Pollutant Scope and Setting Concentration Levels

October 18, 2016
Questions on Pollutant Scope and Setting Risk Based Concentrations

Scope of Pollutants
• What pollutants and why

Setting Concentration Levels
• Setting risk-based concentrations
• Concentration averaging times
• Default toxicity values
What air toxics are included in other programs?

- Regulated in California
- Federally Listed Hazardous Air Pollutants
- Evaluated by Workplace Safety and Public Health Agencies

Regional Concerns
What is the basis for including or excluding pollutants?

Significance to public health

- Monitored at levels of concern
- Modeled at levels of concern
- Designated high priority by other agencies

Listed by EPA

- Federally regulated

Regulated Pollutants

Based on program structure

Permitting

- Fees
- Reporting

Broad Definition

- Other states
- Federal agencies
- State specific

Highly Inclusive
Program Element 4: Pollutant Scope

Technical Workgroup said:

• Start with EPA’s 187 HAPs and add pollutants that cause health concerns
• Look at other state lists (CA and WA)
• Use a longer prioritized list
• Look at pollutants that have existing risk based screening levels
• Tailor list to Oregon sources
Program Element 4: Pollutant Scope

Potential elements for pollutant scope

The following are potential elements for which DEQ and OHA are seeking additional discussion and input from the Advisory Committee. If there are additional elements not included below, please raise them.

Potential Elements

A. Use 52 Oregon Ambient Benchmark air toxics
   [http://www.deq.state.or.us/aq/toxics/benchmark.htm]

B. Use 187 Federally listed Hazardous Air Pollutants (Includes 50 Oregon Ambient Benchmark air toxics, but not diesel particulate matter or hydrogen sulfide)
   [https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications]

C. Include Oregon’s toxic chemical focus list
   [http://www.deq.state.or.us/toxics/docs/focuslist.pdf]

D. Use a list composed of 187 federally listed Hazardous Air Pollutants plus other air toxics shown to be a concern in OR, WA or CA

E. Use NY’s very inclusive air toxics list [http://www.dec.ny.gov/docs/air_pdf/dsi1.pdf]

F. Michigan model: broad and inclusive definition. No list. Guidance documents help facilities assess the risk associated with potential air toxics emissions, and the burden is on the facility to assess the risk. There are many exemptions for low toxicity, criteria pollutants, if the facility has a NESHAP residual risk standard in place.

G. South Coast model: use different lists of chemicals for different programs. Establish classes of toxics—high, medium, and low toxicity, with different requirements for the high versus low. For example, low toxicity compounds might require reporting only.

H. Propose that the Environmental Quality Commission delegate adding, removing or changing the threshold or levels of an air toxic to the DEQ Director.

I. Placeholder for elements developed by advisory committee members.

Pollutant Scope and Setting Risk Based Concentrations

- What concentrations for each air toxic will be used in risk assessment and in setting the significant emission rates or de minimis rates?
- Program Element 4: What Air Toxics Should Be Included in the Program?
- Program Element 5: Method for Setting Health Risk-Based Concentrations
- Program Element 6: Default Toxicity Values
- Program Element 7: Risk Based Concentration Averaging Times

Include cumulative risk? Background? Cross-media pathways?

Risk based concentrations are set using allowable risk levels.
Program Element 5: Setting Risk Based Concentrations
How do other programs set RBCs?

- **More Flexible, More Work**
  - Primary research evaluation by agency
    - EPA, ATSDR, CalEPA do this.
  - Use of hierarchy with discretion to evaluate special cases
    - Most similar to what ATSAC does now.
  - Use of rigid hierarchy or algorithm
    - States with very large pollutant lists (e.g., WA, RI) do this.
  - Use of someone else’s values
    - For example New Jersey only uses EPA values

- **Less Flexible, Less Work**
Program Element 5: Setting Risk Based Concentrations

Technical Workgroup said:

• RBCs should be based on the best science available from a well-respected authoritative body
• Use a hierarchy to set RBCs along with a decision making process or a hybrid approach in cases of disagreement
• Use a surrogate analysis approach if you don’t have data for a chemical
Potential elements for method for setting health risk-based concentrations

