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Comment, The Need for a Revision of Ozone Standards: Why Has the EPA Failed to Respond?

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INTRODUCTION

Ozone and the ozone layer have been heavily studied environmental topics since federal efforts to control air pollution began in the early part of the twentieth century. The culmination of these studies is now a battle of contradicting data obtained from private industries and the government. Moreover, not even private industries can agree among themselves on the effect current living styles have on air pollution and the ozone layer. Health organizations have linked the ozone particle to smog and human illness.¹ Yet, while the ozone particle may be destructive to human welfare, in the form of the ozone layer it becomes an indispensable protector of environmental health.²

While some companies urge the Environmental Protection Agency (EPA) to lower acceptable levels of ozone in the air, other companies are fighting to keep the current guidelines. The EPA has resisted changing the standards for ozone particles in the air. Although the National Ambient Air Quality Standards for ozone and other governmental targeted substances must be reviewed every five years³ by order of the Clean Air Act (CAA),⁴ the American Lung Association had to bring suit against the EPA in 1992 to have the ozone standards reexamined.⁵ After several private industries joined the EPA as defendants, the government agency had to be ordered by the courts to review its standards.⁶ After completing the review, the EPA refused to revise the National Ambient Air Quality Standards for ozone. The EPA supported this decision by rejecting other organizations' studies as being unsupported by independent research.⁷ However, the EPA also promised to review its own and independent research.⁸ This research however, has been criticized as being outdated by health and environmental organizations.⁹

In addition to difficulties regulating the ozone particle, the EPA faces further complications protecting the ozone layer. Particles which deplete the ozone layer are currently regulated by the Montreal Protocol, an international

¹See AMERICAN LUNG ASS'N, *BREATH IN DANGER II* (MAY 1993).

²See Morad Eghbal, *Depletion of the World Ozone Protection True Progress: Looking for a Place Where We Can Stop*, 1 DICK. J. ENVTL. L. & POL'Y. 66 (1992).

³Clean Air Act § 109(d)(1), 42 U.S.C. § 7409(d)(1) (1977). "Not later than December 31, 1980, and at five-year intervals thereafter, the Administrator shall complete a thorough review. . ." *Id.* 42 U.S.C. §§ 7401-7642 (1988), amended by Clean Air Act Amendments of 1990, Pub. L. No. 101-549, 104 Stat. 2399 (codified at 42 U.S.C. §§ 7401-7671q) (Supp. IV 1992).

⁵American Lung Ass'n v. Reilly, 141 F.R.D. 19 (E.D.N.Y.), *aff'd*, 962 F.2d 258 (2nd Cir. 1992).

⁶*Id.*

⁷Browner Upholds Bush EPA Decision to Maintain Current Ozone Standard, AIR WATER POLLUTION REPORT (Bus. Pub. Inc., Silver Springs, Md.), Mar. 8, 1993, at § 10.

⁸*Id.*

⁹EPA's No-Change Ozone Plan Ignores Data Showing Lung Damage, AIR WATER POLLUTION REPORT (Bus. Pub., Inc., Silver Springs, Md.), October 26, 1992, at § 42. Among those criticizing the research is the American Lung Association. See AMERICAN LUNG ASS'N, *BREATH IN DANGER II* (MAY 1993).

agreement to protect human and environmental health, by controlling the production of substances which harm the ozone layer.¹⁰ The Montreal Protocol lists certain products that are to be eliminated by the countries involved in the agreement.¹¹ These products have been harming the environment and endangering human health by depleting the ozone layer. The EPA, however, is attempting to renege on the Montreal Protocol by pushing to gain exemptions for certain products and private industries which claim that the use of certain ozone depleting chemicals are essential to current production and consumption needs of the United States.¹²

This Comment examines the current battle between and within industries and the government, and analyzes the differing results obtained in studies of ozone and the ozone layer. It examines the legislative history dealing with guidelines for emissions that harm the ozone layer. This Comment attempts to explain the reasons for the contradictory policies and why it is difficult to prescribe standards for ozone particles and substances that deplete the ozone layer. Finally, this Comment concludes with projections regarding future developments in the battle over ozone depleting particles and the ozone layer.

I. OZONE AND THE OZONE LAYER

The ozone layer has been a major issue among environmentalists and in the media. However, reports on ozone bring attention to the environment without fully explaining what the ozone layer is and why it is important to the global ecosystem. Although many people can name pollutants harmful to the ozone, few understand the reasons why these pollutants are a danger. The issue is further confused by the fact that many of these pollutants actually help balance the delicate needs of the earth. The result is that a mass disagreement has developed between companies, the government and laymen as to what is needed to maintain and restore a healthy and protective ozone layer and earth.

The earth's atmosphere has been divided by scientists into four layers: the troposphere, stratosphere, mesosphere and thermosphere.¹³ These divisions are based on the temperature of the atmosphere.¹⁴ Just above the earth's surface is the troposphere, followed respectively by the stratosphere, mesosphere and thermosphere.¹⁵ The stratosphere¹⁶ is where the greatest concentration of ozone can be found. Ozone, an unstable gas, is a pale blue form of oxygen.¹⁷

¹⁰Montreal Protocol on Substances That Deplete the Ozone Layer, Sept. 16, 1987, 26 I.L.M. 1541 (entered into force Jan. 1, 1989) [hereinafter Montreal Protocol].

¹¹*Id.*

¹²*Environmental Protection Agency: Air*, 23 Env'tl. L. Rep. (Env'tl. L. Inst.) 10461 (July 1993). The EPA requested nominations for exemptions in accordance with the essential uses decisions adopted by the parties to the Montreal Protocol at the November 1992 meeting. *Id.*

¹³THEODORE L. BROWN ET AL., CHEMISTRY: THE CENTRAL SCIENCE 639 (Prentice Hall, 5th ed. 1991).

¹⁴*Id.* at 639. The temperature varies as a function of altitude. *Id.*

¹⁵*Id.* Humans spend their lives in the troposphere where temperature normally decreases with increasing altitude, reaching approximately 215K at about 12 km. *Id.* The altitude ranges are as follows: troposphere — 0 to 12 km, stratosphere — 12 to 50 km, mesosphere — 50 to 85 km, thermosphere — 85 to 110 km. *Id.* at 639-40.

¹⁶*Id.* at 640. The temperature in this region increases with altitude, reaching a maximum of 275K at about 50 km. *Id.* at 639.

