

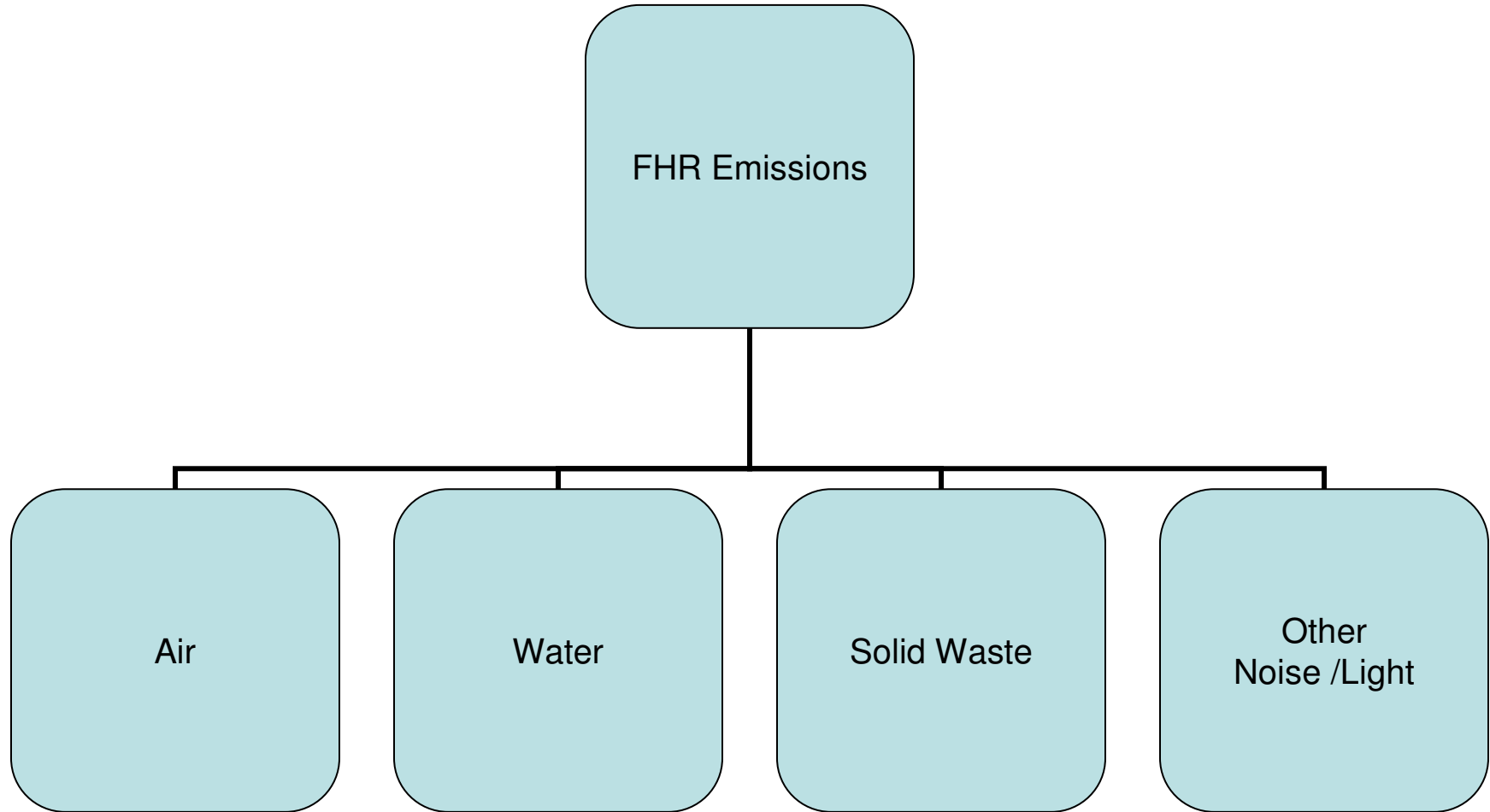
FHR/CAC Air Monitoring A Historical Review

