Oregon Department of Environmental Quality
Toxic Air Contaminant Review and Update Rulemaking 2025

ATSAC Meeting 5-7 Written Responses to Discussion Questions

The purpose of this document is to compile ATSAC member feedback during the DEQ Toxic Air Contaminant Review and Update Rulemaking.

Background

DEQ and OHA requested written responses from ATSAC members to all questions in Document #3: ATSAC Meetings #5-7 Discussion Questions. These written responses were submitted to OHA in March 2025 and compiled into this document.

Overall Process

Related Resources
Document 1: Overview of TRV Review
Document 2: QC of Toxicity Reference Values
ATSAC Meeting #4 PPT Slides

Discussion Questions and Responses

1. Do you feel prepared to go through these discussion questions?	
ATSAC Member	**Response:**
John Budroe	Yes – the material in the several documents and workbooks involve reasonably standard toxicology risk assessment methodology.
Daisy Dong	Yes
John Stanek	Yes, the prior overview meeting and delivery of materials helped greatly in this regard.
Susan Tilton	Yes, appreciate the pre-meeting review of the materials, particularly organization of the workbooks.
John Vandenberg	Yes, I feel well prepared. There is a lot of information provided to review, so it is appropriate to split the discussion across several ATSAC sessions. It would be useful to provide context as to what may be asked of the ATSAC in the future e.g., I understand a review of diesel exhaust will occur, probably in May, but at the end of that activity will ATSAC be asked to participate in future reviews?

2. What was your experience like preparing for this review process as an ATSAC member?	
ATSAC Member	**Response:**
John Budroe	There were 197 new TRVs and 107 changed TRVs = 304 TRVs proposed for review. That was a pretty substantial number of chemicals to review in the time from the review materials were made available to the meeting dates. It would have been useful if the review materials (especially Workbooks 1 and 2) had been provided farther in advance of the meeting (an additional 2-4 weeks).
Daisy Dong	I can follow it through ok, but I have some comments on worksheet 2 and document 3 to improve the transparency.

John Stanek	Somewhat related to question #1 (considering the amount of material to review and tremendous amount of work accomplished), the decision to present and provide several smaller documents focused on specific topics for discussion really helped to streamline and organize the review.
Susan Tilton	Focused on learning about processes used, appreciate the organization of materials provided, including the use of links to referenced materials which made accessing them very straightforward.
John Vandenberg	I was impressed by the clarity of communications by the DEQ/OHA team and the well-organized and extensive materials provided to the ATSAC. As noted above, there was a lot of information to review and it was especially helpful to receive this Discussion Questions document which presents questions for the ATSAC to respond to. This provided focus, but was also open-ended enough for the ATSAC to bring in items for discussion throughout the meetings.

3. Do you agree with DEQ's and OHA's overall process for reviewing and updating TRVs?	
ATSAC Member	**Response:**
John Budroe	The overall TRV update process is generally appropriate to the purpose.
Daisy Dong	Yes, but with some minor comments (HEC, RfC methods for DEQ derived TRVs)
John Stanek	Yes, I agree with DEQ's and OHA's overall process for reviewing and updating TRVs. Given the overall scope of this project, the process and review materials were scientifically sound, well-articulated and clearly presented. The resulting database of reference values provides an efficient resource for use in human health risk assessment.
Susan Tilton	• Yes, with consideration of questions, clarifications and points below. Generally approve of the tiered approached for proposed TRVs based on available sources. Incorporates prior ATSAC feedback – including providing all available TRV values, including TRVs derived from other states (and not just authoritative sources), rationale for choosing proposed values and prioritizing basing acute TRVs on studies with short-term/acute exposure periods rather than deriving from chronic or intermediate studies. • Need to make the cut-off for new data inclusion (or date for included data) clear, as well as the process for updating values (e.g. draft values) as new data is available Noticed that when workbooks list DEQ as the source, not all of the information in document 4 on the source material reviewed by ATSAC is included. Important to document sources used in publicly available material or make sure the document 4 is referenced.
John Vandenberg	Yes, the process for reviewing and updating the TRVs was clear and appropriate. Rounding protocol and the number of significant digits used at various steps in the analysis needs to be clearly described.

