Montreal Protocol

Introduction

- The ozone layer is destroyed by ozone-depleting substances (ODS) when those chemicals are released into the atmosphere and then react with the ozone molecules.

- Elevated ultraviolet radiation reaching the earth as a result of ozone depletion can have major impacts on life and nature, including skin cancer and cataracts and weakened immune systems.

- It also can damage terrestrial plant life, including crops, and aquatic ecosystems.

Unit Outline

1. Introduction
2. Scope of Montreal Protocol
3. Categories of ODS
4. Phasing Out ODS
5. Role of Customs & Border Control
6. Conclusion

Scope of Protocol

The Montreal Protocol is an international agreement adopted in 1987 to control the production and consumption of specific man-made chemicals that destroy the ozone layer, the earth's protective shield.

An agreement /mechanism to reduce and eliminate the production and consumption of ODS

Developed and developing countries have different phase out schedules

Ratification Status

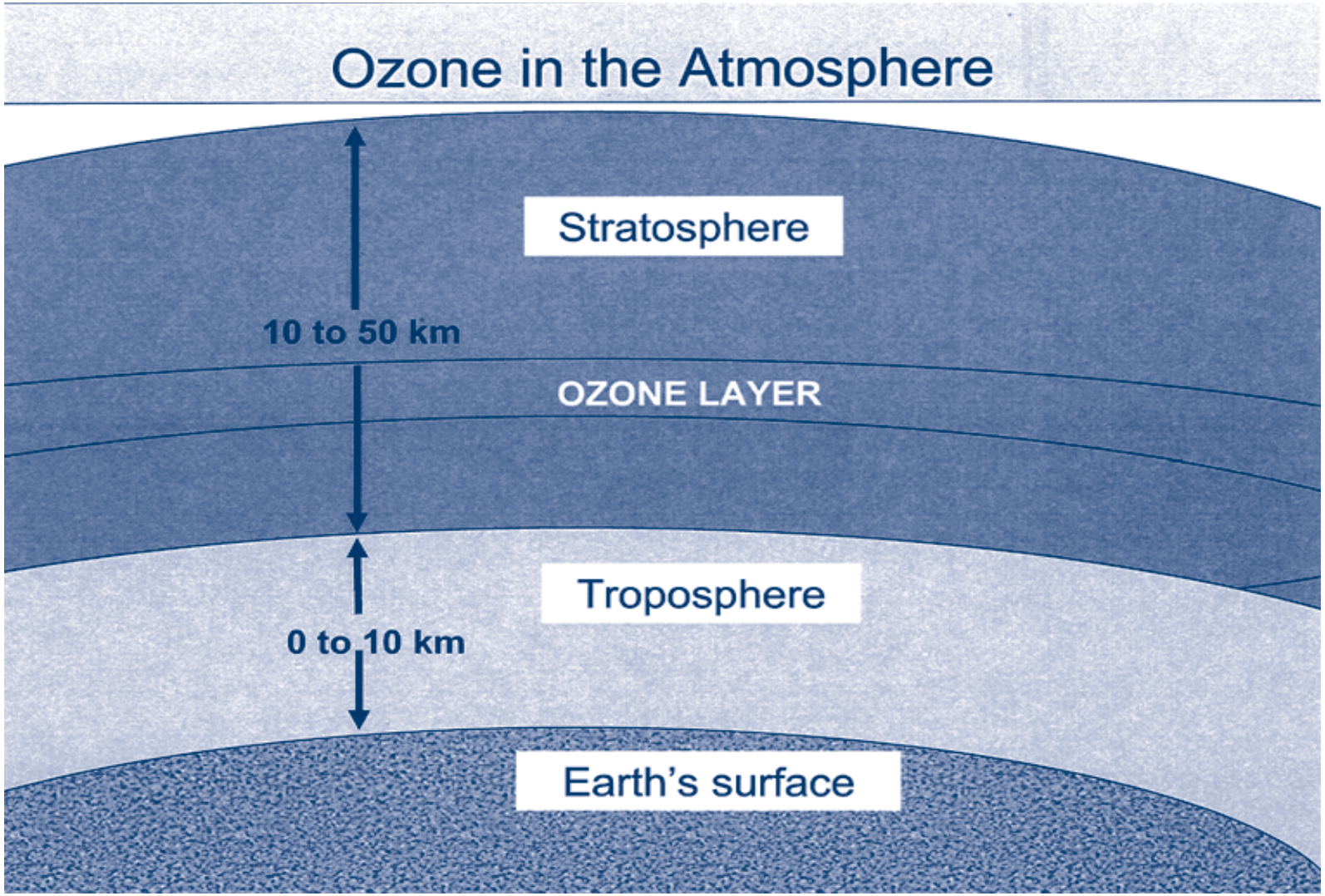
- Vienna Convention for the Protection of the Ozone Layer signed in 1985
- Montreal Protocol adopted in 1987
- 197 countries have signed the Montreal Protocol. These countries have also ratified the London, Copenhagen, Montreal, and Beijing amendments.

