

Chapter 18 – Le Chatelier’s Principle

Name _____

For the following gaseous equilibrium reactions, indicate what happens to the equilibrium position (shift to the right or left) when the indicated stress or condition change occurs. *Assume all molecules are gases.*

- $\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3 + \text{heat}$
 a) remove NH_3 gas
 b) decrease pressure
- $\text{CO}_2 + \text{H}_2 + \text{heat} \rightleftharpoons \text{CO} + \text{H}_2\text{O}$
 a) decrease temperature
 b) add a catalyst
- $2\text{SO}_2 + \text{O}_2 \rightleftharpoons 2\text{SO}_3 + \text{heat}$
 a) increase SO_2 concentration
 b) increase temperature
- $\text{CO}_2 + \text{C} + \text{heat} \rightleftharpoons 2\text{CO}$
 a) increase temperature
 b) increase CO concentration
- $\text{N}_2\text{O}_4 + \text{heat} \rightleftharpoons 2\text{NO}_2$
 a) decrease pressure
 b) remove N_2O_4
- $\text{H}_2 + \text{Cl}_2 \rightleftharpoons 2\text{HCl} + \text{heat}$
 a) increase H_2 concentration
 b) increase pressure
- $\text{N}_2 + \text{O}_2 + \text{energy} \rightleftharpoons 2\text{NO}$
 a) decrease O_2 concentration
 b) add a catalyst

Use the following equations to complete the tables below with respect to the desired item – how does the stress effect concentration, pressure, and temperature. *Assume all molecules are gases.*

- $\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3 + \text{heat}$
- $\text{H}_2 + \text{I}_2 \rightleftharpoons 2\text{HI} + \text{heat}$
- $2\text{NO} + \text{O}_2 \rightleftharpoons 2\text{NO}_2 + \text{heat}$

Concentration

What are the resulting concentrations?

R E S U L T S

Equation	Stress	Shift, <i>Left or Right?</i>	Increase	Decrease
1	increase N_2			
2	decrease H_2			
3	increase O_2 decrease NO_2			

Pressure

R E S U L T S

Equation	Stress	Shift, <i>Left or Right?</i>	Increase	Decrease
1	increase decrease			
2	increase or decrease			
3	increase decrease			

Temperature

R E S U L T S

Equation	Stress	Shift, <i>Left or Right?</i>	Increase	Decrease
1	increase decrease			
2	increase decrease			
3	increase decrease			