This presentation discusses how to populate the HAP Emissions tab of the Plywood and Composite Wood Products ICR spreadsheet.

The HAP Emissions tab is where you supply hazardous air pollutant (HAP)-specific emission estimates to be used in the EPA’s residual risk modeling input file.

The HAP Emissions tab also houses the provisional calculations tool, which is an optional tool you can use to calculate HAP emissions if you have no emissions data for a process unit.

Pages 49-53 of the ICR instructions document explain how to populate the HAP Emissions tab using your own emissions estimates. Pages 53-58 discuss how to use the optional provisional calculation tool.

The purpose of this presentation is to:
• give a visual overview of the HAP Emissions tab in the spreadsheet, and
• provide background on the provisional calculations.

SEE SPREADSHEET: layout and required fields
HAP Emissions tab:

Layout

The gray columns are prepopulated with every Process Unit and associated Emission Release Point ID from the EquipDetail tab.

Fifty rows prepopulate for each emission release point because each row will be assigned a different pollutant in column I. Fifty is more rows than needed for most process units. Only a few types of direct-fired processes may approach 50 pollutants. If you need more than 50 rows to list the pollutants for a given release point ID, there are 1000 extra blank rows at the bottom of the table that you can use.

The required columns to complete are columns G through O.

You are asked to provide three separate emission estimates. Actual and allowable emissions are requested in tons per year. Maximum emissions are requested in pounds per hour for use in estimating acute risk. Enter your emission estimates developed outside the spreadsheet into columns M through O to complete the HAP Emissions tab for each emission point.

Provisional calculations are at the right of the tab beginning in column P.

- Columns P-Z contain provisional calculation tool parameters. Several parameters are prepopulated from elsewhere in the spreadsheet. Others must be entered into the white columns.
- Columns AA-AH contain the emission factors and calculation formulas.
- Column AI lists the pollutants with provisional emission factors available based on the SCC. Columns AA-AI activate when you select “yes” in column L to say that you want to view the provisional calculations.
- To complete the HAP Emissions tab using the provisional calculations, you must copy and paste (as values) the calculation results in columns AF-AH into the required columns M-O.
- If you are not using the provisional calculations, you can ignore everything from column P to the right.

CBI. There is no red CBI block in the HAP Emissions tab because emissions data are not considered to be CBI. If you plan to use the provisional calculations, it is important that you do not redact CBI production rates from the spreadsheet until after you have copied the results of the provisional calculations into columns M-O. Otherwise the necessary production data will not be available for the calculations to work.

Completing the Required fields:

G-H. Enter the start and end dates – typically Jan 1 to Dec 31, 2016 if you are using 2016 as the base year.

I. Select each HAP emitted, using a different row for each pollutant. If a HAP is not listed, you may write it in.

Only HAP emissions are required to be entered. You do not need to enter non-HAP pollutants such as PM or VOC in the HAP Emissions tab.
If emitted, certain HAP including mercury, chromium, polycyclic aromatic hydrocarbons (PAHs), and dioxin/furans need to be speciated. See the ICR instructions page 53 for information on speciation of if these HAP are emitted. Speciated chromium and mercury are included in the menu.

J. Once you enter the pollutant, a pollutant type note will appear in column J. It will say “organic,” “metal,” or “user-added.” This column is included to tell the provisional calculations which formula to use. If the spelling of a pollutant name you key in column I does not exactly match the column I menu, “user-added” will appear. There are no provisional calculations for user-added pollutants.

K. Select the “method for determining emissions” corresponding with the “actual” emissions you enter into column M. There are various ways you might estimate emissions depending on the data you have. Please use the most accurate, representative data you have available. You should use source/stack test data for a given pollutant and process if you have it rather than estimating emissions with an emission factor. You may use a representative emission factor estimate if you do not have stack test data for a pollutant expected to be emitted. Emission factors are not available for all processes and expected pollutants, so in some cases, you may estimate emissions by other means such as a model for tank emissions or material balance for miscellaneous coating operations. Whatever method you choose, please use column K to indicate how you arrived at the emission estimate.

The ICR response was intended to be limited to process units with HAP emissions. However, there is a choice for release points with no known or expected HAP emissions. If you have a release point that you have no data for and no reason to expect HAP emissions from, you may select “NA-No known HAP emissions” in column K and leave the remaining required columns blank.

