Air Toxics Science Advisory Committee (ATSAC)

Meeting 2: January 20, 2023, 1-4pm PT

Meeting Minutes

Meeting Attendees

ATSAC Members	
Jefferson Fowles	California Department of Public Health/New Zealand Government
John Budroe	California Environmental Protection Agency (retired)
Qiaoxiang (Daisy) Dong	California Environmental Protection Agency
John Vandenberg	Duke University
John Stanek	Environmental Protection Agency
Susan Tilton	Oregon State University
Jessica Myers	SRC Inc.
Project Team	
Matthew Davis	Oregon Department of Environmental Quality (DEQ)
Apollonia Goeckner	Oregon Department of Environmental Quality (DEQ)
J. R. Giska	Oregon Department of Environmental Quality (DEQ)
Kristen Martin	Oregon Department of Environmental Quality (DEQ)
Susan MacMillan	Oregon Department of Environmental Quality (DEQ)
Holly Dixon	Oregon Health Authority (OHA)
David Farrer	Oregon Health Authority (OHA)
Facilitation Team	
Ben Duncan	Kearns & West
Angela Hessenius	Kearns & West

Welcome and Introductions

Ben Duncan, Kearns & West, opened the meeting, facilitated introductions from the project team (Oregon Department of Environmental Quality (DEQ) and Oregon Health Authority (OHA)) to introduce themselves, and conducted roll call of Air Toxics Science Advisory Committee (ATSAC) members. Ben reviewed the meeting agenda, which included 1) Finalizing the Charter, 2) Discussion of Authoritative Sources, 3) Presentation and Discussion of Proposed Process for Chronic and Acute Toxicity Reference Values (TRVs), 4) Presentation on TRV Workflow, and 5) Closing and Next Steps.

Finalizing the Charter

Ben reviewed the changes made to the ATSAC operating principles based on the feedback heard from the individual ATSAC member interviews with Kearns & West. Two modifications were made to the operating principles: an additional process step for dialogue and deliberation was added to the framework for identifying agreement and the language was changed to one of the ground rules to limit the discussion to health risk assessment rather than to health science. ATSAC members approved the final operating principles, which have been added to the committee's charter.

Authoritative Sources

Holly Dixon, OHA, and Matt Davis, DEQ, gave a presentation on authoritative sources and the process for selecting TRVs and Ben facilitated discussion on specific questions for feedback from ATSAC members. Holly defined the key lists that the group will discuss. The first was the Priority Toxic Air Contaminants list ("priority list"), which includes over 600 chemicals that are reportable in the Cleaner Air Oregon program. All permitted facilities need to report on these emissions as part of a statewide emissions inventory exercise every three years. DEQ manages and updates this list. During the TRV review process, the project team will be looking for TRVs that apply to the chemicals on this list.

Matt shared that the project team envisions two primary bodies of work for DEQ and OHA during the TRV review process. The first body of work is to review the chemicals on the priority list that already have recognized TRVs to see if any of the authoritative sources have updated these values. The second body of work is to review the chemicals on the priority list that do not currently have TRVs to see if any of the authoritative sources have adopted values that the project team can consider adding to the Cleaner Air Oregon program.

Matt also shared the rationale for the project team's proposed framework for TRV review. Given the practical limitations of DEQ and OHA's staff capacity, the project team plans to use existing values from the authoritative sources as their primary body of evidence for selecting TRVs. Their goal is to develop a hierarchy or algorithm that will be used for all the chemicals on the priority list to evaluate any changes that authoritative sources have made and prioritize which TRV updates should be proposed. In some cases, none of the authoritative sources have existing values or have made updates. The project team expects that the ATSAC will focus on certain chemicals for deeper discussion. Matt noted that the authoritative sources and current TRVs are listed in Oregon Administrative Rule (OAR). DEQ does not have authority to change rules; they must work with an independent rulemaking commission, the Environmental Quality Commission (EQC). This rulemaking process will occur following the project team's work with the ATSAC and generally takes about a year to complete. Given these constraints, the project team has proposed an approach that relies on authoritative sources and does not include a deep dive into every individual chemical.

