**Oxygen Deficiency Calculation**

Computing oxygen level in a room after a cryogen spill

* assumes instantaneous evaporation and equal mixing

This is a 2 part calculation that first requires computing the volume that is displaced by the cryogen spill and then subtracting that volume from the room volume

Variables:

Volume of cryogen spilled – liters

Density of inert gas – g/cm3

MW of gas for 1 mole– grams

Volume of room – ft3

1. Compute volume of displaced air from cryogen spill (ft3)

Volume of displace air (ft3) = (liters of cryogen)\*(103 cm/liter)\*(density of inert gas)\*(1 mole/MW of gas)\*(24.25 liters/mole)\*(1 ft3/28.31 liters)

1. Oxygen level in room (% oxygen)=

= (20.9%)\*(room volume - volume of displaced air)\*(volume of displaced oxygen)

Room volume

Note: in the numerator the volume of displaced air is subtracted from the volume of the room