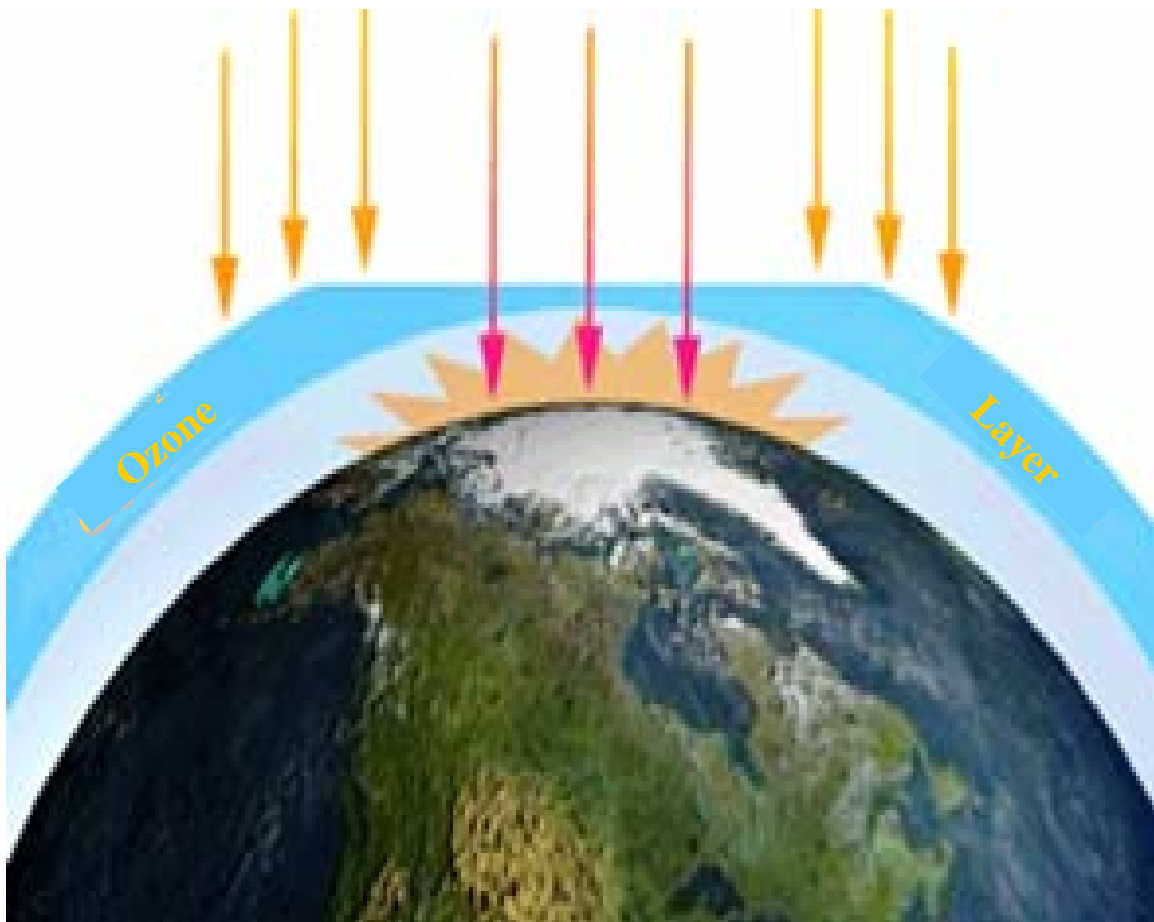
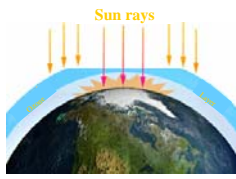