Matt outlined that the focus of this meeting is on a couple key process questions before the ATSAC begins discussing particular chemicals. These questions include the following: 1) What information should the agencies consider when evaluating work from other organizations as the agencies work to establish TRVs when the authoritative source is DEQ in consultation with the ATSAC? 2) What process should the agencies use to evaluate updated TRVs from the authoritative sources?

John Vandenberg asked whether the ATSAC will have a role in identifying or suggesting other contaminants to include on Oregon's priority list. Matt shared that the chemicals on the priority list are also in rule and require a rulemaking to add to. The agencies are considering whether there are chemicals that have TRVs from authoritative services that should be added to the priority list. Providing input on chemicals to add to the priority list is possibly a role for the ATSAC, but the agencies have internal work to do first to decide to what extent they will take on adding new chemicals to the priority list. Holly added that if any ATSAC members have any suggestions for specific chemicals to pay attention to or resources to share, that input would be greatly appreciated by the project team.

Next, Holly outlined the list of authoritative sources that DEQ is directed to rely upon, which is designated in Oregon administrative rule. These rules are adopted by the EQC. The authoritative sources are the U.S. Agency for Toxic Substances and Disease Registry (ATSDR), U.S. Environmental Protection Agency (EPA), California Environmental Protection Agency (CalEPA), and DEQ in consultation with the ATSAC. Holly noted that in 2021, the EQC added DEQ in consultation with the ATSAC to the list of authoritative sources, which gives DEQ more flexibility in the TRV 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. However, for several reasons, the agencies primarily rely on those three authoritative sources. Holly highlighted that these sources go through extensive peer-reviewed processes to establish TRVs using the best available science and research. For each chemical, expert panels review hundreds of scientific studies to evaluate the weight of scientific evidence, and this public process requires substantial investments of tax dollars. Additionally, 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. In many instances, the results of a state level review would likely confirm the conclusions of the other authoritative sources.

Since developing a TRV is very resource intensive, the project team plans to look for TRVs beyond US EPA, ATSDR, and CalEPA only if all of the following criteria are met: 1) none of the authoritative sources have a value, 2) the chemical has a high likelihood of harming public health in Oregon, 3) there is adequate scientific information available, and 4) there is agency staff bandwidth. Due to limited resources, the project team's first preference is to look at TRVs from another state or country. These values could be modified, if necessary. In cases where the agencies in consultation with ATSAC look at TRVs developed by an organization not on the authoritative source list, they will check to make sure that the other organization's selection of points of departure and application of uncertainty factors are congruent with the approach taken by Oregon's three main authoritative sources. If not completely congruent with that approach, the project team could still use portions of that agency's work but make some modifications to point of departure selection or uncertainty factor application to make it more consistent. The project team expects to consult with ATSAC members for assessment and application if they pursue this type of work.

Jessica Myers asked how the project team intends to handle the fact the values may be orders of magnitude different between the three authoritative sources, since each use different methods? Holly noted that while there are differences between the three sources, there are also a lot of similarities, and that they will discuss this question in more detail during the portion of the meeting when the group reviews and discusses the proposed process for selecting acute and chronic TRVs. Jessica noted that the same methodology considerations for the authoritative sources will also apply to the other sources, and that it is important for the group to consider this up front.

Discussion Question: What should DEQ and OHA consider when reviewing values from other organizations or agencies not listed as an authoritative source?

- Jessica Myers: Jessica shared that in her opinion, Texas Commission on Environmental Quality (TCEQ) has some great values, including for manganese. There are also other states that develop their own values, including Michigan and New York. Jessica shared that it is important to classify state agencies above other non-governmental sources that may have bias in developing those values. Additionally, Jessica suggested that DEQ and OHA look at sources that are using the

methodology that they want to drive these values, because even the methods between the three authoritative sources can be very different.

