

Cleaner Air Oregon: How does Cleaner Air Oregon protect against noncancer health risk?

Cleaner Air Oregon is a program that regulates emissions of toxic air contaminants from industrial and commercial facilities based on local risks to health. Cleaner Air Oregon requires facilities to report toxic air contaminant emissions, assess potential health risks, and reduce risk if the level of risk posed by the toxic air contaminant exceed health risk action levels. Facilities are required to assess potential health risks from toxic air contaminants to people living, working, or going to school nearby. Health risks may include cancer and non-cancer health effects. This factsheet provides information on how CAO protects against noncancer health risk.

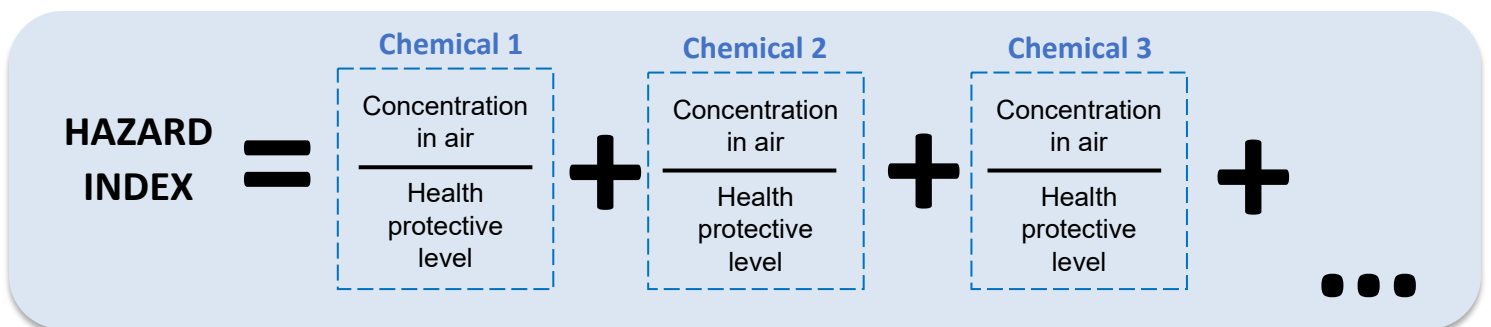
What is a noncancer health risk?

A noncancer health risk is the risk of getting sick with something that is not cancer. Noncancer health effects from breathing toxic air may include breathing problems, heart disease, liver disease, impaired brain development, infertility, premature birth, and birth defects. The impact on health can range from a cough to heart attack and death. Whether a person gets sick from breathing a toxic air contaminant depends on how long the contact lasted, the type and amount of contaminants in air, how often they breathe it, a person's general health, and inherited (genetic) factors.

How is noncancer health risk measured?

Noncancer health risk from air contaminants is measured using a Hazard Index (HI). Scientists calculate an HI to understand the risk to people who breathe multiple chemicals at one time. An HI groups chemicals that affect a single part of the body. For example, one HI would group all chemicals that affect breathing, and a separate HI would group chemicals that affect brain development. An HI is only used to measure noncancer risk.

How is a Hazard Index created?



An HI is calculated by comparing the amount of each chemical present in the air (concentration) with the amount of each chemical that is not expected to harm health (health-protective levels). Toxic air contaminants that cause noncancer health effects have health protective levels, or thresholds, where negative effects are not expected to occur below that level. The health-protective levels for each chemical are based on information developed by federal and state agencies (for example, the Center for Disease Control's Agency for Toxic Substances and Disease Registry and California's Office of Environmental Health Hazard Assessment).

What does a Hazard Index mean for health?

An HI that is below 1 means a person breathing a facility's emissions is not expected to experience health effects. An HI greater than 1 means a person breathing a facility's emission may experience health effects. The greater the HI number, the greater the potential risk to health. For example, an HI of 3 means that exposure to a facility's emissions is three times the level that is not expected to harm health. An HI of 5 means that exposure to a facility's emissions is five times the level that is not expected to harm health. The higher the number, the higher the risk. The lower the HI, the lower the health risk.

How does a Hazard Index protect sensitive populations?

An HI considers scientific uncertainty around safety, particularly in sensitive populations. Often the exact level of exposure that causes health effects in people is unknown because: 1) experiments are rarely conducted on people; 2) science experiments can only reflect the doses tested; and 3) different people have different sensitivities to the same dose. The greater the scientific uncertainty around the level of harm, the more scientists add safety buffers that increase the HI number.

What are the Hazard Index levels that require action?

A Hazard Index above 5 is the level at which facilities are required to take action. This is called a Noncancer Risk Action Level (RAL). Facilities with higher RALs would be required to take more actions to reduce risk. The Cleaner Air Oregon [Risk Action Levels fact sheet](#) provides more information on the cancer and noncancer risk levels, and the risk reduction requirements for facilities.

Who decides what the Risk Action Level is for facilities?

The RAL HI value of 5 is set at a level, or benchmark, established by law in Senate Bill 1541 (SB 1541). The Oregon Legislature enacted SB 1541 in 2018. The law allows the Oregon Environmental Quality Commission, which oversees DEQ, to set an HI as low as 3 (but no lower) if the chemicals being considered are known to have developmental human health effects associated with prenatal or postnatal exposure, or have other severe human health effects. The law directs the Commission to convene a committee to advise the Commission regarding the approach to identifying which chemicals should be regulated at a lower HI. DEQ will carry out a separate rulemaking to adopt this list of chemicals and associated HI levels.

HAZARD INDEX (HI) LEVELS