L. Enter “yes” if you would like to view the provisional calculations.

M, N, O. Enter your emission estimates in columns M, N and O. These are the required emissions columns that will go into the EPA’s residual risk modeling file.

Column M asks for “actual” emission in tons per year. Actual emissions are emissions at the final control device outlet, if a control device is present; or actual uncontrolled emissions if there is no control device for the pollutant listed.

Column N asks for “allowable” emissions in tons per year. Allowable emissions may be the same or higher than actual emissions. Allowable emissions represent the emissions allowed under the PCWP NESHAP. For example:

- If you operate a HAP control device that gets 94% reduction, but you are only required to get 90% reduction, then the allowable emissions would be based on 90% reduction.
- If you meet a production-based compliance option (PBCO) in the PCWP rule, then your actual emissions are likely below the PBCO limit with some compliance margin, but allowable emissions would be based on the PBCO limit.
- If the NESHAP does not contain limits for a process unit, the allowable emissions are equal to actual emissions.

Column O asks for “maximum” short-term emissions in pounds per hour. The short-term emission estimate will be used for acute risk modeling. When thinking about short-term emissions, consider conditions when the emissions will peak. Emissions are likely to peak when
the process is at its maximum hourly production rate for the year. Emissions can also peak if a control device is not available for an hour – for example, if you are using the routine control device maintenance exemption under the PCWP NESHAP.

**Apportioning for processes with multiple release points (BH10 vent and BH11 vent).** As you begin working on the HAP Emissions tab, you need to look for process units with multiple release points. You can spot these by looking for process unit IDs in column E that appear in more than one 50-row block. You can also look back at the EquipDetail tab to recall which process units were assigned multiple emission release point IDs.

Depending on the data source you are using for your emission estimates, you may need to apportion emission estimates for a given process unit across its emission release points to avoid double-counting emissions.

If you are using source test data for the emission point, no apportioning would be required. However, if you are using an emission factor estimate that represents emissions from the whole process unit, you would need to apportion emissions across its multiple release points. You can use your engineering judgement on how to best apportion emissions, whether the apportionment is based on relative gas flow rate or other factors.

For this former, suppose we are estimating emissions using an emission factor that represents total former emissions to the atmosphere. The predominant venting mechanism for the former is from pickup points that draw more or less the same volume of air flow through two baghouses. Therefore, we can assign half of the total estimated former HAP emission to each baghouse.

(If you are using the provisional calculations, you will use the “release point emissions apportionment fraction” column to apportion emissions.)

**Process with the same release point (RTO1 stack, BH8 vent).** Another thing to check for is multiple process units venting to the same emission release point. The same emission release point ID will appear in multiple blocks of 50 rows if it serves multiple processes. You may need to treat these specially depending on the data source you are using for your emission estimates. There are several options:

You can estimate emissions for each process unit venting to the emission point on the rows for that process unit. Emissions from all of the processes venting through a single release point will be added together by the risk model as being emitted at the latitude/longitude assigned for that release point.

If you are using source test data for the release point, you could:

> Apportion the total measured emissions from the emission point tested across the rows for each process unit venting to that emission point. This is helpful because it provides an indication of the magnitude of emissions associated with each process unit.

If you have no basis for apportioning emissions, for example, if different types of processes vent to the release point, then you could explain in the pollutant and comments columns that the “combined emissions are provided for process unit ID’s X, Y, and Z in in the row for unit X.” This will alert the EPA to the fact that combined emissions are provided in one row.
Optional Provisional Calculation Tool

- Optional emission-factor calculation resource you may use in the absence of more-representative data
- Available in the right-hand columns of the HAP Emissions tab
- Developed to reduce burden of the ICR for facilities that have little data and do not maintain a HAP emissions inventory
- See section D4b3 of the ICR Instructions

See slide for text
Use of the Provisional Calculations

➤ You may use for pollutants where you lack data.
➤ The provisional calculations should not be used when more-representative, or site-specific data are available.
➤ You may mix and match calculation approaches for a given emission release point. For example:

<table>
<thead>
<tr>
<th>Emission Release Point ID</th>
<th>Pollutant</th>
<th>Method for Determining Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTO1 stack</td>
<td>Formaldehyde</td>
<td>02 - Source Test</td>
</tr>
<tr>
<td>RTO1 stack</td>
<td>Methanol</td>
<td>07 - Emission Factor</td>
</tr>
<tr>
<td>RTO1 stack</td>
<td>Propionaldehyde</td>
<td>99 - PCWP Provisional Calculation</td>
</tr>
</tbody>
</table>

See slide for text

Example: You may use site-specific source test data for formaldehyde, a representative emission factor available to the facility for methanol, and the provisional calculations for additional HAP that you have no other data for (e.g., propionaldehyde).
How the Provisional Calculations Work

- The provisional calculations:
  - Look up publicly-available emission factors based on the SCC associated with each emission release point ID
  - Use formulas to pull in process throughput, operating hours, and fuel use entered elsewhere in the PCWP spreadsheet
  - Accept an apportionment fraction to parse emission-factor estimates across multiple release points from the same process unit
  - Account for HAP reductions from control devices
- Most of the provisional emission factors are from AP-42
  - Pollutants with all below detection limit (BDL) data excluded
- Facilities can enter a different emission factor, if desired

See slide for text
There are some pros and cons to using the AP-42 emission factors that you should consider as you decide whether to use the provisional calculations.

Cons: The AP-42 chapters covering the PCWP sector were last updated in 2002 and are now somewhat dated. The AP-42 factors predate the 2007 PCWP NESHAP compliance date when many facilities installed controls. However, the available uncontrolled AP-42 emission factors can be coupled with control efficiency estimates to estimate controlled emissions for facilities that do not have data for certain HAP. The AP-42 emission factors also predate implementation of resin changes to reduce formaldehyde off-gassing from interior products. We expect that use of the AP-42 factors would err on the side of overestimating emissions at facilities switching to low- or no-added formaldehyde resins.

Pros: see slide for text

The ICR instructs respondents to use the most representative means of estimating emissions available to them, including site-specific emissions measurements or emission estimates based on representative emission factors if measurements are not available. Respondents with access to more updated emission factors should use the most representative information for their facility. Respondents using the provisional calculations can input different emission factors into the calculations if they have factors that are more representative.
The provisional calculation emission factors depend on source classification codes (SCCs). If you plan to use the provisional calculations, you will want to refer to Appendix 8 of the ICR instructions.

Appendix 8 provides a crosswalk of the SCCs and the assigned emission factors.

Appendix 8 is organized by product and sorted by SCC. The SCC level four description and corresponding process unit type is provided. These gray columns are helpful when assigning SCCs in the ReleasePt tab. The blue columns are helpful for identifying the pollutants with a provisional emission factor for each SCC and the source of the emission factor.
Column Q of the HAP Emissions tab provides a description of the “most closely related available emission factor for organic HAP.” Column Q should not be confused with the SCC description which appears in the ReleasePt tab.

Column Q displays the organic HAP emission factor paired with each SCC for use in the provisional calculations. Right next to it in column R is the reference for each emission factor. More SCCs were available than emission factors, so it was necessary to make some conservative substitution assumptions to associate available AP-42 emission factors with the new SCCs. Comparable emission factors were selected whenever possible - for example, substituting a softwood plywood plant veneer dryer emission factor for a softwood veneer dryer in an LVL plant.

Examples of conservative substitutions made include:
• using softwood emission factors for mixed or hardwood species when no emission factor was available for that wood type;
• or using a direct-fired emission factor for indirect-fired units when no indirect-fired emission factors are available.

The “most closely related available emission factor” Column Q was provided to aid respondents in evaluating whether the provisional calculation emission factor is adequately representative. We encourage you to consider the assigned provisional emission factor. If you conclude the emission factor is not representative, then you can estimate emissions without using the provisional calculations, or substitute a more-representative emission factor that you have into the calculation.
If you are interested in more detail on selection of the emission factors included in the ICR provisional calculation tool, see the September 2017 memo on the ICR website. This memo was made available for public comment with the second ICR Federal Register notice. It documents how the AP-42 and other emission factors were paired with each SCC.

One thing to note is that the PCWP SCCs were updated in 2015. A total of 425 SCCs were available. Sixty of the new SCCs were not included in the ICR drop-down menus because they are for processes, such as green end operations, that do not emit HAP. The ICR drop-down menu in the ReleasePt tab contains 365 SCCs. Some of these SCCs – such as not-elsewhere-classified SCCs - have no available HAP emission factors.