¹⁷*Id.* at 644. Ozone is made up of three oxygen atoms. $O(g) + O_2(g) \rightarrow O_3(g)$. *Id.*

It has a naturally short life.¹⁸ While in existence, it absorbs solar radiation which would otherwise penetrate to the earth's surface.¹⁹ Thus, ozone within the stratosphere layer absorbs a great deal of ultraviolet radiation and helps prevent heat from escaping the earth.²⁰ Without it, plant and animal life would be destroyed by high-energy radiation. Experiments have shown that unabsorbed ultraviolet radiation can adversely effect crop yields, plant growth, leaf structure, physiological and biological functions, and germination of plants.²¹

In 1974, Sherwood Rowland and Maria Molina from the University of California, Irvine, suggested that chlorine from chlorofluorocarbons (CFCs) might be depleting the ozone layer.²² CFCs are found in everyday items such as spray cans, refrigerant and air-conditioner gases, as foaming agents for plastics,²³ and are additionally used to manufacture chairs, food packaging items and important medical devices.²⁴ Indeed, "[i]t is impossible to avoid products manufactured from CFCs or with CFCs."²⁵

In the lower atmosphere, the troposphere, CFCs are unreactive.²⁶ This lack of reactivity makes CFCs industrially useful.²⁷ However, once CFCs reach the stratosphere, they are susceptible to the action of high-energy radiation.²⁸ The radiation causes a chemical reaction that changes ozone into oxygen, thus depleting the ozone layer.²⁹ This depletion was first noted around the South Pole in 1977.³⁰ Since then, researchers have found an annual thinning of the ozone layer over Antarctica every austral spring.³¹ Scientists are finding similar but less pronounced thinning over the North Pole during late winter.³² Some reports indicate that the CFC levels around the North Pole have the capacity to destroy one percent of ozone per day.³³

¹⁸*Id.* at 645.

¹⁹*Id.* One solar radiation, i.e. wavelength of light, is ultraviolet light. *Id.*

²⁰*Id.*

²¹See Eghbal, *supra* note 2.

²²BROWN ET AL., *supra* note 13, at 646.

²³*Id.*

²⁴Glenn M. Mattei, *Chlorofluorocarbons and Its Effects on the Ozone Layer: Is Legislation Sufficient to Protect the Environment?*, 19 N.C. CENT. L.J. 88, 89 (1990).

²⁵*Id.*

²⁶BROWN ET AL., *supra* note 13, at 646.

²⁷*Id.*

²⁸*Id.*

²⁹*Id.* at 647. CFCs breakdown into chlorine, fluorine and carbon. *Id.* at 646. The chlorine molecule formation occurs at the greatest rate at 30 kilometers altitude, in the stratospheric layer. *Id.* It is the atomic chlorine that changes ozone to chlorine oxide (ClO) and oxygen (O₂). *Id.* Chlorine pulls an oxygen molecule from ozone. *Id.* In the case of ClOs, the oxygen atom attracts other oxygen atoms that then break off from the ClO to form more chlorine and oxygen. *Id.* at 646-47. This causes the reaction that destroys ozone to occur over and over again. *Id.* at 647. About 100,000 molecules of ozone are destroyed by each chlorine molecule. *Id.*

³⁰Mattei, *supra* note 24, at 90. A scientist by the name of Farman made this discovery yet did not publish the results until 1985 out of fear of incorrect data collection. After publication, NASA reviewed its own data and found that the NASA computers were purposely programmed to reject low levels of ozone in the stratosphere. *Id.*

³¹BROWN ET AL., *supra* note 13, at 647. Austral spring refers to the southern hemisphere spring. *Id.* Ozone levels in October 1987 and 1989 dropped to approximately 60% of the levels found in August 1987 and 1989. *Id.*

³²*Id.*

³³Mattei, *supra* note 24, at 91. In 1988 a panel of scientists measured a three percent ozone depletion around the North Pole and a five percent depletion around the South Pole. Protection

While ozone in the stratosphere is important for blocking the sun's ultraviolet rays, it is a harmful pollutant in the troposphere. Ozone is a key ingredient in photochemical smog.³⁴ This smog is comprised of undesirable substances produced by the action of sunlight on an urban area polluted with automobile emissions.³⁵ Smog usually occurs when weather conditions produce stagnant air masses. The ozone found in these smog-filled areas is extremely reactive and toxic,³⁶ and can be dangerous for asthma sufferers, exercisers and elderly people.³⁷ Thus, ozone presents an interesting dilemma for scientists and lawmakers. While excessive amounts of ozone are harmful when in the troposphere, there are vital in the stratosphere.³⁸

II. FEDERAL LEGISLATION OF OZONE AND THE OZONE LAYER

The United States' guidelines for emissions of ozone and ozone depleting chemicals are currently listed in the Montreal Protocol.³⁹ The Montreal Protocol is an international effort to reduce CFCs and hydrochlorofluorocarbons (HCFCs)⁴⁰ by setting up guidelines to protect the stratosphere.⁴¹ The Protocol sets 1996 as the deadline for terminating production of CFCs. Under Title VI of the CAA, the United States must conform to the terms set up by the Protocol.⁴² Additionally, the Clean Air Act names ozone as one of six criteria pollutants.⁴³ The current acceptable level of ozone listed in the National Ambient Air Quality Standards (NAAQS) of the CAA is .12 particles per million.⁴⁴

A. An International Agreement to Protect the Ozone Layer—The Montreal Protocol

In 1985, at the Vienna Conference, an international agreement was reached on reducing the threat of CFCs through international cooperation in research.⁴⁵ The United States ratified this treaty, now known as the Montreal Protocol, in 1986, and on September 16, 1987, the Protocol was signed by thirty-one countries.⁴⁶ The following four resolutions were adopted: 1. A trib-

of Stratospheric Ozone, 53 Fed. Reg. 30,604 (1988) (to be codified at 40 C.F.R. pt.82) (proposed August 12, 1988).

³⁴BROWN ET AL., *supra* note 13, at 654.

³⁵*Id.*

³⁶*Id.*

³⁷*Id.* at 654-655.

³⁸*Id.* at 654.

³⁹Montreal Protocol, *supra* note 10.

⁴⁰*See* Eghbal, *supra* note 2. HCFCs act as substitutes for CFCs with an additional hydrogen being added to the original compound of CFCs. *Id.* However, HCFCs have also become ecologically suspect. *Id.*

⁴¹*Id.* More than ninety countries have signed the Montreal Protocol. *Id.*

⁴²Clean Air Act § 601, 42 U.S.C. § 7671(a)(e) (1988).

⁴³Arnold W. Reitze, Jr., *Overview and Critique: A Century of Air Pollution Control Law: What's Worked; What's Failed; What Might Work*, 21 ENVTL. L. 1549 (1991). The additional five pollutants are PM-10, sulfur dioxide, carbon monoxide, nitrogen dioxide, and lead. *Id.* To be named as a criteria pollutant, ambient concentrations must be found in the air. *Id.*

⁴⁴Clean Air Act § 181(a) tbl. 1. NAAQS are maintained to protect public health and welfare. *Id.*

⁴⁵Mattei, *supra* note 24, at 99.

⁴⁶Douglas Hunter Ogden, Comment, *The Montreal Protocol: Confronting the Threat to Earth's Ozone Layer*, 63 WASH. L. REV. 997, 1002 (1988).

ute to Canada for hosting the conference;⁴⁷ 2. An exchange of technical information between participating countries;⁴⁸ 3. A requirement to report data on the importing, exporting, and production of named controlled substances;⁴⁹ and 4. The Protocol itself.⁵⁰

The reporting requirements, based on 1986 levels of production, importation and exportation, required that the participating countries would again meet to decide on how to report data within six months of the Protocol's adoption.⁵¹ The overall purpose of the Protocol was to protect human health and welfare, along with protecting the environment against human activities which could modify the ozone layer.⁵² The Protocol itself recommended a freeze of controlled substances consumption and production.⁵³ This freeze was amended in 1990 to establish more stringent controls and to establish a multilateral fund to provide financial aid to developing countries wishing to participate in the Agreement.⁵⁴

Eleven countries were needed to ratify the Protocol. By December, 1988, twenty-eight countries, including the United States, representing eighty percent of world consumption of controlled substances, ratified the Montreal Protocol.⁵⁵ In 1989, the Montreal Protocol became effective worldwide. Currently, the Protocol includes over ninety countries, representing more than ninety percent of the world's consumption of ozone-depleting substances.⁵⁶ Since 1988, parties to the Montreal Protocol have met two more times to strengthen the requirements established in 1987. The Protocol now calls for a phase-out of all CFCs by 1996 and still contains a reduction schedule for other ozone depleting chemicals.⁵⁷ However, the Protocol is not a legally binding agreement. Rather, it is a treaty that represents a duty of each country which signed the Protocol. Moreover, the Protocol allows a country to withdraw from participation after four years.⁵⁸

⁴⁷Montreal Protocol, *supra* note 10, at 1549.

