United States
Environmental Protection
Agency

Summary of Public Comments and EPA Responses for February 2024 Beta Release of TANKS 5.0 and Updates to Chapter 7.1 of AP-42

September 2024

Summary of Public Comments and EPA Responses for February 2024 Beta Release of TANKS 5.0 and Updates to Chapter 7.1 of AP-42

U. S. Environmental Protection Agency
Office of Air Quality Planning and Standards
Research Triangle Park, NC 27711

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Introduction

This document provides the U.S. Environmental Protection Agency (EPA)'s response to public comments on the release of the beta version of TANKS 5.0 and updates to AP-42, Chapter 7.1, Organic Liquid Storage Tanks. The comment period extended from February 29, 2024, through April 30, 2024.

TANKS 5.0 (released in February 2024) and TANKS 5.1 (released in September 2024) are designed for use by local, state, and federal agencies, environmental consultants, and others who need to calculate air pollutant emissions from organic liquid storage tanks.

TANKS 5.0 and TANKS 5.1 use chemical, meteorological, deck fitting, and rim seal data to generate emissions estimates for several types of storage tanks, including:

- Vertical fixed roof tanks
- Horizontal fixed roof tanks
- Internal floating roof tanks
- External floating roof tanks
- Domed external floating roof tanks

The list of commenters is arranged numerically by comment identifier (ID) and includes the commenter name and commenter affiliation (if supplied). The comment IDs assigned in this document are relatively random and are used only to track the origin of each comment.

List of Commenters

Comment ID	Commenter Name	Commenter Affiliation
EF-Comment-1	Don Kite	ECCI
EF-Comment-2	Michelle Seguin	RWDI
EF-Comment-3	Georgia Perkins	SLR International Corporation
EF-Comment-4	Loree Fields	AECOM
EF-Comment-5	Derek Reese	ACC / API / AFPM
EF-Comment-6	Wendy Alexander	Broadbent Inc.
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EF-Comment-8	Danny Wong	NJ DEP
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EF-Comment-14	Ron Sober	RFS Consulting, Inc.
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EF-Comment-16	Randi J. Walker	DEC New York
EF-Comment-17	Catrina Judge	EA Engineering, Science, and Technology, Inc. PBC
EF-Comment-18	Andrea Perez	Hexion
EF-Comment-19	Zachary C. Boyden	DEC Alaska
EF-Comment-20	Allen Pitcher	Berkshire Environmental Consultants, Inc.
EF-Comment-21	Maria Ramirez Fernandez	CEPSA
EF-Comment-22	Todd Tamura	Tamura Environmental, Inc.
EF-Comment-23	Todd Tamura	Tamura Environmental, Inc.
EF-Comment-24	David R.	unknown
EF-Comment-25	Todd Tamura	Tamura Environmental, Inc.
EF-Comment-26	Eric Milligan	DEQ Oklahoma
EF-Comment-27	Michael J. Rinkol	Black & Veatch
EF-Comment-28	Ling Li	Altamira
EF-Comment-29	Michelle Xue	Stantec
EF-Comment-30	Ling Li	Altamira
EF-Comment-31	Lynne Lamia Wallace	Providence Engineering
EF-Comment-32	Todd Tamura	Tamura Environmental, Inc.
EF-Comment-33	Chris Bestfather	Atkins Realis
EF-Comment-34	Stacy M. Dieffenbach	Bryan Research & Engineering, LLC
EF-Comment-35	Claire Hoernschemeyer	SCI Engineering Inc.
EF-Comment-36	Patrick Baum	Peraton
EF-Comment-37	Erin Scott	San Joaquin Valley APCD

Comment ID	Commenter Name	Commenter Affiliation
EF-Comment-38	GaEun Lee	San Joaquin Valley APCD
EF-Comment-39	Aruna Arunagiri	Unknown
EF-Comment-40	Joshua Iguina	Nicklaus Engineering, Inc.
EF-Comment-41	Stacy R Knapp	Maine Department of Environmental Protection
EF-Comment-42	Haya al ali	BEEAH Group
EF-Comment-43	Raoul LeBlanc	S&P Global
EF-Comment-44	Jonae` Wood	Ingredion Incorporated
EF-Comment-45	Todd Tamura	Tamura Environmental, Inc.
EF-Comment-46	Erin Scott	San Joaquin Valley APCD

Comments

The comments on the beta version of TANKS 5.0 and updates to AP-42 Chapter 7.1 were received through EFComments@epa.gov. Copies of all comments submitted are available electronically on the TANKS website: https://www.epa.gov/air-emissions-factors-and-quantification/tanks-emissions-estimation-software-version-5. The comments are grouped by general topic and then by specific comment grouping/ description.

The following topics are covered in this document:

- Positive feedback
- Comments on AP-42 Chapter 7.1
- TANKS 5.0 Data Entry
- TANKS 5.0 Deletions
- TANKS 5.0 Questions and Issues Encountered
- TANKS 5.0 Suggestions
- TANKS 5.0 Reports
- TANKS 5.0 User's Guide
- TANKS website
- General comments

Under each topic, comments are arranged by the commenter name, affiliation, comment ID, and page number. If a comment ID appears multiple times in a comment group, it indicates that the commenter had multiple comments under the specific comment grouping/description. For each comment grouping, the specific comments are listed by comment ID.

1 Positive Feedback

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 9

Commenter Name: Gail Craner
Commenter Affiliation: PW Grosser
Comment Number: EF-Comment-9
Page(s): 1

Commenter Name: Tracey Hiltunen
Commenter Affiliation: DNR Georgia
Comment Number: EF-Comment-10
Page(s): 1

Commenter Name: Tracey Hiltunen
Commenter Affiliation: DNR Georgia
Comment Number: EF-Comment-10
Page(s): 1

Commenter Name: Matthew Hite
Commenter Affiliation: GPA
Comment Number: EF-Comment-12
Page(s): 2

Commenter Name: Catrina Judge
Commenter Affiliation: EA Engineering, Science, and Technology, Inc. PBC
Comment Number: EF-Comment-17
Page(s): 1

Commenter Name: Zachary C. Boyden
Commenter Affiliation: DEC Alaska
Comment Number: EF-Comment-19
Page(s): 1

Commenter Name: Zachary C. Boyden
Commenter Affiliation: DEC Alaska
Comment Number: EF-Comment-19
Page(s): 1

Commenter Name: Ling Li
Commenter Affiliation: Altamira
Comment Number: EF-Comment-28
Page(s): 1

Commenter Name: Chris Bestfather
Commenter Affiliation: Atkins Realis

Comment Number: EF-Comment-33
Page(s): 1

Commenter Name: Stacy M. Dieffenbach
Commenter Affiliation: Bryan Research & Engineering, LLC
Comment Number: EF-Comment-34
Page(s): 1

Comment Group: Positive feedback

EF-Comment-5:

Comment 20: When creating a custom product profile, TANKS 5.0 allows the user to start from a "template chemical." This is a helpful feature as it makes the creation of chemicals and petroleum liquids more efficient. ...

EF-Comment-9:

After testing the Tanks 5.0 application, I found it to be fairly user friendly with some good improvements.

EF-Comment-10:

The Tank Data section worked well. It was pretty easy to input and save tank data for different types of tanks.

EF-Comment-10:

I do like the fact that the application does not have to be downloaded. Also, the user guide is very helpful.

EF-Comment-12:

GPA supports the development of the Tanks 5.0 software. The predecessor Tanks 4.0 was very helpful for industry in the calculation of tank emissions. This is a tool that industry is likely to use if developed especially if it includes the ability to do flashing emissions.

EF-Comment-17:

I look forward to the final version of EPA TANKS 5!

EF-Comment-19**:**

Deserved praise:

The development and beta release of TANKS 5.0 is to be commended. This software is a needed option for permit applicants, permitting agencies, and the public alike for estimating emissions from storage tanks in a simplistic, accessible, and straightforward manner.

EF-Comment-19:

There is an already sizable quantity of locations available to choose from for adding or editing tank details, under the Tank Data page, in the Identification window. The capability to easily add further locations under the Customize page, under the Custom Meteorological Data tab, is a valuable feature.

EF-Comment-28:

Glad EPA updated the tank emission calculation software.

EF-Comment-33:

I've used Tanks 4.09 for many years and was happy to see an updated version available. Beta version looks promising so far based on my preliminary tests.

EF-Comment-34:

Generally, BR&E supports the minor updates [of AP-42, Chapter 7.1, Organic Liquid Storage Tanks] throughout the Proposed Revisions for grammatical improvements and replacing difficult-to-read images.

Response: The EPA thanks the commenters for their supportive feedback.

2 Comments on AP-42 Chapter 7.1

Commenter Name: Todd Tamura
Commenter Affiliation: Tamura Environmental, Inc.
Comment Number: EF-Comment-23
Page(s): 1

Comment Group 2.1: Hourly max and hourly min temperatures

EF-Comment-23:

Ever since the models were first developed and validated, API and AP-42 referenced min and max temperatures as identified by NOAA/NCDC, which are not hourly averages, they are closer to 1-minute averages. After the 2019/2020 AP-42 updates, it was discovered that the met data published from NREL were actually hourly averages rather than min/max temps defined by meteorologists, but that was inadvertent and it wasn't specifically stated anywhere. While the difference is negligible for floating-roof tank emissions it can be appreciable for some fixed-roof tanks (and this is why the difference in averaging times was spotted), because using hourly average max/min instead of 1-minute average max/min decreases both delta-T and delta-P_V in the equation for the expansion factor K_E.

Response 2.1: In response to this comment, "hourly" was removed from the footnotes to Table 7.1-7 that define T_{AX} and T_{AN} in the September 2024 release of AP-42, Chapter 7.1, Organic Liquid Storage Tanks.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 3

Commenter Name: Matthew Hite
Commenter Affiliation: GPA
Comment Number: EF-Comment-12
Page(s): 1-2

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Commenter Name: Stacy M. Dieffenbach
Commenter Affiliation: Bryan Research & Engineering, LLC
Comment Number: EF-Comment-34
Page(s): 1

Commenter Name: Stacy M. Dieffenbach
Commenter Affiliation: Bryan Research & Engineering, LLC

Comment Number: EF-Comment-34
Page(s): 5

Comment Group 2.2: Changes to Equation 1-16 and Equation 1-17

The commenters listed above noted that Equation 1-16 and Equation 1-17 were incorrect because the equations calculated the hydraulic diameter, which is used to handle flow estimations in non-circular ducts, which is not directly applicable to storage tanks. The specific comments were not included below due to formatting issues when attempting to paste the specific comments into this document. All specifics given by each commenter can be reviewed on the TANKS website: https://www.epa.gov/air-emissions-factors-and-quantification/tanks-emissions-estimation-software-version-5.

All commenters suggested replacing Equation 1-16 with:

$$D_{Er} = \sqrt{\frac{L_1 L_2}{\frac{\pi}{4}}}$$

All commenters suggested replacing Equation 1-17 with:

$$D_{Es} = \sqrt{\frac{L * L}{\frac{\pi}{4}}}$$

Response 2.2: These changes have been made in the September 2024 release of AP-42, Chapter 7.1, Organic Liquid Storage Tanks and in TANKS 5.1.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 3

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 3-4

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 9

Comment Group 2.3: Changes to Table 7.1-6

EF-Comment-5:

Table 7.1-6, Note 1, and footnote "a" are in error and require correction. The footnote "a" indicates the information in the table is from Reference 22, the 2017 version of API's Manual of Petroleum Measurement Standards (MPMS), Chapter 19.4, Evaporative Loss Reference Information and Speciation Methodology. However, this table in the MPMS has since been corrected (see Addendum 3 dated October 2023). The MPMS and AP-42 Section 7.1 originally had solar absorptance factors only for paint in "good" and "poor" condition. The "average" paint condition column that was later added does not represent values obtained from any study, but represents the mathematical average of the good and poor (now labeled as "aged") factors. The 2023 version of Chapter 19.4 labels the paint factors not as "new" and "aged" but as "good" and "aged." The following note appears in the MPMS, Chapter 19.4:

> "Good – for paint, paint is in good condition; i.e., the studies that the white factors were taken from clearly used a factor of 0.17 (83% reflectance) for tanks "in good condition" (and this was the condition of the majority of the tanks studied), and there is no evidence to support the idea that this factor only applies to paint that still "retains a fresh shine of having been recently applied." For mill-finish aluminum, surface is shiny. If specific information is not available, a white shell and roof, with the paint in good condition, can be assumed to represent the most common or typical tank surface in use.
>
> Average – for mill-finish aluminum, surface is oxidized but still bright. The value given in each case is the average of the Good and Aged values for that case and does not represent new data.
>
> Aged – for paint, paint is noticeably faded and dull; for mill-finish aluminum, surface is dull."

EF-Comment-5:

We request that AP-42 Table 7.1-6 be revised to change "new" to "good" and to remove the language in Note 1 that indicates the "good" paint factors are relegated to paint that still retains the fresh shine of having been recently applied. There is no evidence to support such a statement. Note "a" should be updated to reference the 2023 version of Chapter 19.4 and state, "If specific information is not available, a white shell and roof, with the paint in good condition, can be assumed to represent the most common or typical tank surface in use."

EF-Comment-5:

Comment 18: Per our comment below on paint solar absorptance factors, please change the "new" factors to "good."

Response 2.3: These changes have been made in the September 2024 release of AP-42, Chapter 7.1, Organic Liquid Storage Tanks.

Commenter Name: Matthew Hite
Commenter Affiliation: GPA
Comment Number: EF-Comment-12
Page(s): 2

Commenter Name: Stacy M. Dieffenbach
Commenter Affiliation: Bryan Research & Engineering, LLC
Comment Number: EF-Comment-34
Page(s): 4

Commenter Name: Stacy M. Dieffenbach
Commenter Affiliation: Bryan Research & Engineering, LLC
Comment Number: EF-Comment-34
Page(s): 5

Comment Group 2.4: Add clarifying language to equations that use effective diameter

EF-Comment-12:

GPA Midstream also suggests expanding the variable definitions for tank diameter for Equations 1-3 and 1-4 to include instructions for applying D_{Er} and D_{Es}. Currently, clarifying language is only present for horizontal tanks.

EF-Comment-34:

BR&E requests clarification on the use of effective diameter in the various temperature equations in which tank diameter is a variable. Specifically, in the Proposed Revisions, Equation 1-6 (ΔTV), Equation 1-29 (TLA), and Equation 1-34 (TV). Our assumption is that these equations were created using vertical cylindrical tanks and as such, the effective diameter should be used for the best approximation of tanks with different shapes. Especially for rectangular and square tanks, which do not naturally have a diameter, but also for horizontal tanks, as the effective diameter may better represent a similar vertical cylindrical tank. BR&E believes that these equations should have similar tank diameter variable definitions as mentioned above for Equations 1-3 and 1-4, but would appreciate guidance from the EPA on this interpretation.

EF-Comment-34:

Additionally, BR&E recommends clarifying the variable definitions for tank diameter for both Equation 1-3 and Equation 1-4. They currently read, "D = Tank diameter, ft, see Equation 1-14 for horizontal tanks". As we understand it, the newly-added DE_r and DE_s should be inserted in these equations for rectangular and square tanks, so we suggest something like:

"D = Tank diameter, ft, see Equation 1-14 for horizontal tanks, Equation 1-16 for rectangular tanks, and Equation 1-17 for square tanks"

Response 2.4: Clarifications were added to Equations 1-3, 1-4, 1-6, 1-29, and 1-34 for horizontal, rectangular, and square tanks in the September 2024 release of AP-42, Chapter 7.1, Organic Liquid Storage Tanks.

Commenter Name: Loree Fields
Commenter Affiliation: AECOM
Comment Number: EF-Comment-4
Page(s): 1

Comment Group 2.5: Change units in Table 7.1-7 from lb/in^2 to psia

EF-Comment-4:

In Table 7.1-7 (meteorological data) of AP-42 Chapter 7, the units of PA are listed as lb/in^2. The units should instead be listed as psia?

Response 2.5: This change has been made in the September 2024 release of AP-42, Chapter 7.1, Organic Liquid Storage Tanks.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 4

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Comment Group 2.6: Add maximum hourly emission rate methodology

EF-Comment-5:

As mentioned below, several states require permitted facilities to estimate the maximum hourly emissions rate of a storage tank. States such as Texas provide guidance on how to make that estimation. EPA should include a methodology for estimating maximum hourly emissions rates from storage tanks in AP-42, even if it does not include the methodology in the TANKS 5.0 application.

EF-Comment-13:

Additionally, TCEQ recommends adding explicit guidance to AP-42 Chapter 7.1 to address short-term, worst-case, routine loss emission rate calculations.

Response 2.6: In Section 7.1.3.8 of AP-42, Chapter 7.1, Organic Liquid Storage Tanks, "It is important to note that a 1-month time frame is recommended as the shortest time period for which emissions should be estimated using these methodologies." Therefore, a change to lower that time period from one month to one hour is not being made to AP-42, Chapter 7.1, Organic Liquid Storage Tanks at this time. The EPA will consider efforts to research methodologies for shorter term emissions estimates in future updates to AP-42, Chapter 7.1 and the TANKS application.

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 5

Comment Group 2.7: Add clarifying language to Example 6

EF-Comment-13:

Example 6 in the AP-42 guidance document evaluates the scenario where the forced ventilation was discontinued overnight between the second and third days of tank cleaning, and thus there was an overnight standing idle period. TCEQ recommends adding the footnote in Example 6 (Page 7.1-198) to explain the Csf value used. Footnote to be added: "For subsequent vapor space purges that follow a cessation of forced ventilation overnight, Csf shall be taken as 1.0."

Response 2.7: This change has been made in the September 2024 release of AP-42, Chapter 7.1, Organic Liquid Storage Tanks.

3 TANKS 5.0 Data Entry

Commenter Name: Fortune Chen
Commenter Affiliation: AQMD
Comment Number: EF-Comment-7
Page(s): 1

Comment Group 3.1: Error after editing a custom chemical

EF-Comment-7:

After editing a custom petroleum liquid or mixture, emission calculation results remain the same for a given tank. Emission calculations do not reflect the updated custom petroleum liquid or mixture until the user edits the Contents in the Tank Data tab to reselect the custom petroleum liquid or mixture.

Comment: TANKS 5.0 should update the Contents data for each tank storing a custom petroleum liquid or mixture whenever that specific custom petroleum liquid or mixture is edited by the user, so that emissions calculations are properly updated.

