PLAINTIFF'S EXHIBIT

ATT-163

Terminology Used in OSHA Safety and Health Standards (29 CFR 1910)

Permissible Exposure Limit - 8-Hour

This term is synonymous with the 8-hour time weighted average exposure limit. It represents the maximum 8-hour average exposure concentration which may occur in any 8-hour work shift of a 40 hour work week.

Action Level

An 8-hour time weighted average concentration of a contaminant in air (usually equal to 1/2 the PEL) at which some provisions of the standard apply. Medical monitoring is required for some contaminants when exposure exceeds the action level.

Ceiling Concentration

The maximum airborne concentration not to be exceeded during any 8-hour work shift. Ceiling concentrations may only be exceeded if a peak value is specified by OSHA.

Peak Exposure Concentration

A maximum concentration above the ceiling concentration to which an employee may be exposed for a brief period (usually 5-10 minutes). Acceptable peak concentrations are specified for only 21 compounds.

OSHA EXPOSURE LIMITS FOR POTENTIAL BELL SYSTEM AIR CONTAMINANTS

	8-Hour PEL	8-Hour Action Level	Ceiling Concentration	Peak Concentration
Asbestos	2 fibers/cm^3	0.1 fibers/cm^3	10 fibers/cm^3	-
Lead	50 µg/m^3	30 µg/m^3	-	-
Benzene	30 mg/m^3 (10 ppm)	-	80 mg/m^3 (25 ppm)	160 mg/m^3 (50 ppm)

Calculation: Asbestos Concentration (fibers/cm³)

Sample problem: Calculation of asbestos concentration (fibers/cm³) from sampling and analytical data

Example: A sample was collected for 15 minutes at a flow rate of 2.0 Liters/minute. Optical examination of the filter revealed 18 fibers in 100 microscopic fields of 0.01 mm²/field. The total area of the filter was 855 mm².

1) Calculate volume of air sampled (in cm³)
remember: 1 Liter = 1,000 cm³

$$\text{Volume Air} = \text{flow rate} \times \text{time}$$

$$= \frac{2.0\text{L}}{\text{min}} \times 15 \text{ min}$$

$$= 30\text{L}$$

$$= 30\text{L} \times \frac{1000 \text{ cm}^3}{\text{L}}$$

$$= 30{,}000 \text{ cm}^3$$

2) Determine the number of fibers on total filter sample (most laboratories will give results directly in terms of fibers/filter)

$$\#\text{fibers/filter} = \frac{18 \text{ fibers}}{100 \text{ fields}} \times \frac{1 \text{ field}}{0.01 \text{ mm}^2} \times \frac{855 \text{ mm}^2}{\text{filter}}$$

$$= 15{,}390$$

3) Calculate asbestos fiber concentration (fibers/cm³)

$$\text{fibers/cm}^3 = \frac{15{,}390 \text{ fibers}}{30{,}000 \text{ cm}^3}$$

$$= 0.5 \text{ fibers/cm}^3$$