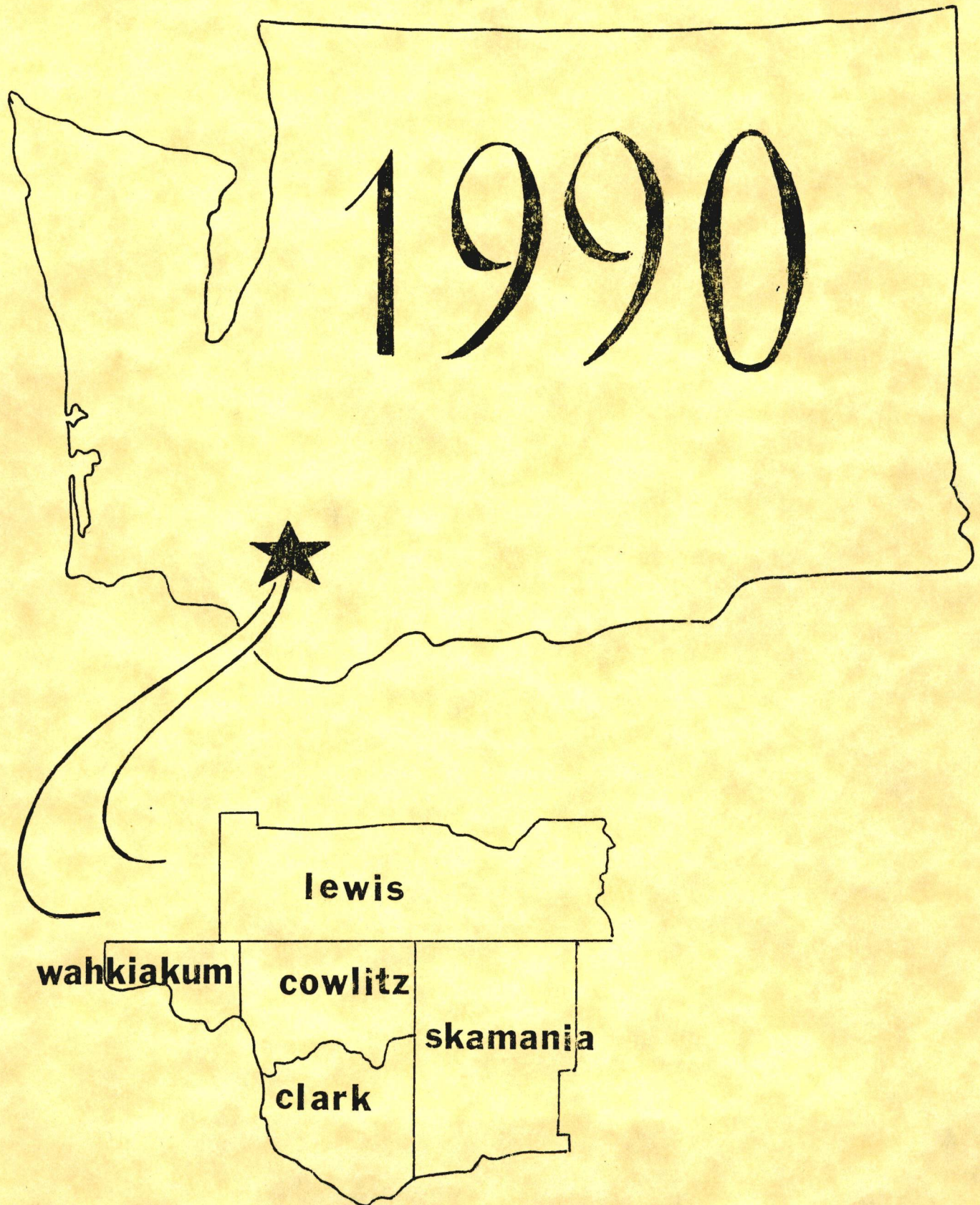


S.W. AIR POLLUTION CONTROL AUTHORITY

ANNUAL REPORT



SOUTHWEST AIR POLLUTION CONTROL AUTHORITY

1990

Annual Report

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INTRODUCTION
and
BACKGROUND

to the

S.W. AIR POLLUTION CONTROL AUTHORITY

Prior to the formation of the S.W. Air Pollution Control Authority, a minor amount of ambient sampling and complaint investigation fell under the responsibility of the S.W. Washington Health District. But the need for a full time air pollution control agency became evident as the volume of air quality complaints increased. The vast majority of these pertained to particulate fallout problems from industrial sources within the local Vancouver area.

On July 7, 1966 the Clark County Air Pollution Control District was formed and continued as a single county agency until March 1968, then it was dissolved and reestablished as a multi-county jurisdiction district in April of that year.

The Agency was first based in the Clark County Courthouse, but moved a few months later to the Washington Health Department offices. In 1970 permanent quarters were established in Hazel Dell, where the Agency resided until November 1986. Then, in a cost cutting move, the office was moved to its present location at 1308 N.E. 134th Street, Suite D, Vancouver, Washington.

Business rules were adopted in 1968 followed by the first Regulation, known as "Regulation 1", on December 17, 1968. On October 28, 1969 "Regulation 2" was added. While Reg. 1 dealt primarily with general requirements, Reg. 2 addressed permissible ambient concentrations, acceptable contaminant levels from industrial stacks and odor limits. These two documents stayed in use until December 1979 at which time they were superseded in order to comply with Federal and State laws and to incorporate many of the

provisions contained in the federal and state regulations. The new Regulation was then adopted and entitled the "General Regulations for Air Pollution Sources". Minor "house cleaning" changes have been made to these regulations since the initial adoption, but for the most part, they are still intact and used effectively today as the Agency's primary enforcing document.

Mr. Dick Serdoz, a registered professional engineer, currently holds the Agency's position of Executive Director. Mr. Serdoz came to work for SWAPCA in June of 1986. Prior to that time, he held the position of Air Quality Officer for the State of Nevada's Dept. of Conservation and Natural Resources.

Currently the S.W. Air Pollution Control Authority has a total of nine employees: the Executive Director, Chief Engineer, Chief of Technical Services, four Air Quality Control Specialists, and two part time (job sharing) secretaries.

The Agency's jurisdiction is comprised of five counties in the southwestern portion of Washington: Clark with an area of 627 square miles, Cowlitz with 1,144, Lewis with 2,423, Skamania with 1,672, and Wahkiakum with 261. Combined, this makes a regional jurisdiction of 6,127 square miles. The population within these boundaries has increased 13% overall between 1980 and 1990. The major growth took place in Clark County, who experienced an upswing of 19% during this same period and almost 4% within the last year alone. Current population in the region is 383,000. The counties break down as follows: Clark - 228,700, Cowlitz - 83,500, Lewis - 59,200, Skamania - 8,100 and Wahkiakum - 3,500.

The financial and economic base of the region was once strongly dominated by forest harvest and production, but in recent years the economic mainstay of the area has diversified significantly. Even though forest harvest is still a strong supporter to the area, many other economic product lines have been established, making us less dependent on a single type of occupation force.

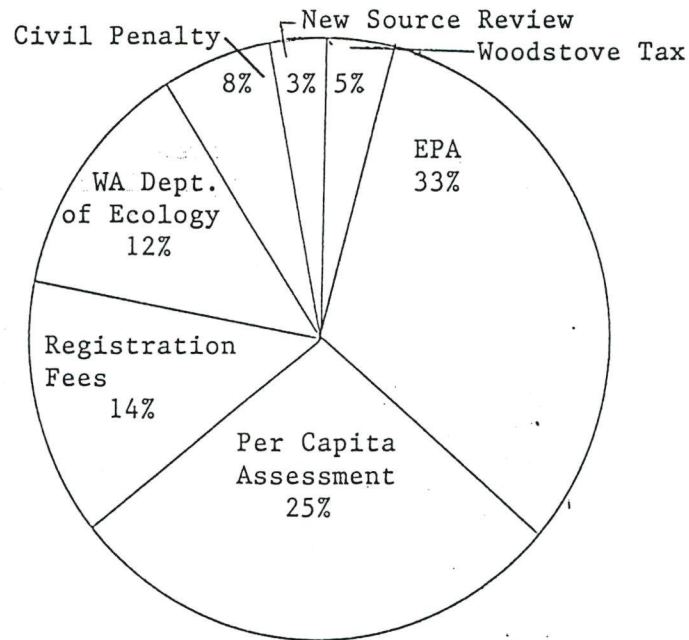
SWAPCA EMPLOYEES

<u>Name</u>	<u>Position Held</u>	<u>Date of Hire</u>
Dick Serdoz	Executive Director	June 1986
William Prastka	Chief Engineer	April 1970
Thomas Tabor	Chief of Tech. Serv.	January 1971
Jackie Sherby	Air Quality Cont. Spt.	October 1979
Lance Jackson	Air Quality Cont. Spt.	May 1988
Jerry Strawn	Air Quality Cont. Spt.	October 1988
Steven Mrazek	Air Quality Cont. Spt.	October 1990
Virginia Fry	Secretary (job sharing)	January 1982
Judy Mikkelson	Secretary (job sharing)	October 1990

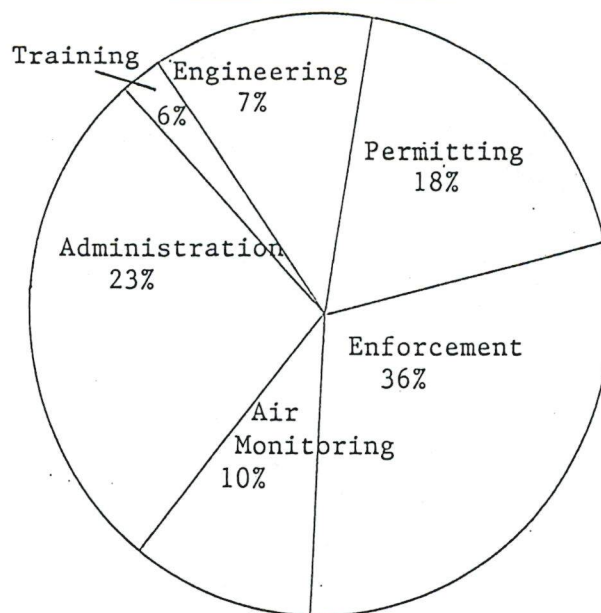
SWAPCA BOARD OF DIRECTORS
(as of Dec. 1990)