- John Vandenberg: Some of the considerations should include whether the other organization or agency has published their methodology for their assessments. It is important to have that reference to make sure there is consistency with the values from the authoritative sources. Having a public comment as part of the process of developing those values is also essential. John suggested focusing on other agencies rather than non-governmental organizations (NGOs) whose process and motivations may be less clear. John also pointed out that newer values may not necessarily be better. If there are competing values, John suggested that DEQ and OHA should try to understand why they are different and whether one is more consistent with Oregon's approach.
- John Budroe: John agreed that availability of the methodology and specific derivation that is used for a chemical as well as public comment and peer review should all be transparent. Additionally, John shared that the health value should be based on actual adverse health effects. Some health values are based on other factors such as odor perception, for example.
- Jefferson Fowles: Jeff agreed with other ATSAC members' points and added that it is important to ensure that other agencies' values that are adopted are de novo derived values through their own authoritative process based on primary data, not adopted from another source.
- Susan Tilton: Susan echoed the importance of considering and understanding the methodology for the other values and allowing input on those values through a public comment period.
- Daisy Dong: Daisy suggested that DEQ should develop guidance since different agencies may base their analyses on the same studies but apply different criteria. She noted that even within CalEPA, different branches (e.g., the Department of Pesticide Regulation (DPR) vs. the Office of Environmental Health Hazard Assessment (OEHHA)) use different methods such as uncertainty factors. DEQ and OHA may need to develop criteria that are more conservative or science based. Daisy also noted that even within the authoritative sources, some of the most recent science might not be incorporated. This committee could help the agencies create this guidance so Oregon can develop their own criteria, which should guide the values that are chosen.
- John Stanek: John shared that when looking at the availability of reference values for hydraulic fracturing, they came up with a similar approach using criteria and searchable databases. In their report, there is an extensive appendix with sources that might be available, though this process was based on oral rather than inhalation reference values. Potential alternative sources could be listed there for values that cannot be found elsewhere. For example, the World Health Organization (WHO) has databases for some reference values. This report could be considered as a resource that outlines an approach that was used for over 1,000 chemicals.
- John Vandenberg: As Jessica mentioned, some of the authoritative sources will have quite different values. In these instances, Oregon could choose the lower value, which would be more health protective, in the face of uncertainty about what value to choose. John emphasized that this is a policy choice rather than a science choice.
    - Matt acknowledged that this group is not a decision-making body, but it is appropriate for this group to discuss the application of health science at the interface of science and policy.
    - John added that the methods that are used often delineate science policy choices that have been made during an assessment process. Other agencies often develop set

guidelines for risk assessment that outline the science policy decisions that have been made. The end decision is informed by the policy choices made along the way.

Proposed Process for Chronic and Acute Toxicity Reference Values

Next, Holly presented the proposed processes for selecting TRVs from the authoritative sources, and Ben facilitated the ATSAC members' responses to the prepared discussion questions. DEQ uses the term TRV when referring to any similarly derived health-based toxicity value. Both acute and chronic TRVs are defined in OAR. For Oregon DEQ, acute refers to exposure to a toxic air contaminant over a 24-hour period and chronic refers to exposure to a toxic air contaminant over a one-year period for noncarcinogens and a lifetime of exposure for carcinogens. DEQ has used and proposes to use different processes for selecting chronic TRVs and acute TRVs.

Chronic TRVs

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

Holly shared a table that includes the authoritative sources and chronic TRV names. Holly pointed out that within the EPA, DEQ and OHA look at values from the Integrated Risk Information System (IRIS) and the Provisional Peer Reviewed Toxicity Values (PPRTV). Within CalEPA, the agencies look at values from the Office of Environmental Health Hazard Assessment (OEHHA). Holly added that the project team welcomes feedback from ATSAC members on other values within the EPA or CalEPA that they should look at. 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 rule. In the past, the agencies chose to select the most recently published TRV from among the authoritative sources. 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 to ensure that the TRVs are based on the most recent review of scientific studies by an authoritative source.

Discussion Question: What questions or feedback do you have on the general process of selecting the most recently published chronic TRV?

- Jessica: ATSDR has an intermediate value also, which means that they do not typically use subchronic studies to develop chronic number because the subchronic studies would be used for the intermediate values. However, EPA consistently uses subchronic studies, so the durations from these sources are going to be slightly different depending on the data available.