4. Do you have any questions related to the *Overview of TRV Review* document (Document 1)?	
ATSAC Member	**Response:**
John Budroe	No questions – the document was well written and self-explanatory.
Daisy Dong	None.
John Stanek	For document 1, indicating the number of chemicals without a TRV from the identified list would add to the clarity and completeness of Table 1. This could help characterize any data gaps and how they might be addressed in the future via read-across, QSAR, or other methods especially if you have chemicals of great concern (i.e. exposure) that do

	not have a TRV. Conversely, if the missing values are for chemicals of less concern, that would be worth characterizing as well.
Susan Tilton	• When DEQ selected TRVs from among candidate options based on robustness of the critical study – what was considered? Would this include making sure adverse health outcomes (or which outcomes) are being evaluated? • Cancer and non-cancer TRVs used the most recent source – this was discussed at a prior meeting, but were details about the source considered as part of the process? Or were these used as a starting TRV with subsequent modifications applied as described in document 4 (e.g. time adjustments or uncertainty factors)? I know parameters were documented in the TOA worksheet for uncertainty factors, POD, endpoint, etc – but was consideration given to the approach used by Oregon DEQ to choose TRVs and rational for prioritizing some parameters over others (not necessarily using the most recent source)?
John Vandenberg	This document is undated. It is very important to be clear as to the dates through which the analyses were updated. The first paragraph of the Overview document refers to the cancer risk level (10^{-6}) as target for TRV, but does not there provide a definition for non-cancer endpoints. Document 4 provides a list of abbreviations, but not the full definition for the various terms e.g., RfC, TRV, etc. The approach assumes the meanings of the terms are consistent across authoritative sources – yet this may not be the case.

5. Do you agree that the quality control process was adequate? *(Document 2*)	
ATSAC Member	**Response:**
John Budroe	The update quality control process was adequate.
Daisy Dong	Seems to be adequate, one question is the transcription from worksheet 2 to worksheet 1 and its QC process.
John Stanek	Yes, the QC process was adequate and that any errors identified during compilation and review were transparently described. In addition, the selection of the "Authoritative Sources" used as the primary basis for TRV collation was appropriate.
Susan Tilton	Yes, requested more information on the QC process for confirmation of hazard index designation (e.g. HI3 vs. HI5) and to indicate whether these designations contribute to the final TRV since a significant part of the QC focused on this.
John Vandenberg	I agree that the quality control process was adequate but I recommend this contractor document be an attachment to a document authored by the DEQ/OHA, making it an Oregon document, not just a contractor report. In that Oregon document indicate what the DEQ/OHA staff did to identify tasks for the contractor and activities by the contractor and DEQ/OHA staff in checking the results. Furthermore, please look closely to use of terminology and include definitions of terms such as "substantial difference".

ATSAC Workbooks

Related Resources
Workbook 1: DEQ Proposed TRVs
Workbook 2: TRV Derivation

Discussion Questions and Responses

1. Did Workbooks 1 and 2 capture the right information?	
ATSAC Member	**Response:**
John Budroe	The information in Workbooks 1 and 2 was ample and well-chosen.
Daisy Dong	--Yes, they captured most necessary information, but I would prefer to include the POD, IUR (slope factor)-see my suggestion in the Workbook 2 --Simplify some other information (e.g., for acute, the duration adjustment is 24hr, so no need a column for that; same for chronic, the duration adjustment is 24h/day, 7 days per week; --POD method, POD values, POD Duration adjustment before UF columns --HEC-just provide the value instead of yes or no (also when use DAF =1, it is also a form of HEC calculation as it will affect UFa TK portion) --Specify "animal" --"Duration of exposure" can be incorporated into the critical effect, e.g. in a 13 wk rat study --Cancer: Source TRV, better to say "Source IUR" as some agencies use 1x 10^5 instead of 1 in a million --By re-arranging the columns and providing more details in workbook 2, permitting greater transparency as future employees or ATSAC members can calculate the value for accuracy within this workbook directly. --Future ATSAC members may only need to focus on review worksheet 2 and one single companying document (combine all other documents into one single SOP-like PDF and assign section numbers and bullets to different rules, and reference these rules in the Workbook with a hyperlink) (Consider doing this for your future updates).
John Stanek	Yes, these workbooks/databases provide comprehensive information as a resource for TRVs. Each TRV entry provides information on study, duration, endpoint as well the numerical inputs to reproduce the TRV derivations. Both workbooks/databases are well-organized and clearly and thoroughly convey the intended information and complement one another.
Susan Tilton	I primarily used these as a reference for evaluating the processes used by DEQ for deriving TRVs and appreciated reviewing these during the initial meeting to orient us to their layout. Not all information/values used for deriving TRVs is shared in the workbooks – for example, POD, IUR, cancer slope factor. Because of the detail provided for the other values, e.g. UFs, used, this stands out as missing.
John Vandenberg	The Workbooks provide a very impressive compilation of relevant information to derive and document the TRV work. It is clear this was a very large effort and the resulting workbooks are potentially useful for decisions by the State of Oregon, and by other groups. I suggest addition of three columns to the Workbooks: 1) Indicate the date the data were included to each data row; 2) Add the Inhalation Unit Risk (IUR) for the cancer results, when available; and 3) document whether Age Dependent Adjustment Factors (ADAF) per U.S. EPA (2005) supplemental guideline for early life exposure, were applied. Furthermore, indicate that the IUR from USEPA assessments published prior to 2005 did not apply ADAFs and the quantitative effect when ADAFs are applied is about a 60% increase in lifetime cancer risk (see #2 below).

