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China – Russia Dialog
Saint Petersburg, Russian Federation, April 2012

Montreal Protocol for the Protection of the Ozone Layer

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UNEP ECA webpage:
www.unep.org/ozonaction/ecanetwork/

OzonAction website:
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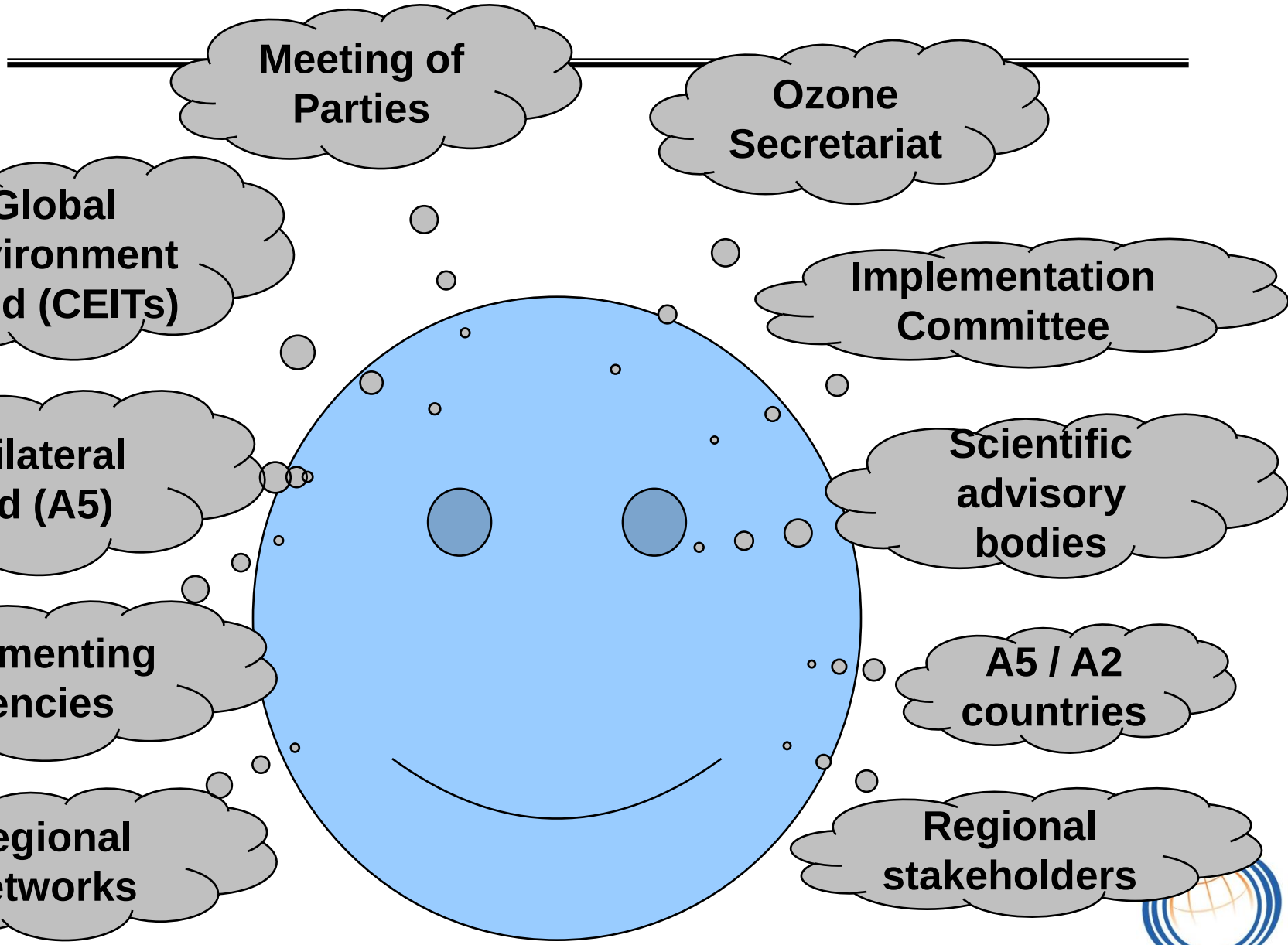
Montreal Protocol on Subastances that Deplete the Ozone Layer

