



Air Toxics Technical Considerations

Advanced Air Quality Seminar – Portland, Oregon

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Overview

- What are air toxics?
- Air toxics compared to criteria pollutants and GHGs.
- What is a “Health Risk” based air toxics program?
- What you can do to prepare.

What are Air Toxics?

- Metals (e.g. Cr+6, As, Cd)
- Organics (e.g. Benzene, Hexane)
- Inorganics (HF, HCl, Chlorine)
- Cancer Vs. Non-cancer health risks

Lists of Air Toxics

- Oregon ABCs
 - <http://www.deq.state.or.us/aq/toxics/docs/abc.pdf>
- HAPs
 - <https://www3.epa.gov/airtoxics/orig189.html>
- Washington Ecology
 - <https://fortress.wa.gov/ecy/publications/documents/173460.pdf>
- California AB2588
 - <http://www.arb.ca.gov/ab2588/substances.htm>

Air Toxics Vs. Criteria Pollutants Vs. GHG

- Compared to most criteria pollutants & GHG air quality standards, i.e., emission rate limits or ambient air quality standards, the standards for air toxics are really small.

Chromium (VI) Vs. NOx

- Ambient Air Quality Standard¹
 - NO₂ – 100,000 ng/m³
 - Chromium (VI) – 0.08 ng/m³

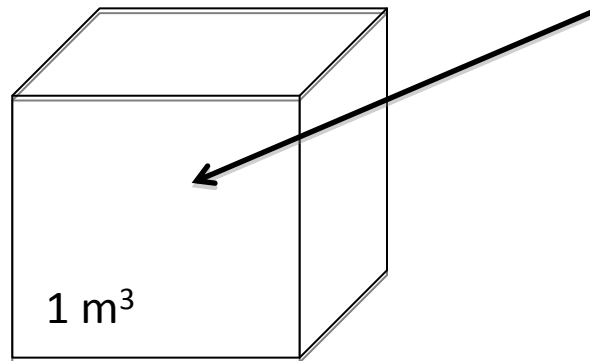
¹ Average **Annual** Concentration

Chromium (VI) Vs. Nox (cont.)

- Potential Modeling Thresholds
 - NOx > 40 tpy (Oregon SER)
 - Chromium (VI) – 0.00128 lb/yr (WA SQER)
 - ~0.58 grams or the mass in a small paper clip – per year!

Chromium (VI) ABC

- 0.08 ng/m^3



1 m^3

What weighs a
nanogram?

Human cell: 1 ng

Grain of sand: 350 ng

Chromium (VI) In Diesel

- 45,360 nanograms¹ of Chromium (VI) are emitted from combusting 1 gallon of diesel fuel in a stationary engine.

¹SCAQMD default emission factor: 0.0001 lb Cr+6/1000 gal

What is a Health Risk Based Air Toxics Program

- Not just:
 - Control technology requirement
 - Mass emission limit



Health Risk Assessment

- Potentially 3 or 5 Step Process

Simple

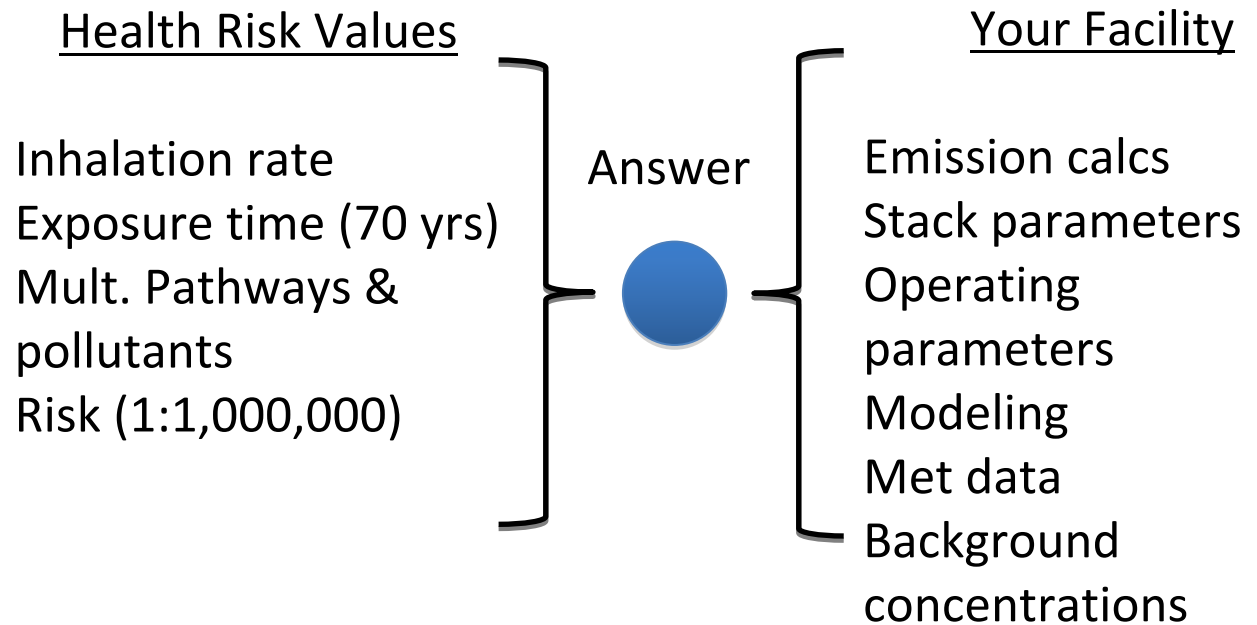
- 1.Emission Estimates
- 2.Modeling
- 3.Compare against ambient air standard

More Complicated

- 1.Emission Estimates
- 2.Modeling
- 3.Exposure Assessment
- 4.Dose-response assessment
- 5.Risk Characterization

Health Risk Assessment

- What goes into the process?





Health Risk Assessment

- Are conservative by nature.
- Compounding conservatism can lead to high impacts.
- Sharpen the pencil and have good data.

What can you do to prepare?

- Be involved in the process
- Find out if you use or could emit potentially regulated air toxics
- Estimate emissions
- Screen against potential modeling thresholds
 - WA SQER table may help
- Model?
- Evaluate options and/or controls

Summary

- Standards associated with air toxics are really small
- Health risk assessments required good data from your facility
- Start looking at potential air toxics emissions now
- Be involved in the process