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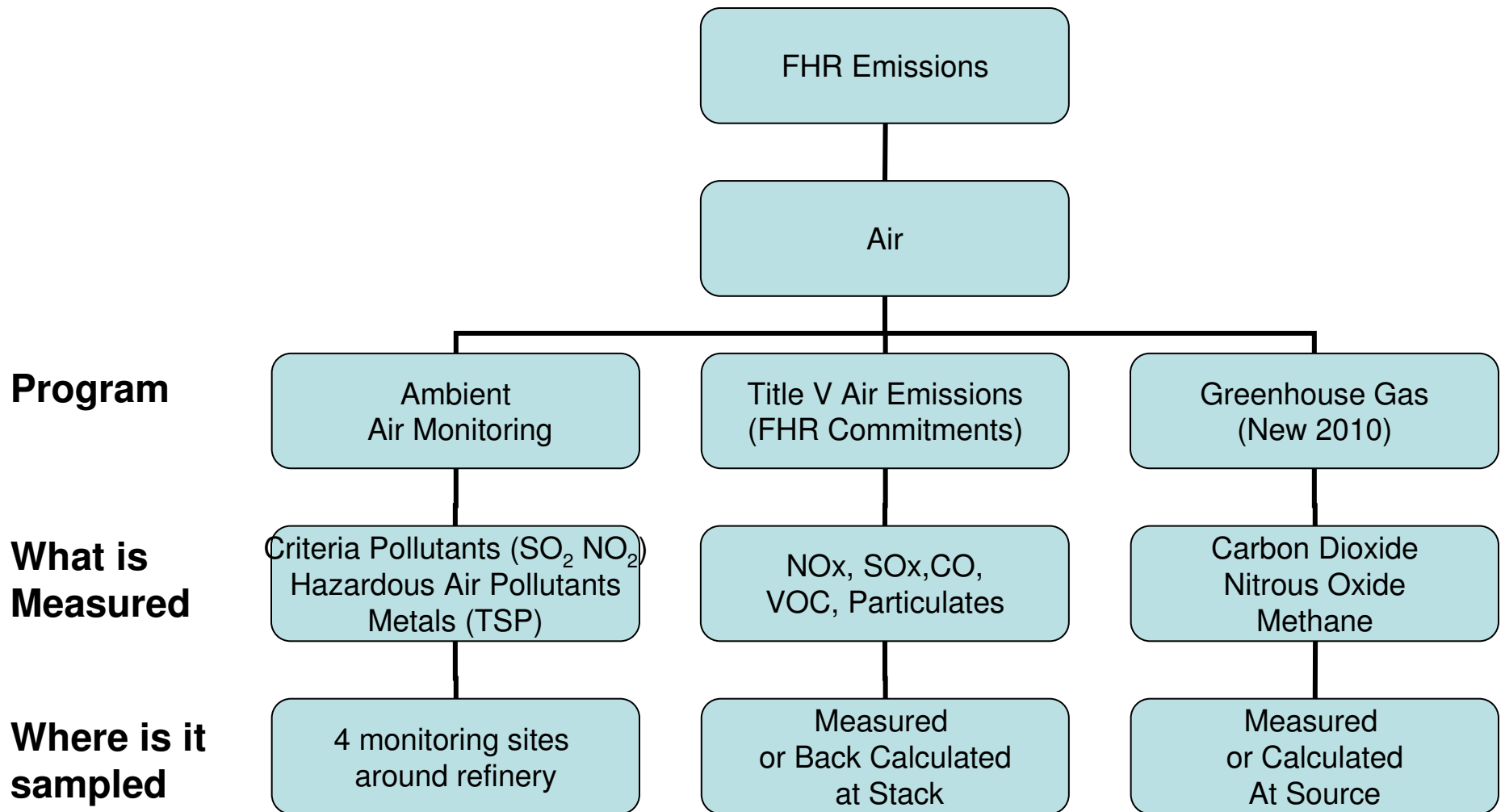
CAC Environmental Committee

