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Memorandum

Air Quality Program

March 4, 2019

To: Stakeholders for 460 Rulemaking

From: Elena Guilfoil, Environmental Planner, Policy and Planning Section
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Subject: Recommendations for updating Chapter 173-460 WAC

This Memorandum provides our updated recommendations for establishing:

- SQER model parameters
- De minimis emission values
- ASILs for groups of chemicals (toxicity equivalence)
- Chemicals not listed as a TAP
- 2-significant digits in the table
- Other changes to the rule

Rulemaking goals

Rulemaking goals:

- Update the 150 look-up table.
- Establish one ASIL, SQER, and de minimis emission value for each TAP.
- Continue 2009 purpose of SQERs

  > "The rule revision also establishes Small Quantity Emission Rates (SQERs) and de minimis levels for every TAP. SQERs are used as a screening tool by permit engineers, and are levels of emissions below which dispersion modeling is not required to show that a new or modified source is below an ASIL. De minimis levels are small levels of emissions that Ecology has determined not to pose a health or environmental risk, and so don't require regulation. The previous version of the rule did not provide TAP-specific SQERs in the rule language, and had no provisions for de minimis levels. Providing this screening tool and de minimis levels allow for improved permitting efficiency for both the applicant and the permitting authority while still remaining protective of public health and the environment." (2009 Concise Explanatory Statement, Publication 09-02-008, pg. 1)

- Review 2009 SQER model parameters, updating as necessary, to establish the SQER

Establishing the SQER Model Parameters

We reviewed three options in light of our rulemaking goals:

- Option 1: one model run that reflects one set of SQER parameters
- Option 2: updated parameters that reflect several point and volume sources
- Option 3: revised parameters that reflect a 5-meter building, capped stack and an urban population

Recommendations

Based on our review, we recommend:

- Using the model parameters in option 2 to establish the SQER rate that is applied to the applicable ASIL
- Requesting that permitting agencies collect data on the types of emission parameters observed from new sources of air toxics so Ecology can evaluate whether the parameters used to determine SQERs remain appropriate.

Background information

For more information, refer to the materials related to the Jan. 23, 2019 stakeholder meeting.

Table 1. Model parameter options

Questions in the dispersion model	**Option 1** One model run 2009 parameters	**Option 2** 124 model runs Parameters reflect		**Option 3** One model run Other parameters
Model?	Screen 3 Version 96043	AERSCREEN Version 16216	AERSCREEN Version 16216	AERSCREEN Version 16216
Source?	Point	Point	Volume	Capped point
Emission rate?	1 gram per second	1 gram per second	1 gram per second	1 gram per second
Stack height?	5 meters	10, 10.5, and 11	N/A	5 meters
Stack diameter?	0.33 meters	0.33 meters	N/A	0.33 meters
Exit velocity?	0.00001 meters per second	1, 5, and 10 meters per second	N/A	0.00001 meters per second
Stack temperature?	293.15 K	Same as ambient	Same as	Same as ambient
Receptors above ground?	Yes, 1.6 meters	Yes, 1.6 meters	Yes, 1.6 meters	Yes, 1.6 meters
Urban or rural?	Rural	Rural	Rural	Urban. Pop 150K*
Building downwash?	Yes	Yes	N/A[1]	Yes
Building height?	5 meters	10 meters	10 meters	5 meters
Minimum horizontal dimension?	10 meters	10 meters	10 meters	10 meters
Maximum horizontal dimension?	20 meters	20 meters	20 meters	20 meters
Complex terrain?	No	No	No	No

Questions in the dispersion model	Option 1 One model run 2009 parameters	Option 2 124 model runs Parameters reflect		Option 3 One model run Other parameters
Meteorology?	Full	Full	Full	Full
Use discrete distances?	Yes, 50 meters	Yes, 5 to 50 meters in 5 m increments	Yes, 5 to 50 meters in 5 m increments	Yes, 5 to 50 meters in 5 m increments
Terrain height above	No	No	No	No
Comparison to existing SQER	SQER/7	SQER x .83		SQER/7.2

* Population 150,000 is representative of size of small city.

Establishing the de minimis emission value

We discussed options for establishing the de minimis emission value at several stakeholder meetings. Continuing the 10-year practice of providing a buffer between the SQER and de minimis value is an appropriate regulatory mechanism. This design provides local air agencies an ability to review systematically new sources of air toxics to ensure impacts are minimized even in situations where emissions may be below the SQER, but the facility configuration is not ideal for pollutant dispersion. Agencies will continue to review emissions greater than the de minimis values and require the application of TBACT. Because we have no data on the impacts of applying the SQER divided by 10, we are unable to evaluate the impacts to determine whether this value would be protective. We will be asking the permitting agencies to begin collecting data so we can evaluate this option in the future.

