Cleaner Air Oregon's Hazard Index Rule Requirements

Overview

Oregon statutes place limits the Department of Environmental Quality's authority to require emissions reductions for industrial facilities that were in existence prior to implementation of the CAO program (November 2018). For noncancer risk, the statute prohibits CAO from requiring emissions reductions at existing facilities if the cumulative noncancer risk from regulated pollutants is lower than a hazard index of 5, unless the toxic air contaminant(s) emitted are shown to have "developmental or other severe health effects." In those cases, DEQ can impose emissions reduction requirements at a facility if the cumulative noncancer risk hazard index is higher than 3.

To implement this statutory provision, the Environmental Quality Commission has assigned each toxic air contaminant that has a noncancer TRV (182 toxic air contaminants) a designation as either an "HI5" or "HI3" toxic air contaminant. Toxic air contaminants designated as HI3 are those known to have developmental or other severe health effects. Other severe health effects include:

- Reproductive effects
- Multiple organ effects
- Inhalation hazards per the U.S. Department of Transportation

These criteria were developed in consultation with a Technical Advisory Committee1, a Rules Advisory Committee, and a Fiscal Advisory Committee. HI5 toxic air contaminants are those that do not meet any of the criteria described above.

HI3 Criteria

Table 1 shows the number of toxic air contaminants meet each of the HI3 criteria.

Table 1 – HI3 Criteria		Number of Toxic Air Contaminants
Developmental Health Effects		133
Other Severe Health Effects	Reproductive Health Effects	116
	Multiple Target Organs	63
	U.S. Department of Transportation Inhalation Hazards	14
Expected to have Developmental and/or Other Severe Health Effects		**158**

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State of Oregon
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Note that the number of toxic air contaminants identified in each Table 1 category do not add up to 158. This is because 114 (75%) of these chemicals are found in more than one list; thus, there are multiple lines of evidence indicating that these chemicals are expected to have other severe human health effects, given these proposed categories. These categories are described in more detail below.

Toxic Air Contaminants with Developmental Effects

- 133 toxic air contaminants are expected to have developmental effects. Developmental health effects are adverse health outcomes in offspring which occur from chemical exposure during development, beginning with parental germ cells and continuing through all following stages of development. If a chemical had a developmental health effect at any dose, then it was classified as a toxic air contaminant with developmental effects, even if the contaminant also caused other health effects at lower doses.

Toxic Air Contaminants with Other Severe Health Effects

- **Reproductive Health Effects** - 116 toxic air contaminants are designated as HI3 because they are expected to have reproductive effects. Reproductive human health effects are closely related to developmental health effects. DEQ considers reproductive effects to be included with "other severe human health effects."
- **Multiple Target Organs** – 63 toxic air contaminants are designated as HI3 because the chemical's TRV is based on effects on more than one target organ or organ system.
- **U.S. Department of Transportation Inhalation Hazards** - DEQ and OHA considered information from the U.S. Department of Transportation, which lists chemicals that are inhalation hazards under Hazard Classes 2.3 and 6.1. These chemicals are "known to be so toxic to humans as to pose a hazard to health during transportation" (49 CFR 173.115). Phosgene is one such chemical that poses an inhalation hazard according to the U.S. DOT. These chemicals pose inhalation hazards during transportation via volatilization, aerosolization, or particulate dispersion. Several of these overlap with the list of 158 toxic air contaminants with developmental human health effects, reproductive effects, and/or those that affect multiple target organ systems. Inclusion of a chemical on the list of "inhalation hazards" is a parameter considered by DEQ to be indicative of a severe human health impact. This means that three toxic air contaminants from the DOT list that are not already listed under other criteria were designated as HI3. These chemicals are phosgene, chloropicrin, and oleum.

OAR 340-247-8010 Table 2[2] details all chemicals with a TRV. The table also indicates which chemicals have the HI 3 designation.

Risk Determination Ratio

The Risk Determination Ratio formula (Equation 1) weights the noncancer risk from a mixture of toxic air contaminants being emitted from an individual air contamination source that have different HI3 vs. HI5 designations. This allows for a facility-specific evaluation of noncancer risk based on the unique mixture of HI3 and HI5 toxic air contaminants emitted by that facility.

Equation 1. Calculating a Risk Determination Ratio.

$$Risk_{HI3} = \sum_{HI3\ chemicals} \frac{Concentration}{Risk\ Based\ Concentration}$$

$$Risk_{HI5} = \sum_{HI5\ chemicals} \frac{Concentration}{Risk\ Based\ Concentration}$$

$$Risk\ Determination\ Ratio = \frac{Risk_{HI3}}{3} + \frac{Risk_{HI5}}{5}$$

ATSAC's Role

For newly added toxic air contaminants or when a TRV update is proposed for a toxic air contaminant that is currently designated as HI5, DEQ and OHA may consult with ATSAC about whether that toxic air contaminant meets the criteria listed above for HI3 designation. DEQ and OHA do not expect to reconsider the criteria used to make HI 3 designations.

Program name and contacts

Your program name and contact information can go at the end here. You can also replace the "Fact Sheet" on page one with your program name if it can fit on one line. If you have questions on how to make this look its best, check in with the Web Team for layout assistance.

Alternate formats

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