2. Did you identify any systemic or thematic problems with either workbook that could be improved?

ATSAC Member	Response:
John Budroe	No problems were noted with either Workbook 1 or 2.
Daisy Dong	See above
John Stanek	In agreement with others who provided more detail, a subset of columns should be reordered that would align more closely with the process of TRV derivation. For example, starting a reordering from the endpoint (column Q?) → POD → Duration info → Duration adjustments → DAF → HEC → UFs → Notes etc., Reordering would help increase clarity/reproducibility for TRV derivation. In addition, the characterization of the HEC/DAF language in the workbook and QC document is confusing/misleading relative to derivation procedures. From a methodological standpoint, if the DAF = 1 that does not mean that the HEC is "no". A DAF = 1 is still an adjustment and reduces the TK/TD UF to 3. Typically it is used for systemic effects and is based on differences in animal and human blood:air partition coefficients. However, it sometimes might be used for other effects depending on the histopathology and location of effect, chemical reactivity and solubility etc., A narrative/rationale for DAF selection is usually provided. Thus, the HEC is the result of the duration adjusted POD and the DAF irrespective of the "numerical value" of the DAF.
Susan Tilton	None observed
John Vandenberg	Per response just above (Question #1) the application of Age Dependent Adjustment Factors (ADAF) to the unit risk estimates is not clear. Refer to the 2005 Supplemental Guidance for Assessing Susceptibility from Early-Life Exposures to Carcinogens. https://www.epa.gov/risk/supplemental-guidance-assessing-susceptibility-early-life-exposure-carcinogens

3. Are there any missing functionalities in Workbooks 1 or 2 or functions that should work differently that we could improve for the next time we do TRV updates?	
ATSAC Member	**Response:**
John Budroe	No suggestions for Workbook 1 and 2 function additions or changes.
Daisy Dong	I personally prefer to include information from workbook 1 into workbook 2, thus reviewers only need to review ONE single workbook (highlight cases that proposed values higher than the initial values-call for reviewers' attention. In a separate workbook, it is time consuming to go between different worksheet to review the information). Also highlight cases that have ambiguity in conforming the rules specified by DEQ (for most cases, if reviewers agree with the rules then there is no need to review all individual cases). Could do something like this: state the reason for why choose one authority over the other and cite the selection criterion A, B, C, D etc.). This way, reviewers can spend their time on the most needed cases.
John Staneck	No additional functionalities from those that were discussed as a group during the committee meetings.
Susan Tilton	It was suggested to set up rules applied to TRV selection and then reference which rules were applied in the case of calculated TRVs. I would agree with this approach in the future as it would help to standardize the review process. As mentioned above, a date stamp for data and adding details for sources described in document 4.

John Vandenberg	Having the workbooks online with links between the workbooks would be very useful e.g., to add search features to enable all information for specific chemicals to be readily identified and pulled into summary form.

4. Were you able to access all the information you needed to make decisions about whether to support DEQ's proposed TRVs?	
ATSAC Member	**Response:**
John Budroe	The information supplied was sufficient for the purpose.
Daisy Dong	Yes
John Stanek	Yes, all the information was provided to support my decision making. In random testing of links to the resource and reference information provided, everything was accessible.
Susan Tilton	I primarily used these as a reference for evaluating the processes used by DEQ for deriving TRVs and appreciated reviewing these during the initial meeting to orient us to their layout.
John Vandenberg	I found the information was available except that information on application of ADAFs for carcinogens was not indicated.

