# **Treaties**

The Montreal Protocol on Substances that Deplete the Ozone Layer

The London Amendment (1990): The amendment to the Montreal Protocol agreed by the Second Meeting of the Parties (London, 27-29 June 1990)

[Source: Annex II of the report of the Second Meeting of the Parties. The amendment entered into force on 10 August 1992.]

**ARTICLE 1: AMENDMENT** 

A. Preambular paragraphs

1. The 6th preambular paragraph of the Protocol shall be replaced by the following:

Determined to protect the ozone layer by taking precautionary measures to control equitably total global emissions of substances that deplete it, with the ultimate objective of their elimination on the basis of developments in scientific knowledge, taking into account technical and economic considerations and bearing in mind the developmental needs of developing countries,

2. The 7th preambular paragraph of the Protocol shall be replaced by the following:

Acknowledging that special provision is required to meet the needs of developing countries, including the provision of additional financial resources and access to relevant technologies, bearing in mind that the magnitude of funds necessary is predictable, and the funds can be expected to make a substantial difference in the world's ability to address the scientifically established problem of ozone depletion and its harmful effects,

3. The 9th preambular paragraph of the Protocol shall be replaced by the following:

Considering the importance of promoting international cooperation in the research, development and transfer of alternative technologies relating to the control and reduction of emissions of substances that deplete the ozone layer, bearing in mind in particular the needs of developing countries,

#### B. Article 1: Definitions

- 1. Paragraph 4 of Article 1 of the Protocol shall be replaced by the following paragraph:
- 4. "Controlled substance" means a substance in Annex A or in Annex B to this Protocol, whether existing alone or in a mixture. It includes the isomers of any such substance, except as specified in the relevant Annex, but excludes any controlled substance or mixture which is in a manufactured product other than a container used for the transportation or storage of that substance.
- 2. Paragraph 5 of Article 1 of the Protocol shall be replaced by the following paragraph:
- 5. "Production" means the amount of controlled substances produced, minus the amount destroyed by technologies to be approved by the Parties and minus the amount entirely used as feedstock in the manufacture of other chemicals. The amount recycled and reused is not to be considered as "production".
- 3. The following paragraph shall be added to Article 1 of the Protocol:

9. "Transitional substance" means a substance in Annex C to this Protocol, whether existing alone or in a mixture. It includes the isomers of any such substance, except as may be specified in Annex C, but excludes any transitional substance or mixture which is in a manufactured product other than a container used for the transportation or storage of that substance.

## C. Article 2, paragraph 5

Paragraph 5 of Article 2 of the Protocol shall be replaced by the following paragraph:

5. Any Party may, for any one or more control periods, transfer to another Party any portion of its calculated level of production set out in Articles 2A to 2E, provided that the total combined calculated levels of production of the Parties concerned for any group of controlled substances do not exceed the production limits set out in those Articles for that group. Such transfer of production shall be notified to the Secretariat by each of the Parties concerned, stating the terms of such transfer and the period for which it is to apply.

### D. Article 2, paragraph 6

The following words shall be inserted in paragraph 6 of Article 2 before the words "controlled substances" the first time they occur:

Annex A or Annex B

# E. Article 2, paragraph 8 (a)

The following words shall be added after the words "this Article" wherever they appear in paragraph 8 (a) of Article 2 of the Protocol:

and Articles 2A to 2E

# F. Article 2, paragraph 9 (a) (i)

The following words shall be added after "Annex A" in paragraph 9 (a) (i) of Article 2 of the Protocol:

and/or Annex B

G. Article 2, paragraph 9 (a) (ii)

The following words shall be deleted from paragraph 9 (a) (ii) of Article 2 of the Protocol:

from 1986 levels

H. Article 2, paragraph 9 (c)

The following words shall be deleted from paragraph 9 of Article 2 of the Protocol:

representing at least fifty per cent of the total consumption of the controlled substances of the Parties

and replaced by:

representing a majority of the Parties operating under paragraph 1 of Article 5 present and voting and a majority of the Parties not so operating present and voting

I. Article 2, paragraph 10 (b)

Paragraph 10 (b) of Article 2 of the Protocol shall be deleted, and paragraph 10 (a) of Article 2 shall become paragraph 10.

J. Article 2, paragraph 11

The following words shall be added after the words "this Article" wherever they occur in paragraph 11 of Article 2 of the Protocol:

and Articles 2A to 2E

K. Article 2C: Other fully halogenated CFCs

The following paragraphs shall be added to the Protocol as Article 2C:

Article 2C: Other fully halogenated CFCs

- 1. Each Party shall ensure that for the twelvemonth period commencing on 1 January 1993, and in each twelvemonth period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex B does not exceed, annually, eighty per cent of its calculated level of consumption in 1989. Each Party producing one or more of these substances shall, for the same periods, ensure that its calculated level of production of the substances does not exceed, annually, eighty per cent of its calculated level of production in 1989. However, in order to/satisfy the basic domestic needs of the Parties operating under paragraph/1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1989.
- 2. Each Party shall ensure that for the twelvemonth period commencing on 1 January 1997, and in each twelvemonth period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex B does not exceed, annually, fifteen per cent of its calculated level of consumption in 1989. Each Party producing one or more of these substances shall, for the same periods, ensure that its calculated level of production of the substances does not exceed, annually, fifteen per cent of its calculated level of production in 1989. However, in order to/satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1989.
- 3. Each Party shall ensure that for the twelvemonth period commencing on 1 January 2000, and in each twelvemonth period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex B does not exceed zero. Each Party producing one or more of these substances shall, for the same periods, ensure that its calculated level of production of the substances does not exceed zero. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to fifteen per cent of its calculated level of production in 1989.

