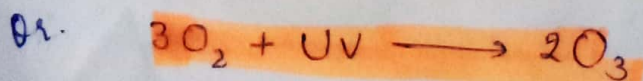
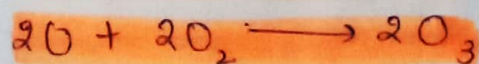
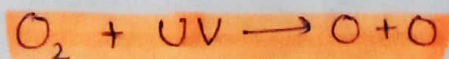


Depletion of Ozone layer

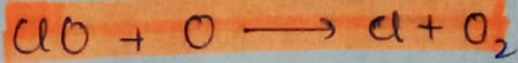
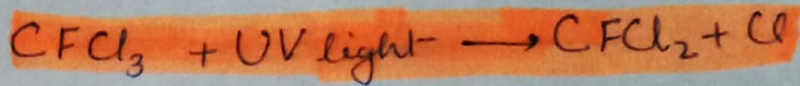
Gradual thinning of Earth's Ozone layer in the upper atmosphere called depletion which is caused by the release of chemical compounds containing gaseous chlorine or bromine from industry and other human activity. This phenomenon is very common in polar regions, especially in Antarctica. It is an environmental problem because the main role of Ozone layer is to reduce of UV rays which causes skin cancer, eye contact and damage in immune system. ~~Depletion to~~ Depletion in Ozone layer causes increase in such medical issues. The Montreal Protocol ratified in 1987, was the first of several comprehensive international agreements enacted to halt the production and use of Ozone-depleting chemicals. As a result of continued international cooperation on this issue, the Ozone layer is expected to recover over time.

Ozone formation -

Stratospheric ozone is produced by the combination of an oxygen atom (O) with an O_2 molecule in



Ozone destruction/depletion → Major reagent
chlorofluorocarbons (CFCs)

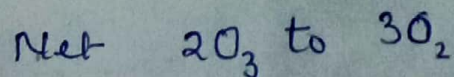
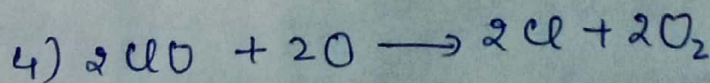
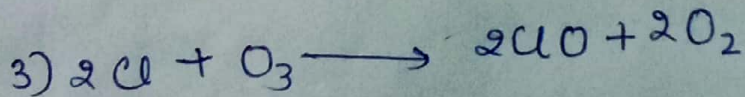
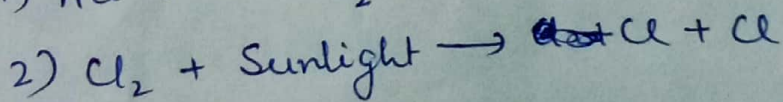
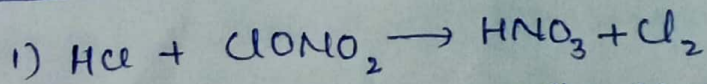


The free chlorine atom is then free to attack another molecule



These reactions continued causes depletion in
Ozone layer

Reactions in antarctic Springtime



Preventive measures for ozone depletion

The depletion of stratospheric ozone layer is truly a universal problem. The continued release of ozone depleting substances into the atmosphere and the resulting depletion of ozone layer will affect

the whole world. Therefore appropriate steps must be taken now to protect the ozone layer. Protective ~~depleting substance~~ measures should aim at ~~eliminating~~ eliminating the production and consumption of ozone depleting substance. The Montreal Protocol banned the use of main ozone depleting subs. such as CFC-11 and CFC-12 by 1996. This protocol produced a complete ban on the production of CFCs by 1995 with some exception. If full compliance is strictly achieved, the Montreal Protocol will ultimately result in recovering the natural conc. of ozone in stratosphere.

Alternative use of CFCs in refrigeration, air conditioning, foam plastic production and in cleaning operations are virtually any fluid/gas. HCFCs (Hydrochlorofluorocarbon) and HFCs (Hydrofluorocarbons) as alternatives to CFCs. Both have hydrogen atoms. The presence of H-atom makes less stable in atmosphere leading to a greatly reduced atmospheric residence time. It is not absolutely safe. Some HCFCs are HCFC-22, HCFC-123, HCFC-124 etc which are used as refrigerant.

(4)

The ability to monitor the stratosphere, to investigate its phenomenon and to assess its future has ~~dramaticat~~^{-ly} dramatically improved because of the advance in science & technology.