GREEN CHEMISTRY-
REAL APPLICATIONS – (a)

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1/57

REPLACEMENT OF CHLOROFLUORO CARBANS (CFCs)

Chlorofluorocarbons (CFCs) and hydrochlorofluoro-Carbons (HCFCs) are fully or partly halogenated Paraffin hydrocarbons that contain only C, H, Cl and F Produced as volatile derivative of methan, Ethane and Propane, They are also commonly Known by the Dupont brand name freon. The most common representative is dichlorodifluoro-methan (R-12 or freon-12) may CFCs have been widely used as refrigerants, Propellants (in aerosol applications), and solvents. Because CFCs contribute to ozone depletion in the upper atmosphere, the manufacture of such compounds has been Phased out under the Montreal Protocol, and they are being replaced with other Products such as hydrofluorocarbon (HFCs) including R-410A and R-134a.

However, the atmospheric impacts of CFCs are not limited to their role as ozone-depleting Chemicals. Infrared absorption bands Prevent heat at that wavelength from escaping earth's atmosphere. CFCs have their strongest absorption bands from C-F and C-Cl bonds in the spectral region of 7.8-15.3 μm

The Strength of CFC absorption bands and the unique susceptibility of the

atmosphere at wave lengths where CFCs (indeed all covalent-fluorine compounds) absorb creates a 'super' green-house effect- from CFCs and other unreactive fluorine-containing gases such as Perfluoro-Carbon, HFCs, HCFCs, promofluorocarbons, SF_6 and NF_3. This "atmospheric window" absorption is tentensified by low concentration of each individual CFC. Because CO_2 is close to saturation with high concentrations and few infrared absorption bands, the radiation budget and hence the greenhouse effect has law sensitivity of change in CO_2 concentration, the increase in temperature is roughly logarithmic conversely, the low concentration of CFCs allow their effects to increase linearly with mass, so that CFCs are greenhouse gases with a much higher Potential to enhance the greenhouse effect than CO_2

According to NASA in 2018, the hole in the ozone layer has begun to recover as a result of CFC bans.

cfcs were quickly replaced by Hcfcs, Hcfcs are less stable in the lower atmosphere, enabling them to break down before reaching the ozon layer. Nevertheless, a significant amount hydrochlorofluorocarbons reached the Stratosphere to release more chlorine than predicted. Hcfcs are scheduled to be Phased-out by 2015.

Hfcs are organofluorine compounds that contain hydrogen, carbon and fluorine. Importantly they do not contain chlorine and therefore do not have any potential for the destruction of ozone. They are however a potent global warming gas - though in small controllable quantities. Pentane is an organic compound with the formula C_5H_{12}. It is an alkane with five carbon atoms. Pentane, occurring naturally, is a component of petrol fuel for vehicles. It is also used as a solvent and as a precursor in production of other chemicals.

In construction Pentanes (iso-Pentane, cyclopentane, n-Pentane) are some of the primary blowing agents used in the production

of Polyther insulation foams. Bromofluorocarbons (Bfcs) are molecules based on carbon, bromine, and fluorine. The most common use has traditionally been in the fire suppression systems. The brand name "Halon" frequently used interchangeably for Bfcs. However, not all Halons are technically Bfcs. (Some contain chlorine also.

Bfcs attack the ozone layer even more aggressively than Cfcs and are powerful greenhouse gases, although due to shorter atmospheric lifetimes not as powerful as equivalent., Bfcs are still used in some ships and aircraft, because replacement was are not as effective. As Production of Bfcs was banned by the Montreal Protocol, remaining use depends on old inventories and on recycling.

The infrared atmospheric window refers to a region of the infrared spectrum where there is relatively little absorption of terrestrial thermal radiation by atmospheric gases. The window plays an important role in the atmospheric greenhouse effect by maintaining the balance between incoming solar radiation and outgoing IR to space. In the earth atmosphere this window is roughly the region between 8 and 11 μm although it can be narrowed or closed at times and places of high humidity because of the strong absorption in the water vapour continuum or because of blocking by clouds. Principally it is large gap in the absorption spectrum of water vapour.