L. Article 2D: Carbon tetrachloride

The following paragraphs shall be added to the Protocol as Article 2D:

Article 2D: Carbon tetrachloride

- 1. Each Party shall ensure that for the twelvemonth period commencing on 1 January 1995, and in each twelvemonth period thereafter, its calculated level of consumption of the controlled substance in Group II of Annex B does not exceed, annually, fifteen per cent of its calculated level of consumption in 1989. Each Party producing the substance shall, for the same periods, ensure that its calculated level of production of the substance does not exceed, annually, fifteen per cent of its calculated level of production in 1989. However, in order to/satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1989.
- 2. Each Party shall ensure that for the twelvemonth period commencing on 1 January 2000, and in each twelvemonth period thereafter, its calculated level of consumption of the controlled substance in Group II of Annex B does not exceed zero. Each Party producing the substance shall, for the same periods, ensure that its calculated level of production of the substance does not exceed zero. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to fifteen per cent of its calculated level of production in 1989.

M. Article 2E: 1,1,1trichloroethane (methyl chloroform)

The following paragraphs shall be added to the Protocol as Article 2E:

Article 2E: 1,1,1trichloroethane (methyl chloroform)

1. Each Party shall ensure that for the twelvemonth period commencing on 1 January 1993, and in each twelvemonth period thereafter, its calculated level of consumption of the controlled substance in Group III of Annex B does not exceed, annually, its calculated level of consumption in 1989. Each Party producing the substance shall, for the same periods, ensure that its calculated level of production of the substance does not exceed, annually, its calculated level of production in 1989. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1989.

- 2. Each Party shall ensure that for the twelvemonth period commencing on 1 January 1995, and in each twelvemonth period thereafter, its calculated level of consumption of the controlled substance in Group III of Annex B does not exceed, annually, seventy per cent of its calculated level of consumption in 1989. Each Party producing the substance shall, for the same periods, ensure that its calculated level of production of the substance does not exceed, annually, seventy per cent of its calculated level of consumption in 1989. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1989.
- 3. Each Party shall ensure that for the twelvemonth period commencing on 1 January 2000, and in each twelvemonth period thereafter, its calculated level of consumption of the controlled substance in Group III of Annex B does not exceed, annually, thirty per cent of its calculated level of consumption in 1989. Each Party producing the substance shall, for the same periods, ensure that its calculated level of production of the substance does not exceed, annually, thirty per cent of its calculated level of production in 1989. However, in order to satisfy the basic domestic needs of Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1989.
- 4. Each Party shall ensure that for the twelvemonth period commencing on 1 January 2005, and in each twelvemonth period thereafter, its calculated level of consumption of the controlled substance in Group III of Annex B does not exceed zero. Each Party producing the substance shall, for the same periods, ensure that its calculated level of production of the substance does not exceed zero. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to fifteen per cent of its calculated level of production in 1989.
- 5. The Parties shall review, in 1992, the feasibility of a more rapid schedule of reductions than that set out in this Article.

#### N. Article 3: Calculation of control levels

1. The following shall be added after "Articles 2" in Article 3 of the Protocol:

, 2A to 2E,

2. The following words shall be added after "Annex A" each time it appears in Article 3 of the Protocol:

or Annex B

- O. Article 4: Control of trade with nonParties
- 1. Paragraphs 1 to 5 of Article 4 shall be replaced by the following paragraphs:
- 1. As of 1 January 1990, each Party shall ban the import of the controlled substances in Annex A from any State not party to this Protocol.
- 1 bis. Within one year of the date of the entry into force of this paragraph, each Party shall ban the import of the controlled substances in Annex B from any State not party to this Protocol.
- 2. As of 1 January 1993, each Party shall ban the export of any controlled substances in Annex A to any State not party to this Protocol.
- 2 bis. Commencing one year after the date of entry into force of this paragraph, each Party shall ban the export of any controlled substances in Annex B to any State not party to this Protocol.
- 3. By 1 January 1992, the Parties shall, following the procedures in Article 10 of the Convention, elaborate in an annex a list of products containing controlled substances in Annex A. Parties that have not objected to the annex in accordance with those procedures shall ban, within one year of the annex having become effective, the import of those products from any State not party to this Protocol.
- 3 bis. Within three years of the date of the entry into force of this paragraph, the Parties shall, following the procedures in Article 10 of the Convention, elaborate in an annex a list of products containing controlled substances in Annex B. Parties that have not objected to the annex in accordance with those procedures shall ban, within one year of the annex having become effective, the import of those products from any State not party to this Protocol.

4. By 1 January 1994, the Parties shall determine the feasibility of banning or restricting, from States not party to this Protocol, the import of products produced with, but not containing, controlled substances in Annex A. If determined feasible, the Parties shall, following the procedures in Article 10 of the Convention, elaborate in an annex a list of such products. Parties that have not objected to the annex in accordance with those procedures shall ban, within one year of the annex having become effective, the import of those products from any State not party to this Protocol.

4 bis. Within five years of the date of the entry into force of this paragraph, the Parties shall determine the feasibility of banning or restricting, from States not party to this Protocol, the import of products produced with, but not containing, controlled substances in Annex B. If determined feasible, the Parties shall, following the procedures in Article 10 of the Convention, elaborate in an annex a list of such products. Parties that have not objected to the annex in accordance with those procedures shall ban or restrict, within one year of the annex having become effective, the import of those products from any State not party to this Protocol.

- 5. Each Party undertakes to the fullest practicable extent to discourage the export to any State not party to this Protocol of technology for producing and for utilizing controlled substances.
- 2. Paragraph 8 of Article 4 of the Protocol shall be replaced by the following paragraph:
- 8. Notwithstanding the provisions of this Article, imports referred to in paragraphs 1, 1 bis, 3, 3 bis, 4 and 4 bis, and exports referred to in paragraphs 2 and 2 bis, may be permitted from, or to, any State not party to this Protocol, if that State is determined by a meeting of the Parties to be in full compliance with Article 2, Articles 2A to 2E, and this Article and have submitted data to that effect as specified in Article 7.
- 3. The following paragraph shall be added to Article 4 of the Protocol as paragraph 9:
- 9. For the purposes of this Article, the term "State not party to this Protocol" shall include, with respect to a particular controlled substance, a State or regional economic integration organization that has not agreed to be bound by the control measures in effect for that substance.

