MAR. 1 0 1984

clean air file

One copy to LL presidents only; NOT ON DPM

FOR IMMEDIATE RELEASE MARCH 8, 1984

On Wednesday, March 7, the U.S. Senate Committee on the Environment and Public Works voted to reduce sulfur dioxide emissions by 10 million tons in the next ten years in 31 eastern states, not including Texas.

"I visited with Senator Bentsen on this topic in his Washington office a few months ago, and we commend him for his positive committee vote on this very important national issue," said Lois Carpenter, President of the League of Women Voters of Texas.

Sulfur dioxide is one of the major causes of acid rain. Although a 10 million ton reduction does not quite reach the 50% reduction level recommended by the National Academy of Science, it is a larger reduction than the Committee voted for in 1982 and demonstrates the Committee's recognition of the severity of the acid rain problem.

Next Wednesday and Thursday, March 14 and 15, the Senate Committee on the Environment and Public Works will be considering measures to control several toxic air pollutants. These amendments to the Clean Air Act would:

. put into law a schedule, which the Environmental Protection Agency (EPA) has testified it could meet, to require decisions on whether certain suspect chemical emissions should be regulated;

- more -

- close a loophole in determining the level of control required of sources emitting toxic pollutants;
- require a permit for the operation of existing and new sources that emit toxic pollutants in order to prove that they do not put out unsafe levels of emissions.

The League of Women Voters of Texas believes that these additional amendments to the Clean Air Act are necessary because the EPA currently regulates only four toxic air pollutants, and many Texans are regularly exposed to these suspect air emissions.

"It is to our benefit that determinations be made as expeditiously as possible on these suspected toxic emissions and, once done, that provisions be made to protect our citizens' health. We hope that Senator Bentsen agrees with us and will vote in favor of these amendments to the Clean Air Act," said Mrs. Carpenter.

# # # # #

FEB. 1 1984

TO: Air Quality Chairmen/LL Presidents
NOT ON DPM

FROM: Kathy Jacob, Air & Transp. Assoc. Director
[redacted]

LWV-Texas
January 1984
LL Pres. Mailing ONLY;
NOT ON DPM
II. A. 1. a.
Air

RE: ACID RAIN IN TEXAS

Problems associated with acid rain in this country are receiving a great deal of attention, most of which is focused on the Northeast. Although the available data indicate that Texas does not have a serious acid rain condition at this time, certain areas of the state could face problems in the future. Perhaps our biggest challenge is to adequately monitor the situation so that any deterioration is promptly addressed.

Acid rain is falling with regularity in the eastern half of Texas (see enclosed chart listing cities/acid rain recordings). The greatest permanent destruction of our environment occurs when the soil acidifies and plants and aquatic life can no longer survive. Fortunately, acid rain is not a major problem throughout most of Texas because the acid in rain tends to be neutralized by our alkaline soils. The Tyler, Beaumont, Longview, and Marshall areas have the greatest potential for environmental destruction because the soil in that region is somewhat sandy and not alkaline enough to prevent the acidification of the soil, lakes, and rivers.

In a 1981 Texas Energy and Natural Resources Advisory Council (TENRAC) report on acid rain in Texas, data are given for rivers which were tested for a variety of acid rain indicators. For comparison, the pH of normal rain is 5.6; vinegar is 3.0. The TENRAC study found that the pH levels in the following rivers were not at levels detrimental to aquatic life.

7.7 for the South Sulfur River
7.0 for the Sabine
6.8 for the Neches
6.7 for the Angelina

A pH of 6.5 is the lowest reading at which most aquatic systems (fish) can survive. There were no data available on heavy metals, a low-level presence of which kills fish. The Angelina River, located in Nacogdoches County between Longview and Beaumont, is beginning to show signs of bicarbonate (alkalinity) destruction, which indicates the soil may be becoming more acid. The Texas Air Control Board (TACB) is monitoring the situation.

Acid rain affects not only soil, water, and fish, but plants and materials as well. For most plant species, a wet acid deposition of 3.6 or less will have a noticeable affect. If the plant has pollution-free periods, a recovery can be made. Therefore, the frequency of rain if it is acidic has much to do with its effects on foliage. However, rain may have a greater impact on fertilization and reproduction of plants than on foliage. This can affect crop yields and harm native plant species. Lichens are the most sensitive to acid rain. The disappearance of Spanish moss or Brake ferns may indicate an acid rain problem. Herbaceous plants (those that do not have wood) are also very sensitive. In northeast Texas the oak-pine forests, managed timberlands, and truck crops are all affected. Liming the soil helps in the short term, but is not effective in the face of long-term soil deterioration.

- more -

Stone and building materials that are composed of calcite (marble and limestone) are most affected by acid rain. Calcite reacts chemically with SO_2 and makes gypsum develop a dark brown or black crust. The crust cracks and exposes new stone to decay. Metals are corroded by acid deposition of pH 4 or less. Zinc, copper, and bronze, all of which are popular building and trim materials, are most affected.

That acid rain is falling regularly in eastern Texas is a fact, but proving that it has caused damage is somewhat more difficult because there are many other factors to consider. This is a problem comparable to proving that smoking cigarettes causes cancer! As a result, the TACB has received no complaints regarding acid rain damaging plants or buildings.

THE CAUSES OF ACID RAIN IN TEXAS

Acid rain is caused by sulfur dioxide (SO_2) and nitrous oxide (NO_x) pollutants combining with moisture to form sulfuric acid and nitric acid, then falling to the ground as rain, fog, or dust. The industries in Texas that are most responsible for SO_2 and NO_x are power plants generating electricity from coal, and petroleum industries that produce wastes.

Power plants permitted prior to 1978 with a 750 megawatt capacity are allowed to emit 9,000 lbs. per hour of SO_2, and 5,250 lbs. per hour of NO_x. For plants permitted since 1978, a 750 megawatt plant is allowed to emit 6,479 lbs. per hour of SO_2 and 4,718 lbs. of NO_x per hour.

In the next five years, approximately six new power plants will come on line in the lignite belt of eastern Texas. According to a 1982 modeling study done by TENRAC, this can be done without Texas' exceeding the air quality standard. Bill Carter, of the Central Texas Lignite Watch, remains skeptical that the additionl plants will not harm the environment because large amounts of pollution will be emitted from the stacks. There is also the question of whether the standards, set for all areas, are stringent enough to protect sensitive areas. TACB is monitoring this.

Local emissions from industries are the major cause of acid rain in Texas, but there can be other causes. Auto emissions contributed 35 percent of the NO_x emissions in all of Texas in 1975. Now, that percentage is probably somewhat smaller due to more stringent auto emissions controls and an increased number of power plants.

According to the TENRAC report, natural sources of acid rain were thought to be minimal. Hydrogen sulfide released in the coastal area bogs might contribute as much as 100 lbs. per acre per year, compared to 6,000 lbs. per hour from a single power plant.

Although no data have been collected, the only out-of-state sources that could contribute to Texas' acid rain problem would probably come from Louisiana near Lake Charles, and possibly from Mexico because of the increasing industrialization and erratic pollution regulation there.

In conclusion, Texas does have acid rain, but it is not as serious a problem as in the northeastern U.S. Northeast Texas is very susceptible to acid rain, and should be monitored carefully as more power plants come on line. Eastern Texas regularly has acid rain, and citizens there should be aware that it is probably costing their area in lower crop yields and corrosion of buildings, though difficult to prove quantitatively. Acid rain is not affecting western Texas at this time, due chiefly to its alkaline soil's neutralizing effect.

# # # # #

State acid rain damage found minimal

By ROXANNE EVANS
American-Statesman Staff

Although acid rain routinely falls along the Texas Gulf Coast and in much of East Texas, experts say the state has escaped the environmental damage that plagues the Northeast United States.

However, the Texas Air Control Board says the potential for a problem exists.

Texas rainfall is relatively benign, said Dan Cook, deputy director of acid deposition research for the U.S. Environmental Protection Agency.

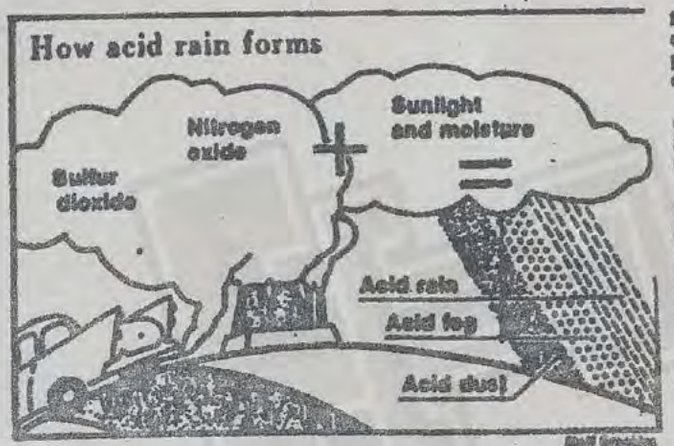
"Although there are both some water resources at risk and some significant levels of acid deposition in Texas — particularly East Texas — it is not as significant and is on a much smaller scale than in the Adirondacks," Cook said, referring to the New York mountain range where acid rain has caused fish kills.

PUBLIC AND PRIVATE agencies and universities in Texas have been collecting data on the acidity of precipitation since the 1950s, although scientists did not begin to seriously study acid rain in Texas until the late 1970s. Here are some of the recent findings:

Monitoring of precipitation shows that rainfall in Tyler, Beaumont, Longview and Fort Worth is acidic much of the time. All but Beaumont had an average pH level for rain lower than the 5.6 regarded as normal for unpolluted precipitation. The pH scale indicates the degree of acidity on a scale of 0 to 14, with each unit change representing a tenfold difference. The lower the pH rating, the more acidic the rain is.

A 1981 AIR CONTROL board report noted: "It appears that acidic precipitation routinely, though not invariably, occurs along the upper Texas Gulf Coast and throughout most of East Texas. Conversely, the precipitation in West Texas appears to be primarily, but not exclusively, alkaline. The dividing line (or, more appropriately, dividing band) appears to pass through Victoria, Austin and Dallas-Fort Worth."

The report also said: "The available body of knowledge suggests that acid deposition is not a problem of immediate concern throughout most of Texas. The potential for a problem in the future may exist, however, in parts of East Texas where acid precipitation has been monitored and where the most sensitivity to potential acid deposition effects are found."



Staff Graphics

A STUDY BY MINE state agencies and a consulting firm in 1982 documented scattered occurrences since 1950 of acid rain around the state. Sites include Amarillo, Fort Worth, Dallas, Marshall, Longview, College Station, Austin, the Big Bend area, San Antonio, Prairie View, Nacogdoches, Tyler, Beaumont, Baytown, Houston, Galveston, Brownsville, San Angelo, Odessa and Laredo.

The study by the now-defunct Texas Energy and Natural Resources Advisory Council and the Austin consulting firm of Espey Huston and Associates Inc. concluded that acid rain "shouldn't be of immediate concern to Texans," although monitoring should continue, said Julian Levy Jr., a meteorologist with Espey Huston.

A REPORT COMPILED by two University of Texas professors last year showed that the acidity of rain falling in Central and Southeast Texas had increased since 1977, but concluded that the acid in the rain would be neutralized by the alkaline limestone soil in the region.

Acid rain is caused largely by sulfur dioxide and nitrogen oxides emitted from either natural or man-made sources, including factories, smokestacks, power plants and automobiles. These pollutants react with sunlight and moisture to produce acidic rain, fog and dust particles. Natural sources — including volcanoes, decaying matter and lightning — also give off gases that make rain acidic.

Across parts of the Northeast and eastern Canada, acid rain is polluting lakes, streams and drinking water, killing fish and other animal and plant life, robbing soils of nutrients, corroding limestone and marble buildings and monuments, and reducing yields of certain crops, experts say. Acid rain damage also has been blamed for deaths of fish and plants in Colorado lakes.

THE STATE AIR control board has acid rain monitors in Tyler, Beaumont, Odessa and Fort Worth. However, the Odessa monitoring will be discontinued soon because no acidity problems have been found, said Dr. Tom Porter of the abatement requirement section of the board.

The National Atmospheric Deposition Project sponsored by the U.S. Geological Survey collects air samples in Longview for testing.

Neither the air control board nor the atmospheric deposition program in monitoring acid rain in Austin, despite a report by two UT professors who found increasing acidity in Austin rainfall.

Geology Professors Howard Liljestrand and James Feeley recorded an average pH level of 4.9 for rain that fell in Austin in 1982, showing increased acidity from the 6.6 average pH level recorded in 1977 by the air control board.

DESPITE OCCASIONAL high acidity readings, Austin is unlikely to have acid rain problems because of the geology of the area, Porter said.

Several atmospheric and geological factors must be present before acid rain causes damage. Austin and most of the rest of the state are fortunate because geological conditions, such as a heavy concentration of limestone in soil and water, combine with wind flow to protect against acid rain damage, according to Porter, Levy and Cook.

John McKetta, a UT engineering professor and presidential appointee on the National Acid Precipitation Task Force, said that although rain falling in some parts of Texas is as acidic as that falling in the northeast, the limestone usually present in Texas soil is an immediate neutralizer of the acid.

BECAUSE OF WIND patterns from the Gulf, emissions of sulfur dioxide and nitrogen oxides from Texas plants are more likely to cause pollution in neighboring states than in Texas, said Cook.

Patterns of soil composition also limit damage from acid rain. Areas of the state with the highest incidences of acid rain are those least susceptible to harm, Porter and Levy said.

For example, acid rain falls with the greatest frequency in the Houston-Galveston-Beaumont area, a region characterized by a high density of air-polluting emission sources, according to the Energy and Natural Resources Advisory Council study and the air control board report. However, both studies pointed out that the alkaline soil in this southeastern region has a fair amount of buffering capacity.

PORTER SAID researchers and environmentalists are far more concerned about possible acid rain damage in the Tyler-Longview area. Acidic, sandy soils make that corner of the state more vulnerable than other areas, Porter said.

Some scientists and many environmentalists say the increasing dependence of Texas on fossil fuels — particularly the burning of lignite coal — to generate electric power will boost the incidence of acid rain in Texas and heighten the danger of damage.

Although research shows a direct correlation between the presence of sulfur dioxide — a chief pollutant resulting from lignite-burning — and acid rain, scientists and environmentalists disagree on how much of the chemical in the atmosphere comes from power plants.

PORTER SAID A proliferation of industries and lignite plants across the state has not caused a noticeable change in the acidity of rain in the areas monitored.

Levy, the Espey Huston meteorologist, said future lignite plants are unlikely to significantly increase the occurrence of acid rain because of the desulfurization or scrubbing regulations for pollutants imposed by the state air control board. But environmentalists like Bill Carter of Central Texans Lignite Watch dismiss the value of scrubbing requirements.

"Even with the best desulfurization process, the 10 percent of sulfur dioxide that remains amounts to tons," Carter said.

McKetta said, "Coal isn't the biggest culprit — nature is."

MCKETTA, WHO was chairman of the National Air Quality Management Commission in 1979, said acid rain has been traced to prehistoric times by scientists who have studied glaciers. And although man-made sources may increase the likelihood of acid rain, "the issue of acid rain is much more complex than the use of fuels."

McKetta said tests showed that acid rain fell in his back yard in Lago Vista in 1931. "And there was no coal burning within 1,000 miles of my house," he said.

Porter agreed with McKetta that chemicals released by coal-burning are not the only source of acid rain and cautioned that "the real bugaboo" in studying acid rain is linking a cause with the effect. Because airborne acidity can be transported several hundred miles, it is difficult to pinpoint a source, he said.

