



Attachment 2B(a)

NOTES ON PROCEDURES FOR FUGITIVE EMISSIONS CALCULATIONS AT REFINERIES

There are 3 different methods of calculating fugitive hydrocarbon emissions from equipment component leaks:

1. Default Emission Factor Method,
2. Correlation Equation Method, and
3. Screening Value Range Method.

All the above methods apply to all Rule 1173 major and minor components; Rule 1176 components as well as Rule 1176 exempt components (i.e., components with potential emissions).

Default Emission Factor Method:

- It is applied to each component with no screening data (when an I&M Program (i.e., Rule 1173 or Rule 1176) is not in place at the facility and reliable site specific screening data are not available), or to components that are inspected under I&M Program but screening data is not maintained for screening values lower than the levels specified in District rules.
- Emission Factors are provided in tables on page 6 of Guidelines for Fugitive Emissions Calculations for each component type (e.g., valves, pumps, fittings, etc) and service type (e.g., liquid light, gas/vapor, and heavy liquid)

Correlation Equation Method:

- It is applied to each component with screening data.
- Mass emissions are calculated by component type using Default Zero Factors, Pegged Factors, or Correlation Equation (all listed in Table IV-3a).
 - *Default Zero Factor:* is used when screening value minus the background concentration value equals or less than zero PPMv
 - *Pegged Factors:* is used when the screening value are pegged at 10,000 PPMv or 100,000 PPMv. There is no adjustment for background concentration in these two cases.
 - *Correlation Equation:* is used when screening value – background concentration is between 0 and 10,000 PPMv or 100,000 PPMv.
- Default background concentration is assumed to be 5 PPMv if not measured for each component.

- Screening values for component with “Liquid Leak” should always be reported as 999,999 PPMv. For these readings, use the 100,000 PPMv pegged factors without adjustment for background concentration during emission calculation.
- When the component inspection results in a higher or lower screening value than its previous inspection (e.g., between two quarterly inspections), the average of the two calculated mass emission rates is used to calculate mass emissions during that reporting period.
- The emission rate from the 1st inspection of component during each reporting period will be used to calculate mass emission from the beginning of that reporting period through the date of the 1st inspection.
- The emission rate from the last inspection of component during each reporting period will be used to calculate mass emission from the date of the last inspection through the end of that reporting period.

Screening Value Range Method:

It is an alternative to Correlation Equation Method. It will apply to each component with screening data.

- All the screening value range emission factors are listed in Tables IV-2a, 2b, and 2c based on the industry (refinery, marketing terminal, or oil & gas production), component type (valve, pump, etc), source type (gas, light liquid, or heavy liquid), and screening values $< 10,000$ PPMv or $\geq 10,000$ PPMv.
- Report all screening values including those less than as well as greater than 1000 PPMv, (i.e., from 0 PPMv up to 100,000 PPMv or greater). Do not subtract background concentration from the direct reading.
- For screening values less than or greater 100,000 PPMv, report all the values as measured. Use the applicable $< 10,000$ PPMv or $\geq 10,000$ PPMv screening value range emission factors during emission calculation.
- Screening values for component with “Liquid Leak” should always be reported as 999,999 PPMv. For these readings, use the applicable $\geq 10,000$ PPMv screening value range emission factors without subtracting background concentration during emission calculation.

Please refer to Guidelines for Fugitive Emissions Calculations dated June 2003 for more details