4: Proposed TRVs Where DEQ is the Authoritative Source

Related Resources
Document 4: Proposed TRVs Where DEQ is the Authoritative Source

Discussion Questions and Responses

1. What feedback or concerns do you have about the way DEQ proposes to adjust acute TRVs for exposure time in many cases (Section 2)?	
ATSAC Member	**Response:**
John Budroe	The methods listed in Section 2 for extrapolating from 1-hour acute TRVs to 24-hour acute TRVs and for extrapolating from subchronic TRVs to 24-hour acute TRVs are generally acceptable.
Daisy Dong	See my comments on Document 4 for questions 1 to 7.
John Stanek	No concerns noted with the proposal to adjust acute TRV for exposure times. The proposal is supported to my knowledge by current science and practices. In the cases where a subchronic study is used to calculate the acute TRV, consideration should be given to providing discussion or characterization of the potential uncertainty and/or conservative health protectiveness of these values. In the majority of these cases, a relatively minor adjustment is used to extrapolate from studies greater than 30 days in duration which result in 24-hr TRVs similar to subchronic TRVs.
Susan Tilton	Described the default values used for exponent n when reflecting the influence of concentration relative to exposure time. Should be noted when Haber's Law was applied with or without the ten Berge adjustment – only seems that it was noted if an empirical value was used if it was different than n=1. In section 2.3, since Haber's Law with ten Berge adjustment was not used for extrapolating from longer exposure duration to a shorter one with the exponent n=3 as outlined in the prior section, should be clear about time adjustments from subchronic exposures to acute where the only adjustment was to remove 'days per week' to account for the intermittent exposures over time.

John Vandenberg	The documentation on proposed TRVs where DEQ is the authoritative source was thorough and necessary to understand the approach applied and analyses for individual chemicals. I recommend the document reference the OECD acute assessment document provided by John Stanek. Daisy Dong made some useful recommendations for *future, not current*, adjustments to Points of Departure (POD) using molecular weight, and exposure time used in principal study, not just from 1 hour to 24 hour (which Equation 4 seems to show). Adding example calculations using data from a chemical in the table will be helpful for users of these documents when equations are shown.

2. Are there any specific TACs in section 2 to which Haber's Law should not be applied to adjust exposure time?	
ATSAC Member	**Response:**
John Budroe	No chemicals in section 2 where the application of Haber's Law would be inappropriate (e.g. sensory irritation-inducers or developmental toxicants) were noted.
Daisy Dong	*blank*
John Stanek	None identified.
Susan Tilton	For chemicals in which the endpoint is listed as respiratory and eye irritation, is it confirmed which endpoint the POD is derived? In some cases (e.g. benzyl chloride, phenol, selenide), both endpoints are listed and Haber's Law is presumably being applied even though this should be an exception (for eye and mucous membrane irritation) because the effect would be concentration-dependent and not time dependent. I don't see this described in Workbook #2 (actually found this in a different column for target organ so don't know if this could be clearer in the workbook)
John Vandenberg	None that I know of.

3. What feedback or concerns do you have about the cases where DEQ proposes to apply toxicity information from a better studied TAC to a lesser studied, structurally similar TAC (Section 3)?	
ATSAC Member	**Response:**
John Budroe	No concerns for the chemicals listed in Section 3.
Daisy Dong	*blank*
John Stanek	No concerns noted. Using information from structurally similar chemicals for chemicals that are data poor reflects the current state-of the-science for use in hazard assessment.
Susan Tilton	No concern for the use of TEFs for polybrominated biphenyls, polybrominated dibenzo-p-dioxins and dibenzofurans as that uses a recommended approach discussed the literature with feedback from ATSAC. I also agree with the use of RPFs applied to crotonaldehyde; however, in general would recommend that the rationale for read-across be provided by DEQ even if referencing another agency's method for derivation, particularly when not from an authoritative source. This would also apply to N-propylbenzene and PFOS.
John Vandenberg	Please review the acrolein entry in workbook 2; the noncancer chronic TRV is 0.9 ug/m3 derived from ATSDR, but the IRIS RfC is 0.02 ug/m3 (2003), and the workbook doesn't show multiple authoritative sources.