Chapter 4

Ozone Layer Protection

Sun rays

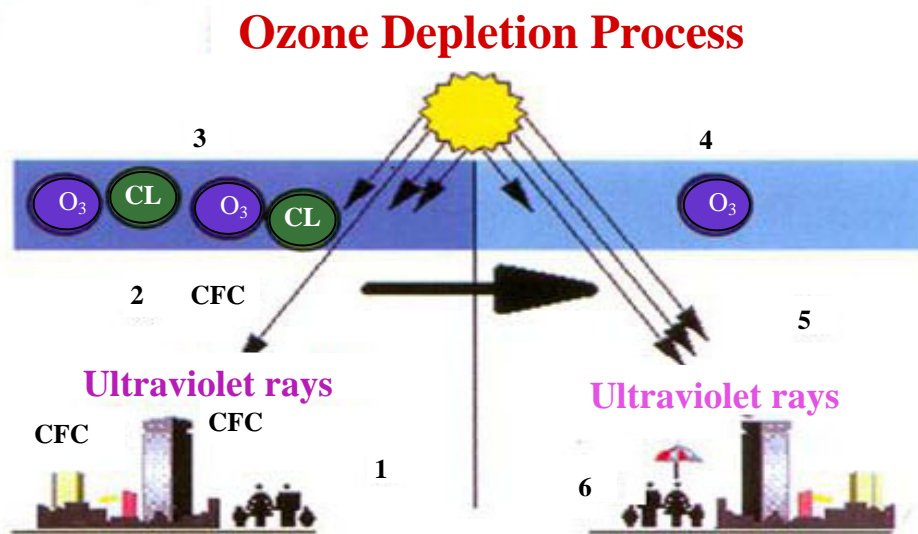




Ozone Layer Protection

Introduction

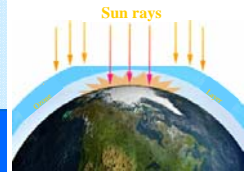
Ozone exists in small amounts in the troposphere in which we live, but in large amounts in the 2-8 km thick stratosphere, 10-50 km away above earth.



- | | |
|--|---|
| 1- Chlorofluorocarbon (CFC) emissions | 4- Chlorine (Cl) molecule Ozone (O ₃) destruction |
| 2- CFC rise to the ozone layer | 5- Ozone depletion leads to increased ultraviolet (UV) rays |
| 3- UV rays react with CFCs, releasing Cl molecules | 6- Excessive UV-B leads to skin cancer |

Fig. (4.1) Ozone depletion process

Threat comes from the introduction of man-made chemicals that have led to increased use of ozone-depleting substances: chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) used in household and commercial refrigerators and household, central and vehicle air conditions, in aerosols (perfumes, insecticides, medications), and in foam products as blowing agents; halons used in fire fighting equipment and systems; and some industrial solvents used for cleaning plastic, metal surfaces and electric circuits, such as methyl chloroform, carbon tetrachloride, also, methyl bromide used as a pesticide and in spraying agricultural crops and soil treatment.



Harmful Effects

Ozone layer is the natural filter and preventive shield surrounding Earth to protect all creatures against harmful UV-B rays effects coming from the sun to earth's surface. Effects include human skin cancer and eye cataract; effect on photosynthesis in green plants, reducing plant growth and affecting agricultural crops; and impact on marine ecosystems, all of which leads to an unbalanced general system of nature and life on earth, which, in turn, affects the global climate change; hence, threatening human health and environment safety.



Some negative impacts of ozone depletion

Destroying marine micro-organisms



Affecting human immune system

Affecting agricultural crops



Affecting dyes and plastics

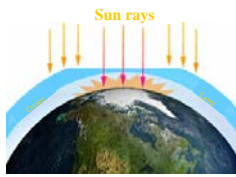


Eye cataract



Skin cancer

Fig. (4.2) Some negative impacts of ozone depletion



Ozone Layer Protection

Environmental Indicators

Ozone layer protection environmental indicators are as follows:

- EEAA monitors and compares annual consumption of ozone-depleting substances with allowed consumption levels. This indicator identifies how far Egypt is in compliance with Montreal Protocol and its amendments on Substances that Deplete the Ozone Layer.