The best way for the state to avoid acid rain damage is to find a way "to burn dirty fuels in a clean manner," Levy said. "But it takes effort."

ACID RAIN pH RECORDINGS IN TEXAS

	pH HIGH	pH LOW	AVERAGE pH
Austin (1975)	7.7	5.7	6.6
Austin (1982 UT)[3]			4.9
Beaumont (1980 TACB)	6.6	3.6	
Beaumont (1981)	6.5	4.6	5.3
Beaumont (1982, TACB)[2]			5.3
Big Bend (1981)	7.6		5.8
Clear Creek School District (1970's)		3.5	4.0-4.5
Dallas/Ft. Worth (1981)	6.6	4.7	
Dallas/Ft. Worth (1982)[2]	6.5	4.6	5.5
Galveston County		3.0	4.1
Harris County	6.1	2.8	
Nacogdoches			4.5-4.7
Odessa			5.2-6.8
Odessa (1982)[2]			6.0
San Angelo (1975)			6.5
San Antonio (1976-77)			8.2
Tyler	5.8	3.5	
Tyler (1982)[2]	5.3	3.7	4.3
Victoria (1971-77)			slightly acid

The pH of normal rain is 5.6. Vinegar is 3.0.

Sources: TENRAC Acid Deposition Technical Report Vol. II, 1982

[2]TACB telephone conversations (1982)

[3]Austin American Statesman, January 3, 1984

TABLE 3-1

1973 SO_2 EMISSIONS BY SOURCE CATEGORY
(IN PERCENTAGE OF TOTAL SO_2 EMISSIONS WITHIN EACH REGION)

Source Category	Region I Abilene	Region II Lubbock	Region III Waco	Region IV Brownsville	Region V Corpus Christi	Region VI Odessa	Region VII Houston	Region VIII Dallas	Region IX San Antonio	Region X Beaumont	Region XI El Paso	Region XII Longview	Statewide
Transportation	50	4	3	62	12	1	6	17	14	5	1	4	4
Electric Power Generation	8	1	89	3	3	< 1	2	9	7	< 1	< 1	2	12
Industrial Fuel Combustion	3	9	-	3	22	9	21	11	1	37	3	14	12
Mineral Industry Process Losses	22	< 1	1	-	2	< 1	3	30	17	-	< 1	< 1	2
Petroleum Industry Process Losses	6	36	4	-	29	85	19	8	56	50	1	71	35
Metallurgical Industry Process Losses	-	42	2	6	27	-	3	13	-	-	94	5	23
Chemical Industry Process Losses	-	5	-	-	2	4	42	3	-	6	< 1	3	9
Area Source Fuel Combustion	10	4	1	24	2	< 1	1	9	6	1	< 1	1	1
Contribution of Regional Emissions to Statewide Total	< 1	11	13	< 1	2	18	17	3	2	10	17	6	100

Source: TACB (1973)

TABLE 3-3

RANKING OF 1973 SO_2 EMISSION SOURCES
BY SOURCE CATEGORY

Rank	Source Category	Total 1973 SO_2 Emissions (1000 tn/yr)	Percent of Total SO_2 Emissions for the State (%)
(1)	Petroleum Industry Losses	425	35
(2)	Metallurgical Industry Process Losses	279	23
(3)	Electric Power Generation	146	12
(3)	Industrial Fuel Combustion	146	12
(5)	Chemical Industry Process Losses	109	9
(6)	Transportation	49	4
(7)	Mineral Industry Process Losses	24	2
(8)	Area Source Fuel Combustion	12	1
	Total	~~1190~~	

Source: TACB (1973).

Actual 1982 Estimate Total 1,412

TABLE 3-2

1973 NO_x EMISSIONS BY SOURCE CATEGORY
(IN PERCENTAGE OF TOTAL NO_x EMISSIONS WITHIN EACH REGION)

Source Category	Region I Abilene	Region II Lubbock	Region III Waco	Region IV Brownsville	Region V Corpus Christi	Region VI Odessa	Region VII Houston	Region VIII Dallas	Region IX San Antonio	Region X Beaumont	Region XI El Paso	Region XII Longview	Statewide
Transportation	51	37	55	50	13	23	24	67	74	21	67	44	35
Electric Power Generation	29	7	41	21	52	5	14	21	16	6	16	17	21
Industrial Fuel Combustion	18	39	2	20	33	68	58	8	6	69	12	28	39
Industrial Process Losses	< 1	2	-	-	1	2	2	1	-	3	1	10	2
Area Source Fuel Combustion	3	15	2	9	< 1	2	1	3	4	1	4	1	3
Contribution of Regional Emissions to Statewide Total	4	10	7	2	14	8	25	10	4	9	1	6	100

Source: TACB (1973)

TABLE 3-4

RANKING OF 1973 NO_x EMISSION SOURCES
BY SOURCE CATEGORY

Rank	Source Category	Total 1973 NO_x Emissions (1000 tn/yr)	Percent of Total NO_x Emissions for the State (%)
(1)	Industrial Fuel Combustion	823	39
(2)	Transportation	739	35
(3)	Electric Power Generation	443	21
(4)	Area Source Fuel Combustion	63	3
(5)	Industrial Process Losses	42	2
	Total	2,110	

Source: TACB (1973).

1982 ACTUAL ESTIMATE Total 1,178

TABLE 7-1

PLANT SPECIES COMMON IN TEXAS KNOWN TO BE SENSITIVE TO ACID DEPOSITION AND ASSOCIATED POLLUTANTS

Crops

Alfalfa, Cotton, Red clover, Oats, Peas, Sweet potatoes, Lettuce, Soybean, Broccoli, Squash, Wheat, Carrot, Tomato, Field beans, Rye

Garden Flowers

Sweet pea, Aster, Gladiola, Tulip, Violet, Zinnia, Verbena, Morning glory

Garden Plants

Peas, Spinach, Beans, Carrots, Cucumber, Lettuce, Radish, Squash, Tomato, Mustard, Swiss chard, Broccoli, Cauliflower, Green pepper

Trees

Black willow, Alder, Apple, Water oak, Pines, Birch, Catalpa, American elm, Pear

Weeds and Other Plants

Bindweed, Buckwheat, Careless weed, Curly dock, Fleabane, Prickly lettuce, Mallow, Plantain, Western ragweed, Sunflower, Velvet-weed, Lichens, Bracken fern, Mosses

Source: Jacobson and Hill (1970).

FEB 1 1984

TO: Air Quality Chairmen/LL Presidents; DPM

FROM: Kathy Jacob, Air & Transportation Assoc. Dir.
[redacted]

LWV-Texas
January 1984
LL Pres. Mailing; DPM
II. A. 1. a.
Program - Air

RE: CLEAN AIR ACT REAUTHORIZATION
ACID RAIN

Thanks to those who have sent me copies of letters to your Congressmen. We desperately need to reduce the acid rain problem in this country.

Included in this mailing is a brief summary--one copy to each local League--of some statistics regarding acid rain in Texas, as well as an article from the Austin American-Statesman. The article describes better than I can the different views regarding acid rain in the state. I hope this information will be helpful to you when contacting your Congresemen concerning this problem.

For a comprehensive study of Texas' acid rain, I urge you to ask the Texas Air Control Board (TACB) at [redacted] to send you a copy of TENRAC's January, [redacted], Acid Deposition in Texas, Vol. I & II. In 1982, TENRAC also published a modeling study of the impact of additional power plants on air quality in Texas. This report may also be obtained from TACB.

# # # # #

DEC. 5 1983

TO: Air Quality Chairman/LL President; DPM

FROM: Kathy Jacob, Air & Transportation Assoc. Dir.
[redacted]

LWV-Texas
December 1983
LL Pres. Mailing(1); DPM
II. A. 1. a.
Air

RE: -Clean Air Act Reauthorization
-Acid Rain
-Texas Air Control Board Sunset Review

Please read your mail from national concerning HR 3400, National Acid Deposition Control Act of 1983. Texas has acid rain. It is not as bad as the northeast but our representatives in Congress need to know this is an issue that can affect Texas.

Galveston has at times recorded pH's of 3.0, Tyler 3.5, College Station 3.6, Beaumont 3.6, Dallas 3.8. Normal rain is 5.6. Vinegar is 3.0. Drinking water standard is 6.0. The Texas acid rain problem will affect our piney woods, crops, and recreational fishing.

Our representatives need to hear from us about our local problems. During this Congressional break, contact your representatives and ask them to co-sponsor HR 3400 and other Clean Air Act reauthorization bills. Take them the acid rain brochure enclosed ("Who Will Stop the Rain"), and let me know what they say. For background reading, see your Report From the Hill and the Clean Air Coalition memos from LWVUS if you receive them. If you need more of the enclosed brochure, contact LWVUS.

Texas Air Control Board Sunset Review

TACB is under Sunset Review. At the Texas Environmental Coalition workshop on sunset review, we learned from Bill Wells of the Sunset Commission that the most effective time for citizen participation is during staff review, many months PRIOR TO the hearing. The hearings for TACB will be July 25, 26, 27, 1984. If you have any suggestions about TACB, let me know. I plan to talk with the staff this winter in Austin.

For background information, contact the Texas Air Control Board. A self study of TACB is available from the agency: [redacted]

The study outlines the entire board and its responsibilities. More information from me will follow in the January mailing.

# # # # #

Blueprint for Clean Air

Air pollution can make your eyes water and your throat burn. It can cause dizziness, blurred vision, coughing, chest discomfort and impaired breathing. During episodes of heavy air pollution, scores of people come to hospital emergency rooms with serious breathing problems, and premature deaths from heart and lung diseases jump dramatically. Furthermore, many scientists are convinced that air pollution contributes to three major types of chronic disease that kill millions of people annually—heart disease, lung disease and cancer.

Besides these health effects, dirty air has other impacts. It injures crops, flowers, shrubs and forests; it corrodes and dirties buildings, statues, fabrics and metals. When air pollution emissions return to the earth in the form of acid rain, populations of fish and other organisms in sensitive lakes can be decimated. Air pollution can impair visibility on the highway and in national parks. And, it may even be altering the earth's climate.

The Clean Air Act: The nation's plan for clearing the air

In response to a growing awareness about the health effects—both acute and chronic—of air pollution and the involuntary nature of exposure, Congress enacted the first U.S. legislation to control air pollution in 1955 to provide technical assistance to states. The original **Clean Air Act (CAA)** passed in 1963, 1965 and 1966 amendments and the Air Quality Act of 1967 all suffered from the same problem. The approach relied solely on voluntary cooperation by the states and, in the absence of federal requirements, some states were unwilling to adopt strict controls because they feared it would put them at a competitive disadvantage for attracting industry.

The historic *Clean Air Act Amendments of 1970*, which provided the first comprehensive program for attacking air pollution nationwide, set a variety of legal precedents:

☐ The newly established **U.S. Environmental Protection Agency (EPA)** was required to set national ambient (surrounding) air quality standards, with attainment required by 1975.

☐ States were charged with developing implementation plans.

☐ EPA was authorized to set emission limits for new stationary sources (fixed installations, such as power plants and factories).

☐ The federal government was given new information-gathering and enforcement powers.

This law combined a goals-oriented approach with a technology-based strategy for protecting and enhancing air quality. The evolution of the program has been shaped by successive revisions to the law, by regulatory programs and by numerous court cases.

The *1977 amendments* to the Clean Air Act extended compliance deadlines, set penalties for noncompliance, and gave statutory recognition to many of EPA's policies for making progress toward cleaner air while allowing industrial growth. They also established the presidentially appointed **National Commission on Air Quality (NCAQ)** to undertake an analysis of air pollution control strategies and make recommendations on how to improve the effectiveness of the Clean Air Act.

In 1981, the Clean Air Act is slated for reauthorization by Congress, and a tough battle is shaping up, over how clean this country's air should be, how much should be spent to make it cleaner and how fast the timetable for cleanup needs to be. Clean air advocates will point to some measurable improvements in air quality over the last ten years. Industry will argue that the costs of cleanup are too high and that government redtape is strangling them. Arguments are likely to center on a seemingly complex array of deadlines, definitions and acronyms. To the average citizen, the difference between "BACT" and "RACT" may be only one letter. But the differences between the levels of pollution control technologies and associated expenses they represent are of vital concern.

Among the key questions that will be considered in the debate:

☐ What has been achieved by air pollution control efforts in this country?

☐ Are enforcement and regulatory provisions of the Clean Air Act adequate and effective for achieving healthful air quality?

☐ What pollutants remain uncontrolled?

☐ What are the energy, environmental, health and economic impacts of implementing the Clean Air Act?

Chief goal of the CAA: To protect public health and welfare

The Clean Air Act is focused primarily on controlling the seven most common and widespread pollutants—sulfur dioxide, particulates, carbon monoxide, ozone, nitrogen oxides, hydrocarbons and lead. These are called **criteria** pollutants because EPA is required to compile scientific and medical information on their health and environmental effects into "criteria documents" (see chart). This compilation of scientific information is used as the basis for setting **National Ambient Air Quality Standards (NAAQS),** which set a limit on the amount of pollution allowed in the ambient air (that is, the surrounding outdoor air).

Primary standards are intended to safeguard *human health,* allowing for a margin of safety to protect sensitive members of the population such as children, the elderly, pregnant women, and sick people. **Secondary standards** are stricter—set at lower concentrations that are necessary to protect the *public welfare* by preventing injury to agricultural crops and livestock, deterioration of materials and property, and adverse impacts on the environment.

NAAQS are designed to be precautionary—based on health and welfare considerations and set without regard to abatement costs. However, economic considerations *are* taken into account when EPA and the states choose the most appropriate strategies or technologies to attain the standards.

The Clean Air Act calls for EPA to review the NAAQS periodically and revise them to reflect the latest scientific knowledge. Evidence relating illness to air pollution is drawn from three sources: laboratory studies on animals; experimental human exposures; and epidemiological studies of exposed human populations. However, there are many complicating factors — such as smoking habits, medical history, diet and age — that make it difficult to isolate the precise incremental effect of air pollution on human health. Because there is a fair amount of discretionary judgment involved in interpreting scientific data and determining what constitutes an adequate margin of safety, the standard-setting process has been quite controversial. When EPA reviewed the standard for ozone (smog) in 1979 and relaxed it by 50 percent, public health advocates charged that costs had been improperly considered, while the American Petroleum Institute contended that the standard was still far more stringent than necessary.

The standard for carbon monoxide (CO) was the second criteria pollutant to undergo review. In August 1980, EPA proposed a somewhat tighter standard based on the need to protect people with heart ailments during periods of moderate exercise. A final decision on the standard is expected by spring of 1981.