4. What feedback or concerns do you have about cases where DEQ proposes to modify TRVs by changing uncertainty factors (Section 4)?	
ATSAC Member	**Response:**
John Budroe	In Table 3, DEQ (TRVs where DEQ Proposes to Modify Uncertainty Factors Applied by Originating Source Agency) proposes to change the acetone LOAEL to NOAEL uncertainty factor (UF) from 2 (used by TCEQ) to 3, stating that "DEQ proposes to increase TCEQ's LOAEL to NOAEL UF from 2 to the more standard 3 used by all DEQ's authoritative sources (TCEQ 2015), raising the total UF from 20 to 30". OEHHA uses a LOAEL to NOAEL UF of 10 for all chronic REL derivations. DEQ should clarify this, and consider whether a LOAEL to NOAEL UF of 10 should be used in this situation. Additionally, Table 3 of Section 4 lists a proposed acute TRV of 12,000 µg/m^3 for n-hexane based on an uncertainty factor modification to the 2017 TCEQ acute ReV. Table 1 of Document 7 (Proposed TRVs Not Yet Finalized by Authoritative Sources) lists a proposed acute TRV of 21,000 µg/m^3 for n-hexane based on a draft ATSDR acute MRL. DEQ should clarify which n-hexane acute TRV it intends to adopt.
Daisy Dong	*blank*
John Stanek	In certain instances, revise the language about the UF application of 2 to 3 for use of a LOAEL in place of a NOAEL. The EPA default is 10 not 3 so this does not apply to all authoritative sources as currently written. A UF is not applied if BMD modeling is used to determine the POD. This was discussed in the committee meetings.
Susan Tilton	Agree with proposed changes in UFs to bring approach in line with DEQ authoritative sources and standard OR DEQ processes (for example, in cases where uncertainty for the extrapolation is needed – subchronic to chronic). As mentioned earlier, when a source is listed as DEQ in the table rather than a non-authoritative sources (TCEQ, for example), it would be helpful to have this process documented for reference in the Worksheets. It is well described in document 4.
John Vandenberg	The documentation and modifications appear appropriate and the brief narrative is helpful. From the ATSAC discussion my notes indicate the acetone writeup should change UF_D = 1 and UF_L = 10.

5. Do you have feedback or concerns about cases where DEQ proposes to derive TRVs by making other types of modifications to values developed by other agencies (Section 5)?	
ATSAC Member	**Response:**
John Budroe	The TRVs derived using modifications to chemical health values derived by other agencies (Section 5, Table 4) appear to be appropriate.
Daisy Dong	*blank*
John Stanek	No concerns noted.
Susan Tilton	None
John Vandenberg	From the ATSAC discussion my notes indicate hydrazine should be included in table 2.

6. Do you have any feedback or concerns about DEQ using the list of relative potency factors provided by the Minnesota Department of Health for carcinogenic PAHs (using the 2017 IRIS IUR for benzo[a]pyrene as the index) (Section 5 table 6)?

ATSAC Member	Response:
John Budroe	No concerns about using the Minnesota Department of Health carcinogenic PAH relative potency factors.
Daisy Dong	*blank*
John Stanek	No concerns noted.
Susan Tilton	The proposed updates utilize the same RPF from 2018, but is now applying it to the IUR for benzo[a]pyrene (2017 EPA IRIS) rather than the older OEHHA IUR. So the process has not changed and the RPFs are the same, derived similarly (presumably, difficult to find original information as some links in the MDH document do not work). It should be noted that ATSDR provides guidance (2022) on PAH relative potency factors, which seems it would be an authoritative source compared to MDH. I have not looked at it in detail, but don't know if DEQ considered this source.
John Vandenberg	I support the use of the Minnesota Department of Health relative potency factors. The used of other sources of values that are not listed in the Oregon Rule as authoritative, such as MN, CT, NY etc was discussed at outset of this review and I understand with ATSAC agreement the use of other sources is acceptable based on careful consideration by DEQ/OHA and ATSAC.

7. Do you have feedback or concerns about any of the TRVs that DEQ is proposing to adopt without modification from non-authoritative (i.e., not EPA, ATSDR, or CalEPA) sources (Section 6, Table 7)?	
ATSAC Member	**Response:**
John Budroe	No concerns regarding the TRVs proposed in Section 6, Table 7.
Daisy Dong	*blank*
John Stanek	No concerns noted. However, either provide a brief summary about what criteria these sources lack (in general) that makes them non-authoritative or link back to the source where this is outlined.
Susan Tilton	I don't have any issues with these sources as long as the same criteria are being met in terms of how Oregon DEQ accepts the TRV values. This has primarily been used to adopt chronic and acute TRVs and are described in detail through TCEQ documents or DEQ July 2024 memorandum summarizing available TRVs and parameters used to derive them. Will the information in the memorandum be public as a source – or links to the original sources used in the memorandum? There is not description in the worksheets about the source for these new TRVs other than having DEQ as the authoritative source.
John Vandenberg	I have no concerns about adoption of the other values as identified in Table 7. I recommend addition of b(a)p to this table for completeness.

