

Homework 1

key pg 1

a. $N_2, O_2, Ar, CO_2, Cu/Rn$

b. $Rn, CO, (CO_2)$

c. CO

d. $Rn + Ar$

b. a. $9000 \text{ ppm} \Rightarrow 0.9\%$ (move 4 decimal places)
(or $9000 \text{ ppm} \times \frac{1\%}{10000 \text{ ppm}}$)

b. $0.0400\% = 400 \text{ ppm}$
 $0.0500\% = 500 \text{ ppm}$
 $400 - 500 \text{ ppm}$

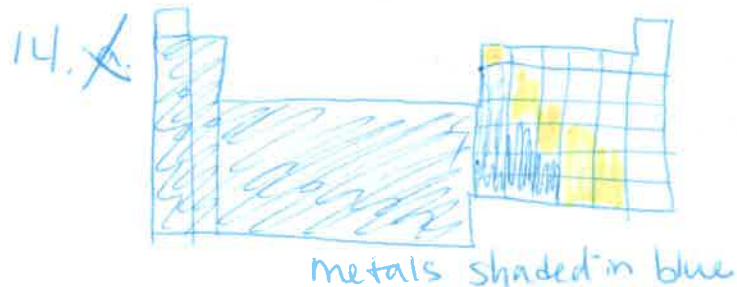
c. $50,000 \text{ ppm} \Rightarrow 5\%$

10. a. $8.5 \times 10^4 = 85,000 \text{ g}$

b. $1.0 \times 10^7 = 10,000,000 \text{ gallons}$

c. $5.0 \times 10^{-3} = 0.005\%$

d. $0.0001 \times 10^{-5} = 0.00001 \text{ g}$



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14b. Fe
Mg
Al
Na
K
Ag

e. Chlorine Cl
Oxygen O
Nitrogen N
Sulfur S
Carbon C
etc

15. a. compound
b. compound
c. mixture
d. element
e. mixture
f. element

16b. CH₄: methane, SO₂: Sulfur dioxide
O₃: ozone



33. You can not smell CO so ^{or taste or see}
You might not know it is poisoning you. O₃ has a strong odor and NO_x is colored so they are not silent killers

~~35.~~ Sunlight levels are low in winter

39. a. Air pollution is bad in Beijing.
b. Mexico City, Hong Kong, LA etc

40. See EPA website
www.epa.gov/greenchemistry/pubs/pgcc.presgccc.html

Save Smog city

- a) Sunlight, Inversion layer, wind speed and temperature wind seems to have largest effect because it disperses the pollution.
- b) a temperature inversion is a layer of warm air above the ground that traps air pollution below it. If there is an inversion, air quality decreases. They are common in MN winters, especially early + late winter (close to fall + spring).
- c) Particles are more of a concern because there is limited sunlight to produce O_3 and because there is more winter heating, etc.
- d) O_3 is a secondary pollutant. Other pollutants must first be produced. Sunlight also needs to be present for O_3 to form. Sunlight peaks in the afternoon.