- John Stanek: No comments at this time.
- Susan Tilton: When these values are being compared and there is a difference in the most recent value, are you aware of what is contributing to this difference? Is it because there is new data available? Has the methodology changed?
    - David Farrer, OHA, acknowledged that as ATSAC members have shared, there are differences even within an agency in the approach that they take to develop a reference value. The project team has been looking at many values from many sources at the same time through a comprehensive process, and David observed that the biggest predictor of differences appears to be the era during which the assessment was conducted. For example, an EPA Integrated Risk Information System (IRIS) reference concentration developed in 1991 probably used a different method than EPA IRIS would from 2023. Benchmark dose modeling is a good example. In the 1990s, all the sources were using No Observed Adverse Effect Level (NOAEL) or Lowest Observed Adverse Effect Level (LOAEL) as points of departure. Over time, across all agencies, there was a clear preference to move towards benchmark dose modeling, and nowadays, all the agencies' first choice is to use benchmark dose modeling if they can. For David, this was an argument in favor of using the most recently published study. At any point in time, there are more similarities than differences across the agencies' methods, but the pace of keeping up with the reviews of agencies differs.
    - Susan added that if the focus is on improvements in the methodology, then there is a good rationale for focusing on the most recently published data. She emphasized the importance of understanding why there are differences rather than automatically using the most recent data.
- Jefferson Fowles: Jeff suggested that it would be helpful to be aware of whether the difference in value is due to the study, the endpoint selected, the point of departure, the benchmark dose, or an uncertainty factor difference, which has been applied differently by different organizations. It would be helpful if there were a categorical way to quickly triage the differences. If there's a new study, then that raises the need to dig into the weeds compared to whether there is a methodological difference that is known across different agencies.
- John Budroe: First, John clarified whether recently published TRVs include both cancer and noncancer values, and the project team answered yes. John then provided an example of ethylene oxide. Both EPA and TCEQ have very recent evaluations based on the same general dataset with dramatically different opinions on how that data should be modeled, resulting in a three order of magnitude difference between the cancer potencies. In this case, it would be necessary to investigate the details of both evaluations to figure out which value to select.
- Daisy Dong: Daisy asked whether the project team will present the ATSAC with all the TRVs that are found from different sources, or only the value that they think is the most reasonable? Daisy agreed with other ATSAC members that the value selected depends on what endpoint is used and what methodology and type of modeling is employed in the study. When there are multiple TRVs that are all scientifically justified, the decisions should be based on which criteria Oregon wants to use. Daisy also suggested that DEQ and OHA look for values developed by the DPR within CalEPA, which has different values than OEHHA, as well as the Office of Pesticide Programs (OPP) within EPA, which has different values than IRIS. Daisy thinks that it would be better if the project team presents the all the TRVs that they can find and let the ATSAC help

them decide which one to choose, rather than only sharing the study and value that the project team initially chooses. That would allow the committee to look at all the selection criteria and then make a recommendation to the project team.

- John Vandenberg: John agreed with other ATSAC members that the most recently published TRV should not be selected automatically and that it is important to evaluate what the differences are across the studies. John agreed with David Farrer's point that the methodologies for some areas have changed and with John Budroe's comment pointing out that different authoritative organizations can have very different values. John felt that it would be a mistake to take the most recent value automatically. If there are different values for different authoritative sources, that requires an evaluation.

Matt reflected that he is hearing from the group that the approach of using the most recently published TRV could be used as the first step in a stepwise process that would help the project team identify chemicals that need a deeper investigation into differences in methodology. Matt sought confirmation from the group that this is an accurate characterization of the discussion that identifying the most recently published TRV is an important step but should not be used as the sole decision-making framework. ATSAC members confirmed that this is an accurate summary of feedback. It can be helpful for screening values and looking at as a starting point, but should not be taken automatically. If there are multiple sources, what are those multiple sources and why are they different are key questions that need to be determined. Which one follows the guidelines more closely to what Oregon DEQ would develop, or which one is more protective of public health?