8. Pending DEQ and OHA consideration of ATSAC comments in previous discussion questions, do you agree with the TRVs where DEQ (in consultation with ATSAC) is the proposed authoritative source?	
ATSAC Member	**Response:**
John Budroe	The TRVs where DEQ (in consultation with ATSAC) is the proposed authoritative source are generally acceptable. Some suggested reconsiderations are noted in the question responses above.
Daisy Dong	Yes

John Stanek	Yes, I agree with the proposed TRVs where DEQ is the proposed authoritative source.
Susan Tilton	I agree with the process as discussed in the meeting with considerations made for referencing the process in the workbooks as described earlier.
John Vandenberg	I agree with the TRVs where DEQ (in consultation with ATSAC) is the proposed authoritative source.

9. What feedback do you have related to the *Proposed TRVs Where DEQ is the Authoritative Source* document?	
ATSAC Member	**Response:**
John Budroe	No feedback in addition to the answers to the document questions already answered.
Daisy Dong	Suggest to include a summary table for all default settings (especially UFs) from the authoritative sources (EPA, ATSDR, CalEPA).
John Stanek	No additional feedback.
Susan Tilton	There is a lot of supporting information used for deriving TRVs and so it should be considered how to best make that information publically available and not lose connection to the workbooks.
John Vandenberg	My only comment is that the documentation by OHA/DEQ is highly informative, well organized and very useful. I commend the staff for the great work they have done as it demonstrates depth of knowledge and thoughtful consideration for ATSAC to review and comment on.

5: Proposed Groupings of Toxic Air Contaminants

Related Resources
Document 5: Proposed Groupings of Toxic Air Contaminants

Discussion Questions and Responses

1. Do you have any feedback or concerns about how we plan to organize groups of chemicals and how we plan to account for their toxicity?	
ATSAC Member	**Response:**
John Budroe	The organization of chemical groups in this document is generally well done. One suggested addition to Section 4.1 (Metals) would be an explicit statement in the section text that those groupings do not apply to organometallic compounds. Additionally, in Section 2 , Table 1, the entry for toluene diisocyanate (TDI) isomers (CAS: 26471-62-5) in column 3 (Difference in approach from existing rule) needs to be corrected. The OEHHA REL listing covers mixed TDI isomers, 2,4-TDI and 2,6-TDI as a group, not separately.
Daisy Dong	No
John Stanek	No concerns noted with the document or organization of the chemicals.
Susan Tilton	In the future, would consider documenting or reporting how similarity for groupings is defined by sources when utilized by DEQ.
John Vandenberg	I have no concerns, the organization of chemicals appears appropriate.

2. Do you agree that these are the right compounds within each group?	
ATSAC Member	**Response:**
John Budroe	The selection of the compounds within each group are appropriate.
Daisy Dong	Yes. Question related to the size for crystalline silica (4μm vs. 10 μm): I did some search and I think the common acceptable consensus is 4 μm.
John Stanek	Yes, it appears the right compounds have been assigned within each group. The approach to group various chemicals and metals is consistent with other agencies as cited throughout the document. For example, a similar grouping approach was used by EPA in their assessment of trimethylbenzenes as are the groupings of metals and compounds.
Susan Tilton	No concerns
John Vandenberg	Yes, to the best of my knowledge the right compounds are included within each group.

3. The World Health Organization (WHO) has a 2024 set of toxic equivalency factors (TEFs) for dioxins and furans. DEQ is currently proposing to keep using the 2010 EPA TEFs as applied by OEHHA. No other jurisdictions have adopted the new WHO TEFs to DEQ's knowledge. Should DEQ continue to apply EPAs 2010 recommended TEFs as proposed or consider proposing the 2024 WHO TEFs instead (Section 3.1)?	
ATSAC Member	**Response:**
John Budroe	DEQ should continue to use the 2010 EPA TEFs for the present. DEQ may wish to consider using the 2024 WHO TEFs if one of their external authoritative sources (ATSDR, EPA, OEHHA) adopts them.
Daisy Dong	Maybe contact EPA and OEHHA to see their plan of whether or when they will adopt the new TEFs? I prefer to adopt the new WHO TEFs-better database and methodology.
John Stanek	Continuing with the current proposed approach based on the 2010 TEFs is justifiable. However, careful consideration should be given to determining the feasibility of conducting an independent review and analysis of the newly proposed 2024 TEFs as they would presumably reflect updated science. Consequently, if the WHO approach is recommended after review, DEQ should consider leading the change.
Susan Tilton	Agree since these have recently been developed and would be consistent with your proposed approach to use authoritative sources. In addition, from examples used in the DeVito et al. 2024 paper, it is estimated that original 2005 TEFs would generally be more health protective/conservative in the short-term. Would determine how EPA plans to incorporate these methods. Also, agree with discussion on consistency regarding reporting of significant digits and how these are determined.
John Vandenberg	The rationale for not using the WHO 2022 TEFs is not compelling. The WHO document is most current and the authors of that document are well-known experts in the field. I suggest contacting Linda Birnbaum (former Director of NIEHS) for her opinions about the WHO 2022. Though she is an expert in the area of TEFs she was not an author of the document and could provide an independent review based on her extensive experience.

