

Potential to Emit How To and Updates Related to Permitting Requirements

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Background

- ▶ Region 7 state agencies (KDHE, MDNR, IDNR, NDEE) now requiring site-wide PTE with submittal of operating permit renewals and construction permit applications in many instances
- ▶ Even when not required, it is not uncommon for the state agency to request site-wide PTE information following application submittal
- ▶ The overall intent is to confirm source status and current classification
- ▶ Knowing requirements and expectations up front can save time and potential headaches later on

KDHE Expectations on Potential to Emit (PTE) Related to State Permitting

- ▶ KDHE now requires updated site-wide PTE for operating permit renewals (Excel format)
 - IAs need to be included in site-wide totals
- ▶ KDHE may require site-wide PTE for construction permit/approval applications
 - Automatically required for synthetic minor sources
 - Otherwise, KDHE will request on case-by-case basis as deemed necessary
 - ◆ Will use PTE on file from previous submittal, if available, to confirm thresholds

MDNR Expectations on Potential to Emit (PTE) Related to State Permitting

- ▶ Currently, MDNR does not require updated site-wide PTE for operating permit renewals, although request may be made on a case-by-case basis
 - Likely be required in future
- ▶ Site-wide PTE for construction permit applications is not required

IDNR Expectations on Potential to Emit (PTE) Related to State Permitting

- ▶ IDNR requires updated site-wide PTE for operating permit renewals
 - Form CA-01 Calculations
 - Instructions - <https://www.iowadnr.gov/portals/idnr/uploads/air/operpermit/Instructions%20Title%20V%20Operating%20Permit%20Application.pdf>
- ▶ IDNR also requires updated site-wide PTE for construction permit applications
 - Form EI
 - Form - <https://www.iowadnr.gov/portals/idnr/uploads/forms/5420946.pdf>
 - Instructions - https://www.iowadnr.gov/portals/idnr/uploads/air/conpermit/Air_Construction_Permit_Basic_Instructions_Revised_11-13-2020.pdf

NDEE Expectations on Potential to Emit (PTE) Related to State Permitting

- ▶ NDEE requires updated site-wide PTE for operating permit renewals
 - Exception – No changes have been made since the previous issuance
 - ◆ If no changes have been made, then the PTE spreadsheet from the current operating permit Factsheet is required to be attached with the application
 - Form 8.0 Section 1.1, Part 63
 - <http://dee.ne.gov/publica.nsf/PubsForm.xsp?documentId=27F9A63164818C3086258410006AE795&action=openDocument>
- ▶ NDEE does not require site-wide PTE for construction permit applications (though they appreciate receiving them as part of the application to confirm major/minor source status)
 - Note, the fee schedule for construction permits is based on the PTE of the source post project (Section 1 1 CP General Information Instructions - <http://dee.ne.gov/Publica.nsf/pages/08-101>)

NDEE Expectations on Potential to Emit (PTE) Related to State Permitting, cont.

<u>Permit Application Fee Schedule</u>	
Facility-Wide Potential-To-Emit (PTE)	Application Fee
100 tons or more per year of any air pollutant; or 10 tons or more per year of any single hazardous air pollutant (HAP); or 25 tons or more per year of any single combination of HAPs	\$3,000
50 tons or more but less than 100 tons per year of any air pollutant; or 2.5 tons or more but less than 10 tons per year of any single HAPs; or 10 tons or more but less than 25 tons per year of any combination of HAPs	\$1,500
Less than 50 tons per year of any air pollutant; or Less than 2.5 tons per year of any single HAP; or Less than 10 tons per year of any combination of HAPs	\$250

Agency Potential to Emit (PTE) Submittal Expectations – Summary

Agency	Site-wide PTE Required with Operating Permit Renewal?	Site-wide PTE Required with Construction Permit Application?
KDHE	Yes	Yes (synthetic minor sources only)
MDNR	Upon Request	No
IDNR	Yes	Yes
NDEE	Yes*	No

*Unless there have not been any changes since the prior submittal.

Potential to Emit (PTE)

- ▶ PTE is the potential uncontrolled emission rate for a piece of equipment based on the maximum design capacity and unlimited operation of the equipment.
- ▶ PTE can be reduced by
 - Addressing physical limitations to a piece of equipment operating at maximum capacity
 - Use of air pollution control equipment
 - Restrictions on hours of operation
 - Restrictions on raw materials and fuel usage
- ▶ Limitations must be federally and practically enforceable