⁴⁸*Id.* at 1548.

⁴⁹*Id.* at 1548-1549. The controlled substances named by the Protocol are various CFC formulations. Group I consisted of CFC 11 [ozone depletion potential=1], CFC 12 [ozone depletion potential=1], CFC 113 [ozone depletion potential=.8], CFC 114 [ozone depletion potential=1], CFC 115 [ozone depletion potential=.6]. Group II consisted of halon 1211 [ozone depletion potential=3], halon 1301 [ozone depletion potential=10], halon 2402 [ozone depletion potential undetermined]. *Id.*

⁵⁰*Id.* at 1550-1561.

⁵¹*Id.* at 1549.

⁵²*Id.* at 1550.

⁵³*Id.* at 1552-1554. The following freeze was recommended: Group I: 1990, freeze consumption and production at 1986 levels; 1984, consumption and production should be frozen at 80% of 1986 levels; 1999, consumption and production was to be frozen at 50% of 1986 levels; Group II: 1992 freeze at 1986 levels. *Id.*

⁵⁴*Id.* at 1556-1557.

⁵⁵Press release from Dr. Noel J. Brown, Director of United Nations Environment Programme (Jan. 6, 1989).

⁵⁶David M. Friedland & David G. Isaacs, *Worldwide Community Takes Action on Ozone*, THE NAT'L L.J. (N.Y. L. Pub. Co., New York, N.Y.), June 14, 1993, at 30.

⁵⁷*Id.*

⁵⁸Montreal Protocol, *supra* note 10, at 1560.

B. Federal Efforts to Regulate the Ozone Particle—The Clean Air Act

1. *Legislative History of the Clean Air Act.*

The Federal government began efforts to control air pollution in the early twentieth century when the Department of the Interior's Bureau of Mines was researching ways to control smoke from coal combustion.⁵⁹ The unrestricted usage of coal for industrial purposes caused numerous cases of asthma in coal workers and nearby residents.⁶⁰ When the infrastructure began to develop in the form of railroads, pollution from transportation sources also became a federal concern.⁶¹ Air pollution quickly became a problem in California and Pennsylvania. In Southern California, smog caused the city of Los Angeles, local industries and the state to spend millions of dollars for research into its causes and possible cures.⁶² In Donora, Pennsylvania, a coal mining region, a temperature inversion caused air pollution to increase significantly over a brief period of time.⁶³ The Donora Air pollution problem caused complete loss of visibility for travelers and twenty deaths due to traffic and respiratory problems.⁶⁴ These incidents spurred the federal government into investigating air pollution.

In 1967, the Clean Air Act was passed to establish controls based on atmospheric air quality standards.⁶⁵ It gave the states primary responsibility for the development of programs to control stationary sources of air pollution, and gave the federal government primary control over emission requirements for new motorized vehicles.⁶⁶ The CAA started a state implementation plan,⁶⁷ which requires that every state specify how primary and secondary NAAQS shall be achieved and maintained.⁶⁸ These specifications are submitted to the Administrator of the EPA for approval.⁶⁹ The Administrator's duties, as outlined in the CAA, include establishing primary NAAQS.⁷⁰

Throughout the 1960s and the 1970s, public concern and heightened awareness over air pollution grew and air pollution control was recognized as an important political topic. President Nixon began emphasizing environmental initiatives and rallying for major revisions of the Clean Air Act.⁷¹ The 1970s became a time of energy conservation and preservation by American citizens.⁷² It also served as a prelude for what is now occurring between businesses, citizens and the EPA. Although citizens wanted to preserve energy,

⁵⁹Reitze, *supra* note 43, at 1584.

⁶⁰*Id.*

⁶¹Mark L. Manewitz, *Clean Air Act Overview*, in *BASICS OF ENVIRONMENTAL LAW* 1993 99 (PLI Litig. & Admin. Practice Course Handbook Series No. 459, 1993).

⁶²Reitze, *supra* note 43, at 1585.

⁶³*Id.*

⁶⁴*Id.*

⁶⁵Reitze, *supra* note 43, at 1588-1589.

⁶⁶*Id.* at 1605.

⁶⁷Clean Air Act § 110(a)(1), 42 U.S.C. § 7410(a)(1) (1988).

⁶⁸*Id.*

⁶⁹*Id.*

⁷⁰*Id.* § 109(b)(1), 42 U.S.C. § 7409(b)(1) (1988).

⁷¹Reitze, *supra* note 43, at 1590. President Nixon emphasized environmental initiatives in his State of the Union Message of January, 1970. *Id.*

⁷²*Id.* at 1595.

they resented the higher prices businesses imposed on them for fuel in 1970.⁷³ Today, businesses are threatening to raise prices for consumers again if higher ozone regulations are implemented.

For example, New Jersey has been declared an area with severe ground-level ozone pollution.⁷⁴ The EPA has required New Jersey to achieve CAA ozone standards by the year 2007.⁷⁵ In order to do so, the state is considering a law that would reduce nitrogen oxide emissions by thirty percent.⁷⁶ This would cost public utility companies an estimated \$1,000 per ton of nitrogen oxide removed.⁷⁷ The utility companies plan to pass this cost on to consumers by raising rates an average of fifty cents per month.⁷⁸ Since the price of meeting regulations was passed from the business to the consumer in the past and is now being passed in the present, history indicates that the cost of meeting new regulations will also be passed on to the consumer in the future.

In the 1970s, federal air pollution legislation changed drastically. In 1970, the CAA was amended to increase federal participation and the stringency of the air pollution control program.⁷⁹ However, the 1970 Act was a law that regulated government more than pollution. It established that the EPA had to identify and classify various pollutants, then ensure that the pollutant emissions were subjected to federal or state control.⁸⁰

In 1977, the Amendments established a "mid-course" change.⁸¹ The widespread failure of the states to attain NAAQS forced Congress to amend the CAA by giving non-attainment areas more time.⁸² The 1977 Amendments created a program intended to prevent significant deterioration⁸³ that allowed limited increases in NAAQS, including ozone, but did not allow concentrations of any pollutants to exceed the NAAQS.⁸⁴

2. *Current Federal Regulations of the Ozone Particle—The Clean Air Act and the 1990 Amendments*

In 1990, the CAA was again amended to include previously unaddressed air quality problems. Legal opinions have been divided on the strength of these latest amendments. Some scholars consider the new Amendments to be characteristic of the 1977 Amendments: programs that are easy to write laws for

⁷³*Id.*

⁷⁴*New Jersey, Land of Severe Ozone Pollution, Makes Plans to Reduce NOx*, Clean Air Network Online Today, March 26, 1993, available in LEXIS, Envirn Library, NWSTLRS File.