Response 3.1: The EPA is considering this change as a future enhancement to the TANKS application. A note about this issue has been added to the TANKS 5.1 User's Guide.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 6-7

Commenter Name: Fortune Chen
Commenter Affiliation: AQMD
Comment Number: EF-Comment-7
Page(s): 1

Commenter Name: Saeid Alizadeh
Commenter Affiliation: RWDI
Comment Number: EF-Comment-11
Page(s): 1

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Comment Group 3.2: Field limits on mole fractions

EF-Comment-5:

Additionally, the field limits the user to specify data above one-thousandth (0.001). This minimum value for composition is limiting. There are many mixtures with constituents present on the order of parts per million (ppm) and TANKS 5.0 should be set up to accommodate those scenarios.

EF-Comment-7:

When creating a custom petroleum liquid or custom mixture, TANKS 5.0 only accepts liquid/vapor mole fraction inputs with up to three figures to the right of the decimal point (thousandths). Additionally, inputting values with more than three figures to the right of the decimal point for the mole fraction field(s) results in an error and does not allow the user to save the custom petroleum liquid/mixture data, but no specific error code or reason is given.

Comment: Users should be able to input mole fraction values that have more than three figures to the right of the decimal point. As an example, users would need to round the liquid mole fraction values to the nearest thousandths for speciated components when calculating emissions from Example 4 in Chapter 7.1.

EF-Comment-11:

In the process of creating the mixtures and in general entering any numeric values, we realized that the input fields of the forms enforce 3 decimal points for precision for float variables. Since for the molar fraction we might need higher precision (for instance in one of our cases: 0.00002), could this form validation be changed to become more flexible with the decimal points?

EF-Comment-15:

Custom mixtures do not allow individual components to have a liquid mole fraction lower than 0.01. Many of the speciated HAPs present in the previously-available EPA Tanks 4.09 speciations for liquid mixtures included species that are present in the liquid phase below this threshold, will they be included in the speciations used in 5.0?

Response 3.2: This issue has been resolved in TANKS 5.1 by allowing 5 decimal places for mole fractions entered for custom mixtures and custom petroleum liquids.

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Comment Group 3.3: Field limits on tank dimensions

EF-Comment-15:

Will limitations be enforced on the numerical fields for dimensions on tanks? 5.0 now allows for fields such as shell diameter and height to accept very small (0.001 ft) and very large (at least

10e+199 ft in our testing) values and utilize them to calculate VOC emissions without generating any errors.

Response 3.3: This issue has been resolved in TANKS 5.1 by adding a lower limit of 5 feet for shell height and shell diameter for all tank types; an upper limit of 80 feet for shell height for all tank types; and an upper limit of 6 times the shell diameter for shell length for a horizontal fixed roof tank.

Commenter Name: Gail Craner
Commenter Affiliation: PW Grosser
Comment Number: EF-Comment-9
Page(s): 1

Comment Group 3.4: Expand all sections during data entry

EF-Comment-9:

Is there a way to keep all sections open/expanded when entering/ viewing data? It seems that only one section can be viewed at a time.

Response 3.4: The EPA is considering this change as a future enhancement to the TANKS application.

Commenter Name: Zachary C. Boyden
Commenter Affiliation: DEC Alaska
Comment Number: EF-Comment-19
Page(s): 1

Comment Group 3.5: Include note from User's Guide about units used for Antoine constants

EF-Comment-19:

Include a note regarding unit changing for Antoine's Equation Constants

The user guide has a note of caution on the last page warning that resources providing Antoine's equation constants are in units different from those in TANKS 5.0. It continues by addressing a popular resource and the conversion requirements to correct the units. This note is greatly appreciated.

Could a similar notice be included on the window for "Add Custom Organic Liquid" on the Customize page, under the Custom Organic Liquids tab?

With the understanding that space is limited on this window, one suggestion is to mention the conversion additions, and link to the user guide warning for further information.

Response 3.5: As noted by the commenter, Section 6.2.1 of the TANKS 5.0 User's Guide stated, "Please note that in some resources, such as the NIST Chemistry Workbook, the Antoine's equation constants are in different units. Pressure is in bar and temperature is in Kelvin (K). To convert these to mmHg and °C, add 2.8751 to A, keep B the same, and add 273.15 to C."

This note has been added to the "Customize" tab in TANKS 5.1 and the note has been retained in the TANKS 5.1 User's Guide.

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 3

Comment Group 3.6: Insulated tanks

EF-Comment-13:

9. In the Tank Data tab, for "fully insulated" and "partially insulated" tanks, users are given the option to select "AP-42 Calculation" for "Liquid Bulk Temperature Calculation Method." TCEQ recommends clarifying what "AP-42 Calculation" means in this context. In the draft updated version of AP-42 Chapter 7, Section 1, equation 1-33 in the updated draft version of AP-42 Chapter 7 is given for liquid bulk temperature. However, AP-42 Chapter 7, Section 1, states "For uninsulated fixed roof tanks known to be in approximate equilibrium with ambient air, heat gain to the bulk liquid from insolation is almost entirely through the tank shell; thus the liquid bulk temperature is not sensitive to HS/D and may be calculated using [equation 1-33]." Hence, equation 1-33 appears to only apply to uninsulated fixed roof tanks known to be in approximate equilibrium with ambient air and would not be applicable to fully insulated or partially insulated tanks. No equation for the bulk liquid temperature of fully insulated nor partially insulated tanks is given in AP-42 Chapter 7, Section 1. TCEQ recommends either clarifying within AP-42 Chapter 7, Section 1, how the bulk liquid temperature of fully insulated and partially insulated tanks is calculated, or alternatively, require that the liquid bulk temperature of fully insulated or partially insulated tanks be specified by the user within TANKS 5.0.

Response 3.6: This issue has been resolved in TANKS 5.1 by requiring the Liquid Bulk Temperature instead of choosing the AP-42 calculation method using Equation 1-33 for the following: (1) insulated vertical and horizontal fixed roof tanks that are fully insulated and not heated and (2) partially insulated vertical and horizontal fixed roof tanks. As noted above, Equation 1-33 only applies to uninsulated tanks.

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Commenter Name: Eric Milligan
Commenter Affiliation: DEQ OK

Comment Number: EF-Comment-26
Page(s): 1

Comment Group 3.7: Working Loss Turnover Factor and Working Loss Product Factor

EF-Comment-13:

10. In the Tank Data tab, for the Working Loss Turnover Factor Method users are given the option to select "Set to 1" or "AP-42 Calculation". However, the Working Loss Turnover Factor as defined in AP-42 Chapter 7, Section 1, is dependent on whether the tank is vapor balanced and/or flashing occurs. Therefore, TCEQ recommends changing the question from "Working Loss Turnover Factor Method" to instead prompt the user to specify whether the tank is vapor balanced and/or flashing occurs. If the tank is vapor balanced and/or flashing occurs, the Working Loss Turnover Factor should generally be equal to 1 and it would be inappropriate to calculate the Working Loss Turnover Factor using equation 1-37 in the updated draft version of AP-42 Chapter 7 for such tanks. If the tank is not vapor balanced nor does flashing occur, the Working Loss Turnover Factor Method should be calculated using equation 1-37. Finally, for tanks which are splash loaded, TCEQ recommends allowing users to specify a Working Loss Turnover Factor that is greater than 1, as it may be appropriate to adjust the Working Loss Turnover Factor for tanks which are splash loaded, consistent with the guidance provided in Chapter 7 of AP-42.

EF-Comment-26:

There should be a way to use a variable K_N.

There are circumstances indicated in AP-42 and for other reasons that the saturation factor should be set equal to 1 or some other value.

For example: if there are flashing emissions, vapor balancing, tanks are manifolded together and gases from other tanks would be pulled into the tank when emptying.

Response 3.7: The EPA is considering these changes as future enhancements to the TANKS application.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 6-7

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 6-7

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Comment Group 3.8: Data entry for custom mixtures

EF-Comment-5:

Comment 10: The customize feature allows the user to define mixtures. However, the menu requires the liquid mole fraction as an input. The menu should allow the user to specify either a liquid mole fraction or a liquid weight fraction.

EF-Comment-5:

Comment 10: It would also be helpful if the application showed the total mole or weight fraction that had been entered for the mixture.

EF-Comment-15:

Custom chemicals added through the Custom Organic Liquids section of the Customize page only allow for density, molecular weight, and Antoine's Equation constants in degrees Celsius to be edited, not the other parameters.

EF-Comment-15:

When defining a custom mixture or custom petroleum liquid, it would be helpful if the CAS number is displayed with the chemical species available in the pick list.

Response 3.8: Regarding the following comment:

> Custom chemicals added through the Custom Organic Liquids section of the Customize page only allow for density, molecular weight, and Antoine's Equation constants in degrees Celsius to be edited, not the other parameters.

The only other parameters listed in AP-42, Table 7.1-3 are CAS, True Vapor Pressure at 60 °F, and the Normal Boiling Point. The last two parameters are not used by TANKS 5.0 or TANKS 5.1, so it is unclear why they would need to be edited. If supplied with more information, the EPA will take this into consideration in a future update.

The EPA is considering the remaining comments as future enhancements to the TANKS application.

Commenter Name: Michelle Seguin
Commenter Affiliation: RWDI
Comment Number: EF-Comment-2
Page(s): 1

Commenter Name: Michelle Seguin
Commenter Affiliation: RWDI
Comment Number: EF-Comment-2
Page(s): 1

Commenter Name: Georgia Perkins
Commenter Affiliation: SLR International Corporation
Comment Number: EF-Comment-3
Page(s): 1

Commenter Name: Catrina Judge
Commenter Affiliation: EA Engineering, Science, and Technology, Inc. PBC
Comment Number: EF-Comment-17
Page(s): 1

Commenter Name: Michelle Xue
Commenter Affiliation: Stantec
Comment Number: EF-Comment-29
Page(s): 1

Commenter Name: Chris Bestfather
Commenter Affiliation: Atkins Realis
Comment Number: EF-Comment-33
Page(s): 1

Comment Group 3.9: Minimum temperature for meteorological data

EF-Comment-2:

In the customize Meteorological Data we cannot go below 0 F. (ie we entered -5.1 F) WE get errors indicated that it cannot process the data. Although these temps are cold, it is not unheard of having temperatures this cold in Alaska or Canada.

EF-Comment-2:

As follow up to my email below after trouble shooting.

We found that that the issues with regards to temperature is due to website validation, and not the tool itself.

When we exported a tank, changed the temperature outside the tool for a given location and imported the tank back into the website, the tanks program seemed to read it.

EF-Comment-3:

I am trying to import tanks located on the North Slope of Alaska. There is no meteorological data for anywhere in AK, so I went to customize meteorological data. I found that the program does not like negative temperatures. It won't accept that the negative temperatures are less than the max temp.

EF-Comment-17:

When trying to enter custom meteorological data, I am not able to enter negative numbers for the Hourly Average Maximum Ambient Temperature or the Hourly Average Minimum Ambient Temperature. Given that the tanks I am calculating emissions for reside in the interior of Alaska, there were several entries that I was unable to input properly, resulting in inaccurate meteorological data.

EF-Comment-29:

For Custom Meteorological Data entry, for "minimum ambient temperature", it does not let me enter a value less than 10 degree F.

EF-Comment-33:

It would also be nice to have temperatures below 0°F be allowed in minimum values (for northern locations).

Response 3.9: This issue has been resolved in TANKS 5.1 by setting a minimum temperature of -130 degrees F.

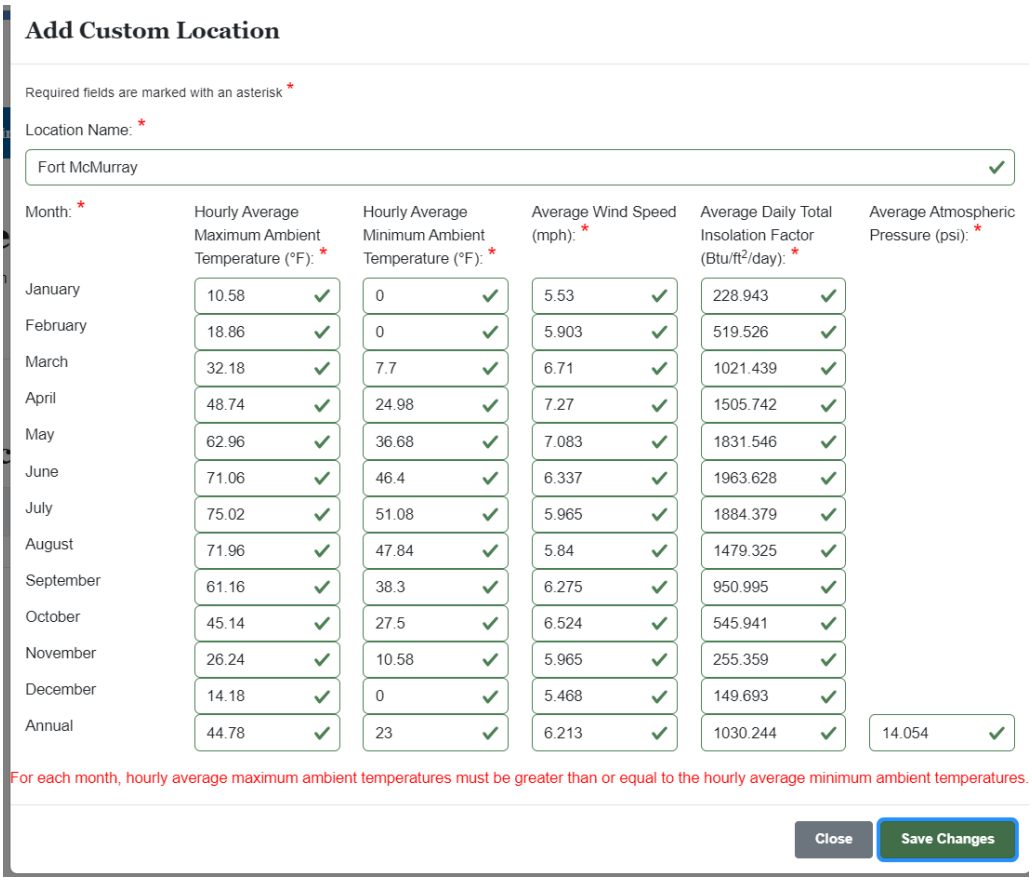
Commenter Name: Michelle Seguin
Commenter Affiliation: RWDI
Comment Number: EF-Comment-2
Page(s): 1

Commenter Name: Chris Bestfather
Commenter Affiliation: Atkins Realis
Comment Number: EF-Comment-33
Page(s): 1

Comment Group 3.10: Error message related to max/min temps in custom meteorological data

EF-Comment-2:

WE have filled out the data with what we consider valid data but we still get the error that hourly average max must be greater than or equal to the hourly average min ambient temp (see below)



Add Custom Location

Required fields are marked with an asterisk *

Location Name: *

Fort McMurray

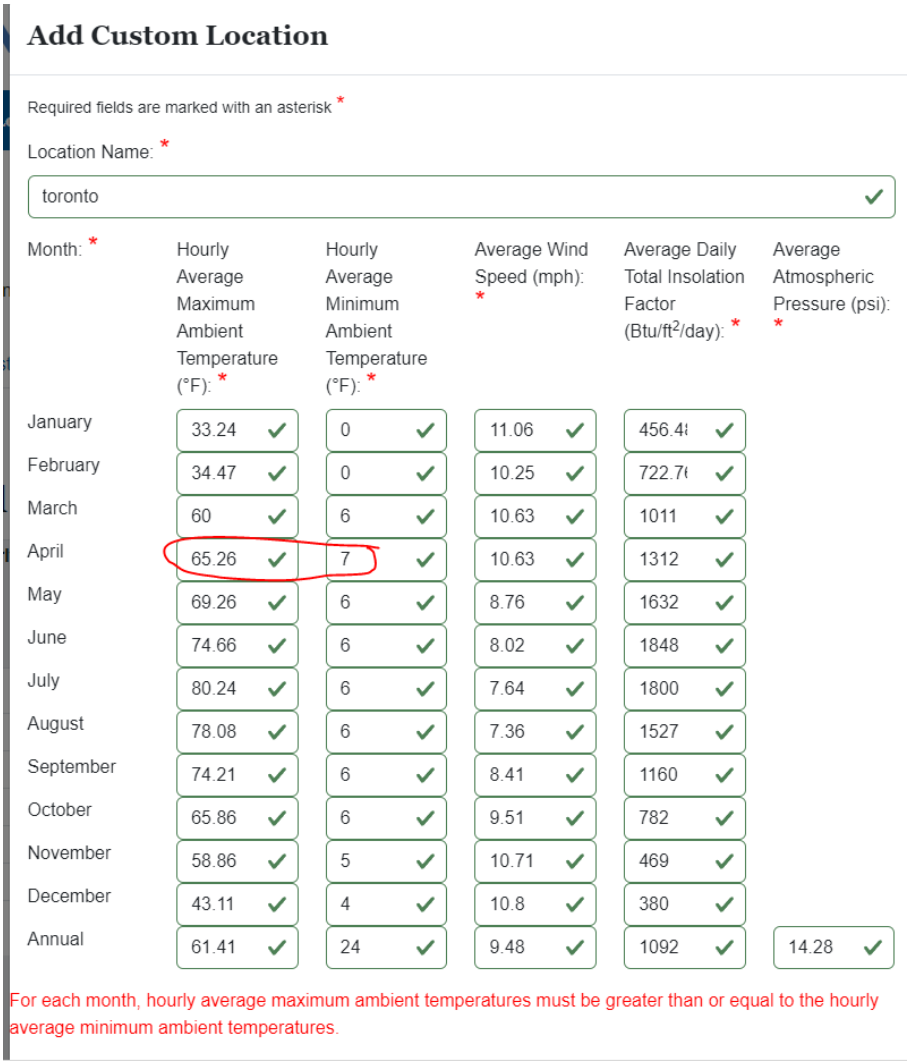
Month: *	Hourly Average Maximum Ambient Temperature (°F): *	Hourly Average Minimum Ambient Temperature (°F): *	Average Wind Speed (mph): *	Average Daily Total Insolation Factor (Btu/ft²/day): *	Average Atmospheric Pressure (psi): *
January	10.58	0	5.53	228.943	
February	18.86	0	5.903	519.526	
March	32.18	7.7	6.71	1021.439	
April	48.74	24.98	7.27	1505.742	
May	62.96	36.68	7.083	1831.546	
June	71.06	46.4	6.337	1963.628	
July	75.02	51.08	5.965	1884.379	
August	71.96	47.84	5.84	1479.325	
September	61.16	38.3	6.275	950.995	
October	45.14	27.5	6.524	545.941	
November	26.24	10.58	5.965	255.359	
December	14.18	0	5.468	149.693	
Annual	44.78	23	6.213	1030.244	14.054

For each month, hourly average maximum ambient temperatures must be greater than or equal to the hourly average minimum ambient temperatures.