### P. Article 5: Special situation of developing countries

Article 5 of the Protocol shall be replaced by the following:

- 1. Any Party that is a developing country and whose annual calculated level of consumption of the controlled substances in Annex A is less than 0.3 kilograms per capita on the date of the entry into force of the Protocol for it, or any time thereafter until 1 January 1999, shall in order to meet its basic domestic needs, be entitled to delay for ten years its compliance with the control measures set out in Articles 2A to 2E.
- 2. However, any Party operating under paragraph 1 of this Article shall exceed neither an annual calculated level of consumption of the controlled substances in Annex A of 0.3 kilograms per capita nor an annual calculated level of consumption of the controlled substances of Annex B of 0.2 kilograms per capita.
- 3. When implementing the control measures set out in Articles 2A to 2E, any Party operating under paragraph 1 of this Article shall be entitled to use:
- (a) For controlled substances under Annex A, either the average of its annual calculated level of consumption for the period 1995 to 1997 inclusive or a calculated level of consumption of 0.3 kilograms per capita, whichever is the lower, as the basis for determining its compliance with the control measures:
- (b) For controlled substances under Annex B, the average of its annual calculated level of consumption for the period 1998 to 2000 inclusive or a calculated level of consumption of 0.2 kilograms per capita, whichever is the lower, as the basis for determining its compliance with the control measures.
- 4. If a Party operating under paragraph 1 of this Article, at any time before the control measures obligations in Articles 2A to 2E become applicable to it, finds itself unable to obtain an adequate supply of controlled substances, it may notify this to the Secretariat. The Secretariat shall forthwith transmit a copy of such notification to the Parties, which shall consider the matter at their next Meeting, and decide upon appropriate action to be taken.

- 5. Developing the capacity to fulfil the obligations of the Parties operating under paragraph 1 of this Article to comply with the control measures set out in Articles 2A to 2E and their implementation by those same Parties will depend upon the effective implementation of the financial cooperation as provided by Article 10 and transfer of technology as provided by Article 10A.
- 6. Any Party operating under paragraph 1 of this Article may, at any time, notify the Secretariat in writing that, having taken all practicable steps it is unable to implement any or all of the obligations laid down in Articles 2A to 2E due to the inadequate implementation of Articles 10 and 10A. The Secretariat shall forthwith transmit a copy of the notification to the Parties, which shall consider the matter at their next Meeting, giving due recognition to paragraph 5 of this Article and shall decide upon appropriate action to be taken.
- 7. During the period between notification and the Meeting of the Parties at which the appropriate action referred to in paragraph 6 above is to be decided, or for a further period if the Meeting of the Parties so decides, the noncompliance procedures referred to in Article 8 shall not be invoked against the notifying Party.
- 8. A Meeting of the Parties shall review, not later than 1995, the situation of the Parties operating under paragraph 1 of this Article, including the effective implementation of financial cooperation and transfer of technology to them, and adopt such revisions that may be deemed necessary regarding the schedule of control measures applicable to those Parties.
- 9. Decisions of the Parties referred to in paragraphs 4, 6 and 7 of this Article shall be taken according to the same procedure applied to decisionmaking under Article 10.
  - Q. Article 6: Assessment and review of control measures

The following words shall be added after "Article 2" in Article 6 of the Protocol:

Articles 2A to 2E, and the situation regarding production, imports and exports of the transitional substances in Group I of Annex C

- R. Article 7: Reporting of data
- 1. Article 7 of the Protocol shall be replaced by the following:

- 1. Each Party shall provide to the Secretariat, within three months of becoming a Party, statistical data on its production, imports and exports of each of the controlled substances in Annex A for the year 1986, or the best possible estimates of such data where actual data are not available.
- 2. Each Party shall provide to the Secretariat statistical data on its production, imports and exports of each of the controlled substances in Annex B and each of the transitional substances in Group I of Annex C, for the year 1989, or the best possible estimates of such data where actual data are not available, not later than three months after the date when the provisions set out in the Protocol with regard to the substances in Annex B enter into force for that Party.
- 3. Each Party shall provide statistical data to the Secretariat on its annual production (as defined in paragraph 5 of Article 1), and, separately,
  - amounts used for feedstocks,
    - o amounts destroyed by technologies approved by the Parties,
    - imports and exports to Parties and nonParties respectively,

of each of the controlled substances listed in Annexes A and B as well as of the transitional substances in Group I of Annex C, for the year during which provisions concerning the substances in Annex B entered into force for that Party and for each year thereafter. Data shall be forwarded not later than nine months after the end of the year to which the data relate.

- 4. For Parties operating under the provisions of paragraph 8 (a) of Article 2, the requirements in paragraphs 1, 2 and 3 of this Article in respect of statistical data on imports and exports shall be satisfied if the regional economic integration organization concerned provides data on imports and exports between the organization and States that are not members of that organization.
- S. Article 9: Research, development, public awareness and exchange of information Paragraph 1 (a) of Article 9 of the Protocol shall be replaced by the following:

(a) Best technologies for improving the containment, recovery, recycling, or destruction of controlled and transitional substances or otherwise reducing their emissions;

#### T. Article 10: Financial mechanism

Article 10 of the Protocol shall be replaced by the following:

#### Article 10: Financial mechanism

- 1. The Parties shall establish a mechanism for the purposes of providing financial and technical cooperation, including the transfer of technologies, to Parties operating under paragraph 1 of Article 5 of this Protocol to enable their compliance with the control measures set out in Articles 2A to 2E of the Protocol. The mechanism, contributions to which shall be additional to other financial transfers to Parties operating under that paragraph, shall meet all agreed incremental costs of such Parties in order to enable their compliance with the control measures of the Protocol. An indicative list of the categories of incremental costs shall be decided by the meeting of the Parties.
- 2. The mechanism established under paragraph 1 shall include a Multilateral Fund. It may also include other means of multilateral, regional and bilateral cooperation.
- 3. The Multilateral Fund shall:
- (a) Meet, on a grant or concessional basis as appropriate, and according to criteria to be decided upon by the Parties, the agreed incremental costs;
- (b) Finance clearinghouse functions to:
- (i) Assist Parties operating under paragraph 1 of Article 5, through country specific studies and other technical cooperation, to identify their needs for cooperation;
- (ii) Facilitate technical cooperation to meet these identified needs;
- (iii) Distribute, as provided for in Article 9, information and relevant materials, and hold workshops, training sessions, and other related activities, for the benefit of Parties that are developing countries; and

- (iv) Facilitate and monitor other multilateral, regional and bilateral cooperation available to Parties that are developing countries;
- (c) Finance the secretarial services of the Multilateral Fund and related support costs.
- 4. The Multilateral Fund shall operate under the authority of the Parties who shall decide on its overall policies.
- 5. The Parties shall establish an Executive Committee to develop and monitor the implementation of specific operational policies, guidelines and administrative arrangements, including the disbursement of resources, for the purpose of achieving the objectives of the Multilateral Fund. The Executive Committee shall discharge its tasks and responsibilities, specified in its terms of reference as agreed by the Parties, with the cooperation and assistance of the International Bank for Reconstruction and Development (World Bank), the United Nations Environment Programme, the United Nations Development Programme or other appropriate agencies depending on their respective areas of expertise. The members of the Executive Committee, which shall be selected on the basis of a balanced representation of the Parties operating under paragraph 1 of Article 5 and of the Parties not so operating, shall be endorsed by the Parties.
- 6. The Multilateral Fund shall be financed by contributions from Parties not operating under paragraph 1 of Article 5 in convertible currency or, in certain circumstances, in kind and/or in national currency, on the basis of the United Nations scale of assessments. Contributions by other Parties shall be encouraged. Bilateral and, in particular cases agreed by a decision of the Parties, regional cooperation may, up to a percentage and consistent with any criteria to be specified by decision of the Parties, be considered as a contribution to the Multilateral Fund, provided that such cooperation, as a minimum:
- (a) Strictly relates to compliance with the provisions of this Protocol;
- (b) Provides additional resources; and
- (c) Meets agreed incremental costs.

- 7. The Parties shall decide upon the programme budget of the Multilateral Fund for each fiscal period and upon the percentage of contributions of the individual Parties thereto.
- 8. Resources under the Multilateral Fund shall be disbursed with the concurrence of the beneficiary Party.
- 9. Decisions by the Parties under this Article shall be taken by consensus whenever possible. If all efforts at consensus have been exhausted and no agreement reached, decisions shall be adopted by a twothirds majority vote of the Parties present and voting, representing a majority of the Parties operating under paragraph 1 of Article 5 present and voting and a majority of the Parties not so operating present and voting.
- 10. The financial mechanism set out in this Article is without prejudice to any future arrangements that may be developed with respect to other environmental issues.

U. Article 10A: Transfer of technology

The following Article shall be added to the Protocol as Article 10A:

Article 10A: Transfer of technology

Each Party shall take every practicable step, consistent with the programmes supported by the financial mechanism, to ensure:

- (a) That the best available, environmentally safe substitutes and related technologies are expeditiously transferred to Parties operating under paragraph 1 of Article 5; and
- (b) That the transfers referred to in subparagraph (a) occur under fair and most favourable conditions.

V. Article 11: Meetings of the Parties

Paragraph 4 (g) of Article 11 of the Protocol shall be replaced by the following:

(g) Assess, in accordance with Article 6, the control measures and the situation regarding transitional substances;

### W. Article 17: Parties joining after entry into force

The following words shall be added after "as well as under" in Article 17:

Articles 2A to 2E, and

#### X. Article 19: Withdrawal

Article 19 of the Protocol shall be replaced by the following paragraph:

Any Party may withdraw from this Protocol by giving written notification to the Depositary at any time after four years of assuming the obligations specified in paragraph 1 of Article 2A. Any such withdrawal shall take effect upon expiry of one year after the date of its receipt by the Depositary, or on such later date as may be specified in the notification of the withdrawal. Y.

#### Y. Annexes

The following annexes shall be added to the Protocol:

Annex B: Controlled substances

Group	Substance	Ozone-Depleting Potential
Group I		
CF <sub>3</sub> CI	(CFC-13)	1.0
C <sub>2</sub> FCl <sub>5</sub>	(CFC-111)	1.0
C <sub>2</sub> F <sub>2</sub> Cl <sub>4</sub>	(CFC-112)	1.0
C <sub>3</sub> FCl <sub>7</sub>	(CFC-211)	1.0
C <sub>3</sub> F <sub>2</sub> Cl <sub>6</sub>	(CFC-212)	1.0
C <sub>3</sub> F <sub>3</sub> Cl <sub>5</sub>	(CFC-213)	1.0
C <sub>3</sub> F <sub>4</sub> Cl <sub>4</sub>	(CFC-214)	1.0
C <sub>3</sub> F <sub>5</sub> Cl <sub>3</sub>	(CFC-215)	1.0
C <sub>3</sub> F <sub>6</sub> Cl <sub>2</sub>	(CFC-216)	1.0
C <sub>3</sub> F <sub>7</sub> Cl	(CFC-217)	1.0
Group II		
CCI <sub>4</sub>	carbon tetrachloride	1.1
Group III		

C<sub>2</sub>H<sub>3</sub>Cl<sub>3</sub>\*

1,1,1-trichloroethane\* (methyl chloroform)