⁷⁵*Id.*

⁷⁶*Id.*

⁷⁷*Id.*

⁷⁸*Id.*

⁷⁹Reitze, *supra* note 43, at 1591. The 1970 Amendments established the basic statutory framework of federal involvement with respect to stationary sources that is still followed today. *Id.*

⁸⁰Clean Air Act § 109, Pub. L. 91-604, § 4(a), 84 Stat. 1969 (1970) (current version at 42 U.S.C. § 7409 (1988)).

⁸¹Manewitz, *supra* note 61 at 100.

⁸²*Id.* The time limit for non-attainment areas was extended to 1982. Clean Air Act § 172, 91 Stat. at 746-748.

⁸³Kristen Thall Peters, *Legislative Note, The Clean Air Act and the Amendments of 1990*, 8 SANTA CLARA COMPUTER & HIGH TECH. L.J. 233, 234 (1992).

⁸⁴*Id.*

but difficult to implement.⁸⁵ Others consider the Amendments to be strong and forward-looking, considering the hasty manner in which they were passed and the large amount of lobbying and deal-making involved in their passage.⁸⁶

Most of the 1990 Amendments mandate that the Administrator promulgate regulations that limit or eliminate production of specific chemicals within a certain period of time.⁸⁷ The effect of the Amendments has been to make United States environmental clean air legislation conform with the Montreal Protocol.⁸⁸ Meanwhile, the EPA retained discretion in determining the technologies that are employed to meet the requirements.⁸⁹ The 1990 Amendments targeted four environmental hazards:⁹⁰ acid rain,⁹¹ mobile sources and smog,⁹² toxic emissions⁹³ and ozone depletion.⁹⁴

For purposes of this Comment, only the two Amendments that relate to ozone are examined: the Mobile Sources and Smog Amendment, and the Ozone Depletion Amendment. The Mobile Sources and Smog Amendment governs the levels of allowable ozone in the troposphere. It is the presence of ozone in the tropospheric layer that traps pollutants and results in the creation of smog.⁹⁵ The CAA changed the level of acceptable ozone particles in the air from .08 ppm to .12 ppm. Before the Amendments, ninety-six areas had failed to meet deadlines for ozone reduction.⁹⁶ The new deadlines stipulate that eighty-seven of these areas must comply with the NAAQS by November, 1999.⁹⁷ Los Angeles, the worst offender, was given until November, 2010 to comply.⁹⁸ Areas of the United States that were classified by the Administrator as moderately polluted⁹⁹ were given until November, 1996 to reduce smog by fifteen percent.¹⁰⁰

⁸⁵Reitze, *supra* note 43, at n.1 iii. Many feel that the laws are just too sweeping. To quote Professor Mazmanian and Mr. Morell, "... it is much easier to write a law than to implement or enforce it" *Id.* at 1549.

⁸⁶Peters, *supra* note 83, at 235.

⁸⁷*Id.*

⁸⁸*Id.* at 242.

⁸⁹*Id.*

⁹⁰*Id.* at 235-41.

⁹¹*Id.* at 235. Acid rain is caused by sulfur and nitrogen oxide emissions. The amendment provides utility companies with incentives to buy pollution control technology. *Id.*

⁹²*Id.* at 237.

⁹³*Id.* at 240. Regulations must be promulgated by the year 2000 for 189 toxic and carcinogenic chemicals. *Id.* Polluting plants must use advanced technology to make 90% reductions in emissions. *Id.*

⁹⁴*Id.* at 241.

⁹⁵*Id.* at 238.

⁹⁶*Id.*

⁹⁷Clean Air Act § 181(a)(1), 42 U.S.C. § 7511(a)(1) (Supp. III 1991). See Peters, *supra* note 83, at 238.

⁹⁸Peters, *supra* note 83, at 242.

⁹⁹Reitze, *supra* note 43, at 1609. Ozone nonattainment areas are divided up into five classifications based on pollution severity and the time allotted to meet the CAA requirements for ozone of .12 parts per million: Marginal, 3 years time of attainment (toa), .121ppm—.138ppm design value; moderate, 6 years toa, .138ppm—.160ppm design value; serious, 9 years toa, .160—.180ppm design value; severe, 15 years toa, .180—.280 design value; extreme, 20 years toa, above .280 design value. *Id.*

¹⁰⁰Clean Air Act § 182(b)(1)(A)(i), 42 U.S.C. § 7511(a)(b)(i) (Supp. III 1991). After the 1996 deadline, areas that are classified as serious or worse must make annual improvements of three percent until the standards are met. *Id.* § 182(c)(2)(B)(i), 42 U.S.C. § 7511(a)(B)(i) (Supp. III 1991).

The Ozone Depletion Amendment¹⁰¹ found in Title VI of the Act conforms with the requirements of the Montreal Protocol. The CAA requires the elimination of CFCs by the year 2000,¹⁰² and that HCFC production be frozen by 2015¹⁰³ and eliminated by the year 2030.¹⁰⁴ Title VI also encourages the planting of trees to reduce pollution consumption of products containing the Montreal Protocol's Class I and Class II substances.¹⁰⁵

III. EPA STUDIES, INDUSTRY STUDIES AND HEALTH STUDIES DISAGREE OVER THE PROPER STANDARD FOR THE OZONE PARTICLE

A. Health Organizations' Research Concluding that the CAA Ozone Particle Regulations Are Set Too High and the EPA's Response.

In 1992, the American Lung Association, joined by the Environmental Defense Fund, Natural Resources Defense Council and several states, brought suit against the EPA for failing to review¹⁰⁶ and revise the CAA's NAAQS.¹⁰⁷ The suit was brought to compel the EPA to review its current standards.¹⁰⁸ The organizations argued that research had shown that the .12 ppm level was too high.¹⁰⁹ As a result, children and elderly people were being exposed to dangerous health ailments by breathing air that, although within the federally acceptable ozone limits, still posed significant health risks.¹¹⁰ Since the review was statutorily mandated, the Court concluded that the EPA must review its NAAQS standard for ozone and publish a final decision by March 1, 1993.¹¹¹

In March, 1993, the EPA announced its decision to not revise the federal air quality standard for ozone.¹¹² Carol Browner, in her first major decision as EPA Administrator, decided to retain the fourteen year-old NAAQS for ozone in the tropospheric layer.¹¹³ She reached this decision by reviewing studies conducted in 1989.¹¹⁴ Although she acknowledged that many new studies were available, she refused to consider them because they had not undergone

¹⁰¹*Id.* §§ 601-618, 42 U.S.C. 7671(a)-7671(q) (Supp. III 1991).

¹⁰²*Id.* § 604(b), 42 U.S.C. § 7671(c)(b) (Supp. III 1991)

¹⁰³*Id.* § 605(b)(1), 42 U.S.C. § 7671(b)(1) (Supp. III 1991).

¹⁰⁴*Id.* § 605(b)(2), 42 U.S.C. § 7671(b)(2) (Supp. III 1991).

¹⁰⁵Manewitz, *supra* note 61, at 100.