Close | Save Changes

EF-Comment-33:

Custom Meteorological Data – there is an error generated when entering Hourly Average Minimum Ambient Temperature (°F) in Ad custom Location window. See screenshot below (no error when April min value is 6). “For each month, hourly average maximum ambient temperatures must be greater than or equal to the hourly average minimum ambient temperatures.”



Add Custom Location

Required fields are marked with an asterisk *

Location Name: *

toronto

Month: *	Hourly Average Maximum Ambient Temperature (°F): *	Hourly Average Minimum Ambient Temperature (°F): *	Average Wind Speed (mph): *	Average Daily Total Insolation Factor (Btu/ft²/day): *	Average Atmospheric Pressure (psi): *
January	33.24	0	11.06	456.4	
February	34.47	0	10.25	722.7	
March	60	6	10.63	1011	
April	65.26	7	10.63	1312	
May	69.26	6	8.76	1632	
June	74.66	6	8.02	1848	
July	80.24	6	7.64	1800	
August	78.08	6	7.36	1527	
September	74.21	6	8.41	1160	
October	65.86	6	9.51	782	
November	58.86	5	10.71	469	
December	43.11	4	10.8	380	
Annual	61.41	24	9.48	1092	14.28

For each month, hourly average maximum ambient temperatures must be greater than or equal to the hourly average minimum ambient temperatures.

Response 3.10: This issue has been resolved in TANKS 5.1.

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Comment Group 3.11: Secondary seals for floating roof tanks

EF-Comment-13:

16. For floating roof tanks, under "Tank Construction and Rim Seal System," the drop-down options for Secondary Seal include the option "None." However, TCEQ recommends that "None" be changed to "Primary Only / None," as "Primary Only / None" is a more prescriptive term.

Response 3.11: This issue has been resolved in TANKS 5.1 by changing the Secondary Seal option from "None" to "Primary Only / None".

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Comment Group 3.12: Inconsistent units of measure

EF-Comment-15:

The UOM used between pages are not consistent in temperature input, mixture of Fahrenheit, Rankine, Celsius. Can the units on these inputs be standardized, then converted as needed internally by the page?

Response 3.12: TANKS 5.1 is consistent with the units of measure used in AP-42 Chapter 7.1. The EPA is considering this change as a future enhancement to the TANKS application.

Commenter Name: Gail Craner
Commenter Affiliation: PW Grosser
Comment Number: EF-Comment-9
Page(s): 1

Commenter Name: Ling Li
Commenter Affiliation: Altamira
Comment Number: EF-Comment-30
Page(s): 1

Comment Group 3.13: Project folders and saving data for more than one facility

EF-Comment-9:

Would it be possible to save data for more than one facility without having to export the data each time you want to work on another facility?

EF-Comment-30:

Is it possible for Tank 5.0 to allow users to create project folders? For example, Project 1 folder contains tanks IDs 1-100, Project 2 folder contains tank IDs 201-300?

Response 3.13: It is not possible to have multiple active, but separate "project folders" or "facilities" within TANKS 5.0 and TANKS 5.1. However, you may achieve the effect of having separate projects or facilities by:

1. Add Project 1 (or Facility 1) with Tank IDs 1-100 to the platform.

2. Click “Export Tank Data” and save the file somewhere safe on your computer – being sure to note the name of the file or naming it something that indicates it is for Project 1 (or Facility 1)
3. Click “Clear Tank Data” in the platform
4. Add Project 2 (or Facility 2) with Tank IDs 201-300 to the platform.
5. Click “Export Tank Data” and save the file somewhere safe on your computer – being sure to note the name of the file or naming it something that indicates it is for Project 2 (or Facility 2)
6. You may now perform work in either Project 1 or Project 2 (or Facility 1 or Facility 2) by clearing tank data and then utilizing the “Import Tank Data” button to upload the file you saved in step 2 or step 5

Commenter Name: Lynne Lamia Wallace
Commenter Affiliation: Providence Engineering
Comment Number: EF-Comment-31
Page(s): 1
Comment Group 3.14: Negative Antoine constant C

EF-Comment-31:

I have a tank that is 30% by volume HCN, 70% water. I tried to create a custom mixture by first adding the custom chemical Water.

It won’t let me add a negative number for Antoine’s coefficient C.

Response 3.14: Please ensure you are using the correct units. As mentioned in Section 6.2.1 of the TANKS 5.0 User’s Guide, “Please note that in some resources, such as the NIST Chemistry Workbook, the Antoine's equation constants are in different units. Pressure is in bar and temperature is in Kelvin (K). To convert these to mmHg and °C, add 2.8751 to A, keep B the same, and add 273.15 to C.”

This language has been retained in Section 5.2.1 of the TANKS 5.1 User’s Guide.

As noted in Response 3.5 of this document, this note has been added to the “Customize” tab in TANKS 5.1.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 4-5

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 9

Commenter Name: Fortune Chen
Commenter Affiliation: AQMD
Comment Number: EF-Comment-7
Page(s): 1

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Comment Group 3.15: Data entry errors

EF-Comment-5:

This is also true in other areas where changing a specific input (e.g., changing the number of days of forced ventilation), it resets the form.. Additionally, there are situations where multiple tanks have similar dimensions and store similar products but may be different types (i.e., internal floating roof vs. domed external floating roof)..

However, when using the "duplicate" feature to save time in setting up a tank from an existing tank's properties, all fields will be cleared when you change the tank type. The original data should be retained in the form regardless of the change made to a different field.

EF-Comment-5:

Comment 17: When setting up the "contents" for calculating the working loss turnover factor of any individual tank, the user has the option of selecting either a value of 1 or "AP-42 Calculation". When selecting the value of 1, the report produces an error if there is any throughput reported in the form. For ease of use and to minimize confusion, EPA should adjust the tool so that the output will not be an error even if there is data in the throughput field.

EF-Comment-7:

When inputting Tank Data for an Internal Floating Roof tank, if the user initially chooses a Bolted Deck Type with Custom Deck Seams, but then changes the deck type to Welded, the input field for "Width" persists and the user is required to input a value (greater than zero and rounded to the nearest thousandth) even though welded deck seams are assumed to have zero emissions.

Comment: This apparent bug should be resolved.

EF-Comment-15:

Keystroke issue occurs when a 0 is directly typed into a numerical field on the Tank Data page – 0 will remain in the field and cannot be deleted with the backspace key, attempting to type any values into this field will result in a leading zero (which disappears when the page is saved, so it's just a minor issue). The 0 must be highlighted manually with the cursor and then be typed over with another value.

EF-Comment-15:

The 0 issue described above also prevents the entry of negative values using the "-" key once a 0 has been typed into a numerical field (primarily an issue with the vacuum setting field). If the 0 is highlighted and typed over as described above, the field still will not allow for the use of the "-" key and instead requires the user to use the adjustment buttons to the right of the field to select a negative value.

Response 3.15: The EPA is considering these changes as future enhancements to the TANKS application.

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Comment Group 3.16: Corrections, bugs, and errors

EF-Comment-13:

12. In addition to using the up and down arrows in the TANKS 5.0 interface, TCEQ recommends allowing users the ability to type decimal points directly into the input cells, where appropriate. For example, TCEQ recommends that user specified values such as shell length and shell diameter accept decimal point entries typed by the user. This flexibility will allow the program to be more user-friendly and will provide more accurate emission estimates.

EF-Comment-13:

13. The "Average Concentration (ppmv)" input associated with a Tank Cleaning event, Emissions Events tab, allows users to specify values greater than 1,000,000 which is not physically possible.

EF-Comment-13:

14. The "Vent Time (hr/day)" input associated with a Tank Cleaning event, "Emissions Events" tab, allows users to specify values greater than 24. TCEQ recommends limiting the "Vent Time (hr/day)" to a maximum of 24.

EF-Comment-13:

18. In the Deck Tank Characteristics tab for external floating roof tanks, several of the fittings require a count value. TCEQ recommends that the numeric fields be formatted as integers for the count values since the beta test version of the program currently allows the user to enter fractional values, which is inconsistent with user-input for internal floating roof tanks in the software and fractional counts would not apply to fittings.

Response 3.15: Regarding the comment about allowing shell length and shell diameter to accept decimal point entries, this feature was included in TANKS 5.0. Therefore, no changes have been made.

The remaining issues have been resolved in TANKS 5.1.

Commenter Name: Allen Pitcher
Commenter Affiliation: Berkshire Environmental Consultants, Inc.
Comment Number: EF-Comment-20
Page(s): 1

Comment Group 3.17: Error with duplicated tanks

After creating new tank records by "duplicating" an existing saved tank, changes in the Tanks Contents (i.e., Monthly Values) for one Tank Record appear in all the duplicated records, not just the one being edited. This was resolved by changing the Input Type from monthly to annual and back and reentering the monthly values.

Response 3.16: This issue has been resolved in TANKS 5.1.

4 TANKS 5.0 Deletions

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 8

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 3

Comment Group 4.1: Rename "Emission Events"

EF-Comment-5:

Comment 15: The name for tank landings and cleanings should be changed from "Emission Events" to "Maintenance Activities". The term "Emission Events" has a specific meaning in some states (i.e., -Texas) and can imply that the emissions associated with that activity are unauthorized. Changing to "Maintenance Activities" will prevent confusion for some in the regulated community.

EF-Comment-13:

TCEQ recommends changing "Emission Events" to "Non-Routine Events" since "emission events" has a connotation of a non-compliance event.

Response 4.1: This issue has been resolved in TANKS 5.1 by changing "Emission Events" to "Non-Routine Losses" to contrast with "Routine Losses".

Commenter Name: Todd Tamura
Commenter Affiliation: Tamura Environmental, Inc.
Comment Number: EF-Comment-25
Page(s): 1

Commenter Name: Todd Tamura
Commenter Affiliation: Tamura Environmental, Inc.
Comment Number: EF-Comment-25
Page(s): 1

Commenter Name: Patrick Baum
Commenter Affiliation: Peraton
Comment Number: EF-Comment-36
Page(s): 1

Comment Group 4.2: Remove some chemicals from use in TANKS 5.0

EF-Comment-25:

TANKS 5 includes methane as well, and the vapor pressure of methane at ambient temperature isn't even defined, since methane's critical temperature (i.e., the endpoint of the vapor-liquid equilibrium line) is below ambient temperature.

EF-Comment-25:

I was particularly interested in seeing what chemical parameters EPA put into the tool (and couldn't), because the appropriate Antoine coefficients are temperature-dependent, with the vapor-liquid equilibrium line being appropriate for temperatures above a substance's triple point and the solid-vapor equilibrium line being appropriate for temperatures below a substance's triple point. For many heavier substances, the substance's triple point is actually above ambient temperature but the Antoine coefficients provided in AP-42 are only good for temperatures above the triple point. This can lead to substantial overestimation of emissions at ambient temperature: e.g., for naphthalene and phenanthrene, the degree of overestimation that occurs by extrapolating the equations in AP-42 to ambient temperature is shown in the attached .pdfs).

EF-Comment-36:

The Navy is requesting JP-4 be removed to the list of fuels since it is no longer produced or procured. Supporting documentation is provided. The Navy recommends adding a reference: "Coordinating Research Council, Aviation Fuel Properties Handbook, CRC Report No. 663".

Response 4.2: JP-4 has been removed from AP-42, Chapter 7.1, Organic Liquid Storage Tanks. The other chemicals referenced above (methane, naphthalene, and phenanthrene) will remain in AP-42, Chapter 7.1, Organic Liquid Storage Tanks, but will not be able to be added to storage tanks in TANKS 5.1. The chemical parameters for all chemicals in TANKS 5.1 match the chemical parameters in Table 7.1-2 and Table 7.1-3 of AP-42, Chapter 7.1.

Commenter Name: Gail Craner
Commenter Affiliation: PW Grosser
Comment Number: EF-Comment-9
Page(s): 1

Comment Group 4.3: Remove tank color for underground tanks

EF-Comment-9:

When entering data for underground storage tanks, the system asks to provide the tank color. Could this be removed?

Response 4.3: This issue has been resolved by removing the question about tank color if a tank is underground in TANKS 5.1.

Commenter Name: Todd Tamura
Commenter Affiliation: Tamura Environmental, Inc.
Comment Number: EF-Comment-23
Page(s): 1

Comment Group 4.4: Remove hourly from minimum and maximum temperatures

EF-Comment-23:

When customizing met data, the beta tool asks for "Hourly Average" min and max temperatures. It should not use the term "Hourly". Ever since the models were first developed and validated, API and AP-42 referenced min and max temperatures as identified by NOAA/NCDC, which are not hourly averages, they are closer to 1-minute averages. After the 2019/2020 AP-42 updates, it was discovered that the met data published from NREL were actually hourly averages rather than min/max temps defined by meteorologists, but that was inadvertent and it wasn't specifically stated anywhere. While the difference is negligible for floating-roof tank emissions it can be appreciable for some fixed-roof tanks (and this is why the difference in averaging times was spotted), because using hourly average max/min instead of 1-minute average max/min decreases both delta-T and delta-P_V in the equation for the expansion factor K_E.

Response 4.4: This change has been made in TANKS 5.1.

5 TANKS 5.0 Questions and Issues Encountered

Commenter Name: Claire Hoernschemeyer
Commenter Affiliation: SCI Engineering Inc.
Comment Number: EF-Comment-35
Page(s): 1

Comment Group 5.1: Aviation Gasoline is not available

EF-Comment-35:

Why isn't Aviation Gasoline available for a custom petroleum mixture? What should I use in it's place for an accurate emission estimate?

Response 5.1: Chapter 7.1 of AP-42 does not have enough information on aviation gasoline for emissions to be estimated. It has an ASTM slope, but no other information. This chemical could not be used in TANKS 4.09D either. No changes were made as a result of this comment. However, if additional information is provided to the EPA, the Agency will consider incorporating this mixture into a future version of the TANKS application.

Commenter Name: GaEun Lee
Commenter Affiliation: San Joaquin Valley APCD
Comment Number: EF-Comment-38
Page(s): 1

Comment Group 5.2: Explain how vapor space pressure affects emissions

EF-Comment-38:

I was wondering how "Vapor Space Pressure at Normal Operating Conditions (psig)" parameter affects the calculated emissions. Based on AP-42 Chapter 7.1.3.1.2 Note 2, Vent Setting Correction Factor, the vapor space pressure at normal operating conditions is used to calculate vent setting correction factor when the breather vent settings are greater than the typical values of ± 0.03 psig. However, when I use breather vent setting greater than ± 0.03 psig and try several different vapor space pressures, I get the same results regardless of different vapor space pressures.

Could you please explain how the vapor space pressure affects the outputs?

Response 5.2: AP-42 Equation 1-43 is used to calculate the vent setting correction factor when the breather vent settings are greater than the typical values of ± 0.03 psig and the condition of Equation 1-42 is met:

$$K_N \left[\frac{P_{BP} + P_A}{P_I + P_A} \right] > 1.0$$

where:

K_N = working loss turnover (saturation) factor (dimensionless)
P_{BP} = breather vent pressure setting, psig
P_A = atmospheric pressure, psia
P_I = pressure of the vapor space at normal operating conditions, psig
P_I is an actual pressure reading (the gauge pressure). If the tank is held at atmospheric pressure (not held under a vacuum or at a steady pressure) P_I would be 0.

Using the data supplied by the commenter, the results of Equation 1-42 were much lower than 1.0. Therefore, the vent setting correction factor, K_B, was assumed to be 1.0 and not calculated using Equation 1-43.

When the data supplied by the commenter was adjusted so that the result of Equation 1-42 was greater than 1.0, a calculated value of the vent setting correction factor, K_B, was used instead of 1.0. Therefore, TANKS 5.0 was found to be working correctly. No changes were made as a result of this comment.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 9

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Commenter Name: Randi J. Walker
Commenter Affiliation: DEC New York
Comment Number: EF-Comment-16
Page(s): 1

Comment Group 5.3: **Partial liquid heel**

EF-Comment-5:

Comment 19: When calculating emissions associated with tank landings and tank cleanings, the saturation factor varies depending on whether the tank is drain-dry, has a partial liquid heel, or has a full liquid heel. There are three fields in TANKS 5.0 that request information on the heel: (1) the Tank Data tab, under "Tank Characteristics", there is a field titled Liquid Heel Type at Tank Minimum; (2) the Emission Events tab, under "Floating Roof Landings" there is a field titled Type of Liquid Heel Present during Roof Landing; and (3) the Emission Events tab, under "Tank Cleaning, there is a field titled Type of Liquid Heel Present at the Start of Cleaning. In all three fields, there are only two options: (1) Full Liquid Heel; and (2) No Liquid Heel. None of

the fields have an no option for Partial Liquid Heel. The option to select Partial Liquid Heel should be made available as the emissions are different for a partial liquid heel.

EF-Comment-13:

17. In the Tank Characteristics section, the options for Liquid Heel Type at Tank Minimum are "Full Liquid Heel" and "No Liquid Heel." TCEQ recommends that an option for "Partial Liquid Heel" be provided consistent with the methodology in Chapter 7 of AP-42.

EF-Comment-16:

Liquid Heel type at tank minimum – why no option for partial heel?

Response 5.3: A partial liquid heel is available, but only for tanks with a cone-down bottom. According to Table 7.1-4 and Figure 7.1-20 of AP-42, Chapter 7.1, Organic Liquid Storage Tanks, partial liquid heel occurs on tanks with a cone-down bottom. The equations for partial liquid heel in Table 7.1-4 will not work if the slope is zero, which is the case for a flat or nominally flat bottom tank. Therefore, if the tank has a "flat or nominally flat bottom", you cannot choose "Partial liquid heel" for the heel type.

No changes were made as a result of these comments.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 7-8

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 7-8

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Comment Group 5.4: Partial speciation errors

EF-Comment-5:

Comment 13: The ability to use partial speciation is critical for materials like crude oil and gasoline which have many components, but only a few of those components are of specific interest. The tool has an option to partially or fully speciate, with the ability to select which compounds to speciate. However, when partial speciation is selected, the functionality does not work as intended because speciated results are populated for all compounds.. For months where "none" is selected, only total emissions is displayed and no speciation is included in the output.

EF-Comment-5:

In addition, if only a few months are filled out for a mixture that the user wants to partially speciate (e.g., if the mixture is only in the tank from January through March), selecting an annual emissions report does not result in any speciated emissions; only selecting a monthly report provides speciated emissions results.

EF-Comment-15:

Customized petroleum liquids with added component speciations will not calculate emissions, instead resulting in an error message.

Response 5.4: Without more specific examples from the commenter, the EPA was unable to replicate the issue from EF-Comment-15, where Customized petroleum liquids with added component speciations result in an error message. However, the EPA continued testing prior to the release of TANKS 5.1.

The EPA is considering the remaining changes as future enhancements to the TANKS application.

