

**THE VIENNA CONVENTION FOR THE PROTECTION OF THE OZONE LAYER  
AND THE MONTREAL PROTOCOL ON SUBSTANCES THAT  
DEplete THE OZONE LAYER**

**By Edith Brown Weiss\***

*Francis Cabell Brown Professor of International Law, Georgetown University Law Center*

In 1974 scientists published their first scientific hypotheses that chemicals we produced could harm the stratospheric ozone layer. The ozone layer protects the earth against excessive ultraviolet radiation, which could cause damage and mutations in human, plant, and animal cells. The scientists found that the chlorofluorocarbon gases (CFCs), which were widely used and viewed as posing no harm, could migrate to the stratosphere, remain intact for decades to centuries, and by releasing chlorine, break down the ozone layer.

In 1977 the United Nations Environment Programme (UNEP) concluded a World Plan of Action on the Ozone Layer, which called for intensive international research and monitoring of the ozone layer, and in 1981, UNEP's Governing Council authorized UNEP to draft a global framework convention on stratospheric ozone protection. The Vienna Convention, concluded in 1985, is a framework agreement in which States agree to cooperate in relevant research and scientific assessments of the ozone problem, to exchange information, and to adopt "appropriate measures" to prevent activities that harm the ozone layer. The obligations are general and contain no specific limits on chemicals that deplete the ozone layer.

During the Vienna Convention negotiations, countries discussed a possible protocol that would provide specific targets for certain chemicals, but no consensus was reached. The UNEP regional seas agreements had provided a precedent in which States negotiated a framework convention and at least one protocol, which countries were required to ratify at the time they joined the convention. The Vienna Convention went forward on its own, however, and was opened for signature in March, 1985. A working group under UNEP began negotiations on a protocol, and the Montreal Protocol was concluded in September, 1987, only nine months after the formal diplomatic negotiations opened in December, 1986. It went into effect on January 1, 1989. A State must be party to the Vienna Convention in order to become a party to the Montreal Protocol. The Vienna Convention and the Montreal Protocol established the precedent in UNEP for completing a framework agreement, followed later by one or more Protocols. This precedent has been used frequently since then, as in the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the Cartagena Protocol on Biosafety to the Convention on Biological Diversity.

The ozone agreements are remarkable, in that they are the first to address a long-term problem in which the cause of the damage occurs today, but the effects are not evident for decades hence. Decisions were taken on the basis of probabilities, since damage had not yet occurred. Since scientific understanding of the problem would change, the agreements needed to be flexible and capable of being adapted to accommodate new scientific assessments. No single country or group of countries could address the problem of ozone depletion alone, so maximum international cooperation was needed.

The Montreal Protocol reflects a convergence of interest of scientists who warned of growing threats to the ozone layer, private industry that wanted a level playing field as companies responded to new national legislation controlling the harmful chemicals, nongovernmental organizations advocating environmental protection, and national governments that increasingly saw an international agreement as in their own best interests.

The Montreal Protocol controls the production and consumption of specific chemicals, none of which occur naturally: CFCs, halons, fully Halogenated CFCs (HCFCs), methyl bromide, and similar chemicals. It sets specific targets for reduction and a timetable for doing so. The Protocol originally required parties other than developing countries to freeze consumption and production of CFCs at 1986 levels (the base year), to reduce them by 20 percent and then an additional 30 percent by 1999, and to freeze consumption of halons at 1986 levels. The formula of targets and timetables has been subsequently employed in other international agreements controlling air pollutants and in the Kyoto Protocol to the UN Framework Convention on Climate Change.

During the Protocol negotiations, there was controversy as to whether to base the targets on consumption or production of the chemicals. The CFC industry was concentrated, with the major companies in the United States, the European Community, and Japan. In contrast, consumption of the chemicals was diffuse around the world. Although both the United States and the European Community were large producers of CFCs, only the latter was a large net exporter. Thus, the European Community argued for a production-based control system, while the United States argued for a consumption-based one. The formula adopted in the Protocol equates consumption to production minus exports plus imports of the controlled chemicals. Countries must report annually on their consumption of the controlled chemicals.

Anticipating changes in scientific knowledge about the ozone layer and emergence of new problems in implementing the Protocol, negotiators included several provisions to provide flexibility. The first is for Technology and Economic Assessment Panels, which provide regular expert assessments. The second is for differentiated procedures for altering the obligations to control substances: namely by adjustments and by amendments. In the adjustment process, parties may adjust the targets and timetables for phasing out chemicals that are already listed without having to go through a formal amendment process. Adjustments become effective six months after parties receive formal notice and bind all countries party to the Protocol. A formal amendment is required to add new chemicals to the list of controlled substances. In contrast to the adjustment process, amendments bind only those countries that ratify them. As a result, different states are bound by different obligations. Countries joining the agreement after an amendment goes into effect assume the obligations as of that date, but must ratify any future amendment for it to bind them.