- **International environmental treaty**
  - **25th anniversary 1997 – 2012**
  - **Universal ratification by 197 Parties**
- **Phase out production & consumption of controlled ozone depleting substances (ODS)**
  - **Chlorofluorocarbons (CFCs), halons, methyl bromide, carbon tetrachloride, methyl chloroform , hydrochlorofluorocarbons (HCFCs)**
- **Differentiated responsibilities for developed (Article 2) and developing countries (Article 5)**
  - **Funding mechanisms for Article 5 and CEIT countries**
  - **Differentiated phase-out schedules**

Montreal Protocol …



UNEP OzonAction Programme

- **One of four implementing agencies**
- **Regionalised Compliance Assistance Programme**
  - **Global:** Information clearinghouse including websites, publications, newsletters
  - **Regional:** Regional networks of Ozone Officers, enforcement networks, policy & technical advice, country-to-country cooperation, stakeholder cooperation
  - **National**: Institutional strengthening, policy setting, capacity building, training, awareness raising, phase-out strategies, disposal & destruction

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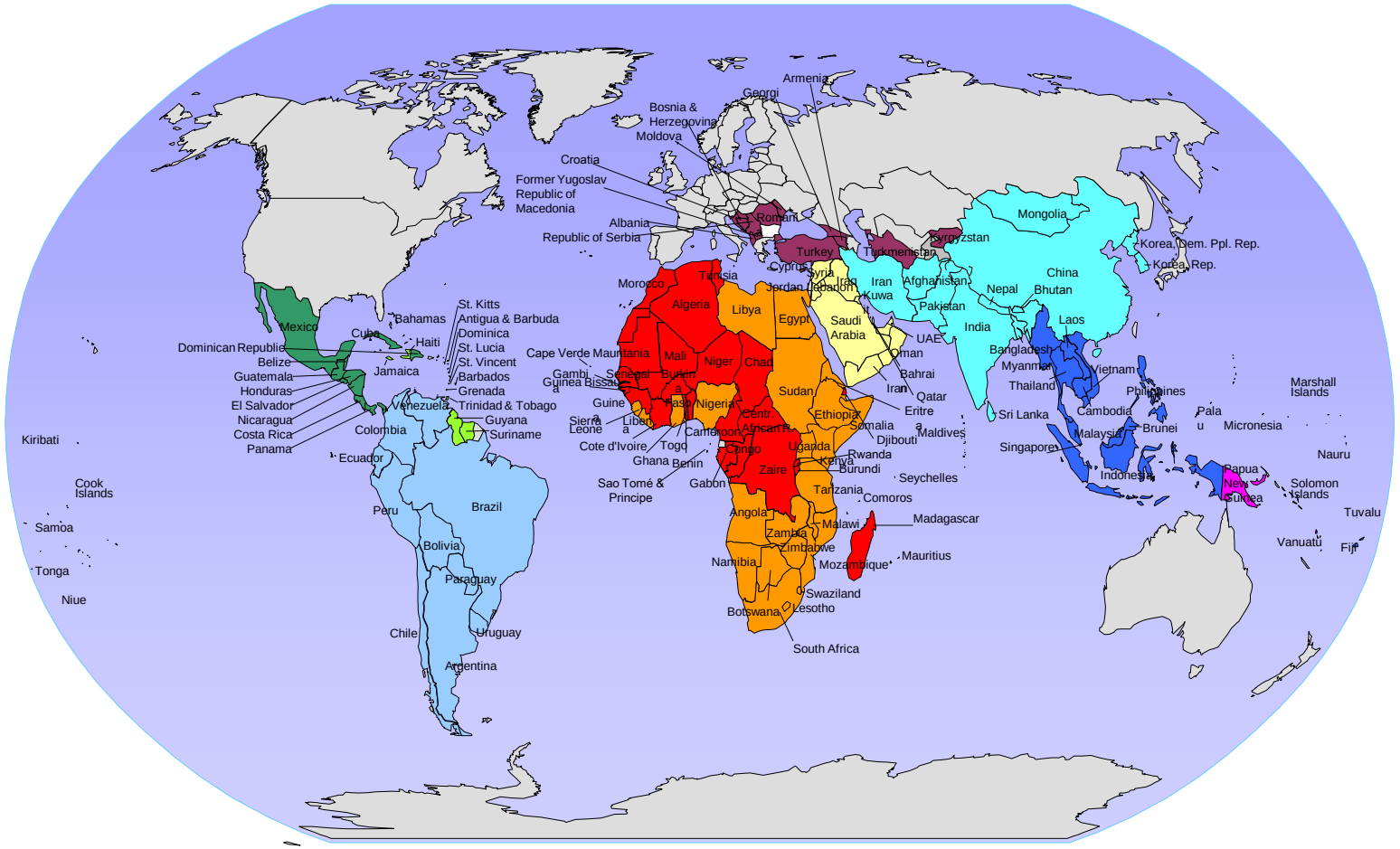
Regional Networks



