

EXAMPLE PTE ANALYSIS FOR T&S MACT

Facility: Compressor station

Equipment present: 3 compressor engines and glycol dehydrator.

PTE Analysis

1. *Determine which emissions must be calculated.* Since this is a T&S facility, HAP emissions from all sources must be calculated and aggregated to determine if the facility is a major source.

2. *Calculate emissions.*

The glycol dehydrator and compressor engine calculations are described below.

Glycol Dehydrator Emission Calculation Procedure

1. Determine gas throughput according to guidelines in Subpart HHH. There are varying calculations depending on whether the unit has operated at least 5 years and whether production has declined steadily over that time (see Section 4.2 for more details).

For an example 20 MMscfd (design) dehydrator, the following annual production data are available:

	1995	1996	1997	1998
Annual Throughput, MMscf	6,600	6,500	6,800	6,400
Daily Average, MMscfd	18.1	17.8	18.6	17.5

Because there are not five years worth of throughput data, the number used should be the actual maximum x 1.2 or the design maximum, whichever is greater. In this case, that would be as follows:

$$(6,800 \text{ MMscf} \times 1.2) / 365 \text{ days} = 22.4 \text{ MMscfd}$$

1. Determine the values for other parameters needed for GRI-GLYCalc. These include:

- Gas temperature and pressure
- Gas composition
- Glycol circulation rate & pump type
- Flash tank temperature and pressure (if present)
- Control device type and related data (if federally enforceable for the PTE calculation)

The rule states that the value of other parameters should be selected over the same time period over which the throughput is determined above. Other parameters shall be based on either the highest measured value or annual average.

For this example, those other parameters would be based on data from the most recent three years. The operator could use the highest measured value or annual average; it's assumed that the operator could also use the design, since that would be the highest possible.

2. Enter the data and run GRI-GLYCalc to determine HAP emissions.

Compressor Engine Calculation Procedure

1. Compressor engine emissions are typically calculated using emission factors and engine operating data, such as engine type, engine size, hours of operation, and possibly fuel type (i.e., there are some different emission factors based on transmission-quality natural gas and field gas available in the literature). Therefore, the throughput calculations specified in Subpart HHH are not relevant to the engine calculation in this example (note that for storage fields, the throughput calculations in HHH may prescribe a number of hours of operation for engines at the storage field).
2. Select the appropriate emission factor for the engine (factors are available in GRI HAPCalc as well as other sources, such as EPA's Chief web site), typically in units of g/hp hr.
3. The engine type and size are inherent to the design of the engine. Presumably, EPA's provisions in Subpart HHH for selecting other parameters based on either the highest measured value or annual average extend to sources such as engines that are not addressed by Subpart HHH. However, typically full load conditions will be used for determining PTE and will be used in this example. The hours of operation may be selected based on the highest measured value or annual average.
4. Perform the calculation as follows:

$$\text{EF (g/hp hr)} \times \text{Eng. size (hp)} \times \text{Hr operation (hr)/year (yr)} \times 1 \text{ ton}/(907200 \text{ g}) =$$

emissions, tpy