David asked the group if the recency takes on more importance if there is a greater gap between the newer study and the older study. Perhaps if they're only a couple of years apart in the same period of peer-reviewed literature, it might be more important to look in more detail at the two studies. John Vandenberg shared that renewed assessments of IRIS values did not substantially change the value for most chemicals nor were the new values consistently higher or lower. While the benchmark dose modeling is superior to using a NOAEL and LOAEL, the results are often not that different in application.

Daisy asked whether if there is only a very old TRV available, are the agencies going to update the TRV using the newer methodology? John Budroe shared that most of the older health values are updated when a new dataset becomes available. If there are TRVs that have not been updated since the 1980s or 1990s, it is often because there is no new data to generate a new health value from. John Vandenberg agreed that many of the older IRIS assessments have not been a priority to update since there have not been any new studies. Resources tend to go to conducting assessments of other chemicals that the agency regulatory programs are prioritizing.

In response to these questions and comments, Matt referred back to the criteria that the project team introduced, which determine when the agencies will take a deep dive into specific chemicals with this committee versus not. One of those criteria is that none of the authoritative sources have a value. Another way to frame Daisy's question is whether these are the right criteria, or whether there should be a temporal cutoff. Matt reminded everyone that the group is discussing when they are willing to rely on a value understanding that there are limitations, versus when something should be designated for deep review by agency staff in consultation with this group with the understanding that it will not be possible to do that level of review for all the chemicals.

Daisy shared that DPR updates the reference concentrations after a certain time threshold to be protective of public health. Using a different methodology (e.g., using benchmark dose modeling rather than a NOAEL or LOAEL) yields different values. Daisy also shared that for inhalation, EPA developed new guidance in 2012 for portal-of-entry effects, which increases rather than lowers TRV when using that guidance compared to the previous methodology. There is also a potential to be challenged by the public for not using the most recent methodology and science. EPA also came out with new modeling software for particles to calculate the human equivalent concentration. Given these advancements in methodology, the value could be completely different even if an assessment is based on older studies. Jessica added that the portal-of-entry effects and the 2012 guidance has a huge effect; it causes the point of departure to go down to one tenth of the value using the previous guidelines versus the default factor of 1:1 that is recommended now. Jessica said that even though the 2012 guidance document came from EPA, most of EPA still refers to the older guidance and ATSDR does not use the new inhalation guidance. Jessica reiterated that Oregon's policy should guide the value selection because that will determine which sources' values make the most sense. John Stanek shared that the 2012 EPA document being referenced is a status report that is being adopted by some but is not official guidance. Daisy shared that at CalEPA, they adopted the conversion factor of one for port-of-entry effects from the newer guidance. Jessica shared that TCEQ also adopted the updated inhalation reference and retroactively updated values that were based on the old guidance.

Acute 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

Next, Holly showed a table that includes the authoritative sources, acute TRV names, and assumed exposure times. As mentioned earlier, DEQ and OHA assume 24 hours of exposure for acute TRVs. Holly noted that 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 mechanisms to address emergency situations other than how these values will be applied.

In the past, DEQ and OHA chose acute TRVs from the authoritative sources with exposure times that best matched DEQ and OHA's assumed exposure time of 24 hours. This table shows the authoritative sources listed in order of that preference. DEQ in consultation with ATSAC can also set an acute TRV. This provides flexibility in choosing and setting acute TRVs that best match the 24-hour exposure duration definition. Holly pointed out that 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. The first is when it is not clear when developmental health effects are initiated within the developmental period. The second is when 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. Holly acknowledged that deriving acute TRVs from chronic TRVs is not ideal and, where appropriate and possible, DEQ and OHA would prefer to derive an acute TRV from a study with an acute exposure duration. During their review of acute TRVs, the agencies plan to try to find alternative TRVs that are based on studies with short-term/acute exposure periods. Holly noted that the project team is interested in any feedback from ATSAC members on how to best look for

acute TRVs from other organizations and have an order of preference to help select TRVs to bring to the committee in future meetings to discuss.

Discussion Questions: Do you have questions or feedback on the authoritative source order preference for selecting acute TRVs?

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?

