

Cleaner Air Oregon Fact Sheet

Noncancer Health Risk

This fact sheet provides information on noncancer health risk related to breathing toxic air contaminant emissions and how the [Cleaner Air Oregon](#) (CAO) program regulates this risk to protect communities. For the purposes of this fact sheet the terms toxic air contaminant and contaminant mean the same thing – specifically, that these are chemicals known to cause negative health effects when people breathe them.

CAO is an air quality program that regulates emissions of toxic air contaminants from industrial facilities by assessing the potential health risks those emissions pose to the surrounding communities. DEQ requires that these facilities assess both the cancer and noncancer health risks that their activities may cause to people who live, work, and congregate nearby.

What are noncancer health effects?

Noncancer health effects that can occur from breathing toxic air contaminants may include respiratory issues such as shortness of breath, heart disease, liver disease, impaired brain development, infertility, and birth defects. Different contaminants can affect different organ systems in the body. For example, a contaminant may specifically target both the lungs and heart organ systems.

Whether a person experiences health problems from breathing a contaminant depends on how long the contact lasted, the type and amounts of contaminants in the air, and how often they breathe them, as well as a person's general health and inherited (genetic) factors.



How does CAO regulate noncancer health risks?

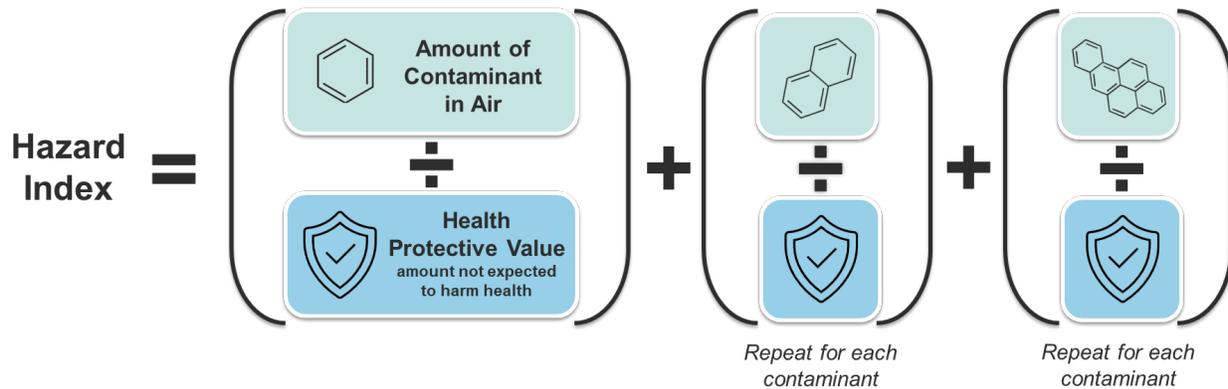
CAO uses a **Hazard Index (HI)** calculation to determine whether noncancer health effects are possible from exposure to multiple chemicals. There are two pieces of information needed for each contaminant when calculating an **HI**:

- (1) **Amount of the Contaminant in Air:** In CAO, modeling is used to calculate the amount of the contaminant in the air that is emitted by a facility. These amounts are calculated for locations near the facility where people live, work, learn, and play.
- (2) **Health Protective Value:** In the CAO program chemicals that cause noncancer health effects are assigned health protective values, called Toxicity Reference Values, or TRVs. These values represent the amount of contaminant a person can breathe at which no negative health effects are expected to occur. These values include safety buffers to protect the health of people who may be especially sensitive to the health effects of chemicals, such as children, pregnant women, and individuals with health issues. Learn more about DEQ's health protective values [here](#).

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A **Hazard Index** is calculated by comparing the amount of each contaminant in the air with the health protective value. This comparison is done for each contaminant emitted from a facility that has a health protective value and each result is then added up to provide the final **Hazard Index** number. See the figure below for an example of what this calculation looks like.



In CAO, the contaminants that harm the same organ systems can be added up to get an **HI** for that system. For example, all the comparisons for contaminants that impact the respiratory system would be added up.

What does a Hazard Index number mean for health?

Hazard Index ≤ 1

An **HI** number that is 1 or lower means **noncancer health effects are not expected.**

Hazard Index > 1

An **HI** number that is higher than 1 means **noncancer health effects are possible, but not certain.**

When the **HI** number is higher than 1, toxicologists look closely at the health protective values for the contaminants and make conclusions about the potential for exposure-related health effects to ensure that health-protective risk levels are maintained in the community. Generally, **the higher the Hazard Index number, the higher the potential risk to health.**

How does CAO use a Hazard Index to regulate noncancer health risk?

The maximum **HI** value determined for a facility by the CAO program indicates that if modeled risk level meets health-based standards, called Risk Action Levels in CAO. The Oregon Legislature set these Risk Action Levels (Oregon Revised Statute [468A.343, Sec. 7](#)), which mandates the actions a facility must take if certain risk levels are exceeded. **Facilities with higher risk are required to take more actions to reduce risk.** The [Risk Action Levels fact sheet](#) provides more details.

Program information and non-discrimination statement

If you have additional questions, please contact us at cleanerair@deq.oregon.gov. To find out more about the status of facilities in the CAO program, visit [this website](#). Sign up for updates on the CAO program [here](#).

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