The Provisional Calculations memo Appendix C contains the list of HAP included in the HAP Emissions tab pollutant menu. The pollutant drop-down menu was developed based on the list of available HAP emission factors that reflect “detectable” emissions, and the list of HAP from the National Emissions Inventory for PCWP category sources. Respondents can include additional HAP emitted, if any, the HAP Emissions tab.

HAP metals are included in the HAP Emissions tab pollutant drop-down menu because of their potential to be emitted from direct-fired dryers. The EPA does not currently have any data documenting HAP metals emissions from dryers, but we believe the possibility exists given what we know about fuel combustion from other source categories. The provisional calculations include HAP metals emission factors derived from fuel analysis data in stoker and suspension burner wood-fired boilers. These data are reasonably transferrable for conservatively estimating potential metals emissions for residual risk analysis. Some metals such as mercury and chromium require speciation prior to inclusion in the risk analysis. The provisional calculation emission factors for HAP metals take speciation into account.

Oil-firing is less common in the PCWP industry than firing wood or natural gas. Therefore, no SCCs are associated with oil firing. The provisional calculations memo Table 4 contains residual oil-firing emission factors from AP-42.
No Emission Factor Scenarios

Within the Provisional Calculations:

- **No EF for SCC:** Displays in column R if no HAP emission factors were available for an SCC (e.g., other not classified, tanks, miscellaneous coating operations)
- **No EF for pollutant:** Displays in column AC if no HAP emission factor is available for a given pollutant, or if the available emission factor as based on all-BDL data

Within the provisional calculations, there are SCCs and pollutants that do not have any available emission factors.

See slide for text

GO TO SPREADSHEET – PROVISIONAL CALCULATIONS
Provisional calculations:
Quick page-through:
Select “yes” in column L to view the provisional calculations so the emission calculation formulas will appear in columns AA through AI.
Recall that column J displays “organic” or “metal” to dictate which formula the provisional calculations use. There are no provisional calculations for “user-added” HAPs.
The provisional calculation parameters begin in column P.
Review the information in the light purple columns that is prepopulated with formulas based on responses elsewhere in the spreadsheet. Please pay careful attention to the information to ensure it is correct because it will be used in the calculations.
You will enter information into the white columns for the release point apportionment fraction and the control efficiency. For HAP metal rows, the PM control efficiency column turns white to accept data entry and the MMBtu/hr associated with wood firing prepopulates in column Z.
You may enter a site-specific or more representative emission factor to use in place of the provisional emission factor in column AA.
Column AC provides the provisional emission factor, and Column AB provides its units of measure. The emission factor is prepopulated based on the SCC displayed in column P.
The pollutants with available provisional emission factors for the SCC are listed in column AI. If no emission factor is available for a pollutant, you will see “No EF for pollutant” in column AC [see row 125].
The scalar columns will typically display “1” and “unity” unless a conversion is required to convert production units of measure to the emission factor units of measure. If a conversion is required, the scalar columns will update.
The calculated emissions appear in columns AF – AH. To complete the HAP Emissions tab, you must copy and paste the results of the provisional calculations into columns M - O.

Column by column discussion:
The SCC is prepopulated for the emission release point from the ReleasePt tab.
Column Q describes the “Most Closely Related Organic HAP Emission Factor” for the SCC. As explained earlier, this most-closely-related emission factor description is not the same thing as the SCC description provided in the ReleasePt tab. As we explained earlier, there are many SCCs that did not have available organic HAP emission factors in AP-42. This column describes the emission factor paired with each SCC to allow you to evaluate whether it is representative or if you have better information to use a different calculation approach.
Column R provides a reference for the organic HAP emission factor. If no HAP emission factors were available for a given SCC, column R displays “No EF for SCC.” [Row 224]

Multiple SCC per emission point issue. Please pay special attention to the SCC listed if you have processes with different SCCs feeding into the same release point. The lookup formulas pick up the first SCC listed in the ReleasePt tab for the emission point. There is a trick for correcting the
second and later SCCs for the emission point if you want to use the provisional calculations. BH23 and BH24 vent examples:

BH23 shows the problem. We have a sander and a saw venting to BH23. The lookup formula picks up the first SCC is sees in the ReleasePt tab – for the sander. This sander SCC is also prepopulated for the saw.