- Jefferson Fowles: Jeff shared that he does not have any major disagreements with the authoritative source order as listed. The use of the OEHHA acute one hour exposure value will present some extrapolation issues to go to 24-hour exposure, especially for some chemicals. For chemicals that are almost entirely portal-of-entry concerns, it may not be as big of an issue. If the issues related to extrapolation are caveated appropriately, this should be okay. It will also likely require the use of an uncertainty factor. In terms of additional sources of acute values, it might be useful to investigate acute reference doses that exist by agencies that collect or require that information from companies that conduct studies to meet regulatory requirements. For food safety, there are acute reference dose lists from sources such as WHO and the European Food Safety Authority. Those could be areas where the group could consider drawing upon at least the key studies if a chemical has a systemic effect. For acute reference doses, it's typically not done for inhalation exposures, so you must take the systemic effect and reach a conclusion, whether or not it can be easily translated to an inhalation scenario. The European Food Safety Authority and other country authorities like Australia that derive or require companies to provide data that they derive the values from. There are various ways that agencies end up with these numbers, but at least it does provide an acute number. These are often based on animal studies that are not necessarily an acute exposure, they may be a developmental or reproductive toxicity study. There could be a subacute study. It's very rare to find a one-hour exposure studies. Typical acute studies used for classification and labeling are not going to be sensitive enough to pick up subtle effects. There might be some utility in looking at an assembly of acute reference doses that exist internationally.
- John Vandenberg: John suggested that language should be added to the issue brief to clarify that the toxicity reference values being discussed are for acute exposures, not for acute effects. There can be long-term effects from acute exposure, like developmental toxicity. This group probably understands that the acute TRVs refer to exposure, but this should be clear and explicit to avoid confusion for the reader. John also noted that it would be more helpful if the table of chronic TRV values was separated by cancer and noncancer values. John advised that the project team be as clear as possible in distinguishing exposure versus effects when discussing acute or chronic exposures and either cancer or noncancer effects. There are studies that have been done of just a couple of hours of exposures, particularly for developmental and neurological effects, that can have lifelong effects.
- John Stanek: John shared that the majority of sources he can think of, such as the EPA's Acute Exposure Guideline Levels (AEGL) values, were based on acute values for inhalation associated with advisory levels and emergency situations.

    - Jefferson: Jeff agrees that the AEGL values do not have margins of safety built in that a lot of other values do. However, they often have a fairly rigorous assessment of the time duration adjustment. That could be potentially useful to try to assess to what degree a study of a different duration the TRV needs. It might be useful to consider some of these documents even if the numbers themselves are not perfect fits.
- John Budroe: The AEGLs might be useful as a secondary source, but the numbers tend not to be that useful for this context. John shared that extrapolating from AEGLs for acute health values is something that OEHHA would only do with great trepidation and did not ultimately do.
- Daisy: DPR had the same problem with reference doses. Their strategy, since they are equipped with resources for comprehensive risk assessment, is to look through all the studies for any short-term or acute effects. Even in a chronic study, it's sometimes possible to find an endpoint that represents an acute exposure effect. For Oregon, the best approach might be if there's no acute TRV, to look at to the development studies. DPR assumed a developmental window exposure that could have resulted from a one-day exposure. It's a reasonable assumption that the effect could be derived from a single day. ATSDR has a toxicological profile, and the agencies could look at their developmental studies to see if there's any effect that they can use to derive acute exposure. Another alternative is to use any short-term study, such as within a week of exposure. Using a chronic value is the last option. DPR has a tiered process. For full risk assessment, they look at any study to find any effect associated with acute exposure.
- Jessica Myers: TCEQ has acute values for all the chemicals that are monitored in the state of Texas. Whether those have gone through a full review or have used surrogation or read across to develop them, those are available. Jessica also shared that she would hesitate to use ATSDR intermediate values to derive an acute value considering that some of those studies could be based on exposures up to a year and Oregon is trying to develop a value for a single day. That kind of duration adjustment might not be practical.

Holly asked if the group if the Superfund Health Risk Technical Support Center (STSC) is a source within EPA that DEQ and OHA should be looking into. ATSAC members were not familiar with this program.

