

Ozone Governance and Feedstocks: A Chronological Overview

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**We are in a
climate
emergency
that requires
that we
consider all
the
governance
tools at our
disposal**

- **We are on track to cross 1.5 °C of climate warming within 5 or so years.**
- **Carbon dioxide (CO₂) is only half of the warming story.**
- **Hydrofluorocarbons (HFCs) and other non- CO₂ super climate pollutants are the other half.**
- **While we are making some progress on CO₂ (although not fast enough), non-CO₂ super climate pollutant emissions continue to rise.**
- **This is an “all hands using all governance tools” moment.**

Feedstocks and process agents – What are they?

A feedstock is a controlled substances that undergoes transformation in a chemical process in which it is converted from its original composition except for insignificant trace emissions as allowed by Decision IV/12.

A process agent is a controlled substance that, because of its unique chemical and/or physical properties, facilitates an intended chemical reaction and/or inhibits an unintended chemical reaction.

See Technical and Economic Assessment Panel (TEAP) (1995) Report of the Chemical Agents Task Force, May 1995, p. 3, section 2.1. (Feedstocks).

See also TEAP (1997j, 2001) Reports of the Process Agents Task Force (feedstock and process agent definitions).

**We have
wrestled with
policy options
for these
controlled
substance uses
since at least
as early as
1987...**

Negotiators and their advisors have wrestled with policy options for “chemical intermediates” (e.g., feedstocks) since the pre-Montreal Protocol negotiations.

Note that an assumption at this early point, was that not all of these chemical intermediates are released to the atmosphere

The discussions of the **Ad Hoc Working Group of Legal and Technical Experts for the Preparation of a Protocol on Chlorofluorocarbons to the Vienna Convention for the Protection of the Ozone Layer** (Vienna Group), going back to the **1987** negotiations of what evolved into the Montreal Protocol, signaled clarifications and assumptions surrounding feedstocks and process agents.

In the Report of the Ad Hoc Working Group on the Work of Its Third Session, 8 May 1987, negotiators and their advisors were clearly struggling with the definition of “production” and how to handle chemical intermediates.

This Report (at p. 13) mentions that “[s]ome chemicals, notably CFC 22 and to a lesser extent CFC 113, are also used as chemical intermediates. **Therefore, not all of these chemicals produced are released to the atmosphere.**” (Emphasis added.)

These discussions influenced the eventual development of Decision 4/12, discussed later in this discussion.

**Montreal
Protocol parties
agreed on
exemptions for
controlled
substances used
as feedstocks
and process
agents**

Montreal Protocol parties have agreed on exemptions for controlled substances used as feedstocks and process agents from certain Montreal Protocol requirements.

(From a legal perspective, “exempted” means that they do fall under Montreal Protocol requirements, but that the Parties have granted special exceptions. This contrasts with “excluded,” which can be interpreted to mean that the chemical falls entirely outside the scope of the Montreal Protocol.)

The following slides identify key points along the Montreal Protocol chronology relevant to these feedstock and process agent exemptions.

What is the bottom line on these exemptions?

1 Amendment 1 Decision

1. The first exemption is via amendment (London 1990) (that was initially signaled via Decision I/12B).

This modified the Montreal Protocol definition of “production” to exempt controlled substances entirely used as feedstocks from calculations of controlled substances produced (and consumed).

2. The second exemption is via Decision IV/12 (Copenhagen 1992)

This exempts “**insignificant** quantities of controlled substances originating from inadvertent, unauthorized or coincidental production during a manufacturing process, from unreacted feedstock, or from their use as process agents which are present in chemical substances as trace impurities, or that are emitted during product manufacture or handling from the definition of controlled substances.” (Emphasis added.)

**Here is the
pre-
exemption,
original
Article 1(5) of
the Montreal
Protocol text
(1987)**

5. “Production” means the amount of controlled substances produced minus the amount destroyed by technologies to be approved by the Parties.