<u>Name</u>	<u>Representing</u>	<u>Date Appt.</u>
Gregory Cox (Chairman)	Lewis County	January 1987
Ron Bartels (Alternate)	City of Vancouver	January 1982
Bernard Cossette	City of Cathlamet	January 1987
Linda Horowitz	City of Vancouver	February 1990
Doug Larson	Member at Large	July 1987
James Macey	Cowlitz County	September 1990
John Magnano	Clark County	January 1989
Kaye Masco	Skamania County	January 1989
Marvin Morasch	City of Stevenson	March 1989
Mark Miller	City of Centralia	May 1989
Ron Ozment	Wahkiakum County	January 1989
Hal Palmer	City of Longview	February 1990

1990
REVENUE DISTRIBUTION



LABOR DISTRIBUTION



Staff Training

Dick Serdoz, Executive Director

EPA: Environment 2010 Workshop - 1/90
EPA: Strategic Planning Workshop - 1/90
ALAPCO: Bi-Annual Meeting - 5/90
A&WNA: Technical Meeting - 8/90
EPA: Stage II VOC Workshop - 9/90
WDOE: Wood Stove Enforcement Workshop - 9/90
ALAPCO: Bi-Annual Meeting - 10/90
EPA: Transportation Conference - 11/90
PBS: Clean Air Act Conference - 11/90
A&WMA: Technical Meeting - 11/90

William Prastka, Chief Engineer

NONE

Thomas Tabor, Chief of Technical Services

WDOE/DEQ: Plume Evaluation Recertification - 3/90
ALAPCO: Spring Meeting - 5/90
EPA: AFS AIRS training - 7/90
WDOE/DEQ: Plume Evaluation Recertification - 9/90
NCASI: Workshop - 10/90
WDOE: PM-10 for Curtailment of Woodstoves Workshop - 11/90

Jackie Sherby, Air Quality Control Specialist II

WDOE/DEQ: Plume Evaluation Recertification - 3/90
EPA/APTI: Control of Gaseous Emissions (#415) - 8/90
EPA: Source Test Observer's Training Course - 9/90
WDOE/DEQ: Plume Evaluation Recertification - 10/90
WDOE/EPA: Underground Storage Tanks - 12/90

Staff Training (continued)

Lance Jackson, Air Quality Control Specialist II

EPA/APTI: Baseline Source Inspection Tech. (#445) - 3/90
EPA/APTI: Inspection Procedures and Safety (#446) - 3/90
WDOE/DEQ: Plume Evaluation Recertification - 4/90
WDOE/DEQ: Plume Evaluation Recertification - 9/90
WDOE/EPA: Underground Storage Tanks - 12/90

Gerald Strawn, Air Quality Control Specialist II

EPA/APTI: Baseline Source Inspection Techniques (#445) - 3/90
EPA/APTI: Inspection Procedures & Safety (#446) - 3/90
WDOE/DEQ Plume Evaluation Recertification - 3/90
EPA/APTI: Baghouse Plan Review (#SI:412A) - 7/90
EPA: Source Test Observer's Training Course - 9/90
WDOE/DEQ: Plume Evaluation Recertification - 10/90
WDOE/EPA: Underground Storage Tanks - 12/90

Steven Mrazek, Air Quality Control Specialist II

WDOE/DEQ: Plume Evaluation Initial Certification - 10/90
WDOE: Woodstove Workshop - 12/90

Virginia Fry, Secretary

NONE

Judy Mikkelsen, Secretary

NONE

Air Pollutants and Their Related Health Effects

Suspended Particulates

Any matter that exists in a finely divided form, whether liquid or solid, is defined as particulate when airborne. In years past, emphasis was placed on the total combined weight of all suspended particles with no thought given to whether they were of a respiratory size or not. The latest research however, has caused the public officials to shift emphasis away from total suspended particulate and concentrate their control efforts in the direction of those particles that pose the most serious threat to the public's health. It is commonly accepted that matter having an aerodynamic diameter of less than, or equal to, a nominal 10 microns is breathable. These are the particles that are not usually filtered out by the nose and mouth before reaching deep into the lungs and internal organs. The terminology used to describe this fraction of the suspended particulate is particulate matter 10, or "PM-10".

Fine particulate matter (PM-10) exerts harmful effects on human beings in a number of ways:

- 1) Small particles may be toxic due to their chemical make up.
- 2) Small particles may absorb various other contaminant compounds and substances, and these compounds may very well be of a toxic nature. As these bond with one another the toxic compounds are more easily carried into the vital health centers of your body.
- 3) Small particles may interfere with clearance mechanisms of the respiratory tract.

Carbon Monoxide (CO)

Carbon Monoxide (CO) is a colorless, odorless, nonirritant gas that interferes with oxygen transport in the body. Studies of the effects indicate that exposure to high concentrations of CO can strongly impair the functions of oxygen dependent tissues, especially the brain, heart and muscles. Even low concentrations of CO can cause adverse health effects, particularly to those individuals already suffering with arteriosclerotic heart disease. Low concentrations can affect healthy individuals as well, by increasing risk of heart disease, decreased tolerance to

exercise and decreased mental capabilities. In addition, studies have shown that high levels of CO, sometimes found in heavily populated urban areas, can be responsible for a lower birth weight and increased deaths of infants.

Annually, transportation accounts for approximately 80% of the man-made CO emissions, but industrial sources, open burning, wood burning for space heat, and forest harvest slash burning also significantly contributes to the problem. On any single day the combination of open burning and industrial emissions may be responsible for up to 90% of total carbon monoxide buildup in the local air shed.

Ozone and Volatile Organic Compounds (VOC)

Many volatile organic compounds (VOC) contribute to ground level concentrations of ozone. Sunlight, in the presence of oxides of nitrogen, converts these VOC compounds into ozone. Therefore, our most severe ground level concentrations occur during the hot summer days. Characteristically these days normally occur in the months of June through September. This time frame is often referred to as "the ozone season". The conversion of these compounds generally takes from two to seven hours to complete, dependent upon the reactivity of the VOCs in the atmosphere mixture. As a result, heavy ground level concentrations usually occur miles from the source of emission.

Unlike the "ozone layer", located above our earth's atmosphere, ozone at the earth's surface is not a desirable condition. Ozone causes shifts in enzyme activities, chemical activities, and cellular activity in the respiratory tract. Individuals with existing conditions of asthma, heart disease and chronic lung disease suffer worsening conditions and increased hospitalization as well as loss of some of their physical endurance when exposed to ozone. In addition, healthy people may suffer eye irritation, respiratory tract annoyances, headaches, lessening of athletic performances, decreased visual acuity, an increased risk of chronic lung disease, increased risk of acute respiratory disease, potential risk of mutagenesis and carcinogenesis and women may have impaired fetal development.

Nitrogen Oxides (NOx)

Nitrogen Oxides are necessary in the chemical reaction with volatile organic compounds, water vapor and sunlight in order to form the contaminant - ozone. There is considerable evidence that persistent low levels of oxides of nitrogen pose considerable health threats to the populous. Of these compounds, nitrogen dioxide is the most toxic. People already plagued with respiratory disease will experience increased problems when exposed to ambient concentrations of oxides of nitrogen. The health effects to these people could take the form of aggravation of asthma, aggravation of heart and lung disorders, and increased acuteness of their existing respiratory diseases. For those individuals that are normally healthy, effects of exposure may lead to increased susceptibility to acute respiratory diseases, loss of physical capabilities, reduction of lung function, and a potential of carcinogenesis and mutagenesis.

The burning of fossil fuels, by industrial or municipal, stationary sources, contribute a little over 50% of the ambient nitrogen oxide emissions. The remainder is made up largely from transportation sources.

Sulfur Oxides (SO₂ & SO₃)

Sulfur is a nonmetallic element found in coal and petroleum products. When burned, this material is transformed into sulfur dioxide and sulfur trioxide. When these compounds combine with water they form sulfuric acid. On a national level, approximately two thirds of all sulfur oxide emissions come from coal and oil fired power plants. Sulfur oxide and nitrogen oxide emissions are responsible for the acid deposition phenomenon, or what is commonly referred to as "acid rain". Human health effects believed to be attributed to exposure of sulfur compounds are: acute irritation of the upper respiratory tract and conjunctiva, acute aggravation of cardiopulmonary disease, worsening of asthma and chronic destructive pulmonary disease, and a decrease in lung function capability.

Health Effects Related to Wood Stove Emissions

The Problem

Over the past few years there has been a growing trend to install wood stoves and fireplace inserts. Believing that this is a cheaper method of heat, sales of these products have soared and consequently, wood burning has escalated dramatically. As a result, air contaminant emissions, including compounds such as: creosote, polycyclic aromatic hydrocarbons, fine particulate, carbon monoxide, aldehydes (including formaldehyde and acrolein) and nitrogen dioxide have also increased proportionately. Residential wood heat emissions are unique in that, unlike industrial contamination and auto emissions, the pollution is released directly where we live - right in our "backyards". It is in the evening that this form of space heat is most often utilized. Unfortunately, this is also the same time frame that the most stagnant, stable conditions generally exist and when the largest portion of the populace is at home, being subjected to the increased levels of that contamination.

Further adding to the problem of contaminant build up, many newer wood burning devices provide the user the flexibility to damper the air flow down at times of non-use, generally when the resident is going to bed for the evening. This conserves on wood, but the air starved fuel continues to smolder and smoke for hours, providing little in the way of heat, but substantial amounts of air contamination.