EPA is currently reviewing the NAAQS for nitrogen oxides (NO_x), sulfur dioxide (SO_2) and total suspended particulates (TSP); possible changes are not likely to be proposed before late 1981. Among the issues to be considered:

☐ *Limiting short-term exposures to nitrogen oxides (NO_x)* The current standards consider only annual averages, not recognizing the detrimental health effects of brief exposures during peak traffic periods. Annual averages can hide episodes of high concentrations

Criteria Pollutants

Pollutant	Health effects	Welfare effects	Major sources	Controls
Sulfur Dioxide (SO_2) *—a gas*	Aggravates symptoms of heart and lung disease, obstructs breathing (particularly in combination with other pollutants); increases incidence of acute respiratory diseases including coughs and colds, asthma, bronchitis and emphysema.	Toxic to plants; can destroy paint pigments, erode statues, corrode metals, harm textiles; impairs visibility; precursor to acid rain.	Electricity generating stations, smelters, petroleum refineries, industrial boilers.	See box on SO_x control technologies.
Total Suspended Particulates (TSP) *—solid particles or liquid droplets*	Can carry heavy metals and cancer-causing organic compounds into the deepest, most sensitive parts of the lung; with SO_2, can increase incidence and severity of respiratory diseases.	Obscure visibility; dirty materials and buildings; corrode metals.	Industrial processes and combustion; about 7% from natural, largely uncontrollable, sources (windblown dust, forest fires, volcanoes).	Most common method: electrostatic precipitators in utility boilers, to trap particulates by charging them with electricity so they will adhere to retaining magnets. Other methods: cyclone collectors, bag-houses, wet scrubbers.
Carbon Monoxide *—a gas*	Interferes with blood's ability to absorb oxygen, thus impairing perception and thinking, slowing reflexes and causing drowsiness, unconsciousness and death. CO inhaled by pregnant women may threaten the unborn child's growth and mental development. Long-term exposure is suspected of aggravating arteriosclerosis and vascular disease.		Motor vehicles.	Engine modifications to achieve more complete combustion; use of catalytic converters.
Nitrogen oxides (NO_x), *—a gas*	High concentrations can be fatal; at lower levels, can increase susceptibility to viral infections such as influenza, irritate the lungs, and cause bronchitis and pneumonia.	Toxic to vegetation, reducing plant growth and seed fertility when present in high concentrations; causes brown discoloration of the atmosphere; is a precursor to acid rain and ozone.	Electric utility boilers and motor vehicles.	Most difficult pollutant to control. "Low NO_x burners" are one method for reducing emissions from new and existing industrial boilers. They use a *staged combustion* process that varies the fuel-air mixture. Other techniques under investigation: *fuel denitrogenation* to produce cleaner fuel prior to burning; *catalytic combustion* in industrial boilers; industrial *flue gas treatment; three-way catalytic converters* for automobiles change exhaust gases into molecular nitrogen, CO_2 and water vapor.
Hydrocarbons (HC), sometimes called **Volatile Organic Compounds** or **VOCs** *—a gas*	Of concern mainly because it combines with NO_x in the presence of sunlight to form ozone. Certain HCs, such as benzene, are hazardous in their own right because they cause cancer.	Precursor to ozone.	Gasoline vapors that escape from automobiles; gasoline stations, industries that use solvents; painting and dry cleaning operations.	Vapor collection systems at gasoline storage and transfer points; carbon adsorption to capture leakages from stationary sources.
Ozone *—a gas*	Irritates mucous membranes of respiratory system, causing coughing, choking, impaired lung function, reduced resistance to colds and serious diseases such as pneumonia; can aggravate chronic heart disease, asthma, bronchitis, emphysema.	Corrodes materials such as rubber and paint; can injure and kill many crops, trees, shrubs.	Formed by chemical reactions in the atmosphere from two other airborne pollutants — NO_x and HC.	Strategies are directed at controlling NO_x and HC.
Lead *—a metal*	Affects blood-forming, reproductive, nervous and kidney systems; can accumulate in bone and other tissues, posing a health hazard even after exposure has ended. Children are particularly susceptible, and behavioral abnormalities including hyperactivity and decreased learning ability have recently been demonstrated.		Motor vehicle exhaust; lead smelting and processing plants.	Major strategy: to phase out use of leaded gasoline.

of air pollution and thus are less protective than short-term ceilings. A decision by EPA on this issue, mandated by the 1977 amendments, is several years overdue.

☐ *Setting a short-term health standard for sulfur dioxide (SO_2)* Though no such standard currently exists, evidence suggests that short-term exposures to high concentrations of SO_2 may be harmful to human health. EPA also is considering whether to amend the standard to take into account exposure to *sulfate aerosols* (aerosols are liquid and solid particles that form in the atmosphere and are suspended in the air) and their role in the creation of acid rain (discussed in detail later).

☐ *Establishing a standard for fine particles* The current standard does not take particle size into account. Yet some scientists consider fine particles to be more harmful than large particles, because they can more easily bypass the body's defense mechanisms and lodge in the lower, most sensitive regions of the lungs, where clearance mechanisms are slow or ineffective. Fine particles are frequently toxic and, even when not toxic, can act as carriers of other harmful pollutants. Fine particles, between 1 and 2 microns in diameter (a human hair, by comparison, is about 100 microns thick), are emitted from a variety of sources including power plants, iron and steel mills and diesel-powered vehicles.

Airborne toxics

Criteria pollutants have been the central focus of the nation's air pollution control program. There are, however, a large number of other airborne chemicals and radionuclides (radioactive nuclear species), often emitted from sources more local in nature than criteria pollutants, that may be implicated in cancer, genetic damage, neurotoxicity, reproductive effects and other serious health effects. The Clean Air Act empowered EPA to list and regulate these toxic air pollutants, but to date only seven have been listed, and the major industrial sources of only four have been regulated. The status of each is outlined below.

☐ *Asbestos* can cause lung cancer, asbestosis (a serious respiratory disease) and mesothelioma (a rare form of cancer with no other known causes). Emission standards for a number of sources of airborne asbestos, including asbestos mills, manufacturers of fireproofing products, and demolition operations for old buildings, have been established.

☐ *Beryllium* exposure can produce skin and conjunctival effects, as well as chronic lesions in the lungs. Ceramic manufacturers, foundries and incinerators are among the sources with emission standards.

☐ *Mercury* in ambient air can attack the nervous system, if present in high concentrations, and can cause kidney damage. Mercury ore processing facilities and incinerators must control their vapor emissions.

☐ *Vinyl chloride* can be responsible for a rare form of liver cancer called angiosarcoma; it also may cause brain cancer, birth defects and stillbirths. Manufacturers of vinyl chloride and polyvinyl chloride resin must limit their airborne emissions of this hazardous substance.

☐ *Benzene* is known to cause leukemia and other diseases of the blood. Regulations to control benzene emissions have been proposed but not yet promulgated.

☐ *Radionuclides* and *arsenic* have been listed but emission standards have not yet been proposed.

Dozens of other airborne toxics, including many carcinogens that are potentially dangerous, remain unregulated, among them: benzo(a)pyrene, a highly carcinogenic hydrocarbon emitted by coke ovens; trace metals such as cadmium; and synthetic organic chemicals such as chloroform, carbon tetrachloride, toluene, formaldehyde, perchloroethylene and trichloroethylene.

In order to speed up its regulation of atmospheric carcinogens, EPA proposed in October 1979 that it shift from a chemical-by-chemical approach to a generic methodology for identifying, assessing and controlling suspected carcinogens emitted from stationary sources. No final action had been taken by the end of 1980.

How it all fits together: A simplified description of the CAA's major elements

Federal emission limits apply to the *sources* of pollution on an *industry-wide* basis:

☐ new source performance standards (NSPS) for *new* factories and plants;

☐ motor vehicle emission standards for *new* cars, trucks and buses;

☐ national emission standards for hazardous air pollutants (NESHAPS) for *new* and *existing* sources of airborne toxics.

* * *

National ambient air quality standards (NAAQS) state the maximum *levels* of pollution permitted in the air.

* * *

State implementation plans (SIPs) specify cleanup requirements for existing sources and control requirements and permit procedures for new sources on a *case-by-case* basis.

* * *

Polluted areas are designated "nonattainment" if they exceed the NAAQS.

☐ *Existing* factories and plants must install Reasonably Available Control Technology (RACT).

☐ *New* or modified factories and plants must install pollution controls with the Lowest Achievable Emission Rate (LAER) and obtain further emission reductions (offsets) from existing sources.

☐ Urban areas must adopt Inspection/Maintenance (I/M) programs for cars and institute other transportation control measures.

* * *

Cleaner areas are designated "attainment" and are subject to Prevention of Significant Deterioration (PSD) requirements.

☐ *Existing* sources that can be traced to visibility impairment in National Parks must install Best Available Retrofit Technology (BART).

☐ *New* and modified factories and plants must install Best Available Control Technology (BACT) and must not exceed increments.

State implementation plans

Though the Clean Air Act makes state governments chiefly responsible for meeting and maintaining the NAAQS, it gives them considerable flexibility in determining how they will do so. The **State Implementation Plan (SIP)** that each state and territory must submit to EPA for approval has two major elements: one spells out an enforceable strategy for bringing air quality in **nonattainment** (dirty air) areas up to minimum federal health standards for the criteria pollutants; the other, for cleaner air regions that are subject to **prevention of significant deterioration (PSD)** provisions, must show how the higher quality of the air will be maintained. Since most areas are "attainment" for one or more criteria pollutants and "nonattainment" for others, major new industries or large-scale modifications to existing sources may be subject to review under both the PSD provisions and the nonattainment provisions of the CAA.

The 1977 amendments set a deadline of 1982 for meeting the primary air quality standards. No deadline for meeting secondary standards to protect public welfare was established. Before a state can issue permits for construction of new polluting facilities, it must have an approved SIP in place or be working with EPA to correct deficiencies in a conditionally approved plan. EPA shares the responsibility for reviewing permit applications. Though major urban areas got a five-year extension to 1987 to meet the standards for CO and ozone, which are particularly stubborn auto-related problems, the extension was contingent on the establishment of automobile **inspection and maintenance (I/M)** programs to prevent deterioration of pollution control equipment.

If a state fails to develop a needed I/M program, EPA can cut off federal funding for sewer and highway projects on the grounds that these projects and the growth they promote can contribute to air pollution problems. To date, of the 29 states required to develop I/M programs, California and Kentucky are the only two that are subject to the funding sanctions. The fund cutoffs will be lifted as soon as laws establishing acceptable I/M programs are passed in those states. A study prepared for the National Commission on Air Quality found that in high growth areas, funding and permitting sanctions have been effective in getting states to act.

Each SIP must contain an inventory of pollution sources with

estimates of how much of each kind of pollutant is emitted each year. The inventory includes information on mobile sources such as automobiles and trucks, as well as stationary sources.

Mobile sources In areas suffering from auto-related pollution, states must use areawide *transportation control measures* to reduce traffic and traffic-inducing development. Examples mentioned in the law include: motor vehicle I/M programs; improved public transit; bus and carpool lanes; on-street parking controls; traffic flow improvements; staggered work hours; employer programs to encourage car and van pooling, mass transit, bicycling and walking; bicycle lanes and storage facilities; vapor recovery systems at gas stations; and tolls to discourage single-occupancy car trips. Many states have been reluctant to impose what they perceive as possibly unpopular measures, even though they have obvious energy conservation as well as clean air benefits. Because transportation is so integrally linked with air quality, nonattainment areas that do not include these measures in their plans are required to show why they would not be feasible.

Stationary sources SIPs must specify emission limitations and timetables for compliance by stationary sources. **RACT, reasonably available control technology,** the least stringent level of control, is required on existing industries in nonattainment areas. SIPs also must include a permit program for the construction and operation of new sources and specify a preconstruction review process for PSD and nonattainment areas. EPA handles the permit program for PSD areas until explicit authority is delegated to a state. The plans must lay out pollution-monitoring procedures to track progress toward attaining clean air goals. *Monitoring* involves sampling the ambient air with sensitive instruments to determine the actual concentrations of pollutants. It is different from *modeling*, a mathematical, computerized method of estimating real-world concentrations of pollutants. Existing sources in PSD areas need not install any control technology unless required under the provision of the CAA to protect visibility (described later).

By September 1980, all but one state, Hawaii, had submitted revised SIPs to EPA for review, as required by the 1977 CAA amendments. Forty of the SIPs were complete; 11 states and territories had submitted partial plans. EPA has completed its review of the adequacy of 20 of the SIPs. Only five states had fully approved plans in place as of December 1980. South Dakota's SIP was disapproved, and about 15 state plans were approved with conditions.

Nonattainment areas: Offsets, bubbles and banking

One of the toughest problems in the struggle to clean up the nation's air is how to accommodate new industrial growth in dirty air areas while still demonstrating steady reductions in pollution emissions. EPA came up with an answer—an **emissions offset policy** for these "nonattainment areas" that is now part of the 1977 CAA amendments.

To get a permit to build a new facility or make a major modification to an existing plant in a nonattainment area, new sources of air pollution now must be able to demonstrate that other facilities they own are in compliance or on a schedule of compliance with the applicable SIP. The new sources must be equipped with especially tough pollution controls that reflect the **lowest achievable emission rate (LAER).** In defining LAER for a particular source, permit-issuing authorities must consider the most stringent emission limitation in any SIP and the lowest emission rate achieved in practice by a similar source. LAER is supposed to be a stricter requirement than **new source performance standards (NSPS),** which give greater weight to cost considerations (described later). But, in practice, many state agencies often require the less stringent NSPS.

Further, industries must show how emissions remaining after the application of LAER will be more than offset by reducing emissions of the same pollutants from existing sources in order to demonstrate a net benefit in air quality. The reductions, called *offsets*, cause existing industries to control pollution beyond what is already required by the SIP. A company can get offsets from facilities that it already owns or buy them from other pollution sources in the area.

For example, when General Motors wanted to build a new auto assembly plant in Oklahoma City, it was estimated that the proposed facility would add 3,000 tons of hydrocarbons per year to the city's air. EPA, state and local government officials and business representatives persuaded local oil companies to reduce their hydrocarbon emissions by 5,280 tons per year — more than enough to offset emissions from the new auto plant. Many industries are unwilling, however, to part with their offsets because they want to save them to accommodate their own plans for future growth or expansion.

The offset or trade-off policy, as it is sometimes called, is a market mechanism for controlling pollution. Under the policy, air pollution and the right to clean it up have become a commodity that can be bought, sold, traded and even banked.

Banking programs enable firms to receive legally recognized credit for reducing emissions beyond levels required in SIPs and to save the credits until a use is identified some time in the future. The bank, which can be operated by private or governmental agencies, serves as a clearinghouse to provide information to potential buyers and sellers of offsets. Supporters of the policy believe that using emissions offsets and banking is a cost-effective way to meet clean air and economic goals. Critics point out that it rewards existing polluters by allowing them to control new growth in the area.

Banking programs are underway in a number of cities including Louisville, San Francisco and Seattle. The city of Boston is creating an emissions bank of its own by reducing hydrocarbon pollution from municipal sources, by cutting fuel use in public buildings and by installing vapor recovery systems at city-run garages. The offsets will be allocated to promote the city's long-range economic development plans.

A related market mechanism, called the *bubble policy,* has recently been established by EPA for regulating existing sources. Instead of separately regulating each smokestack, open furnace door or dirt pile in a plant, an imaginary bubble with a single opening is put over the plant to make a tally of the total pollution coming out. The industry is allowed to increase its emissions from one portion of a facility if it reduces them elsewhere in the same plant, so as to meet the single total emission limit in the cheapest possible way. Under the policy, only pollutants of the same type can be traded. Critics of the bubble policy point out that it can result in net increases in emissions, by allowing credits from point sources that are currently operating below allowable emissions rates to be applied as compensation for emissions from noncomplying sources of pollution.

Clean air areas: Prevention of significant deterioration

Most of the nation has air quality that is superior to one or more of the ambient air quality standards. The 1977 amendments confirmed the federal policy of keeping these clean air areas clean. EPA developed a program for the **prevention of significant deterioration (PSD,** for short) in 1973, in response to a lawsuit. The Sierra Club had argued before the Supreme Court that one of the stated purposes of the 1970 Clean Air Act is to protect air quality where it is good, as well as improve it where it is not.

The PSD regulations are based on "maximum allowable increases," or *increments*, of pollutants. The Clean Air Act specifies short- and long-term increments for two of the criteria pollutants that stem mainly from stationary sources—SO_2 and particulates. Short-term increments are stricter than long-term yearly averages because of the briefer averaging time. EPA is in the process of developing increments, or an alternative system, for the other criteria pollutants.