Ozone Layer

Ozone is a gas that is naturally present in the atmosphere.

The large amount of ozone in the part of the upper atmosphere known as the stratosphere is often referred to as the "ozone layer"

Layers of the Earth's Atmosphere



What are Ozone depleting substances (ODS)

1. Chemicals that potentially deplete the ozone layer
2. Contain chlorine or bromine atoms
3. Have long atmospheric life

Examples:

Chlorofluorocarbons (CFCs) e.g. CFC-12 (aka R-12 or F-12)
Halons (Bromochlorofluorocarbons) e.g. Halon 1301
Carbon tetrachloride
Methyl chloroform
Hydrochlorofluorocarbons (HCFCs) e.g. HCFC-22 (aka R-22 or F-22)
Hydrobromofluorocarbons (HBFCs)
Bromochloromethane
Methyl bromide

Main uses of ODS

- Refrigerants (gases)
- Fire extinguishers
- Fumigants, pesticides
- Foam-blowing agents
- Cleaning solvents
- Aerosol propellants
- Air-conditioning systems (and components)
- Refrigerators/freezers
- Compressors
- Vehicles (mobile air-conditioning systems)
- Insulating boards/pipe covers
- Metered-dose inhalers (medical inhalers

Why control Ozone Depleting Substances?

- Harmful to the environment and human health
  - Ozone (Layer) depletion
  - Climate Change
  - Global Warming
  - Economic impact
  - Others?
- International agreement for their complete phase out
- National legal obligation for their phase out
- Personal obligation to protect and care for our natural environment
  - Our generation
  - Our children's generation

Some Effects of Ozone Layer Depletion

Human Health

Damages DNA which suppresses immune system resulting in increase in infectious diseases eg Skin Cancer; Eye Cataracts

Plants & Trees

Reduces crop production, damage to seeds

Reduces quality of crops

Aquatic Organisms

Damage to plankton, aquatic plants, fish larvae, shrimp, crabs

Affects marine food chain

Materials

degrades paints, rubber, wood, & plastics, especially in tropical regions

Ground Level Smog

Increase in the formation of Ground level ozone as a pollutant

High economic cost

Damages could be in billions of US dollars

Phasing out ODS

Parties to the Montreal Protocol must freeze, reduce and phase out their production and consumption of ODS according to a specific step-wise schedule.

- Approaches:
  - Production Control
  - Consumption Control
  - Trade, Import, export and reimport control
  - Adaptation to Ozone Friendly technology
  - Training and Capacity Building

Phase-out Mandates of the Montreal Protocol

Ozone depleting Substance *Consumption = Imports + production – Exports*	developed Country (*Article 2 Parties) (this schedule will be applicable for USA CANADA*	Article 5 Parties developing Country (Mexico)
CFCs	**100% phase out Jan. 1st, 1996**	**Base level: 1995-97 Freeze in Consumption: Jan 1st, 1999 50% Cut-2005 85% Cut-2007 Phase out: Jan. 1st 2010**
Halons	**100% phase out Jan. 1st, 1994**	**Base level: 1995-97 Freeze in Consumption: Jan 1st, 1999 50% Cut-2005 Phase out: Jan. 1st 2010**
Methyl Bromide	**Phase out 2005**	**Base level: 1995-98 Freeze in Consumption: Jan 1st, 2001 20% Cut-2005 Phase out: Jan. 1st 2015**

HCFC The schedule for Article 2, Developed countries is:

Schedule	Year
CAP .. Base line	1989
30%	2004
75%	2010
90% by	2015
Phase out by	2020
Allowing 0.5% for servicing	**2020-2030** and thereafter, consumption restricted to the servicing of Refrigeration and Air-conditioning equipment existing at that date.

