

# Homework 1 Key pg 1

a.  $\text{N}_2, \text{O}_2, \text{Ar}, \text{CO}_2, \text{Cu/Rn}$

b.  $\text{Rn}, \text{CO}, (\text{CO}_2)$

c.  $\text{CO}$

d.  $\text{Rn} + \text{Ar}$

6. a.  $9000 \text{ ppm} \Rightarrow 0.9\%$  (move 4 decimal places)

$$\left( \text{or } 9000 \text{ ppm} \times \frac{1\%}{10000 \text{ ppm}} \right)$$

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

$0.0500\% = 500 \text{ ppm}$

$400 - 500 \text{ ppm}$

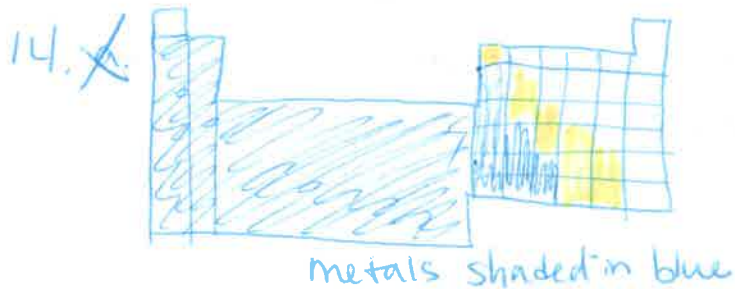
c.  $50,000 \text{ ppm} \Rightarrow 5\%$

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



- 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. CH<sub>4</sub>: methane, SO<sub>2</sub>: sulfur dioxide  
O<sub>3</sub>: ozone



33. You can not smell CO so <sup>or taste or see</sup>  
You might not know it is poisoning you. O<sub>3</sub> has a strong odor and NO<sub>x</sub> 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](http://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.