Using Multiple Stack Tests From a Calendar Year to Estimate Emissions

The example calculations below are provided for illustrative purposes only. For questions please contact Nick Page at 515-725-9544 or nick.page@dnr.iowa.gov.

If more than one DNR-approved stack test was conducted for an emission point during the emissions inventory year, emissions should be estimated using each DNR-approved stack test results along with the throughput or operating data for the period of time after each stack test date(s).

**Most recent stack test for EP-1 prior to January 1 of the emissions inventory year:** Use the most recent DNR-approved stack test result prior to January 1 of the emissions inventory year along with the throughput/operating data from January 1 up to the date of the first stack test conducted during the emissions inventory year.

*Example calculation*
- November 1 (of the previous year) stack test result (average of all the runs conducted during the test) = 0.07 lbs VOC/ton of raw material
- Throughput from the emissions inventory year = 1,500,000 tons raw material
- Estimated throughput from January 1 through February 15 = (46 days/365 days)*(1,500,000 tons) = 189,041 tons raw material
- Estimated VOC emissions from January 1 through February 15 = (189,041 tons)*(0.07 lbs VOC/ton)*(ton/2,000 lbs) = 6.62 tons VOC

**Stack test #1 during the emissions inventory year for EP-1 occurred on February 15:** Use the DNR-approved stack test result from February 15 along with the throughput/operating data from February 16 through May 15 to estimate the emissions from this time period.

*Example calculation*
- February 15 stack test result (average of all the runs conducted during the test) = 0.04 lbs VOC/ton of raw material
- Throughput from the emissions inventory year = 1,500,000 tons raw material
- Estimated throughput from February 16 through May 15 = (89 days/365 days)*(1,500,000 tons) = 365,754 tons raw material
- Estimated VOC emissions from February 16 through May 15 = (365,754 tons)*(0.04 lbs VOC/ton)*(ton/2,000 lbs) = 7.32 tons VOC

**Stack test #2 during the emissions inventory year for EP-1 occurred on May 15:** Use the DNR-approved stack test result from May 15 along with the throughput/operating data from May 16 through August 15 to estimate the emissions from this time period.

*Example calculation*
- May 15 stack test result (average of all the runs conducted during the test) = 0.06 lbs VOC/ton raw material
- Throughput from the emissions inventory year = 1,500,000 tons raw material

12/03/2014
Stack test #3 during the emissions inventory year for EP-1 occurred on August 15: Use the DNR-approved stack test result from August 15 along with the throughput/operating data from August 16 through November 15 to estimate the emissions from this time period.

**Example calculation**
- August 15 stack test result (average of all the runs conducted during the test) = 0.03 lbs VOC/ton raw material
- Throughput from the emissions inventory year = 1,500,000 tons raw material
- Estimated throughput from August 16 through November 15 = (92 days/365 days)*(1,500,000 tons) = 378,082 tons raw material
- Estimated VOC emissions from August 16 through November 15 = (378,082 tons)*(0.06 lbs VOC/ton)*(ton/2,000 lbs) = 11.34 tons VOC

Stack test #4 during the emissions inventory year for EP-1 occurred on November 15: Use the DNR-approved stack test result from November 15 along with the throughput/operating data from November 16 through December 31 to estimate the emissions from this time period.

**Example calculation**
- November 15 stack test result (average of all the runs conducted during the test) = 0.08 lbs VOC/ton raw material
- Throughput from the emission inventory year = 1,500,000 tons raw material
- Estimated throughput from November 16 through December 31 = (46 days/365 days)*(1,500,000 tons) = 189,041 tons raw material
- Estimated VOC emissions from November 16 through December 31 = (189,041 tons)*(0.08 lbs VOC/ton)*(ton/2,000 lbs) = 7.56 tons VOC

<table>
<thead>
<tr>
<th>Stack Test Date</th>
<th>Actual Emissions Estimate Period</th>
<th>Stack Test Result</th>
<th>Actual Throughput Data During Emissions Estimate Period</th>
<th>Conversion To Tons</th>
<th>Actual Emissions Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov-1-2010</td>
<td>Jan-1-2011 thru Feb-15-2011</td>
<td>0.07 lbs/ton</td>
<td>189,041 tons</td>
<td>ton/2,000 lbs</td>
<td>6.62 tons</td>
</tr>
<tr>
<td>Feb-15-2011</td>
<td>Feb-16-2011 thru May-15-2011</td>
<td>0.04 lbs/ton</td>
<td>365,754 tons</td>
<td>ton/2,000 lbs</td>
<td>7.32 tons</td>
</tr>
<tr>
<td>May-15-2011</td>
<td>May-16-2011 thru Aug-15-2011</td>
<td>0.06 lbs/ton</td>
<td>378,082 tons</td>
<td>ton/2,000 lbs</td>
<td>11.34 tons</td>
</tr>
<tr>
<td>Aug-15-2011</td>
<td>Aug-16-2011 thru Nov-15-2011</td>
<td>0.03 lbs/ton</td>
<td>378,082 tons</td>
<td>ton/2,000 lbs</td>
<td>5.67 tons</td>
</tr>
<tr>
<td>Nov-15-2011</td>
<td>Nov-16-2011 thru Dec-31-2011</td>
<td>0.08 lbs/ton</td>
<td>189,041 tons</td>
<td>ton/2,000 lbs</td>
<td>7.56 tons</td>
</tr>
<tr>
<td></td>
<td>Jan-1-2011 thru Dec-31-2011</td>
<td></td>
<td>1,500,000 tons</td>
<td></td>
<td>38.51 tons</td>
</tr>
</tbody>
</table>

The individual emissions estimates for all time periods should be added together to estimate the total emissions from the emission point for the emissions inventory year.

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