

When is a Construction Permit Needed?

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Potential Emissions or Potential to Emit (PTE)

PTE is defined in the Missouri State Rules at 10 CSR 10-6.020(2)(P)38 as

The emission rates of any pollutant at maximum design capacity.
Annual potential shall be based on the maximum annual-rated capacity of the installation assuming continuous year-round operation. Federally enforceable permit conditions on the type of materials combusted or processed, operating rates, hours of operation, and the application of pollution control equipment shall be used in determining the annual potential. Secondary emissions do not count in determining annual PTE.



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Continuous year-round operation

What does that mean?

24 hours a day, 365 days a year

8,760 hours/year

Maximum design capacity

- MHDR (maximum hourly design rate) of the equipment = i.e rating of the equipment
- Maximum vehicle-miles traveled if equipment is operating at MHDR
- Maximum number of widgets that can be produced in a certain time period
- Maximum usage of a raw material

Bottlenecks

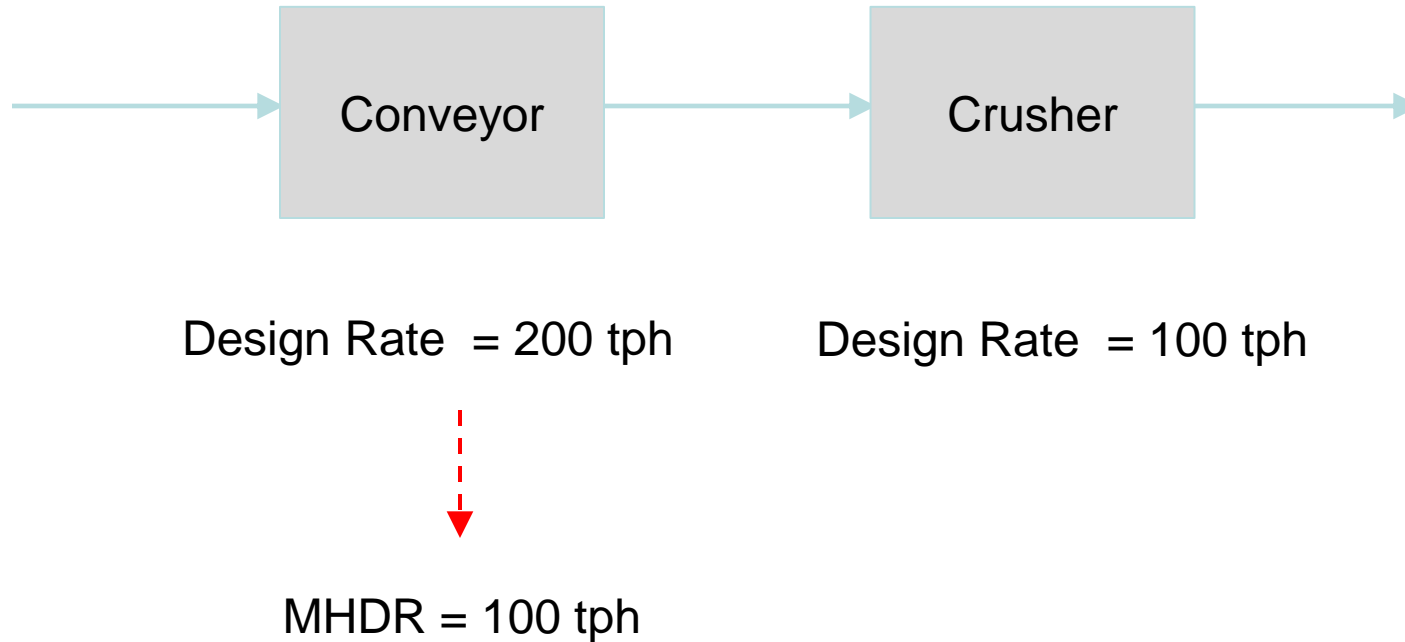
When calculating PTE, you can take into accounts bottlenecks.

Types of Bottlenecks:

- 1) Physical bottlenecks
- 2) Process bottlenecks

Physical Bottleneck

Activity or process that restricts the capacity of another.



Process Bottleneck

Constraint on a process that limits its throughputs.

Scenario 1:

A facility can coat 6 parts in 1 hour in the spray booth (or 1 part every 10 minutes).

→ The maximum throughput is 6 parts per hour, or 144 part per day.

Scenario 2:

A facility can coat 6 parts in 1 hour in the spray booth (or 1 part every 10 minutes). However, the parts require an additional 3 hours of drying before they can be moved out of the spray booth.

