Stratospheric Ozone Protection Under Title VI of the Clean Air Act

Key milestones and achievements in protecting the ozone layer, from discovery of its depletion to its projected recovery

In 1990, the Clean Air Act (CAA) Amendments were signed into law. The Amendments added Title VI, Stratospheric Ozone Protection, which directs the Environmental Protection Agency (EPA) to protect the stratospheric ozone layer.

To minimize the disruption to consumers, the global phaseout of ozone-depleting substances (ODS) has been a gradual reduction over time. This has allowed for the adoption of alternative chemicals that pose a lower risk to human health and the environment in products like air conditioners, refrigerators, and aerosols.

As a result of the CAA and the Montreal Protocol on Substances that Deplete the Ozone Layer, the ozone layer is expected to recover by the middle of the 21st century. Restoring the ozone layer helps reduce the amount of ultraviolet (UV) radiation reaching the Earth's surface, which lowers the risk of developing skin cancer and cataracts. Full implementation of the Montreal Protocol is expected to prevent 443 million cases of skin cancer and 63 million cases of cataracts in the United States alone.

EPA Stratospheric Ozone Protection Models

EPA developed and maintains models that are used to support the implementation of Title VI of the CAA. The Atmospheric and Health Effects Framework (AHEF) Model evaluates human health effects associated with ozone layer depletion. The Vintaging Model estimates the annual chemical emissions from industrial sectors that have used ODS in their products.

Sun Safety Programs

In 1994 and 1998, EPA launched sun safety initiatives. The UV Index provides a forecast of the expected risk of overexposure to UV radiation from the sun, and the SunWise Program provides free K-8 sun safety educational materials. SunWise is currently managed by the National Environmental Educational Foundation.



EPA Voluntary Partnerships that Protect the Ozone Layer

In 2006 and 2007, EPA launched voluntary programs to support and encourage industry to take actions beyond federal requirements. The Responsible Appliance Disposal (RAD) Program encourages best practices while disposing of refrigerated appliances, and GreenChill works with supermarkets to reduce harmful refrigerant emissions.





RECOVERY

DISCOVERY



The United States signed the Montreal Protocol.

1985 The United States signed the Vienna Convention for the Protection of the Ozone Layer.



1978 The United States banned the use of CFCs as a propellant in certain consumer aerosol products.

Scientists discovered that chlorofluorocarbons (CFCs), a class of chemicals containing chlorine, can destroy ozone molecules when broken down, posing a threat to the stratospheric ozone laver.

1996 Phased out production and import of the most harmful ODS-which include CFCs, carbon tetrachloride, and methyl chloroform—with limited exceptions.



EPA took first actions under Title VI of the CAA:

- · Established requirements to manage the release of refrigerants for both motor vehicles and stationary refrigeration and air conditioning systems.
- · Banned the sale of nonessential products, including aerosols and foam, containing CFCs and hydrochlorofluorocarbons (HCFCs).
- Required labeling of products containing or made with the most harmful ODS.
- Phased out production and import of halons, a potent ODS used for fire suppression.
- Established the Significant New Alternatives Policy (SNAP) Program to identify safer substitutes for ODS.



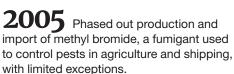
1990 The CAA Amendments, including Title VI, Stratospheric Ozone Protection, were signed into law.



- Required labeling of products containing or made with HCFCs.
- Production and import of HCFCs only allowed for servicing existing air conditioning, refrigeration, and fire suppression equipment.



- Banned production and import of HCFC-22, the most widely used refrigerant, and -142b except for servicing existing equipment.
- Banned the manufacture and import of refrigeration and air conditioning units containing HCFC-22.
- Production and import of CFCs and halon phased out globally.



2003 Phased out production and import of HCFC-141b, a commonly used foam blowing agent, with limited exceptions, marking the first reduction step in the "worst first" phaseout of HCFCs.

2040

HCFC production and import will be phased out globally.



ozone layer will recover to pre-1980 levels.

2030 The United States will phase out the production and import of all HCFCs.

2020 Phased out all HCFCs with the exception of HCFC-123 and HCFC-124 for servicing existing air conditioning, refrigeration, and fire suppression equipment.

