Ozone Depletion

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The Ozone Layer

- The ozone layer is a thin layer of gas (ozone – O_3) 15-50kms above the Earth
  - The ozone layer protects us from excessive levels of harmful ultraviolet (UV) radiation
- Ozone depletion refers to the thinning of the ozone layer, which allows more UV radiation to reach the Earth's surface
  - Thinning ozone layer discovered in the 1980s
  - Ozone holes at the south and north poles


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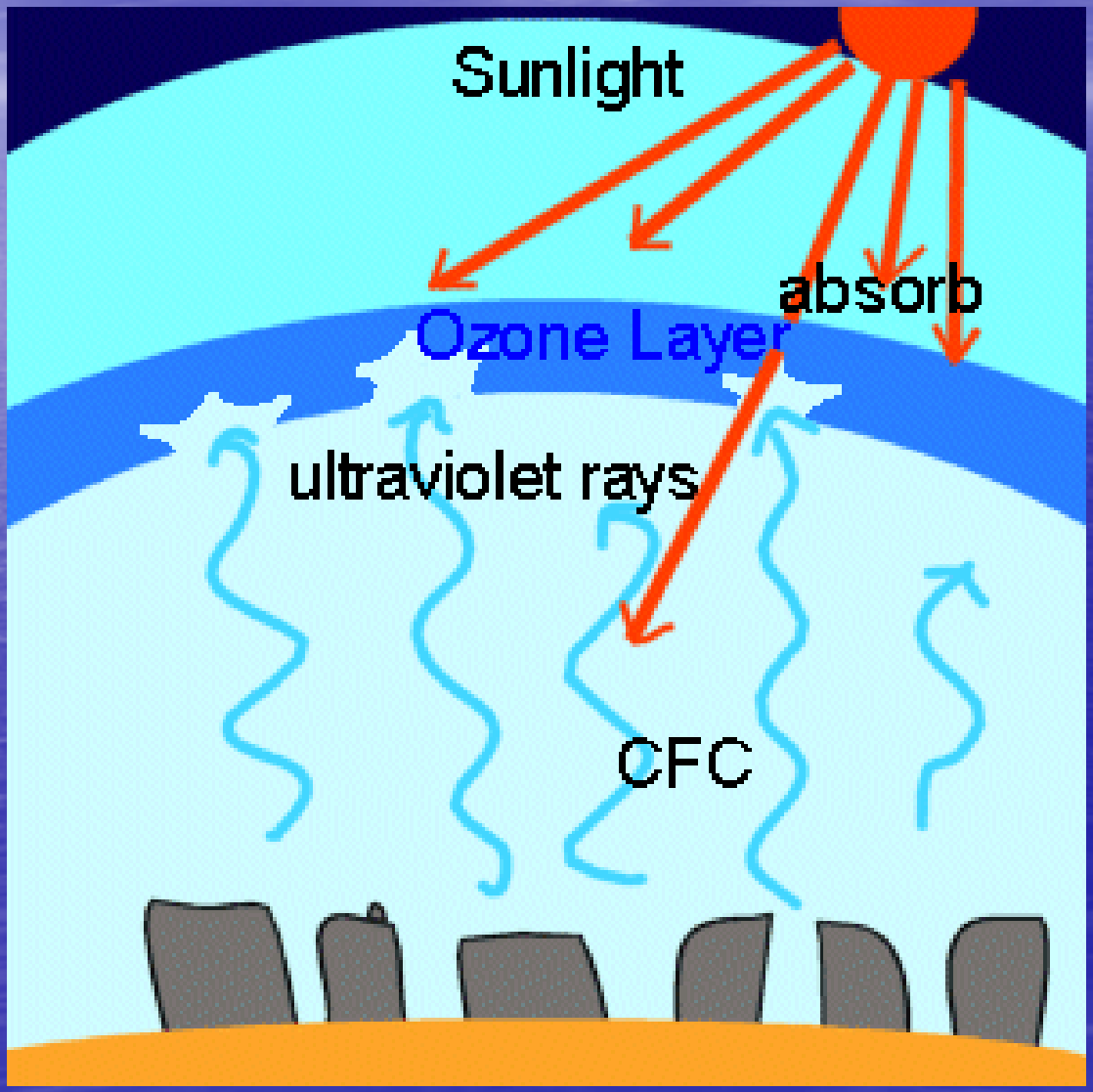
Ozone Depletion

- Major Cause: chlorofluorocarbons (CFCs)
  - Chemicals invented in the 1920s
  - Used in refrigerator and air-conditioner coolant, foam, solvents, aerosol spray cans
  - CFCs are very harmful to ozone, especially at cold temperatures (north and south poles)

Ozone Depletion



Ozone Depletion

Fighting Ozone Depletion

- United Nations Environmental Program (UNEP)
  - Working on reducing the use of ozone-depleting chemicals since the 1970s
- Montreal Protocol (1987)
  - An agreement between industrialized countries to reduce and eventually phase out the use of CFCs and other ozone-depleting chemicals

Fighting Ozone Depletion

- CFC use has been eliminated in developed countries, but in newly industrialized and developing countries CFC use is still high
- Ozone depletion is slowing
  - CFCs can remain in the atmosphere for decades
  - The ozone layer may not be back to its pre-1980 level for another 50-100 years

Consequences of Ozone Depletion

- Effects on Human Health
  - High exposure to UV radiation can:
    - Weaken the human immune system
    - Cause skin and eye cancer
    - Cause cataracts

Consequences of Ozone Depletion

- Effects on Plant Life
  - High exposure to UV radiation can:
    - Stunt the growth of plants
    - Lead to the loss of plant species
    - Reduce crop yields

Consequences of Ozone Depletion

- Effects on Marine Ecosystems
  - High exposure to UV radiation can:
    - Reduce phytoplankton numbers
    - Damage the early developmental stages of fish and other marine life

Ozone Video Clip

- http://www.youtube.com/watch?v=qUfVMogIdr8