→ The maximum throughput then becomes

6 parts every 4 hours (1 hour for spraying + 3 hours for drying) or
 $6 \text{ parts} / 4 \text{ hours} \times 24 \text{ hours} / \text{day} = 36 \text{ parts per day.}$

The emission rates of any pollutant at maximum design capacity

Need to:

- Assume you are operating at 100% capacity
- Assume a worst case emission factor
 - Example:
 - Coating A has VOC content of 4 lb/gal,
 - Coating B has VOC content of 5 lb/gal
 - Use Coating B in your potential emission calculations.)
- Do not adjust PTE based on # of people working, normal working hours, or warehouse space.

Likely rely on one or more of the following resources for determining PTE

Rely on one or more of the following resources:

1. Data from continuous emission monitor system (CEMS);
2. Data from stack tests;
3. Material balance;
4. Standard emission factors;
5. Other U.S. Environmental Protection Agency or Air Pollution Control Program guidance documents;
6. Technical reports and research papers,
7. Manufacturer's data and
8. Sound engineering calculations.

Stack Test Data – Justifying the Number

Example 1: Stack Test Results for PM₁₀ from 3 1-hour tests

Run 1	2.3 lb/hr
Run 2	2.0 lb/hr
<u>Run 3</u>	<u>2.6 lb/hr</u>
Avg	2.3 lb/hr

What emission rate do
you use for your PTE??

Example 2: Stack Test Results for PM₁₀ from 3 1-hour tests

Run 1	2.3 lb/hr
Run 2	10.0 lb/hr
<u>Run 3</u>	<u>2.6 lb/hr</u>
Avg.	5.0 lb/hr

What emission rate do
you use for your PTE??

Example:

Determining the maximum usage of lubricant oil in a machine.

Based on existing equipment, you are trying to estimate the maximum usage.
You propose 66,000 gal/year.

	Example 1	Scaled up to 8760
2020	55,000 gal @ 8000 hours	60,225 gal
2019	60,000 gal @ 8100 hours	64,888 gal
2018	58,000 gal @ 7700 hours	65,984 gal

Is there a chance that 66,000 gal/year can be exceeded?

Apply a safety factor:

65,984 gal/year and 110% = 72,582 gallons/year

Maximum Usage and Use of a Safety Factor

There is no one method to use. A lot is based on engineering judgement.

What you should consider:

- Does the emission unit operate continuously (24 hours/day) or is it more sporadic (1 hour per shift)?
- Does the equipment operate at steady state or does the operation cycle?
- How much data do you have? Is it based on years of data? Is it based on a best guess? Is it based on just a couple of data points?

Use of EPA's AP-42 – Word of caution

- EPA cautions the wide-spread use of AP-42 emission factors.
- When source-specific emissions or other more reliable approaches are unavailable, AP-42 emission factors may be the only way to estimate emissions.
- The limitations of the factor in accurately representing the facility's emissions should be carefully considered when relying on it to estimate PTE.

See *EPA Reminder About Inappropriate Use of AP-42 Emission Factors*, EPA Publication No. 325-N-20-001, issued Nov, 2020)

Federal Enforceable Permit Conditions

We refer to them as “Special Conditions” in our construction permits.

-Once they are federally enforceable, we can take them into account in the PTE.

Common SCs that limit PTE:

- 1) Use of a control device
- 2) Use of a capture device
- 3) Throughput or usage limits
- 4) Limits on hours of operation
- 5) Pollutant limit (ex. <40 tpy for project equipment)

Permit Rule Applicability – 10 CSR10-6.060

(1) Applicability.

(A) Construction Permit Required. The owner or operator of a new or existing installation throughout Missouri that meets any of the following provisions must obtain a permit:

1. Before construction of a new installation that results in a potential to emit greater than de minimis threshold levels;
2. Before new construction and/or modification that results in an emission increase greater than the de minimis threshold levels at an existing installation with potential to emit less than de minimis threshold levels;
3. Before new construction and/or modification that results in an emission increase at an existing installation whose potential to emit exceeds de minimis threshold levels or is less than de minimis threshold levels due to taking practically enforceable requirements in a permit;
4. The new construction and/or modification is a major modification as defined—
 - A. Under 40 CFR 52.21(b)(2), which is incorporated by reference in subsection (8)(A) of this rule, for pollutants in attainment and unclassified areas; or
 - B. Under 40 CFR 51.165(a)(1)(v), which is incorporated by reference in paragraph (7)(A)2. of this rule, for pollutants in nonattainment areas; or
5. Before construction of an incinerator.

(B) Voluntary Permit. An installation in Missouri may obtain a permit under this rule in order to acquire voluntary, enforceable limits.

(C) Exempt Construction or Modification.

