

# Children's Health and Air Toxics Risk Assessments

## Cleaner Air Oregon

### REFORMING OREGON'S INDUSTRIAL AIR QUALITY REGULATIONS

Inviting Oregonians to help create new regulations that protect what we all care about: the health of our people, a clean environment, and the economic vitality of our communities.

Presentation to the Environmental Quality Commission  
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# Questions Considered

1. How are children uniquely vulnerable to the effects of air toxics?
2. How do proposed CAO risk assessment methods consider children's health?
3. What other elements of the proposed CAO program protect children's health?
4. How does CAO compare to other air toxics programs around the country in considering children's health?

# Children's Unique Vulnerabilities

- **Exposure**
  - Breathing rates and behaviors
- **Metabolic differences**
  - Children's bodies metabolize and remove chemicals differently
- **Biological sensitivity**
  - Exposure during development can have lasting health effects

# Accounting for Vulnerabilities in Risk Assessments

- **Toxicity**

- Toxicity Reference Values (TRVs) are the basis for evaluating toxicity of each chemical

- **Exposure**

- Frequency and duration of exposure
- Estimated concentrations of chemicals

# Cleaner Air Oregon Risk Assessment Assumptions

- **Toxicity**

- TRVs are designed to be protective of children and sensitive populations
- Early life adjustment factors amplify cancer risk from mutagenic chemicals during early life exposures

- **Exposure**

- Risk based concentrations assume constant exposure for 70 years
- Models to estimate air concentrations make cautious assumptions
- For persistent chemicals, risk assessments consider all routes of exposure

***...Consistent with EPA and many state-level programs***

# How are children's breathing rates considered in risk assessment?

- **EPA and other states**
  - Not directly addressed in EPA risk assessment guidance
- **California**
  - **Noncancer**- breathing rates to be incorporated into noncancer “Reference Exposure Levels” on a chemical by chemical basis
  - **Cancer**- incorporated through age-specific exposure adjustments in the risk assessment process
- **Cleaner Air Oregon**
  - **Noncancer**- included in some noncancer TRVs based on California RELs
  - **Cancer**- not currently included in cancer risk calculations

# Cancer Risk Assumptions in Oregon and California

Assumption	California OEHHA	Cleaner Air Oregon
Higher breathing rate for children	Yes	No
Extra weighting for early-life exposure	Yes – for all carcinogens	Yes – for subset of carcinogens known to cause DNA damage (mutagens)
Exposure duration	30 years starting from 3 <sup>rd</sup> trimester of pregnancy	70 years starting from birth
Percentage of day spent at home	72-85%	100%
Percentage of days per year spent at home	95%	100%

\*\*Shading denotes the program with the more cautious assumptions for that category\*\*

# Risk Management Decisions

## Risk reduction levels for existing facilities

	<b>Cleaner Air Oregon</b>	<b>California San Joaquin</b>	<b>California South Coast</b>	<b>New York</b>
<b>Cancer</b>	50 in 1 million	100 in 1 million	25 in 1 million	10 in 1 million
<b>Non- cancer</b>	HI 3-5	HI 5	HI 3	HQ 2

# Multiple Factors of Protectiveness in CAO

- **Program Scope and Prioritization**
  - Includes new and existing facilities
  - Includes cumulative risk from multiple chemicals
  - Facilities prioritized based on demographics, including young children
- **Risk Assessment**
  - Toxicity Reference Values designed to protect sensitive populations
  - Early-life exposure adjustments for mutagenic chemicals
  - Health-protective exposure assumptions
- **Regulatory Action**
  - RALs apply statewide
  - RALs may be updated/reduced by EQC in 2029
  - RALs may be lower for chemicals with developmental or other severe effects

# Summary

- Every state has a unique set of assumptions in place to specifically protect the health of children and communities.
- CAO rules assess children's health risks consistent with the majority of other jurisdictions and EPA.
- CAO has multiple program components that contribute to protect children's health.
- The proposed CAO program is among the most health-protective industrial air toxics programs in the country.