# Annex C: Transitional substances

CHFC12 (HCFC21)  CHF2C1 (HCFC31)  C2HFC14 (HCFC31)  C2HFC14 (HCFC121)  C2HFC13 (HCFC122)  C2HF3C12 (HCFC123)  C2HF4C1 (HCFC123)  C2HF4C1 (HCFC124)  C2HF4C13 (HCFC133)  C2HF4C1 (HCFC132)  C2HF3C12 (HCFC132)  C2HF3C12 (HCFC132)  C2H2F3C1 (HCFC132)  C2H2F3C1 (HCFC133)  C2H3F3C1 (HCFC13)  C3H3F3C1 (HCFC141)  C3H3F3C1 (HCFC151)  C3HF3C1 (HCFC221)  C3HF3C1 (HCFC221)  C3HF3C1 (HCFC221)  C3HF3C1 (HCFC223)  C3HF3C1 (HCFC223)  C3HF3C12 (HCFC223)  C3HF3C12 (HCFC224)  C3HF3C12 (HCFC225)  C3HF3C12 (HCFC228)  C3H5C12 (HCFC228)  C3H5C11 (HCFC228)  C3H5C11 (HCFC228)  C3H3F3C11 (HCFC231)  C3H3F3C13 (HCFC231)  C3H3F3C13 (HCFC231)  C3H3F3C13 (HCFC231)  C3H3F3C13 (HCFC231)  C3H3F3C12 (HCFC231)  C3H3F3C13 (HCFC231)  C3H3F3C12 (HCFC231)  C3H3F3C12 (HCFC231)  C3H3F3C12 (HCFC231)  C3H3F3C12 (HCFC231)  C3H3F3C12 (HCFC241)  C3H3F3C13 (HCFC242)  C3H3F3C12 (HCFC242)  C3H3F3C12 (HCFC243)  C3H3F3C12 (HCFC243)	Group Substance
CHF2C1 (HCFC21) CH2FC1 (HCFC31) C2HFC14 (HCFC121) C2HFC13 (HCFC122) C2HF3C12 (HCFC123) C2HF3C12 (HCFC123) C2HF4C1 (HCFC124) C2H2FC13 (HCFC131) C2H2FC12 (HCFC131) C2H2FC12 (HCFC131) C2H2FC12 (HCFC132) C2H2FC12 (HCFC132) C2H2F3C1 (HCFC133) C2H3FC12 (HCFC141) C2H3F2C1 (HCFC141) C2H3F2C1 (HCFC141) C3H3FC16 (HCFC221) C3HFC16 (HCFC221) C3HFC16 (HCFC222) C3HF3C14 (HCFC223) C3HF3C14 (HCFC223) C3HF3C14 (HCFC224) C3HF3C15 (HCFC224) C3H2FC15 (HCFC225) C3H2FC15 (HCFC225) C3H2FC15 (HCFC231) C3H2FC15 (HCFC231) C3H2FC15 (HCFC231) C3H2FC15 (HCFC231) C3H2FC15 (HCFC231) C3H2FC16 (HCFC231) C3H2FC16 (HCFC231) C3H2FC17 (HCFC231) C3H2FC17 (HCFC231) C3H2FC17 (HCFC231) C3H2FC17 (HCFC231) C3H2FC17 (HCFC231) C3H3FC17 (HCFC231)	Group I
CH2FC1 (HCFC31)  C2HFC14 (HCFC121)  C2HF2C13 (HCFC122)  C2HF3C12 (HCFC123)  C2HF3C12 (HCFC123)  C2HF3C12 (HCFC124)  C2H2FC13 (HCFC131)  C2H2FC14 (HCFC132)  C2H2FC15 (HCFC132)  C2H2FC16 (HCFC132)  C2H2FC16 (HCFC133)  C2H3FC16 (HCFC141)  C3H3FC16 (HCFC141)  C3H3FC16 (HCFC221)  C3H3FC16 (HCFC222)  C3H3FC16 (HCFC223)  C3H3FC16 (HCFC223)  C3H5FC16 (HCFC224)  C3H5FC12 (HCFC34)  C3H5FC12 (HCFC34)  C3H2FC16 (HCFC235)  C3H2FC16 (HCFC236)  C3H2FC16 (HCFC236)  C3H2FC16 (HCFC237)  C3H2FC16 (HCFC238)  C3H2FC17 (HCFC238)  C3H2FC17 (HCFC238)  C3H2FC18 (HCFC238)  C3H2FC18 (HCFC238)  C3H2FC18 (HCFC244)  C3H3FC18 (HCFC244)	CHFC12 (HCFC21)
C2HFC14 (HCFC121)  C2HF2C13 (HCFC122)  C2HF3C12 (HCFC123)  C2HF4C1 (HCFC124)  C2H2FC13 (HCFC131)  C2H2FC13 (HCFC131)  C2H2FC14 (HCFC132)  C2H2F3C1 (HCFC132)  C2H3FC12 (HCFC133)  C2H3FC12 (HCFC133)  C2H3FC12 (HCFC141)  C2H3FC12 (HCFC141)  C3H3FC11 (HCFC142)  C3H3FC11 (HCFC142)  C3H3FC15 (HCFC221)  C3HF2C15 (HCFC222)  C3HF3C14 (HCFC223)  C3HF3C14 (HCFC224)  C3HF3C14 (HCFC224)  C3H2FC16 (HCFC225)  C3H2FC16 (HCFC225)  C3H2FC16 (HCFC225)  C3H2FC16 (HCFC225)  C3H2FC15 (HCFC233)  C3H2FC15 (HCFC233)  C3H2FC15 (HCFC233)  C3H2FC16 (HCFC235)  C3H3FC16 (HCFC241)  C3H3FC17 (HCFC241)  C3H3FC18 (HCFC241)  C3H3FC18 (HCFC242)  C3H3FC18 (HCFC244)	CHF2C1 (HCFC22)