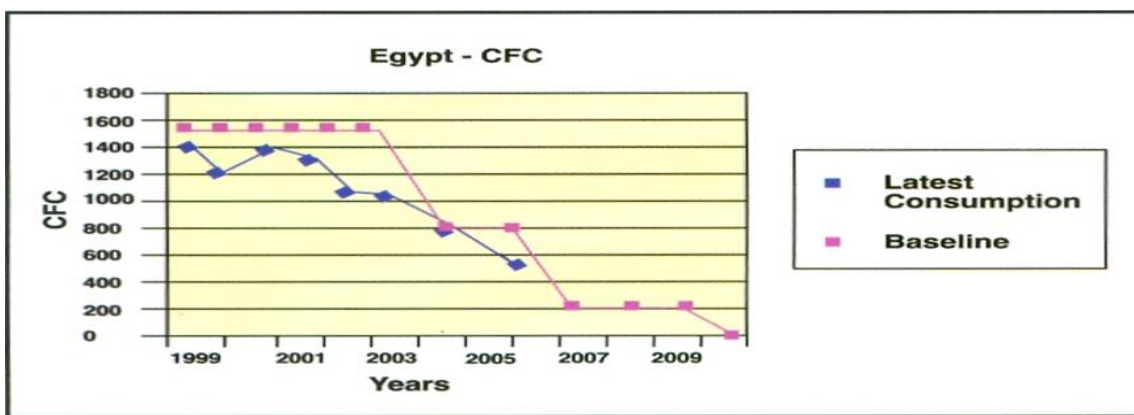


Fig. (4.3) CFC consumption (in tons)

Source: EEAA

- Egyptian Meteorological Authority (EMA) measures ozone for monitoring ozone layer change above Egypt, especially above Aswan (above the tropical area where ozone is naturally generated). Straight lines demonstrate that there is no clear tendency for change.

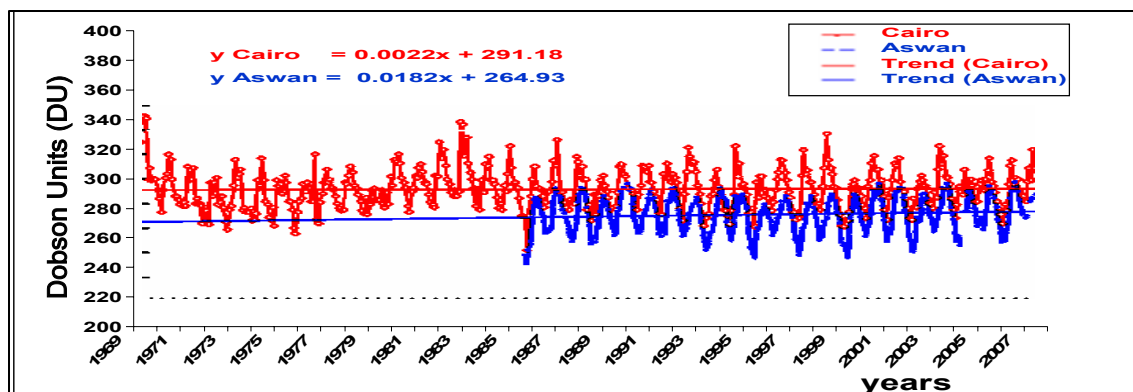
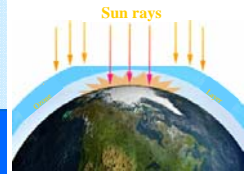


Fig. (4.4) Ozone measurement changes above Cairo and Aswan

Source: Egyptian Meteorological Authority



Efforts Made to Reduce Negative Impacts

In implementation of Montreal Protocol and in the framework of Egypt's membership as a party to Montreal Protocol on Substances That Deplete the Ozone Layer, the Government of Egypt (GOE) has developed the Egyptian Program for Protecting the Ozone Layer. It included industrial and agricultural activities that need alternative technologies, as well as draft decrees and general rules to execute Egyptian obligations under Montreal Protocol. Many of such activities were implemented in 2007.

1– Project for Phasing out Ozone-Depleting Substances in Industrial Solvents Sector

By the end of July 2007, national companies have totally achieved environmental compliance by phasing out the consumption of 841 tons of ozone-depleting substances such as the use of methyl chloroform and carbon tetrachloride as solvents for cleaning purposes in electronic, metallurgical and some plastic production, as well as aluminum purification purposes.

2– Egypt's Halon Bank Development and Management Project

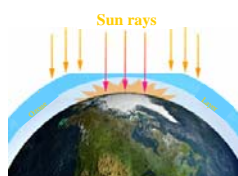
By the end of 2007, installing and operating the Halon Bank equipment were finalized, as well as training staff on recycling and refilling halons to meet necessary needs in different vital sectors in Egypt.

3– Ozone-Depleting Substances National Phase-out Plan (NPP)

Project Phase II was initially implemented in 2007, aiming at freezing and minimizing the use of CFCs in the refrigeration and air conditioning sector. It had many activities and achievements, ahead of which come the distribution of recovery and recycle equipment for free to refrigerator and vehicle air condition service centers, as well as organizing a training program, and spreading awareness of using modern technology operating with environment-friendly alternatives.