South Latin America | Central Latin America | Caribbean | French Africa | English Africa | West Asia | South Asia | South East Asia | Europe & Central Asia

Phase-out schedule for Article 5 countries

- **Some ODS already phased out**
  - Chlorofluorocarbon, halon, carbon tetrachloride
  - Few exemptions for essential and critical uses (Russia imported 308 ODP tons CFC for essential use)
- **Remaining challenges**
  - 2015: 100% methyl bromide phase-out
  - 2015: 100% methyl chloroform phase-out
- **Hydrochlorofluorocabon (HCFC) challenge**
  - 2013: Freeze at baseline level
  - 2015: 10% reduction of baseline
  - 2020: 35% reduction of baseline
  - 2025: 67,5 % reduction of baseline
  - 2030: 97,5% reduction of baseline

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Phase-out schedule for Article 2 / CEIT countries

- **Most ODS already phased out**
  - **Chlorofluorocarbon, halon, carbon tetrachloride, methyl chloroform, methyl bromide**
  - **Few exemptions for essential and critical uses**

- **Hydrochlorofluorocabon (HCFC) challenge**
  - **2010: 75% reduction of baseline**
  - **2015: 90% reduction of baseline**
  - **2020: 99,5 % reduction of baseline**

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ODS already phased-out

ODS	ODP	GWP
CFC-11	1	4750
CFC-12	1	10890
Halons	3-10	1640-7140
CTC	1,1	1400

HCFCs & alternatives

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Substance	ODP	GWP
HCFC	0,001-0,52	77-2310
HFC	zero	124-3920
HC	zero	2-4
NH3	zero	zero
CO2	zero	1

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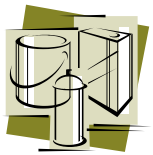
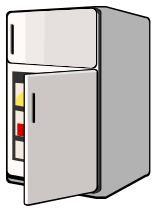
Uses of ODS

- Refrigerants: domestic, commercial, and transport refrigerators; air-conditioning & heat pump systems; motor vehicle air-conditioners
- Blowing agents: CFC-11 foam blowing agent for the manufacture of polyurethane, phenolic, polystyrene and polyolefin foam plastics.
- Cleaning solvents: CFC-113, methyl chloroform, carbon tetrachloride for electronic assembly production processes, precision cleaning & general metal degreasing . Also for dry cleaning & spot cleaning in textile industry
- Propellants: CFC-11, -12, -113, -114 for aerosols like deodorants, shaving foam, perfume, window cleaners, lubricants, & oils
- **Sterilants**: Mixtures of CFC-12 & ethylene oxide used for medical sterilisation
- Fire extinguishers: Halons & hydrobromofluorocarbons
- Fumigants: Methyl bromide, pesticide for soil fumigation & pre-shipment & quarantine apps.
- Feedstock: HCFC & carbon tetrachloride are used as feedstock for chemical synthesis.