C2HF2C13 (HCFC122)  C2HF3C12 (HCFC123)  C2HF4C1 (HCFC124)  C2H2FC13 (HCFC131)  C2H2FCC13 (HCFC132)  C2H2FCC12 (HCFC132)  C2H2FCC12 (HCFC133)  C2H3FC12 (HCFC133)  C2H3FC12 (HCFC141)  C2H3FC21 (HCFC141)  C3H3FC21 (HCFC151)  C3HFC16 (HCFC221)  C3HFC16 (HCFC221)  C3HF2C15 (HCFC222)  C3H3F3C14 (HCFC223)  C3H5FC12 (HCFC224)  C3H5FC12 (HCFC225)  C3H5FC12 (HCFC225)  C3H2FC15 (HCFC225)  C3H5FC12 (HCFC225)  C3H5FC12 (HCFC225)  C3H5FC12 (HCFC225)  C3H5FC12 (HCFC225)  C3H5FC11 (HCFC225)  C3H5FC11 (HCFC225)  C3H3FC11 (HCFC231)  C3H2FC15 (HCFC231)  C3H2FC16 (HCFC231)  C3H2FC11 (HCFC232)  C3H3FC11 (HCFC233)  C3H3FC11 (HCFC235)  C3H3FC11 (HCFC235)  C3H3FC11 (HCFC241)  C3H3FC13 (HCFC241)  C3H3FC13 (HCFC241)  C3H3FC13 (HCFC241)  C3H3FC13 (HCFC241)  C3H3FC13 (HCFC241)	CH2FC1 (HCFC31)
C2HF3C12 (HCFC124)  C2H2FC13 (HCFC131)  C2H2F2C12 (HCFC132)  C2H2F3C1 (HCFC133)  C2H2F3C1 (HCFC133)  C2H3FC12 (HCFC141)  C2H3FC12 (HCFC142)  C2H4FC1 (HCFC151)  C3H5C16 (HCFC221)  C3H5C15 (HCFC222)  C3H5C16 (HCFC223)  C3H5C16 (HCFC223)  C3H5C16 (HCFC223)  C3H5C16 (HCFC224)  C3H5C17 (HCFC236)  C3H5C17 (HCFC236)  C3H5C17 (HCFC236)  C3H5C17 (HCFC237)  C3H5C17 (HCFC238)  C3H3FC17 (HCFC241)  C3H3FC17 (HCFC241)  C3H3FC17 (HCFC241)  C3H3FC17 (HCFC241)  C3H3FC17 (HCFC241)	C2HFC14 (HCFC121)
C2HF4C1 (HCFC124)  C2H2FC13 (HCFC131)  C2H2F2C12 (HCFC132)  C2H2F3C1 (HCFC133)  C2H3FC12 (HCFC141)  C2H3F2C1 (HCFC142)  C2H4FC1 (HCFC151)  C3H4FC1 (HCFC221)  C3H5C15 (HCFC222)  C3H5C16 (HCFC223)  C3H5C16 (HCFC224)  C3H5C17 (HCFC226)  C3H5C17 (HCFC226)  C3H5C17 (HCFC226)  C3H5C17 (HCFC227)  C3H5C17 (HCFC227)  C3H5C17 (HCFC227)  C3H5C17 (HCFC228)  C3H5C17 (HCFC228)  C3H5C17 (HCFC228)  C3H5C17 (HCFC231)  C3H5C17 (HCFC231)  C3H5C17 (HCFC231)  C3H2FC17 (HCFC231)  C3H3FC17 (HCFC231)  C3H3FC17 (HCFC231)  C3H3FC17 (HCFC231)  C3H3FC17 (HCFC231)  C3H3FC17 (HCFC241)	C2HF2C13 (HCFC122)
C2H2FC13 (HCFC131)  C2H2F2C12 (HCFC132)  C2H2F3C1 (HCFC133)  C2H3FC12 (HCFC141)  C2H3F2C1 (HCFC142)  C2H4FCI (HCFC151)  C3HFC16 (HCFC221)  C3HFC15 (HCFC222)  C3HF3C14 (HCFC223)  C3HF4C13 (HCFC224)  C3HF5C15 (HCFC225)  C3HF6C1 (HCFC225)  C3HF6C1 (HCFC226)  C3HF3C14 (HCFC233)  C3HF4C15 (HCFC233)  C3HF4C15 (HCFC235)  C3HF6C1 (HCFC235)  C3HSC15 (HCFC235)  C3HSC16 (HCFC235)  C3HSC16 (HCFC235)  C3HSC17 (HCFC241)	C2HF3C12 (HCFC123)
C2H2F2C12 (HCFC132)  C2H2F3C1 (HCFC133)  C2H3FC12 (HCFC141)  C2H3F2C1 (HCFC142)  C2H4FC1 (HCFC151)  C3HFC16 (HCFC221)  C3HFC15 (HCFC222)  C3HF3C14 (HCFC223)  C3HF3C14 (HCFC223)  C3HF4C13 (HCFC224)  C3HF5C12 (HCFC225)  C3HF3C14 (HCFC225)  C3HF3C14 (HCFC225)  C3HF3C14 (HCFC225)  C3HF3C14 (HCFC225)  C3HF3C14 (HCFC225)  C3HF3C14 (HCFC225)  C3HF3C15 (HCFC231)  C3H2FC15 (HCFC231)  C3H2FC15 (HCFC231)  C3H2F3C13 (HCFC233)  C3H2F3C13 (HCFC233)  C3H2F3C13 (HCFC234)  C3H3F3C13 (HCFC234)  C3H3F3C14 (HCFC235)  C3H3F3C14 (HCFC241)  C3H3F3C15 (HCFC241)  C3H3F3C15 (HCFC242)  C3H3F3C14 (HCFC242)  C3H3F3C15 (HCFC243)  C3H3F4C1 (HCFC244)  C3H4FC13 (HCFC244)	C2HF4C1 (HCFC124)
C2H2F3C1 (HCFC141)  C2H3FC12 (HCFC141)  C2H3F2C1 (HCFC142)  C2H4FCI (HCFC151)  C3HFCI6 (HCFC221)  C3HFCI5 (HCFC222)  C3HF3C14 (HCFC223)  C3HF3C14 (HCFC224)  C3HF5C12 (HCFC225)  C3HF6C1 (HCFC226)  C3HF6C1 (HCFC228)  C3HF6C1 (HCFC228)  C3HF6C1 (HCFC228)  C3HF6C1 (HCFC228)  C3HF6C15 (HCFC231)  C3H2FC15 (HCFC231)  C3H2FC15 (HCFC231)  C3H2FC15 (HCFC231)  C3H2FC16 (HCFC231)  C3H2FC17 (HCFC231)  C3H3FC17 (HCFC231)  C3H3FC17 (HCFC231)  C3H3FC17 (HCFC241)  C3H3FC17 (HCFC241)  C3H3FC17 (HCFC241)  C3H3FC17 (HCFC241)  C3H3FC17 (HCFC241)	C2H2FC13 (HCFC131)