Commenter Name: Todd Tamura
Commenter Affiliation: Tamura Environmental, Inc.
Comment Number: EF-Comment-32
Page(s): 1

Comment Group 5.5: Partial speciation for petroleum liquids

EF-Comment-32:

It appears that TANKS 5 isn't able to do partial speciation - that is a big issue that will definitely limit the ability of the model to calculate emissions of HAP/toxics. Most mixtures (including petroleum liquids) aren't fully speciated.

While the model has vapor pressure parameters for the petroleum liquids, there doesn't seem to be any way of calculating speciated emissions from those liquids; and if you enter "Custom Mixtures", TANKS 5 demands that the mixtures be fully speciated.

Response 5.5: Custom mixtures are required to have a full speciation profile when entered in TANKS 5.1. However, using the custom petroleum liquids feature, a user can enter a custom petroleum liquid with partial speciation. Components can be added using vapor mole fractions or liquid mole fractions.

The petroleum liquids in TANKS 5.1 were not speciated using the old speciation profiles from TANKS 4.09D because creating a custom petroleum liquid with the exact speciation profile used by the user is considered more accurate. No changes were made as a result of this comment.

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Commenter Name: Todd Tamura
Commenter Affiliation: Tamura Environmental, Inc.
Comment Number: EF-Comment-22
Page(s): 1

Comment Group 5.6: Partial speciation of custom mixtures

EF-Comment-15:

Custom mixtures require liquid mole fractions of components to sum to 1, but only individual chemical species can be included in the mixture definition. As such, users cannot approximate the balance of a mixture's non-HAP components and must have a complete speciation to use this feature. Can generic unclassified VOC options (i.e. unclassified gasoline components, unclassified diesel components etc.) be added to the pick list?

EF-Comment-22:

I don't see how you partially speciate anything other than petroleum liquids though - is that not possible? I suppose one workaround might be to just call every mixture a "petroleum liquid" (even if it isn't), but I think the user's manual ought to (1) mention that people need to do that if they have partially speciated mixtures, and (2) caution people that the Antoine coefficients that the might've used previously to model such mixtures may need to be changed when modeling them as petroleum liquids (since petroleum liquids have different Antoine equation format/units than the organic liquids).

Response 5.6: The EPA is considering this change as a future enhancement to the TANKS application.

Commenter Name: Maria Ramirez Fernandez
Commenter Affiliation: CEPSA
Comment Number: EF-Comment-21
Page(s): 1

Comment Group 5.7: Custom meteorological data

EF-Comment-21:

Hello, good morning, we have a question about TANKS software, so gratefull if you could help us.

If we want to carry out the calculation with TANKS for the case of Spain, how could we geolocate it, in order to have the meteorological location? Can coordinates be entered? Or should we take the most similar city in EEUU there is?

Response 5.7: The recommended approach is to utilize the Custom Meteorological Data function by:

1. Clicking the "Customize" tab in the top ribbon
2. Clicking the "Custom Meteorological Data" tab in the middle ribbon
3. Clicking "Add Custom Location" and entering the data in the window that pops up (check https://power.larc.nasa.gov/ to see if they have the data for the location you are interested in)
4. Clicking "Save Changes"
5. Now when you create a new tank, you will be able to select the custom city that you created in step 3. The city will appear at the top of the drop down menu under a "Custom Locations" heading
6. When you've got all your tanks with the correct custom locations added, be sure to utilize the "Export Tank Data" function to save all your tanks and custom settings on your PC so you can upload them again later if your browser cache is cleared

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Commenter Name: Haya al ali
Commenter Affiliation: BEEAH Group
Comment Number: EF-Comment-42
Page(s): 1

Comment Group 5.8: Custom mixtures using custom chemicals

EF-Comment-42:

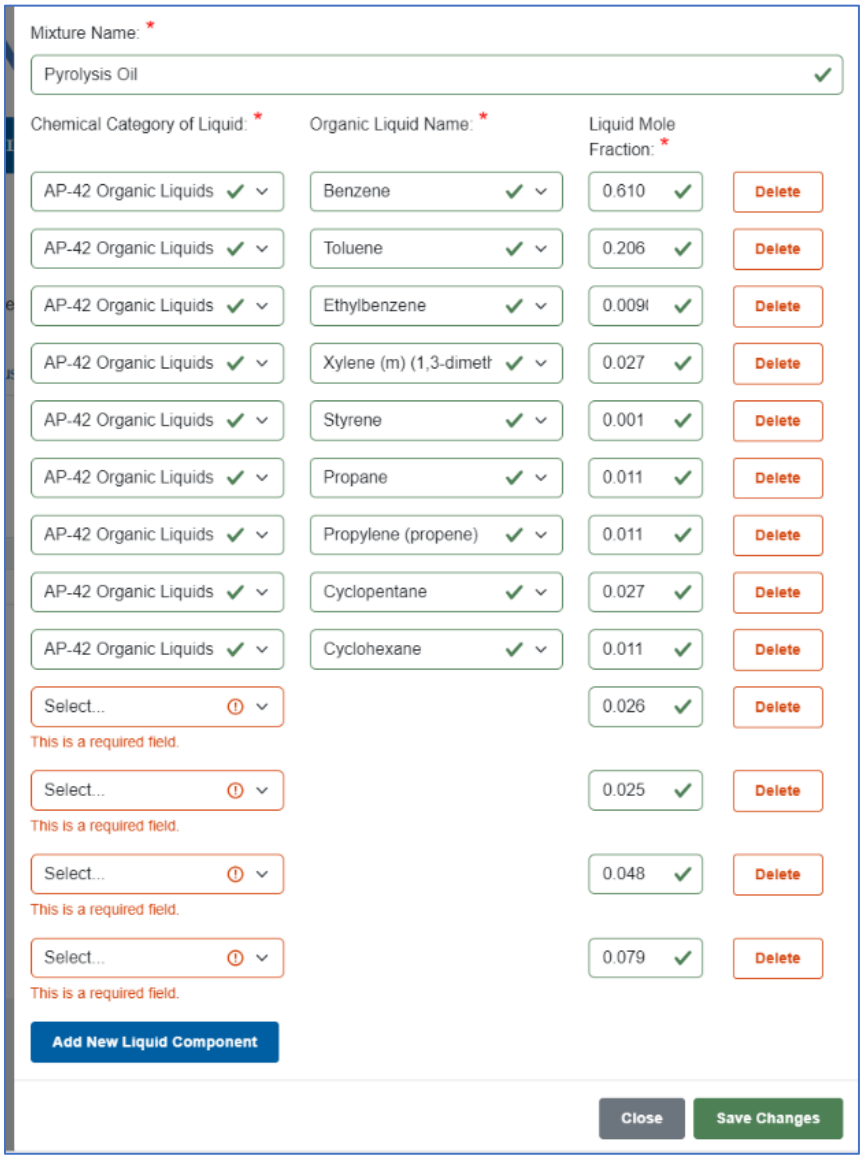
This email inquires about the capabilities of EPA TANKS 5.0 software to model custom mixtures, specifically for Pyrolysis Oil.

Bee'ah - Sharjah Environmental Company, located in the United Arab Emirates, is currently conducting an Odor Emission and Control Study. During this study, the USEPA's AP 42 Chapter 7: Liquid Storage Tanks Guideline and TANKS 5.0 software were identified as potentially valuable tools. An attempt was made to create a custom mixture within the software to represent Pyrolysis Oil. This mixture would include the components listed in the table below:

No.	Components	Liquid mole fraction (Xi)
1	Benzene	0.610214354
2	Toluene	0.206919224
3	Xylene	0.026938871
4	Ethyl benzene	0.008979032
5	Styrene	0.000915292

6	Propylene	0.01132669
7	Propane	0.010808863
8	Water	0.026457453
9	Oil (Average value for gas oils)	0.024868092
10	Cyclopentane	0.027197628
11	Cyclohexane	0.011326959
12	Cycloheptane	0.048542462
13	Propylbenzene	0.079307559

However, it was discovered that the software's pre-defined list of petroleum and organic liquids is limited.



This limitation prevented the inclusion of custom information for components not found in the existing database, thereby hindering routine loss calculations.

We would be grateful if you could advise us on alternative approaches within the software to model Pyrolysis Oil. Ideally, we would like to avoid resorting to manual calculations.

Response 5.8: In order to model Pyrolysis Oil, you will need to first use the Customize page to create custom organic liquids for water, cycloheptane, and propylbenzene using the available Antoine constants. Note that in some resources, such as the NIST Chemistry WebBook, the Antoine's equation constants are in different units than requested by TANKS 5.1. Pressure is in bar and temperature is in Kelvin (K). To convert these to mmHg and °C, add 2.8751 to A, keep B the same, and add 273.15 to C.

Then you will need to create a custom mixture for "Oil (Average value for gas oils)" using the known components and mole fractions.

Then you should create a custom mixture named "Pyrolysis Oil" using the following:

- AP-42 Organic Liquids for benzene, toluene, ethylbenzene, m-xylene, styrene, propane, propylene, cyclopentane, and cyclohexane;
- Custom Organic Liquids for water, cycloheptane, and propylbenzene;
- Custom Mixture for "Oil (Average value for gas oils)"; and
- the appropriate mole fractions for each.

Commenter Name: Raoul LeBlanc
Commenter Affiliation: S&P Global
Comment Number: EF-Comment-43
Page(s): 1

Comment Group 5.9: Help on custom meteorological data outside of the United States

EF-Comment-43:

Background: I'm trying to calculate dear missions of tanks located in the country of Colombia. In order to do this, it is necessary to input the relevant meteorological data (min and Max temperatures, atmospheric pressure, wind speed, and insolation). In your very helpful user guide, there's a link for both the US information, which we can easily understand, And the information for other global locations. This link to the information for other global locations brings us to A database which has a very large amount of information and it is unclear which of the data columns in this large data set should be used for the tank calculations. For example, the wind data is available at 2 meters, 10 meters, and 50 meters. The history is also available starting in 1981. The units are unclear to me.

Question: Is there a data set already of major international cities that contains the same information as does the US table? If not, could you help guide us in the specific data fields and time periods we will need to average in order to create a comparable data set for international cities (using the NASA Power dataset to which the link on the tanks 5.0 user guide points us)?

Response 5.9: The EPA listed this data set as a potential source for use in gathering international meteorological data, of which there may be other sources. The EPA is not familiar with all aspects of this data set or any other international data set, or how the data set could be applied to TANKS 5.0 or TANKS 5.1. Therefore, we are not able to offer further guidance on the specific use of this or any other international meteorological data within TANKS 5.1.

Commenter Name: Michelle Xue
Commenter Affiliation: Stantec
Comment Number: EF-Comment-29
Page(s): 1

Comment Group 5.10: Heated internal floating roof tanks

EF-Comment-29:

I did a case run for a heated internal floating roof tank (attached), and found that the annual standing losses TANKS 5.0 estimated are significant lower than the one I calculated by hand calculation (696 lb/year from TANKS 5.0 vs 1098 lb/year by hand calculation). I checked my hand calculations for LR and LD, and they are correct. LF is negligible in this case. I wonder if there is something wrong with TANKS 5.0 for LR and/or LD calculations. Hope you can check.

Response 5.10: Neither TANKS 4.09D nor TANKS 5.0 allowed heated floating roof tanks. Only heated fixed roof tanks can be modeled, so that is why TANKS 5.0 did not match the hand calculations. It appears that the user assumed that setting the bulk temperature to a set temperature would mean that the average/min/max liquid surface temperature would also be equal to the bulk temperature. However, the liquid surface temperature is a calculated value based on the bulk temperature and the ambient temperature (Eq. 2-5 of AP-42, Chapter 7.1, Organic Liquid Storage Tanks).

The EPA is considering the addition of heated floating roof tanks as a future enhancement to the TANKS application.

Commenter Name: Tracey Hiltunen
Commenter Affiliation: DNR Georgia
Comment Number: EF-Comment-10
Page(s): 1

Comment Group 5.11: Issue with routine losses

EF-Comment-10:

There were some issues with the Routine Losses section. I was not able to select an individual tank. When choosing a specific tank in the drop-down box, nothing happened. When selecting all tanks, the option to calculate annual or monthly emissions opened on the screen.

Response 5.11: If you choose tanks individually, either click outside of the tank selection window or click "Tab" to close the tank selection window. Then choose whether to calculate annual or monthly emissions.

These additional instructions have been added to Section 3.1 of the TANKS 5.1 User's Guide.

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Comment Group 5.12: Maximum and minimum height for horizontal fixed roof tanks

EF-Comment-15:

Adjusting the liquid max/min height values for HFRs have no impact on the calculation of routine losses when only the annual emissions are calculated for these tanks. Adjusting these values does impact the emissions calculated for monthly intervals. Is the intention to allow users to provide these values and impact the calculation of the number of turnovers for the tank (Eq 1-38)?

Response 5.12: Testing of TANKS 5.0 and TANKS 5.1 shows that adjusting the minimum and maximum liquid height in horizontal fixed roof tanks impacts the number of turnovers and the working losses for annual and monthly intervals. Adjustments to the liquid heights has no influence on standing losses.

While testing TANKS 5.0, an error was discovered in the annual calculations for horizontal fixed roof tanks which resulted in much higher emissions than calculating by hand. This error has been corrected in TANKS 5.1.

Commenter Name: Georgia Perkins
Commenter Affiliation: SLR International Corporation
Comment Number: EF-Comment-3
Page(s): 1

Commenter Name: Zachary C. Boyden
Commenter Affiliation: DEC Alaska
Comment Number: EF-Comment-19
Page(s): 1

Comment Group 5.13: New Meteorological data

EF-Comment-3:

I am trying to import tanks located on the North Slope of Alaska. There is no meteorological data for anywhere in AK...

EF-Comment-19:

Are there additional locations that are planned to be implemented after the beta release, or is the current list of locations the final selection?

It is reasonable to limit the number of included locations. Population density is likely a reason for assessing which locations were included. However, there are no locations included for the State of Alaska.

Response 5.13: TANKS 4.09D contained met data for 21 Alaska cities, so TANKS 5.1 has been updated to include the following Alaska locations:

- Bethel, Alaska
- Bettles, Alaska
- Big Delta, Alaska
- Anchorage, Alaska
- Annette, Alaska
- Barrow, Alaska
- Cold Bay, Alaska
- Fairbanks, Alaska
- Gulkana, Alaska
- Homer, Alaska
- Juneau, Alaska
- King Salmon, Alaska
- Kodiak, Alaska
- Kotzebue, Alaska
- McGrath, Alaska
- Nome, Alaska
- St. Paul Island, Alaska
- Talkeetna, Alaska
- Unalakleet, Alaska
- Valdez, Alaska
- Yakutat, Alaska.

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Comment Group 5.14: Annual and monthly emissions vary widely

EF-Comment-15:

The routine emissions for a tank vary widely depending on the interval selected for the calculation (annual, monthly, or both). For reference, the emissions calculated for identical HFR

tanks in each of these three scenarios, with 100,000 gallons of RVP 10 gasoline annual throughput, have been consolidated into the attached spreadsheet. The totals calculated for an annual-only calculation interval (1290.494 lbs of VOCs) are significantly lower than the totals calculated when a monthly calculation interval is selected (either as the only interval selected for the calculation or when both the monthly and annual interval is selected, which both resulted in 2989.818 lbs of VOCs for the year).

Response 5.14: It appears that for this example, the user entered data into the Tank Data tab using annual values and then used the Routine Losses tab to calculate annual and monthly emissions. As shown on the Routine Losses tab,

> If tank contents data was entered as monthly values, annual emissions are estimated as the sum of the emissions in each month.
>
> If tank contents data was entered as annual values, monthly emissions are estimated assuming an equal throughput in each month.

For example 1, a horizontal floating roof tank with RVP 10 gasoline; a shell length of 20 feet; a shell diameter of 15 feet; annual throughput of 120,000 gallons in Fort Myers, Florida; and an annual input type results in total annual emissions of 4,711.572 lbs. Using the same tank and evaluating for monthly emissions, results in annual emissions of 7,658.767 lbs. The difference is due to the note above (i.e., "monthly emissions are estimated assuming an equal throughput in each month"), as demonstrated by example 2.

For example 2, a horizontal floating roof tank with RVP 10 gasoline; a shell length of 20 feet; a shell diameter of 15 feet; annual throughput of 120,000 gallons (10,000 gallons per month) in Fort Myers, Florida; and a monthly input type results in total annual emissions of 7,658.767 lbs. Using the same tank and evaluating for annual emissions, results in annual emissions of 7,658.767 lbs.

Therefore, it is important to evaluate the emissions from each tank consistent with the way the tank data were entered. If monthly throughput data are known, they should be entered into the Tank Data tab to ensure emissions are as accurate as possible. In that case, the report should be evaluated for monthly emissions. If annual data were entered into the Tank Data tab, the report should be evaluated for annual emissions.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 8-9

Commenter Name: Fortune Chen
Commenter Affiliation: AQMD
Comment Number: EF-Comment-7
Page(s): 1

Commenter Name: Jonae` Wood
Commenter Affiliation: Ingredion Incorporated
Comment Number: EF-Comment-44
Page(s): 1

Commenter Name: Erin Scott
Commenter Affiliation: San Joaquin Valley APCD
Comment Number: EF-Comment-46
Page(s): 1

Comment Group 5.15: Calculation errors

EF-Comment-5:

Comment 16: To test TANKS 5.0, the following cases were evaluated:

- Case 1- Standard Chemical Mixture (non-customized compounds) in a Vertical Fixed Roof Tank
- Case 2 – Standard Chemical Mixture (non-customized compounds) in a Horizontal Tank
- Case 3 – Standard Chemical Mixture (non-customized compounds) in an External Floating Roof Tank
- Case 4 - Gasoline in an Internal Floating Roof Tank
- Case 5 - Floating Roof Landing Loss for an External Floating Roof Tank
- Case 6 - Cleaning Loss for an External Floating Roof Tank
- Case 7 - Standard Single Component Stock (non-customized) Vertical Fixed Roof Tank, No Insulation, Not Heated
- Case 8 –Custom Mixture in a Vertical Fixed Roof Tank
- Case 9 - Diesel in a Horizontal Fixed Roof Tank
- Case 10 – Custom Single Component Stock Horizontal Fixed Roof Tank.
- Case 11 – Custom Single Component Stock Vertical Fixed Roof Tank
- Case 12 – Standard Single Component Stock (non-customized) Vertical Fixed Roof Tank, Fully Insulated, Not Heated
- Case 13 – Standard Single Component Stock (non-customized) Vertical Fixed Roof Tank, Partially Insulated, Not Heated
- Case 14 – Standard Single Component Stock (non-customized) Vertical Fixed Roof Tank, Fully Insulated, Heated
- Case 15 – Standard Chemical Mixture (non-customized compounds) in a Domed External Floating Roof Tank

None of the cases produced an exact match between emissions calculations from TANKS 5.0 and spreadsheet calculations. Three cases (1-3) were approximately correct (accurate to less than 5%). The remaining cases deviated from our calculations by between approximately 20-60%. One of the highest deviations was associated with a custom compound, such as Case 11. Because there is no detailed report option, we cannot determine the cause the emissions differences.