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<table>
<thead>
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<tbody>
<tr>
<td>A. Comprehensive review and evaluation of primary research by agency</td>
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<tr>
<td>B. Use of established list of authoritative bodies from among which to select RBCs as to which of the RBCs is based on the best science (52 from Air Toxics Science Advisory Committee, EPA Integrated Risk Information System, Office of Environmental Health Hazard Assessment, Agency for Toxic Substances and Disease Registry)</td>
</tr>
<tr>
<td>C. Use of rigid hierarchy or algorithm to select from among risk based concentrations developed by an established list of authoritative bodies</td>
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<tr>
<td>D. Use of other program’s values</td>
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<tr>
<td>E. Establish hybrid approach that can use combination of methods listed above depending on situation for individual air toxics</td>
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<tr>
<td>F. Incorporate cross-media impact potential into the risk based air concentration goal itself*</td>
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<tr>
<td>G. Account for cumulative risk from multiple air toxics by setting very low acceptable risk level for individual air toxics to leave estimated buffer for cumulative effect.*</td>
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POLLUTANT SCOPE AND SETTING RISK BASED CONCENTRATIONS

What concentrations for each air toxic will be used in risk assessment and in setting the significant emission rates or de minimis rates?

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Include cumulative risk? Background? Cross-media pathways?

Risk based concentrations are set using allowable risk levels
Program Element 6: Default Toxicity Values

Default Toxicity Value:
Contingency plan if insufficient toxicity information from any credible source to develop an RBC specific to a certain toxic air pollutant
Program Element 6: Default Toxicity Values

Example default toxicity values

- **Louisville STAR program**
  - Cancer risk default value = 0.0004 µg/m³
  - Non-cancer default value = 0.04 µg/m³

- **New York**
  - Contaminant known not to be “high toxicity” = 0.1 µg/m³
  - Contaminant known to be “low toxicity” = 1 µg/m³
  - Contaminant known to be “high toxicity” = 0.00002 µg/m³

- **Michigan**
  - Default Initial Threshold Screening Level = 0.1 µg/m³
Program Element 6: Default Toxicity Values

Technical Workgroup said:

- Default RBCs could be very useful for air toxics with little information available but only used as a last resort.
- Put burden on industry to determine a risk level for that unknown chemical.
- Use more than one default RBC ("high", "medium", or "low" toxicity) or whether or not an air toxic is likely to be carcinogenic.
Program Element 6: Default Toxicity Values

Potential elements for default toxicity values

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<td>A. Do not use default toxicity values</td>
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<td>B. Use a tiered system of default RBCs based on any available information about whether an air toxic has generally high, medium, or low toxicity. There could be a default RBC for each toxicity category.</td>
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<tr>
<td>C. Develop and use different default RBCs for air toxics that may cause cancer and those that do not.</td>
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<tr>
<td>D. Develop a single default RBC that is very conservative to use for any toxic air pollutant for which there is inadequate information to develop a chemical specific RBC.</td>
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<tr>
<td>E. Placeholder for elements developed by advisory committee members</td>
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POLLUTANT SCOPE AND SETTING RISK BASED CONCENTRATIONS

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Program Element 4: What Air Toxics Should Be Included in the Program?
Program Element 5: Method for Setting Health Risk-Based Concentrations
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Program Element 7: Risk Based Concentration Averaging Times

Include cumulative risk? Background? Cross-media pathways?
Risk based concentrations are set using allowable risk levels
Program Element 7: Risk Based Concentration Averaging Times

Annual to lifetime duration
- Cancer effects
- Chronic non-cancer effects

Short-term duration
- 24-hr exposure
- 8-hr exposure
- 1-hr exposure
Importance of RBC averaging times?

Averaging time should be relevant to exposure duration and/or modeling/monitoring period

• Comparing a sample collected over 24 hours to a chronic protective value is not scientifically sound.
• RBC values generally increase as averaging times decrease.

Oregon’s program currently monitors for 24-hour and annual averaging times, depending on location.
Program Element 7: Risk Based Concentration
Averaging Times

Technical Workgroup said:

• Use multiple averaging times when appropriate toxicological data is available
• Acute RBCs are important for interpretation of short-term monitoring results and responding to acute incidents
• Acute RBCs applicable to locations where people spend only a short time. Chronic RBCs are applicable to locations where people live or work
Potential elements for concentration averaging times

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<td>B. Chronic: 8-hour (for nearby workers, schoolchildren, or other populations)</td>
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<tr>
<td>C. Acute: 1-hour</td>
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<td>D. Acute: 24-hour</td>
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<td>E. Intermediate: Two weeks up to a year</td>
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Pollutant Scope & Setting Concentration Levels

Discussion

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- What pollutants and why

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