September 13, 2010

Flint Hills Emissions/Pollutants



CAC/FHR Air Emissions Monitoring/Reporting



Decision Resources 2008 Phone Survey

Current and Future CAC Functions

- *Oversees independent monitoring of the air quality in the areas around the refinery?*
 - 52 - 65% thought it was very important
 - 83 - 91% thought it was either very or somewhat important
- *Monitors progress towards air emissions targets associated with the recent refinery expansion projects?*
 - 59 - 70% thought it was very important
 - 87 - 97% thought it was either very or somewhat important
- *Works with the refinery on initiatives to reduce the greenhouse gas emissions associated with the refinery operations?*
 - 59 - 70% thought it was very important
 - 86 - 95% thought it was either very or somewhat important

Note

- *Ranges are shown as Decision Resources presented the data based on respondents location. They used three categories.*
 - 1) *Within 5 miles of refinery*
 - 2) *Rosemount and Inver Grove, but > 5 miles from the refinery*
 - 3) *Outlying cities (Apple Valley, Eagan and Hastings)*

Ambient Air Monitoring Key Milestones

2002 STS Air Monitoring Situational Review

- MPCA collection and sampling methods
- Initial health impact analysis
- Identified pros and cons of HAP sampling methods
- Indicated the need for metals monitoring

2003 MPCA Twin Cities Metro Area Air Toxics Monitoring Study

- Average formaldehyde concentrations were above its health benchmark in the Twin Cities (inc FHR locations).
- The majority of monitoring sites throughout the Twin Cities did not have significant differences in concentrations of the 44 pollutants monitored

Ambient Air Monitoring Key Milestones

2003 CAC Air Monitoring Recommendations to FHR

- Accept the MPCA's offer to begin particulate testing for metals
- Continue sampling at 4 locations
- Encourage FHR to continue its Benzene emission reduction plan
- Engage MPCA in further understanding more about with high levels of three chemicals not emitted by FHR
 - Carbon Tetrachloride
 - Acrolein
 - Formaldehyde

2004 First STS FHR Air Monitoring Report

- 6 of 12 Targeted Chemicals (as requested by CAC)
- Report only identified Formaldehyde as a chemical of concern

“It is likely that the majority of the formaldehyde concentrations come from combustion sources, either mobile or stationary.”

Ambient Air Monitoring Key Milestones

2005 STS Air Monitoring Report

- First report with metals (data back to Q1/2004)
- Formaldehyde exceeded its standard at all monitoring stations
- For the metals only chromium exceeded its air quality standard but chromium impacts are likely over-estimated
 - Total Chromium (measured) vs Chromium VI (toxic)
 - Total Suspended Particulate Vs Particles (<10 micron) which are respirable

2006 – 2008 STS Air Monitoring Reports

- Formaldehyde and Chromium levels continue to be flagged as a concern or requiring interpretation
- 2007 report flagged Manganese levels at location 421 as a potential concern (no further data at this location, plus Federal benchmark appears to have changed?)

2009 Air Monitoring

- AECOM who acquired STS elects not to renew its contract with FHR/CAC (finalized in Feb 2010)
- CAC unable to identify consultants who can fill in at short notice.

Key Milestones

2009 MPCA Presentation on USA Today Article Concerns

- Analysis used 2005 TRI data and EPA Risk Screening Environmental Indicators model
- USA Today Report listed the following compounds from FHR
 - Cobalt
 - Carbonyl sulfate
 - Chlorine
 - Lead and lead compounds
 - Ammonia
- Discussion on how many of these are airborne pollutants vs. solid waste
- The list of compounds emitted from marathon was different
 - Discussion on Polyaromatic hydrocarbon (PAH) discharge and monitoring

2010 Air Monitoring

- Request for Proposal prepared and independent consultants identified
- MPCA offer to analyze and present data for 2010
- Environmental Committee agreed to utilize MPCA for 2010 on a trial basis

Ambient Air Monitoring Program

Four Key Points

- Ambient air monitoring samples are collected at four sites around the refinery
- Other sites or sources could be contributing some or all of the measured amount of a pollutant from the samples at the monitoring site.
- Analysis of the samples is completed by MPCA
- Consultants have reviewed and analyzed the data for the CAC. However the source of data has always been from the MPCA.

CAC Air Monitoring Considerations

- Are we measuring the right compounds?
- Have we covered concerns on acute effects?
- Would we like to invite MPCA to present in 2011?
- What if anything do we want added/subtracted from the MPCA format?
- Do we want or need an independent consultant for 2011?