EF-Comment-7:

There appears to be variation in routine and event storage tank emissions between TANKS 5.0 and sample calculation examples provided in AP-42 Chapter 7.1. No consistency was found in the differences.

Comment: Sensitivity scenarios should be released that demonstrate that TANKS 5.0 generate emissions equivalent to results from the sample calculations shown in AP-42 Chapter 7.1.

EF-Comment-44:

I'm using your tanks 5.0 database to calculate standing losses of my tanks but for some reason we're getting a standing loss of 0. We started to encounter this problem when we entered the temperature in degrees R (file with no standing losses) instead of degrees F (file with standing losses). Attached is a copy of both of the reports I got.

Additionally, neither report matches the data from previous years that was produced using the Tanks 4.09 Access database system. Any assistance rendered will be greatly appreciated.

EF-Comment-46:

So far, we have been unsuccessful at reproducing the results provided from TANKS 5.0 with our internal calculator that uses AP-42 Chapter 7 equations.

Response 5.15:

With respect to EF-Comment-5, the first 6 cases listed appear to be the sample calculations included in Chapter 7.1 of AP-42. When the 6 examples were edited to correct legibility of the equations and lessen the amount of rounding in the calculations, some numbers were not corrected. All 6 cases were reviewed and some errors were found and corrected in the AP-42 calculations. All 6 examples now match TANKS 5.1.

With respect to EF-Comment-44, the temperatures must be entered in Rankine, not Fahrenheit. The EPA was unable to generate a report using TANKS 5.0 or TANKS 4.09D because the vapor pressures inside the tank are greater than the atmospheric pressure of Greensboro, NC. It appears that the Antoine constants are incorrect.

While testing TANKS 5.0, an error was discovered in the annual calculations for horizontal fixed roof tanks which resulted in much higher emissions than calculating by hand. This error has been corrected in TANKS 5.1.

Additional testing has been conducted prior to the release of TANKS 5.1. Without more specific information from the commenters, such as the Tank Data file and the Routine Emissions file, the EPA is unable to offer more guidance on the differences noted in EF-Comment-5, EF-Comment-7, and EF-Comment-46.

Commenter Name: Todd Tamura
Commenter Affiliation: Tamura Environmental, Inc.

Comment Number: EF-Comment-45
Page(s): 1

Comment Group 5.16: Meteorological data used in Table 7.1-7

EF-Comment-45:

Reference #14 for Section 7.1 (NREL's National Solar Radiation Data Base) has been updated with a hyperlink; however, it still does not clearly identify which NREL Solar Radiation Data that EPA is using: i.e., are they the "Hourly extraterrestrial radiation on a horizontal surface" data, the "Hourly extraterrestrial radiation normal to the sun" data, the "Modeled global horizontal" radiation data, the "Modeled direct normal" radiation data, the "Modeled diffuse horizontal" data, the "Measured global horizontal" data, the "Measured direct normal" data, or the "Measured diffuse horizontal" data?

Response 5.16: The data in Reference 14 that were used to create the meteorological data contained in Table 7.1-7 are no longer available at https://rredc.nrel.gov/solar/old_data/nsrdb/1991-2010/hourly/list_by_state.html. The address of the updated dataset available from the National Renewable Energy Laboratory (NREL) was added to Reference 14 in AP-42, Chapter 7.1, Organic Liquid Storage Tanks: https://www.ncei.noaa.gov/products/land-based-station/national-solar-radiation-database.

As no changes have been made to the meteorological data in Chapter 7.1 of AP-42, this comment is beyond the scope of this application. Therefore, no changes were made to Chapter 7.1 of AP-42 as a result of this comment.

6 TANKS 5.0 Suggestions

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 5

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 5

Commenter Name: Fortune Chen
Commenter Affiliation: AQMD
Comment Number: EF-Comment-7
Page(s): 1

Commenter Name: Saeid Alizadeh
Commenter Affiliation: RWDI
Comment Number: EF-Comment-11
Page(s): 1

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Comment Group 6.1: Tank Data file for import and export

EF-Comment-5:

Comment 3: The forms-based approach makes data entry extremely tedious. It would be far more user-friendly if data input was table based, which would facilitate compilation of the input data in a spreadsheet from which it could be copied and pasted into TANKS 5.

EF-Comment-5:

Comment 3: The forms-based approach makes data entry extremely tedious. ...A table approach using cut and paste should also be available for entering custom mixtures.

EF-Comment-7:

The upload and download format is comprised of variables grouped by section (e.g., tankType, tankIdentification, location, etc.). Each section contains a string of variables and their values (e.g., {the column tankIdentification the following data string {"tankID":"ES5","tankDescription":"External Floating Roof Tank","tankCity":"Port Arthur","tankState":"Texas","company":""}). No data specifications are provided for the storage tank input/output files.

Comment: The file format for saving tank/equipment data used for upload and download should be in standard file format (e.g., Excel file format). Note that TANKS 4.09D allowed users to modify data using Access format. Many users have multiple storage tanks and entering and maintaining data must be in a format that is conducive to doing so.

EF-Comment-11:

In terms of Exporting Tank Data, currently the values that are stored in localStorage are transferred to an Excel file in different sheets and the file gets downloaded. Can we also get this data in a JSON file as a part of the export process? In this way, the data will be more readable if the JSON is opened in editors such as Visual Studio Code.

EF-Comment-15:

The readability of the tank data export file would be greatly improved if each characteristic was presented in its own column, rather than in the concatenated groupings that are currently included in the sheet. Some of these groupings, such as the tank fittings and tank contents, result in groups of data so long that they cannot be displayed in their full width on a monitor.

Response 6.1: In TANKS 5.1, all tank inputs are included in the routine losses output file. See Response 7.1 for more details on the changes to the routine losses output file.

The EPA is considering changes to the Tank Data file as a future enhancement to the TANKS application.

Commenter Name: Gail Craner
Commenter Affiliation: PW Grosser
Comment Number: EF-Comment-9
Page(s): 1

Commenter Name: Ling Li
Commenter Affiliation: Altamira
Comment Number: EF-Comment-28
Page(s): 1

Comment Group 6.2: Allow upload of tank data from TANKS 4.09D

EF-Comment-9

Is there a way to import to Tanks 5.0 tank data saved/created using the Tank 4.09D software?

EF-Comment-28:

Does the new Tank 5.0 take the tank data in Tank 4.09 format? If we have old tank data from Tank 4.09, is it possible to upload it to the new version?

Response 6.2: TANKS 5.1 requires tank data information used for landing losses that were not contained in TANKS 4.09D. Also, the chemical vapor pressure information has changed for many chemicals used in Chapter 7.1 of AP-42. Additionally, it appears that exporting tank data from TANKS 4.09D is only available in text or Access format, which is not compatible with the current format. The EPA is considering this change as a future enhancement to the TANKS application.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 7

Commenter Name: David R
Commenter Affiliation: unknown
Comment Number: EF-Comment-24
Page(s): 1

Commenter Name: Michelle Xue
Commenter Affiliation: Stantec
Comment Number: EF-Comment-29
Page(s): 1

Commenter Name: Michelle Xue
Commenter Affiliation: Stantec
Comment Number: EF-Comment-29
Page(s): 1

Comment Group 6.3: Allow custom entries for supporting column diameter, deck seam factor, deck seam footage, and other fittings or seals

EF-Comment-5

Comment 12: The current form needs to allow the user to input a tank specific value because AP-42 specifically indicates to input the tank specific value, unless unknown. For internal floating roof tanks, there is a drop-down menu with two options for specifying the tank specific effective column diameter.

EF-Comment-24:

There is no customization for

1. Deck Seam factor (tested in accordance with API MPMS 19.3)
2. Deck Seam Footage (panels or sheet not in the list)
3. Other fittings or seals tested in accordance with API MPMS

EF-Comment-29:

For Effective supporting column diameter, there is no option for customer data entry.

EF-Comment-29:

Deck fitting has no “default” option any more.

Response 6.3: In TANKS 5.0 and TANKS 5.1 users are able to customize deck seam footage for bolted deck internal floating roof tanks (AP-42 states that deck seam loss is not applicable to welded decks) under Deck Characteristics by choosing:

- Deck Type = Bolted
- Deck Construction = Panel
- Deck Seam= Custom
- Panel Lenth (ft):
- Panel Width (ft):

OR

- Deck Type = Bolted
- Deck Construction = Sheet
- Deck Seam= Custom
- Sheet Width (ft):

The custom entries are then used to determine the deck seam factor. This customization remains available in TANKS 5.1.

The ability to enter a custom diameter for supporting columns is being considered by EPA as a future enhancement to the TANKS application.

Without more specific information from EF-Comment-24, the EPA is unable to offer other custom options for “Other fittings or seals tested in accordance with API MPMS”.

As noted throughout Chapter 7.1 of AP-42, the emissions estimation methodologies encourage the use of user-specific information, if known. Therefore, TANKS 5.0 and TANKS 5.1 encourage the use of user-specific information rather than depending on the default or typical values. Therefore, the option to choose "typical" deck fittings, suggested by EF-Comment-29, for a specific tank type instead of entering each one individually has not been added to TANKS 5.1. However, a table of typical deck fittings by floating roof tank type has been added to the TANKS 5.1 User’s Guide in Section 6.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 6

Commenter Name: Danny Wong
Commenter Affiliation: NJ DEP
Comment Number: EF-Comment-8
Page(s): 1

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Commenter Name: Randi J. Walker
Commenter Affiliation: DEC New York
Comment Number: EF-Comment-16
Page(s): 1

Comment Group 6.4: Include calculations for short-term emissions and maximum hourly emissions

EF-Comment-5:

Comment 7: The tool should include a calculation for maximum hourly emissions. The correct equation for estimating hourly emissions is not based on a simple conversion of the annual emissions rates estimated from AP-42 Chapter 7.1. At least one state, Texas, developed a formula for calculating the worst-case hourly emissions rates from storage tanks. Without incorporating this approach, the regulated community will need to maintain calculations both in a spreadsheet and TANKS 5.0.

https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emissrates-tanks6250.pdf

EF-Comment-8

As states are increasingly concerned with short-term emission rates and health risks associated with them, TANKS 5.0 should integrate optional fields that will perform simplified hourly emission rate calculations, such as user inputs for filling loss duration (hours per event).

EF-Comment-13:

4. TANKS 5.0 is capable of calculating annual routine emissions and/or monthly routine emissions in lb/yr. Some state agencies, such as TCEQ, require quantification of tank maximum hourly emissions. TCEQ recommends including short-term, worst-case maximum hourly routine emission calculations in lb/hr. TCEQ also recommends that the program follow TCEQ guidance documents APDG 6250[1] for maximum hourly fixed roof tank emissions and APDG 6419[2] for

[1] APDG 6250 for maximum hourly fixed roof tank emissions is available at https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emissrates-tanks6250.pdf.
[2] APDG 6419 for maximum hourly floating roof tank emissions is available at

maximum hourly floating roof tank emissions that reflect the worst case meteorological data or liquid stored temperature, maximum hourly tank fill rate for fixed roof tanks, and maximum hourly withdrawal rate for floating roof tanks in the maximum hourly emission rate calculations.

Similarly, the program should calculate the maximum hourly emissions from each nonroutine event such as floating roof landings, which would require the user to enter the refilling rate (gallons/hour or barrels/hour) to refloat the roof.

EF-Comment-16:

Short-term emissions: Many states have short-term standards or guidance concentrations for air toxics with known acute effects such as benzene and hydrogen sulfide. The most emissive period for a cleaning is the first hour of the vapor space purge cycle and for the landing it's the refill period prior to refloating the roof. For the permitting of crude oil storage In New York, we request terminals to evaluate hydrogen sulfide releases during landings or cleanings operations with a specific focus on the most emissive periods of these two emission events. Providing short-term emissions for these specific periods would help regulatory agencies determine if modeled concentrations would meet the short-term guidance or standards and ensure health protections for nearby communities. Looking at an hourly average emission across the entire landing or cleaning period would provide lower emissions and an unrealistic scenario.

Response 6.4: In Section 7.1.3.8 of AP-42, Chapter 7.1, Organic Liquid Storage Tanks, "It is important to note that a 1-month time frame is recommended as the shortest time period for which emissions should be estimated using these methodologies." Therefore, a change to lower that time period from one month to one hour is not being made to AP-42, Chapter 7.1, Organic Liquid Storage Tanks or TANKS 5.1 at this time. The EPA will consider efforts to research methodologies for shorter term emissions estimates in future updates to AP-42, Chapter 7.1 and the TANKS application.

Commenter Name: Danny Wong
Commenter Affiliation: NJ DEP
Comment Number: EF-Comment-8
Page(s): 1

Commenter Name: Randi J. Walker
Commenter Affiliation: DEC New York
Comment Number: EF-Comment-16
Page(s): 1

Comment Group 6.5: Allow different chemical categories in different months

EF-Comment-8:

https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emisshortrates-tanks6419.pdf.

The "Tank Contents" section should be adjusted so that different chemical categories of liquids can be selected to be stored in different months, especially if more default gasoline RVP options are not added.

EF-Comment-16:

In New York State terminals are required to store gasoline during the ozone season (May 1st through September 15th) with an RVP no greater than 9.0 psi. To achieve this, some terminals remove the light-weight alkanes and add them back after the ozone season. Because of this requirement, gasoline stored has a much greater range of RVP values than those inputs provided in TANKS 5.0. A recent terminal provided monthly results for a tank storing gasoline for all 12 months using the following RVP values: 9, 13, 13.5, 15. Only RVP 13 is available in the tool under the Chemical Category of Liquid. While custom petroleum products can be created, the program does not allow for simultaneous use of both default and custom values.

Response 6.5: The EPA is considering allowing different chemical categories to be stored in the tank each month as a future enhancement to the TANKS application.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 4

Comment Group 6.6: **Allow saving of partially completed form**

EF-Comment-5:

Comment 2: When defining inputs for a specific tank, there are many inputs that are required. This is expected. However, when filling out the form, all required fields must be selected before a user can save the tank. This can lead to inefficiency of use, specifically if a user gets to a certain input such as contents and the specific custom mixture is not available/not yet added. If the user navigates away from a partially completed form, it erases all previous inputs. While it is possible to enter placeholder values, save, and revisit, it would be easier to use if there was a way to save a partially completed form and come back to it later.

Response 6.6: The EPA is considering this as a future enhancement to the TANKS application.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 6

Comment Group 6.7: Material changes between landing and filling

EF-Comment-5:

Comment 8: When estimating emissions from roof landings, the American Petroleum Institute (API) equations and AP-42 address a difference in emissions when you fill the tank with a material that has different properties than what was initially stored in the tank. However, the current version of Tanks 5.0 provides only one option in the drop down for what material is stored in the tank before and after a tank landing. This can be an issue when changing crude types, doing seasonal gasoline changes, and any time a change of service is made.

Response 6.7: For roof landings and filling, TANKS 5.0 allowed the user to choose from any material that is entered into the tank on the Tank Data screen. The tank should contain the same materials during landing, cleaning, and refilling as during routine tank operations. No changes were made as a result of this comment.

Using any material that has been entered into the tank for landing and filling has been retained in TANKS 5.1.

Commenter Name: Fortune Chen
Commenter Affiliation: AQMD
Comment Number: EF-Comment-7
Page(s): 1

Comment Group 6.8: Filling loss from roof refloating

EF-Comment-7:

Filling loss from roof refloating is not provided as an emission event option.

Comment: Filling loss from roof refloating should be provided as an emission event option.

Response 6.8: As shown in Section 5.1 of the TANKS 5.0 User's Guide, when the user enters the "Chemical Added to Tank during Refilling," when evaluating roof landing losses, the filling losses are calculated for the tank after the tank is refilled. No changes were made as a result of this comment.

The language was retained in Section 4.1 of the TANKS 5.1 User's Guide.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 9

Comment Group 6.9: Crude oil check box should be automatically filled if using crude oil as template chemical

EF-Comment-5:

Comment 20: However, for the creation of custom petroleum liquids, there is a check box at the bottom of the form for the user to indicate whether it is a crude oil. If the selected "template chemical" is crude oil, the tool should automatically assume that the new custom profile will be a type of crude oil.

Response 6.9: The EPA is considering this as a future enhancement to the TANKS application.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 9-10

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Comment Group 6.10: Allow other units for throughput

EF-Comment-5:

Comment 21: The current version of TANKS 5.0 is limited to accepting throughput data in units of "gallons." The tool should be revised to allow the user to specify throughputs in other units such as "barrels" or "cubic meters." This would give users the flexibility to enter the throughput data in the units to which they are accustomed.

EF-Comment-13:

20. It would be helpful if the user could also choose barrels for the monthly throughput since that is a standard industry unit.

Response 6.10: The EPA is considering this addition as a future enhancement to the TANKS application.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 6-7

Commenter Name: Fortune Chen
Commenter Affiliation: AQMD
Comment Number: EF-Comment-7
Page(s): 1

Commenter Name: Danny Wong
Commenter Affiliation: NJ DEP

Comment Number: EF-Comment-8
Page(s): 1

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Comment Group 6.11: Add help, descriptive error messages, and/or error logs

EF-Comment-5:

In addition, one API member reported entering a custom mixture where the user thought the mole fractions added up to 100% but the mixture would not save, and the program did not explain what prevented the save. It would be helpful if the application had descriptive error messages that allow the user to determine what entry error should be corrected such that the mixture will save.

EF-Comment-7:

There is no means for the user to save a report showing errors. For example, these errors may derive from tank inputs that failed validation. Others occur during emissions calculations.

Comment: There should be a mechanism to export an error log file allowing the user to resolve all errors more easily.

EF-Comment-8**:**

It is possible for a Floating Roof Landing emission calculation to output a negative value. An error message that indicates what caused the negative value would help in troubleshooting the error.

EF-Comment-13:

15. TCEQ believes that TANKS 5.0 would be more useful if each user input contained an embedded help icon that explains why the information is needed to perform the calculations in AP-42 and the relevant equation(s) which use the information.

Response 6.11: TANKS 5.0 and TANKS 5.1 uses validation errors to note when data are missing. As stated in the TANKS 5.0 User's Guide, you cannot save your tank until all validation errors are corrected. This language has been retained in the TANKS 5.1 User's Guide.

