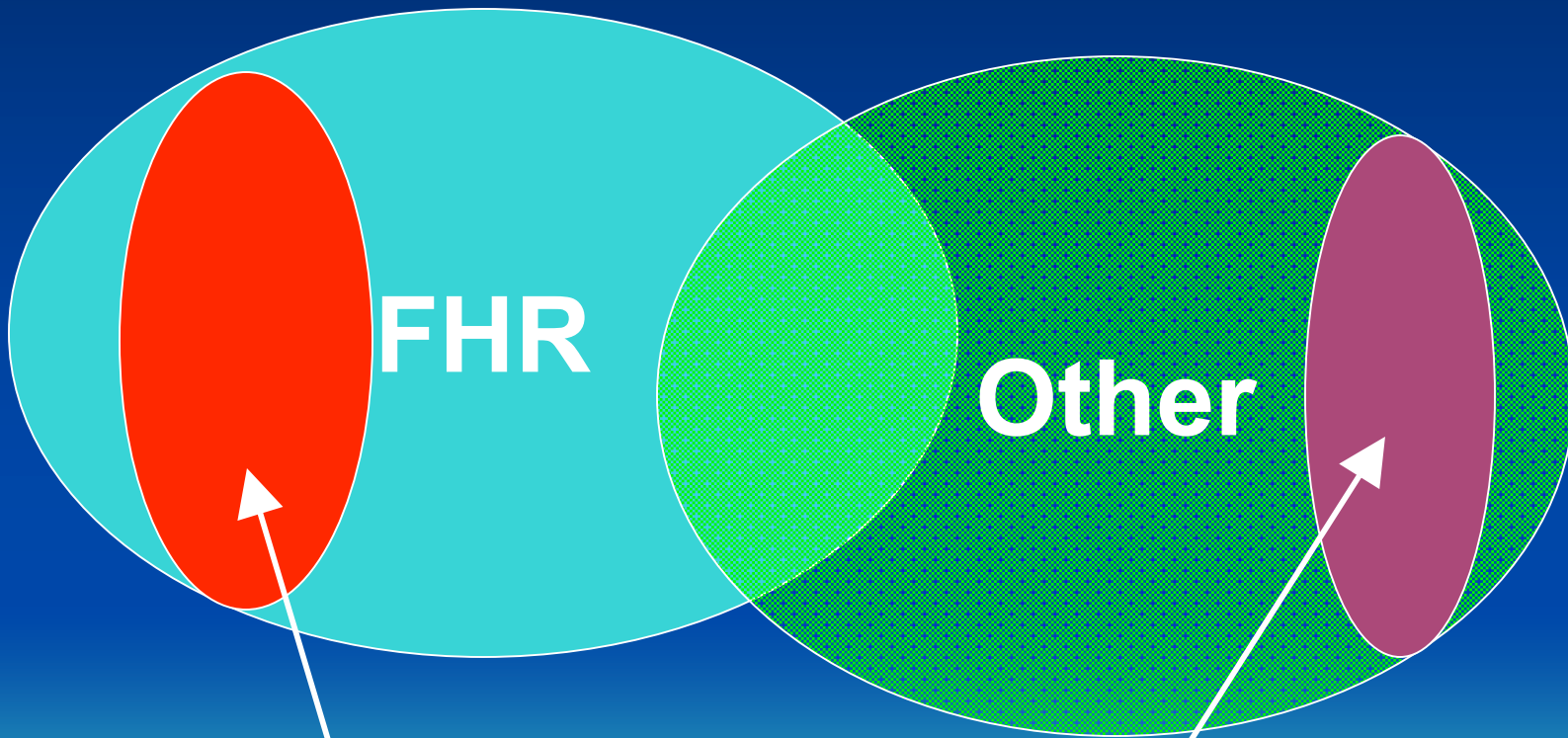


Chronic Health Criteria

- Ambient air concentrations of chemicals that the public can be exposed to without harm continuously (i.e. 24 hrs/day; 365 days/year) throughout their entire lifetime.