For the purpose of developing applicable increments, Congress divided the country into three types of areas. Class I areas include national parks and wilderness areas, where only minimal amounts of air quality deterioration are allowed. All other areas were initially designated as Class II, where a larger degree of industrial pollution is allowed (with an increment of 25 percent of the level of the NAAQS). A state is free to upgrade some or all of these Class II lands to Class I —to preserve pristine air to attract vacationers, for instance, or to protect an agricultural economy sensitive to air pollution. Alternately, states can choose to downgrade Class II areas to Class III, which has the largest increment, set at 50 percent of the level of the NAAQS. The increments allowed are over and above the "baseline" concentration of existing pollution levels. However, in no case can ambient concentrations of criteria pollutants rise above the ceiling of the NAAQS.

New sources that want permits to locate in clean air areas must install **best available control technology (BACT).** Since BACT is determined on a case-by-case basis, states are able to take advan-

Visibility protection

Visitors to the Grand Canyon are at times disappointed that they cannot see from the southern edge to the northern rim because emissions from the Four Corners power plant occasionally fill the canyon with haze. The CAA was amended in 1977 and regulations went into effect in January, 1981 to provide special protection for the visibility values of this and other Class I national parks and wilderness areas.

If smokestack emissions from an *existing* major source can be traced to visibility impairment of a scenic vista, sources can be required to install **best available retrofit technology (BART).** *New* sources must evaluate their potential impact on visibility, and if the source would cause an adverse impact on the visibility of a Class I area (regardless of the effect on the PSD increment), the state can choose to deny the construction permit. These regulations will principally affect the western states, which now have generally good visibility that is extremely sensitive to degradation.

tage of technological breakthroughs that can bring about greater emission reductions than new source performance standards (NSPS, discussed below), which often do not reflect state-of-the-art control. In addition, applying BACT in clean air areas means that *every* new source, not just those subject to NSPS, must install air pollution controls.

Each new pollution source that is built consumes a portion of the increment. Though the CAA calls for planning on the use of increments, allocation of increments is usually on a first-come, first-served basis. Once maximum permissible levels are reached, areas have to use an emissions offset program like those used in non-attainment areas to allow for new industrial growth.

Industries complain that the PSD program causes substantial and costly delays and will adversely affect the country's energy program. The report of the National Commission on Air Quality (NCAQ) disputes this charge. It points out that lengthy permit reviews do not necessarily cause construction delays because in most cases the source is not ready to begin construction as soon as the permit is issued. In addition, the report concluded that the PSD program is not expected to limit energy development in the next few decades.

According to a report on the 1977 CAA amendments made by the House Committee on Interstate and Foreign Commerce, these are the important reasons for preventing significant deterioration in clean air areas:

Public health impacts The NAAQS are based on the assumption that a threshold level exists below which exposure has no effect. But such a threshold has never been demonstrated, as the National Academy of Sciences has reported repeatedly. NAAQS do not protect against the adverse effects of derivative pollutants such as sulfates which form in the atmosphere. Studies show that health damage occurs at sulfate concentrations one-tenth of those allowed for sulfur oxides. Many epidemiologists believe that the more we learn about air pollution, the more likely we are to identify adverse effects at lower concentrations. Moreover, the NAAQS do not take into account *synergistic* (more than additive) effects of exposure to multiple pollutants.

Environmental effects The evidence is strong that air pollutants damage crops at levels below the national standards, and interactive effects between SO_2 and ozone are known to injure many crops. Acid deposition is now a common occurrence over much of the northeastern United States. Increases in total pollution loadings from areas where the air is now relatively clean might exacerbate the long-range transport problem (see "Getting the drift").

Economic considerations The PSD program preserves the potential for long-term economic growth by requiring new facilities to be located, constructed and operated so as to minimize their impact on available clean air resources. Abandonment of a PSD policy could encourage the flight of industry and jobs from urban areas to cleaner areas requiring fewer controls. Furthermore, if the air in clean air areas deteriorates, it will contribute to pollution problems in downwind areas. It is also more economical to prevent pollution before it occurs than to require retrofitting later.

Quality-of-life values In many parts of the country where visibility is a hundred miles or more it could be reduced to merely 10-15 miles if air quality were allowed to degrade to the levels of the NAAQS, reducing the attractiveness of regions tourists visit to enjoy spectacular vistas and fresh air.

National emissions standards

Besides the strategy of setting limits on the presence of criteria pollutants in ambient air, the CAA also calls for a second major strategy—one of limiting emissions of these and other pollutants at their *point of origin.* To avoid the problems that arose when each state was left to set those emission limits for itself, the CAA called for several types of uniform *federal* controls:

- ☐ national emission standards for hazardous air pollutants (discussed above);
- ☐ new source performance standards; and
- ☐ motor vehicle emission standards.

Because these standards are "performance standards," the specified emission limits can be met with any technology—a powerful incentive for technological innovation to lower compliance costs.

New stationary sources

EPA sets **new source performance standards (NSPS)** on an industry-by-industry basis to ensure that new (or substantially modified) factories and plants are built with proper pollution controls. States then use NSPS as guidelines in setting specific emissions limits (BACT and LAER) for individual factories. Environmental quality will therefore improve over time as existing sources are retired and replaced with new facilities subject to stricter controls.

In establishing NSPS, EPA must take into account costs, the total environmental impact (including water quality and solid waste considerations) and energy requirements. Because of these factors, NSPS adopted by EPA generally do not reflect the state-of-the-art, and new sources can in many cases achieve greater emission limitations than the current NSPS call for.

Besides helping to eliminate the possibility that states might compete for new industry by relaxing their pollution control regulations, tight standards on new sources increase the potential for long-term growth in an area by holding down today's air pollution, thereby permitting more construction in the future. Industries save money by installing pollution control systems when a new plant is built rather than retrofitting it at some future date.

By 1977, EPA had established NSPS for about 20 major industries, including steam generators, municipal incinerators, cement plants, sulfuric acid plants, petroleum refineries and storage tanks, iron and steel mills and a number of metal smelters.

Congress wanted faster action, so the 1977 amendments required EPA to set NSPS for all remaining major industrial source categories by 1982. Congress specifically told EPA to toughen its emission standards for new coal-fired power plants, which are among the most polluting industrial sources of pollution. The revised NSPS for coal-burning utilities, which were intensely contested by the industry, in effect require "scrubbers" or equivalent control technology on new plants (see box).

Mobile sources

Motor vehicle emission standards are another major element in the emissions control part of our nation's clean air program. Despite repeated administrative delays, legal extensions and waivers, progress has been made in controlling automobile emissions. For motor vehicles in operation in 1980, average emissions levels were reduced 35 percent for hydrocarbons, 43 percent for CO and 12 percent for NO_x, compared to uncontrolled vehicles. Control of heavy-duty vehicles such as pick-up trucks and vans, however, has lagged behind. Final emission standards for the growing fleet of diesel-powered cars, trucks, and buses required by the CAA will not be put into effect for several years, despite the fact that the fine particle emissions from diesel-powered vehicles are coated with thousands of potentially toxic chemicals.

In 1977, when automakers claimed that they could not tool up to meet the nationwide standards for 1978-model cars (even though they were already producing, on a lesser scale, cars that met California's more stringent standards), Congress relaxed the standard for NO_x and extended the deadline for meeting auto emission standards to 1981-model cars. In September 1980, in order to save the ailing domestic auto industry an estimated $600 million, EPA de-

Scrubbing and washing: Controlling sulfur oxides

Sulfur oxide (SO_x) emissions in the United States exceed 25 million metric tons annually—about a quarter of the worldwide total. Coal combustion is the largest single source. Sulfur, a natural contaminant of coal, is released into the atmosphere in the form of sulfur dioxide (SO_2) when coal is burned. In the atmosphere, the SO_2 is converted by the addition of oxygen to highly destructive sulfates. In the presence of water, sulfates can be converted to sulfuric acid, a component of acid rain. Dry, they are a substantial portion of the fine particulate pollution that afflicts most urban areas.

U.S. consumption of coal is expected to increase in the next few years as the country attempts to decrease its dependence on foreign oil; hence, the importance of carefully controlling SO_x emissions from coal-fired power plants and industrial boilers. Available technologies are outlined below.

Physical cleaning of coal involves a mechanical crushing and washing procedure to remove ash and other impurities such as pyrite, the mineralized form of sulfur found in coal. Coal cleaning improves fuel characteristics and reduces the bulk of the coal. It can bring significant savings for the user in the form of increased boiler reliability and lower transportation costs.

Chemical cleaning is needed to remove organic sulfur that is chemically bound in the coal. In one such experimental process, *microwave desulfurization,* heated crushed coal is exposed to microwave energy in the presence of calcium hydroxide. The result is calcium sulfite, which is removed along with other impurities when the coal is washed with water. Another process, *hydrothermal desulfurization,* is also in the experimental stages.

These cleaning processes remove sulfur before the coal is burned. Those described below remove sulfur oxides during or after combustion.

Wet scrubbing, also called *flue gas desulfurization,* is the method most commonly used to control SO_x emissions. A chemical absorbent, such as lime or limestone, suspended in water is sprayed or otherwise forced into contact with the flue gases as they move through a long chamber, known as a scrubber. The most difficult problem associated with some wet scrubbing processes is how to dispose of the large volume of sludge that is generated.

Dry scrubbing, a modification of this process, used only on low sulfur coal, combines hot exhaust gases with a fine slurry mist of lime or sodium carbonate. The resultant calcium sulfite and sodium sulfite particles are collected along with other particles generated by coal combustion in a *baghouse collector,* which functions like a giant vacuum cleaner. Fabric bags filter out particles while permitting cleaned gases to escape. Dry scrubbing uses much less water than wet scrubbing and is simpler to operate, though it is not as effective as wet scrubbing in removing SO_2.

Fluidized bed combustion, an experimental method of removing SO_x gases in the combustion area before they reach the smokestack, may be less costly than scrubbers. Crushed coal is mixed with limestone or dolomite in the heated combustion chamber. Air is blown into the chamber in such a manner that the limestone, which becomes suspended and moves in a fluid-like motion, absorbs the SO_2 released from the coal.

EPA is working to reduce the costs of these SO_x removal processes by trying to develop markets for the wastes they produce.

layed emission standards for light-duty trucks and heavy-duty vehicles from the 1983 model year to 1984.

To date, automakers have used two general approaches to lower emissions levels. They have modified engine design and adjustment so that fuel would burn more completely and the output of CO and hydrocarbons would go down. And they have added devices such as catalytic converters to the exhaust system to remove pollutants by changing unburned CO and hydrocarbons in the exhaust stream into CO_2 and water vapor.

Inspection/maintenance programs (I/M) can prevent deterioration in emission control systems whether they are caused by engine maladjustments, by switching to cheaper leaded gasoline in unleaded-only cars, tampering with emission control devices or by general deterioration and insufficient maintenance. In New Jersey, where an I/M program has been in operation since 1974, CO levels have gone down 40 percent while traffic volume was increasing. Since I/M programs also reduce emission of the hydrocarbons that are a factor in ozone formation, one can infer that these programs also indirectly reduce ozone concentrations. In addition to the clean air benefits, well-tuned engines can result in better mileage, hence lower fuel costs.

Enforcement

Examples of noncompliance by recalcitrant industries — six-year delays were not uncommon — prompted Congress in 1977 to strengthen the enforcement provisions of the Clean Air Act. EPA and the states were required to establish compliance schedules for major source violators through *judicial action* rather than through the administrative order process. States can file their own enforcement actions and in 1977 they took action against some 15,000 polluters. In 1979, EPA filed 119 civil or criminal enforcement actions as compared to just 22 such actions against violators in 1977. The 1977 amendments also require EPA to levy *noncompliance penalties* that cancel out any economic benefit that facilities might gain by delaying cleanup.

If the government fails to take action against polluters, concerned citizens can file suit and the courts have discretion to repay their legal expenses. In September 1980, the Sierra Club announced its intent to take legal action under the CAA against 20 major electric utilities that, they allege, are five years late in achieving compliance with air quality requirements.

Major industries that are not in compliance include integrated iron and steel facilities (only 13 percent in compliance) and primary smelters. In several western states, the metal smelting industry is the largest industrial polluter, yet a special exemption was included in the 1977 CAA that effectively postpones cleanup until 1988. One of the first bills into the 1981 congressional hopper was one that would extend compliance deadlines for steelmaking facilities for several years, to facilitate modernization.

Is the air getting cleaner?

The *1980 Annual Report* of the President's Council on Environmental Quality (CEQ) reported, "Available data suggest that, overall, the nation's air quality is continuing to improve, although serious problems exist in many areas, including some of the most densely populated."

CEQ examined a variety of air quality indicators in conducting its assessment, including trends in ambient concentrations, emissions trends and incidences of violations of the air quality standards. Between 1973 and 1978, despite increases in population, national average annual *concentrations* of CO, SO_2 and total suspended particulates had gone down in both urban and rural areas—evidence that the nation's air pollution control program is working. Average CO levels were down 33 percent, SO_2 concentrations dropped 20 per-

Synfuels

Assessment of the impacts of synthetic fuel development on air quality is just beginning. Every stage of such processes as coal liquefaction, coal gasification and oil shale—including mining, fuel conversion, refining, waste evaporation ponds and fuel use—requires examination. Though converting coal to a liquid or a gas may remove some of the emission control problems caused by direct combustion, such conversion creates new pollutants. Below are some preliminary indications:

- ☐ The use of synfuels in motor vehicles might increase emissions of carcinogenic organic compounds.
- ☐ Oil shale production would create airborne toxics, including a host of new ones for which no standards have been established; and available technologies may be inadequate to control even those toxic pollutants for which standards do exist.
- ☐ Much of the synfuel development is projected to take place in clean air regions. Unless adequately controlled, particles released into the air and aerosols formed in the atmosphere could degrade visibility in these regions.

cent and TSP levels were 7 percent lower, with ozone concentrations remaining constant.

The air quality in New York City was unhealthful 174 days of the year in 1978, the most recent year for which data are available, while in Los Angeles, there were 206 days when air pollution readings violated national standards. In 1980, L.A. residents were inflicted with the worst October smog siege in nine years. These levels, in the two metropolitan areas that together contain more than 8 percent of the nation's population, are substantial improvements from previous years, although they are still indicative of very serious air pollution problems.

In some American cities experiencing high growth, the air quality has actually been getting worse. Kansas City, for example, had 56 unhealthful days in 1978, ten times the number in 1974. Houston had 94 unhealthful days, almost three times the number in 1974.

The CEQ report cites data that indicate that from 1970 to 1978 annual *emissions* of particulates have dropped from 23.2 to 12.5 million metric tons and SO_2 emissions dropped 9.4 percent (though these trends might be reversed if utilities converting to coal do not control emissions). Carbon monoxide and volatile organic compound (or hydrocarbon) emissions remained fairly constant over the eight-year period. NO_x emissions increased 17 percent and are expected to continue to rise because of the growing trend toward using coal to generate electricity and the primitive state of control technology for this pollutant.

Vigorous efforts by federal, state and local officials are needed if we are to meet our national goal of air that is healthy for everyone to breathe. Despite trends in lower emissions, a study prepared for the National Commission on Air Quality found that of the 3,107 counties in the U.S., 536 with a total population of more than 140 million violate the ozone standard (including virtually the entire northeast), 235 counties exceed TSP standards, and 62 million Americans live in urban areas with unhealthy concentrations of CO. Another 21 million people in 84 counties are exposed to unsafe levels of SO_2, while 13 million reside in areas that violate NO_x standards.