TRV Workflow Presentation

Holly outlined the proposed TRV review process. After considering all the feedback heard from ATSAC members during this meeting, DEQ and OHA will begin the next steps of this TRV review process. DEQ and OHA will have two sets of TRVs to review. The first is the list of existing TRVs. These are currently in rule, and the project team wants to check this list to see if there are any updates and make sure all the information is accurate. Then, they will also check for any updates to the list of priority toxic air contaminants to see if any new TRVs should be added. For the sets of TRVs to review, agency staff will check TRV information from all authoritative sources and gather information on other TRVs that could be adopted from other organizations or developed. Gathering information from other organizations will be dependent on the factors discussed today as well as staff bandwidth.

Then, agency staff will select initial TRVs using the processes discussed today. Agency staff will hold a series of meetings with ATSAC to share a variety of information learned during the review and ask for feedback. During these meetings, agency staff will share the results of the TRV selection process and ask ATSAC members technical questions that arose during the review process. They expect to discuss other

tangential work and decisions during those meetings. One example of other tangential work are the hazard index designations. In future meetings, DEQ and OHA may consult with the ATSAC about whether a toxic air contaminant meets the criteria in rule for changing hazard index designations. In follow-up ATSAC meetings, DEQ and OHA will seek input from the ATSAC if they propose to deviate from the predetermined process or propose to use a TRV that is not from one of the three main authoritative sources.

Currently, the project team anticipates consulting ATSAC members on TRVs for at least two air contaminants, including manganese (acute TRV) and 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.

Holly also provided an overview of the TRV Update Tool that DEQ and OHA have developed and are continuing to refine to organize the review of existing TRVs and to add new TRVs to the list. This tool is an organized excel spreadsheet for aggregating and reviewing authoritative source information. While the project team is not seeking feedback on the layout or setup, they wanted the ATSAC members to be aware of the tool they are developing and how they plan to use it.

The tool is designed to work on one chemical at a time to reduce the chance of entering data for the wrong chemical. Agency staff will enter in information from each authoritative source for each contaminant with at least one TRV. This tool is more than a data entry form; it also aggregates information and allows side-by-side comparison to visually confirm changes and has built-in checks to minimize entry errors. The agencies will also use the tool to track decision-making. For example, when the project team proposes to deviate from the normal algorithm, the rationale can be recorded within the tool. Further, the tool also creates comprehensive key tables of all the information that is entered. These key tables can be queried in any number of ways and the proposed changes are all trackable and directly linked to the appropriate reference information.

The team designed this tool with future iterations of this review in mind. The end goal is to turn this tool into a database for the next round of TRV review. They are investing a lot of time in the development of this tool since they intend to use it to streamline review, minimize input error, and track changes across future TRV update cycles.

Holly also pointed out that reviewing TRVs will be a large, time-consuming effort for their team. They expect that data entry, decision making in the tool, and quality control processes will take hundreds of hours of staff time. The work is expected to be this time-consuming for several reasons, including that they need to look for new TRVs that are not currently in rule; they need to check for new data and sources of information about TRVs they already have; and they want to verify the units, dates, and other information of each TRV as they transition to this new TRV tool. They also need to track target organ information, which is not present in most lists from authoritative sources, and they need to track additional information related to hazard index designations.

Discussion Questions: Do you have questions or comments on the proposed process for reviewing and providing feedback on DEQ's and OHA's work?

What other feedback or input do you have for DEQ and OHA?

