

## Ground Level Air Pollution – Acid Rain

### Topics covered

- Indoor air pollution
- Origin of Acid Rain
- pH of natural rain water
- Impact of Acid Rain & Neutralization

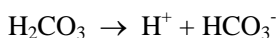
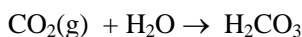
### Keypoints :

**Indoor air quality is important since people spend more times indoors than outdoors**

(Common indoor pollutants: Formaldehyde, NO<sub>x</sub>, Carbon monoxide, cigarette smoke, asbestos and particulate matter, Radon)

**Tailpipes and Smoke stacks are the main sources of acid rain**

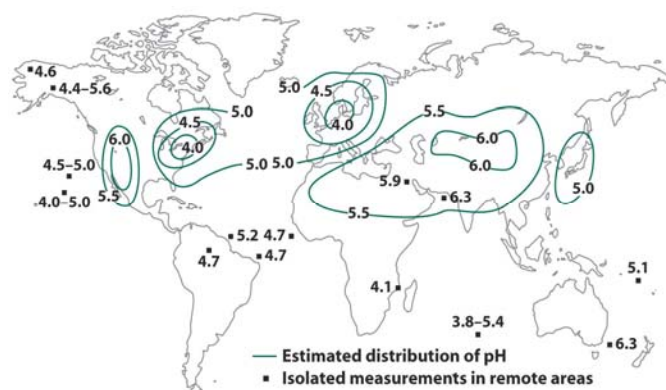
**Dissolved CO<sub>2</sub> produces carbonic acid, which is a weak acid**



**H<sub>2</sub>SO<sub>4</sub> and HNO<sub>3</sub> are responsible for the acid rain – a secondary effect of pollutants**



- Rainwater has a pH of 5.7. If CO<sub>2</sub> is the only species that affects its acidity.
- When additional acidic species are present at appreciable levels as a result of man-made activities, pH of rain water becomes lower than 5.7 → Acid rain.
- H<sub>2</sub>SO<sub>4</sub> and HNO<sub>3</sub> are the major contributors to acid rain.



Problem. If the pH of the rainfall is 4.0 and half the acidity is due to HNO<sub>3</sub> and half due to H<sub>2</sub>SO<sub>4</sub>, calculate the mass of the primary pollutants NO and SO<sub>2</sub> that are required to acidify 1L of rain

### Have you heard about “Clean Coal”?:

.....It exists only in advertisement! Not in practice yet  
Coal gasification, which some say offers a future of plentiful, clean energy from coal, is not the standard electric utilities must follow when seeking to build new power plants, the Environmental Protection Agency’ decision, Dec. 13 2005.

