

# ACCELERATING THE GLOBAL PHASEOUT OF HALON PRODUCTION

Bella A. Maranion  
Technology Transfer & Industry Programs  
Global Change Division (6202J)  
U.S. Environmental Protection Agency  
401 M Street, S.W.  
Washington, D.C. 20460  
(202) 233-9138 phone  
(202) 233-9576 fax

## ABSTRACT

New information regarding alarming levels of chlorine in the Northern Hemisphere and the increased potential for greater depletion of the stratospheric ozone layer provide compelling arguments for nations to adopt earlier production phaseout schedules than those required under the Montreal Protocol as adjusted in London. This paper discusses the status of current regulations and programs in national and international efforts to accelerate the phaseout schedule for halon production. Several factors **are** presented as considerations to support earlier phaseout: the status of current world-wide production and use of CFCs and halons; the status of **U.S.** implementation of the CAAA and the Montreal Protocol; progress in cooperative government, **military**, and industry efforts to accelerate research for halon replacement agents, to identify alternative fire protection measures, to manage the existing bank of halons, and to promote recovery and recycling programs; and status of national policies and programs by many developed countries that commit to a more stringent phaseout schedule than required by the Protocol. Meeting the **fire** protection needs of the developing countries is another important consideration for a faster phaseout; innovative programs and projects in cooperation with developed countries and international organizations **are** bridging these countries' transition to an earlier goal.

## INTRODUCTION

**As** the news about the status of the stratospheric ozone layer worsens, many concerned parties have called for the speedy phaseout of the use of the controlled substances under the amended Montreal Protocol including chlorofluorocarbons (CFCs), halons, carbon tetrachloride, methyl chloroform (MCF), and transitional substances, specifically partially halogenated fluorocarbons. To date, **76** nations from both developed and developing countries have ratified the original Protocol. The current London amendments to the Montreal Protocol require the Parties to phase out of fully halogenated CFCs and carbon tetrachloride by the year **2000**, and to completely phase out of MCF by the year **2005**. For halons, the Protocol currently calls for a 50 percent

reduction of the **1986** levels by the year **1995** and a production phaseout by **2000** with exemptions for essential uses.

In January **1991**, three panels of international experts reconvened to assess the provisions of the Protocol under the auspices of the United Nations Environment Programme (*UNEP*). The Science Panel analyzes the extent of ozone depletion and evaluates the atmospheric chemistry linking CFCs and halons to ozone depletion. The Environmental Effects Panel evaluates the consequences of ozone depletion. The combined Technical and Economics Panel examines the feasibility of replacing ozone-depleting chemicals with alternative chemicals or technologies. The Technical and Economics assessment is conducted by the following six separate Options Committees: Refrigeration, Air Conditioning and Heat Pumps; Flexible and Rigid Foams; Solvents, Coatings, and Adhesives; Aerosols, Sterilants, and Miscellaneous Uses; Halon Fire Extinguishing Agents; and Economics.

The Synthesis Report made the following conclusions: **(1)** ozone depletion is occurring at levels more alarming than previously determined; **(2)** additional ozone depletion will **occur** in the next decade, **(3)** further control measures would protect the ozone layer, **(4)** earlier phaseout is feasible **as** costs fall to adopt alternative technologies; **(5)** developing countries can work to accelerate the phaseout.

The *report* by the Halon Technical **Options** Committee concluded that an orderly transition to alternative **fire** protection measures, establishment of **procedures** to adequately manage the bank of **halons** and increased efforts to develop transitional and eventual replacement **fire** extinguishing agents with the beneficial characteristics of the present halons may minimize the loss of fire protection capability represented by the phaseout of the halons. Their findings reflect a worldwide phaseout consensus for halons that limits use to essential applications, eliminates use in testing and training, minimizes leakages and accidental discharges during servicing, and encourages recycling, recovery, and banking to meet **fire** protection needs. Additional findings from this report **are** highlighted below.

**Fire** protection organizations, through educational programs, changes in technical standards and various other **means** have played an important role in making it known that use of halons must be drastically reduced and wherever possible alternative fire protection measures employed. The effect of these programs can be seen by the fact that production of halon **1301**, for example, peaked in **1988** and has now declined to approximately 60% of **1986** levels, while halon 2402 production has virtually ceased within OECD nations.

Recycled halon as the prime supply of these agents would: (1) encourage responsible stewardship of the bank of halons and reduce ozone depletion, and (2) make sense economically for producers to consider **as** they face a declining market.