Sources of Emissions



Emissions Sampled

Sample Frequency

- Criteria Pollutant Subset – CO, NO_x, SO₂
 - Continuous
- HAPs
 - 24 hour composite sample taken once every 6 days
 - Not ideal for chronic or acute, but generally more acceptable for chronic exposure



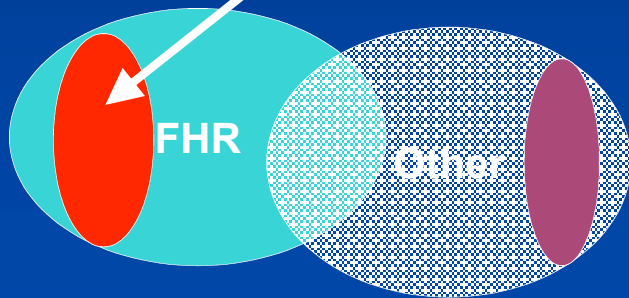
Monitor Site Summary

<u>Parameter</u>		<u>420</u>	<u>423</u>	<u>441</u>	<u>442</u>
• Carbon Monoxide	CO	X	X		
• Nitric Oxides	NO _x	X	X		
• Nitrogen Dioxide	NO ₂	X	X		
• Sulfur Dioxide	SO ₂	X	X	X	X
• Total Reduced Sulfur	TRS			X	X
• Hazardous Air Pollutants	HAPs	X	X	X	X
• Wind Speed	WS	X	X		
• Wind Direction	WD	X	X		
• Temperature	Temp	X	X		

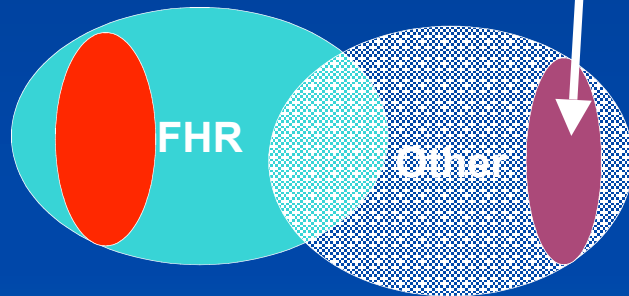
Air Monitoring Results

Chemicals coming from
FHR (1998-2001)

- Except for benzene all pollutant concentrations were well below annual criteria

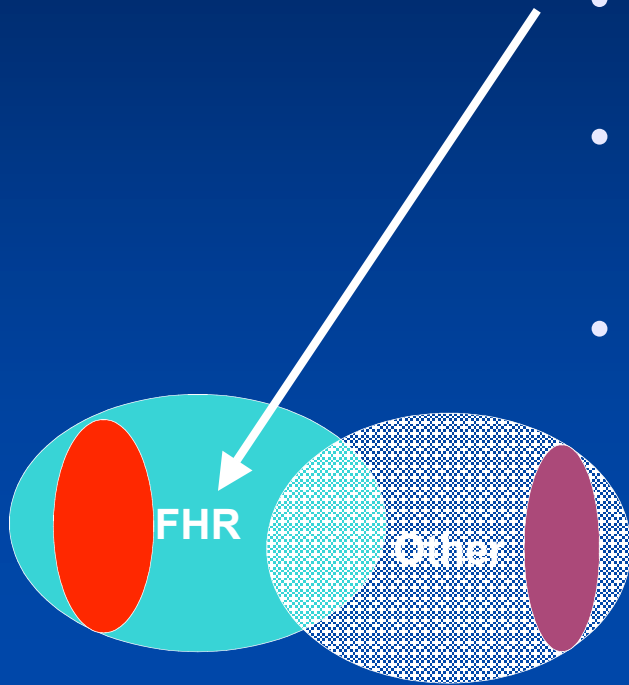


What chemicals **not** emitted by FHR have concentrations near the health limits?



- Acrolein
 - Lung irritant
- Formaldehyde
 - Carcinogen
- Carbon Tetrachloride
 - Carcinogen

What's not being monitored?



- Many more chemicals being emitted than are being monitored
- Relative health impacts were calculated
 - $(\text{Annual Emission Rate} / \text{Chemical Toxicity Value})$
- Emissions with highest potential health impact are all particulates (except chlorine)
 - Chromium compounds,
 - Nickel compounds,
 - Cobalt compounds
 - Zinc compounds
 - Chlorine
 - Manganese compounds

Results of Discussion with MPCA, FHR, and CAC Committee

- MPCA just purchased analytical equipment (ICAP) to measure particulates
- The 24 hr average, once every 6 day sampling frequency will be used – ok for chronic
- No solution for acute
- MPCA recommended placement of monitors in all 4 directions to start



CAC Recommendations

- Accept MPCA offer to do particulate testing
 - Verify quality control procedures
- Place monitors at 4 sites surrounding FHR
 - (not limited to existing sites as new canisters are required)
- Provide residents with a method to have air samples taken and analyzed on-demand
 - Important for acute sampling
- Encourage FHR to continue and report on Benzene reduction program
- Obtain information on Acrolein, Formaldehyde, and Carbon Tetrachloride emissions and health effects from MPCA