¹⁰⁶Under the CAA, the NAAQS must be reviewed every five years. *See* Clean Air Act § 109, 42 U.S.C. § 7409 (Supp. III 1991).

¹⁰⁷*American Lung Ass'n v. Reilly*, 141 F.R.D. 19 (E.D.N.Y.), *aff'd*, 962 F.2d 258 (2d Cir. 1992). The states include Connecticut, Maine, Massachusetts, New York and Rhode Island. *Id.* On February 28, 1992, Judge Bartels signed a consent order and final judgment which ordered the EPA to review and, if determined necessary, to revise the existing NAAQS for ozone. *Id.* at 21.

¹⁰⁸*Id.* at 21.

¹⁰⁹*Browner Upholds Bush EPA Decision to Maintain Current Ozone Standard*, *supra* note 7, at 10.

¹¹⁰*Id.*

¹¹¹*Id.*

¹¹²*Id.*

¹¹³*Id.*

¹¹⁴*Id.* Specifics about the studies were not released. *Id.* However, if prior history is any indication of present EPA practices, it is likely that the available studies were thoroughly examined. Several years ago a review of particulate standards produced a 1,500 page summary document on public comments and research. George Lobsenz, *Federal Ozone Standard Retention Disappoints Environmentalists*, Mar. 4, 1993, available in LEXIS, News Library, NWSLTRS File.

the necessary assessments.¹¹⁵ Browner stated “[a] number of new studies on the effects of ozone have been published since early 1989. EPA did not take these studies into account in today’s decision because they have not yet undergone the rigorous assessment necessary to incorporate them into a revised criteria document, the scientific report on which a smog standard revision would be based.”¹¹⁶ In other words, the research was not considered valid since it had not been reviewed by EPA scientists.

Since then, several additional organizations have determined that the acceptable level of ozone is set too high by the EPA. The American Academy of Pediatrics has concluded that ozone inflames lung tissue and hampers breathing.¹¹⁷ After reviewing over forty-seven studies conducted through 1991, the Academy recommended that the federal government tighten the ozone standard.¹¹⁸ The Academy found that, in addition to the general dangers of ozone, it specifically worsens lung problems of asthmatic children.¹¹⁹ The Academy stated that “[t]here’s been this enormous upsurge of asthma and asthma-related deaths in this country,” and ozone is one of the reasons.¹²⁰ Similarly, Harvard University researchers found a link between ambient levels of ozone and pulmonary function deterioration or lung disease in children.¹²¹ These results were found at levels of .08 ppm, far below the current federal guidelines.¹²² The National Resources Defense Council also found the EPA’s proposal to retain the ozone standard of .12 ppm unacceptable.¹²³ The environmental advocacy group felt that the EPA ignored the valuable scientific evidence offered by the American Lung Association that indicated that lung functioning was reduced and that damage occurs when lungs are exposed to ozone.¹²⁴

In 1991, prior to bringing its first suit, the American Lung Association announced findings that more than 158 million people lived in areas of the United States with unhealthy ozone levels.¹²⁵ Out of those 158 million people, 31.6 million people resided in areas that met the current federal standard.¹²⁶ This finding suggested to the American Lung Association that the current federal guideline may be dangerous for human beings.¹²⁷ In May, 1993, the American Lung Association released an air pollution report estimating that fifty-five percent of all Americans live in areas that do not meet current

¹¹⁵*Browner Upholds Bush EPA Decision to Maintain Current Ozone Standard*, *supra* note 7 at § 10.

¹¹⁶*Id.*

¹¹⁷Brenda C. Coleman, *Federal Ozone Standard Fails to Protect Children, Pediatricians Say*, Associated Press, June 8, 1993, available in LEXIS, Envirn Library, CURNWS File.

¹¹⁸*Id.*

¹¹⁹*Id.*

¹²⁰*Id.* Statement taken from Dr. J. Routt Reigart, Associate Professor of Pediatrics at the Medical University of South Carolina. *Id.*

¹²¹*Id.*

¹²²*EPA’s No-Change Ozone Plan Ignores Data Showing Lung Damage*, *supra* note 9, at § 42.

¹²³*Id.*

¹²⁴*Id.*

¹²⁵*Lung Ass’n Returns to Court to Force EPA on Ozone Standard*, Clean Air Network Online Today, July 9, 1993, available in LEXIS, Envirn Library, NWSLTRS File.

¹²⁶*Id.*

¹²⁷*Id.*

NAAQS health standards.¹²⁸ The report, "Breath in Danger II," estimated that more than thirty-one million children and over eighteen million elders in the United States are at risk for lung disease or respiratory irritation because of unhealthy levels of air pollutants.¹²⁹ The report was based on studies that found that the current .12 ppm rate was unsafe.¹³⁰ The studies found adverse health effects, including reduced lung functioning, wheezing, shortness of breath and chest irritation, can occur at the much lower level of .08 ppm.¹³¹ Because of these findings, the American Lung Association is again taking the EPA to court.¹³²

The EPA has stated that studies indicating a need for a lower ozone level were not examined because their reliability is unknown.¹³³ However, an additional reason for the EPA's failure to review and change the NAAQS is suggested by the nature of the parties that joined the EPA's appeal of the 1991 American Lung Association suit.¹³⁴ These parties include sixty-seven power, electric and gas companies, several of which are run by individual states and counties.¹³⁵ Although the EPA is a federally-run organization, state and county run systems may have influenced the EPA's political decision to ignore the mandated review of acceptable ozone levels. Indeed, EPA officials acknowledged their concern for state and county organizations when they refused to revise the standard. The agency cited the potential impact the lowering of the ozone standard would have on state and local officials, noting that a decision to revise the ozone standard would have "enormous impact on

¹²⁸*American Lung Ass'n Releases Air Pollution Report*, Clean Air Network Online Today, May 3, 1993, available in LEXIS, Envirn Library, NWSLTRS File.

¹²⁹*Id.*

¹³⁰*Id.*

¹³¹*Lung Ass'n Returns to Court to Force EPA on Ozone Standard*, Clean Air Network Online Today, July 9, 1993, available in LEXIS, Envirn Library, NWSLTRS File.

¹³²*Id.*

¹³³*Browner Upholds Bush EPA Decision to Maintain Current Ozone Standard*, *supra* note 7, at § 10.

¹³⁴*American Lung Ass'n v. Reilly*, 962 F.2d 258 (2nd Cir. 1992).