C2H3FC12 (HCFC141)  C2H3F2C1 (HCFC151)  C3HFC16 (HCFC221)  C3HF2C15 (HCFC222)  C3HF3C14 (HCFC223)  C3HF4C13 (HCFC224)  C3HF5C12 (HCFC225)  C3HF6C1 (HCFC225)  C3HF6C1 (HCFC226)  C3H2FC15 (HCFC231)  C3H2F2C14 (HCFC232)  C3H2F3C13 (HCFC231)  C3H2F3C13 (HCFC231)  C3H2F3C13 (HCFC231)  C3H2F3C13 (HCFC233)  C3H2F3C13 (HCFC234)  C3H2F3C13 (HCFC234)  C3H3F3C14 (HCFC234)  C3H3F3C14 (HCFC235)  C3H3F3C14 (HCFC235)  C3H3F3C14 (HCFC241)  C3H3F3C13 (HCFC242)  C3H3F3C13 (HCFC242)  C3H3F3C14 (HCFC244)  C3H3F3C15 (HCFC244)	C2H2F2C12 (HCFC132)
C2H3F2C1 (HCFC142)  C2H4FCI (HCFC151)  C3HFCl6 (HCFC221)  C3HF2C15 (HCFC222)  C3HF3C14 (HCFC223)  C3HF3C14 (HCFC223)  C3HF4C13 (HCFC224)  C3HF6C1 (HCFC226)  C3HF6C1 (HCFC226)  C3H2FC15 (HCFC231)  C3H2FC15 (HCFC232)  C3H2FC15 (HCFC233)  C3H2F3C13 (HCFC233)  C3H2F3C13 (HCFC234)  C3H2F3C13 (HCFC234)  C3H2F3C13 (HCFC234)  C3H3F3C14 (HCFC235)  C3H3F3C14 (HCFC235)  C3H3F3C14 (HCFC241)  C3H3F3C15 (HCFC241)  C3H3F3C16 (HCFC242)  C3H3F3C17 (HCFC242)  C3H3F3C17 (HCFC242)  C3H3F3C17 (HCFC242)  C3H3F3C17 (HCFC242)	C2H2F3C1 (HCFC133)
C2H4FCI (HCFC21)  C3HFCI6 (HCFC222)  C3HF2C15 (HCFC222)  C3HF3C14 (HCFC223)  C3HF4C13 (HCFC224)  C3HF5C12 (HCFC225)  C3HF6C1 (HCFC226)  C3HF6C1 (HCFC231)  C3H2FC15 (HCFC231)  C3H2FC15 (HCFC231)  C3H2F2C14 (HCFC232)  C3H2F3C13 (HCFC233)  C3H2F3C13 (HCFC233)  C3H2F3C13 (HCFC234)  C3H2F3C1 (HCFC234)  C3H3F3C14 (HCFC241)  C3H3F3C14 (HCFC241)  C3H3F3C13 (HCFC242)  C3H3F3C14 (HCFC244)  C3H3F3C13 (HCFC244)  C3H4FC13 (HCFC244)	C2H3FC12 (HCFC141)
C3HFCI6 (HCFC221)  C3HF3C14 (HCFC223)  C3HF3C14 (HCFC224)  C3HF5C12 (HCFC225)  C3HF6C1 (HCFC225)  C3HF6C1 (HCFC231)  C3H2FC15 (HCFC231)  C3H2F2C14 (HCFC232)  C3H2F3C13 (HCFC233)  C3H2F3C13 (HCFC233)  C3H2F3C13 (HCFC234)  C3H2F3C13 (HCFC234)  C3H3F3C14 (HCFC241)  C3H3F3C14 (HCFC241)  C3H3F3C13 (HCFC242)  C3H3F3C14 (HCFC242)  C3H3F3C14 (HCFC244)  C3H3F3C13 (HCFC244)	C2H3F2C1 (HCFC142)
C3HF2C15 (HCFC222)  C3HF3C14 (HCFC223)  C3HF4C13 (HCFC224)  C3HF5C12 (HCFC225)  C3HF6C1 (HCFC226)  C3H2FC15 (HCFC231)  C3H2F2C14 (HCFC232)  C3H2F3C13 (HCFC233)  C3H2F3C13 (HCFC233)  C3H2F3C14 (HCFC235)  C3H3F3C14 (HCFC241)  C3H3F3C14 (HCFC241)  C3H3F3C14 (HCFC241)  C3H3F3C15 (HCFC241)  C3H3F3C16 (HCFC241)  C3H3F3C17 (HCFC241)  C3H3F3C18 (HCFC241)  C3H3F3C19 (HCFC241)  C3H3F3C19 (HCFC241)  C3H3F3C11 (HCFC241)	C2H4FCI (HCFC151)
C3HF3C14 (HCFC223)  C3HF4C13 (HCFC224)  C3HF5C12 (HCFC225)  C3HF6C1 (HCFC226)  C3H2FC15 (HCFC231)  C3H2F2C14 (HCFC232)  C3H2F3C13 (HCFC233)  C3H2F3C14 (HCFC235)  C3H2F4C12 (HCFC234)  C3H3F5C1 (HCFC235)  C3H3F5C14 (HCFC241)  C3H3F3C12 (HCFC242)  C3H3F3C13 (HCFC242)  C3H3F3C14 (HCFC243)  C3H3F4C1 (HCFC243)  C3H3F4C1 (HCFC244)	C3HFCI6 (HCFC221)
C3HF4C13 (HCFC224)  C3HF5C12 (HCFC225)  C3HF6C1 (HCFC226)  C3H2FC15 (HCFC231)  C3H2F2C14 (HCFC232)  C3H2F3C13 (HCFC233)  C3H2F4C12 (HCFC234)  C3H2F5C1 (HCFC234)  C3H3F5C14 (HCFC241)  C3H3F2C13 (HCFC242)  C3H3F3C14 (HCFC242)  C3H3F3C15 (HCFC243)  C3H3F3C16 (HCFC243)  C3H3F3C17 (HCFC243)  C3H3F4C1 (HCFC244)	C3HF2C15 (HCFC222)