Avoidable halon releases account for greater halon emissions than those needed for fire protection and explosion prevention. Clearly such releases can be **minimized** if a concerted effort is made by the fire protection community with support from national governments. The Committee recommends the following strategies:

- reduce halon usage to essential applications only
- discontinue protection system discharge testing using halon **as** the test gas
- discontinue the discharge of portable halon fire extinguishers for training purposes
- discontinue the discharging to the atmosphere of portable halon extinguishers and system cylinders during equipment servicing
- encourage users of automatic detection/release equipment to take advantage of the latest technology
- encourage the application of risk management strategies and good engineering design to take advantage of alternative protection schemes.

Another strategy outlined in the report to avoid unnecessary emissions is the management of the bank of halons. The Committee recommends that the following issues be addressed if managing the banked halon is to be feasible:

- financial assistance and positive national policies **are** developed to encourage accreditation and investment in recovery and recycle organizations and facilities
- national policies and financial assistance are developed to deal with the storage and eventual destruction of contaminated halons
- in addition, to avoid the paradox of some nations requiring destruction of otherwise recyclable halons, at the same time that the Montreal Protocol allows continued production, it is recommended that international exchange of recyclable and recycled halons be encouraged to reduce requirements for new production of halons.

International cooperation is necessary to ensure that one nation's surplus halon is exported to meet the needs of another nation, rather than destroyed. This is particularly important for meeting the special needs of less developed nations, who will not have adequate halon banks to support their essential uses.

The **Committee** deferred establishing a list of essential uses to a later date and expressed concern that while this issue may need to be reconsidered in the future, the combination of successful bank management, and the **proper** utilization of lower and **zero** ODP halon alternatives that also **considers** GWP, offers the best potential to eliminate the need for a production exemption for essential uses in the foreseeable future.

Additional findings in the *UNEP* assessment reports is that the phaseout of the controlled substances is occurring faster than that scheduled by the Protocol. The findings of the three assessment panels have just recently been published in time for consideration by the Parties to the Protocol during a working group meeting this June. Based on the recommendations of the panels, the Parties may vote for more stringent restrictions in their formal meeting in November of this year.

The move to accelerate the phaseout of the controlled substances is supported not only through the recommendations of the Protocol's assessment panels but through the actions of individual nations that have already adopted national policies that restrict halon uses more stringently and commit to faster phaseout goals than the Protocol.

On February 11, in response to new scientific evidence of greater ozone depletion than previously estimated, President Bush announced that by December 31, 1995, the United States will unilaterally phase out production of halon and other ozone-depleting substances. He called on other nations to agree to an accelerated phaseout schedule. Regulations being developed under the 1990 Clean ~~Air~~ Act will reflect this accelerated schedule.

Elimination schedules for nations moving to phase out halon production or importation include Sweden, Norway, Switzerland, Germany, Denmark, Holland, and Australia..

Countries such as Australia, Germany, and **Denmark** have halted virtually all new halon applications (except essential **uses**) and will *require* recharging using only recycled halon. Germany has one of the most aggressive phaseout schedules and has committed itself to eliminating the **use** of halons after December 1991 except for essential applications.

In accordance with the neighboring countries of Germany and Austria, the Swiss Government has set up a **program** to phaseout ODSs. Switzerland has banned all imports of halon as of January 1, 1992. New halon installations **are** only allowed under certain very stringent conditions. Unlike Germany or Austria, Switzerland allows existing installations to be refilled

when necessary until December 31,1997. All supplies of halon must come out of the existing bank.

The following countries have banned the use of halon 1211 in hand-held portables with exemptions for essential **uses** on aircraft and in certain military applications. New South Wales, Australia, has not banned halon 1211 hand-helds, but has adopted an essential use policy that regulates state approval of any new halon 1211 sale.

Australia, Denmark, the Netherlands, and Sweden have all adopted a governmental approval process for all new halon 1301 total flooding installations. Norway has determined that there **are** no essential uses for total flooding halon systems and has banned all new installations effective **January** 1,1992. Denmark has banned new fixed flooding installations as of January 1, 1993.

Industry commitments to early phaseout dates include DuPont's October 1991 announcement to phase out halon production by the end of 1994.

## **SUMMARY**

Extraordinary progress to phase out ozone-depleting substances has been made through national and international policies and programs. Communication between governments, industry, military, and science communities must remain frequent and focused **as** alternative technologies are identified and evaluated. **Our** work continues and follows two courses -- to develop and support international and national policies by both developed and developing countries to achieve faster halon phaseout which will mitigate further damage to the ozone layer, and to identify and encourage opportunities for alternative fire protection, recycling, and bank management.