Trends in fine particle and toxic pollutant emissions are harder to identify because monitoring stations generally sample only for criteria pollutants. However, in cities, the growing fleet of diesel-fueled vehicles will almost certainly worsen these problems, and in rural areas, synfuels developments could threaten air quality.

Getting the drift: Acid rain

When SO_x and NO_x gases are emitted into the air, they can rise high into the atmosphere where they sometimes are transformed into sulfate and nitrate aerosols. Depending on weather conditions, these aerosols can remain suspended in the atmosphere for days, and be transported thousands of miles with the prevailing winds, eventually falling to earth as dry particles or combining with water to form acid rain, dew or snow. The **long-range transport** and deposition of acids is the subject of much concern today, as we discover their effects on vegetation, soils, surface water and materials.

The SO_x and NO_x originate mostly at older, poorly controlled plants, particularly coal-fired power plants, located far from where the acid rain falls. (Auto emissions of NO_x are a secondary source.) Since many of these older plants, which emit an average of 83 pounds of SO_2 for each ton of coal burned, are expected to remain in operation for another 20 or more years, early relief from the average emissions of 12 pounds of SO_2 per ton from plants built to the specifications of the new source performance standard is not expected.

How acid is acid rain? Normal clean rain is slightly acidic because of the mild carbonic acid that is formed by the reaction of CO_2 with water. But the acidity of rainfall in the eastern half of the United States and Canada has increased about 50-fold over the past 25 years. Rainfall as acidic as lemon juice has occasionally been recorded. Acid rain has also been recorded in the Colorado Rockies, the Great Smokies, Northern Minnesota, Shenandoah National Park and elsewhere.

The effect of acid rain on high-altitute lakes has received a lot of attention. Many lakes have a natural acid-neutralizing system that keeps the water at a fairly alkaline level necessary for fish survival and reproduction. Unfortunately, many lakes in regions of the world that have been getting the heaviest doses of acid rain are underlain by granite or quartz, which is much less helpful than limestone or dolomite bedrock in buffering acid. Continued doses of acid rain or a sudden flush of acid runoff that may come with the spring snowmelt can overwhelm their buffering capacity.

The effects of acid rain on fish life and other aquatic organisms are startling. In Scandinavia, about 10,000 lakes are now totally devoid of fish and another 10,000 are threatened. The Swedish government has placed the economic loss to its commercial and recreational fishing industry at $50 to $100 million in 1973 alone. In the Adirondack Mountains of New York, 280 once pristine lakes known for their trout fishing now contain no fish at all. Critical levels of acidity have been reached in an estimated 2,600 lakes in Minnesota's Boundary Waters Canoe Area. Canada estimates that aquatic life in all of Ontario's 48,000 lakes may be threatened in the next decade, creating an international dilemma because Canadian officials believe that the bulk of the emissions contributing to the problem originate in the United States.

Effects on terrestrial ecosystems are more difficult to document. Scientists have reported that acid rain may cause long-term reductions in forest productivity and damage to some agricultural crops.

Ironically, the basic control strategy of the Clean Air Act itself, which focuses on minimizing *ground-level* concentrations rather than total *atmospheric* loadings of air pollutants, has complicated efforts to control long-range transport of acid pollutants. When polluters have opted to avoid harmful ground-level concentrations not by lowering their emissions but by building tall smokestacks, the result has been the widespread scattering of pollutants over large geographical areas, aggravating the acid rain problem.

Congress never intended to allow tall stacks to become a method for avoiding pollution control. Nonetheless, EPA permitted the construction of an estimated 429 stacks taller than 200 feet to be built since 1970, mostly by electric utilities. Of these, 36 exceed 800 feet in height, and half a dozen utility stacks are taller than 1,000 feet, the tallest of which is nearly a quarter of a mile high.

In order to discourage the use of dispersion techniques and intermittent controls, the 1977 CAA amendments clarified the original tall stack provisions in the law and directed EPA to tighten its policies. Stack height was to be limited to no more than two-and-a-half times the building height, or the height necessary to prevent excessive concentrations in the immediate vicinity of the source. However, by early 1981, EPA had not yet issued final regulations.

Another section of the CAA empowers EPA to regulate interstate pollution by disapproving SIPs that allow pollution from one state to

Global air pollution issues

Depletion of the ozone layer The stratosphere—a part of the atmosphere between 7 and 40 miles above the earth—contains a layer of gaseous ozone that serves as a protective barrier to shield life on earth from the sun's harmful ultraviolet radiation. The Clean Air Act requires EPA to regulate substances, activities and processes that may affect the ozone layer and endanger public health or welfare. A study by the National Academy of Sciences has shown that chlorofluorocarbon (CFC) emissions can deplete ozone in the stratosphere, which could cause a dramatic increase in the incidence of skin cancer. The United States and members of the European Economic Community have phased out use of CFCs as an aerosol propellant in spray cans. EPA is also considering regulating the use of CFCs as blowing agents in the manufacture of styrofoam and urethane foams and as a heat transfer medium in automobile air conditioners, refrigerators and freezers.

Carbon dioxide pollution Scientists now agree that the buildup of CO_2 in the atmosphere—mainly from burning coal, oil and gas—could bring about a general warming of the earth, because CO_2 absorbs the radiant energy that is bounced off the earth's surface. If, as predicted, worldwide use of fossil fuel doubles by the year 2050, the earth's temperature could rise 5° F on the average, with changes at the polar regions of up to 15° F. This "greenhouse effect" could warm the oceans, raise sea levels, change rainfall patterns and shift agricultural zones and desert areas — with enormous social and economic implications. Experts recommend several immediate strategies: burn less fossil fuel; maximize conservation and use of renewable energy sources; stimulate reforestation worldwide and restrict the rate of harvest in primary forests, because forests absorb CO_2.

contribute to violations of ambient standards in another state. But this section is largely ineffective in dealing with the noncriteria pollutants contributing to the acid rain problem and has not even been effective with respect to criteria pollutants, such as ozone, which can waft across state borders.

Some of the remedies EPA is considering include:

☐ requirements for mandatory coal washing;

☐ incentives to encourage the early retirement of old powerplants;

☐ development of NAAQS for fine particles including sulfates and nitrates; and

☐ passage of legislative authority to require retrofitting of certain existing sources with scrubbers and low NO_x burners.

Airing the issues

1981 is a critical year for determining whether the country will continue to pursue the goals and strategies laid out in the Clean Air Act. Regulations to implement the 1977 amendments are in proposed or final stages, and revised State Implementation Plans are gradually making their way through the review process. The difficult task of actually meeting the clean air standards is seriously beginning.

But just as these implementing tools are moving into place, the Clean Air Act is due for congressional review and reauthorization (it expires September 30, 1981). Members of Congress will be equipped with the report and recommendations of the National Commission on Air Quality and with recommendations from a new Administration that is not sympathetic to increased regulation. And, they will certainly be besieged by lobbyists of many different persuasions seeking changes in the law. The issues that are likely to be raised are easy to predict, but the outcome of the debate is not. This section outlines, in broad strokes, the positions being expressed by key actors in that debate.

Environmental perspectives

The National Clean Air Coalition (an organization of labor, health, public interest and environmental groups) is generally satisfied with the basic structure of the present Clean Air Act and is not anxious to see it altered.

Clean air advocates stress the following points:

☐ Air pollution controls save lives and dollars—14,000 premature deaths and 7 million extra sick days averted each year and an estimated $21.4 billion saved from improvements in human health, reduced soiling and cleaning costs for households, reduced damage to vegetation, crops and materials and increases in property values.

☐ Environmental regulations have created new jobs in manufacture and operation of pollution control equipment.

☐ Pollution control requirements under the CAA will not constrain energy development.

Clean air advocates cite public health and environmental protection as their major continuing goals. They advocate these *strengthening* amendments:

☐ faster regulation of toxic air pollutants, dozens of which are uncontrolled;

☐ a requirement for EPA to set a NAAQS for fine particles;

☐ rollback of SO_x and NO_x emission from poorly controlled, existing stationary sources to bring the acid rain problem under control;

☐ repeal of the special exemption for the smelter industry;

☐ more funds for enforcement; and

☐ improved opportunities for citizen participation.

These groups oppose weakening the present law and will ask Congress to preserve its key features by:

☐ resisting pressure to allow a "graying" of clean air (PSD) areas;

☐ retaining automobile emission standards;

☐ keeping the current method of setting NAAQS to protect sensitive members of the population with an ample margin of safety and continuing to insulate the standard-setting process from considerations of costs versus benefits, inasmuch as other portions of the CAA can and do properly take economics into account; and

☐ retaining deadlines for attaining ambient standards and requirements for offsets and lowest achievable emission rates for new sources in nonattainment areas.

State and local government viewpoints

Positions of state and local governments will vary considerably by region depending on an area's particular pollution problems and experiences; but the association of State and Territorial Air Pollution Program Administrators has made these tentative recommendations for changes they would like to see in the Clean Air Act:

☐ Reduce emissions from existing sources that contribute to acid rain on a "cost-effective" basis while continuing research.

☐ Improve the SIP process by giving states more discretion in issuing permits, with EPA retaining oversight authority;

☐ Give states more federal funding for implementing programs.

☐ Eliminate Class II and Class III increments, and the short-term increment for Class I areas, in the PSD program. Instead, use only a technology-based requirement for these areas and make it apply to more sources.

Industrial standpoints

Industry groups say that many portions of the Clean Air Act are too burdensome and costly and not adequately justified by scientific facts. They argue that some requirements are unnecessarily stringent and that the CAA affects not only air quality but jobs, prices, national security (by encouraging dependence on foreign sources of energy) and the future of energy and industrial development in this country.

The Business Roundtable, an association of industry executives, has made these recommendations:

☐ Base NAAQS on economic as well as health considerations and, in considering health effects, seek to protect only against adverse effects that cause permanent damage or incapacitating illness, not against reversible effects such as colds, flu or eye irritation.

☐ Drastically revise the PSD program to eliminate excess costs and time constraints by abolishing Class II and Class III increments and substituting the use of technology-based standards in clean air areas. Allow deterioration of air quality up to the NAAQS.

☐ Streamline the permit process.

☐ Make greater use of cost-benefit and cost-effectiveness analysis.

Other groups, such as the National Coal Association, suggest such changes as these:

☐ Make secondary air quality standards "exemplary" rather than mandatory.

☐ Give states rather than EPA primary responsibility for implementing the CAA.

☐ Set more realistic and reasonable deadlines and schedules.

☐ Subject the PSD program and visibility protection requirements to cost-benefit analysis.

☐ Conduct more research on acid rain before undertaking a regulatory program.

Among the proposals by other industry groups:

☐ Relax the NO_x standard for automobiles.

☐ Eliminate offset requirements in dirty air areas.

☐ Allow use of intermittent, as opposed to continuous, control techniques.

Citizen action

The importance of public pressure on industry and all levels of government to enhance, protect and maintain air quality can not be overestimated. Here are two important steps you can take:

☐ Meet with local, state and regional officials to learn more about the air quality situation in your state. Has your revised State Implementation Plan been approved? Does your state agency have adequate qualified personnel to monitor and enforce the plan? What are the most important air pollution problems in your area?

☐ Follow regulatory and legislative developments and let your senators and representatives know your stand on the issues. Make your views known to members of the Senate Committee on Environment and Public Works, the House Committee on Energy and Commerce and the Subcommittee on Health and Environment, which have jurisdiction over the Clear Air Act reauthorization.

Researched and written by Deborah A. Sheiman, Staff Specialist, LWVEF Environmental Quality Department.

Order from League of Women Voters of the United States, 1730 M Street, NW, Washington, DC, 20036. Pub. No. 222, 75¢.

. . . Will Take Your Breath Away!

Dear League Member:

We're now facing one of our biggest challenges of the 97th Congress as the House of Representatives and the Senate prepare to vote on changes in the Clean Air Act. What happens in these floor votes will also make a difference in the political climate as other important legislation comes up for action, including the Clean Water Act.

The Clean Air Act, passed in 1970 and strengthened in 1977, has been responsible for improving air quality, protecting human health, and preventing environmental degradation. The Council on Environmental Quality has estimated that clean air translates into benefits in excess of $21 billion, including countless illnesses averted and more than 13,000 lives saved. Despite the proven success of this law, industrial interests, with the support of the Administration, have launched an all-out attack to destroy the act. They are trying to flood Congress with letters against the act by massive appeals to stockholders, auto dealers, and other local interests.

We have to win big this time. Since your representative may vote either way on this important issue, what you do can make all the difference. Even if your representative or senators have not generally supported League positions in the past, this is such an important and popular public health issue that broad congressional support is possible.

Because votes won't occur for a few weeks, we are mailing this alert bulk rate. This way we can afford to mail to many more League members than would be possible with a first-class mailing. But this alert is as urgent as any mailgram or telephone call.

Please take a few minutes now to write to your representative to say you support a strong Clean Air Act. Urge him or her to work with Representative Henry Waxman, who will be leading the efforts to protect the act. And, if you can, write to one or both of your senators. Tear off and send back the response card so we can assess the impact of this special grassroots alert, and, if you wish, inform you of last-minute dangers.

We thank you for doing all you can.

Sincerely yours,

Ruth J. Hinerfeld,
President

Merilyn Reeves
Natural Resources Coordinator

The League of Women Voters is working on clean air as a member of the National Clean Air Coalition:
American Lung Association • Amalgamated Clothing & Textile Workers • Americans for Democratic Action • Center for Auto Safety • Citizens for a Better Environment • Environmental Defense Fund • Environmental Policy Center • Environmentalists for Full Employment • Friends of the Earth • International Association of Machinist & Aerospace Workers • Izaak Walton League • League of American Bicyclists • League of Women Voters • National Audubon Society • National Consumers League • National Farmers Union • National Parks & Conservation Association • National Wildlife Federation • Natural Resources Defense Council • Oil, Chemical & Atomic Workers International Union • United Steelworkers of America • Sierra Club • The Wilderness Society • Western Organization of Resource Councils.

THE CLEAN AIR ACT

What It Does For You

The Clean Air Act was one of the first important environmental laws. It:

- requires the U.S. Environmental Protection Agency to set limits on how much pollution is permitted in the air you breathe. Standards to protect your health and the environment have been set for such important pollutants as sulfur dioxide, carbon monoxide, ozone, oxides of nitrogen, hydrocarbons, lead, and particulates.
- requires states to meet these limits on a fixed but reasonable timetable.
- sets stringent limits on pollution emissions from all new industrial facilities.
- allows industrial construction in places where the air is still unhealthy **only** when total emissions are reduced by clean-up at other nearby sources.
- keeps the air clean in areas where the air meets the health standards. The grandure of our parks and wilderness areas is protected. Elsewhere, it allows carefully controlled new pollution sources.
- requires the auto industry to clean up pollution from cars, trucks and other vehicles — a goal they have nearly attained. This is critical to ensure healthy air in our cities.
- requires the Environmental Protection Agency to prevent emissions of toxic, cancer-causing air pollutants, such as mercury, cadmium, and asbestos.

The act has worked well so far, but needs to be strengthened to better control the damage now being caused by toxic pollutants and acid rain.

Industry complaints — often exaggerated — can be met with modest streamlining changes that will not compromise our national clean air program.

The Current Situation

Over the past few months, opponents of the Clean Air Act have launched an all-out campaign to weaken it, flooding the offices of members of Congress with mail and filling the halls with lobbyists. We have done our best to counter this, and even now, most senators and representatives have not taken positions.

By the time you get this alert, the House Energy & Commerce and the Senate Environment & Public Works committees, which have jurisdiction over this issue, will be well along in their discussions, and clean air legislation will be nearing floor debate in both the House and the Senate.