Wood smoke is a mixture of organic compounds, many of which are the very same compounds found in cigarette smoke. Included in these compounds are fourteen which have been directly linked to causing cancer.

There is growing scientific evidence which indicate that serious health implications can be attributed to this trend of increased wood burning. A 1985 epidemiologic study reported that preschool children that spent their day in wood heated homes showed increased symptoms of airway irritation, allergy and asthma, when compared to those that lived in environments utilizing other forms of space heat.

In a three year study conducted in Montana, both healthy school children and adults with chronic pulmonary disease showed increases in pulmonary distress whenever wood smoke pollution levels were increased.

Other studies involving individuals of the third world that were subjected to heavy concentrations of wood smoke during their normal way of life, show evidence of chronic bronchitis, chronic obstructive pulmonary disease (COPD), and heart failure secondary to COPD.

It has been demonstrated that suspended particulate matter of less than 10 microns in diameter, is respirable. Or, to say it another way, particles of 10 microns or smaller can readily be taken deep into the respiratory system through a person's normal breathing process. In the case of residential wood combustion smoke, roughly 50% of the particles are less than 2.5 microns and 70% are less than 5 microns. This would indicate that over 70% of this contamination, when breathed in, would reach the person's throat, lungs and internal organs thereby causing irritation and/or health concerns.

Action to Cure the Problem

In an effort to help alleviate the growing problem of wood space heating emissions, the Washington Department of Ecology passed regulations to: 1) curb the smoke generated by existing wood space heating sources, and 2) put restrictive limits on the air contaminant levels that will be achieved from newly manufactured units.

The visual emission restrictions took on a two step approach. As of January 1, 1988 an opacity limit from all woodstoves was restricted to 40 percent. In July 1990 that level dropped to 20 percent. Opacity is measured by a certified observer and is based on the degree that a background object is obscured when looking through the plume of smoke. The scale used is from 0 to 100%, with 0 representing no visible smoke and 100% indicating that an object behind the smoke plume is become totally obscured from view. Since July 1, 1988 any new wood stove, or insert, sold in the State of Washington must be certified by the Environmental Protection Agency and must display a test certification sticker on the exterior of the unit.

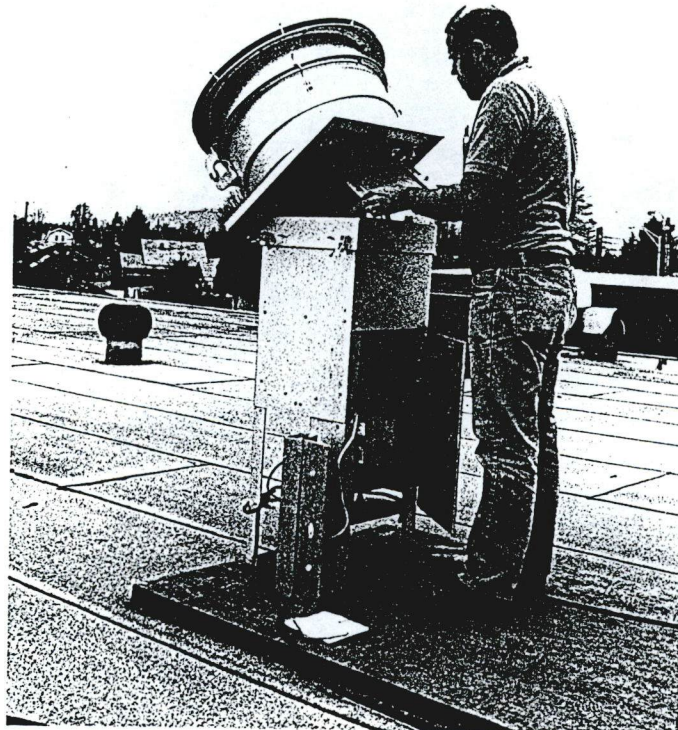
In addition to the above requirements and in an effort to protect public safety during times of severe inversions and rising levels of ambient contamination, the law includes provisions that requires curtailment of wood space heating when either WDOE, or a local air agency call an air stagnation advisory. This is accomplished in stages, based on severity of predicted meteorological conditions and actual measured increases of ground level ambient contamination. This could mean in some cases that the use of EPA certified stoves and inserts may be allowed, while all other wood heating devices are prohibited. If however, conditions should worsen, there are appropriations which could restrict all wood burning.

The only exception to these rules is in the case of a resident having no other means to heat their homes, other than with wood. In this case, SWAPCA issues variances on a case by case basis. When approved they are granted for a maximum of one year and end the following June 30th. After that date, in order to maintain the exemption, the resident must reapply and obtain an extension.

Ambient Air Monitoring

Technical Services

The Agency sampling network is currently maintained by Thomas Tabor. Mr. Tabor has been in the Agency's employ since January 1971. In October of 1988 he took over the position of Chief of Technical Services. Before that time he worked in enforcement, as an Air Quality Control Specialist for the Agency.



A white quartz filter is placed on the PM-10 sampler in order to capture the fine particulate matter for later laboratory analyses.

Much of the ambient sampling equipment is owned by the Washington Department of Ecology (WDOE) and is on loan to the local Agency. The data gathered and processed by the SWAPCA staff is then forwarded to the WDOE via either the telemetry phone line and/or hard copy by the mail service. The sampling equipment is maintained by both SWAPCA and WDOE. Audits and calibrations are routinely performed by WDOE and SWAPCA personnel in order to maintain a consistent high degree of quality assurance.



PM-10 Sampler

Continuous Ambient Telemetry

In 1974 the Agency's first ambient data telemetry system was installed. It quickly became obsolete however, and was replaced only a year or two later by a Monitor Lab "9400". The 9400 served the Agency and the State very well up until 1988, when it too became antiquated and had to be replaced by a modern unit with more versatility. The new system, built by Environmental Systems Corporation, of Knoxville, Tennessee, provided many advantages that were not available until recent years. It allowed for easier access to data, the ability to generate instantaneous reports, better monitoring of site performance and many other advantages that help to insure data quality and ease of monitoring.

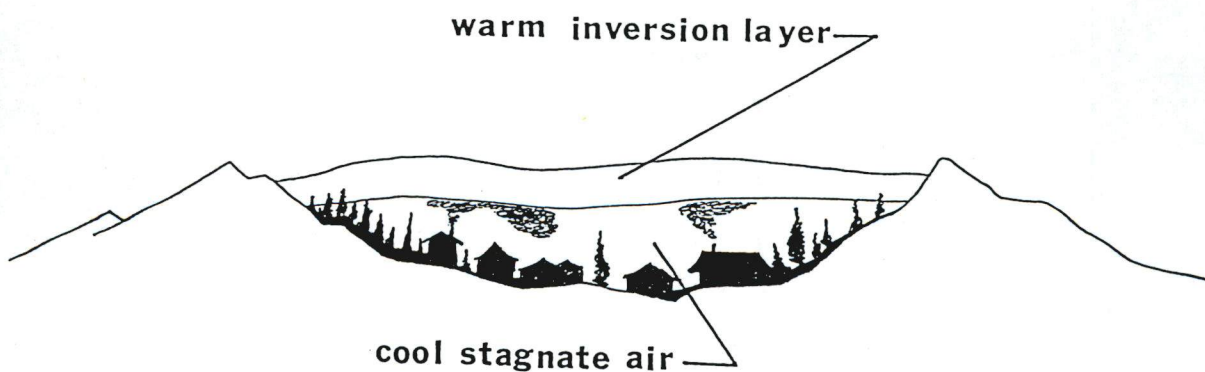


figure 2

Particulate

No longer does the Agency sample for total suspended particulate matter (TSP). Currently all particulate monitoring is through the use of PM-10 samplers, which have the ability of separating the larger particles out and only capturing those particles having an aerodynamic diameter of less than, or equal to, a nominal 10 microns. Particles of 10 micron and smaller have the capability of reaching a human's internal organs when breathed in. During the 1990 calendar year, three PM-10 samplers were operated. These were located at the Longview City Shop, Port of Vancouver and at the Moose Lodge in Vancouver. There were no PM-10 violations detected during year 1990.

