The Ozone Shield

Notes from 13.2

Ozone Layer

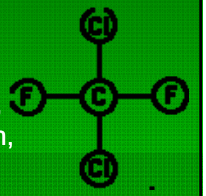
- Layer of the atmosphere in the stratosphere that contains concentration of ozone

Ozone Layer

- Ozone Absorbs (UV) Ultra Violet energy from the sun
- Protects harmful energy from reaching surface

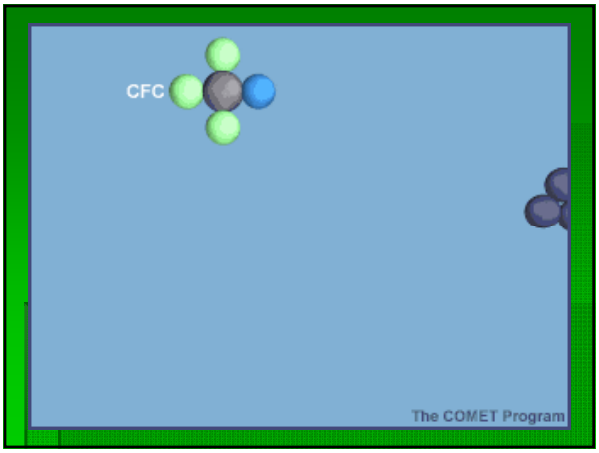
Chemicals that cause ozone depletion

- CFC (Chlorofluorocarbon)
- Thought to be a great chemical for industry
- Propellant in aerosol cans, refrigerant known as Freon, made gas bubbles in Styrofoam

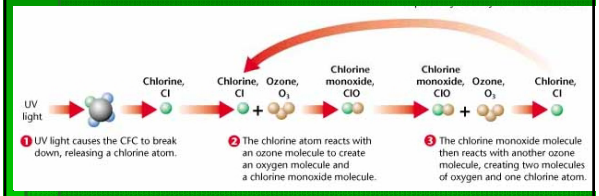


Chemicals that cause ozone depletion

- Stable at the surface
- Breaks down high in atmosphere when UV energy is absorbed
- Free Cl molecule breaks apart the ozone molecule and forms regular oxygen
- Cl molecule continues to destroy ozone 100,000 times!

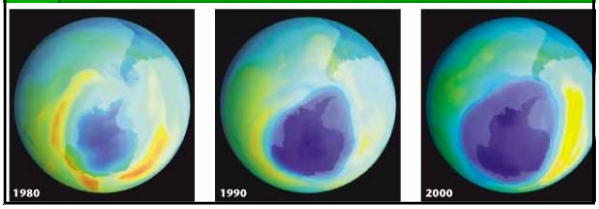


The breakdown



The ozone hole

- Discovered in 1979
- Satellite Data collected indicated a growing ozone hole over Antarctica



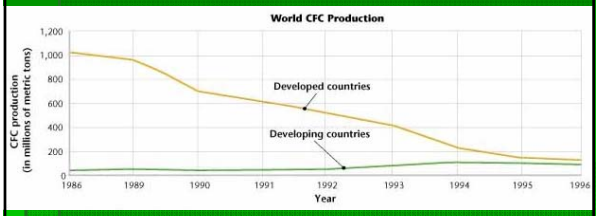
Impact of Ozone Hole

- Increase UV enters atmosphere
- Increase temperatures
- UV – damages genetic material - cause of skin cancer
- Kills phytoplankton – organisms who process CO_2
- Interfere with photosynthesis – reduced crop yields

Montreal Protocol

- Group of nations met to voluntarily take action
- Use of CFC products reduced or banned by nations

CFC Reduction



International Success Story

- Because of the sharp reduction in CFC production and the joint effort of nations, this effort is seen as a huge success
- HOWEVER
- CFC molecules remain active for 60-100 years
- Ozone Animation AMNH

Think about this…

- If the ozone layer gets significantly thinner during your lifetime, what changes might you need to make in your lifestyle?