In the House, **Representative Henry Waxman,** a California Democrat, will be leading the effort to protect and strengthen the act. Waxman is chairman of the Subcommittee on Health & the Environment.

In the Senate, **Senator Robert Stafford** of Vermont will be the champion of a strong act. He is the Republican chairman of the Environment & Public Works Committee.

It's too soon to be certain which amendments will be up for votes in the House or Senate. But the message we must convey to all members of Congress is simple: **We want them to work with Rep. Waxman and Sen. Stafford to protect and strengthen the Clean Air Act.**

THE CLEAN AIR ACT

What Industry Wants To Do To It

Opponents of a strong Clean Air Act claim they want to make only minor changes in the current law, changes that will not hurt the environment or endanger human health. **But their changes would:**

- **delay** by almost a decade the clean-up of areas that do not yet meet minimum health standards, areas where 154 million Americans live;
- **double** auto emissions, increasing the threat to the 62 million people who now breathe unhealthy levels of carbon monoxide, ozone, or oxides of nitrogen;
- **degrade** visibility in our cleanest regions, our parks and wilderness areas;
- **abandon** the program to protect unpolluted rural areas — some 90% of our nation — from heavy new doses of pollution;
- **aggravate,** rather than control, the problem of acid rain, which is destroying life in our streams and lakes; and
- **continue** to allow thousands of cancer deaths all across the country by ignoring toxic air pollutants.

WRITE NOW!

Your letters now can make a difference. They will show members of Congress that the public cares about the Clean Air Act — and about other environmental legislaton that will come up this year.

(1) Write to your member of the House. (Call your local library if you don't know his or her name.) Address: Honorable _____, House Office Building, Washington, D.C. 20515.

Urge that your representative oppose efforts to weaken the Clean Air Act. Ask him or her to work with Rep. Henry Waxman to keep this act strong when the full House considers it. Tell him or her not to be fooled by so-called "moderate" amendments that would really cripple clean air programs.

(2) If you can, write to one or both of your senators. Address: Honorable _____, Senate Office Building, Washington, D.C. 20510. Give them the same message, but ask them to work with Senator Robert Stafford when the issue comes before the full House.

(3) Return the card to the right.

Please detach and return this card. This will help us assess our impact and let us know if we can count on your additional help in case last-minute messages to Congress are needed.

☐ I have written to my representative.

☐ I was also able to write to my senator(s).

☐ If the Clean Air Act is in serious trouble, please contact me by phone. My number is

(_____) _____ home

(_____) _____ work

Please remove your peel-off address label from the front of this mailer and place it here.

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League of Women Voters of the United States

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Legislative Action Dept.
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Washington, D.C. 20036

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Polluting Industries are Flooding Congress With Letters

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What Some People Want To Do To The Clean Air Act . . .

. . . Will Take Your Breath Away!

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DEC. 8 1981

TO: LL Presidents, 2nd copy to EQ or Air Chairman; DPM
FROM: Meg Titus, Air Assoc. Director
[redacted]

RE: AIR QUALITY

LWV-Texas
December 1981
LL Pres. Mailing(2); DPM
II. A. 1. a.
Program - Air

THE TIME IS NOW!! Vice President Bush needs to hear from you. We need to protest to him, as Chairman of the Task Force for Regulatory Relief, that we don't want the Environmental Protection Agency (EPA) decimated. Read the letter below for particulars on his and EPA Administrator Anne Gorsuch's proposals which cut both the budget and personnel of EPA so drastically that they will no longer be able to enforce our environmental laws.

LWVUS says the time is right to let VP Bush know (with carbons to your Senators and Representative in Washington) that Texas Leagues don't want the EPA destroyed from the inside. Sometime between now and New Years try to find a moment to stop what could be an effective repeal of environmental laws.

* * * * * * *

(following letter sent on November 23, 1981)

Dear Vice President Bush:

The League of Women Voters of Texas is deeply concerned that the proposed Environmental Protection Agency budget cuts of 12% each in April and September, plus another 20% cut said to have been proposed by Administrator Gorsuch, plus at least a 20% loss of purchasing power due to inflation will effectively dismantle the EPA. We concur with the comments of Senator Stafford that "Decreases of such magnitude could amount to de facto repeal of some environmental laws."

These drastic budget cuts, coupled with Ms. Gorsuch's proposal to terminate 30.8% of the agency personnel by 1983, we believe would devastate the agency.

Our organization worked hard during both the drafting of the Clean Air Act in 1970 and the 1977 amendment process to develop a strong Clean Air Act. The most recent Harris Survey on public attitudes toward the CAA confirmsour belief that the public wants, and is willing to pay for, a strong and protective CAA. We are confident that the proposed deep budget and personnel cuts do not conform to the intent of the various environmental laws regulating clean air, clean water, and hazardous wastes as passed by our Congress. Indeed, Congressman Florio's analysis calling Ms. Gorsuch's action "willful failure to uphold the laws protecting the nation's environment" seems accurate from our perspective.

Before final budget decisions are made, the League of Women Voters of Texas urges you to make a careful examination of the record of the EPA. We think you will find little "fat" in either budget or personnel. We further urge that the proposed drastic budget cuts not be made as the ability of the EPA to carry out the mandates of the Clean Air Act and other environmental legislation will be destroyed -- a responsibility the TFRR (Task Force on Regulatory Reform) cannot assume.

Thank you for considering our concerns in this matter.

cc: Senators Stafford, Hart, Bentsen
Representatives Wright, Frost, Mattox, Gramm, Florio

Sincerely yours,
Diana Clark, President
Meg Titus, Air Quality

\# \# \# \# \#

SPEAK NOW, OR FOREVER

You breathe 17,000 times each and every day. But the air you breathe is far from clean. Life-threatening chemicals contaminate each breath. Other pollutants destroy plant and animal life, cause smog and ruin visibility.

Yet industry lobbyists and the Reagan administration are mounting a massive campaign to destroy the best weapon we have for protecting ourselves from air pollution — the Clean Air Act. Unless we act now, we and our children can look forward to more cancer, more heart and lung disease and more acid rain.

The fate of the Clean Air Act is about to be decided by Congress. So speak now, or forever hold your breath.

- **Double** carbon monoxide and nitrogen oxide emissions from new automobiles. New cars would be dirtier than those now being produced.
- **Delay** deadlines for achieving healthy air.
- **Relax** pollution control requirements for new factories and coal-burning power plants. Future industrial facilities would be dirtier than plants being built today.
- **Do nothing** about acid rain but "study" it, while the measures described above make this serious problem even worse.

In the House, most of industry's ideas for gutting the Clean Air Act are contained in legislation proposed by North Carolina Congressman James Broyhill. Taken together, the Reagan/Watt/Gorsuch proposals and the Broyhill bill are an extreme attack on our nation's clean air standards.

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ly on them. Acid rain, sometimes as acidic as vinegar, has been measured in all parts of the country, including the Adirondacks, the Rockies, the Smokies and the Boundary Waters of Minnesota. Forty-eight thousand Canadian lakes are also threatened.

The main contributors to acid rain are automobiles and large coal-burning power plants. The pollutants and particulates from these sources also damage visibility, even in our national parks.

Clean Air and the Economy.

Opponents of a strong Clean Air Act repeatedly charge that stringent pollution controls are incompatible with a healthy economy. The facts simply do not support this rhetoric.

Accusation: The Clean Air Act causes inflation.

Fact: The National Commission on Air Quality, a congressionally mandated multi-year study of the Clean Air Act, concluded, "The effect of the Act's requirements on national economic indicators [inflation and GNP] has not been significant."

Accusation: Federal pollution control requirements have thrown thousands of people out of work.

Fact: The EPA this year concluded: "Jobs are created in the pollution control equipment industry and in all industries to operate and maintain pollution equipment and facilities. By 1987, there [will be] a net increase of 524,000 additional jobs as a result of pollution controls."

Accusation: The benefits of the Clean Air Act are dwarfed by the costs it imposes on industry.

Fact: The most comprehensive cost/benefit survey available, prepared for the President's Council on Environmental Quality in 1979, concluded that benefits substantially outweigh costs, by $21.4 billion to $17 billion.

Accusation: Auto emission regulations have seriously hurt the American automobile industry.

Fact: The National Commission on Air Quality concluded that factors such as interest rates, petroleum prices and foreign competition, and not pollution requirements, are responsible for the problems of the U.S. auto industry. Moreover, our auto industry is already meeting most of its emission control requirements. All of this year's gasoline powered cars meet the nitrogen oxide standard and 70 percent meet the carbon monoxide standard.

SPEAK NOW

Because Congress
children will have clea
can do to protect your

Write your two Sena
them that you support
That's right. A pen and
stamp are the best wea

Tell your elected rep
Act that:

- Protects the health
- Effectively controls
- Keeps the PSD and
- Removes toxic chem
- Retains strong auto

Your legislators can be

The Honorable _____
U.S. Senate
Washington, D.C. 2051

The U.S. Capitol switc

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HOW DOES THE CURRENT CLEAN ACT WORK?

The Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set standards limiting the amount of pollutants in our air. Each state then develops and carries out its own plan (the State Implementation Plan) for achieving the federal standards within deadlines set by the law — either 1982 or 1987 depending on the pollutant. Costs are considered in choosing control strategies to meet the standards.

EPA has so far focused primarily on seven widespread pollutants — sulfur dioxide, carbon monoxide, ozone (a major component of smog), nitrogen oxide, hydrocarbons, lead and particulates. Primary air quality standards are supposed to be set at levels that provide an ample margin of safety for the health of sensitive individuals. Secondary standards are supposed to be set at levels that protect wildlife, vegetation and property.

In places where the standards have not yet been met (non-attainment areas) new plants can be built if pollution is kept to a minimum and is offset by a reduction in emissions from another source in the area. This policy allows industrial growth while maintaining progress toward clean air.

In areas where the air already meets the standards, the Clean Air Act keeps the air clean through the Prevention of Significant Deterioration program (PSD). In major national park and wilderness areas (Class I), no appreciable increases in pollution are allowed. Special regulations safeguard visibility in these areas from pollution originating elsewhere. In other areas (Class II and III), substantial growth of new factories is allowed, but they must meet stringent pollution control requirements.

The Clean Air Act also requires the auto industry to control pollution from cars, trucks and buses (mobile sources). These emissions alone often prevent urban areas from meeting minimum health standards.

Environmental Action, the Environmental Defense Fund, Friends of the Earth, the Izaak Walton League of America, the League of Women Voters of the United States, the National Audubon Society and the Sierra Club belong to the National Clean Air Coalition, a group of labor, health, farm, citizen and environmental organizations working to save and strengthen the Clean Air Act.

Other members of the coalition include: the American Lung Association; Americans for Democratic Action; the Center for Auto Safety; Citizens for a Better Environment; Environmental Policy Center; Environmentalists for Full Employment; the International Association of Machinists and Aerospace Workers; the National Consumers League; the National Farmers Union; the National Parks and Conservation Association; the National Wildlife Federation; the Natural Resources Defense Council; the Oil, Chemical and Atomic Workers; the United Steel Workers of America; the Wilderness Society; and the Western Organization of Resource Councils.

For further information, please contact the National Clean Air Coalition at 530 7th Street S.E., Washington, D.C. 20003, Phone 202/543-8200.

NATIONAL CLEAN AIR COALITION

8/2+/81

Blueprint for Clean Air

Air pollution can make your eyes water and your throat burn. It can cause dizziness, blurred vision, coughing, chest discomfort and impaired breathing. During episodes of heavy air pollution, scores of people come to hospital emergency rooms with serious breathing problems, and premature deaths from heart and lung diseases jump dramatically. Furthermore, many scientists are convinced that air pollution contributes to three major types of chronic disease that kill millions of people annually—heart disease, lung disease and cancer.

Besides these health effects, dirty air has other impacts. It injures crops, flowers, shrubs and forests; it corrodes and dirties buildings, statues, fabrics and metals. When air pollution emissions return to the earth in the form of acid rain, populations of fish and other organisms in sensitive lakes can be decimated. Air pollution can impair visibility on the highway and in national parks. And, it may even be altering the earth's climate.

The Clean Air Act: The nation's plan for clearing the air

In response to a growing awareness about the health effects—both acute and chronic—of air pollution and the involuntary nature of exposure, Congress enacted the first U.S. legislation to control pollution in 1955 to provide technical assistance to states. Th- nal **Clean Air Act (CAA)** passed in 1963, 1965 and 19- ments and the Air Quality Act of 1967 all suffered problem. The approach relied solely on voluntar states and, in the absence of federal req were unwilling to adopt strict controls h put them at a competitive disadvar

The historic *Clean Air Act A-* the first comprehensive p- wide, set a variety of l-

☐ The newly est- **(EPA)** was re standard

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The Dollars and Sense of Environmental Regulation

With headlines on spiraling inflation, plant closings and energy shortages running alongside stories about declining productivity, high unemployment and government spending, the public debate over environmental clean-up has increasingly come to be dominated by economic considerations. Industry groups complain that required pollution control expenses and growing government red tape are strangling them. They argue that environmental regulation impedes innovation and the introduction of new products onto the market. Moreover, they claim that these regulations force them to divert capital from more directly productive investments to install pollution control equipment. And they blame expensive pollution controls for fanning inflation and forcing closure of plants, with the resultant job loss. Environmental advocates submit that the original objectives of environmental laws have been obscured by too much emphasis on the costs of cleaning up pollution. They note that environmental

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-ne letter. But the differences

between the levels of pollution control technologies and associated expenses they represent are of vital concern.

Among the key questions that will be considered in the debate:

☐ What has been achieved by air pollution control efforts in this country?

☐ Are enforcement and regulatory provisions of the Clean Air Act adequate and effective for achieving healthful air quality?

☐ What pollutants remain uncontrolled?

☐ What are the energy, environmental, health and economic impacts of implementing the Clean Air Act?

Chief goal of the CAA: To protect public health and welfare

The Clean Air Act is focus- -marily on controlling the seven most common and widesp- -nts—sulfur dioxide, particulates, carbon monoxide oxides, hydrocarbons and lead. These are c- s because EPA is required to compile -ation on their health and environ- -nts" (see chart). This compi- s the basis for setting **Na- AAQS),** which set a limit ambient air (that is, the

that researchers confront when they undertake ben- *human health,* allow- efits analyses; bers of the popula-

- reviews a study that has attempted to synthesize pollution control benefits; , and sick people.
- provides a checklist of some of the benefits of environmental regulation; ncentrations that
- examines how cost estimates are derived; enting injury to
- discusses a report that says the impacts of environmental regulation on inflation and unemployment have been exaggerated; and als and prop-
- examines the controversy surrounding the role of environmental regulation in decisions concerning pollution control programs.

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Measuring the benefits of pollution control

In the 1970s, when many environmental laws were ver, nabits, isolate the health. Because involved in interpret- constitutes an adequate process has been quite con- he standard for ozone (smog) in cent, public health advocates charged properly considered, while the American contended that the standard was still far more necessary.

ard for carbon monoxide (CO) was the second criteria to undergo review. In August 1980, EPA proposed a somet tighter standard based on the need to protect people with heart ailments during periods of moderate exercise. A final decision on the standard is expected by spring of 1981.

EPA is currently reviewing the NAAQS for nitrogen oxides (NO_x), sulfur dioxide (SO_2) and total suspended particulates (TSP); possible changes are not likely to be proposed before late 1981. Among the issues to be considered:

☐ *Limiting short-term exposures to nitrogen oxides (NO_x)* The current standards consider only annual averages, not recognizing the detrimental health effects of brief exposures during peak traffic periods. Annual averages can hide episodes of high concentrations

With the debate over the Clean Air Act (CAA)--now up for renewal--heating up, the LEAGUE OF WOMEN VOTERS EDUCATION FUND is offering two publications guaranteed to provide a fresh, straightforward examination of the facts.

