IMPLEMENTATION OF THE GOVERNOR'S EXECUTIVE ORDER ON ELIMINATING OR FINDING ALTERNATIVES TO CFC-CONTAINING PRODUCTS

Replace chlorofluorocarbon-containing products with less harmful alternatives and reduce the use of those products which cannot be replaced.

About 90% of the earth's ozone is located in a natural layer in the stratosphere. This natural layer acts as a shield against ultraviolet radiation. A significant reduction in the concentration of ozone in the stratosphere could result in an increase in the number and severity of cases of skin cancer and cataracts and weakening of the human immune system. Also, evidence is mounting that destruction of the statospheric ozone could reduce crop yields and alter terrestrial and aquatic ecosystems.

It is well known in the scientific community that chlorine from synthetic chemicals called chlorofluorocarbons (CFCs) and bromine from chemicals called halons will destroy ozone in the stratosphere. Some CFCs have a lifespan in the lower atmosphere of over 100 years. As a result, they slowly move to the stratosphere where higher energy radiation breaks apart the CFC molecule releasing chlorine. Once freed, the chlorine rapidly and repeatedly combines with and breaks apart ozone molecules. Because of their long lifespan, even if CFC use came to a complete halt today, what has already been produced will continue to destroy ozone in the stratosphere for decades to come.

The chemicals that are believed to pose the greatest threat to the ozone layer include CFC-11, CFC-12, CFC-113, Halon 1211, Halon 1301, methyl chloroform amd carbon tetrachloride. Of these, CFC-11 and CFC-12 are considered to be the most important ozone depleaters because of their high production levels and depletion potency. The Halons are produced in much smaller quantities but contain bromine which may be a more effective depleater per atom than chlorine.

Many products used in Maine incorporate or are produced with ozone depleating chemicals. Foam packaging, insulation and cusioning, refrigerants in air conditioning and refrigeration systems of all kinds, solvents to clean electronics and other manufactured goods, sterilants used in hospitals, fumigants, aerosol propellants and fire extinguishing systems. Each of these broad uses are represented by dozens of individually marketed products.

Below are some suggestions on the implementation of the section of the executive order dealing with replacing CFC-containing products with less harmful alternatives and reducing the use of those products which cannot be replaced:

1. Each agency should review the types of products it uses in order to determine which contain or are made with CFCs. Places where CFC-containing products are used include: labs, hospitals, computer sections, air conditioning and refrigeration systems, automotive and agricultural uses. The major uses of CFCs are in:

- o foam blowing
- o refrigeration
- o solvent cleaning
- o sterilization
- o fire extinguishing

See the attached list for more detailed application categories.

2.a. Determine which CFC-containing products can be replaced with alternatives immediately. For example: many of the foam manufacturers are already using alternatives to CFC blowing agents in certain products. Also, the use of fiberglass products in place of polyurethane foam insulation could be an immediate replacement.

2.b. Alternatives to some CFC-containing products will not be available immediately but may be in the near future. For example: various chemical substitutes are still being tested for their ability to replace CFCs in many different products.

2.c. In certain applications, substitutes for CFCs are not readily available and may not be for some time. In those cases agencies should, wherever possible, strive to minimize the use of of these products or take precautions to prevent the release of the CFCs. For example: for refrigeration units, using an alternate leak test gas, refrigerant dye to locate leaks, recovery of the refrigerant during repair or system testing and at the time of disposal are ways in which emissions may be reduced.

3. Submit a plan for decreasing the use of CFC-containing products. This plan should indicate the products to be replaced with alternatives immediately, by July 1, 1993 and those whose use will be reduced or where release of CFCs can be prevented.

For the control options available to reduce the use of CFCs, the one that state agencies and consumers in general have direct control over is product substitution. That is, using available alternative products that do not contain or were made with CFCs. The other control options; chemical substitutes and process modification or engineering controls must be performed by the manufacturing industry. Even though industry is moving away from the use of CFCs, many of the controls that are more costly will only be performed if the regulatory incentive exists.

The University of Maine could possibly be used as a coordinating body for state agencies to contact with questions regarding what products might contain CFCs, what substitutes might be available, etc. The University, with seven campuses across the state, would be easily accessible to various state agencies and the public. Given the number of students enrolled in the sciences, a great opportunity exists to enlist their talents in increasing the public's awareness to the ways in which it can directly contribute to saving the earth's ozone layer.

It may be possible for the Governor to set the stage for somewhat of an environmental crusade by challenging state agencies and their employees to devise the best program, come up with the most innovative ideas and to do whatever they can in addressing this crucial issue of eliminating or finding alternatives to CFC-containing products. State government has the ability, indeed the responsibility to provide the leadership necessary for businesses, communities, groups and individuals to take action against this tough problem facing our state, our nation, our world.