Emissions from Loading Operations
An Overview

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TRANSFER OPERATIONS
Loading Losses

- Standards for present practice:
  - AP-42 Section 5.2
  - API Publications 2514A and 2524
- Understand all loading operations by:
  - Restating the expressions, and then
  - Evaluating the vapor concentration.

Volume x Concentration

- Recognize this for all filling/loading.
- Volume is typically the throughput.
- Variable to evaluate is concentration.

Concentration = (density) x (saturation)

Density (W_V) = [(M_V P_V) / (R T)]

where: M_V = molecular weight of stock vapor,

P_V = stock vapor pressure,

R = the ideal gas constant, and

T = the system temperature (absolute).

Saturation

- Density (W_V) is for equilibrium condition.
- Hydrocarbon vapors tend to stratify.
- A given vapor space may be < saturated.
- Development of emission factors for loading operations is essentially an estimate of the level of saturation that is typical for a given operation.

Controlled Loading
Vapors Routed to a Control Device

- Two considerations wrt efficiency:
  - Capture efficiency.
  - Control device efficiency.
- Capture efficiency is a function of leakage.
  - Tank truck pressure decay testing.
  - GDI MACT guidance for factors.
- Control device efficiency is not unique to loading, & thus is not addressed here.