

Appendix 2B.2. Chronology of the Ozone-Depletion Issue

(*Italic font denotes action entry; roman font denotes knowledge entry.*)

1840 Shoenbein (Switzerland) discovers ozone.

1880 Hartley and Cornu (United Kingdom) discover the ozone layer.

1928 Midgley (United States) invents CFCs as non-flammable refrigerants.

1930 Chapman (United Kingdom) presents a theory of ozone chemistry.

1950 Bates (North Ireland) and Nicolet (Belgium) propose that hydrogen oxides are catalysts for ozone destruction.

1957 The Dobson network is established as part of the IGY to measure ozone levels.

1962 Pressman (United States) is concerned that rockets would harm the upper atmosphere.

1964–1966 Hampson (Canada) suggests that nuclear explosions and water vapor from SSTs might destroy ozone.

1970 Crutzen (Netherlands) poses the nitrogen-ozone chemistry theory and shifts the SST debate away from water vapor and climate change.

1971 Lovelock (United Kingdom) measures fluorine compounds in the atmosphere.

1971 The U.S. Climatic Impact Assessment Program is launched.

1971 McDonald (United States) testifies that a fleet of SSTs would cause 10,000 skin cancer cases per year from ozone loss.

1972 DuPont hosts the Seminar on the Ecology of Fluorocarbons.

1973 The Kyoto meeting of the International Association of Geomagnetism and Aeronomy directs attention to chlorine.

1974 Molina and Rowland publish a theory of CFC-chlorine-induced ozone-depletion.

1975 The U.S. Climate Impact Assessment Program (CIAP) report is published.

1975 *Johnson Wax (United States) stops using CFCs in aerosols.*

1977 *The United States hosts UNEP meeting that is the first intergovernmental meeting to discuss the international regulation of CFCs.*

1977 *UNEP's World Plan of Action on the Ozone Layer is adopted in Washington.*

1977 *UNEP establishes the Coordinating Committee on the Ozone Layer (CCOL).*

1978 *Bans on use of CFCs in nonessential aerosols are imposed by the United States, Sweden, Norway, Denmark, Finland, and Canada.*

1980 *The European Community passes a resolution to reduce aerosol use by 30 percent and discusses a capacity cap.*

1982 *The first UNEP Ad Hoc Working Group meeting is held for preparation of a Convention for Protection of the Ozone Layer.*

1983 *Norway, Sweden, and Finland submit plan for a worldwide ban of CFCs in aerosols.*

1985 *The Vienna Convention for the Protection of the Ozone Layer calls for research and exchange of information.*

1985 Farman (United Kingdom) publishes data showing a seasonal Antarctic ozone hole.

1985 WMO circulates *Atmospheric Ozone: 1985* and publishes it in January 1986.

1986 Chemicals and polar stratospheric clouds are shown to cause ozone loss over Antarctica; a solar theory is rejected.

1986–1987 *Five rounds of negotiation on an ozone-control protocol are held.*

1986–1987 Chemical versus dynamic explanations of the ozone hole are debated.

1986–1987 Field investigations show that chlorine and bromine are the primary agents responsible for the ozone hole.

1987 *The Montreal Protocol on Substances That Deplete the Ozone Layer is adopted.*

1987 *The Venice Economic Summit Declaration lists stratospheric ozone depletion first among environmental concerns.*

1988 WMO et al. release the *Ozone Trends* panel report in Washington.

1988 *DuPont announces a phaseout of CFCs.*

1988 *The Vienna Convention enters into force.*

1989 *The Montreal Protocol enters into force.*

1989 *The first meeting of parties to the Montreal Protocol in Helsinki calls for a complete phaseout of CFCs and halons.*

1990 *The London Amendments to the 1987 Montreal Protocol are adopted.*

1990 WMO et al. publishes *Scientific Assessment of Stratospheric Ozone: 1989*.

1992 *The Copenhagen Amendments to the 1987 Montreal Protocol are adopted.*

1992 *The London Amendments to the 1987 Montreal Protocol enter into force.*

1995 WMO et al. publish the *Scientific Assessment of Stratospheric Ozone: 1994*.