

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 = $(46 \text{ days}/365 \text{ days}) * (1,500,000 \text{ tons}) = 189,041 \text{ tons raw material}$
- Estimated VOC emissions from January 1 through February 15 = $(189,041 \text{ tons}) * (0.07 \text{ lbs VOC/ton}) * (\text{ton}/2,000 \text{ lbs}) = 6.62 \text{ tons VOC}$

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 = $(89 \text{ days}/365 \text{ days}) * (1,500,000 \text{ tons}) = 365,754 \text{ tons raw material}$
- Estimated VOC emissions from February 16 through May 15 = $(365,754 \text{ tons}) * (0.04 \text{ lbs VOC/ton}) * (\text{ton}/2,000 \text{ lbs}) = 7.32 \text{ tons VOC}$

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

- Estimated throughput from May 16 through August 15 = $(92 \text{ days}/365 \text{ days}) * (1,500,000 \text{ tons}) = 378,082 \text{ tons raw material}$
- Estimated VOC emissions from May 16 through August 15 = $(378,082 \text{ tons}) * (0.06 \text{ lbs VOC/ton}) * (\text{ton}/2,000 \text{ lbs}) = 11.34 \text{ tons VOC}$

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 = $(92 \text{ days}/365 \text{ days}) * (1,500,000 \text{ tons}) = 378,082 \text{ tons raw material}$
- Estimated VOC emissions from August 16 through November 15 = $(378,082 \text{ tons}) * (0.03 \text{ lbs VOC/ton}) * (\text{ton}/2,000 \text{ lbs}) = 5.67 \text{ tons VOC}$

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 = $(46 \text{ days}/365 \text{ days}) * (1,500,000 \text{ tons}) = 189,041 \text{ tons raw material}$
- Estimated VOC emissions from November 16 through December 31 = $(189,041 \text{ tons}) * (0.08 \text{ lbs VOC/ton}) * (\text{ton}/2,000 \text{ lbs}) = 7.56 \text{ tons VOC}$

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

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.