Potential to Emit

- ▶ Potential to emit means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

Emission Calculation Concepts

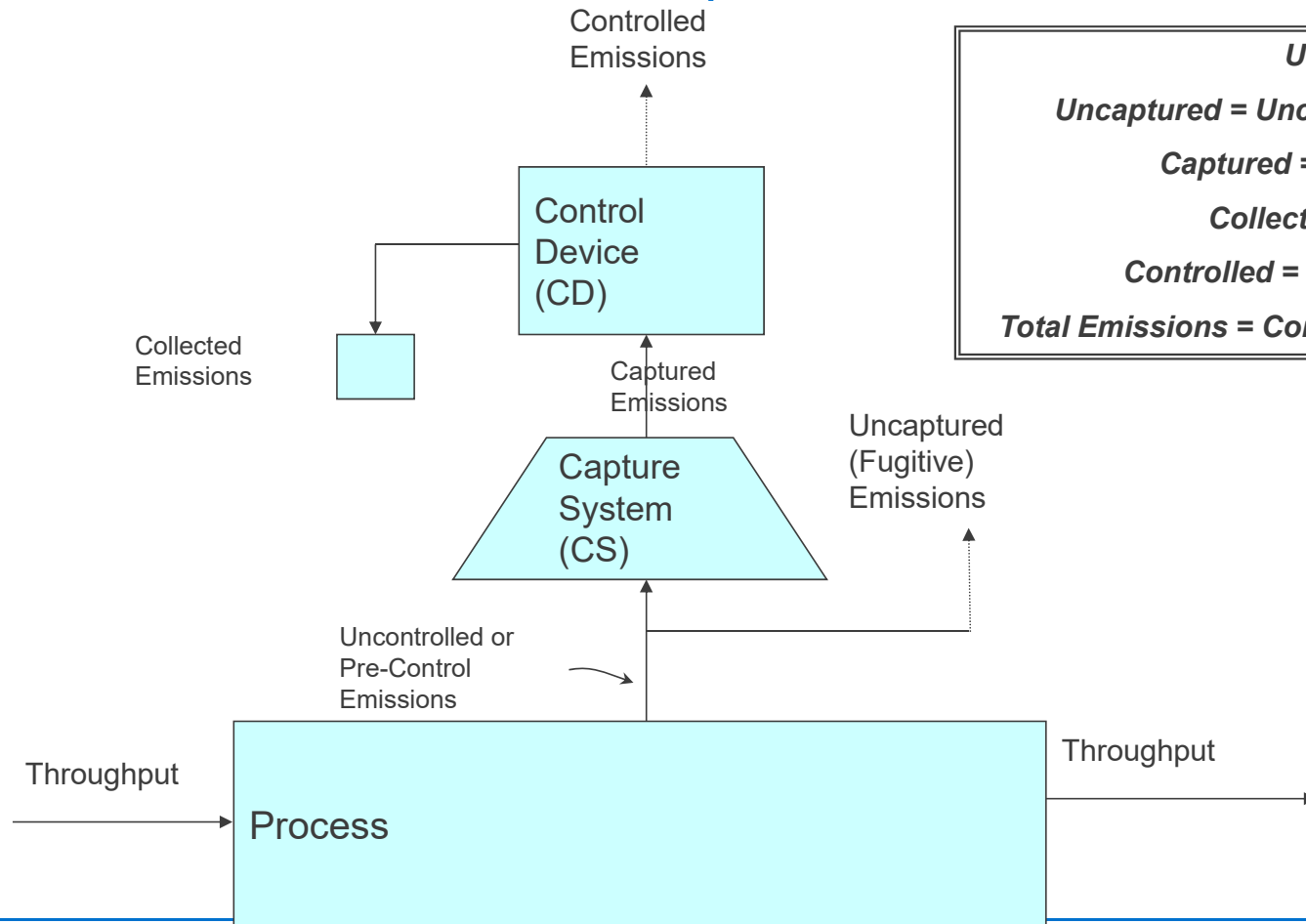
- ▶ Emission calculations are easy!
 - Almost all emission calculations can be reduced to the following:

$$[Throughput (TP)] \times [Emission Factor (EF)]$$

- Almost all emission calculations for sources with capture systems and control devices can be reduced to the following:

$$[TP] \times [EF] \times [Capture Efficiency] \times [1 - Control Efficiency] \\ + [TP] \times [EF] \times [1 - Capture Efficiency]$$

Emission Calculation Concepts



$Uncontrolled = TP \times EF$ $Uncaptured = Uncontrolled \times (1 - CE_{CS})$ $Captured = Uncontrolled \times CE_{CS}$ $Collected = Captured \times CE_{CD}$ $Controlled = Captured \times (1 - CE_{CD})$ $Total\ Emissions = Controlled + Uncaptured$

A Word of Caution

▶ [Throughput] X [Emission Factor]

- Pay attention to units!!
- The fun/difficulty in emission calculations often comes from the unit conversions, additional data, and assumptions needed to get it right
 - ◆ For example: A facility may measure production in terms of “dry tons per day” and the emission factor for a particular pollutant may be given in terms of “pounds per ton”
 - What question should you ask?