BH24 shows the trick for fixing this temporarily so you can use the provisional calculation. Simply go back in the EquipDetail tab and give the second and subsequent uses of the emission point a different name until you get your provisional calculations done and copied into columns M-O, and then remove the temporary distinctions. Because each release point has its own row in the ReleasePt tab, it does not cause problems to temporarily rename release points in the EquipDetail tab. The release points only appear in EquipDetail, ReleasePt, and HAP Emissions tabs.

S-V. The throughput and units of measure in columns S and T are prepopulated from the dryer, press, and other process specific-tabs in the spreadsheet.

Operating hours and the APCD system are brought in from the EquipDetail tab.

Please take a look at the values in these columns S-U to make sure they are correct for use in the emissions calculation. If the values in S-U are not correct, the underlying tab needs to be corrected or you should not use the provisional calculation.

W. The “release point emissions apportionment fraction” in column W is used to apportion emissions from a single process unit across multiple release points. The default is 1 assuming most process units have a single release point where all (or 100%) of the emissions exit.

However, it may be necessary to divide the process unit emissions across multiple release points. For example, for a process unit with 2 stacks you might enter 0.5 to apportion half of the calculated emissions to each stack.

X. Column X accounts for emissions collection and control efficiency. For uncontrolled emissions, enter 0 or leave column X blank.

If the process unit has a control system, then you would enter the control efficiency in decimal form, not to exceed 1 which would indicate 100% emissions reduction by a control device.

Collection efficiency can come into play for units such as presses where there may be partial or less than 100% capture of emissions. If there is less than 100% capture, multiply the capture and control efficiency together to get the combined collection-control efficiency in decimal form to enter. The instructions in cell X10 and in the instructions document provide an example.

Y-Z. Columns Y and Z apply for metal HAP only. The provisional calculations estimate metal HAP emissions from direct-wood firing using emission factors based on fuel analysis data. You need to enter a PM control efficiency in column Y for the APCD system. This is the PM reduction across all control devices if multiple PM-reducing devices are used in series. Some defaults that you can use are provided for different control devices if you do not have any better information. Enter zero for the PM control efficiency for gaseous forms of mercury.

Review the MMBtu/hr from column Z. This is the total MMBtu/hr associated with direct-wood firing from the DFDryFuel tab.
If you have HAP metals emissions estimates for direct-fired dryers burning non-wood fuels, then those emission estimates must be entered into the required columns M-O directly without using the provisional calculations.

AA. Column AA is where you would enter your own emission factor. The provisional formulas in columns AF-AH will preferentially use your emission factor entered in column AA instead of the provisional emission factors.

One thing to keep in mind if you are using your own emission factor is that the units of measure for your emission factor must be the same as the units of measure shown in column AB for the provisional emission factor. If the units are not the same, then you need to convert your emission factor to the units of measure in column AB in order for the emissions calculation result to be correct. (If getting the units to match is problematic, you always have the option to calculate your emissions directly without using the provisional calculations.)

We already discussed the units of measure and scalar columns used to ensure the emission factor units of measure match the production units of measure. If the scalar column returns a blank, then no scalar is available, meaning you will need to estimate emissions separately.

The emissions calculation formulas for columns AF – AH are provided in the instructions document. Column AF calculates actual emissions.

Column AG calculates allowable emissions based on the compliance margin between the actual organic HAP control efficiency verse the 90% control efficiency required in the PCWP NESHAP. If no organic HAP control is used, the calculation sets actual = allowable. Actual also equals allowable for HAP metals that currently have no limits under the PCWP NESHAP.

Column AH calculates the maximum lb/hr based on uncontrolled emissions, assuming there is 1 hour during the year when emissions are uncontrolled.

Facilities can use a different approach for estimating the allowable and maximum emissions, if desired, by entering their emission estimates directly into columns N and O without using the provisional calculations.

To complete the provisional calculations, you must copy and paste the results as values (without formatting) from columns AF-AH into the required emissions columns M-O. The HAP Emissions tab is not complete until columns M-O are populated.
If you have questions, please contact us at the PCWP ICR Helpdesk, or visit our website where we are posting answers to frequently asked questions, as needed.

Thank you for listening to this discussion covering the HAP Emissions tab of the PCWP ICR.