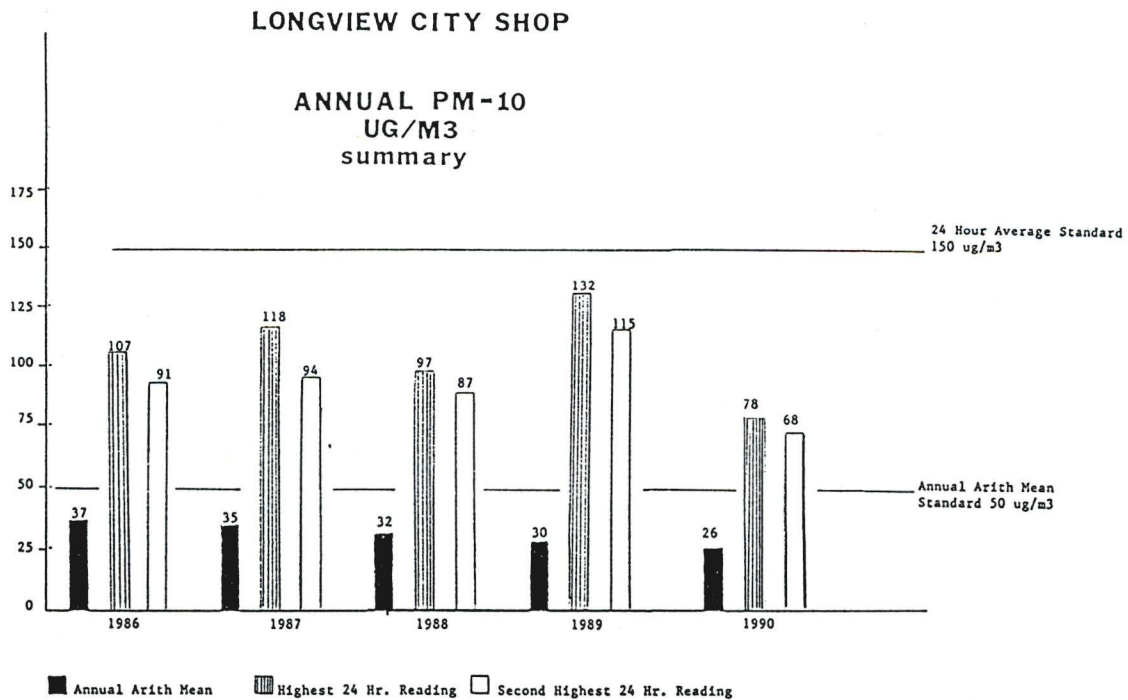


figure 3

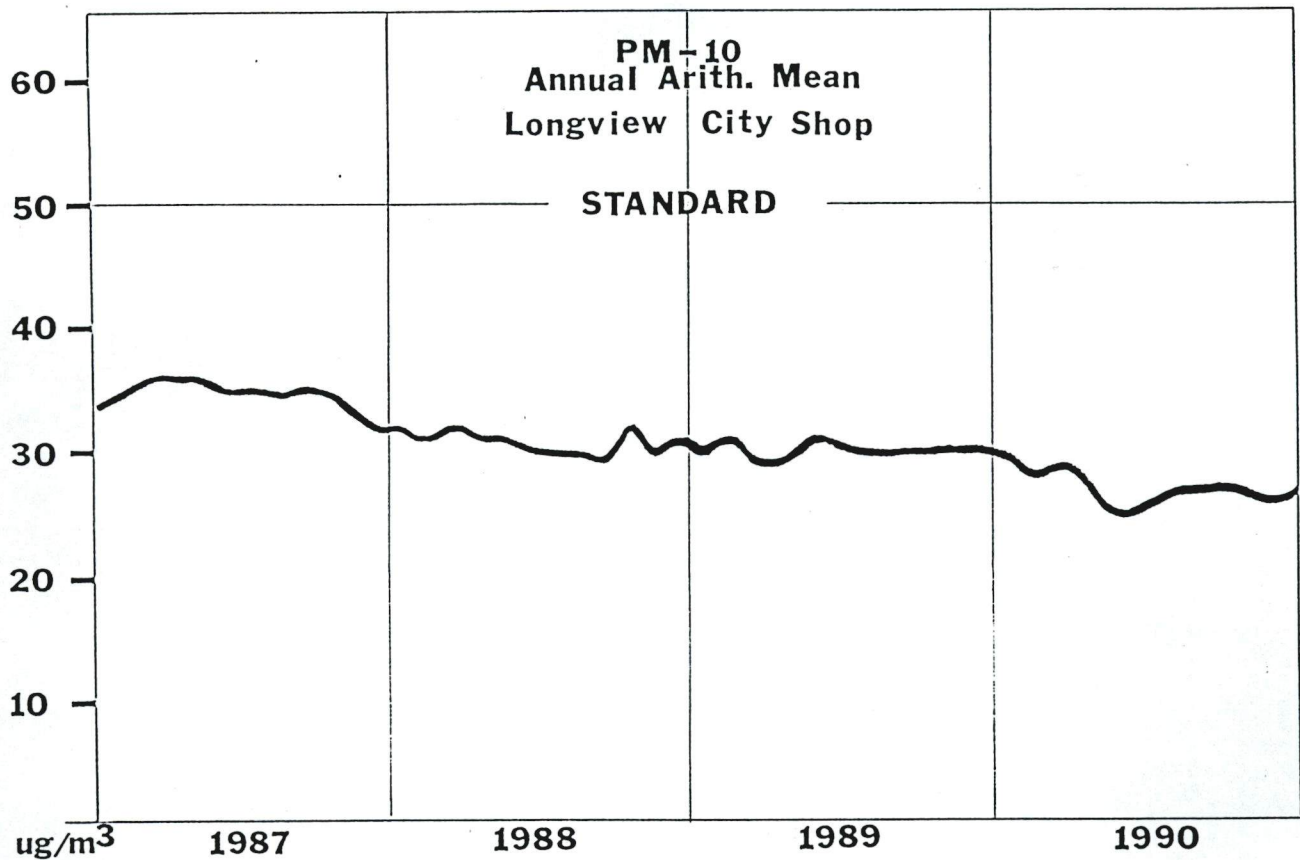


figure 4: Downward trend shown over the last four years.
Graph points were determined monthly based on preceding 12
month annual arith mean.

Particulate Matter 10 Micron and Under (PM-10) Data

Longview City Shop, Longview

Max. value recorded:	78 ug/m3
Min. value recorded:	4 ug/m3
Annual 1990 Average:	26 ug/m3
Number of Samples Over 150 ug/m3:	NONE
Number of Samples Over 75 ug/m3:	1 sample
Number of Violation Days:	NONE
Number of Samples Obtained 1990:	64 samples

Moose Lodge, Vancouver

Max. value recorded:	72 ug/m3
Min. value recorded:	7 ug/m3
Annual 1990 Average:	24 ug/m3
Number of Samples Over 150 ug/m3:	NONE
Number of Samples Over 75 ug/m3:	NONE
Number of Violation Days:	NONE
Number of Samples Obtained 1990:	45 samples

Note: Refer to Appendix I for Ambient Air Quality Standards.

Particulate Matter 10 Micron and Under (PM-10) Data

Port of Vancouver, Vancouver

Max. value recorded:	57 ug/m3
Min. value recorded:	6 ug/m3
Annual 1990 Average:	21 ug/m3
Number of Samples Over 150 ug/m3:	NONE
Number of Samples Over 75 ug/m3:	NONE
Number of Violation Days:	NONE
Number of Samples Obtained 1990:	56 samples

Sulfur Dioxide (SO2)

In conjunction with the Washington State Department of Ecology, the Agency staff operate and maintain a SO2 sampler at the National Guard Armory in Camas. The instrumentation consisted of a Thermo Electron Corp. Model 43 analyzer, which utilizes a pulsed beam of ultraviolet illumination through a monochromatic filter. There were no SO2 violations recorded at this site during calendar year 1990.

Highest 1 Hour Average	.141 ppm
2nd Highest 1 Hr. Average	.136 ppm
Highest 3 Hour Average	.120 ppm
2nd Highest 3 Hr. Average	.108 ppm
Highest 24 Hour Average	.039 ppm
2nd Highest 24 Hr. Average	.039 ppm

Ozone and Volatile Organic Compounds (O3 & VOC)

An ozone sampler is seasonally operated during the ozone season in Vancouver at Mt. View High School. Ozone is a product of volatile organic compounds which react chemically with oxides of nitrogen when exposed to sunlight. SWAPCA recognizes the months of June through September as the "ozone season". In order to monitor ozone the Agency uses a Dasibi Model 1003 analyzer. This is an ultra-violet absorption unit. UV light is generated by a low pressure mercury vapor lamp inside the unit. This light is then absorbed by the sampled gas. Based on the amount of light absorbed the analyzer displays instantaneously the ozone contamination in parts per million.

In calendar year of 1990 no violations were recorded at the Mt. View site. SWAPCA shares the same air-shed as northwestern Oregon however, and within the years of 1988, 1989 and 1990 there were five exceedances of the hourly standard recorded at their Carus site at Canby. Two of these occurred in 1988 and three in '90. Consequently, our area is still deemed as being in "non-attainment" for ozone.

After the summer months came to a close, the ozone monitor was removed from the sampling site by WDOE. It will be reinstalled in April 1991.

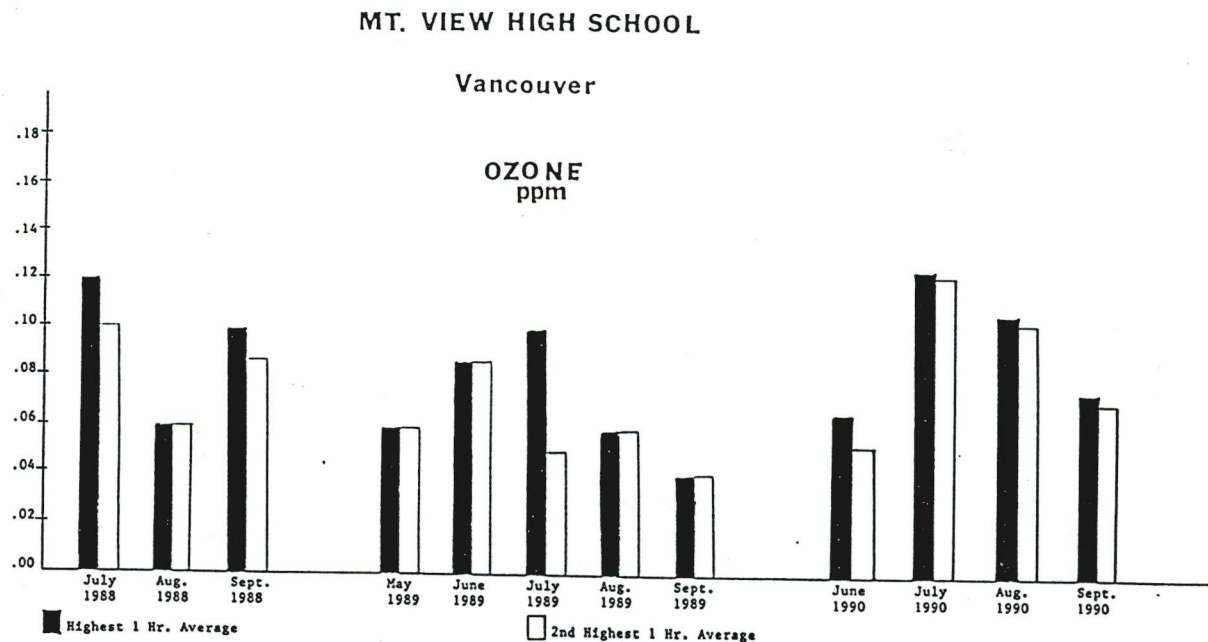


figure 5

Carbon Monoxide (CO)

One carbon monoxide (CO) continuous monitor was operated in the Vancouver area in 1990. This site has become known as the "Atlas/Cox" site and is located near the intersection of Fort Vancouver Way and Fourth Plain Blvd. Essentially it has been in continuous use since 1986 at this location. Prior to that time, a CO monitor was operated and maintained at Action Camera (Justin's Photo) in the downtown area.