Use exemptions for ODS

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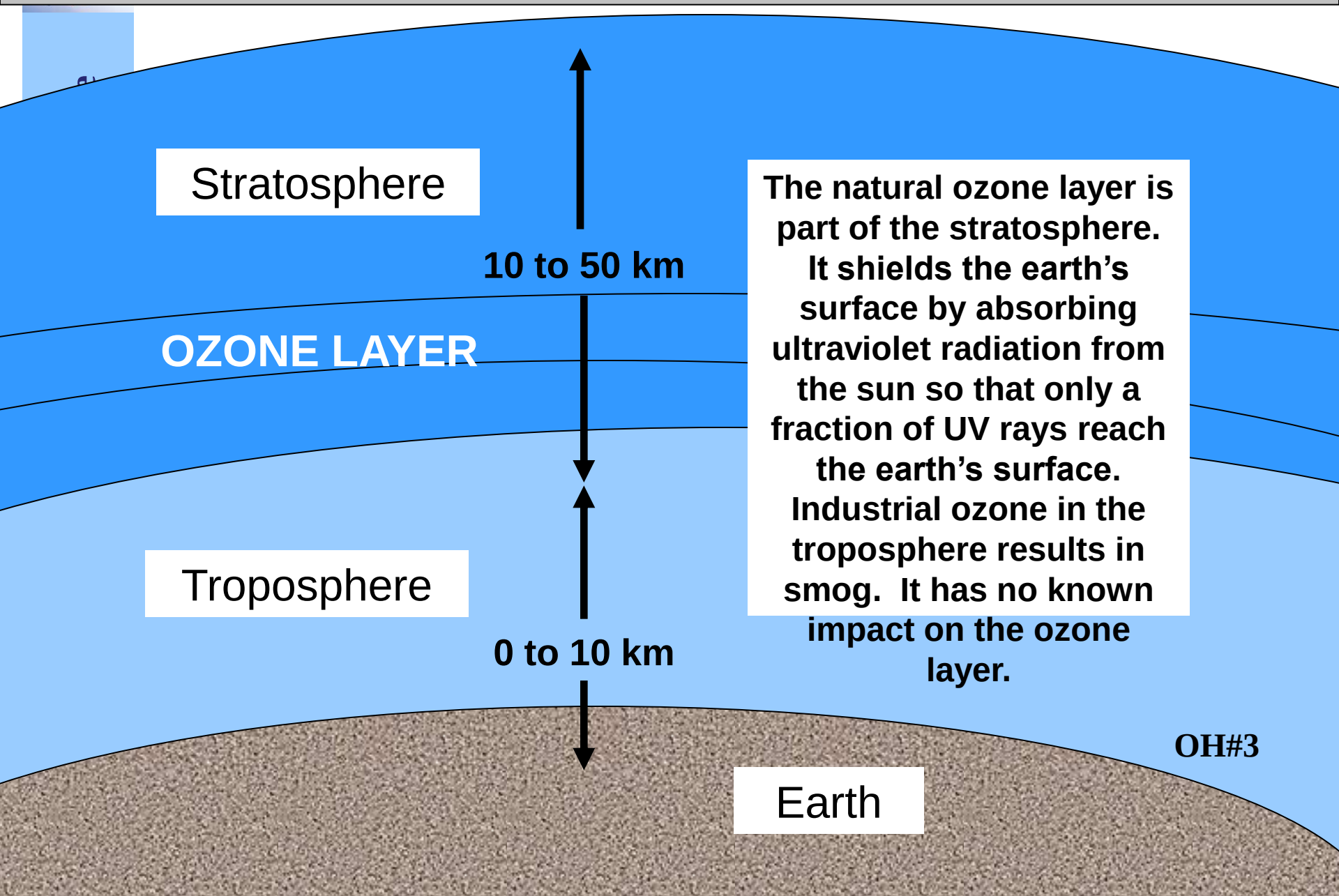
- Essential use: an exemption from the total phase out of controlled substances can be granted for certain essential uses upon application, if approved by the Meetings of the Parties on a case-by-case basis (exempted category).
- Feedstock: controlled substances that are used in the manufacture of other chemicals and that are completely transformed in the process.
- Process agents: some ODS are used in the production of other chemicals e.g. as a catalyst or an inhibitor of a chemical reaction without being consumed. Only those uses of controlled substances approved by the Montreal Protocol are allowed.
- Production to satisfy basic domestic needs: Article 5 countries are allowed a grace period compared with non-Article 5 countries to phase-out the use and production of controlled substances in order to meet their domestic needs.
- Quarantine & pre-shipment use of methyl bromide
- Use of recycled ODS is not controlled

