ERRATA for

PE Environmental Practice Exam

ISBN 978-1-947801-23-3

Errata posted 4-1-2022

Revisions are shown in red.

Solution 28, p. 67:

Dispersion modeling along the centerline for downwind.
Ground-level concentration can be expressed as:

$C(x,y) = [Q / (3.14\ (\sigma_y \sigma_z)\ u)] \exp\{-1/2(H/\sigma_z)^2\}$

where

Q = emission rate
σ_y and σ_z = dispersion coefficients
u = mean wind speed
H = stack height

As the stack height increases, the concentration decreases at the ground surface.

THE CORRECT ANSWER IS: A

Solution 29, p. 67:

The standard flow rate can be calculated as follows:

$Q = A \times V \times (P_s/P_{std}) \times (T_{std}\ °R/T_s\ °R) \times (1 - (\text{moisture fraction})) \times 60\ \text{sec/min}$

$$= \left[\frac{(92/12)^2}{4} \times \pi\ \text{ft}^2\right] (28.84\ \text{fps}) \left(\frac{23.56}{29.92}\right) \left(\frac{460\ +\ 70}{460\ +\ 355}\right) (1 - 0.1225)\ (60\ \text{sec/min})$$

= 35,895 dry standard cubic feet per minute (DSCFM)

The emission rate of NO_x (lb/hr) can be calculated as:

$= 117.27\ \text{ppmv} \times 1.194 \times 10^{-7}\ \text{lb}\ NO_x / \text{scf ppmv} \times Q\ \text{scf/min} \times 60\ \text{min/hr}$

$= 30\ \text{lb}\ NO_x\ \text{/hr}$

The heat input rate for the boiler can be calculated as:

$= 149.9 \times 10^3\ \text{scf/hr} \times 1{,}000\ \text{Btu/scf} = 149.9 \times 10^6\ \text{Btu/hr}$

The emissions per 10^6 Btu then become:

$= 30\ \text{lb/hr} / 149.9 \times 10^6\ \text{Btu/hr} = 0.2012\ \text{lb}\ NO_x / 10^6\ \text{Btu}$, which exceeds the standard

THE CORRECT ANSWER IS: B