**Here is the
pre-
amendment
Decision 1/12B
on Article 1(5)
of the
Montreal
Protocol text
(1989)**

The First Meeting of the Parties decided in Decision I/12B to clarify the definition of controlled substances produced in Article 1(5) (excerpted):

“Controlled substances produced” as used in Article 1, paragraph 5 is the calculated level of controlled substances manufactured by a party. **This excludes the calculated level of controlled substances entirely used as a feedstock in the manufacture of other chemicals.**

(Emphasis added)

**And here is the
Montreal
Protocol,
Amendment
of Article 1(5)
of the
Montreal
Protocol text
(London,
1990)**

The London Amendment replaced Article 1(5) with the following, in pertinent part:

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.

**And here is
the other
exemption,
in the form of
Decision
IV/12, part 1
(1992)**

The Fourth Meeting of the Parties (Copenhagen) decided in Decision IV/12 to clarify the definition of controlled substances as follows:

1. That insignificant quantities of controlled substances originating from inadvertent or coincidental production during a manufacturing process, from unreacted feedstock, or from their use as process agents which are present in chemical substances as trace impurities, or that are emitted during product manufacture or handling, shall be considered not to be covered by the definition of a controlled substance contained in paragraph 4 of Article 1 of the Montreal Protocol;

(This decision is sometimes referred to as the Copenhagen Clarification. Let's call it the "insignificant emissions/outputs decision.")

Decision IV/12, part 2 (1992)

The Fourth Meeting of the Parties also decided in Decision IV/12:

2. To urge parties to take steps to minimize emissions of such substances, including such steps as avoidance of the creation of such emissions, reduction of emissions using practicable control technologies or process changes, containment or destruction;

Observations on Decision IV/12's significance for feedstocks and process agents

Decisions and reports from parties and Montreal Protocol institutions have indicated that Decision IV/12 refers to outputs/emissions.

In other words, we should not take the language in Decision IV/12 to indicate that feedstocks and process agents are excluded from Montreal Protocol obligations.*

Decision IV/12 also marked when the parties clarified that process agents should be managed differently from feedstocks (at least initially), leading to TEAP further studies and reports that led the way to caps and emissions controls on process agents, reflected, for example, in Decision X/14: Process Agents (Cairo, 1998).

*Indeed, they remain subject to reporting and other obligations. (See e.g., Decision VII/30, and supplemental slides in this presentation.)

We should also consider the implications and validity of assumptions underlying the feedstock and process agent exemptions

- Environmental Investigation Agency (EIA), New Trends in ODS Smuggling (Nov. 2014), (EIA is concerned that observed atmospheric levels of some ODS are much higher than would be expected from reported feedstock use. This could be due to several factors including diversion of feedstock for banned uses, higher than anticipated emissions factors and higher than reported feedstock use).
- UNEP and the International Network for Environmental Compliance and Enforcement (INECE) (with IGSD), [Enforcement Strategies for Combating the Illegal Trade in HCFCs and Methyl Bromide](#), p. 48 (2013), ([Options to combat the illegal trade in HCFCs and Methyl Bromide] include comprehensive controls on ODS, including licensing requirements for...ODS imported or exported for all uses (including process agent, laboratory and analytical uses, feedstock and [quarantine and pre-shipment])).
- M. Miller, T. Batchelor, [Information paper on feedstock uses of ozone-depleting substances](#) (Touchdown Consulting) (December 2012), (When the Montreal Protocol was drawn up, parties generally believed that feedstock uses of ODS were entirely converted/transformed and therefore did not emit ODS to the atmosphere) (from Section 2.2 Feedstock exemption and definitions).