The sampler currently used by the Agency is a Thermo Electron Corp., Model 48 which uses the gas filter correlation technique to measure the carbon monoxide.

In order for an area to be classified as "in attainment" neither the eight hour average limit of 9 ppm, or the one hour average limit of 35 ppm, can be exceeded more than once in any one year. In 1988 this site violated the 8 hour average limit on three occasions, in 1989 and 1990 there were two exceedances during each of those years. The 1990 incidents occurred on the nights of December 5th and 6th.

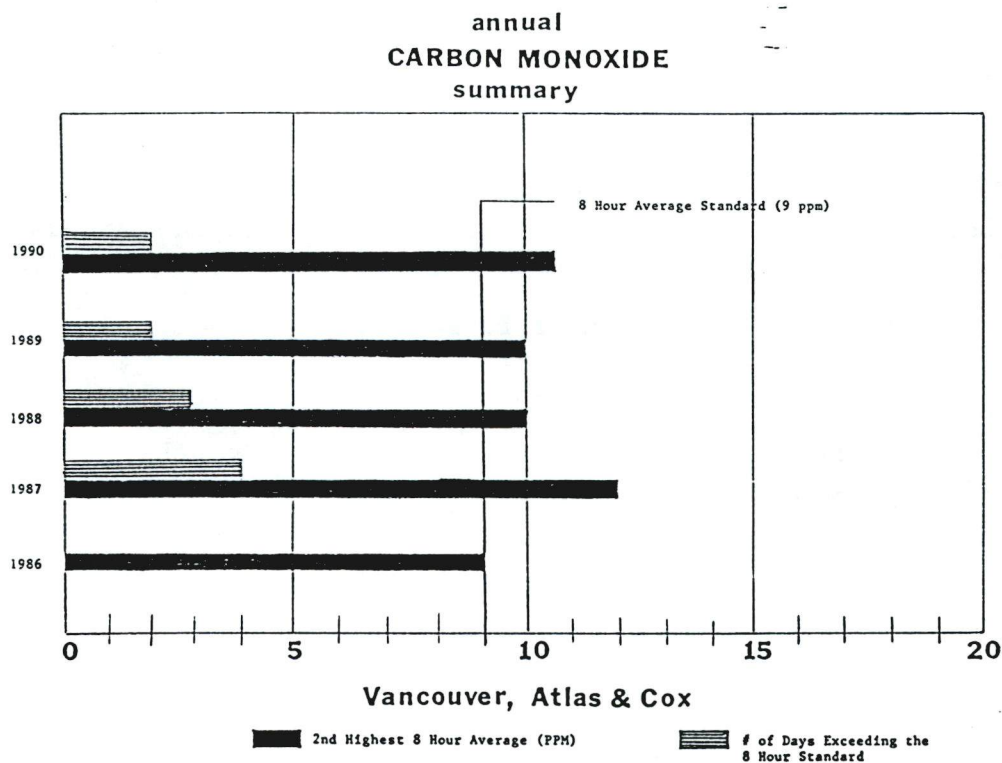


figure 6

Highest Levels of Carbon Monoxide Recorded 1990

<u>Ambient Concentrations</u>		<u>Date</u>	<u>The Standard</u>
Highest 1 Hour Average:	17 ppm	Dec. 6	Not to exceed
Second Highest 1 Hr. Ave:	16 ppm	Dec. 6	35 ppm
Highest 8 Hour Average:	13 ppm	Dec. 6	Not to exceed
Second Highest 8 Hr. Ave:	11 ppm	Dec. 5	9 ppm

SPECIAL STUDY

Carbon Monoxide Bag Samples

During the month of March a study was conducted in the Vancouver area targeting intersections that were suspected of having high levels of carbon monoxide. Hangers were placed on power poles, with the approval of Clark County Public Utilities, and bag samplers hung at eight sites. Several exceedences of the 8 hour average standard had been recorded in past years at the Atlas/Cox permanent monitoring site and the Agency was interested in gathering information to supplement this data. SWAPCA staff felt it was important in order to: 1) make sure the data received at the Atlas/Cox site was in fact indicative and representative of that area, and 2) find out how wide spread the CO problem really was.

The samplers and equipment was loaned to the Agency by the Department of Ecology for the study. Unfortunately, due to other studies taking place, the equipment was received after the normal peak concentrations of CO, this being typically the months of December and January.

Eight days of sampling was accomplished resulting in a total of 62 valid samples. Of these, the two highest values recorded came from the sampling site located near the intersection of 78th Street and Highway 99 in the Hazel Dell area. These were below the 8 hour average standard and occurred on March 14 and 15, 1990 (4:00 p.m. to midnight). The March 14th sample was 5.6 ppm and the March 15 was 7.0 ppm.

The Agency began another bag study in December 1990 which will run into February 1991. The results of this study period will be available at a later date.

Administration

Primary administration is the responsibility of the Executive Director, Dick Serdoz. Mr. Serdoz was hired in June, 1986 and is a registered professional engineer.

The Executive Director's foremost responsibilities includes the planning and organization of the Agency's environmental programs, insuring compliance with the laws, regulations, rules and policies of the Southwest Air Pollution Control Authority, State of Washington, and Federal Government as well as providing staff direction, and review of subordinates.

The function of the Administration is to manage the preparation and control of the budget, develop grant applications and reports within Federal guidelines, coordinate activities and provide advice, consultation and information to officials and the general public.

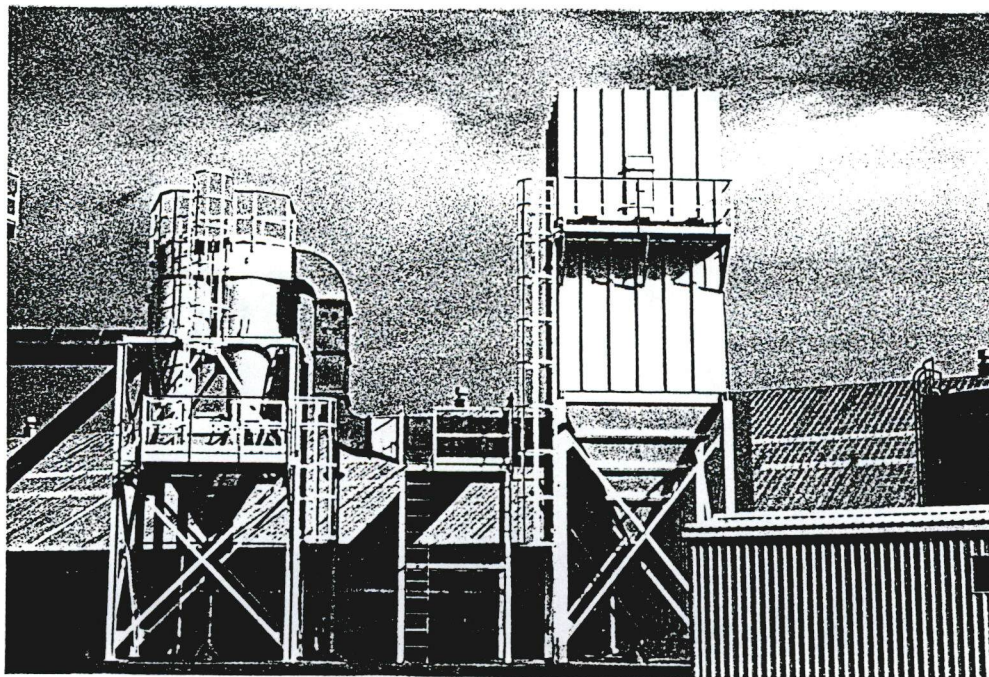
Office management is the primary responsibility of the two Secretaries - Virginia Fry and Judy Mikkelson. Currently this position is a job sharing slot. The position of secretary is charged with typing, clerical work, maintaining and ordering of office supplies and equipment, managing a system of money receipts, financial reporting and preparation of the monthly reports.

Enforcement

Field Activities

Primary enforcement in the field is conducted by the Agency's four Air Quality Control Specialists (AQCS): Jackie Sherby, hired in 1979, Lance Jackson and Mr. Gerald Strawn who were both hired in 1988 and Steve Mrazek who joined SWAPCA in 1990. The Air Quality Control Specialist's responsibilities include complaint investigations, inspection of industrial sources, enforcement of SWAPCA, State and Federal Regulations pertaining to air contaminant emissions, public information, tracking new sources, fire training investigation, final compliance investigation and monitoring/review of stack sampling procedures.

It is a routine requirement for AQCSs to investigate potential violations and are often responsible for the issuance of Field Notice of Violations. The recommendations and reports drafted by the AQCS are then reviewed by the Executive Director. In many cases these result in punitive action in the form of civil penalty assessments. As a result, in 1990 \$29,580.00 was received by the Agency for these violations.



Multiclones, acting as precleaning devices, are sometimes used in conjunction with secondary collection. This system is used to control fugitive dust resulting from railcar bottom dumping.

Annual Summary 1990
Field Enforcement Activities
(Region Wide)

Notice of Violations Issued	373
Complaints Investigated by Field Inspection	568
Complaints Investigated by Non-Field Inspection	200
Annual Compliance Surveys/Update of Order of Auth.	408
Point Source Compliance Inspections	11,353
Area Compliance Inspections	2,689
Property Ownership Determinations	45
Fire Training Inspections	63
Asbestos Removal/Encapsulation Appl's. Processed	158
Meetings/Conferences/Public Participation	226



Illegal open burning constitutes a major portion of the Agency's enforcement action.