The EPA is considering the addition of error logs as a future enhancement to the TANKS application.

Commenter Name: Derek Reese

Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 4

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Commenter Name: Andrea Perez
Commenter Affiliation: Hexion
Comment Number: EF-Comment-18
Page(s): 1

Comment Group 6.12: Allow vapor pressure entry other than Antoine constants

EF-Comment-5:

Comment 1: The customize feature allows the user to add a compound or petroleum liquid that is not listed in either Table 7.1.2 or Table 7.1.3. Specifically, molecular weights, densities, and vapor pressure data are included as possible inputs. However, the only option for the vapor pressures is to provide Antoine's coefficients. There are times when a user is working with compounds for which they have a Vapor Pressure / Temperature relationship that they would like to define or use Riedel's constants. TANKS 5.0 should allow for the user to define the vapor pressure in more than just one way. (See also Comment 10)"

EF-Comment-13:

5. In the Customize tab, users are able to enter a chemical's molecular weight, liquid density, and Antoine's Equation Constants. TCEQ recommends allowing users to enter empirically measured temperature and true vapor pressure data for organic liquid chemicals and utilize the Clausius-Clapeyron Equation to interpolate the true vapor pressure of the chemicals at the relevant temperatures for the purposes of calculating tank emissions similar to how TANKS 4.0.9d allowed users to enter data. Users may not always have a chemical's Antoine's Equation Constants. Allowing for the use of empirically measured temperature and true vapor pressure data will improve the usefulness of TANKS 5.0 by accounting for situations in which the Antoine's Equation Constants are not available."

EF-Comment-18:

In the Customize tab of Tank 5.0, it appears the only option for entering vapor pressure information for a new organic liquid is to have Antoine's constants.

If I have a new organic liquid that does not have Antoine's constants, but I have vapor pressure information for the material at different temperatures – is there any option to be able to put this information instead.

Response 6.12: The EPA is considering this addition as a future enhancement to the TANKS application.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 5

Commenter Name: Fortune Chen
Commenter Affiliation: AQMD
Comment Number: EF-Comment-7
Page(s): 1

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 1-2

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 2

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Commenter Name: Chris Bestfather
Commenter Affiliation: Atkins Realis
Comment Number: EF-Comment-33
Page(s): 1

Comment Group 6.13: Allow import/export of custom data

EF-Comment-5:

Comment 5:

Additionally, there is no way to save or export mixtures and custom chemicals that have been created.

EF-Comment-7:

Customized meteorological data must be entered manually and cannot be saved, uploaded, or downloaded.

Comment: Users should be able to save, edit, upload, and download meteorological data.

EF-Comment-13:

2. The beta test version of the program currently only exports tank-specific data via the data export feature. Custom organic liquid, petroleum liquid, mixture, and meteorological data are only exported if the data are used for a specific tank. For customized user-specified liquid physical property data and user-specified meteorological data, a direct data export feature is not available. To allow the use of customized data for multiple facilities, TCEQ recommends also allowing the user to both import and export customized user-specified liquid physical property data and user-specified meteorological data.

EF-Comment-13:

3. Similar to the Tank Data input interface, TCEQ recommends the Customize input interface include an "Import Data" or a similar option. This will improve the user experience for when custom data has been created and the ability to reuse the custom data for multiple sites or users without having to read it from the exported file and re-enter it

EF-Comment-15:

Allowing users to import/export custom mixture definitions and meteorological data on the Customize page will aid users in consistently using the same data year after year, as it is quite likely that cached data will be lost from the browser between calculations.

EF-Comment-15:

Can the standard chemical, mixture, and meteorological data be accessed electronically outside of the pages in which they can be selected, perhaps through a data export feature?

EF-Comment-33:

Is it possible to allow import/export of custom data (organic/petroleum liquids, mixtures, meteorological). That or copy and paste in the custom windows would be helpful.

Response 6.13: TANKS 5.0 allowed for the import/export of custom data, but it was indirect.

Using the "Export Tank Data" feature, any tank that has been created AND any custom setting that has been created (i.e., custom organic liquid, custom petroleum liquid, custom mixture, and custom meteorological data) are saved into the file and can be restored in the software by importing the tank data file. It is not currently possible to import custom settings unless you also have created some tanks.

TANKS 5.1 includes all custom entries for organic chemicals, petroleum liquids, mixtures, and meteorological data in the routine losses output file. See Response 7.1 for more details.

To avoid any cached data from the browser being lost, please save your data. As explained in Section 3.4 of the TANKS 5.0 User's Guide,

> "TANKS 5.0 will save your data locally within your browser. The data will remain within your browser until you clear your local storage. To save your tank data long term, you should export the tank data for later use. Click "Export Tank Data" as shown by the green oval in Figure 2. Check the "Downloads" page of your web browser to find the file. Open and save the Excel spreadsheet file to your computer, in a location of your choice."

This language has been retained in Section 2.4 of the TANKS 5.1 User's Guide.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 5

Commenter Name: Danny Wong
Commenter Affiliation: NJ DEP
Comment Number: EF-Comment-8
Page(s): 1

Commenter Name: Randi J. Walker
Commenter Affiliation: DEC New York
Comment Number: EF-Comment-16
Page(s): 1

Commenter Name: Randi J. Walker
Commenter Affiliation: DEC New York
Comment Number: EF-Comment-16
Page(s): 1

Commenter Name: Randi J. Walker
Commenter Affiliation: DEC New York
Comment Number: EF-Comment-16
Page(s): 1

Comment Group 6.14: Add more default chemicals

EF-Comment-5:

Comment 5: There is a database of chemicals that is included based on the details in AP-42 Table 7.1.3. While helpful, this list of chemicals is very small. Given that there are several sources of data for obtaining the inputs needed to define a chemical, it is recommended that EPA include a larger list to ensure consistency in the inputs utilized by the regulated community.

EF-Comment-8:

AP-42 Petroleum Liquids Table 7.1-2 should be expanded to include additional Motor Gasoline RVP options. State agencies have received emission calculations from facilities utilizing other tank emission calculation software for additional RVPs not listed in the table (such as RVP 11.5, 13.5, and 15).

EF-Comment-16:

Predefined liquids: Greater selection of predefined liquid inputs beyond AP-42 Table 7.1-2 Selected Petroleum Products and Table 7.1-3 Physical Properties of Selected Petrochemicals is recommended. Specifically, predefined liquid asphalt products and renewables should be included.

EF-Comment-16:

RVP selection:

In New York State terminals are required to store gasoline during the ozone season (May 1st through September 15th) with an RVP no greater than 9.0 psi. To achieve this, some terminals remove the light-weight alkanes and add them back after the ozone season. Because of this requirement, gasoline stored has a much greater range of RVP values than those inputs provided in TANKS 5.0. A recent terminal provided monthly results for a tank storing gasoline for all 12 months using the following RVP values: 9, 13, 13.5, 15. Only RVP 13 is available in the tool under the Chemical Category of Liquid. While custom petroleum products can be created, the program does not allow for simultaneous use of both default and custom values.

Terminals may opt to use only the RVP values in the TANKS model and not take the time to enter the true range because it would require looking at a model output with default values for the months where applicable and running the TANKS model with user inputs for the remaining months. At facilities with many tanks, these small differences could amount to a substantial difference in emissions.

We ran the TANKS model using a gasoline RVP of 10 for all 12 months and a range of RVP values closer to actual storage in New York but average RVP of 10. The scenario of using one RVP value of 10 across all months resulted in a 13% increase in standing loss emissions (see Table 1) over conditions that are closer to what terminals in New York do, which is to store higher RVP in the colder months, lower values before and after the ozone season, and the lowest RVP gasoline during the ozone season (see Table 2). Adding a greater range of gasoline RVP values in the default menu would help to ensure terminals select actual working conditions.

Table 1. RVP 10 for each month

Month	Standing Losses (lb/month)	Working Losses (lb/month)	Total Losses (lb/month)	RVP
January	283.73	27.91	311.64	10

February	275.54	27.91	303.45	10
March	383.98	27.91	411.89	10
April	511.23	27.91	539.14	10
May	685.70	27.91	713.60	10
June	842.07	27.91	869.98	10
July	959.96	27.91	987.87	10
August	922.79	27.91	950.70	10
September	721.49	27.91	749.40	10
October	545.18	27.91	573.09	10
November	410.08	27.91	437.99	10
December	323.90	27.91	351.81	10
Total	6865.66	334.89	7200.55	

Table 2. RVP varies but average is 10 across the year

	Standing Losses (lb/month)	Working Losses (lb/month)	Total Losses (lb/month)	RVP
January	381.29	27.91	409.20	13
February	370.39	27.91	398.29	13
March	383.98	27.91	411.89	10
April	511.23	27.91	539.14	10
May	439.55	27.91	467.45	7
June	533.70	27.91	561.61	7
July	604.47	27.91	632.38	7
August	582.67	27.91	610.58	7
September	721.49	27.91	749.40	10
October	545.18	27.91	573.09	10
November	553.80	27.91	581.70	13
December	435.58	27.91	463.49	13
Total	6063.33	334.89	6398.21	

EF-Comment-16:

When using the same RVP across all months, the vapor pressure function is highest in July. When using values more realistic for the storage in New York, the vapor pressure function is highest in September. These variations are important to consider because the calculations of emissions events are based on model entries for the tank data. Obtaining accurate emissions for landings and cleanings should be based on the most accurate input parameters, and using the

correct RVP is an important component of the calculations. Providing the option for other RVP values in the default input selection will aid the user in obtaining most accurate emissions.

Response 6.14: Similar to TANKS 4.09D, which allowed custom chemicals, TANKS 5.0 and TANKS 5.1 allow the user to add as many custom chemicals, custom petroleum liquids, and custom mixtures as needed. Note that all chemicals, including all RVP gasolines, listed in Chapter 7.1 of AP-42 are included in TANKS 5.0 and TANKS 5.1.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 10

Comment Group 6.15: Default values should auto-populate

EF-Comment-5:

Comment 23: The current version of TANKS 5.0 includes a reference to the default value (e.g., AP-42) for some fields but the user still must enter data manually. Functionality should be added that allows the user to select "default" as an option and have them auto populated.

Response 6.15: As noted throughout Chapter 7.1 of AP-42, the emissions estimation methodologies encourage the use of user-specific information, if known. Therefore, TANKS 5.0 and TANKS 5.1 encourage the use of user-specific information rather than depending on the default values. Auto-population of the default values makes it easier for the user to depend on the default values, which may not apply in all situations.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 10

Comment Group 6.16: Allow 12-month rolling basis

EF-Comment-5:

Comment 22: Many states require regulated entities to track emissions on a 12-month rolling basis. Currently, TANKS 5.0 only allows the user to input on a discrete calendar year period and calculate emissions for the months in that period. Functionality should be added to save throughputs for a combination of month and year and the ability of the user to calculate emissions on a 12-month rolling basis.

Response 6.16: The EPA is considering this change as a future enhancement to the TANKS application.

Commenter Name: Don Kite
Commenter Affiliation: ECCI
Comment Number: EF-Comment-1
Page(s): 1

Comment Group 6.17: Covered tanks

EF-Comment-1:

One issue I've had with 4.09D was that it didn't directly allow calcs for covered tanks (ie no solar heat input).

What is the best way to model these in either program?

I know this is a substantial issue because my large, covered tanks do not raise more than 1 deg F on a hot day, whereas my uncovered tanks will increase substantially more, depending on size.

Response 6.17: Chapter 7.1 of AP-42 does not have separate calculations to estimate emissions from covered tanks. Therefore, TANKS 4.09D nor the current TANKS application contains separate calculations for covered tanks. If the tanks are in temperature-controlled enclosed buildings, a custom meteorological profile based on the temperature of the buildings could be used to estimate emissions from these tanks. However, if the tanks are simply covered by a cloth or metal canopy, the impact on the tank temperature would be much more complicated. Without more specific information from the commenter, the EPA is unable to offer more guidance on the best way to model these covered tanks. If more detailed information is provided, the EPA may consider this change as a future enhancement to the TANKS application.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 5

Commenter Name: Ron Sober
Commenter Affiliation: RFS Consulting, Inc.
Comment Number: EF-Comment-14
Page(s): 1

Comment Group 6.18: Constant level tanks

EF-Comment-5

One specific case that should be clarified in the user's guide is how to use the "Sum of Increases/Decreases in Liquid Level Method" option to account for constant level tanks. If the intent of this field is not to account for constant level tanks, then the capability to specify a constant level tank should be added elsewhere.

EF-Comment-14

For storage tanks which "float" on a pipeline system, whereby inlet and outlet are occurring at a tank at the same time, there needs to be a method to calculate a throughput or level change without being overly conservative or overestimating emissions.

Response 6.18: While changes in the calculation methodologies for tanks which "float" on a pipeline system, are out of scope for this particular action which involves the development of the TANKS 5.0 emissions estimation software, EPA has historically provided guidance regarding tanks which continuously have changing head conditions dependent on pumping operations. As part of the 2020 updates to AP-42 Chapter 7.1, EPA changed the calculation of net turnovers for fixed roof tank working losses in Equation 1-36 (which is now Equation 1-38) to be based on measured increases in liquid level, rather than on pump throughput, to more accurately account for scenarios in which pump-in and pump-out occur simultaneously. Calculations based on pump throughput are now a fallback method in the event that changes in liquid level are not known. EPA clarifies as a footnote under Equation 1-38, in AP-42 that if the annual sum of the increases in liquid level (ΣHQI) are unknown, an estimation can be conducted using pump utilization records. Alternatively, the annual sum of the increases in liquid level may be calculated using the annual net throughput in Equation 1-37.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 7

Commenter Name: Wendy Alexander
Commenter Affiliation: Broadbent Inc.
Comment Number: EF-Comment-6
Page(s): 1

Commenter Name: Wendy Alexander
Commenter Affiliation: Broadbent Inc.
Comment Number: EF-Comment-6
Page(s): 1

Commenter Name: Danny Wong
Commenter Affiliation: NJ DEP
Comment Number: EF-Comment-8
Page(s): 1

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Comment Group 6.19: Enter RVP and ASTM slope for petroleum liquids and crude oils

EF-Comment-5:

Comment 11: When establishing custom petroleum liquids, TANKS 5.0 requires the user to define A and B constants for any material to estimate vapor pressures. However, there are other methods for calculating vapor pressures petroleum liquids, as referenced in Figures 7.1-13b, 7.1-14b, and 7.1-15 of AP-42. Crude Oil and gasoline vapor pressure, in particular, can be calculated utilizing the RVP and the slope of the distillation curve along with temperature. At a minimum, these options should be included in the tool. Ideally, the tool should contain other variations of refined petroleum stocks, gasoline, and crude oil as standard options based on these formulas rather than requiring the user to create a custom product profile each time.

EF-Comment-6:

Also, for gasoline, can you change the choices so that you can enter an RVP value? The current choices of RVP 7, 10, or 13 are limiting.

EF-Comment-6:

For crude oil, can you also allow entry of an RVP value?

EF-Comment-8:

If expanding the default list of AP-42 Petroleum Liquids Table 7.1-2 is not an option, the software should allow the user to calculate the vapor pressure constants (A and B) and other properties by inputting the variables specified in the AP-42 calculations rather than requiring the user perform the calculations outside of the program.

EF-Comment-13:

6. In the Customize tab, users cannot enter the Reid Vapor Pressure (RVP) and American Society for Testing and Materials (ASTM) Slope for RVPs that deviate from the defaults included in the program for distillates and crude oils, which was an option in TANKS 4.0.9d. User specified RVP and ASTM Slopes could be used in the equations provided in Figures 7.1-13b, 7.1-14b, 7.1-15, and 7.1-16 of AP-42 to calculate the liquid vapor pressures. TCEQ recommends adding the option to allow the user to enter RVPs and ASTM slopes for customized distillate and crude oil liquids to estimate the vapor pressures of the liquids stored.

Response 6.19: The EPA is considering this addition as a future enhancement to the TANKS application.

7 TANKS 5.0 Reports

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 5-6

Commenter Name: Danny Wong
Commenter Affiliation: NJ DEP
Comment Number: EF-Comment-8
Page(s): 1

Commenter Name: Gail Craner
Commenter Affiliation: PW Grosser
Comment Number: EF-Comment-9
Page(s): 1

Commenter Name: Saeid Alizadeh
Commenter Affiliation: RWDI
Comment Number: EF-Comment-11
Page(s): 1

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Commenter Name: Randi J. Walker
Commenter Affiliation: DEC New York
Comment Number: EF-Comment-16
Page(s): 1

Commenter Name: David R
Commenter Affiliation: unknown

Comment Number: EF-Comment-24
Page(s): 1

Commenter Name: Todd Tamura
Commenter Affiliation: Tamura Environmental, Inc.
Comment Number: EF-Comment-25
Page(s): 1

Commenter Name: Michael J. Rinkol
Commenter Affiliation: Black & Veatch
Comment Number: EF-Comment-27
Page(s): 1

Commenter Name: Chris Bestfather
Commenter Affiliation: Atkins Realis
Comment Number: EF-Comment-33
Page(s): 1

Commenter Name: Erin Scott
Commenter Affiliation: San Joaquin Valley APCD
Comment Number: EF-Comment-46
Page(s): 1

Comment Group 7.1: **Create a more formal report for TANKS 5.0**

EF-Comment-5:

Comment 6: When calculating routine emissions, the only available output/report is a spreadsheet that includes a pollutant on each row with the total emissions and the standing and working losses. There are also columns for each month of the year to accommodate monthly emissions. While this simple report is suitable for displaying the total emissions, it is not going to be sufficient for permitting and compliance purposes. The state air agencies require detailed inputs and intermediate values that are used to calculate emissions from storage tanks. Based on the report format that has been developed, there is no way for a user to review and validate the output of the tool. This creates two issues: (1) when we get numbers that do not match historical examples based on spreadsheets or other tools, we have no way to figure out the basis for the discrepancy and provide proper feedback to EPA on the cause of the problem; and (2) states will not accept this information as supporting documentation for permit applications and emissions inventories. Specifically, item number 2 will prevent a lot of the community from using TANKS 5.0.

EF-Comment-8:

All calculations performed by TANKS 5.0 should have an option to export results to a spreadsheet. At minimum, these spreadsheets should include all relevant inputs and calculation results. It would be preferable to have an option to include additional details, such as any and all intermediate calculations. This would allow more detailed review of calculations and additional options for performing further calculations outside of the scope of TANKS 5.0.

EF-Comment-9:

Would it be possible to export the input parameters into a table format that can be printed?

EF-Comment-11:

In terms of Exporting Tank Data, currently the values that are stored in localStorage are transferred to an Excel file in different sheets and the file gets downloaded. Can we also get this data in a JSON file as a part of the export process? In this way, the data will be more readable if the JSON is opened in editors such as Visual Studio Code.

