

## THE CLEAN AIR ACT – Highlights of the 1990 Amendments

On November 15, 1990 the Clean Air Act was revised with overwhelming bipartisan support and signed into law by President George H. W. Bush. Specifically the amendments were designed to curb four major threats to the environment and to the health of millions of Americans: acid rain, urban air pollution, toxic air emissions, and stratospheric ozone depletion. The amendments also established a national operating permits program to make the law more workable, and strengthened enforcement to help ensure better compliance with the Act.

The amendments featured several progressive and creative new approaches for effectively achieving the air quality goals and regulatory reform expected from these far-reaching amendments. The new law was designed to:

- Protect human health and the environment by encouraging the use of market-based principles and other innovative approaches, like performance-based standards and emission banking and trading.
- Reduce motor vehicle emissions by setting performance standards that are met by a combination of cleaner fuels and vehicle technologies.
- Reduce acid rain through a market-based program that promotes the use of clean low sulfur coal and natural gas, as well as innovative technologies to clean high sulfur coal.
- Reduce skin cancer and cataracts by phasing out chemicals that deplete the Earth's protective ozone layer while promoting cost-effective alternatives.
- Require areas with more serious pollution problems to adopt additional control measures, while allowing them more time to meet health-based ozone, carbon monoxide and particle air quality standards.
- Adopt new approaches to reducing toxic air pollution, including industry-specific standards that set a level playing field by requiring higher emitting sources to achieve the cleaner level of performance achieved by the best performing similar sources.
- Clarify requirements and ensure public accountability by requiring operating permits that contain all of a facility's Clean Air Act requirements.
- More information: [http://epa.gov/oar/caa/caaa\\_overview.html](http://epa.gov/oar/caa/caaa_overview.html)

### **Better air quality, better health protection, better economy**

- Preliminary EPA analysis shows that in 2010, Clean Air Act fine particles and ozone programs implemented since the 1990 Amendments will prevent more than 160,000 premature deaths. In addition, the economic value of the air quality improvements is estimated to reach almost \$2 trillion for the year 2020, a value which vastly exceeds the costs of efforts to comply with the 1990 Clean Air Act and related programs. <http://www.epa.gov/oar/sect812/prospective2.html>
- From 1990 through 2008, emissions of six common pollutants are down 41%, while gross domestic product has grown 64%. Emissions of volatile organic compounds have dropped 31%, carbon monoxide dropped 46% and sulfur dioxide dropped 51%.
- Data from 2006-2008 show ozone air quality improved in 95 of the 126 areas designated to be in nonattainment for the ozone air quality standards.
- Nearly the entire country is meeting air quality targets set years ago for carbon monoxide, nitrogen oxides and sulfur dioxide.
- Lead levels in ambient air are 92% lower than in 1980, greatly reducing the number of children with IQs below 70 as a result of dirty air.
- In response to the surge in construction of retrofits resulting from EPA regulatory actions, the U.S. boilermaker population grew by approximately 35 percent, or 6,700 boilermakers, in just two years,

between 1999 and 2001, according to data from the International Brotherhood of Boilermakers.

### **Combating acid rain, cleaner power plants, significant economic benefits**

The Acid Rain Program (ARP), established under Title IV of the 1990 Clean Air Act Amendments, requires major emission reductions of sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>), the primary pollutants that form acid rain, from the electric power industry.