Open Burning

No longer do you see the wigwam or teepee burners located at lumber mills belching their clouds of dense, choking smoke and no longer are grocery stores permitted to burn their cardboard boxes behind their stores within SWAPCA jurisdiction.

Today, residents are allowed to still burn natural vegetation from their own backyard, but this activity is strictly regulated and heavily restricted.

The burning restrictions vary from area to area and county to county, with the most restrictive limits in those areas having the highest population density. The first adopted regulation in 1968 restricted all burning by commercial, industrial and municipal sources. Two years later, all burning by those sources was considered illegal. Consequently, the Agency's staff still is required to issue Notices of Violation to these non-residential sources. In addition, residential occupants are commonly cited for burning prohibited materials and/or burning outside the local burning seasons.

Open burning is still the number one source of nuisance complaints the Agency deals with. Virtually hundreds of complaints are received and investigated each year by the Agency's field people. Most of these fall into one of three categories: 1) smoke nuisance, 2) burning by sources that are not legally permitted to burn, or 3) the burning of prohibited materials.

Registration

Gasoline Transport Tanks & Dispensing Operations

Since 1982 the Agency has operated a system of registration and leak check certification for all gasoline transport tanks which operate within Clark County. This system is mandated in designated ozone non-attainment areas by Washington Administration Code 173-490-202.

Operation of a transport tank includes loading and unloading at gasoline terminals, bulk plants and/or gasoline dispensing facilities. An annual registration fee of fifty dollars is levied on each tank. After a tank leak certification and the appropriate fees are received, a "delivery vessel sticker" is issued. A current registration must be maintained and the sticker displayed on the side of the vehicle at all times. and current registration must be maintained.

During calendar year 1990, a total of 288 transport tanks were registered with the S.W. Air Pollution Control Authority.

Source Registration and Tracking

As mandated under 70.94.151 of the Revised Code of Washington and Section 400-100 of the Agency's General Regulations for Air Pollution Sources, a program of air contaminant source registration was adopted and implemented in July 1981. As part of this registration, an annual fee of fifty dollars is levied on each emissions unit. In the case of minor emission sources, the fee is waived, but only when qualified under specific guidelines established for "small sources".

In calendar year 1990 there were 948 companies registered with the Agency. Of these, 548 are considered small sources. The remaining 400 were required to pay an annual registration fee for a total of 1023 emissions units.

By law, the registration fees collected may not exceed the cost of administering that portion of the Agency's program. The money collected in the current program is less than the costs of conducting on site inspections, engineering analysis, as well as, clerical and administration needs. During the 1989/90 registration year, \$51,150.00 in fees were collected.

Annually, each source is inspected and evaluated for compliance status by the Agency's field staff. When determined to be "in compliance", the company is issued a document called an "Order of Authorization to Operate", which contains a listing of authorized equipment, as well as a list of ordered operating parameters that must be adhered to.

Asbestos

Asbestos is a name given to a group of minerals found naturally in our environment. They are flexible in nature and provide very good fire and heat resistivity. Unfortunately, asbestos is also comprised of tiny respirable fibers that have been directly linked to very serious health problems. These fibers can cause asbestosis, a scarring of the lungs, that will lead to breathing problems and heart failure. In addition, it can cause cancer of the lungs and mesothelioma, a rare cancer of the chest or abdomen lining. There is also evidence that links asbestos to cancer of the stomach, intestines and rectum.

Unlike many other air contaminants, asbestos has no known safe exposure level. It is believed that minute concentrations of asbestos fibers, either breathed in, or swallowed, can cause cancer in humans.

For many years, asbestos was commonly used for insulation against heat damage and fire hazard. It was used for insulation around commercial and industrial boilers and their steam pipes, as well as in floor tile, glues, roofing, insulation around fireplaces and wood stoves, plaster, patching and spackling compounds, and in automotive brake linings. In all, there are more than 3,000 products in use today containing asbestos.

There is no question about it - asbestos has distinct advantages for thermal protection. Unfortunately, the related health effects far outweigh the beneficial properties it possesses. Also tragic is the fact it takes from fifteen to forty years for any sign of health problems to manifest themselves. This is why it was not until years after the completion of World War II that the problem was recognized and preventive measures began.

During the war years, shipyard workers were exposed to large quantities of asbestos in the ship building process. But due to the time restraints required for the health affects to show up, it wasn't until the 1970s that we fully recognized the problem and corrective measures began.

In order for asbestos to become a health problem it must be released into the air we breathe, or ingested. As long as the asbestos stays "encased" and never gets to the air - there is little problem associated with it. Unfortunately, this is seldom the case. As insulation, fireproofing, roofing materials and other products are exposed to normal day-in and day-out traffic, the material begins to break down. As a consequence, the fibrous compounds eventually become airborne.

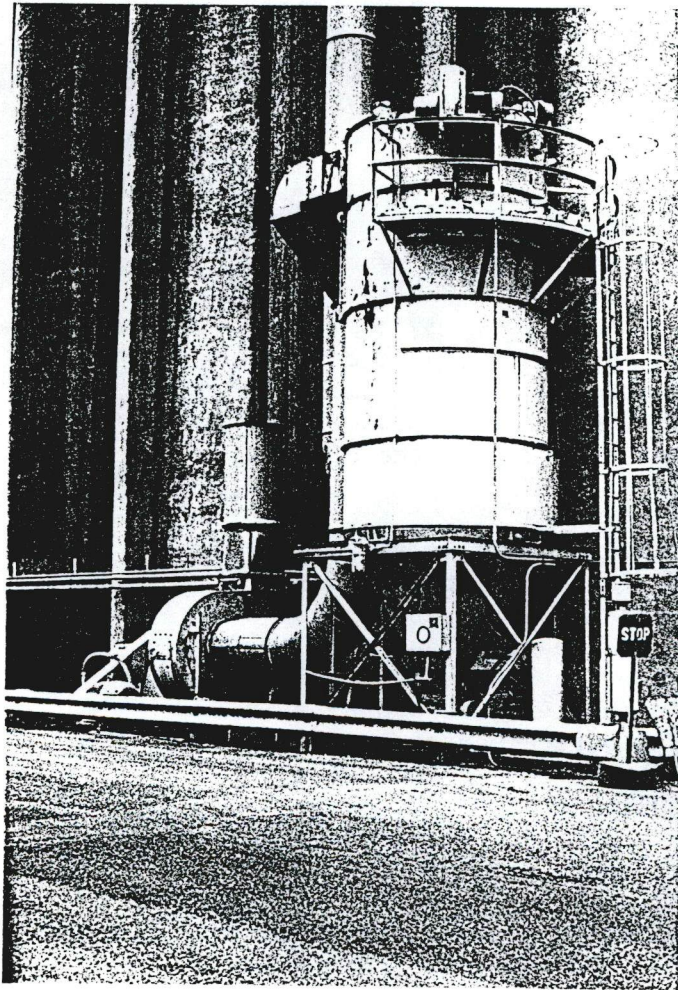
In the process of remodeling or demolition projects, glues and adhesives are often sawed and sanded. If those products contain asbestos, this activity can result in significant airborne contamination and an unhealthy atmosphere for the workers and residents. Even at dump sites, if not handled properly, asbestos fibers can become airborne as a result of heavy earth moving equipment and other vehicles driving over it. For this reason, special precautions must be implemented even during the ultimate disposal.

Before any friable asbestos can legally be removed, or encapsulated, within the Agency's jurisdiction, the contractor must submit a request and obtain prior approval, called a "Notice of Intent to Remove or Encapsulate Asbestos". In order to process this request and insure that all responsible parties, including L&I, are properly notified, the application must be received at least ten days prior to the job. Information required includes a site description and method of handling the waste, as well as, the amount of material, specific type of asbestos, and final disposition.

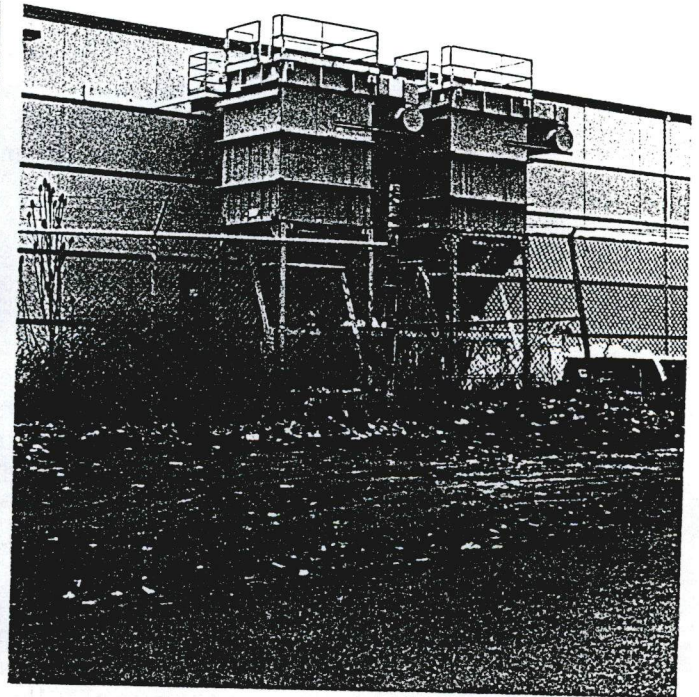
Heavy emphasis has been placed on the removal and/or encapsulation of asbestos laden products throughout the nation in recent years. Working with the Washington Department of Labor and Industries (L&I), the Agency tracks the removal and encapsulation projects and makes sure all jobs are conducted by licensed contractors, who are trained and certified in removal practices. In addition, each job application is screened in order to insure it is properly handled and disposed of after its removal. Most job site

inspections are conducted by the Labor and Industries, who has jurisdiction in the work place environment. Over the past years, SWAPCA and L&I have formed a close alliance in these projects that allows both agencies and the public to benefit.

During 1990 a total of 158 asbestos removal/encapsulation projects were approved by SWAPCA.



