



Fact Sheet

Proposed TRV Update and Selection Process for ATSAC Review

Background

This document summarizes the general process the Department of Environmental Quality (DEQ) and Oregon Health Authority (OHA) propose to follow to update and select inhalation toxicity reference values (TRVs) to use in DEQ’s air quality programs. Every three years, the agencies review these values and conduct a rulemaking to update the TRVs. Existing TRVs are in Oregon Administrative Rule (OAR, [340-247-8010 Table 2](#)). Currently, the agencies are preparing for the first triennial TRV review, developing tools to help with the review process, and asking for feedback on the process from the Air Toxics Science Advisory Committee (ATSAC) before we begin searching for specific TRV updates.

Oregon Administrative Rules, adopted by the Environmental Quality Commission, specify sources of toxicity information considered to be authoritative in terms of their scientific rigor and comprehensive methods for producing toxicity information ([OAR 340-247-0030](#)). DEQ uses the term TRV when referring to any similarly derived health-based toxicity value developed by other agencies. A toxic air contaminant could have up to three different TRVs.

- **Chronic cancer TRV** - Air concentration corresponding to a one in one million excess cancer risk, calculated by dividing one in one million (0.000001) by the inhalation unit risk when that air is breathed all the time over a lifetime.
- **Chronic noncancer TRV** - Air concentration below which noncancer health effects are not expected over a year or more of constantly breathing that air.
- **Acute noncancer TRV** - Air concentration below which noncancer health effects are not expected over 24 hours or less from breathing that air.

Chronic TRV Update and Selection Proposal

The authoritative sources all assume the same exposure time when developing their chronic TRVs. The process to select a TRV from the authoritative sources when more than one TRV is available is not in OAR. In the past, the agencies chose to select the most recently published TRV from among the authoritative sources listed in Table 1 for each toxic air contaminant. For example, the agencies would select a TRV developed in 2018 compared to one developed in 2010. DEQ and OHA propose to use this same selection approach for chronic TRVs in this TRV review. This ensures that the TRVs are based on the most recent review of scientific studies by an authoritative source.

Table 1. Authoritative agencies for selecting chronic TRVs.

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Agency Name	Name of Chronic TRV	Type of TRV Available
U.S. Agency for Toxic Substances and Disease Registry (ATSDR)	Chronic Minimal Risk Level (MRL)	Noncancer
U.S. Environmental Protection Agency (EPA)	Inhalation Unit Risk (IUR)	Cancer
	Reference Concentration (RfC)	Noncancer
California Environmental Protection Agency (CalEPA)	IUR	Cancer
	Chronic Reference Exposure Level (REL)	Noncancer
Oregon DEQ in consultation with ATSAC*	TRV	Noncancer and Cancer

*“Oregon DEQ in consultation with ATSAC” was added to the list of authoritative sources by the Environmental Quality Commission in 2021. Currently, there are no TRVs from this authoritative source.

Acute TRV Update and Selection Proposal

Acute TRVs are different because fewer authoritative sources create them and because the authoritative sources make different assumptions about how long people are exposed. DEQ and OHA assume 24 hours of exposure for acute TRVs. In terms of acute TRV application, the Cleaner Air Oregon program is not intended to be a mechanism to address emergency situations where exposures of less than an hour could affect health. There are other mechanisms to address emergency situations caused by very high accidental releases.

In the past, we chose acute TRVs with exposure times that best matched DEQ and OHA’s assumed exposure time of 24 hours. Table 2 shows the authoritative sources listed in order of preference based on how well their TRVs match DEQ and OHA’s assumed 24-hours of exposure.

Table 2. Order of authoritative scientific agencies for acute noncancer TRVs.

Order of Preference	Agency Name	Name of Acute TRV	Assumed Exposure Time
1	U.S. ATSDR	Acute MRLs	Less than 2 weeks (includes 24 hours)
2	California EPA	Acute RELs	1 Hour
3	U.S. ATSDR	Intermediate MRLs	2 weeks to 1 year

DEQ in consultation with ATSAC can also set an acute TRV. This gives us flexibility in choosing and setting acute TRVs that best match our 24-hour exposure duration definition.

There are some existing acute TRVs that are derived from, or are equivalent to, chronic values. This has occurred in two different types of situations:

- When it is not clear when developmental health effects are initiated within the developmental period. Benzo[a]pyrene is an example.
- The acute TRV chosen is a lower value than the chronic TRV. In these cases, we set the acute TRV to be equal to the chronic TRV. Examples include selenium and benzene.

We acknowledge that deriving acute TRVs from chronic TRVs is not ideal and, where appropriate and possible, we would prefer to derive an acute TRV from a study with an acute exposure duration. During our review of acute TRVs, DEQ and OHA will prioritize finding alternative TRVs that are based on studies with short-term/acute exposure periods.

