Perspectives from a State Regulator

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Environmental Regulation in Texas

- The Texas Commission on Environmental Quality strives to protect our state's human and natural resources consistent with sustainable economic development.
- Our goal is clean air, clean water, and the safe management of waste.
Toxicology Division

• Provide scientifically-sound support for various parts of the agency
  – Develop Effects Screening Levels (ESLs) and Air Monitoring Comparison Values (AMCVs)
  – Perform health effects review of air permit applications
  – Provide risk assessments of environmental data (air, drinking water, surface water, soil, waste)
  – Stay abreast of emerging issues
    • Comment on EPA toxicity values (arsenic, formaldehyde, ozone)
  – Characterize and communicate risk
Challenges

• Develop guidelines for the over 5,000 chemicals emitted by permitted facilities
Challenges

- Appreciating the difference between actual and perceived risk

Davis Petroleum, Shoreacres

390 TPY VOCs
1.2 ppb Benzene 2005

TXI Operations, Midlothian

61 TPY VOCs
0.2 ppb Benzene 2005
Sound Science

- Protection of human health is the highest priority
- High quality information to risk managers to make better-informed decisions
- Imperfect data $\rightarrow$ uncertainty factors
Guideline Levels

• Guidelines to establish screening levels (November 2006)
  – External scientific peer review
  – 2 rounds public comment
  – 36 chemicals completed to date
    • Public comment
    • Peer review for some

• Values are conservative

Air concentration
In parts per billion (ppb)

1,000,000
100,000
10,000
1,000
100
10
1
0.1

1.4 ppb

TCEQ Long-Term AMCV

Leukemia

EPA Acceptable Cancer Risk

Long-Term Health Effect
Guideline Implementation

• Regardless of how conservative guidelines are set, they become definitive lines to the media and public
  – Carbon disulfide
• Concern rises when there is conflicting information
  – Methyl mercury
Importance of Risk Assessment

Worst-Case Scenario + Uncertainty Factors ≠ Reality

- Policy decisions come with a price
  - Money, resources, opportunities
- Realism is a key component of risk assessment
- Ripple effects can be staggering
Formaldehyde

- 2008 TCEQ nonlinear carcinogenic assessment set the Long-Term AMCV at 8.9 ppb
- 2010 draft EPA linear carcinogenic assessment sets its level at 0.08 ppb
  - Leukemia and Hodgkin lymphoma
  - Nasopharyngeal cancer
- TCEQ provided comments on the EPA draft
Annual Average Formaldehyde Concentrations in the Houston Region

- TCEQ Long-Term Air Monitoring Comparison Value = 8.9 ppb
- California EPA 1 in 100,000 Risk Level – 1.4 ppb
- 1991 IRIS 1 in 100,000 Risk Level – 0.6 ppb
- 2010 Draft IRIS 1 in 100,000 Risk Level – 0.07 ppb

* Incomplete sampling year
Typical Formaldehyde Concentrations

2009 Range of Annual Average Formaldehyde Concentrations in the US
(0.75 - 9.4 ppb)
(Source: AQS, USEPA)

California EPA 1 in 100,000 Risk Level - 1.4 ppb
1991 IRIS 1 in 100,000 Risk Level - 0.6 ppb
Draft 2010 IRIS 1 in 100,000 Risk Level - 0.07 ppb

* Incomplete sampling year
1 Only sites with 24-hour sample durations and greater than 25 samples were included
Typical Formaldehyde Concentrations

![Graph showing formaldehyde concentrations over time with notes on risk levels and sampling conditions.]

- **Range of Normal Human Breath**
  
  (4.3 - 40 ppb)

- **2009 Range of Annual Average Formaldehyde Concentrations in the US**
  
  (0.75 - 9.4 ppb)  
  (Source: AQS, USEPA)

- **TCEQ Long-Term AMCV - 8.9 ppb**

- **California EPA 1 in 100,000 Risk Level - 1.4 ppb**

- **1991 IRIS 1 in 100,000 Risk Level - 0.6 ppb**

- **Draft 2010 IRIS 1 in 100,000 Risk Level - 0.07 ppb**

*Incomplete sampling year*

1 Only sites with 24-hour sample durations and greater than 25 samples were included.
Typical Formaldehyde Concentrations

- Typical Indoor Air (9 - 39.8 ppb)
- Range of Normal Human Breath (4.3 - 40 ppb)

2009 Range of Annual Average Formaldehyde Concentrations in the US (0.75 - 9.4 ppb) (Source: AQS, USEPA)

TCQ Long-Term AMCVC - 8.9 ppb
California EPA 1 in 100,000 Risk Level - 1.4 ppb
1991 IRIS 1 in 100,000 Risk Level - 0.6 ppb
Draft 2010 IRIS 1 in 100,000 Risk Level - 0.07 ppb

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(Source: AQS, USEPA)
Resource Impacts

• Monitoring
  – > 60% of the state’s monitoring budget is spent on monitoring for criteria pollutants
  – Federally-required monitoring under new NAAQS will cost > $3.5 million over the next 4 yrs

~ > 6 million annually

Criteria Pollutant Monitoring

~ 4 million annually

Air Toxics and Special Purpose
TARGETED REDUCTIONS
1,3-Butadiene in Milby Park

- > $20 million invested by just TPC Group
- Fenceline monitoring and notification system
- Flare reduction strategies
- 87% reduction in annual average concentrations
Barnett Shale Formation

- 2005 HAWK Flyover
- 6 mobile monitoring projects since 2009
- From August 2009-August 2010
  - GasFindIR – 600 sites
  - 450 sites with hand-held monitor
  - 360 canister samples
- 5 autoGC sites installed
- 8 more autoGC sites proposed
Conclusion

• Dose-response assessments are important
  – Translate to environmental concentrations
  – If everything is bad, then nothing will be fixed
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