Blueprint for Clean Air gives citizens and organizations the accurate background review they need before speaking out on the CAA's reauthorization. Blueprint lays out, in plain and readable language

...the history of the law--the court fights and the regulations;
...the concepts underlying the law itself and the enforcement approaches now being used;
...health and environmental effects of regulated pollutants and the status of each;
...the lead players in the current fight--and their key arguments. 1981, 8 pp., #BP222, 75¢.

And, for a more general background review, The Dollars and Sense of Environmental Regulation provides an easy-reading look at the economic aspects of pollution control programs--the benefits, the costs, and the impacts on jobs, inflation and GNP. Dollars and Sense plunges right into the controversial areas of cost/benefit analysis, risk/benefit analysis and alternative approaches to environmental decision making. 1980, 6 pp., #BP514, 50¢.

To brief yourself, your members and others in your community on the issues at stake in this key environmental fight, order Blueprint for Clean Air and The Dollars and Sense of Environmental Regulation. While you're at it, consider these related League publications:

★ Coal Use and Clean Air: Goals in Collision? focuses on a dilemma facing us all, as increasing coal use impacts on clean-air objectives. 1978, 4pp., #BP179, 30¢.

★ Cleaning Up the Nation's Cities asseses national efforts and outlines current research on pollution control strategies. 1978, 12pp., #BP135, 75¢.

★ Are Jobs Really the Price of a Clean Environment? presents facts and viewpoints on the alleged conflict between jobs and pollution control. 1977, 6pp., #BP400, 40¢.

★ A Toxics Primer discusses effects of exposure to toxic materials; defines some technical terminology; reviews government programs; outlines views of public interest groups and industry. 1979, 12pp., 4x9, #BP545, 40¢.

★ Media Kit includes Reaching the Public; Getting into Print; Setting Up a Speakers Bureau; How to Produce a Slide Show; Breaking into Broadcasting. #BP163, $1.

★ Making an Issue of It: The Campaign Handbook gives step-by-step instructions on managing, coordinating and executing a lobbying campaign. 1976, 12pp., #BP613, 75¢.

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LEAGUE OF WOMEN VOTERS OF THE UNITED STATES
1730 M Street, NW, Washington, DC 20036

6/22/81

TO: LL Presidents, 2nd copy to Air or EQ Chairman; DPM; St. Order
FROM: Pearl Wincorn, Texas Coordinator, National Clean Air Coalition
RE: Local League Liaison to Clean Air Coalition

LWV-Texas
May 1981
LL Pres. Mlg.(2); DPM;St. Ord.
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Program - Air

"Acid rain does fall in Texas," says the Texas Air Control Board (TACB) in its February 1981 report "Air Quality in Texas."* Natural soil alkalinity in Central Texas may buffer acid rain there. However, recent measurements show that rainfall in East Texas, particularly Tyler, is six times more acidic than normal.** Acid rain occurs when oxides of sulfur and/or oxides of nitrogen dissolve in rainwater.

TENRAC (Texas Energy and Natural Resource Advisory Council) predicts that lignite production in Texas, which now provides 7 percent of Texas fuel, will rise to 31 percent by the year 2000. TENRAC also says that conversion to coal will mean a 50 percent increase in sulfur dioxide (SO_2) statewide, a 29 percent increase in nitrogen dioxide (NO_2) and a 4 percent increase in particulate levels.

Greater Houston has 22 percent of the U.S. refining capacity and the largest concentration of petrochemical plants. More than 100 volatile organic compounds of hydrocarbons, many carcinogenic, are found in Houston's air. The high concentration of petrochemical plants contributes to the Gulf Coast having one of the highest cancer rates in the nation. Motor vehicles account for 35 percent of non-methane hydrocarbon emissions in Texas and are a major source of other contaminants.

A strong Clean Air Act is essential if this dangerous situation is to be improved, and that is an important objective of the League of Women Voters.

Unfortunately, the groups attacking the Clean Air Act are powerful and well organized. Local Leagues can be effective by

+ cooperating with or spearheading coalition formation on this issue in their areas, starting now;
+ appointing a League person to be the liaison with the Texas Coordinator for the National Clean Air Coalition, Pearl Wincorn, 7226 Birchwood Dr., Dallas 75240;
+ Letting your Congressional representative know your concern over weakening of the Clean Air Act.

Information is available in two new LWVEF(US) publications: Blueprint for Clean Air (#222, 75¢), and Dollars and Sense of Environmental Regulations (#514, 50¢), and in Report from the Hill.

Additional information and alerts will come from the Texas Coordinator.

* Issue Paper, Acid Rain in Texas, Air Quality Data Analysis, TACB, February 1981.
** House Study Group, Special Legislative Report Number 65, February 3, 1981. Room 307 Reagan Building, Austin, TX 78701.

- -

League of Women Voters of _____

Liaison to Clean Air Coalition: _____

Address: _____ Zip: _____

Please mail to: Pearl L. Wincorn
NCAC
7226 Birchwood Dr.
Dallas, TX 75240

Phone: ( ) _____
A/C

# # # #

This Citizen Information Pamphlet has been prepared by the U.S. Environmental Protection Agency to discuss the specific steps which EPA is considering to reduce air pollution from gasoline/petroleum sources in several areas of Texas. It has been written to respond to the questions most commonly asked by Texans.

This process will be highlighted by a public hearing on EPA's plan for all of the affected areas.

The public hearings will be vital factors in EPA's decisions. Specific measures which EPA is considering fall into three general categories. These include:

- *Traffic control initiatives* ranging from improved mass transit in heavily polluted areas to programs encouraging carpooling and reduced automotive traffic from suburbs to central business areas.
- *Inspection and maintenance programs* to ensure that pollution control equipment on area automobiles is functioning properly so that emission standards on new and used vehicles are achieved.
- *Controls on non-automotive sources* such as crude oil storage vessels and filling stations that emit gasoline/petroleum type substances.

Several segments of the community will be affected by this program. A diversity of viewpoints and suggestions have, therefore, been solicited by EPA in an effort to develop a fair and equitable plan for Texas.

Now it is your turn. You should make certain that your voice is heard at this important public hearing. You don't have to be a technical genius or a professional planner to contribute positively to this process. Many of the ideas that EPA is considering, particularly the *traffic control initiatives* are general in nature or suggestions for local governments and citizens to consider.

EPA has been mandated by Federal law with the task of proposing these clean air plans. It doesn't claim, however, the familiarity with local conditions or unique insights that residents of the affected areas can come up with to reduce automotive traffic in constructive ways. Your assistance and the cooperation of State and local authorities are needed if clean air is to be achieved in Texas.

EPA is not out to take your car away or make it impossible for you to use it. They remind you, however, that the automobile is still the number one polluter in the State of Texas. The most they're asking is that you think about your transportation habits and make some changes, where possible.

1. Why is an inspection and maintenance program a requirement in the EPA air pollution program proposed for some areas?

- American and foreign automobile manufacturers have made significant progress in producing vehicles that pollute less than vehicles produced before 1968. Like any other kind of machinery, however, it can lose efficiency or break down completely if not treated with care. Every pollution control device, including the newer catalytic converters, have to be properly maintained or they will lose their effectiveness. Most cars, and especially the newer ones, are designed to have low emissions. If properly maintained they will have low emissions, in addition to all the other benefits of a properly running car, including fuel economy. These vehicles must also have low emissions to protect the public health from the harmful effects of air pollution. With the continued growth expected in the Texas automobile population as well as the probable growth in the number of miles travelled by most vehicles in the area, achieving clean air is dependent on a periodic program that ensures the proper maintenance of all vehicles that emit unacceptable levels of pollution.

2. What kind of pollution reduction might a motorist expect who is required to have maintenance performed on his/her automobile?

- An average pollution reduction varying between *10* and *15%* can be expected — and this is a very conservative estimate. A recent survey taken by EPA in Houston determined that automobiles without proper maintenance were emitting *35* to *48%* more carbon monoxide and from *18* to *30%* more hydrocarbons than properly maintained vehicles. These kinds of reduction are an indispensible part of the total areawide program to reduce air pollution to acceptable levels.

3. Will a well maintained car burn more gasoline?

- No. In almost all cases better fuel economy will result. EPA studies have concluded that the average car will have *5* to *10%* better fuel economy after proper maintenance is performed.

4. Won't the poor and the elderly on fixed incomes who tend to own a disproportionately large percentage of older vehicles with poorer emission control systems be hard hit by the inspection and maintenance program?

- Not necessarily. Emission limitations for individual automobiles are measured according to the type of car and year of manufacture. Older cars will generally require less stringent requirements than newer ones and the fuel economy factor would again tend to balance out the cost of the maintenance. Provisions can also be made to exempt certain vehicles which, even when properly tuned, would not fully meet air quality standards.

5. Won't the State of Texas have to set up elaborate and expensive inspection systems and machinery in areas affected by the inspection and maintenance program?

- No. Current plans call for the emission inspection program to be integrated into the annual safety inspection program which is administered by private garages throughout the State of Texas. Inconveniences to the motorist as a result of the emission inspection program should be slight as safety and pollution inspection as well as maintenance can be performed at the same time.

6. What kind of expenses can affected motorists expect to incur as a result of the inspection and maintenance program?

- A number of variables must be considered in determining these costs. The cost of simply having a car inspected will average between *$3.00* and *$4.00.* All automobile owners in affected areas will have to pay this cost. EPA has estimated that the average cost for maintenance on failed vehicles will average about *$30.00.* At the same time the existing studies on inspection and maintenance which indicate a fuel saving of between *5* and *10* percent should translate into a monetary figure between *$20.00* and *$25.00.* The average cost to motorists requiring maintenance, therefore, will average about *$10.00* when all factors are considered. These figures also do not include the chances for longer vehicle life that are increased through periodic maintenance programs, nor the costs saved in replacement of expensive parts.

7. Won't there be administrative and technical difficulties by both the State of Texas and affected private garages when the inspection and maintenance program is implemented?

- There will undoubtedly be some difficulties but there are several factors present in Texas and in the proposed plan itself which will mitigate these problems. The first factor is that an established inspection program already exists for safety and this will provide the structural basis for the emission program. Secondly, the program is scheduled to be phased in gradually over a two year period in a manner that will enable motorists to become familiar with the requirements and allow time for the installation of needed inspection equipment and personnel.

8. Aren't motorists being unduly penalized in this clean air program when so many sources of pollution come from industry, commerce and other non-automotive segments of the Texas population?

- No. In addition to the inspection and maintenance program and the positive ways communities can initiate to reduce automotive traffic, broad but reasonable controls are also being placed on stationary sources that emit pollutants into the atmosphere similar to those produced by automobiles. These include:
  - gasoline stations where emissions from gasoline delivery trucks to filling pumps and from filling pumps to automobiles will be controlled.
  - large holding vessels containing crude oil products.
  - ships and barges that transport petroleum products and related products.
  - operations that employ a petroleum based solvent as a detergent to grease machinery and other industrial equipment.

9. Will EPA's proposed air pollution control program handicap economic development in Texas and in the individual areas where plans must be implemented?

- There may be marginal difficulties affecting a few specific sources but the total costs for this program must be placed into a proper perspective. According to EPA studies, the cost of air pollution in terms of the public health, effects on property and vegetation and the general quality of life will rise to *$25 billion annually* if uncontrolled. In contrast, the cost for controlling air pollution, including emission controls on motor vehicles is estimated to be only *$10.7 billion* per year for the ten year period between 1971 and 1980.
- The proposed total air pollution abatement package for Texas *($250-300 million* for a *five* to *20* year period) sounds expensive but it represents only about *9.4%* of the gross Texas product for 1974.

10. What impact will all the measures being proposed by EPA have on energy conservation in Texas?

- A very positive one. In Houston alone, EPA projects that *2 to 3 million* gallons of gasoline will be saved annually by simply implementing portions

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of the program affecting gasoline delivery. When the savings from improved mass transit and carpooling and the inspection and maintenance program are factored in, the annual fuel savings for the Houston area alone approximate *6 million gallons.*

11. Even if these measures are beneficial, can Texans, who are so automobile oriented really cut down on their driving?

• If properly implemented, these measures which EPA has suggested specifically for reducing automobile traffic should not disrupt the State's economy nor should they unduly inconvenience State commuters and shoppers. For example:

Dial-a-bus service can be structured to gravitate to areas of a community where commuter demands are greatest and it affords the commuter the opportunity to remain at home until the bus arrives rather than having to wait at a bus stop.

Park-and-ride facilities can enable suburban commuters to save fuel by reducing long distance daily travel between outlying areas and the downtown. Particularly appropriate for most areas of Texas where long distance commuting from suburb to center city is the rule rather than the exception.

Exclusive bus/carpool lanes can function to complement park and ride facilities and dial a bus service by insuring that commuters who use these systems experience no traffic tie ups.

Vehicle-free or bus only zones have proven to be an aesthetic and commercial success in several European cities where merchants have clamored for their retention. Business has actually improved as a result of the elimination of congested traffic that previously made shoppers reluctant to drive into the area. While Texas cities are far different from European ones (Dallas-Amsterdam), variations on the European experience may be helpful in some areas of the State to reduce congestion that worsens air pollution locally.

Restriction of on Street Parking in central business areas and in some areas of major shopping centers can insure that a few parked vehicles don't force bottleneck tieups that inconvenience a far larger number of vehicles that want to pass freely through the area.

Commuter/Computer carpool matching system can make it more convenient for motorists to team up with other commuters to reduce air pollution and conserve energy. The grid system approach of bunching people up geographically is particularly adaptable to Texas where dispersed populations and shopping centers form the structural base of so many communities.

Employer incentive plans which require large business and commercial concerns to do all they can to make it convenient for employees to commute to work in ways that will reduce their reliance on driving to work alone. Measures such as giving free or bargain rate parking to employees who carpool, free tokens for employees who take the bus, measures to stimulate door to door mass transit service etc., can be utilized. Employer incentive plans can function to complement the previously noted measures for reducing automotive traffic to clean up Texas's air.

CLEAN AIR AND YOU

U. S. Environmental Protection Agency
Region VI
1600 Patterson Street
Dallas, Texas 75201
(214) 749-1171

LEAGUE OF WOMEN VOTERS OF HOUSTON VOTER JANUARY 1980

NATURAL RESOURCES BACKGROUNDER

AIR QUALITY and DEPARTMENT OF ENERGY

The Clean Air Act (CAA as amended in 1970 and 1977) regulates emissions from both mobile and stationary sources and sets health-based ambient standards for six major air pollutants--sulphur oxides (mainly sulphur dioxide, SO_2), particulate matter, carbon monoxide, hydrocarbons, ozone (previously expressed as photochemical oxidants), and nitrogen oxides. More recently, EPA proposed ambient air quality standards for lead.

Some pollutants are considered dangerous to public health but are not covered by existing ambient air quality standards. For these "hazardous air pollutants" EPA is empowered to issue standards for new stationary sources. Thus standards have been established for asbestos, mercury, beryllium, and vinyl chloride.

To achieve these standards, states must make and implement plans to limit emissions from existing stationary sources (industries and power plants), set timetables for compliance, and define monitoring procedures. EPA has also set uniform national performance standards (emission limits) for new and modified stationary sources and emission standards for automobiles.

