Partial Pressures

Skills to Develop

- Define partial pressure using math equations

What if we have a mixture of different gases? We might want to know how much of each there is. We can define the mole fraction of a particular gas A as the number of moles of A divided by the total number of moles of gas:

$$x_A = \frac{n_A}{n_{total}} \tag{1}$$

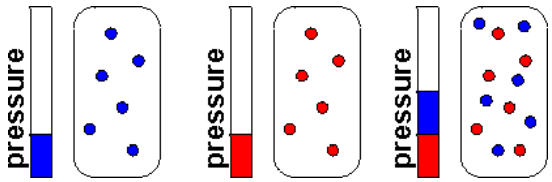
Then we can define the partial pressure of A as:

$$p_A = x_A P \tag{2}$$

This works for real or ideal gases. Partial pressures are often used to describe concentrations of gases. If the gas is ideal, then the partial pressure is the same pressure that the gas would make if all the other components of the mixture weren't there, because:

$$p_A = \frac{n_A RT}{V} \tag{3}$$

In a real gas, this might not be true because the different gases might interact a little bit differently.



An illustration of partial pressures.

Outside Links

- Khan Academy: Partial Pressure (15 min)
- CrashCourse Chemistry: Partial Pressure and Vapor Pressure (12 min)

Contributors and Attributions

- Emily V Eames (City College of San Francisco)