¹³⁵Alabama Power Company, Appalachian Power Company, Baltimore Gas & Electric Company, Carolina Power & Light Company, Centerior Energy Corporation, Cleveland Electric Illuminating Company, Toledo Edison Company, Central & South West Services, Inc., Central Power & Light Company, Public Service Company of Oklahoma, Southwestern Electric Power Company, West Texas Utilities Company, Central Hudson Gas & Electric Corporation, Central Illinois Light Company, Central Illinois Public Service Company, Cincinnati Gas & Electric Company, Columbus Consolidated Edison Company of New York, Inc., Consumers Power Company, Dayton Power & Light Company, Delmarva Power & Light Company, Detroit Edison Company, Duke Power Company, Duquesne Light Company, Florida Power & Light Company, Florida Power Corporation, Georgia Power Company, Gulf Power Company, Illinois Power Company, Indiana Michigan Power Company, Indianapolis Power & Light Company, Iowa Public Service Company, Kansas City Power & Light Company, Kentucky Power Company, Kentucky Utilities Company, Madison Gas & Electric Company, Minnesota Power Company, Mississippi Power Company, Monongahela Power Company, NYS Electric & Gas Corporation, Northern Indiana Public Service Company, Oglethorpe Power Corporation, Ohio Edison Company, Pacificorp Electric Operations, Pacific Gas & Electric Company, Pennsylvania Power & Light Company, Potomac Edison Company, Potomac Electric Power Company, PSI Energy inc., Public Service Electric & Gas Company, Salt River Project, Savannah Electric & Power Company, South Carolina Electric & Gas Company, Southern California Edison Company, Tampa Electric Company, Tucson Electric Power Company, Union Electric Company, Virginia Power, West Penn Power Company, Wisconsin Electric Power Company, Wisconsin Public Service Corporation, Edison Electric Institute, American Public Power Association, National Rural Electric Cooperative Association. *Id.*

economics, lifestyles, and (pollution control) requirements. It's a decision that is not made lightly. The proper scientific analysis has to be completed."¹³⁶

B. The Business Studies Support for EPA's Findings and the Health Organizations' Response.

The Center for the Study of American Businesses has also urged the EPA to retain the .12 ppm level.¹³⁷ The group reviewed EPA and Congressional Office of Technology Assessment research from 1989 to 1991 in order to conduct a cost-benefit analysis of reducing the ozone standard.¹³⁸ The center found that compliance costs would outweigh the benefits.¹³⁹ Overall, including acute health costs, it would cost between \$3.30 and \$5.00 per person for every \$1.00 of benefit received from lowering the ozone standard.¹⁴⁰ It would cost between \$7.3 and \$11.1 billion dollars to reduce ozone.¹⁴¹ The reduction would average out to approximately \$1,900 to \$2,900 per ton of ozone pollution, while the health benefits would only net \$2.2 billion.¹⁴² The Center suggests that an average cost-to-benefit ratio significantly over 1.0 should warn the EPA against revisions of current standards.¹⁴³

The center also examined reports that found that an ozone level of .08 caused substantial pulmonary distress.¹⁴⁴ Although breathing capacity was reduced by an average of seven percent, the center found that it could not rely on the study published in the American Review of Respiratory Disease.¹⁴⁵ It found the study to be inconclusive since two out of the twenty-two people involved in the experiment experienced a lesser decrease in breathing capacity at .10 ppm than they did at .12 ppm.¹⁴⁶ Because of inconsistent scientific data, the Center recommended EPA resist environmentalists' attempts to make the standard more stringent.¹⁴⁷

In addition to these inconsistencies in the study, an obvious shortcoming of the American Review of Respiratory Disease's research is its small sample population. It is difficult to make any form of reliable or valid statistical projections onto an American population of millions.

However, this study does not go unsupported. Other small independent studies, including the research done by the American Lung Association, tend to support the finding that current federal ozone levels are set too high.¹⁴⁸ For

¹³⁶Lobsenz, *supra* note 114, at § 9. It should be noted however, that five states supposedly joined the lung association's action to force an EPA decision on the current ozone standard. *Id.*

¹³⁷*Business Study Urges EPA to Retain Ozone Reg at .12 ppm*, Air Water Pollution Report (Bus. Pub'l Inc., Silver Springs, Md.), Oct. 12, 1992, at 40.

¹³⁸*Id.*

¹³⁹*Id.*

¹⁴⁰*Id.*

¹⁴¹*Id.* This figure is based on a 35% reduction in volatile organic compounds for non-attainment areas. *Id.*

¹⁴²*Id.*

¹⁴³*Id.*

¹⁴⁴*Id.* The study examined individuals that were exercising for fifty minutes. *Id.*

¹⁴⁵*Id.*

¹⁴⁶*Id.*

¹⁴⁷*Id.*

¹⁴⁸Lidia Wasowicz, *Unique Study Finds Air Pollution Can Damage Tissue*, United Press International, Nov., 21, 1993 available in LEXIS, Nexis Library, NWS File.

example, the American Lung Association examined lung biopsies from fourteen healthy subjects exposed to ozone levels typical for smoggy days.¹⁴⁹ The subjects underwent bronchial biopsies after four hours of moderate exercise in ozone laden air.¹⁵⁰ A control group exposed to clean air was also examined.¹⁵¹ They found that the ozone caused inflammation of the upper airways or bronchial tubes.¹⁵² The tissue samples indicated a six-fold increase in inflammatory cells in the airways of the ozone exposed group.¹⁵³

Although this study can also be criticized for having a small sample population and setting the level of ozone particles higher than the federal standard, it did research a unique sample group. The study examined a population that exhibited no outward signs of respiratory problems.¹⁵⁴ The NAAQS however, were based on studies examining people with outward signs of respiratory distress.¹⁵⁵ Perhaps the EPA should expand its sample groups to include symptomless people.

IV. INDEPENDENT ORGANIZATIONS HAVE URGED THE EPA TO REVISE THE NATIONAL AMBIENT AIR QUALITY STANDARDS FOR OZONE—WHY HAS THE EPA REFUSED WHEN RESEARCH INDICATES CURRENT STANDARDS ENDANGER HUMAN HEALTH AND WELFARE?

The scientific data is consistent within each scientific communities' region. Medical experts, health professionals and environmental scientists agree that the ozone level of .12 is set too high.¹⁵⁶ Business centers and governmental agencies, which are businesses themselves, agree that the level of .12 should not be changed.¹⁵⁷ Perhaps this is because, if the standard is lowered, it is the governmental agencies and businesses, not the health and environmental groups, that would bear the financial burden associated with reducing ozone.

Environmental health and its associated benefits do not come cheaply. This is something that businesses realize. If more stringent ozone levels were to be implemented, businesses would have to reevaluate costs. Since costs to meet the new levels would certainly go up, companies might lose a portion of their profits. Some business owners might even lose their livelihoods since, if the standards are drastically changed, some companies may not be able to afford the costs of satisfying the new guidelines. While this explains why private industries would lobby for retention of the current standards, it does not, at first glance, explain why the EPA would resist changing the NAAQS.

However, the EPA has resisted the changes for the same reasons. In July, 1992, the Ninth Circuit ordered the EPA to set an "expeditious schedule" to implement a plan to reduce carbon monoxide and ozone for California re-

¹⁴⁹*Id.*

¹⁵⁰*Id.* The ozone levels were set at .20 ppm, much higher than the federal level of .12 ppm. *Id.*

¹⁵¹*Id.*

¹⁵²*Id.*

¹⁵³*Id.*

¹⁵⁴T. Adler, *Health Effects of Smog: Worse than Thought*, SCI. NEWS, Nov. 20, 1993, at 326.

¹⁵⁵*Id.*

¹⁵⁶See *supra* notes 109 through 136 and accompanying text.