DEQ in Consultation with ATSAC as an Authoritative Source

Since Oregon DEQ in consultation with ATSAC was added to the list of authoritative sources in 2021 ([OAR 340-247-0030](#)), this gives us more flexibility in the TRV update process. This means that DEQ in consultation with ATSAC can develop TRVs and consider TRVs developed by organizations other than U.S. EPA, U.S. ATSDR, and CalEPA. We primarily rely on these three authoritative sources for TRVs for several reasons:

- **The agencies included in the hierarchy tables go through extensive peer-reviewed processes** to establish TRVs using the best available science and research. For each chemical, these expert panels spend years reviewing hundreds of scientific studies to evaluate the weight of scientific evidence. The evaluations are then shared for public comment. This public process is lengthy and requires substantial investments of tax dollars.
- **Regularly establishing new TRVs is beyond the capacity of agencies in Oregon.** To establish new TRVs, Oregon would have to undergo a rigorous and costly process, like the one mentioned above. Doing this work often is far beyond the current capacity of Oregon agencies. In many instances, the results of a state level review would likely confirm the conclusions of other authoritative sources.
- **Other states rely on agency TRVs** as the basis for health-based industrial toxic air contaminant programs. For example, programs in Washington, New Jersey, Rhode Island, Massachusetts, New Hampshire, New York, Georgia, Minnesota, Michigan, and North Carolina all rely primarily on TRVs from the U.S. EPA and U.S. ATSDR.

Since developing a TRV is very resource intensive, it would be a high bar for us to explore developing a TRV in consultation with ATSAC. It is possible that we might not develop any new TRVs during several different triennial review periods. However, there may be instances where developing a TRV is warranted to protect the health of Oregonians. We predict that we would explore developing our own TRV for a toxic air contaminant if

- None of our other authoritative sources have a toxicity reference value,
- We think the chemical has a high likelihood of harming public health in Oregon,
- There is adequate scientific information available, and
- There is agency staff bandwidth.

In instances where none of the authoritative sources listed in rule have adopted a TRV for a chemical we expect to be posing risk in Oregon, the agencies may also review TRVs developed by other states and countries. This approach still represents a significant effort but is much less resource intensive than developing a new value.

It is important to note that the agencies' current policy (as codified in rule by the authoritative sources listed there) is that they generally agree with policy assumptions those authoritative sources make about how to approach scientific uncertainty and protect health. So, in cases where DEQ and OHA may look at TRVs developed by an organization not on our authoritative source list, they would check that the other organization's assumptions and uncertainty factors are congruent with Oregon's implied policies on addressing scientific uncertainty. DEQ and OHA also expect to consult ATSAC in that type of assessment.

At this time, DEQ and OHA anticipate consulting ATSAC on at least two TRVs that meet the criteria discussed above:

- Manganese Acute TRV
- Diesel Particulate Matter Chronic Cancer TRV

The agencies expect to add to and update this list while proceeding with the TRV review process and will share those updates with ATSAC.

Overall Workflow and Follow Up Meetings with ATSAC

OHA and DEQ toxicologists will check toxicity reference value sources from the US ATSDR, US EPA, and CalEPA for all the existing inhalation TRVs used by DEQ to see if updates need to be made. Staff will also crosscheck the rest of the priority toxic air contaminant list ([OAR 340-247-0040](#) & [OAR 340-247-8010 Table 1](#), the list of chemicals for which industrial facilities must report their emissions to DEQ) to see if there are additional TRVs from the authoritative sources that should be added.

DEQ and OHA will convene an ATSAC meeting when the review process has finished to share which values changed after following our TRV selection process and to gather input on the results. In certain cases, if DEQ and OHA toxicologists propose to deviate from the regular TRV selection process, staff will flag those instances and seek ATSAC input.

For toxic air contaminants that are new to the TRV list or those for which DEQ and OHA propose updated TRVs, staff will also evaluate them for information about developmental or other severe health effects. For more details on this see accompanying primer document on our [HI3 vs. HI5 process](#).

Discussion Questions for ATSAC Members

1. What questions or feedback do you have on the general process of selecting the most recently published chronic TRV?
2. Do you have questions or feedback on the authoritative source order preference for selecting acute TRVs?
3. Can you recommend other sources of acute TRVs the agencies should consider while prioritizing review of toxic air contaminants where the current acute TRV is equal to the chronic non-cancer TRV or based on chronic studies?
4. What should DEQ and OHA agencies consider when reviewing values from other organizations or agencies not listed as an authoritative source?
5. Do you have questions or comments on the proposed process for reviewing and providing feedback on DEQ's and OHA's work?
6. What other feedback or input do you have for DEQ and OHA?

Program name and contacts

Cleaner Air Oregon, Oregon Department of Environmental Quality
Primary Contact: Apollonia (Apple) Goeckner, Program Coordinator
Alternate Contact: Matt Davis, Program Manager

Alternate formats

DEQ can provide documents in an alternate format or in a language other than English upon request. Call DEQ at 800-452-4011 or email deqinfo@deq.oregon.gov.