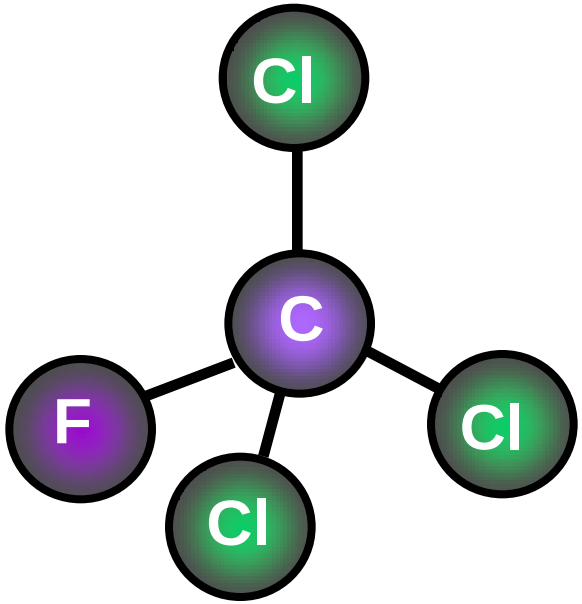
What is the stratoshpere ?



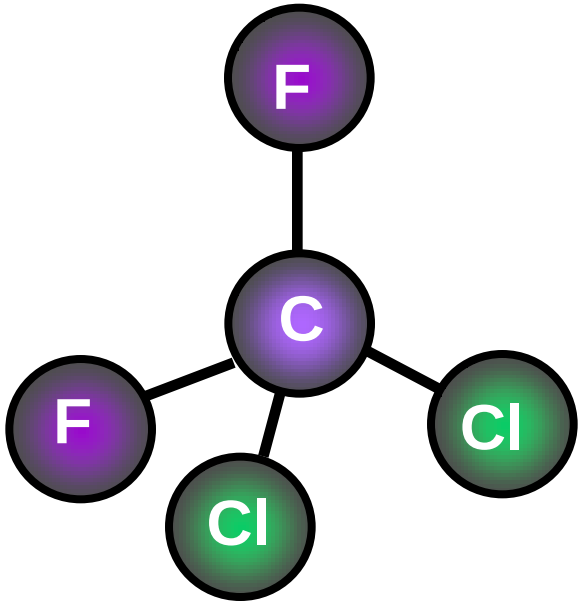
The natural ozone layer is part of the stratosphere. It shields the earth's surface by absorbing ultraviolet radiation from the sun so that only a fraction of UV rays reach the earth's surface. Industrial ozone in the troposphere results in smog. It has no known impact on the ozone layer.

OH#3

What are chlorofuorocarbons (CFC) ?