Recommendations

- Continue the existing rule structure:
  - De minimis established by SQER/20
  - Maintain current de minimis levels for criteria pollutants to provide consistency with threshold limits in WAC 173-400-110(5)
- Request that permitting agencies collect air toxics permit data to inform conversations and decisions to revise the de minimis during future rulemaking.

Background information

For more information on the options, refer to the materials from the Jan. 23, 2019 stakeholder meeting (presentation, meeting summary, comment letter).

Options

- SQER/20. This is the existing approach that applies the regulatory principal for establishing criteria pollutant thresholds to the toxic thresholds.
- SQER = de minimis. This option would establish the screening tool level of emissions below which dispersion modeling is not required as the level that does not pose a health or environmental risk. No evaluation of emissions below these values is required.
- SQER/10. This option would apply the 10 fold factor as found in:
  - Risk difference between 10^{-6} and 10^{-5}

- EPA's 1980 PSD guidance
- Engineering safety factor
- Idaho

Review ASIL for groups of chemicals (toxicity equivalence)

After additional review, we have decided to not include a requirement to calculate toxic equivalence of mixtures of dioxin-like compounds and carcinogenic PAHs. Adding additional steps to consider toxic equivalence of mixtures conflicts with the rulemaking goal of establishing one value for each TAP in the lookup table. We intend to collect permit data to determine whether we want to evaluate this in a subsequent rulemaking.

Recommendations

- Not include ASILs for mixtures of dioxin-like compounds and carcinogenic PAHs, thus there will be no requirement to calculate toxic equivalence for mixtures of dioxin-like compounds and carcinogenic PAHs.
- Collect permit data to evaluate the impacts of this decision for possible evaluation in a subsequent rulemaking action

Chemicals not listed as a TAP

The 2009 TAP list did not include six chemicals that met the criteria for listing:

- Acetone (solvent): EPA says that acetone is neither a hazardous air pollutant nor a volatile organic compound. "[T]oxicity from exposure to acetone occurs only at very high levels, therefore it has a low potential for harming either human health or the environment."[1] CARB removed acetone from its list of toxic air contaminants in 1996.[2]
- Malathion: insecticide in the chemical family known as organophosphates
- Fuels
  - Kerosene-based fuels: kerosene, jet fuel (JP-7, JP-4)
  - Fuel-oil #2 (home heating oil distinct from diesel #2)

We could not find documentation for not listing these TAPs in the 2009 rulemaking record. However, we think it is reasonable to exclude these liquid fuels as TAPs.

For consistency, if we do not list the two jet fuels in 2009, then we should not list JP-5 and JP-8 for which ATSDR developed minimal risk levels in 2017.

Recommendations

- Do not list these chemicals and the 2 additional jet fuels as TAPs
- Consider evaluating the impacts of this decision in a future rulemaking

2-significant digits in the table

[1] EPA Memorandum from Dan Rosenblatt to Lois Rossi, "Reassessment of One Exemption from the Requirement of a Tolerance for Acetone," June 13, 2005, page 2.
[2] CARB, Toxics Introduction website, Removal of Acetone, downloaded from https://www.arb.ca.gov/toxics/tac/intro.htm. Accessed March 4, 2019.

We decided to calculate ASILs to 2-signifcant digits because most toxicity values are reported to one or two significant digits. Because SQERs are based on ASILs, we also calculated the SQERs and de minimis emission values to 2-significant digits.

Due to this rounding convention, de minimis emission values may not be exactly 20 times lower than the SQER. For example:

TAP	EXISTING DE MINIMIS	DRAFT DE MINIMIS
Nitrogen Dioxide	0.457	0.46
Sulfur Dioxide	0.457	0.46
Carbon Monoxide	1.14	1.1

Recommendations

- Use 2-significant digits in the table and adjust the rule language to reflect this

Other changes to the rule

Revising the values in the table in WAC 173-40-150 to two significant digits requires alignment with other parts of the rule to ensure consistency. We will need to revise WAC 173-460-040 and 080 to align with the use of two significant digits.

Recommendations

- Revise WAC 173-460-040 and 080 as needed