Baghouse control system used to capture grain dust.

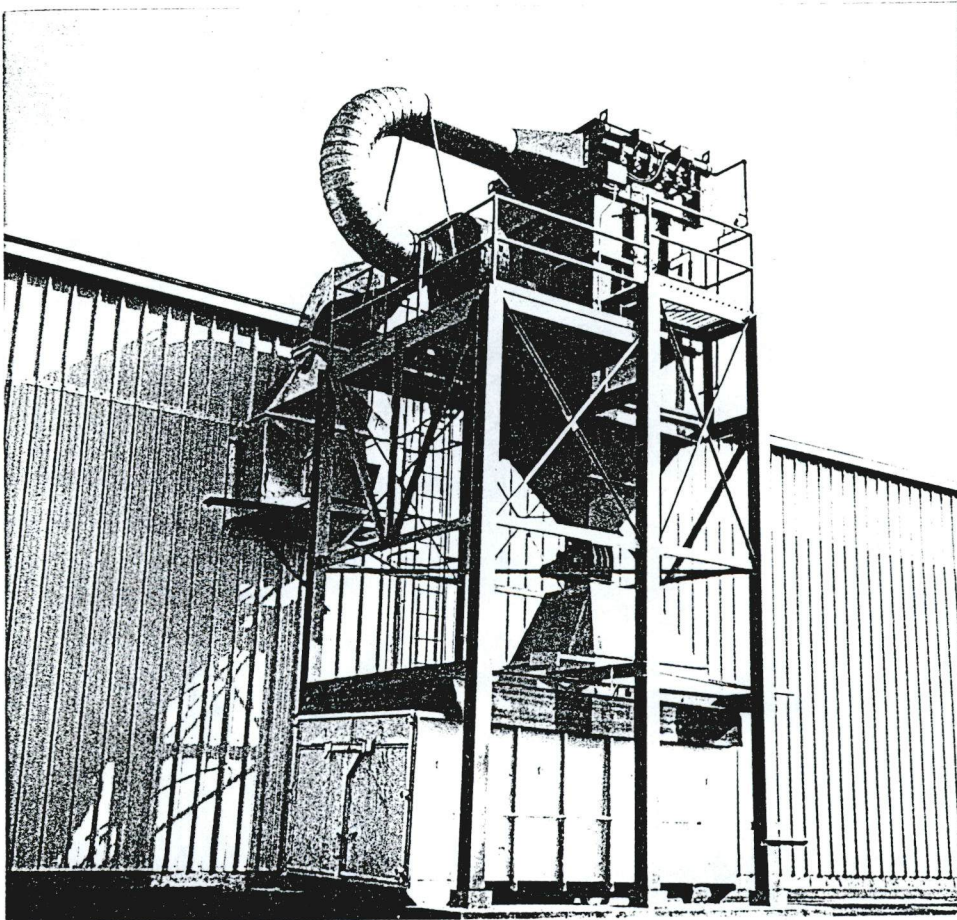


Baghouses used for the control of fine particles of paper dust generated in the manufacture of paper baby diapers.

Engineering

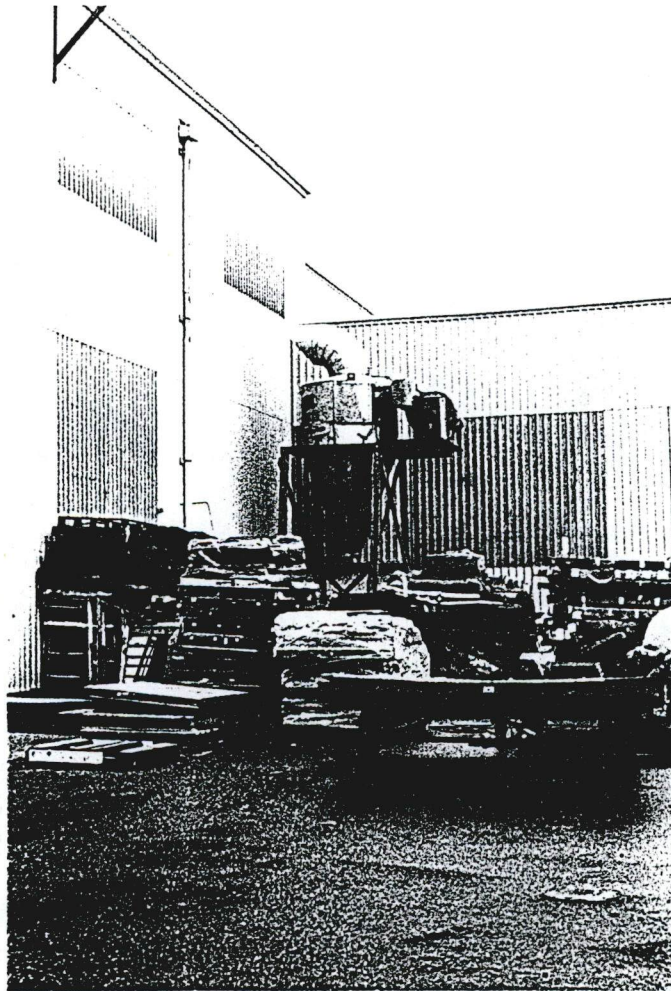
Application Review and Emission Evaluation

Primary responsibility for engineering and Application review falls under the responsibilities of the Agency's Chief Engineer, Mr. Bill Prastka, who has been with the Agency for approximately twenty-one years. Prior to the establishment of any new source of air contaminants, or modification to existing sources, the Agency must review the proposal in order to judge if the project will conform to the criteria generally associated with Best Available Control Technology (BACT). Before any construction can legally take place, SWAPCA's approval must be granted. In some cases this can become a lengthy and time consuming process. In order to help offset the cost of this review a \$75.00 filing fee is required on each Application.



New sources must be equipped with air pollution control devices, like this baghouse, and be capable of meeting a control criteria commonly referred to as "Best Available Control Technology" (BACT).

After the Agency's review has been completed and SWAPCA is satisfied that the proposal can be built in a manner that will not violate any portion of the State or Federal laws pertaining to air pollution, a document called a "Preliminary Determination" is issued. This is sent to the filing party and a copy is then kept on file with the Agency. The Applicant is required to place a public notice in the local newspaper where the construction is intended to take place, announcing their plans. The document and engineering review remains open for public input and comment for thirty days. After that period of time has lapsed, the proposed development is reviewed once again, including any public comments that may have been received. The public's input is then used in order to make the final determination as to whether or not to allow the construction. If the comments do not outweigh the initial preliminary determination results, the document is



Seldom able to meet the criteria associated with "Best Available Control Technology".

finalized and called the "final approval". Once built, the project is inspected by Air Quality Control Specialists in order to determine: 1) did the proposed equipment actually go in as approved, and 2) in actual field application, are the systems and equipment capable of continued compliance to all applicable regulations. If the answer to both of these questions is "yes", an Order of Authorization is issued.

A total of 127 "Applications for Approval/Notices of Construction" were received during calendar year 1990. 116 were processed and either approved or denied based on an engineering evaluation. This amounted to an estimated value of \$4,008,000.00 in capital construction.

Offsets for Volatile Organic Compounds

SWAPCA shares the same air shed with Portland, which is in nonattainment for ozone. Consequently, the Agency developed an emission offset banking system in order to achieve compliance with the federal ambient air standards. In as much as volatile organic compounds (VOC) are precursors to the chemical formation of ozone, it is necessary to control these emissions at the source. Any potential source of new VOC emissions, over one ton per year, must be "offset" by a ratio of 1 to 1.3. In other words, a source expecting to increase their emissions by 2 tons/year or emit that amount as a new source, would have to locate offsets in the amount of 2.6 tons per year before they would be allowed to construct the facility. Offsets can be either purchased outright from any facility that may be holding credits or they may apply for publicly held credits. SWAPCA maintains a public bank and under established guidelines can issue these to new and modified sources. If however, the amount requested is over 10% of the total bank balance, SWAPCA Board approval is necessary.

Emission Credits currently (12/90) in SWAPCA Bank

597.3 kg/day

Emission Credits Withdrawn from the Public Bank 1990

158.7 kg/day

Emission Credits Reclaimed by Public Bank in 1990

10.5 kg/day

Special Events

In keeping with further awareness of environmental issues and Earth Day 1990, the Agency joined with the State and Territorial Air Pollution Program Administrators (STAPPA) and the Association of Local Air Pollution Control Officers (ALAPCO) in sponsoring a school poster contest. The theme was "Earth Day 1990: Care About Clean Air" and was open to all students in grades Kindergarten through the twelfth grade. Two categories of entries were chosen: K through 6th and grades 7th through 12th. Each school was asked to submit the two best posters in each category. Prize money for the winning local entries in each category was contributed by SWAPCA in the amounts of \$50.00 - first place, \$30.00 - second place and \$20.00 - third place. In addition, the first place winner in each category went on to participate for the grand prize national money donated by STAPPA/ALAPCO. In each category there was \$500.00 - first place money, \$300.00 - second place and \$200.00 - third place awards.

On the local level the Agency chose the following students as having the best posters:

Kindergarten through 6th grade

1st Place: Tasha Malouff (Age 11)

South Ridge Elementary School

2nd Place: Curtis Bruun (Age 12) & Derrick Silvestri (Age 11)

Morton Jr. High School

Note: Curtis and Derrick tied for the 2nd place award and shared equally in the award money.

