

Table D-2. Computer Calculations (Inorganic HAPs)

<b>Feed rate of trace elements to the boiler</b>	
<b>For bituminous coal:</b>	
<b>Equation 1</b>	
$\text{Unit coal consumption} \frac{\text{tons coal}}{\text{yr}} \times \frac{2,000 \text{ lb}}{\text{ton}} \times \frac{0.454 \text{ kg}}{\text{lb}} \times \frac{\text{trace element ppmw (by State of coal origin)}}{1,000,000}$ $\times \text{coal cleaning factor} = \frac{\text{kg trace element}}{\text{yr}}$	
<b>For lignite and subbituminous coal:</b>	
<b>Equation 2</b>	
$\text{Unit coal consumption} \frac{\text{tons coal}}{\text{yr}} \times \frac{2,000 \text{ lb}}{\text{ton}} \times \frac{0.454 \text{ kg}}{\text{lb}} \times \frac{\text{trace element ppmw (by State of coal origin)}}{1,000,000} = \frac{\text{kg trace element}}{\text{yr}}$	
<b>For oil:</b>	
<b>Equation 3</b>	
$\text{Unit oil consumption} \frac{\text{bbls oil}}{\text{yr}} \times \frac{42 \text{ gal}}{\text{bbl}} \times \frac{8.2 \text{ lb}}{\text{gal}} \times \frac{0.454 \text{ Kg}}{\text{lb}} \times \frac{\text{trace element ppmw}}{1,000,000} = \frac{\text{kg trace element}}{\text{yr}}$	
<b>For natural gas:</b>	
<b>Equation 4</b>	
$\text{Unit gas consumption} \frac{\text{cf}}{\text{yr}} \times \frac{\text{trace element ppmw}}{1,000,000} \times \frac{1 \text{ atm} \times \text{lb mole} \times ^\circ\text{R}}{0.7302 \text{ cf} \times \text{atm}} \times \frac{1}{(460 + 68)^\circ\text{R}} \times \frac{\text{trace element molecular weight (lb)}}{\text{lb mole}}$ $\times \frac{0.454 \text{ kg}}{\text{lb}} = \frac{\text{kg trace element}}{\text{yr}}$	

State	Coal type	Compound	Concentration, ppmw
WY	Subbituminous	ANTIMONY	0.73
		ARSENIC	0.69
		BERYLLIUM	0.18
		CADMIUM	0.13
		CHROMIUM	2.82
		COBALT	0.87
		CHLORINE	118.30
		FLUORINE	43.70
		LEAD	2.07
		MANGANESE	5.65
		MERCURY	0.08
		NICKEL	2.17
		SELENIUM	0.51

Table D-8b. Trace Element Concentrations in Fuel Oil (for 1994 estimates)

Trace Element	Concentration in Oil, ppmw
Arsenic	0.306
Beryllium	0.027
Cadmium	0.020
Chromium	0.31
Cobalt	1.63
Chlorine	131
Fluorine	17.5
Lead	1.41
Manganese	0.35
Mercury	0.0092
Nickel	26
Selenium	0.095

Table D-8c. Trace Element Concentrations in Gas

Trace Element	Concentration in gas ppmv
Arsenic	0.000963
Cobalt	0.100
Lead	0.100
Mercury	0.0000024
Nickel	0.0500