6: Proposed TRVs Using Screening PPRTVs as the Authoritative Source

Related Resources

Document 6: Proposed TRVs Using PPRTV Screening Values as the Authoritative Source

Discussion Questions and Responses

1. What feedback or concerns do you have related to the *Proposed TRVs Using PPRTV Values as the Authoritative Source* document?	
ATSAC Member	**Response:**
John Budroe	The formic acid chronic PPRTV derivation uses a database uncertainty factor (UF) of 10 (lack of inhaled formic acid developmental/multigenerational reproductive studies) and a subchronic (13-week study) to chronic UF of 10. A database UF of 3 is more commonly used, and some authoritative sources (e.g. OEHHA) would apply a subchronic to chronic UF of 3 to a 13-week study. If those alternative UFs were used, the composite UF would be 3,000.
Daisy Dong	No concerns.
John Stanek	No concerns noted with the document.
Susan Tilton	There is a large amount of uncertainty for these values compared to those reported from other sources in the Workbook; however, the purpose of screening PPRTVs by EPA is for initial risk characterization of compounds of concern at Superfund sites. If these are used, it should be flagged to be updated when non-provisional values are available.
John Vandenberg	The development of PPTRV values includes standard literature search, application of EPA guidelines, and internal and external peer review steps. The scientists involved in the development and review are experienced health risk assessors and I am confident in the PPRTV methods and results, especially for PPRTVs developed in the about the last 20 years i.e., since about 2003, at which time the PPRTV process became more robust.

2. Is the science behind PPRTV screening values sufficiently robust to use for DEQ's air quality programs, including regulatory applications, when no other toxicity information is available?	
ATSAC Member	**Response:**
John Budroe	In general, the risk assessment procedures used to generate the PPRTV screening values are sufficiently robust for DEQ's purposes. However, DEQ might want to consider applying a composite uncertainty factor cap of 3000 to the PPRTV derivations and adjusting those values where necessary.
Daisy Dong	Better to have values than no value.
John Stanek	Yes. Although they are "screening" values, the process for development of these values is the same as for more data-intensive, higher-tier values and undergo external peer review. The development of these values utilizes well-documented methodologies and the assessment documents supporting these values are transparently presented for their intended application. In my opinion, not having a value as a guide in considerably more uncertain in evaluating potential risk.
Susan Tilton	Yes, these values are peer-reviewed and developed using a weight-of-evidence approach. Process to update when non-provisional values are available should be considered.
John Vandenberg	I have confidence in the set of PPRTVs included in Document 6 as appropriate to use as the basis for TRV in the absence of authoritative values.

7: Proposed TRVs Not Yet Finalized by Authoritative Sources

Related Resources

Document 7: Proposed TRVs Not Yet Finalized by Authoritative Sources

Discussion Questions and Responses

1. Do you have any feedback or concerns about DEQ proposing to use the TRVs listed in this document (Table 1) that are not yet finalized by authoritative sources?	
ATSAC Member	**Response:**
John Budroe	In general, the development of TRVs from draft authoritative source chemical health values is reasonable and appropriate. However, DEQ should be more explicit regarding what will be done (and when) if the public comments on the draft authoritative source documents result in changed authoritative source chemical health values.
Daisy Dong	I agree, simply add a column to the Excel Workbook to indicate the dates for update, thus DEQ can update (finalize or revise) these TRVs based on the progress of authoritative sources.
John Stanek	No concerns noted with using the draft TRVs presented in Table 1. All of these draft values are in the later stages of the review process where typically substantial changes to final values do not occur.
Susan Tilton	Similar to screening PPRTVs, which are also peer-reviewed, these should be flagged as draft values and updated once finalized. Is the purpose of the TRVs to be a 'living document' updated as changes occur? If so, then draft TRVs can be included until finalized even if after the rulemaking period ends; however, should be consistent.
John Vandenberg	My only concern is the is the timeline for review. My understanding is that it is to occur every 3 years, which suggests for some chemicals there will be no TRV until the next review cycle, yet updated reviews of critically important chemicals may be available sooner than 3 years. I recommend that if the OHA/DEQ become aware of an updated assessment from an authoritative source before the 3-year review cycle that they seek ATSAC evaluation prior to the 3-year assessment. Also, I recommend reviewing available public comments on the draft assessments from authoritative sources, if available. If public comments are not readily available on their draft documents, then I recommend reaching out to ATSDR, OEHHA or USEPA and ask to see the public comments.