- John Vandenberg: Is this tool or the results going to be publicly available?
    - Holly: They are trying to figure out what version to make public. The entire tool is public record, but they were thinking about making some of the summary tables accessible and available online. The database is the end goal.
    - John shared that considering the work and time that is being put in, this tool would be valuable for other organizations to benefit from this work.
    - It could be possible to export the tool into a format that people can search and sort independently.
    - Kristen Martin, DEQ, added that the structure of the tool is that it is capturing this data in background tables that can be summarized in many ways. The team has been brainstorming different ways to make these tables.
    - John added that if they can create an export function, that would be very helpful for users.
    - John Budroe: John agreed that it would be beneficial to be able to export this tool and allow people to use it.
- Daisy: Daisy added the challenge will come when there are multiple values from different authoritative sources: If there's more than one value, how do you choose? Each agency has their own guidance and methods, so it will eventually come down to Oregon's own hazard risk assessment decision.
- Holly provided some additional details on how the tool is built. There is a tab for each chemical and a section for each authoritative source, and then there is another section for DEQ. They have flexibility and can add additional criteria here. There's also a summary table at the end that summarizes all the information so they can visually compare it and make a selection. Holly shared that they are also deciding how much information to put in the tool and how much time to spend on each individual source.
    - Kristen added that the tool will show a recommended value based on the embedded logic, and the team can choose to use that recommended value or not.
- Daisy: Do you attach the critical study and justification in the table, or just put the values?
    - Holly: Right now, the tool tracks the value, the date the value was created, and who it was created by. There's also a separate place with target organ information for each chemical that tracks the critical effect, a link to the documentation, uncertainty factors, and any information on developmental or reproductive hazards. They are tracking this information and there is flexibility to change this at this time.

David asked if any ATSAC members know the locations of comprehensive lists of all the reference values that their organization has, that would be helpful to send to the project team, especially if there are particularly useful lists that include a lot of data in one place. David shared that the team already has this information for IRIS, PPRTVs, and ATSDR, but may not have this for OEHHA. These kinds of lists are helpful for populating the tool with data.

- John Budroe said that he can check if he has access to a similar list from OEHHA that he can share.
- John Vandenberg added that for some systems like IRIS and PPRTVs, there's a public-facing component, but the team may be able to contact the staff and they may be able to have the

programmers export the data, which would facilitate uploading that data into Oregon's system and save the team some time.
- Jessica shared that TCEQ moved to a database system, and they are able to create Excel files from that system. They can also specify which types of chemicals are exported.

Ben asked if any ATSAC members have final questions or comments. ATSAC members shared that they agree with Oregon's approach and commended the team for the work done so far.

- John Vandenberg: Air toxics can be challenging due to limited availability of scientific information and studies. There are a certain number of chemicals that are always of concern to the public. There might be other sources of potential exposure information, such as the toxic waste inventory and pesticides registration, that might be appropriate to consider. In North Carolina, they are monitoring the level of exposure to emerging contaminants such as PFAS and PFOA chemicals. As Oregon develops their list of chemicals, they might want to consider emerging contaminants that have not been recognized in the past.
- John Budroe: There are other sections in OEHHA that are also working on pulling in values from other state and federal programs. For example, there is a program at CalEPA called the Study of Neighborhood Air near Petroleum Sources (SNAPS) that looks at emissions from oil and gas facilities. It might be possible to share information with people working on this program that are encountering similar challenges.
- John Stanek: John shared that in the appendices of the report that he shared with the project team, there are references to a couple databases that have since moved. John will try to locate and share these databases that DEQ can potentially use as another resource.

Closing and Next Steps

Ben asked the project team to share the next steps. Matt noted that the first step is for the project team to debrief what was discussed during this meeting and invited ATSAC members to send any additional thoughts after the meeting to the team via email or an offline conversation for the next couple of weeks following the meeting. David added that the meeting minutes are the main deliverable and public record from ATSAC meetings, and the ATSAC members will have an opportunity to review the meeting minutes to ensure that comments were captured accurately.

Matt shared that the project team will finalize the logic that will be embedded in the tool and will communicate this decision to the ATSAC. DEQ and OHA will come back to the ATSAC and share the results of this initial screening. That will also give the team a better sense of the overall workload and how many chemicals they anticipate investigating throughout this review process. Over the next couple months, the team will work through the process to bring a specific list of chemicals to the ATSAC. The next ATSAC meeting will likely not be for several months. Ben thanked everyone for participating and adjourned the meeting.

Summary of Resources Recommended by ATSAC Members

- Appendix G in the U.S. EPA 2016 report titled "Hydraulic Fracking for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States"

- U.S. EPA 2012 report titled "Advances in Inhalation Gas Dosimetry for Derivation of a Reference Concentration (RfC) and Use in Risk Assessment"
- U.S. EPA CompTox Dashboard
- North Carolina Environmental Quality Secretaries' Science Advisory Board October 2022 Presentation (available upon request)