¹⁵⁷See *supra* notes 137 through 147 and accompanying text.

gions.¹⁵⁸ California has a history of smog and ozone pollution; in fact, the Los Angeles basin has the nation's highest ozone concentrations.¹⁵⁹ This chronic air pollution has cost the state of California millions of dollars for research into its causes and cure.¹⁶⁰ While California and environmentalists praised the ruling, the EPA resisted the change. The EPA attempted to appeal, but on February 22, 1993, the United States Supreme Court ordered the EPA to formulate clean air plans for the Los Angeles Basin and for Ventura and Sacramento counties.¹⁶¹ The EPA's appeal to the Supreme Court claimed undue economic hardship for big businesses.¹⁶² The EPA contended that the plan would "threaten to result in widespread inconvenience and hardship for millions of California citizens . . . It could become very costly for certain businesses to meet the requirements, whatever they [the requirements] turn out to be. Businesses could choose to leave."¹⁶³ The Supreme Court refused certiorari.¹⁶⁴

With the recent approval of the North American Free Trade Agreement, businesses may choose to leave for foreign countries where ozone pollution and protection of citizens' health is not a priority. Lesser restrictions often result in higher profits for businesses. An increase in ozone restrictions could become an inconvenience that businesses can easily solve by transplanting factories and corporations to other countries.

The health problems undoubtedly also cost California businesses money. Health problems often translate into lost production for businesses. Sick employees will either perform below optimum level or will be absent from work altogether. In addition to lowered production, businesses can expect to pay higher health care premiums due to a sicker employee population. Overall, sick employees reduce business profits.

In addition to having businesses wooing the EPA, the EPA also has its own fiscal considerations. The EPA's fiscal 1993 operating budget was cut sharply, including a cut of \$52 million in air programs.¹⁶⁵ The latest EPA appropriation was \$130.8 million less than the Bush administration had requested for the year beginning last October.¹⁶⁶ The EPA was forced to reduce spending by an additional \$110 million as its part of the forced budget cuts for deficit reduction.¹⁶⁷ Overall, the EPA has a \$240.8 million smaller budget than it originally expected.

¹⁵⁸Coalition for Clean Air v. S. Cal. Edison Co., 971 F.2d 219, 229 (9th Cir. 1992), *cert. denied*, 113 S.Ct. 1361 (1993).

¹⁵⁹David G. Savage & Maia L. LaGanga, *Court Orders Tougher Smog Plan from EPA*, L.A. TIMES, Feb. 23, 1993, at 1.

¹⁶⁰Reitze, *supra* note 43, at 1584.

¹⁶¹Savage & LaGanga, *supra* note 159, at 1.

¹⁶²*Id.*

¹⁶³*Id.*

¹⁶⁴Coalition for Clean Air v. S. Cal. Edison Co., 971 F.2d 219 (9th Cir. 1992), *cert. denied*, 113 S. Ct. 1361 (1993).

¹⁶⁵EPA's Air, Water Programs Hit Hard by Forced Cutbacks in F93 Budget, AIR WATER POLLUTION REPORT (Bus. Pub. Inc., Silver Springs, Md), Feb. 22, 1993, at 8. \$39 million was also cut from water quality programs and \$8.6 million was cut from drinking water programs. *Id.*

¹⁶⁶*Id.*

¹⁶⁷*Id.* These cuts were forced on various federal agencies by the deficit-reduction plan. *Id.*

The cuts in the air program included \$38 million in regulatory development, \$9.6 million in research, and \$4.4 million in enforcement.¹⁶⁸ Due to these cut resources, the Agency believes these monetary cuts will cause it to miss CAA regulatory deadlines for air toxins, including ozone.¹⁶⁹ Another way ozone levels will be affected is in research loss. Since the EPA vowed to conduct research and review various studies so as to determine if a lower EPA ozone standard is needed, the cuts will directly affect ozone revisions.

V. FURTHER COMPLICATIONS—THE OZONE LAYER NEEDS FEDERAL PROTECTION

A. Research studies indicate that depletion of the ozone layer is dangerous to human health and environmental welfare.

While ozone itself is causing havoc with the respiratory systems of millions of Americans, the depletion of the ozone layer is additionally harming other body parts. Research has shown that the destruction of the ozone layer is linked to skin and eye cancer.¹⁷⁰ This is due to more ultraviolet light reaching the earth's surface.¹⁷¹ Every one percent decrease in ozone equals a two percent increase in harmful ultraviolet rays.¹⁷²

The increase in ultraviolet light has been shown to cause eye injury ranging from damage to the cornea to blindness.¹⁷³ For every 1% increase in ultraviolet light, there is a .5% increase in cataracts that can lead to blindness.¹⁷⁴ Estimates indicate that for every 10% increase in ultraviolet light, there is a 7.5% increase in cancer melanoma.¹⁷⁵ Ultraviolet radiation also weakens the immune system, resulting in an increase in infectious diseases.¹⁷⁶ Human health problems are compounded by the effect of ultraviolet radiation on plant life. As ultraviolet stabilizers¹⁷⁷ prove insufficient to withstand the radiation, ozone on the troposphere will increase,¹⁷⁸ thereby increasing respiratory problems for humans.

¹⁶⁸*Id.* The EPA believes that the \$52 million cut in air programs will cause it to miss deadlines for rules on the seven-year Maximum Achievable Control Technology Standards for air toxins, including ozone, standards for Volatile Organic Compound Emissions from consumer products, including CFCs, criteria standards for waste incinerators and Federal Operating Permits. *Id.*

¹⁶⁹*Id.*

¹⁷⁰Mattei, *supra* note 24, at 94.

¹⁷¹*Id.* at 93.

¹⁷²*Id.*

¹⁷³*Id.*

¹⁷⁴*Id.* at 94.

¹⁷⁵*Id.* Additionally, a 10% increase in ultraviolet light could equal a 10% increase in basal and squamous cell cancer. *Id.*

¹⁷⁶*Id.*

¹⁷⁷The ozone layer serves as an ultraviolet stabilizer. It protects the welfare of the earth and its populates by absorbing ultraviolet light. *Id.* at 93.

¹⁷⁸*Id.* at 94.

Plant and animal life will also be harmed.¹⁷⁹ Aquatic animal life could be severely depleted by ultraviolet radiation.¹⁸⁰ Plankton, being ultrasensitive to ultraviolet radiation, will decrease by 2.5% to 5% for every 10% increase in radiation.¹⁸¹ A 7.5% reduction in the ozone layer will result in a 50% reduction in shrimp,¹⁸² which has severe implications for the natural food chain. Since plankton and shrimp are both part of the food chain, all animal life, including humans, will be affected.

B. The EPA's Protection of the Ozone Layer.

The EPA has failed to protect the ozone layer just as it has failed to protect the tropospheric layer. On September 16, 1987, the United States joined thirty other countries in signing the Montreal Protocol.¹⁸³ Although it signed the Agreement, it has not lived up to the regulations. The Protocol calls for an end to CFC production and consumption by the year 2000.¹⁸⁴ Additionally, eighty countries met in Copenhagen to strengthen the requirements of the Montreal Protocol. In addition to setting earlier deadlines for chemical phase-outs, an essential uses doctrine was adopted.¹⁸⁵

Essential uses are defined as those that are "necessary for health, safety or is critical to the functioning of society" and those for which "there are no available technically and economically feasible alternatives or substitutes that are acceptable from the standpoint of environment and health."¹⁸⁶ While the parties are attempting to determine a procedure for which uses of ozone-depleting substances are deemed essential uses, the EPA has already requested exemptions from the production and consumption phase-out for CFCs in accordance to the essential uses decision.¹⁸⁷ The essential uses decision adopted in November 1992, although perhaps not directly, once again benefits big businesses.