2. Would you propose an alternative in the case of any or all these TACs?	
ATSAC Member	**Response:**
John Budroe	DEQ proposes adopting a draft ATSDR acute MRL of 7 µg/m^3 for acrolein based on human nose and throat irritation and decreased respiratory rate (Weber-Tschopp et al. 1977; LOAEL = 0.3 ppm). The prior acute TRV was based on an OEHHA acute REL (2.5 µg/m^3), which was derived from the geometric mean of human eye irritation data from Weber-Tschopp (1977)(LOAEL = 0.07 ppm) and Darley et al. 1960 (LOAEL = 0.06 ppm). ATSDR did not cite Darley et al. (1960). Since both authoritative sources used at least one common study to develop acute acrolein health values, the OEHHA REL is based on an endpoint (sensory irritation) not requiring exposure time adjustment and the OEHHA REL is more health-protective, DEQ should consider retaining the OEHHA acute acrolein REL as the basis for the acute acrolein TRV.
Daisy Dong	None
John Stanek	No proposed alternative.
Susan Tilton	*blank*
John Vandenberg	I do not have any alternative to recommend for any or all of these TACs.

General Questions

Related Resources
All materials linked in Document 1: Overview of TRV Review

Discussion Questions and Responses

1. Did you find any errors or have any feedback or concerns about the content in any of the ATSAC review materials?	
ATSAC Member	**Response:**
John Budroe	No general feedback or concerns regarding the ATSAC review material content.
Daisy Dong	None
John Stanek	No additional concerns noted that have not already been addressed during the committee review meeting or reflected elsewhere in the responses to the discussion questions.
Susan Tilton	*blank*
John Vandenberg	*blank*

2. Do you have any feedback or concerns about a specific toxic air contaminant TRV that we have not discussed or flagged anywhere else?	
ATSAC Member	**Response:**
John Budroe	DEQ proposes to use the ATSDR 2017 toluene chronic MRL instead of the OEHHA 2020 toluene chronic REL as the basis of the toluene chronic TRV. DEQ's reason for this decision provided in Workbook 2 is "For chronic TRV, DEQ proposes to use ATSDR over OEHHA and IRIS values. While OEHHA's value was published more recently, it is based on fewer and older studies than the ones ATSDR used." ATSDR does use newer studies as the basis of its MRL (Schaper 2003, 2004, 2008; Seeber 2004, 2005; Zupanic 2002) compared to the study primarily used by OEHHA (Zavalic 1998). However, ATSDR used a NOAEL of 45 ppm as the point of departure (POD) for developing its chronic MRL. In contrast, OEHHA used a benchmark concentration ($BMCL_{05}$) of 12 ppm to develop its chronic REL. So, while the ATSDR data set used to develop the chronic MRL is newer than the OEHHA data set, the OEHHA derivation uses a newer and more preferred extrapolation method (benchmark concentration) than that used by ATSDR (NOAEL/LOAEL). It should also be noted that combined with different uncertainty factors used by ATSDR and OEHHA, the TRV based on the OEHHA REL is approximately 9-fold less than the TRV based on the ATSDR MRL. DEQ should reexamine their source choice for the toluene chronic TRV. This example also illustrates the necessity for DEQ to consider extrapolation methods when determining which authoritative source TRV has the "newest science".
Daisy Dong	I made some additional comments on chronic TRVs for 1-bromopropane, methanol, and toluene and acute TRVs for 2-Butanone and Chromium (see details in Workbook 2-Column ATSAC notes).
John Stanek	No concerns noted.
Susan Tilton	*blank*

John Vandenberg	*blank*

Contact

Oregon Department of Environmental Quality
Cleaner Air Oregon Program
cleanerair@deq.oregon.gov

Prepared By:

This document was prepared by Oregon Health Authority. Authors:

Holly Dixon, PhD
Public Health Toxicologist

David Farrer, MS, PhD
Public Health Toxicologist

Dana Crosby, MPH
Environmental Health Assessment Program Coordinator

Non-discrimination statement

DEQ does not discriminate on the basis of race, color, national origin, disability, age or sex in administration of its programs or activities. Visit DEQ's Civil Rights and Environmental Justice page.

Translation or other formats

Español | 한국어 | 繁體中文 | Русский | Tiếng Việt | العربية
800-452-4011 | TTY: 711 | deqinfo@deq.oregon.gov

State of Oregon
DEQ Department of Environmental Quality