No construction permit is necessary for construction or modification of installations when—

1. The entire construction or modification is exempt or excluded by 10 CSR 10-6.061;
2. Construction or modification is permitted under 10 CSR 10-6.062; or
3. Original construction or modification occurred prior to May 13, 1982. Any construction or modification that occurs after this date is not exempt.

Use with the next slide -

De minimis levels

Pollutant	De Minimis Level
PM	25.0
PM ₁₀	15.0
PM _{2.5}	10.0
SO _x	40.0
NO _x	40.0
VOC	40.0
CO	100.0
Total HAPs	25.0

Project = new construction or modification

EI = Emission Increase

CP = construction permit

SC = Special Condition

Simplified version of CP Rule

A) Does the Construction Permit rule apply to you?

Yes, if any of the following apply.

- 1) New installation, PTE > de minimis
- 2) Project with EI > de minimis, where existing installation PTE < de minimis
- 3) Project with EI > 0, where existing installation PTE is > de minimis or the existing installation has a CP that has SCs that limit PTE to de minimis
- 4) Project is a major modification
- 5) Project is an incinerator

C) However, you don't need to get a CP if

- 1) Entire project is exempt per 6.061
- 2) Getting a permit-by-rule under 6.062
- 3) Grandfathered. Constructed prior to May 13, 1982.

Emission Increase

Definition - The sum of post-project potential to emit minus the pre-project potential to emit for each new and modified emission unit. Decreases and netting are not to be included in the emission increase calculations.

When determining the need for a permit, we going are going to look at the unconditioned / uncontrolled emissions.

Example: PM₁₀ (tpy)

	Post-project PTE	Pre-project PTE	Emission Increase
EU 1 (new)	5	0	5
EU 2 (modified)	10	5	5
EU 3 (new)	70	0	70
Total			80

Needs a CP

CP Needed, Project EI for determining other applicable rules

Example –

Same equipment as before, but there is a SC in the permit requiring the use of a baghouse.

	Post-project PTE	Pre-project PTE	Emission Increase
EU 1 (new)	5	0	5
EU 2 (modified)	10	5	5
EU 3 (new)	70 0.7	0	0.7
Total			10.7

Project EI < 15.0 tpy -> Modeling is not triggered.

Insignificant Emission Exemption Levels 10 CSR 10-6.061 (3)(A)

Pollutant	Insignificant Level (lb/hr)
PM ₁₀ (emitted solely by equipment)	1.0
SO _x	2.75
NO _x	2.75
VOC	2.75
CO	6.88
Individual HAP	0.5 or SMAL

A couple of things to note:

- Post project PTE minus pre-project PTE does not apply to exemption levels – the language of the rule states...

“At maximum design capacity the proposed construction or modification shall emit each pollutant at a rate of no more than the amount specified in Table 1”

- Do not consider controls in PTE unless the controls are inherent.

Insignificant Emission Exemption Levels 10 CSR 10-6.061 (3)(A)

PM₁₀ (emitted solely by equipment)

- Essentially this means that when determining whether a project is exempt under this provision, you only have to include emissions that are emitted solely by equipment in the PTE for comparison with the 1 lb/hr exemption level.
- What are emissions units not emitted solely by equipment?
 - Haul roads and storage piles
 - Other types, maybe?

Exemptions: Reporting and Record Keeping

(4) Reporting and Record Keeping. The operator shall maintain records in sufficient detail to show compliance with the exemptions in paragraph (3)(A)3. of this rule. Any noncompliance with the requirements in this paragraph constitutes a violation and is grounds for enforcement action and the exemption will no longer apply. Operators of installations found to be not in compliance with the requirements of this paragraph shall be required to apply for a construction permit under 10 CSR 10- 6.060. The exemptions shall be documented as follows:

- (A) Record keeping shall begin on the date the construction, reconstruction, modification, or operation commencement and records shall be maintained to prove potential emissions are below de minimis levels and that actual emissions are below the exemption threshold levels in paragraph (3)(A)3. of this rule. Records shall be maintained using Emission Inventory Questionnaire (EIQ) methods in accordance with EIQ emission calculation hierarchy; or
- (B) In lieu of records, the owner or operator shall demonstrate through engineering calculations that emissions are not in excess of the exemption levels established in paragraph (3)(A)3. of this rule

Exemptions: Reporting and Record Keeping

- Essentially, what this rule is saying is that you have a project that is being exempted from 10 CSR 10-6.060, you should keep records of your justification.
 - To show why the PTE of an installation < de minimis
 - To show why the project is < insignificant thresholds in (3)(A)3.A
 - To show why the project is < 876 pounds per year for criteria pollutant, except lead
 - To show why the project is < 4 tons per year for VOC and does not contain HAPs
- It does not say that you have to get a determination from us, although if a facility wants concurrence, they can submit a determination request.



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Questions?