In some cities, such as Houston, the national ambient air quality standards--which provide margins of safety for sensitive persons--have still not been achieved. For those cities where the ozone standard cannot be achieved by 1982, transportation controls must be implemented. The Texas State Implementation Plan (SIP), submitted to EPA in November, had to include transportation measures for Houston as a demonstration of progress toward achieving the federal ozone standard. These transportation measures include five park-and-ride systems already operating or under contract by the MTA and the MTA's Car-Share program of computer car pooling.

Also part of the SIP is the pilot auto emissions inspection and maintenance (I/M) program for the Houston area. Inspection and maintenance programs will be mandatory for those urban areas whose population is greater than 200,000 and who cannot reach the national standard by 1982. The last session of the Texas Legislature directed the Texas Air Control Board (TACB) to check 25,000 cars in Harris County beginning in January 1980, with recommendations for a full scale I/M program to be reported to the legislature by December 1980. There will be four types of field studies involved in the program. A major problem of I/M is the lack of trained mechanics competent to perform the maintenance and repair work. Additional concerns are the ultimate cost to the consumer, the effectiveness of I/M, and the public acceptance of the program.

The ozone standard, originally .08 ppm (parts per million) was relaxed by EPA earlier this year to .12 ppm. Nonetheless, there are those who believe this standard to be too tight a constraint on growth, and as a result the American Petroleum Institute, the Chemical Manufacturing Assn., and the city of Houston are contesting the new standard in court. The U.S. Court of Appeals for the District of Columbia has asked that briefs be completed by Dec. 31, 1979, so that the case can be heard in early 1980.

Because of the growth constraints imposed upon Houston by the ozone standard, the Chamber of Commerce initiated and recently completed the Houston Area Oxidant Study (HAOS), which collected a considerable amount of pollutant emissions data and which included a study of the health effects of pollutants on 286 Houston residents. The Chamber spokesman reported that no appreciable health effects were detected from ozone levels that often exceeded .2 ppm in the Houston area. In a recent critique of the HAOS study, an EPA researcher wrote that in its present state of analysis the HAOS study provides no sound basis for assertions that local air pollution is innocuous or that it is harmful.

On a national level, the ozone standard is being assailed by Congressman David Stockman of Michigan who reportedly plans to introduce an amendment to the CAA which will establish the ozone standard at .2 ppm. Congressman Stockman argues that the determination of dose/response relationships associated with exposure to air pollution is a scientific matter, but that determining the target population (sensitive persons) to be protected is a matter which must be resolved by Congress through the political process.

The concept of Prevention of Significant Deterioration (SD) of air appeared when the Sierra Club filed suit in 1973 against EPA for approving state plans which allowed degredation of clean air. In 1974 and 1975 dozens of industries in Houston were given permits by the TACB to switch to sulfur-emitting fuel oil or coal when natural gas supplies (low in SO_2) ran out. Under EPA's old regulations, the unused fuel switching permits were counted against Houston's permissible SO_2 increments. The result as reflected in computer studies was that Houston had already used up its SO_2 in the Houston area air to begin with. In its proposed new PSD regulations, the EPA will be applying an "actual emmissions" concept which would not count the unused fuel switching permits against Houston's increments, thereby allowing more room for growth. The final opinion of the U. S. Court of Appeals for the District of Columbia is still pending.

The Houston Health Department has recently initiated a special telephone line--required by EPA--to give the public recorded daily reports on the city's air pollution levels. Two reports daily, recorded by 9:30 a.m. and 3:30 p.m., are available by phoning 795-4994. Measurements are reported in terms of the Pollutant Standards Index System established by EPA; a reading above 100 indicates unhealthy air, while a reading of less than 100 denotes good air quality.

Other topics under Natural Resources will be covered at the January unit meetings along with Air Quality and Toxic Substances. For your information, the recent reorganization of the Department of Energy is reported on below.

****

DEPARTMENT OF ENERGY

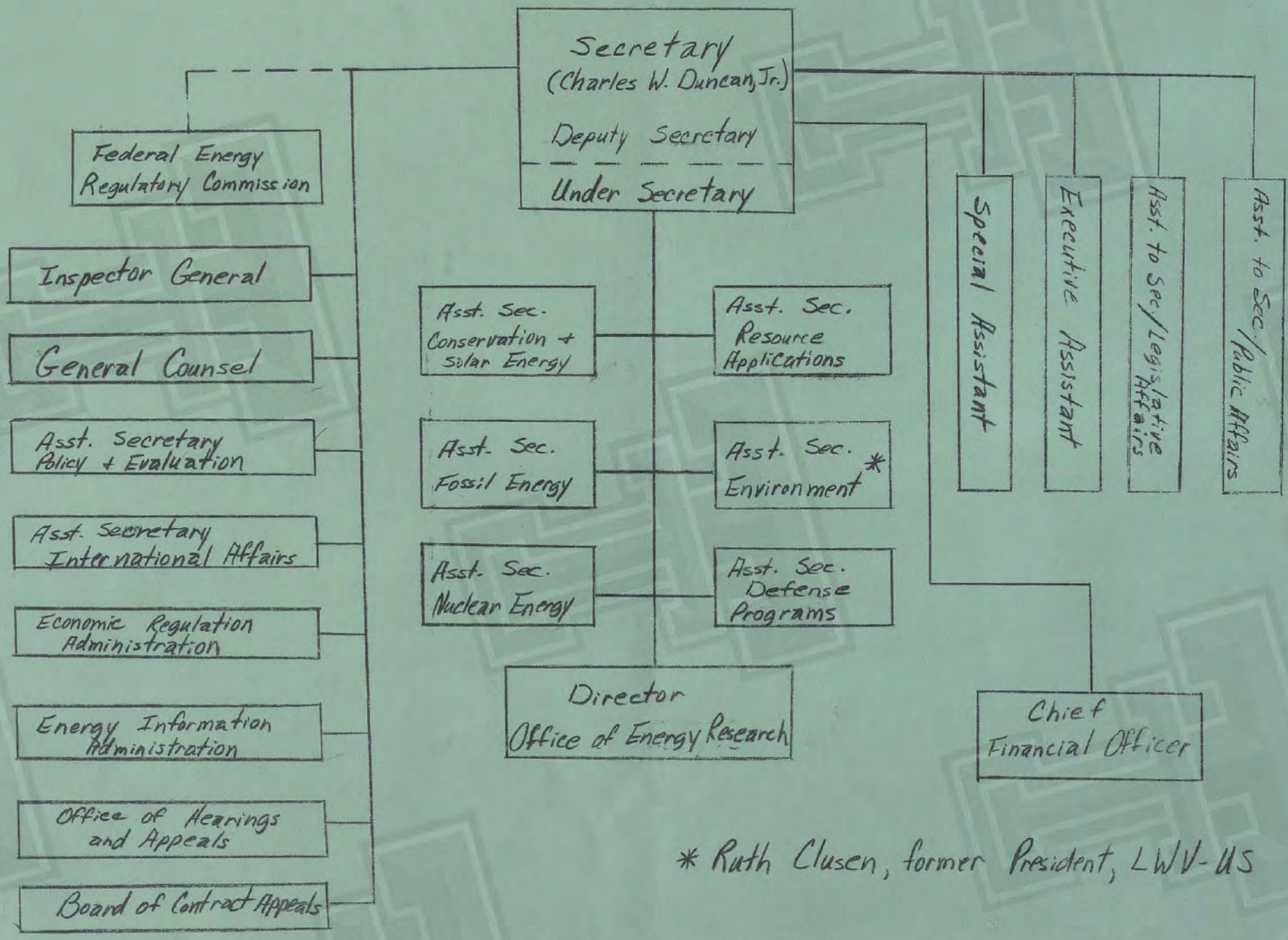
The Department of Energy (DOE), established by President Carter in 1977, has recently undergone organizational changes initiated by Charles Duncan, who assumed the office of Secretary of Energy in August, 1979. Duncan has described the changes as directed toward:

1. improvement in the management of the department's activities,
2. improvement in DOE service to the public and in cooperation with state and local governments,
3. improvement in DOE's cooperation with Congress.

The most significant change involves assigning three major areas of energy production--fossil energy, nuclear energy, and conservation/solar energy--to specific Assistant Secretaries, with the Assistant Secretaries reporting to the Secretary through the Under Secretary.

The current (fiscal year 1979) DOE budget is $10.7 billion. As in the old Atomic Energy Commission budget, a substantial portion of this total--about $2.5 billion--goes for defense related activities. Research on nuclear power claims $1.1 billion. Other energy research categories are: solar, $559 million; fusion, $356 million; coal, oil, and gas, $759 million. The department also spends $485 million annually on nuclear waste management. Most of this waste is generated by weapons programs, not by electric utilities.

New Department of Energy Organization



* Ruth Clusen, former President, LWV-US

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Because of the growth constraints imposed upon Houston by the ozone standard, the Chamber of Commerce initiated and recently completed the Houston Area Oxidant Study (HAOS), which collected a considerable amount of pollutant emissions data and which included a study of the health effects of pollutants on 286 Houston residents. The Chamber spokesman reported that no appreciable health effects were detected from ozone levels that often exceeded .2 ppm in the Houston area. In a recent critique of the HAOS study, an EPA researcher wrote that in its present state of analysis the HAOS study provides no sound basis for assertions that local air pollution is innocuous or that it is harmful.

On a national level, the ozone standard is being assailed by Congressman David Stockman of Michigan who reportedly plans to introduce an amendment to the CAA which will establish the ozone standard at .2 ppm. Congressman Stockman argues that the determination of dose/response relationships associated with exposure to air pollution is a scientific matter, but that determining the target population (sensitive persons) to be protected is a matter which must be resolved by Congress through the political process.

The concept of Prevention of Significant Deterioration (SD) of air appeared when the Sierra Club filed suit in 1973 against EPA for approving state plans which allowed degredation of clean air. In 1974 and 1975 dozens of industries in Houston were given permits by the TACB to switch to sulfur-emitting fuel oil or coal when natural gas supplies (low in SO_2) ran out. Under EPA's old regulations, the unused fuel switching permits were counted against Houston's permissible SO_2 increments. The result as reflected in computer studies was that Houston had already used up its SO_2 in the Houston area air to begin with. In its proposed new PSD regulations, the EPA will be applying an "actual emmissions" concept which would not count the unused fuel switching permits against Houston's increments, thereby allowing more room for growth. The final opinion of the U. S. Court of Appeals for the District of Columbia is still pending.

The Houston Health Department has recently initiated a special telephone line--required by EPA--to give the public recorded daily reports on the city's air pollution levels. Two reports daily, recorded by 9:30 a.m. and 3:30 p.m., are available by phoning 795-4994. Measurements are reported in terms of the Pollutant Standards Index System established by EPA; a reading above 100 indicates unhealthy air, while a reading of less than 100 denotes good air quality.

Other topics under Natural Resources will be covered at the January unit meetings along with Air Quality and Toxic Substances. For your information, the recent reorganization of the Department of Energy is reported on below.

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DEPARTMENT OF ENERGY

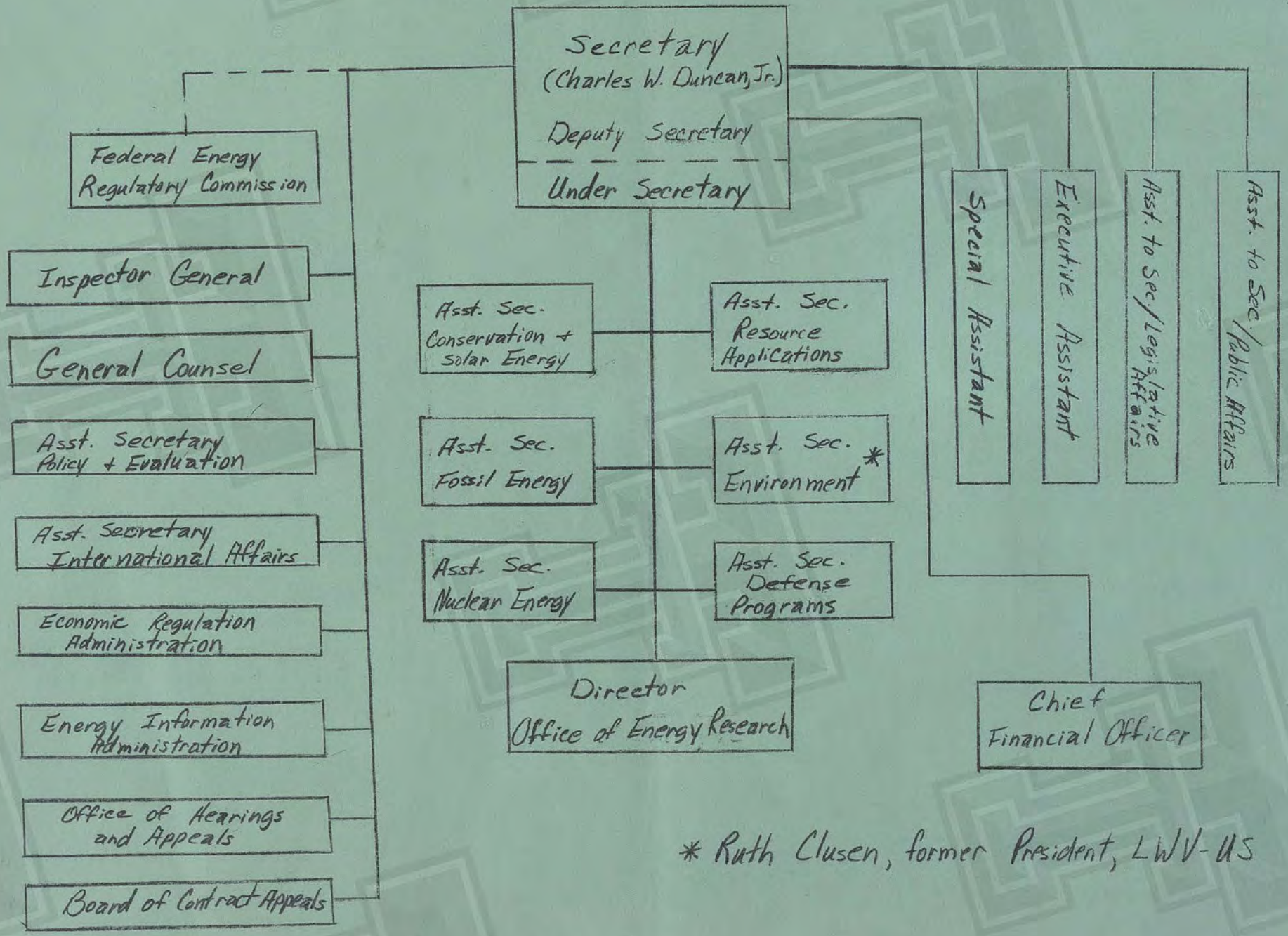
The Department of Energy (DOE), established by President Carter in 1977, has recently undergone organizational changes initiated by Charles Duncan, who assumed the office of Secretary of Energy in August, 1979. Duncan has described the changes as directed toward:

1. improvement in the management of the department's activities,
2. improvement in DOE service to the public and in cooperation with state and local governments,
3. improvement in DOE's cooperation with Congress.

The most significant change involves assigning three major areas of energy production--fossil energy, nuclear energy, and conservation/solar energy--to specific Assistant Secretaries, with the Assistant Secretaries reporting to the Secretary through the Under Secretary.

The current (fiscal year 1979) DOE budget is $10.7 billion. As in the old Atomic Energy Commission budget, a substantial portion of this total--about $2.5 billion--goes for defense related activities. Research on nuclear power claims $1.1 billion. Other energy research categories are: solar, $559 million; fusion, $356 million; coal, oil, and gas, $759 million. The department also spends $485 million annually on nuclear waste management. Most of this waste is generated by weapons programs, not by electric utilities.

New Department of Energy Organization



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