

NATIONAL AND INTERNATIONAL  
POLICIES  
FOR THE CONTROL OF OZONE  
DEPLETING CHEMICALS

by  
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The Montreal Protocol of 1987, endorsed by 23 countries, calls for a 50 percent reduction in the use and production of chlorofluorocarbons by 1999. That agreement has now been endorsed by sixty nations. The United States and Britain, the two largest producers of these chemicals, have begun to reduce production sharply and to turn to substitutes. In June, 1990 more than one hundred nations met in London to finalize the implementation of the Montreal Protocol under the auspices of the U.N. Environmental Program. Included in these discussions was the establishment and implementation of a \$240 million fund to assist third world countries to convert to non-ozone destroying chemicals. The United States will contribute 25 percent of the fund. The total cost of converting third world countries from chlorofluorocarbons and halons, however, will cost between \$5 billion and \$7 billion.

Pressure is mounting for a more rapid phase out of CFC's (chlorofluorocarbons) with a total ban by 1997 as well as a prospective ban on their substitutes, HCFC's (hydrochlorofluorocarbons). Proponents of an accelerated phase out say that chlorine in the stratosphere is expected to increase to levels higher than previously experienced with "a risk that they might trigger disproportionately larger ozone losses." The United Kingdom Stratospheric Ozone Review Group's report claims that they have detected a long-term decline in ozone in winter over North America and Europe of 2.4 percent to 3.5 percent per decade. This suggests that ozone depletion is accelerating over the Northern hemisphere at a rate equivalent to the Antarctic ozone hole. The ozone

hole over the Antarctic, however, could disappear by the year 2050 if an 85 percent reduction in CFC's and other ozone depleting chemicals were achieved by the mid-1990's and totally eliminated by 2000.

Further steps have been called for the prospective ban of the HCFC substitutes. These compounds have only 1 percent to 3 percent of the ozone depleting potential of CFC's because they breakup into other compounds in the lower atmosphere. Proponents of the ban of HCFC's argue, however, that HCFC's only shift the problem to a lower strata of the atmosphere--the degradation products are possibly toxic, albeit at parts per trillion levels, and the potential for adverse effects are untested.

#### The Montreal Protocol of 1987

The Montreal Protocol -- The Protocol on Substances That Deplete the Ozone Layer ("The Protocol on Chlorofluorocarbons") -- was negotiated as a protocol to the 1985 Vienna Convention for the Protection of the Ozone Layer. The Protocol was signed on September 16, 1987 by forty-seven of the participants including the leading industrial nations of the world and the European Economic Community. The Protocol establishes specific obligations to limit and reduce use of chlorofluorocarbons (CFC's) and possibly other chemicals that deplete the ozone.

The control measures to be implemented under the Protocol provide:

1. May 1, 1988 -- Use and production of Group I controlled substances are not to exceed 1986 levels. Production may be increased 10 percent above 1986 to satisfy basic domestic needs and for industrial rationalization between the parties.
2. December 1, 1990 -- Use and production of Group II controlled substances are not to exceed 1986 levels. Adjustment of up to 10 percent may be made to satisfy basic domestic needs and industrial rationalization.
3. July 1, 1993 to June 30, 1994 -- Group I consumption of controlled substances are not to exceed 80 percent of 1986 levels.
4. July 1, 1998 to June 30, 1999 -- Group I consumption of controlled substances are not to exceed 50 percent of the 1986 levels.

Group I controlled substances include: CFC-11, CFC-17, CFC-113, CFC-114, and CFC-115. Group II controlled substances include halon-1211, halon-130, and halon-2402.

By 1989, each party to the Protocol was to ban the importation of controlled substances from non-signing countries.

Special terms are provided for developing countries with annual calculated consumptions of controlled substances of less than 0.3 kilograms per capita. Compliance with control measures may be delayed by ten years from the above compliance dates where necessary to meet basic domestic needs.

#### United States Regulation of CFC Use and Production

The United States as a signature to the Montreal Protocol will comply with above outlined central measures. In 1988 the U.S. EPA implemented regulations to freeze CFC production at 1986 levels and to reduce production to 50 percent by 1999. However, total phase out of CFC's by 2000 is likely. HCFC's are the key alternatives to CFC's. The U.S. EPA has not presently moved to ban the HCFC substitutes nor to ban carbontetrachloride and methylchloroform; however, there is increasing pressure to do so.

#### Prospective California Regulations

California is often the bell weather of future developments. A comprehensive environmental initiative (The California Environmental Protection Act of 1990) which will appear on the November 6, 1990 ballot would substantially accelerate a total ban on CFC's and their substitutes. Under this legislature the substances controlled would include:

- Group I - CFC's, halons, carbontetrachloride, methylchloroform.
- Group II - HCFC's and "any other chemical determined by the [California] Air Resources Board to have the potential to deplete the stratospheric ozone."

The California timetable would be:

- Group I - Total phase out and ban by December 31, 1996 including products made with Group I chemicals. Imports of such products banned. The manufacture of Group II chemicals from Group I prohibited.

Group II - Phase out begins January 1, 1992; total ban by January 1, 2020.

Conclusion

Substitutes for CFC's, primarily HCFC's, are being developed to meet the requirement of the Montreal Protocol. Pressure, however, is mounting for a more rapid phase out of CFC's to totally ban them by 1997 and to prospectively ban the HCFC substitutes. Prospective California legislation may lead the way towards this more stringent approach. An early ban of CFC's and their substitutes may strain the ability of technology to provide adequate supplies of refrigerants with consequential economic effects. In this area of regulation -- as well as other environmental arenas -- the decade of the 1990's will experience a dynamic conflict between technology, economics, and environmental concerns.

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