FEEDSTOCKS Key Decisions

1/12B, Clarification of terms and definitions: Controlled substances produced

IV/12, Clarification of the definition of controlled substances

VII/30, Export and import of controlled substances to be used as feedstock

IX/28(3), Revised formats for reporting data under Article 7 of the Protocol, and Annex VII (Annual Data Reporting)

X/12, Emissions of ozone-depleting substances from feedstock applications

XVI/14, Sources of carbon tetrachloride emissions and opportunities for reductions

XXIII/7, Use of controlled substances as process agents (referring to IV/12 as involving “emissions”)

XXIV/6, Feedstock uses

XXXV/8, Feedstock uses

XXXVI/5, Feedstock uses of controlled substances

PROCESS AGENTS

Key Decisions (From MOP, unless otherwise indicated)

IV/12, Clarification of the definition of controlled substances

VI/10, Use of controlled substances as process agents

[Multilateral Fund], Decision 17/13, para 22

VII/10, Continued uses of controlled substances as chemical process agents after 1996

X/14, Process agents

XIII/13, Request to the Technology and Economic Assessment Panel for the final report on process agents

XV/6, List of uses of controlled substances as process agents

XV/7, Process agents

[Multilateral Fund], Decision 44/65

XVII/6, Process agents

XVII/7, List of uses of controlled substances as process agents

XVII/8, List of uses of controlled substances as process agents

XIX/15, Replacement of Table A and table A-bis in relevant process agent decisions

XXI/3, Uses of controlled substances as process agents

XXII/8, Uses of controlled substances as process agents

XXIII/7, Use of controlled substances as process agents (and the list goes on!)

Mostafa K. Tolba, Executive Director of the United Nations Environment Programme (in 1992, when the Copenhagen Amendment was adopted):

“The measures you have passed here make the Montreal Protocol one of – if not the strongest package of global environmental law ever enacted.

The question which remains is this: Is it enough?

We are in the hands of scientists. From them – and we have sought advice from the best in the world – we know that the answer is ‘No’. This package is not enough. The process of protecting the ozone layer is not at an end.”

BACKUP SLIDES

Vienna Convention and Montreal Protocol N₂O governance is an effective and economic way forward that we should consider

The Vienna Convention requires that Parties take appropriate measures to protect human health and the environment from adverse effects that result from human activities that modify the ozone layer

The 1985 Vienna Convention for the Protection of the Ozone Layer requires that Parties take appropriate measures to protect human health and the environment from adverse effects resulting or likely to result from human activities that modify or are likely to modify the ozone layer.

See Vienna Convention, Article 2(1): General obligations

The Montreal Protocol is a rare example of a treaty that averted environmental disaster

- Since the Montreal Protocol was agreed in 1987, it has phased out 99% of the production and consumption of nearly 100 harmful chemicals with its mandatory controls, putting the ozone layer on the path to recovery and preventing more than two million skin cancer deaths per year.
- Because many of the chemicals that destroy ozone are also climate super pollutants, the Protocol is also a powerful tool for combatting climate change. Indeed, the Montreal Protocol is on course to avoid 2.5 °C of warming by end of century.

The Montreal Protocol is also a powerful model for governance

It builds upon international legal principles including:

- **The precautionary principle** enabling decision-makers to take action before irreversible damage occurs
- **State responsibility for activities under State jurisdiction or control that cause damage to another State or areas beyond national control**
- **The principle of common but differentiated responsibilities**, which translates into earlier phaseout control schedules for developed countries, with developed countries contributing to a fund to support qualifying developing countries to meet their obligations.

And the Montreal Protocol incorporates many other attributes that support successful governance, including:

- **Universal ratification**
- **SAP, TEAP, and EEAP experts that independently monitor, analyze, and report to the Parties**
- **A “start and strengthen” approach, that enables Parties to learn and increase ambition over time.**
The Protocol started with the aim of reducing a small number of ozone depleting substances, and strengthened to phase out nearly 100, then broadened to protect the climate by phasing down HFC super pollutants and address energy efficiency



The Montreal
Protocol
SAP, TEAP, and
Environmental
Effects
Assessment Panel
(EEAP) have been
tasked with
alerting Parties to
ozone-layer
developments
and threats

Decisions [IV/13](#) (1992), [XIX/20](#) (2007), [XXIII/13](#) (2011), and [XXVII/6](#) (2015), among other things, ask the Assessment Panels to bring to the Parties' notice any significant/important developments and threats to the ozone layer.