CFC-11



CFC-12

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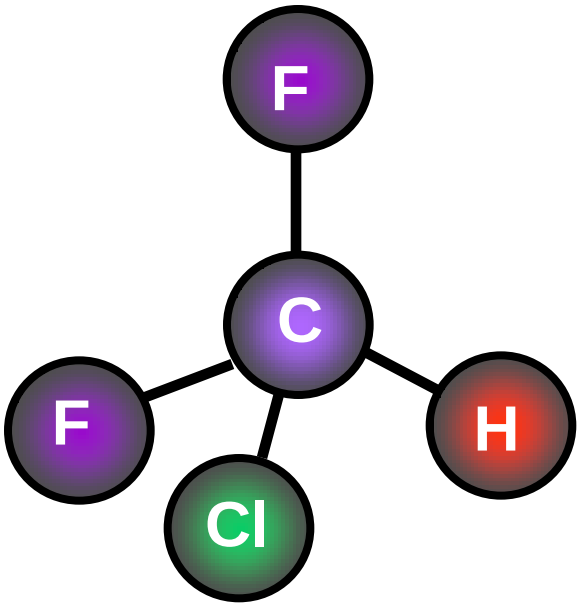
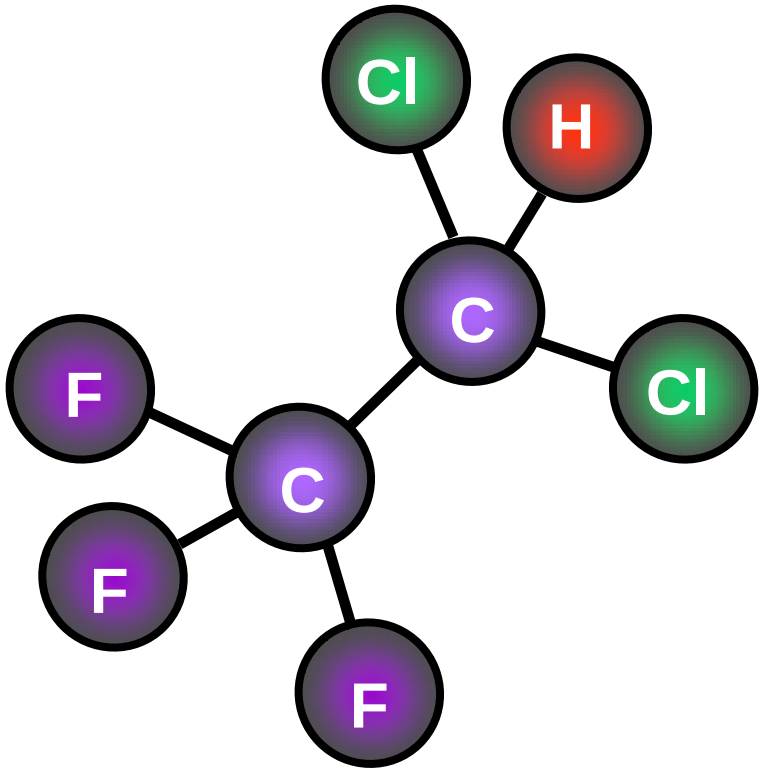
And hydrochlorofluorocarbons (HCFC) ?