Preferred Methods for Calculating Emissions

1. Mass Balance
2. Actual test data (from CEMS or stack tests)
3. Similar sources for which test data is available (e.g., sources at a sister facility)
4. Manufacturer's guarantees (for engines, boilers, etc.)
5. Empirical equations or software incorporating such (e.g., EPA TANKS)
6. Trade association research (e.g., NCASI, API)
7. EPA's AP-42 factors

AP-42 Emission Factors

Table of Contents, AP 42, Volume I, Fifth Edition

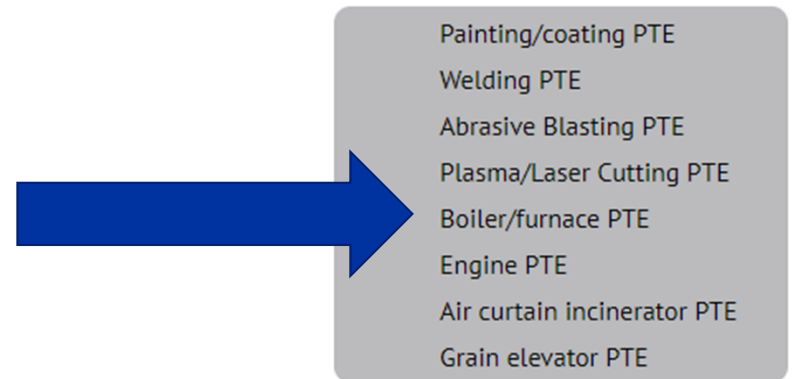
Cover page and Contents	Cover page, detailed Table of Contents, Publications in Series, Insertion Instructions, and Key Word Index (PDF 128K). This is current through the Fifth Edition, Supplement C of AP 42. For sections and chapters added after November 1997, see the chapter web pages below.
Introduction	Introduction to AP 42, Volume I, Fifth Edition - January 1995 (PDF 40K)
Chapter 1	External Combustion Sources
Chapter 2	Solid Waste Disposal
Chapter 3	Stationary Internal Combustion Sources
Chapter 4	Evaporation Loss Sources
Chapter 5	Petroleum Industry
Chapter 6	Organic Chemical Process Industry
Chapter 7	Liquid Storage Tanks
Chapter 8	Inorganic Chemical Industry
Chapter 9	Food and Agricultural Industries
Chapter 10	Wood Products Industry
Chapter 11	Mineral Products Industry
Chapter 12	Metallurgical Industry
Chapter 13	Miscellaneous Sources
Chapter 14	Greenhouse Gas Biogenic Sources
Chapter 15	Ordnance Detonation
Appendix A	Miscellaneous Data & Conversion Factors -- September 1985 (PDF 103K)
Appendix B.1	Particle Size Distribution Data and Sized Emission Factors for Selected Sources -- October 1986 (PDF 2M)
Appendix B.2	Generalized Particle Size Distributions -- September 1996 (PDF 137K)
Appendix C.1	Procedures for Sampling Surface/Bulk Dust Loading -- July 1993 (PDF 65K)
Appendix C.2	Procedures for Laboratory Analysis of Surface/Bulk Dust Loading Samples -- July 1993 (PDF 42K)

Emission Calculation Templates

- ▶ Small Business Environmental Assistance Program (SBEAP) via KState
- ▶ <https://www.sbeap.org/air-quality/tools/pte-calc>
- ▶ Remember: garbage in = garbage out



[Air Quality](#) > [Emission Calculators](#) > Potential to Emit (PTE) Calculation Spreadsheets



What happens once the agency gets your PTE data?

- ▶ Confirms **major source** vs. **minor source** status
 - Can have serious permitting implications
 - Inevitably identifies emission units that should have a construction permit
- ▶ **Case Study**
 - Facility required to prepare Class I renewal application; KDHE requests facility-wide PTE, including insignificant activities (IAs)
 - One of the IAs has a dust collector, but its not federally enforceable
 - ◆ **Uncontrolled PM emissions exceed the PSD major source category!**
 - ◆ KDHE suggests two solutions:
 - “Make the dust collector federally enforceable”
 - “Take a facility-wide PM limit of <250 tpy with recordkeeping requirement”
 - ◆ Other problem: **clearly this IA needs a construction permit**
 - **Domino-effect: Class I Permit references KAR 28-19-300 requirement to obtain a permit or approval, as needed (deviation on SDR/ACC!)**

A background image showing several hands pointing upwards, suggesting a presentation or training session. The hands are in the foreground, with a blurred background of more hands and a dark setting with some bokeh light effects.

Questions?

Training Spotlight

TRI Reporting: Elemental Metals vs. Metal Compounds – May 27, Webinar (FREE)

SPCC Compliance in EPA Region 7 – August 24, Kansas City, MO

Air Quality Permitting in Kansas – October 5, Wichita, KS