

APPENDIX O

EXAMPLE CALCULATION FOR FULL-PERIOD CONSECUTIVE SAMPLING

If two consecutive samples had been taken for carbaryl instead of one continuous sample, and the following results were obtained:

Sample Results		
	A	B
Sampling rate (L/min)	2.0	2.0
Time (min)	240	240
Volume (L)	480	480
Weight (mg)	3.005	2.808
Concentration (mg/m ³)	6.26	5.85

The SAE for carbaryl is 0.23

Step 1. Calculate the $UCL_{95\%}$ and the $LCL_{95\%}$ from the sampling and analytical results. Using [Equation 13](#) from Section IV.D.4.:

$$TWA = \frac{(6.26 \text{ mg/m}^3)(240 \text{ min}) + (5.85 \text{ mg/m}^3)(240 \text{ min})}{480 \text{ min}} = 6.055 \text{ mg/m}^3$$

Using [Equation 9](#) from Section III.K.2:

$$\text{Exposure severity } (Y) = \frac{6.055 \text{ mg/m}^3}{PEL} = \frac{6.055}{5.0} = 1.21$$

Using [Equation 10](#) from Section III.K.2:

$$\text{Assuming a continuous sample: } LCL_{95\%} = 1.21 - 0.23 = 0.98$$

Using [Equation 11](#) from Section III. K.2:

$$UCL_{95\%} = 1.21 + 0.23 = 1.44$$

Step 2. Because the $LCL_{95\%} < 1.0$ and $UCL_{95\%} > 1.0$, the results are in the possible overexposure region. To document an overexposure, the CSHO must reanalyze the data using the more exact calculation for full-period consecutive sampling (Using [Equation 14](#) from Section IV.D.4.):

$$LCL_{95\%} = (1.21) - \frac{0.23\sqrt{(240 \text{ min})^2(6.26 \text{ mg/m}^3)^2 + (240 \text{ min})^2(5.85 \text{ mg/m}^3)^2}}{5.0 \text{ mg/m}^3 (240 \text{ min} + 240 \text{ min})}$$
$$= 1.21 - 0.20 = 1.01$$

Since the $LCL_{95\%} > 1.0$, a violation is established.