C3HF5C12 (HCFC225)  C3HF6C1 (HCFC226)  C3H2FC15 (HCFC231)  C3H2F2C14 (HCFC232)  C3H2F3C13 (HCFC233)  C3H2F4C12 (HCFC234)  C3H2F5C1 (HCFC235)  C3H3FC14 (HCFC241)  C3H3F2C13 (HCFC242)  C3H3F3C12 (HCFC243)  C3H3F4C1 (HCFC245)	C3HF3C14 (HCFC223)
C3HF6C1 (HCFC226)  C3H2FC15 (HCFC231)  C3H2F2C14 (HCFC232)  C3H2F3C13 (HCFC233)  C3H2F4C12 (HCFC234)  C3H2F5C1 (HCFC235)  C3H3FC14 (HCFC241)  C3H3F3C12 (HCFC242)  C3H3F3C12 (HCFC243)  C3H3F4C1 (HCFC243)  C3H4FC13 (HCFC251)	C3HF4C13 (HCFC224)
C3H2FC15 (HCFC231)  C3H2F2C14 (HCFC232)  C3H2F3C13 (HCFC233)  C3H2F4C12 (HCFC234)  C3H2F5C1 (HCFC235)  C3H3FC14 (HCFC241)  C3H3F2C13 (HCFC242)  C3H3F3C12 (HCFC243)  C3H3F4C1 (HCFC243)  C3H3F4C1 (HCFC244)	C3HF5C12 (HCFC225)
C3H2F2C14 (HCFC232)  C3H2F3C13 (HCFC233)  C3H2F4C12 (HCFC234)  C3H2F5C1 (HCFC235)  C3H3FC14 (HCFC241)  C3H3F2C13 (HCFC242)  C3H3F3C12 (HCFC243)  C3H3F4C1 (HCFC244)  C3H4FC13 (HCFC251)	C3HF6C1 (HCFC226)
C3H2F3C13 (HCFC233)  C3H2F4C12 (HCFC234)  C3H2F5C1 (HCFC235)  C3H3FC14 (HCFC241)  C3H3F2C13 (HCFC242)  C3H3F3C12 (HCFC243)  C3H3F4C1 (HCFC244)  C3H4FC13 (HCFC251)	C3H2FC15 (HCFC231)
C3H2F4C12 (HCFC234)  C3H2F5C1 (HCFC235)  C3H3FC14 (HCFC241)  C3H3F2C13 (HCFC242)  C3H3F3C12 (HCFC243)  C3H3F4C1 (HCFC244)  C3H4FC13 (HCFC251)	C3H2F2C14 (HCFC232)
C3H2F5C1 (HCFC235)  C3H3FC14 (HCFC241)  C3H3F2C13 (HCFC242)  C3H3F3C12 (HCFC243)  C3H3F4C1 (HCFC244)  C3H4FC13 (HCFC251)	C3H2F3C13 (HCFC233)
C3H3FC14 (HCFC241) C3H3F2C13 (HCFC242) C3H3F3C12 (HCFC243) C3H3F4C1 (HCFC244) C3H4FC13 (HCFC251)	C3H2F4C12 (HCFC234)
C3H3F2C13 (HCFC242) C3H3F3C12 (HCFC243) C3H3F4C1 (HCFC244) C3H4FC13 (HCFC251)	C3H2F5C1 (HCFC235)
C3H3F3C12 (HCFC243) C3H3F4C1 (HCFC244) C3H4FC13 (HCFC251)	C3H3FC14 (HCFC241)
C3H3F4C1 (HCFC244) C3H4FC13 (HCFC251)	C3H3F2C13 (HCFC242)
C3H4FC13 (HCFC251)	C3H3F3C12 (HCFC243)
	C3H3F4C1 (HCFC244)
C3H4F2C12 (HCFC252)	C3H4FC13 (HCFC251)
	C3H4F2C12 (HCFC252)

<sup>\*</sup> This formula does not refer to 1,1,2-trichloroethane.

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C3H4F3C1 (HCFC253)				
C3H5FC12 (HCFC261)				
C3H5F2C1 (HCFC262)				
C3H6FC1 (HCFC271)				

The London Amendment (1990): The amendment to the Montreal Protocol agreed by the Second Meeting of the Parties (Londo.

6/30/22. 10:13 PM

#### **ARTICLE 2: ENTRY INTO FORCE**

- 1. This Amendment shall enter into force on 1 January 1992, provided that at/least twenty instruments of ratification, acceptance or approval of the Amendment have been deposited by States or regional economic integration organizations that are Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer. In the event that this condition has not been fulfilled by that date, the Amendment shall enter into force on the ninetieth day following the date on which it has been fulfilled.
- 2. For the purposes of paragraph 1, any such instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by member States of such organization.
- 3. After the entry into force of this Amendment as provided under paragraph/1, it shall enter into force for any other Party to the Protocol on/the ninetieth day following the date of deposit of its instrument of ratification, acceptance or approval.