4– Methyl Bromide (MB) Agricultural Use

In 2007, the implementation of the Egyptian Strategy was completed. It targeted the gradual reduction of using ozone-depleting methyl bromide in agriculture and storage sectors, used in soil fumigation and agricultural crop storage. Many activities and achievements were made, such as holding training courses, conducting field visits in collaboration with the Agricultural Research Center, and participating in a regional workshop on training on the use of methyl bromide alternatives.



Ozone Layer Protection

5- Ozone-Depleting Substances Used in Medical Aerosol (MDI)

The Egyptian Drug Sector Strategy was inceptioned in 2007. It aimed at transforming manufacturers' production lines of medical aerosols using ozone-depleting CFCs into ozone-friendly alternatives in manufacturing asthma spray canisters. The Multilateral Fund of Montreal Protocol approved financing such strategy in collaboration with the Ministry of Health and Population to phase out the use of such substances, given that this sector consumes 163 tons of ozone-depleting CFCs. Full transformation of pharmaceutical production lines is expected by 2009.

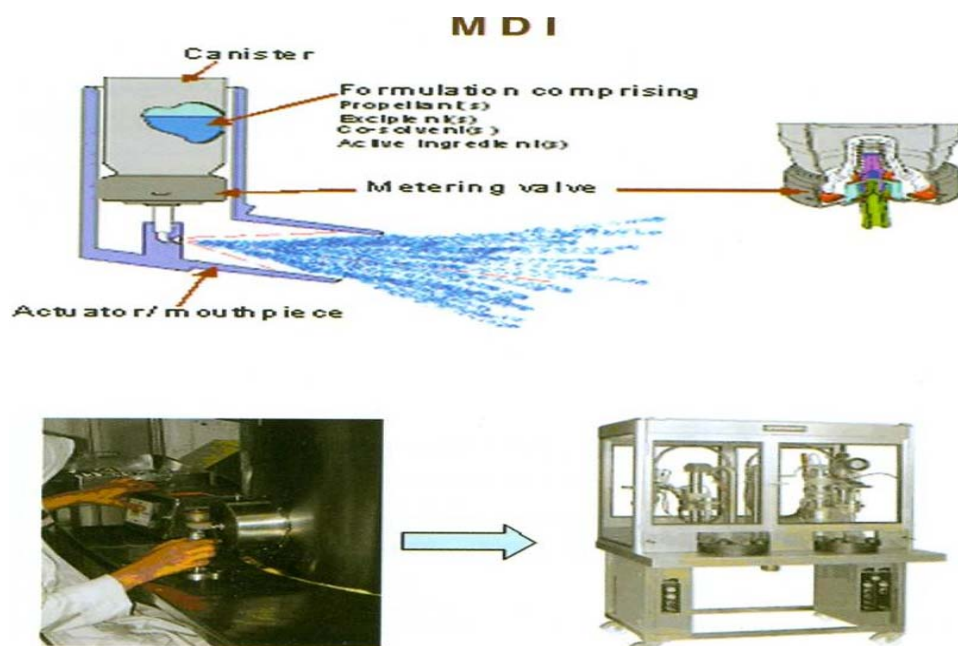
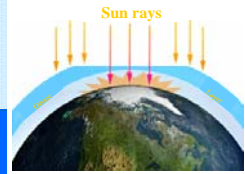


Fig. (4.5) Transforming medical aerosol production lines



Future Vision

Egyptian environmental policy seeks facilitating the compliance with Montreal Protocol on Ozone Protection without prejudice to developmental programs or impacting priorities set by the State for sustainable development. The focus during the coming period will be on the following:

- Collaboration with and supplying all State control agencies with refrigeration gas analysis equipment to prevent illegal trade of refrigeration gases and tightly controlling markets.
- Continuing the implementation of ozone-depleting substance recovery and recycling, and providing equipment for maintenance workshops and service centers for free, as well as training technicians on such equipment.
- Intensifying awareness campaigns on environment-friendly alternatives and orienting them to all community segments, in addition to providing them at competitive prices in order to ensure market stability.
- Combating import flow, especially of prohibited used goods. Such flow results from low prices and soliciting the export of such goods.
- Regional cooperation with Arab and African countries via databases to ensure communication and experience sharing with other countries, and coordination with the rest of the other state parties to Montreal Protocol, and all international organizations implementing modern technological shifting projects.