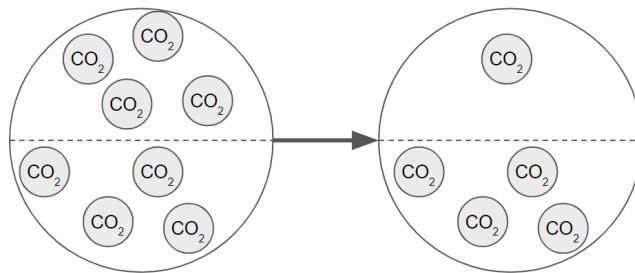


Gas Solubility as Equilibrium

An unopened pop bottle is pressurized with CO_2 gas. The bottle is opened, causing the CO_2 gas to escape. The diagram to the right illustrates the interface between the surface of the liquid pop and the air in the bottle right above the surface.



1. What are the two competing processes we can consider here?
2. Was the system at equilibrium before the bottle was opened? How do you know?
3. Is the system at equilibrium after the bottle is opened? How do you know?
4. Which process is occurring at a greater rate? How do you know?
5. Think Kinetics: Which reaction (forward or reverse?) does the opening of the bottle directly affect? Explain why!
6. How do your answers above explain why the pop is fizzy for a while, but eventually goes flat?
7. Generalize: When the vapor pressure of a gas over water increases, the solubility of the gas (*increases* | *decreases*)
8. Complete the particle-level diagram below for when the pop goes flat. Is the system at equilibrium?