EF-Comment-13:

1. For routine losses, the Excel datasheet, which is exported, only displays the emission rates associated with the tank(s). To improve the quality of the exported Excel datasheet and to clearly show the basis of the calculated emission rates TCEQ recommends adding all parameters used to calculate the emissions to the Excel datasheet as previously detailed in the report that was available in TANKS 4.0.9d. This should include whether a control device was used and the associated control efficiency. If the parameters are not included in the Excel datasheet, the basis of the emission calculations will be unclear, and the emission rate representations may not be clear. Additionally, TCEQ recommends that EPA prepare reports that show each calculation step using the input parameters and AP-42 equations including the reference for each step by equation number. TCEQ believes this would also assist in being able to read and interpret the data provided through the inputs, which is currently exported to Excel and difficult to follow unless the user is intimately familiar with AP-42 and TANKS 5.0.

EF-Comment-15:

The readability of the tank data export file would be greatly improved if each characteristic was presented in its own column, rather than in the concatenated groupings that are currently included in the sheet. Some of these groupings, such as the tank fittings and tank contents, result in groups of data so long that they cannot be displayed in their full width on a monitor.

EF-Comment-15:

It would be helpful if the calculation export file included the throughputs used in the calculation.

EF-Comment-15:

Adding the ability to export a fact sheet of all of the variables used in calculating losses for a given tank be added to the routine/emission events pages would greatly assist in validating emissions calculations.

EF-Comment-16:

Model inputs and outputs: Regulatory agencies do not have the ability to verify if the correct inputs were supplied because the program does not provide an output of the tank input values. Additionally, providing the intermediate results such as monthly vapor pressure functions and each individual type of VOC loss (rim seal, deck fitting, deck seam) would help regulatory agencies verify correct inputs. In our experience, the storage of gasoline in New York shows a typical profile for the vapor pressure function. The ability to view this profile allows us to verify appropriate inputs to the model. If the intermediate information were to be provided with the equation variables used in AP-42 regulatory agencies would have the ability to check parameters and intermediate results.

The public is also at a disadvantage from not having access to modeled inputs. Without that transparency, local communities may not fully understand how the estimates of emissions in their communities were derived.

EF-Comment-24:

The output for routine losses:

1. the basis for the losses is invisible
2. these are only totals
3. the individual losses and loss factors need to be shown

EF-Comment-25:

A key issue I see with the web-based tool is that the output is stripped down to just the emissions, without identifying what inputs were used to get those emissions. While the user can have a separate input file for the tanks (and by the way, this didn't work for me - I got the attached), it doesn't identify the specific chemical parameters/meteorological data used to arrive at the result. It appears to be impossible for a user or agency that receives the output information to see which input data were used to obtain those outputs, and evaluate whether or not they were accurate/appropriate.

EF-Comment-27:

The application needs to generate a more formal report that was previously provided (either summary format or detailed format). This report is typically submitted as part of an air permit application and the current output from TANKS 5.0 would not suffice as it does not provide a summary of the inputs.

Also needs to have an option of providing the speciation information, as illustrated in the Example 4 (found at the end of the Chapter 7 file) for gasoline with the individual HAPs.

EF-Comment-33:

Export Routine Loss Calculations: For transparency and ease of QAQC review would it be possible to also export sample calculations for release calculations?

EF-Comment-46:

Thank you for getting back to me about my request for a meeting regarding our testing of TANKS 5.0 beta.

We would appreciate the ability to see what background information, or data sets, is being used to calculate the results, similar to what was provided with TANKS 4.0.

Response 7.1: This issue has been resolved in TANKS 5.1. The routine losses output file has been updated to include multiple tabs to show the inputs used for each tank, intermediate calculations, and emissions by chemical:

Routine Losses

- Tank ID
- Tank Type
- Description
- City, State
- Company
- Meteorological Location
- Chemical Name
- Annual and monthly emissions, as applicable, by tank
    - Standing Losses
    - Rim Seal Losses
    - Deck Seam Losses
    - Deck Fitting losses
    - Working Losses
    - Total Losses

Floating Roof Tank Calcs

Annual

- Tank ID
- Tank Type
- Description
- City, State
- Company
- Chemical Name
- Annual Rim Seal Losses (lb/yr)
- Seal Factor A (lb-mole/ft-yr)
- Seal Factor B (lb-mole/ft-yr (mph^n))
- Annual Average Wind Speed (mph)
- Seal-related Wind Speed Exponent
- Annual Average Value of Vapor Pressure Function
- Annual Average Daily Avg. Liquid Surface Temp. (R)
- Annual Average Vapor Pressure at Daily Average Liquid Surface Temperature (psia)
- Liquid Bulk Temperature (°R)
- Tank Paint Solar Absorptance (Shell)

- Tank Paint Solar Absorptance (Roof)
- Annual Average Vapor Molecular Weight (lb/lb-mole)
- Annual Product Factor
- Number of Columns
- Effective Column Diameter (ft)
- Annual Net Throughput (gal/yr)
- Annual Sum of Decreases in Liquid Level (ft/yr)
- Annual Average Shell Clingage Factor (bbl/1000 sqft)
- Annual Average Organic Liquid Density (lb/gal)
- Annual Tot. Deck Fitting Loss Fact. (lb-mole/yr)
- Deck Seam Length (ft)
- Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr)
- Deck Seam Length Factor (ft/sqft)
- Annual Withdrawal Losses (lb/yr)
- Annual Deck Fitting Losses (lb/yr)
- Annual Deck Seam Losses (lb/yr)

Monthly

- Tank ID
- Tank Type
- Description
- City, State
- Company
- Chemical Name
- Annual Rim Seal Losses (lb/yr)
- Seal Factor A (lb-mole/ft-yr)
- Seal Factor B (lb-mole/ft-yr (mph^n))
- Annual Average Wind Speed (mph)
- Seal-related Wind Speed Exponent
- Annual Average Value of Vapor Pressure Function
- Annual Average Daily Avg. Liquid Surface Temp. (°R)
- Annual Average Vapor Pressure at Daily Average Liquid Surface Temperature (psia)
- Liquid Bulk Temperature (°R)
- Tank Paint Solar Absorptance (Shell)
- Tank Paint Solar Absorptance (Roof)
- Annual Average Vapor Molecular Weight (lb/lb-mole)
- Annual Product Factor
- By month
    - Rim Seal Losses (lb/mo)
    - Wind Speed (mph)
    - Average Value of Vapor Pressure Function
    - Average Liquid Surface Temp. (°R)
    - Average Vapor Pressure at Daily Average Liquid Surface Temperature (psia)
    - Average Vapor Molecular Weight (lb/lb-mole)
- Annual Withdrawal Losses (lb/yr)
- Annual Deck Fitting Losses (lb/yr)

- Annual Deck Seam Losses (lb/yr)
- Deck Seam Length (ft)
- Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr)
- Deck Seam Length Factor (ft/sqft)
- Annual Tot. Deck Fitting Loss Fact. (lb-mole/yr)
- Number of Columns
- Effective Column Diameter (ft)
- Annual Net Throughput (gal/yr)
- Annual Sum of Decreases in Liquid Level (ft/yr)
- Annual Average Shell Clingage Factor (bbl/1000 sqft)
- Annual Average Organic Liquid Density (lb/gal)
    - By month:
        - Withdrawal Losses (lb/mo)
        - Throughput (gal/mo)
        - Sum of Decreases in Liquid Level (ft/yr)
        - Shell Clingage Factor (bbl/1000 sqft)
        - Organic Liquid Density (lb/gal)
        - Deck Fitting Losses (lb/mo)
        - Tot. Deck Fitting Loss Fact. (lb-mole/mo)
        - Deck Seam Losses (lb/mo)

Fixed Roof Tank Calcs

Annual

- Tank ID
- Tank Type
- Description
- City, State
- Company
- Chemical Name
- Annual Standing Losses (lb/yr)
- Annual Working Losses (lb/yr)
- Annual Vapor Space Volume (cu ft)
- Annual Stock Vapor Density (lb/cu ft)
- Annual Average Vapor Space Expansion Factor
- Annual Average Vented Vapor Saturation Factor
- Effective Diameter (ft)
- Vapor Space Outage (ft)
- Tank Shell Height (ft)
- Tank Shell Length (ft)
- Average Liquid Height (ft)
- Roof Outage (ft)
- Dome Radius (ft)
- Shell Radius (ft)
- Tank Cone Roof Slope (ft/ft)
- Annual Average Vapor Molecular Weight (lb/lb-mole)
- Annual Average Vapor Pressure at Daily Average Liquid Surface Temperature (psia)

- Annual Average Liquid Surface Temp (°R)
- Annual Average Ambient Temp (°R)
- Liquid Bulk Temperature (°R)
- Tank Paint Solar Absorptance (Shell)
- Tank Paint Solar Absorptance (Roof)
- Annual Average Vapor Temperature Range (°R)
- Annual Average Daily Vapor Pressure Range (psia)
- Breather Vent Press. Setting Range (psia)
- Annual Average Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)
- Annual Average Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)
- Annual Average Min. Liquid Surface Temp. (°R)
- Annual Average Max. Liquid Surface Temp. (°R)
- Annual Average Daily Ambient Temp. Range (°R)
- Vapor Space Pressure at Normal Operating Conditions (psig)
- Annual Throughput (gal/yr)
- Annual Turnovers
- Working Loss Turnover Factor
- Maximum Liquid Height (ft)
- Minimum Liquid Height (ft)
- Working Loss Product Factor
- Vent Setting Correction Factor
- Annual Sum of Increases in Liquid Level (ft/yr)

Monthly

- Tank Type
- Description
- City, State
- Company
- Chemical Name
- Annual Standing Losses (lb/yr)
- Annual Working Losses (lb/yr)
- Annual Vapor Space Volume (cu ft)
- Annual Stock Vapor Density (lb/cu ft)
- Annual Average Vapor Space Expansion Factor
- Annual Average Vented Vapor Saturation Factor
- By month
    - Standing Losses (lb/mo)
    - Stock Vapor Density (lb/cu ft)
    - Vapor Space Expansion Factor
    - Vented Vapor Saturation Factor
- Effective Diameter (ft)
- Vapor Space Outage (ft)
- Average Liquid Height (ft)
- Roof Outage (ft)
- Dome Radius (ft)

- Shell Radius (ft)
- Tank Cone Roof Slope (ft/ft)
- Annual Average Vapor Molecular Weight (lb/lb-mole)
- Annual Average Vapor Pressure at Daily Average Liquid Surface Temperature (psia)
- Annual Average Liquid Surface Temp (°R)
- Annual Average Ambient Temp (°R)
- Liquid Bulk Temperature (°R)
- Tank Paint Solar Absorptance (Shell)
- Tank Paint Solar Absorptance (Roof)
- By month
    - Vapor Molecular Weight (lb/lb-mole)
    - Vapor Pressure at Daily Average Liquid Surface Temperature (psia)
    - Daily Avg. Liquid Surface Temp. (°R)
    - Average Ambient Temp (°R)
- Annual Average Vapor Temperature Range (°R)
- Annual Average Daily Vapor Pressure Range (psia)
- Breather Vent Press. Setting Range (psia)
- Annual Average Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)
- Annual Average Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)
- Annual Average Min. Liquid Surface Temp. (°R)
- Annual Average Max. Liquid Surface Temp. (°R)
- Annual Average Daily Ambient Temp. Range (°R)
- Vapor Space Pressure at Normal Operating Conditions (psig)
- By month
    - Daily Vapor Temperature Range (°R)
    - Daily Vapor Pressure Range (psia)
    - Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)
    - Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)
    - Daily Min. Liquid Surface Temp. (°R)
    - Daily Max. Liquid Surface Temp. (°R)
    - Daily Ambient Temp. Range (°R)
- Annual Throughput (gal/yr)
- Annual Turnovers
- Working Loss Turnover Factor
- Annual Sum of Increases in Liquid Level (ft/yr)
- Maximum Liquid Height (ft)
- Minimum Liquid Height (ft)
- Working Loss Product Factor
- Vent Setting Correction Factor
- By month
    - Working Losses (lb/mo)
    - Standing Losses (lb/mo)
    - Throughput (gal/mo)
    - Sum of Increases in Liquid Level (ft/yr)

Tank Characteristics

- Tank ID
- Tank Type
- Description
- City, State
- Company
- Meteorological Location
- Shell Length (ft) *[used only for horizontal fixed roof tanks]*
- Shell Side Length (ft) *[used only for square vertical fixed roof tanks]*
- Shell Side 1 Length (ft) *[used only for rectangular vertical fixed roof tanks]*
- Shell Side 2 Length (ft) *[used only for rectangular vertical fixed roof tanks]*
- Shell Height (ft)
- Shell Diameter (ft)
- Maximum Liquid Height (ft)
- Average Liquid Height (ft)
- Minimum Liquid Height (ft)
- Is Tank Heated?
- Typical Maximum Liquid Bulk Temperature in Heating Cycle (degrees R)
- Typical Average Liquid Bulk Temperature in Heating Cycle (degrees R)
- Typical Minimum Liquid Bulk Temperature in Heating Cycle (degrees R)
- Number of Heating Cycles per Year
- Roof Type
- Vacuum Setting (psig)
- Pressure Setting (psig)
- Vapor Space Pressure at Normal Operating Conditions (psig)
- Is Tank Insulated?
- Is Tank Insulated or Underground? *[used only for horizontal fixed roof tanks]*
- Tank Cone Roof Slope (ft/ft)
- Tank Dome Roof Radius (ft)
- Is Tank Equipped with a Control Device?
- Control Device Efficiency (%)
- Tank Shape *[used only for vertical fixed roof tanks]*
- Liquid Bulk Temperature Calculation Method
- Liquid Bulk Temperature (degrees R)
- Tank Bottom Type
- Cone-Shaped Bottom Slope (ft/ft)
- Liquid Heel Type at Tank Minimum
- Minimum Liquid Heel Height (ft)
- Self Supporting Roof?
- Number of Columns
- Effective Column Diameter
- Internal Shell Condition
- Primary Seal
- Secondary Seal
- Seal Fit

- Deck Type
- Tank Construction
- Deck Construction
- Deck Seam
- Panel/Sheet Width (ft)
- Panel Length (ft)
- Shell Color/Shade
- Shell Condition
- Roof Color/Shade
- Roof Condition

Deck Fittings

- Tank ID
- Tank Type
- Description
- City, State
- Company
- Access Hatch fitting type and count
- Fixed Roof Support Column Well fitting type and count
- Unslotted Guidepole and Well fitting type and count
- Slotted Guidepole/Sample Well fitting type and count
- Gauge-float Well (Automatic Gauge) fitting type and count
- Gauge-hatch/Sample Port fitting type and count
- Vacuum Breaker fitting type and count
- Deck Drain fitting type and count
- Deck Leg fitting type and count
- Deck Leg or Hanger (No opening through deck) fitting type and count
- Rim Vent fitting type and count
- Ladder Well fitting type and count
- Ladder-slotted Guidepole Combination Well fitting type and count
- Deck Leg (Pontoon area of pontoon roofs) fitting type and count
- Deck Leg (Double-deck roofs and center area of pontoon roofs) fitting type and count

Met Data

- Tank ID
- Meteorological Location
- By month
    - Average Maximum Ambient Temperature (°F)
    - Average Minimum Ambient Temperature (°F)
    - Average Wind Speed (mph)
    - Average Daily Total Isolation Factor (Btu/ft^2/day)
- Annual Average Maximum Ambient Temperature (°F)
- Annual Average Minimum Ambient Temperature (°F)
- Annual Average Wind Speed (mph)
- Annual Average Total Insolation Factor (Btu/ft^2/day)

- Annual Average Atmospheric Pressure (psi)

Tank Contents

- Tank ID
- Input Type
- Chemical Category of Liquid
- Sum of Increases/Decreases in Liquid Level Method
- Working Loss Turnover Factor Method
- By month:
    - Chemical Name
    - Speciation Option
    - Components to Speciate
    - Throughput
    - Sum of Increases/Decreases in Liquid Level (ft/yr)
- Annual Chemical Name
- Annual Speciation Option
- Annual Components to Speciate
- Annual Throughput
- Annual Sum of Increases/Decreases in Liquid Level (ft/yr)

Custom Organic Liquids

- Tank ID
- Input Type
- Chemical Name
- Molecular Weight
- Liquid Density (lb/gal)
- Antoine's Equation Constant A
- Antoine's Equation Constant B (°C)
- Antoine's Equation Constant C (°C)

Custom Petroleum Liquids

- Tank ID
- Input Type
- Chemical Name
- Vapor Molecular Weight (lb/lb-mole)
- Liquid Molecular Weight (lb/lb-mole)
- Liquid Density (lb/gal)
- Vapor Pressure Equation Constant A
- Vapor Pressure Equation Constant B (°R)
- Is this a crude oil?
- Component Mole Fraction Type
- Chemical Component Name
- Mole Fraction

Custom Mixtures

- Tank ID
- Input Type
- Mixture Name
- Chemical Name
- Liquid Mole Fraction
- Molecular Weight
- Liquid Density (lb/gal)
- Antoine's Equation Constant A
- Antoine's Equation Constant B (°C)
- Antoine's Equation Constant C (°C)

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 8

Commenter Name: Fortune Chen
Commenter Affiliation: AQMD
Comment Number: EF-Comment-7
Page(s): 1

Commenter Name: Danny Wong
Commenter Affiliation: NJ DEP
Comment Number: EF-Comment-8
Page(s): 1

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Comment Group 7.2: Include a downloadable report for landing and cleaning losses

EF-Comment-5:

Comment 14: There is no way to save the inputs that are used for a specific calculation for tank landings and cleanings. Every time the user executes those calculations, they must fill in all required fields. This makes the tool undesirable for calculating emissions from routine tank landings and cleanings.

EF-Comment-7:

Data for Emission Events must be entered manually and cannot be saved, uploaded, or downloaded.

Comment: Users should be able to save, edit, upload, and download emission event data. Facilities with multiple tanks may have several emission events that need to be reported. The ability to save, edit, upload, and download emission events will ease use and speed especially for annual emission reporting.

EF-Comment-8:

For Routine Losses and Emissions Events (both Floating Roof Landing and Tank Cleaning), the software should allow multi-tank selection and data export options to prevent users from needing to change a series of dropdowns when performing calculations for several tanks and several months.