- The ARP was the first large-scale cap and trade program in the world and has been successful in reducing these pollutants, despite large increases in electricity generation.
- Benefits include improvements in air quality with significant benefits to human health; reductions in acid rain; the beginnings of recovery from acidification in fresh water lakes and streams; improvements in visibility; and reduced risk to forests, materials, and structures.
- Under the Acid Rain Program power plants have reduced annual SO<sub>2</sub> emissions by 64 percent compared with 1990 levels. From 1995 to 2009, annual NO<sub>x</sub> emissions from ARP units dropped by about 4.1 million tons, a net decrease of 67 percent (other programs contributed to NO<sub>x</sub> reductions from power plants, including the OTC NO<sub>x</sub> Budget Program (1999-2002) and the NO<sub>x</sub> Budget Trading Program (2003-2008))
- Acid deposition has decreased by more than 40 percent in the Eastern United States since 1990 under a cap-and-trade program for power plants.
- The benefits of the acid rain program outweigh the costs by more than 46-to-1 (at the lower avoided mortality estimate).
- Analysis of the Acid Rain SO<sub>2</sub> trading program by Resources for the Future (RFF) estimates that the program cost 82% lower than originally projected by EPA.
- More information [www.epa.gov/airmarkets/progress/progress-reports.html](http://www.epa.gov/airmarkets/progress/progress-reports.html).

### **Reducing skin cancer, cataracts and greenhouse gas emissions by protecting the ozone layer**

The Clean Air Act amendments of 1990 require that EPA develop and implement regulations for the responsible management of ozone-depleting substances in the United States to help restore the Earth's protective ozone layer.

- A multi-step reduction in the production and import of the most damaging ozone-depleting substances (ODS) allowed industry and consumers to seamlessly transition to better alternatives over several years, leading to a full phaseout by 1996.
- Specific exemptions beyond 2005 exist for the limited production and import of: CFCs for metered-dose inhalers, Methyl Chloroform and Hydrochlorofluorocarbons (HCFCs) for the Space Shuttle, and Methyl Bromide for critical agricultural practices.
- The phase-out for the most damaging substances was implemented 4-6 years faster and cost 30 percent less than what was predicted at the time the 1990 Clean Air Act Amendments were enacted.
- 99 percent of all ODS have been phased out, avoiding millions of skin cancer deaths and millions of cataract cases in the U.S.
- Title VI of the Clean Air Act provides complementary measures that allow for a seamless transition and further reduce emissions of ODS and their substitutes, including managing refrigerant emissions and reviewing more than 400 alternatives to date.
- In 2010, an additional 160 million metric tons of carbon dioxide equivalent (MMTCO<sub>2</sub>e) greenhouse gas emissions will have been avoided by managing the safe use of substitutes—equivalent to the annual emissions from more than 30 million vehicles.
- The Clean Air Act continues to provide the framework to further the transition from HCFCs. Although less damaging than other chemicals, HCFCs deplete the ozone layer and need to be phased out. By capping production and import of HCFCs below previous levels, the U.S. will

achieve 27,767 ODS tons of ozone layer benefits and 943 MMTCO<sub>2</sub>e of climate benefits in 2010-2014.

### **Cleaner cars, trucks and transportation**

Today's new cars, light trucks, and heavy-duty diesel engines are up to 95 percent cleaner than past models, and new non-road engines such as those used in construction and agriculture have up to 90 percent less particulate matter and nitrogen oxide emissions.

- Cumulatively, the Clean Air Act standards will prevent more than 26,000 premature deaths, 19,000 hospitalizations, and 3.2 million work days lost in 2030.
- When fully implemented in 2030, EPA's vehicle and fuel rules will produce \$186 billion in air quality and health benefits, with only \$11.7 billion in costs, a nearly 16-to-1 benefit/cost ratio.
- Certain rules have been found to be even more cost-effective, including EPA's Nonroad Diesel Tier 4 rule, which boasts a 40-to-1 benefit ratio.

### **Reducing industrial toxic air pollution**

Rules issued since 1990 are expected to reduce toxic emissions from industry by 1.7 million tons a year -- many times the reductions achieved in the previous 20 years.

- The air toxics rules for chemical plants, oil refineries, aerospace manufacturing and other industries also are achieving large reductions in smog-forming VOCs and particulates.
- Extensive monitoring networks have demonstrated that outdoor air concentrations of benzene, a carcinogen, decreased 55 percent between 1994 and 2007.