In addition to the essential uses decision, parties to the Montreal Protocol meeting in Copenhagen added methyl bromide to the list of chemicals that deplete the ozone layer.¹⁸⁸ Methyl bromide is a soil fumigant that is commonly used in the United States on strawberries, tobacco seedlings and

¹⁷⁹Recent studies have linked damage to the ozone layer with a drop in populations of different species of amphibians. Jim Detjen, *Drop in Many Frog Species is Linked to Loss of Ozone*, PHILADELPHIA INQUIRER, March 1, 1994, at A1. For example, researchers at Oregon State University believe that the increase in ultraviolet rays impairs amphibians' reproduction abilities. *Id.* Part of the experiment involved field work in the Cascade mountains of Oregon, where the researchers found that certain frog species hatch 20% to 25% more eggs when UV-B radiation was removed by filters. *Id.* The researchers noted that if loss of ozone is affecting frogs, it could also be affecting insects, plants, and other species. *Id.* However, this research has not yet been confirmed. *Id.*

¹⁸⁰Mattei, *supra* note 24, at 93.

¹⁸¹*Id.*

¹⁸²*Id.*

¹⁸³Montreal Protocol, *supra* note 10, at 1541.

¹⁸⁴*Id.*

¹⁸⁵Friedland & Isaacs, *supra* note 56, at 30 (discussing the *Report of the 4th Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer*, Nov. 25, 1992).

¹⁸⁶*Id.*

¹⁸⁷*Recent Developments: In the Federal Agencies*, 23 Env'tl. L. Rep. (Env'tl. L. Inst.) 10461 (July 1993).

¹⁸⁸Friedland & Isaacs, *supra* note 56, at 30 (discussing the *Report of the 4th Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer*, Nov. 25, 1992).

trees.¹⁸⁹ The EPA originally received environmental praise for adhering to the Montreal Protocol.¹⁹⁰ The EPA proposed adopting the Protocol's guidelines with a phase out of methyl bromide by January, 2000, and a production freeze of the chemical at 1991 levels.¹⁹¹

However, this policy was quickly changed once agriculturists started lobbying politicians and complaining to the EPA on three grounds. First, current production levels of methyl bromide were already at 1991 levels.¹⁹² Second, methyl bromide is heavily used by farmers, being the third most applied pesticide in California.¹⁹³ Third, it is commonly relied on to fumigate the holds of ships and the containers of trucks before fruits and vegetables are loaded off of them.¹⁹⁴

Since farmers are so heavily exposed to the chemical, they are susceptible to the cancers and reproductive damages that methyl bromide has been suspected to cause.¹⁹⁵ The agriculturists, being aware of the dangers associated with methyl bromide, and the methyl bromide producers, already maintaining 1991 levels, were not as concerned with the phase-out date as they were with obtaining federal funding into researching possible alternatives to the chemical. The EPA, hearing all of the arguments and requests for federal money, decided to extend the phase-out date for methyl bromide until January 1, 2001.¹⁹⁶

Additional support for the conclusion that financial and political concerns influence EPA's decisions is found in the EPA's recent request that DuPont continue producing CFCs in 1995 for use in air conditioners and refrigerators.¹⁹⁷ Citing the hazards of ozone depletion and progress in developing technological alternatives, DuPont originally planned to stop manufacturing CFCs by the end of 1994.¹⁹⁸ The EPA's request was prompted by a legislator's concern that DuPont's transition may cause consumer backlash.¹⁹⁹ The EPA expressed concern that a shortage of CFCs could cause consumers to add expensive new equipment to existing automobiles to enable them to use CFC substitutes for air conditioning.²⁰⁰ According to automobile manufacturers, the cost of retrofitting cars built before 1994 could cost between \$200 and \$800.²⁰¹ The EPA estimated that the cost of reducing CFC production could

¹⁸⁹*Id.*

¹⁹⁰*EPA Extends Phase-Out of Ozone-Depleting Fumigant*, Reuters, Nov. 30, 1993, available in LEXIS, NWS Library, WIRES File.

¹⁹¹*Id.*

¹⁹²David Lauter, *Pesticide Flap Threatened Crucial Deal; NAFTA: Kantor's 'Misleading' Letter to Growers Put Accord with Florida Delegation in Jeopardy. The Issue Riled Environmentalists*, L.A. TIMES, Nov. 18, 1993, at A17.

¹⁹³*Id.*

¹⁹⁴*Id.*

¹⁹⁵*Id.*

¹⁹⁶*Id.*

¹⁹⁷*Ozone: EPA Asks DuPont to Delay CFC Phase out*, Greenwire, Dec. 20, 1993 available in LEXIS, NWS Library, WIRES File.

¹⁹⁸*Id.*

¹⁹⁹*Id.* Additionally, EPA officials had been meeting with auto industry representatives and other users of CFCs prior to making the request to DuPont. *Id.*

²⁰⁰Martha A. Hamilton, *EPA Asks DuPont Co. to Make CFCs in '95; Environmentalists Criticize Agency's Move*, THE WASH. POST, Dec. 18, 1993, at C1.

²⁰¹*Id.*

total between \$5 billion and \$20 billion.²⁰² Based on the results of a cost-benefit analysis, the EPA decided that since the potential damage to the ozone layer from the additional year of CFC production would be tiny, it was more cost-efficient to ask DuPont to continue producing CFCs.²⁰³

Regardless of monetary and fiscal concerns, however, the EPA and the Clean Air Act have imposed some stringent regulations on ozone depletion. The Clean Air Act goes beyond the Montreal Protocol by requiring the EPA to promulgate regulations establishing controls over the use and production of ozone-depleting substances. These rules will impose hefty burdens on foreign and domestic manufacturers. For example, the Clean Air Act requires, and the EPA has issued, rules for labeling products manufactured with or containing ozone-depleting substances.²⁰⁴ Additionally, the EPA has issued a rule banning some non-essential products that release ozone-depleting substances.²⁰⁵ It is encouraging that the EPA is working towards implementing ambitious ozone depletion standards in some ways.

CONCLUSION

The EPA has resisted changing the amount of ozone particles that is acceptable in the air. The current standard of .12 has been shown to increase health risks in children and elders as well as to damage the ecological system. The challenge the EPA now faces is not determining if ozone is dangerous but rather is to find a level of air pollution that both health experts and businesses can agree upon. The reduction of acceptable levels of ozone cannot be so dramatic as to force big businesses to leave the country or leave consumers outraged. Major metropolitan areas that historically have had difficulty complying with the EPA should not be severely penalized. However, the changes can also not be so minimal as to allow continued risks to public health and welfare.

The United States has been attempting to control air pollution for the last twenty-four years. Obviously, research studies prove that the efforts have failed. In addition to excessive ozone in the troposphere, the stratosphere now has an inadequate amount of ozone particles. However, the Montreal Protocol and Title VI of the CAA seem to be an improvement in stopping the expansion of holes in the ozone layer. The elimination of CFCs and HCFCs is a promising beginning for the environmental future.

Anna E. Pribitkin

²⁰²*Id.*

²⁰³*Id.*

²⁰⁴40 C.F.R. §§ 82.100-.149 (1993).

²⁰⁵40 C.F.R. §§ 82.60-.68 (1993).