EF-Comment-13:

8. For the "Emission Events" tab, the emission rates are summarized near the bottom of the webpage. Firstly, the emission summary associated with the emission event does not indicate what the emissions consist of. TCEQ recommends revising the emission summary to specify the total VOC emission rate, total HAP emission rate, total exempt solvent emission rate, and total inorganic compound emission rate. TCEQ recommends defining what the above total emission rates consist of (e.g., clarify whether VOC emission rate totals include HAP emissions which are also VOC emissions). Secondly, there is no option to export the data associated with emission events. TCEQ recommends adding an option to export emission events data and include all parameters used to calculate the emission rates. If the parameters are not included in the exported data, the basis of the emission calculations will be unclear, and the emission rate representations may not be clear."

Response 7.2: This issue has been resolved in TANKS 5.1. In the "Non-Routine Losses" tab (the updated name for the previously named "Emission Events" tab), you can add floating roof landing events and tank cleaning events separately, so that the events are saved to the page in a similar manner as the "Tank Data" page. After creating the tank cleaning and floating roof landing events, click "Generate Non-Routine Losses Report." The report can be saved to your computer and contains one tab for "Landing Emissions" and one tab for "Cleaning Emissions".

Landing Emissions

- Tank ID
- Tank Type
- Description
- City
- State
- Company
- Number of Days
- Month
- Floating Roof Leg Height
- Roof Landing Heel Height
- Roof Landing Heel Type

- Landing Chemical
- Refill Chemical
- Standing Losses (lb)
- Filling Losses (lb)
- Total Losses (lb)

Cleaning Emissions

- Tank ID
- Tank Type
- Description
- City
- State
- Company
- Month
- Cleaning Occurred
- Number of Days Idle
- Number of Days Cleaning
- Number of Days Ventilation
- Cleaning Heel Type
- Floating Roof Leg Height
- Liquid Height
- Has Sump?
- Sump Diameter
- Sump Depth
- Solvent Added?
- Solvent Category
- Solvent Name
- Solvent Density
- Solvent Molecular Weight
- Solvent Antoine A
- Solvent Antoine B
- Solvent Antoine C
- Solvent Depth
- Average Ventilation Rate
- Control Efficiency
- Calibration Gas
- Purge Controlled?
- Cleaning Chemical
- Total Purge Losses (lb)
- Total Controlled Forced Ventilation Losses (lb)
- Total Losses (lb)
- Day 1 - Average Concentration (ppmv)
- Day 1 - Ventilation Time (hr/day)
- Day 1 - Average Sludge Depth (in)

- Day 1 - Was Ventilation Stopped?
- Day 1 - Were Emissions Routed to a Control Device?
- Information for Day 1 continues for the number of days in which forced ventilation was used

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Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 6

Commenter Name: Wendy Alexander
Commenter Affiliation: Broadbent Inc.
Comment Number: EF-Comment-6
Page(s): 1

Commenter Name: Danny Wong
Commenter Affiliation: NJ DEP
Comment Number: EF-Comment-8
Page(s): 1

Commenter Name: Saeid Alizadeh
Commenter Affiliation: RWDI
Comment Number: EF-Comment-11
Page(s): 1

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Commenter Name: Zachary C. Boyden
Commenter Affiliation: DEC Alaska
Comment Number: EF-Comment-19
Page(s): 1

Commenter Name: Michael J. Rinkol
Commenter Affiliation: Black & Veatch
Comment Number: EF-Comment-27
Page(s): 1

Commenter Name: Joshua Iguina
Commenter Affiliation: Nicklaus Engineering, Inc.
Comment Number: EF-Comment-40
Page(s): 1

Comment Group 7.3: Show HAP and VOC emissions by chemical in reports

EF-Comment-5:

Comment 9: There is also a need for speciated emissions from tank landings and cleanings. . When testing the landing and cleaning feature, no speciated emissions are reported. Instead, the application reports the total emissions associated with the activity. Similar to the concern around data reporting identified in Comment 5, this output will not be acceptable by regulatory agencies as supporting documentation and can make it difficult to troubleshoot why there may be differences between TANKS 5.0 and legacy tools.

EF-Comment-6:

Can you please update the beta version of TANKS 5.0 to print out a report showing both VOC and HAP emissions, similar to the report that TANKS 4.09D prints out. The beta version of TANKS 5.0 appears to only generate a line item that displays the total VOCs in lbs.

EF-Comment-8:

For Routine Losses and Emissions Events (both Floating Roof Landing and Tank Cleaning), the software should calculate all speciated emission components, including Hazardous Air Pollutants (HAPs), in addition to the total VOC values. HAP constituents are needed for health risk determinations for all tank operating scenarios.

EF-Comment-11:

After exporting the routine losses, in the exported Excel file,...no losses are generated for each VOC individually. Could this be rectified such that we can get the values for each VOC?

EF-Comment-15:

Will the emissions calculations and speciations used in TANKS 5.0 allow users to calculate emissions of HAPS? AP-42 petroleum liquid mixtures calculate only total VOCs, no emissions are calculated for individual chemical species. The emission totals for the individual HAPs are required for reporting purposes.

EF-Comment-19:

The welcome paragraph on the Tank Data page states that the TANKS 5.0 software estimates both VOC and HAP emissions from storage tanks. While VOC emissions (total losses summed from standing and working losses) were found in the spreadsheet exported from the Routine Losses tab, HAP emissions did not appear to be included.

Are HAP emissions a future feature or not currently implemented, or are options to estimate HAP emissions already in the software?

The possibility exists that HAP emission are estimated in the software, and an option to view this was not found during beta testing.

EF-Comment-27:

Also needs to have an option of providing the speciation information, as illustrated in the Example 4 (found at the end of the Chapter 7 file) for gasoline with the individual HAPs.

EF-Comment-40:

I am a contractor working for MCAS Yuma and am wondering how to access HAPS information with TANKS 5.0. The website description labels TANKS 5.0 as being capable of estimating Hazardous Air Pollutants, however I have yet to see anything in the user guide or in exported information from TANKS about anything other than VOC losses. Has this been implemented yet, and if so how would I access it?

Response 7.3: This issue has been resolved in TANKS 5.1 by showing the name of the chemical or mixture in the tank, along with the annual and monthly speciated emissions by component, if applicable, in the report. Note that TANKS 5.1 and AP-2 Chapter 7.1 do not label any specific chemicals as hazardous air pollutants (HAP). For guidance on HAP compounds, please consult the official list of chemicals that are considered HAP. These chemicals may vary by state and may change over time.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 7-8

Comment Group 7.4: Allow all months to be speciated with one click

EF-Comment-5:

Comment 13: Finally, when calculating emissions on a monthly basis, the tool requires the user to specify the level of speciation (partial, full, none) for each month. There should be an option added that allows the user to request that all months be speciated.

Response 7.4: The EPA is considering the addition of one-click speciation as a future enhancement to the TANKS application.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 5-6

Commenter Name: Randi J. Walker
Commenter Affiliation: DEC New York
Comment Number: EF-Comment-16
Page(s): 1

Commenter Name: Michelle Xue
Commenter Affiliation: Stantec

Comment Number: EF-Comment-29
Page(s): 1

Comment Group 7.5: Break out standing and working losses

EF-Comment-5:

Finally, for floating roof tanks, the report only displays total standing and total working losses. The standing losses are comprised of three individual loss mechanisms: (1) deck fitting losses; (2) deck seam losses; and (3) rim seal losses. The report generated should separate the contributions of each loss mechanism and then total the loss.

EF-Comment-16:

Additionally, providing the intermediate results such as monthly vapor pressure functions and each individual type of VOC loss (rim seal, deck fitting, deck seam) would help regulatory agencies verify correct inputs.

EF-Comment-29:

Output emissions are not separated for rim loss, deck fitting loss and deck seam loss.

Response 7.5: In TANKS 5.1, all tank inputs, calculations, rim losses, deck fitting losses, and deck seam losses (if applicable) are included in the routine losses output file. See Response 7.1 for more details on the changes to the routine losses output file.

Commenter Name: Ling Li
Commenter Affiliation: Altamira
Comment Number: EF-Comment-28
Page(s): 1

Comment Group 7.6: Include combustion emissions in tank cleaning emissions

EF-Comment-28:

The tank cleaning calculation section does not take combustion emission into account. A lot of degassing units uses a portable engine to power the unit and the control device itself is also a burner. Would it be possible to add combustion emission calculation functions to the "emission events" tab?

Response 7.6: While combustion factors are available for many cases, Chapter 7.1 of AP-42 does not contain procedures specific to degassing units nor are there any emission factors/calculation procedures related to combustion emissions.

This comment is beyond the scope of this application; therefore, no changes were made.

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Comment Group 7.7: Change units of monthly emissions

EF-Comment-13:

19. The Excel export sheet reports the monthly losses in units of lb/yr. This appears to be incorrect. TCEQ recommends using units of lb/month."

Response 7.7: This change has been made in TANKS 5.1.

8 TANKS 5.0 User's Guide

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Comment Group 8.1: Update the User's Guide

EF-Comment-13:

Also, TCEQ requests that the TANKS 5.0 User's Guide is updated in the final release.

Response 8.1: The TANKS 5.1 User's Guide has been updated for TANKS 5.1.

Commenter Name: David R
Commenter Affiliation: unknown
Comment Number: EF-Comment-24
Page(s): 1

Comment Group 8.2: Define routine losses

EF-Comment-24:

the new term "routine" losses needs to be defined

Response 8.2: Chapter 7.1 of AP-42 notes that "Total routine losses from fixed roof tanks are equal to the sum of the standing loss and working loss." Chapter 7.1 of AP-42 also notes that "Routine floating roof tank emissions are the sum of standing and working losses."

This definition has been added to the TANKS 5.1 User's Guide and TANKS 5.1.

Commenter Name: Ling Li
Commenter Affiliation: Altamira
Comment Number: EF-Comment-28
Page(s): 1

Commenter Name: Lynne Lamia Wallace
Commenter Affiliation: Providence Engineering
Comment Number: EF-Comment-31
Page(s): 1

Comment Group 8.3: Custom chemical selection within a tank

EF-Comment-28:

The tank content does not contain full span of RVP for gasoline. After I created "custom mixture", it does appear in the tank content list. After I duplicated the existing tank, the created chemical was not showing in the tank content table. How can I add a customized chemical to the tank content list?

EF Comment 31:

I have a tank that is 30% by volume HCN, 70% water. I tried to create a custom mixture by first adding the custom chemical Water.

I can enter and save the new chemical Water, but I can't subsequently find it in the list of organic chemicals. Should it be listed in with the other chemicals in the database, or is it somewhere else?

Response 8.3: As detailed in Section 2.2.3 of the TANKS 5.1 User's Guide, custom organic liquids are located here:

- Under Contents / Tank Contents / Chemical Category of Liquid, choose "Custom Organic Liquids".
- Under Contents / Monthly Values or Annual Values / Chemical Name and choose the custom chemical.

Commenter Name: Ron Sober
Commenter Affiliation: RFS Consulting, Inc.
Comment Number: EF-Comment-14
Page(s): 1

Comment Group 8.4: Feet of level change

EF-Comment-14:

Why doesn't the Tank 5.0 not allow entry of feet of level change, as a primary mode of entry, consistent with AP-42?

Response 8.4: As shown in the TANKS 5.0 User's Guide in Section 3.2.4, when entering tank contents, under "Sum of Increases in Liquid Level Method" or "Sum of Decreases in Liquid Level Method" (depending on whether you have a fixed roof tank or a floating roof tank), you can choose "User Input" and you will be asked to enter the following:

- Chemical Name
- Annual Sum of Increases in Liquid Level (ft/yr) or Annual Sum of Decreases in Liquid Level (ft/yr)

If you choose "AP-42 Calculation" you will be asked to enter the following:

- Chemical Name
- Annual Throughput (gal/yr)

This information has been retained in Section 2.2.3 of the TANKS 5.1 User's Guide.

Commenter Name: Fortune Chen
Commenter Affiliation: AQMD
Comment Number: EF-Comment-7
Page(s): 1

Comment Group 8.5: Add file specifications for the Tank data file to the User's Guide

EF-Comment-7:

Regardless, file specifications need be provided as part of the User's manual.

Response 8.5: The EPA set up TANKS 5.0 with the intention that users would employ the interface so that validations are enforced. If users want to employ the Tank Data file to create tank data, they do so at their own risk of errors. Therefore, no file specifications for the Tank Data file have been added to the User's Guide.

Commenter Name: Randi J. Walker
Commenter Affiliation: DEC New York
Comment Number: EF-Comment-16
Page(s): 1

Comment Group 8.6: File storage

EF-Comment-16:

File storage: Our preference would be to allow the user to store data files on local hard drives as opposed to storage in a temporary browser file. Alternatively, it would be helpful to identify the temporary storage path.

Response 8.6: As explained in section 3.4 of the TANKS 5.0 User's Guide,

> "TANKS 5.0 will save your data locally within your browser. The data will remain within your browser until you clear your local storage. To save your tank data long term, you should export the tank data for later use. Click "Export Tank Data" as shown by the green oval in Figure 2. Check the "Downloads" page of your web browser to find the file. Open and save the Excel spreadsheet file to your computer, in a location of your choice."

This guidance has been retained in Section 2.4 of the TANKS 5.1 User's Guide.

Commenter Name: Randi J. Walker
Commenter Affiliation: DEC New York
Comment Number: EF-Comment-16
Page(s): 1

Comment Group 8.7: Clarification of self-supporting roofs

EF-Comment-16:

Greater clarification on the selection of yes or no options for the self-supporting roofs would be helpful.

Response 8.7: There are two basic types of internal floating roof tanks: tanks in which the fixed roof is supported by vertical columns within the tank, and tanks with a self-supporting fixed roof and no internal support columns. This has been added to Section 2.2.2.3 of the TANKS 5.1 User's Guide.

Commenter Name: Derek Reese
Commenter Affiliation: ACC / API / AFPM
Comment Number: EF-Comment-5
Page(s): 5

Comment Group 8.8: Content of User's Guide

EF-Comment-5:

A user's guide has been provided to aid in use of the tool. However, the content in the guide is very limited. There is a brief introduction on simple concepts followed by many pages of what the required inputs are for specific forms. Upon testing, we found the user's guide to be of little value. It could use more detailed information on how the tool works, including examples of certain situations that users may encounter and how to address them or frequently asked questions. If the opportunity for errors is going to be retained in the final version, It should also include guidance regarding which options could result in an error.

Response 8.8: As described in Response 6.11, the EPA is considering the addition of error messages and/or error logs as a future enhancement to the TANKS application.

The EPA has addressed errors noted in the public comments that could be replicated. Without more specific information from many of the commenters, by including the Tank Data file and the Routine Emissions file in their correspondence, the EPA is unable to offer more guidance in the TANKS User's Guide on the existence or correction of additional errors.

The TANKS 5.1 User's Guide will be updated with answers to frequently asked questions as they are received.

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 3

Comment Group 8.9: Confidential Information

EF-Comment-13:

Users may enter confidential information into the program. It is unclear if all information entered through the web interface will be considered public or if TANKS 5.0 users can be assured that using the interface does not make any information public. TCEQ recommends that EPA clarify how user-supplied information will be used and explain whether user provided information could be made available to persons and/or entities besides the user.

Response 8.9: As explained in section 3.1 of the TANKS 5.0 User's Guide,

> "TANKS 5.0 does not store your data within the application, all data is stored within your browser's local storage. The data will remain within your browser until you clear your local storage. In order to save your data long term, you should export your tank data to your computer."

No data is saved by TANKS 5.0 or TANKS 5.1. Therefore, no data entered into the web interface is shared outside of the user's browser and will not be available publicly. This guidance has been retained in Section 2.2 of the TANKS 5.1 User's Guide.

9 TANKS website

Commenter Name: David Munzenmaier
Commenter Affiliation: TCEQ
Comment Number: EF-Comment-13
Page(s): 4

Commenter Name: Geoffrey Bodily
Commenter Affiliation: Peraton
Comment Number: EF-Comment-15
Page(s): 1

Comment Group 9.1: Updates to TANKS website

EF-Comment-13:

21. Once the final TANKS 5.0 program is released, TCEQ recommends that EPA conduct training sessions, or provide training videos, on how to use the program.

EF-Comment-15:

Will there be a notification posted on the home page of 5.0 when software updates have been made? Adding a version number, and a "What's New" link that takes users to a list of changes included in the current update, to the "Last Updated" banner at the bottom of the page would be helpful.

Response 9.1: The EPA thanks you for your suggestions. These suggestions have been implemented. Any changes, revisions, or updates will be sent out via https://www.epa.gov/chief/chief-listserv.

10 General Comments

Commenter Name: Erin Scott
Commenter Affiliation: San Joaquin Valley APCD
Comment Number: EF-Comment-37
Page(s): 1

Comment Group 10.1: Call or meeting requested

EF-Comment-37:

After testing the Beta version of Tanks 5.0, our District has some questions/comments to discuss before the comment period ends. Could we set up a time for a phone call or other meeting.

Response 10.1: The EPA only accepted comments via email or in writing and did not allow for meetings to discuss TANKS 5.0. Questions/Comments can be sent at any time to: https://www.epa.gov/chief/forms/contact-us-about-clearinghouse-inventories-and-emissions-factors.

Commenter Name: Aruna Arunagiri
Commenter Affiliation: Unknown
Comment Number: EF-Comment-39
Page(s): 1

Comment Group 10.2: Gauge Pipe emissions

EF-Comment-39:

I am looking for some information on calculating the emissions from the gauge pipe on the IFR tank. Can I use the Tank software to find the emissions through the gauge pipe as well?

Response 10.2: Emissions from gauge pipes (referred to as guidepoles in AP-42, Chapter 7.1, Organic Liquid Storage Tanks) use the factors shown in Figures 7.1-11 and 7.1-22. Emissions from these gauge pipes are part of the deck fitting losses from floating roof tanks. Standing losses for floating roof tanks are comprised of three individual loss mechanisms: (1) deck fitting losses; (2) deck seam losses; and (3) rim seal losses.

These emissions were included in TANKS 5.0 and TANKS 5.1, but individual emissions for each type of deck fitting are not shown in the report.

Commenter Name: Stacy R Knapp
Commenter Affiliation: Maine Department of Environmental Protection
Comment Number: EF-Comment-41
Page(s): 1

Comment Group 10.3: TANKS 5.0 should remain available after comment period

EF-Comment-41:

I know TANKS 5.0 is available for beta testing right now, and I see comments are being accepted through April 15, 2024. My question is: will TANKS 5.0 continue to be available on the website after April 15, or will it be pulled down? We've received great reviews of the updated version and are considering letting our licensed facilities use it for their 2023 emissions reporting, but we can only do that if we know it will remain accessible.

Response 10.3: The beta version of TANKS 5.0 remained on the site (https://www.epa.gov/air-emissions-factors-and-quantification/tanks-emissions-estimation-software-version-5) until TANKS 5.1 was released in September 2024. The use of the beta version of TANKS 5.0 for any purposes is at the discretion of the regulatory authority.