There have been four Amendments to the Protocol: the London, Copenhagen, Montreal, and Beijing Amendments. The 1990 London Amendment provided for an Interim Multilateral Fund to provide assistance to qualifying developing countries, for noncompliance procedures, for the addition of new chemicals to the list of controlled chemicals, and for other miscellaneous changes. Parties treated the London Amendments as a package, which countries had to accept or reject in whole. This was a critical decision for the effectiveness of the Protocol, because it meant that parties could not agree to add

certain chemicals, but not accept the new funding mechanism for developing countries, or vice versa. In the 1992 Copenhagen Amendments, parties made the Interim Multilateral Fund permanent and put additional chemicals under control, including methyl bromide and the HCFCs. The 1997 Montreal Amendment obligated countries to establish and implement a licensing system for the import and export of new, used, recycled and reclaimed controlled substances, and to control trade in the banned substances by parties not in compliance with the Protocol. The 1999 Beijing Amendment provided for a “basic domestic needs” exception for certain controlled chemicals and added bromochloromethane to the list of controlled substances. Since the Protocol went into effect, adjustments have also been made to the timetable for phasing out listed chemicals. For example, in 1990, States parties agreed to phase out those CFCs listed in 1987 by the year 2000 and to phase out halons except for certain essential uses.

Since the ozone depleting substances regulated under the Protocol are also potent greenhouse gases, the Protocol has contributed to mitigating climate change. However, the ban on CFCs has led to some substitution of HCFCs for these chemicals; HCFCs are controlled but not banned under the Protocol. This lessens to some extent the Protocol’s effect on climate change.

The Protocol makes special provisions for certain countries. Article V gives qualifying developing countries a ten year delay in complying with targets and timetables, a separate consumption limit of 0.3 kilogram per capita, and access to the Montreal Protocol Fund to assist with compliance costs. Article 2(6) was intended to attract countries such as the former Soviet Union to join the Protocol, in that it lets a country add facilities under construction or contracted for prior to September 1987 to its base level for calculating its compliance with base year production. The Protocol also provides for “industrial rationalization” in that a party can transfer part of its calculated level of production of controlled chemicals to another party. This was not intended for transfers between developed and developing countries.

To make the Protocol effective, countries prohibited exports and imports of controlled substances with countries not party to the Protocol. In a second stage, the trade ban would extend to products containing a controlled substance, and in a third stage to products produced with the substances. The last has been dropped from the agenda. During the negotiations, countries were concerned that these provisions might violate the General Agreement on Tariffs and Trade (GATT). To assuage such concerns, Article 4(8) permits trade with countries who are not parties but comply with the Protocol, although this requires a decision of the parties that the nonparty is in compliance.

One of the most significant innovations of the Protocol is the process established to address problems of noncompliance. Parties established an Implementation Committee to review annual reports from parties and developed a suite of measures that could be used in case of noncompliance, including technical assistance to enable the country to comply. This precedent has been widely followed in other environmental agreements, such as the UNECE Convention on Long-Range Transboundary Air Pollution and its Protocols, the UN ECE Århus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, and the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

The Vienna Convention and the Montreal Protocol have been quite successful as of 2009 in addressing the global problem of stratospheric ozone layer depletion. However, problems have arisen in implementing the Protocol, especially in the illegal trade in controlled substances, in the management of the large stockpiles of controlled substances, and in the elimination of certain substances, such as methyl bromide, carbon tetrachloride, and the HCFCs.

\*Based in part on Edith Brown Weiss, "The Five International Treaties: A Living History," *ENGAGING COUNTRIES: STRENGTHENING COMPLIANCE WITH INTERNATIONAL ENVIRONMENTAL ACCORDS* ( E. Brown Weiss and H.K. Jacobson, eds, MIT Press, 1998).

## **Related Materials**

### ***A. Legal instruments***

General Agreement on Tariffs and Trade, Geneva, 30 October 1947, United Nations, *Treaty Series*, vol. 55, p. 187.

Convention on Long-range Transboundary Air Pollution, Geneva, 13 November 1979, United Nations, *Treaty Series*, vol.1302, p. 217.

Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, London, 29 June 1990, Annex II of the Report of the Second Meeting (UNEP/OzL.Pro.2/3).

Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Copenhagen, 15 November 1992, Annex III of the Report of the Fourth Meeting (UNEP/OzL.Pro.4/15).

Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer adopted by the Ninth Meeting of the Parties, Montreal, 17 September 1997, UNEP/OzL.Pro.9/12, Annex IV of the Report of the Ninth Meeting of the Parties.

Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, *Treaty Series*, vol. 2303, p. 148.

Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, Aarhus, Denmark, 25 June 1998, United Nations, *Treaty Series*, vol. 2161, p. 447.

Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Beijing, 3 December 1999, C.N.1231.1999.TREATIES-1 of 28 January 2000 and C.N.13.2004.TREATIES.

Cartagena Protocol on Biosafety to the Convention on Biological Diversity, Montreal, 29 January 2000, United Nations, *Treaty Series*, vol. 2226, p. 208.

**B. Documents**

World Plan of Action on the Ozone Layer (1977), Environmental Assessment, *United Nations Environment Programme: compendium of legislative authority, 1972-1977* (UNEP/GC/DEC/5/84).

**C. Doctrine**

M. Arribas, J.J., “La Degradación de la Capa de Ozono: Un Enorme Desafío para la Comunidad Internacional”, *Revista Española de Derecho Internacional*, vol. 46, 1997, pp. 533-556.

J. S. Bales, “Transnational Responsibility and Recourse for Ozone Depletion”, *Boston College International and Comparative Law Review*, vol. 19, 1996, p. 259.

G. M. Bankobeza, *Ozone Protection: The International Legal Regime*, Eleven International Publishing, Utrecht (Netherlands), 2005.

R. E. Benedick, *Ozone Diplomacy: New Directions in Safeguarding the Planet*, Harvard University Press, Cambridge, 1991.

R. E. Benedick, Comment, “The Montreal Ozone Treaty: Implications for Global Warming”, *American University Journal of International Law and Policy*, vol. 5, 1989-1990, p. 227.

E. Brown Weiss & H. K. Jacobson (eds.), *Engaging Countries: strengthening Compliance with International Environmental Accords*, Massachusetts Institute of Technology Press, Cambridge, 1998.

D. S. Bryk, “The Montreal Protocol and Recent Developments to Protect the Ozone Layer”, *Harvard Environmental Law Review*, vol. 15, 1991, p. 275.

E. R. DeSombre, “The Experience of the Montreal Protocol: Particularly Remarkable, and Remarkably Particular”, *UCLA Journal of Environmental Law and Policy*, vol. 19, 2000-2002, p. 49.

A. Gallagher, “New Montreal Protocol and the Future of International Law for Protection of the Global Environment”, *Houston Journal of Environmental Law*, vol. 14, 1991-1992, p. 267.

D. Hurlbut, “Beyond the Montreal Protocol: Impact on Nonparty States and Lessons for Future Environmental Protection Regimes”, *Colorado Journal of International Environmental Law and Policy*, vol. 4, 1993, p. 344.

T. T. Jones, “Implementation of the Montreal Protocol: Barriers, Constraints and Opportunities”, *Environmental Law*, vol. 3, 1996-1997, p. 813.

D. Kaniaru (ed.), *The Montreal Protocol: Celebrating 20 Years of Environmental Progress: Ozone Layer and Climate Protection*, Cameron May Ltd., London, 2007.

W. Lang, "Is the Ozone Depletion Regime a Model for an Emerging Regime on Global Warming?", *UCLA Journal of Environmental Law and Policy*, vol. 9, 1990-1991, p. 161.

W. Lang, "Compliance-Control in Respect of the Montreal Protocol", *American Society of International Law Proceedings*, vol. 89, 1995, p. 206.

P. M. Lawrence, "International Legal Regulation for Protection of the Ozone Layer: Some Problems of Implementation", *Journal of Environmental Law*, vol. 2, 1990, p. 17.

J. A. Mintz, Comment, "Progress Toward a Healthy Sky: An Assessment of the London Amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer", *Yale Journal of International Law*, vol. 16, 1991, p. 571.

E. Mossos, "The Montreal Protocol and the Difficulty with International Change", *Albany Law Environmental Outlook*, vol.10, 2005, p. 1.

H. Ott, "The New Montreal Protocol: A Small Step for the Protection of the Ozone Layer, A Big Step for International Law and Relations", *Law and Politics in Africa, Asia and Latin America*, vol. 24, 1991, pp. 188-208.

P. M. Posse, "Tratamiento de la Problemática del Ozono y de Las Emisiones de Cloro-fluro Carbonados en la Legislación Internacional - la Convención de Viena y el Protocolo de Montreal", *Tribunale dell' Ambiente*, 1989, pp. 181-192.

J. T. B. Tripp, "The UNEP Montreal Protocol: Industrialized and Developing Countries Sharing the Responsibility for Protecting the Stratospheric Ozone Layer", *New York University Journal of International Law and Politics*, vol. 20, 1987-1988, p. 733.

O. Yoshida, "Soft Enforcement of Treaties: The Montreal Protocol's Noncompliance Procedure and the Functions of Internal International Institutions", *Colorado Journal of International Environmental Law and Policy*, vol. 10, 1999, p. 95.