The HCFC schedule for Article 5 (developing) countries is:

Schedule	Year
Baseline1989 HCFC Consumption +2.8 percent of 1989 CFC Consumption	Average of 2009 and 2010
Freeze	2013
reduction of 10%)	2015
reduction of 35%	2020
reduction of 67.5%	2025
Annual average of 0.5%	2030 to 2040
reduction of 100 %	2040

Monitoring

Most developing countries do not produce ODS and are completely dependent on ODS imports.

Consequently, monitoring the legal trade and preventing the illegal trade of these chemical is crucial to achieving the gradual phase-out of ODS and conversion to non-ODS alternatives.

Measures - Import License System

An Import / Export Licensing System for ODS controlled by Montreal Protocol is necessary to:

- ✓ Facilitate control of ODS supply
- ✓ Increase the monitoring / collecting of information
- ✓ Identify end users
- ✓ prevent illegal imports

Enforcement Measures

- Enforcing import license regime
- Applying penalties to discourage illegal imports /exports
- Executing seizures of ODS products and equipment
- Introducing Quotas and prohibitions

Multilateral Fund

- The main objective of the Multilateral Fund for the Implementation of the Montreal Protocol is to assist developing country parties to the Montreal Protocol whose annual per capita consumption and production of ozone depleting substances (ODS) is less than 0.3 kg to comply with the control measures of the Protocol.
- Currently, 147 of the 196 Parties to the Montreal Protocol meet these criteria (they are referred to as Article 5 countries).

Multilateral Fund

- It embodies the principle agreed at the United Nations Conference on Environment and Development in 1992 that countries have a common but differentiated responsibility to protect and manage the global commons.
- The Fund is managed by an Executive Committee with an equal representation of seven industrialized and seven Article 5 countries, which are elected annually by a Meeting of the Parties. The Committee reports annually to the Meeting of the Parties on its operations. The work of the Multilateral Fund on the ground in developing countries is carried out by four Implementing Agencies, which have contractual agreements with the Executive Committee:
  - United Nations Environment Programme (UNEP), through the UNEP DTIE OzonAction Programme.
  - United Nations Development Programme (UNDP).
  - United Nations Industrial Development Organization (UNIDO).
  - World Bank.

Role of Customs & Border Control

Customs and other Border Control officials must be part of the monitoring process and enforcement of the measures instituted nationally including ensuring that import and export licenses are issued before ODS can be imported or exported

Results to date

- The Montreal Protocol is working. There is clear evidence of a decrease in the atmospheric burden of ozone-depleting substances in the lower atmosphere and in the stratosphere;
- Some early signs of the expected stratospheric ozone recovery are also evident.
- Furthermore, if the Parties were to eliminate all emissions of ozone depleting substances soon after 2006, it would advance by about 15 years (from around 2050 to 2035) the global ozone layer recovery to pre-1980 levels
- Since the Montreal Protocol came into effect, the atmospheric concentrations of the most important chlorofluorocarbons and related chlorinated hydrocarbons have either leveled off or decreased

Failure to Act

- Failure to continue to comply with the Montreal Protocol could delay or even prevent the recovery of the ozone layer.

- Multiple factors, including ozone-depleting substances and climate change, will affect the future state of the ozone layer.

- Every Action counts

Without the Montreal Protocol by 2050

- Ozone depletion would have reached to at least 50 % in the northern hemisphere's mid latitudes
- 70% in the southern mid latitudes
- Doubling on the UV-B radiation reaching earth's surface
- Estimated increases of
  - 19 million more cases of non-melanoma cancer
  - 1.5 million more cases of melanoma cancer
  - 130 million more eye cataracts

Is the Montreal Protocol on ODS the most successful MEA implementation in the Region?