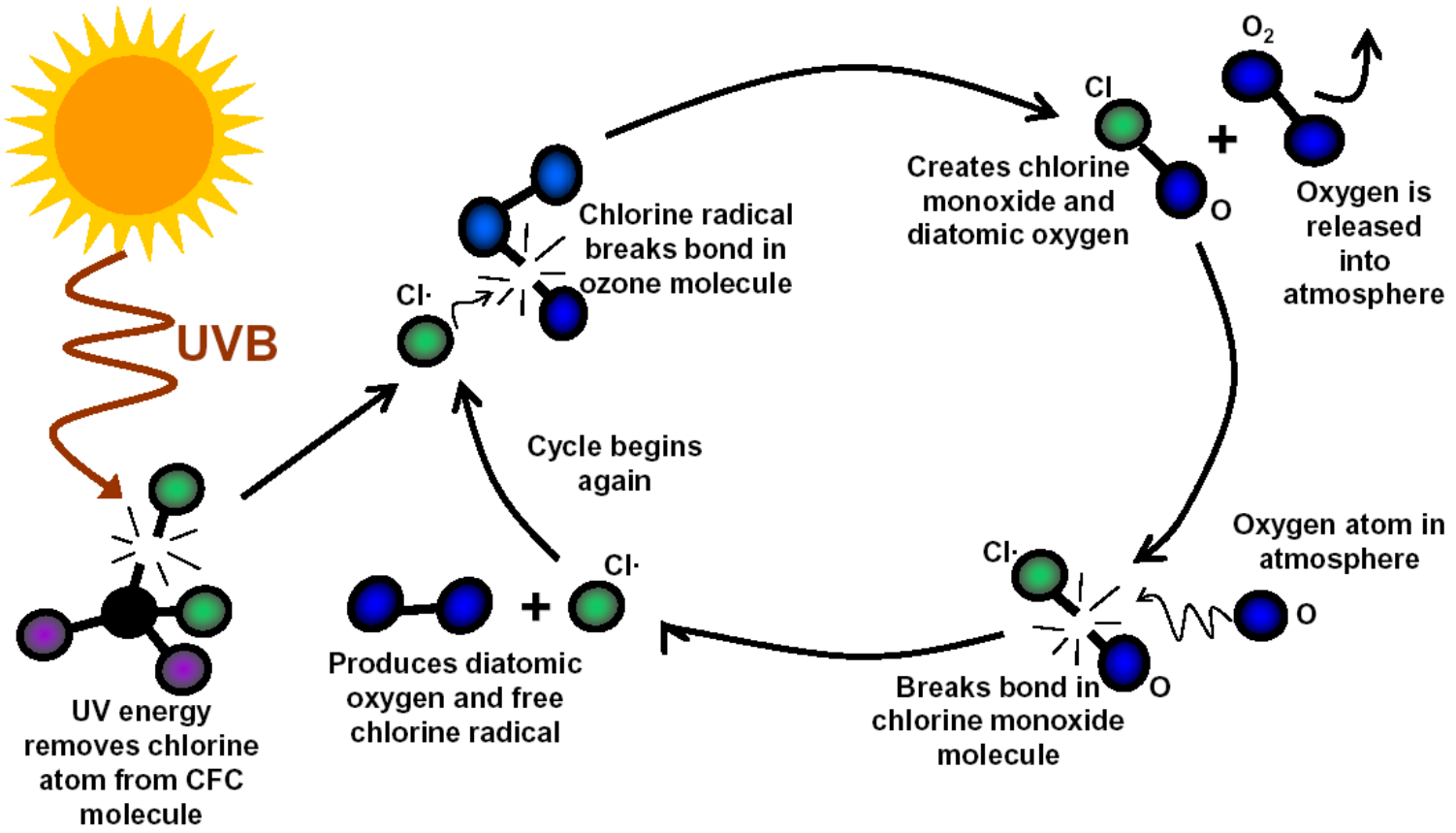


HCFC-22



HCFC-123

How the Ozone Layer gets destructed ?



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Effects of ozone layer destruction

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- **Human Health**
  - Skin Cancer
  - Eye Cataracts
  - Damages to immune system
- **Plants & Trees**
  - Reduces crop production and damage to seeds
  - Reduces quality of crops
- **Aquatic Organisms**
  - Damage to plankton, aquatic plants, fish larvae, shrimp, crabs
  - Affects marine food chain and damage to fisheries results
- **Materials**
  - Damage to paints, rubber, wood, & plastic

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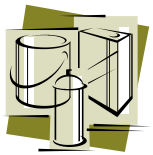


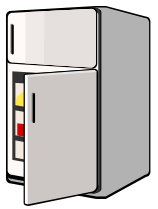

A few examples

- **Human health**
  - Incidence of skin cancer without Montreal Protocol: **300% increase by 2100**
  - Incidence of skin cancer with Montreal Protocol: **peak of 10% increase by 2060**
  - Avoided cataract cases in USA with Montreal Protocol: **22 million cases by 2100 (USEPA, 2010)**
- **Plants & trees & aquatic organisms**
  - Benefits from avoided reduction of crop harvest in USA: **US$ 49 billion by 2075**
  - Avoided damages to agricultural and fishery yields and materials: **US$ 459 billion dollars by 2060**
- **Avoided greenhouse gases emission**
  - **11 billion tonnes CO_2 equivalent per year (Molina, 2009)**
  - **Reduction in greenhouse gas emissions over 20 years valuated at carbon markets as: US$ 3262 billion**

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Conclusions

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Customs authorities have important role in saving life on Earth !

Questions ?