3rd Place: Shawn Whitney (Age 11)

South Ridge Elementary School

Seventh through twelfth grade

1st Place: Jamie Douglas (Age 13)

View Ridge Middle School

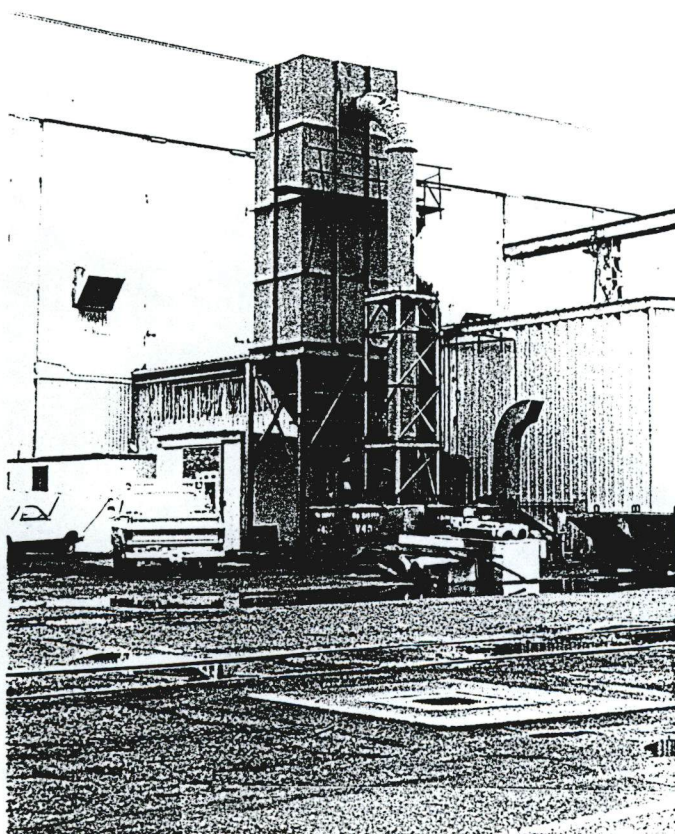
2nd Place: Jeremy Richardson (Age 13)

View Ridge Middle School

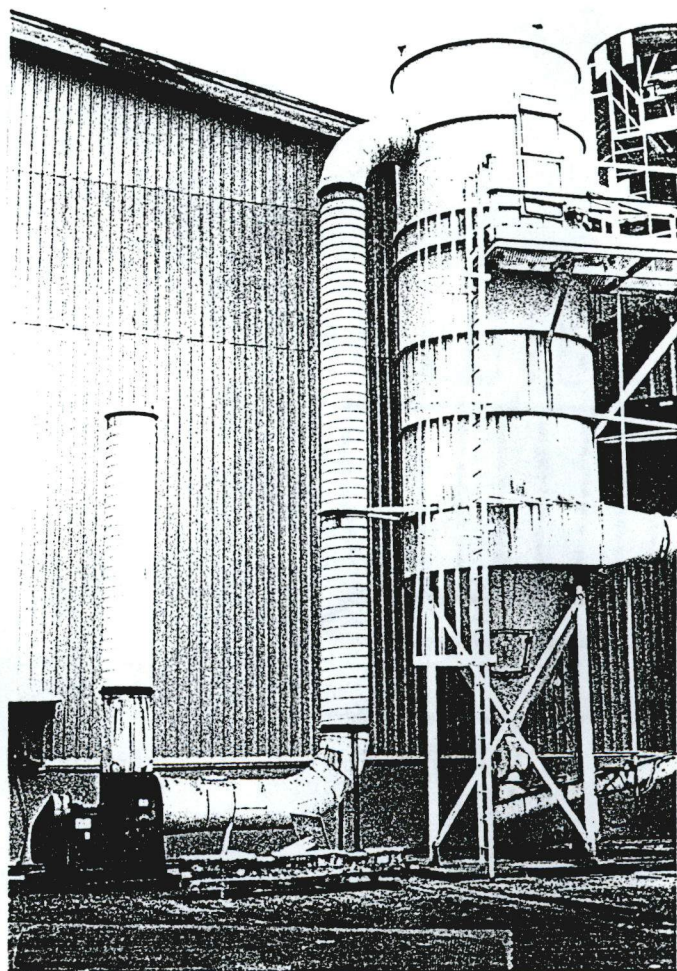
3rd Place: Ted Spear (Age 14)

View Ridge Middle School

The contest was well received and participation good. The two first place winners went on to compete on the national level, but unfortunately they did not win. Nevertheless, the Agency and all parties involved were proud of the local contribution these kids made for our community.



Baghouse used to control fugitive dust from a sandblasting chamber.



Baghouse used to control bulk commodities operations.

CONCLUSION

The Congress of the United States, after years of deliberation, signed into law the new Clean Air Act on November 15, 1990. This was without doubt the most important legislation for clean air advocates since the original Act of 1970. The new law addresses many of the concerns that have materialized in recent years. It includes important provisions authorizing the use of permits, funding assessments based on a source's air contaminant discharge and designation and requirements for non-attainment areas.

Due to the sheer magnitude of this legislation, it will be years until all phases are implemented and the effects fully understood. In the near future there will be many changes affecting how the Agency's program is administrated and in what areas will receive the major attention.

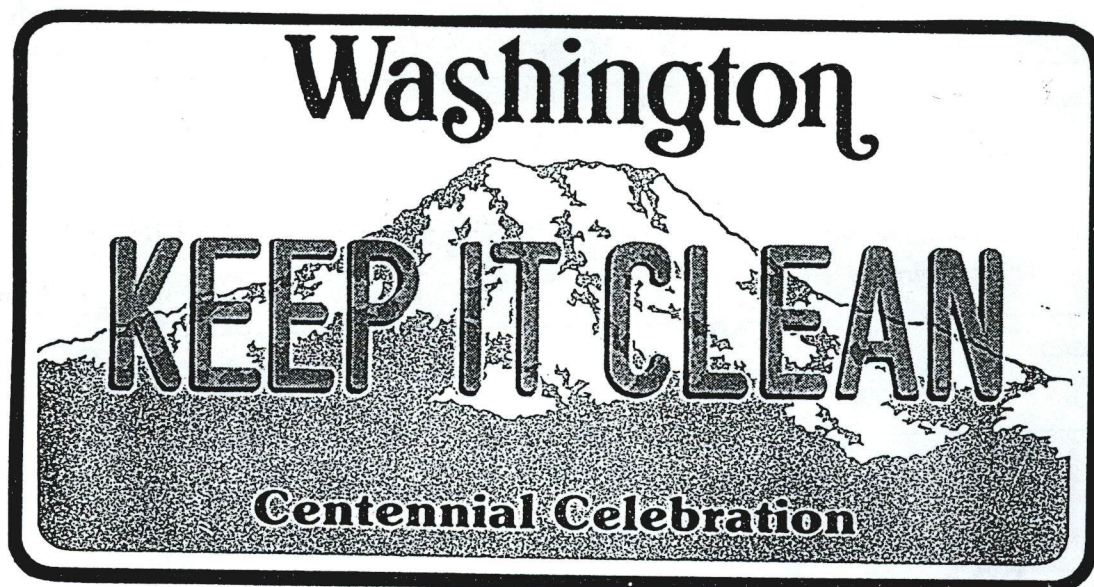
Being that SWAPCA is considered to be out of attainment in the Vancouver area for carbon monoxide and ozone, it is understandable that further emphasis will be given to these areas. This could be in the form of an Inspection and Maintenance Program (I&M) for private vehicles and more attention in the areas of gasoline dispensing, dry cleaning and chemical degreasing operations.

Woodstoves and their use will be a continuing problem area that will require further restrictions and limitations. We, in southwestern Washington, can expect that these activities will be monitored more closely in times to come. With the dramatic increase in Washington's population, the problem of woodstove smoke impacting others has increased dramatically. This can easily be seen in the number of nuisance smoke complainants that are now received by SWAPCA. The problem continues to increase as the populations grows and the residential housing becomes more concentrated.

Open burning is rapidly becoming more of an ambient air quality issue in our urban air-shed. Just like woodstoves, curtailment and reduction of open burning will become more crucial in years to come. As people are "sandwiched" more tightly together, these activities must be scrutinized more closely in order to protect the public health and well-being of the citizens.

In order to insure good ambient air quality it is important to look for less polluting processes. In doing so,

the source discharge becomes less demanding both in cost and resources. Expansion and new development will require further control efficiencies as technological advances move forward in the field of air pollution control equipment. Any new, or modified, source of air contaminant emission must include provisions to control those pollutants to a level at least equal to the capabilities associated with "best available control technology" (BACT). This is continual advancing field of efficiency and will change as advances progress. For this reason the Agency's staff must stay alert to new and more creative ways of increasing control efficiencies.



AMBIENT AIR QUALITY STANDARDS

POLLUTANT	NATIONAL		WASHINGTON STATE
	PRIMARY	SECONDARY	
TOTAL SUSPENDED PARTICULATES Annual Geometric Mean 24 - Hour Average	75 ug/m ³ 260 ug/m ³	60 ug/m ³ ^a 150 ug/m ³	60 ug/m ³ 150 ug/m ³
PM10 Annual Arith Mean 24 - Hour Average	50 ug/m ³ 150 ug/m ³	50 ug/m ³ 150 ug/m ³	50 ug/m ³ 150 ug/m ³
SULFUR DIOXIDE (SO₂) Annual Average 24 - Hour Average 3 - Hour Average 1 - Hour Average	0.03 ppm 0.14 ppm ----- -----	----- ----- 0.50 ppm -----	0.02 ppm 0.10 ppm ----- 0.40 ppm ^b
CARBON MONOXIDE 8 - Hour Average 1 - Hour Average	9 ppm 35 ppm	9 ppm 35 ppm	9 ppm 35 ppm
OZONE 1 - Hour Average ^c	0.12 ppm	0.12 ppm	0.12 ppm
NITROGEN DIOXIDE (NO₂) Annual Average	0.05 ppm	0.05 ppm	0.05 ppm
LEAD Quarterly Average	1.5 ug/m ³	-----	-----

NOTES: (1) ppm = parts per million

(2) ug/m³ = micrograms per cubic meter

(3) Annual Standards never to be exceeded, short -term standards not to be exceeded more than once per year unless noted.

a - This is not a standard, rather it is to be used as a guide in assessing whether implementation plans will achieve the 24 - hour standard.

b - 0.25 ppm not to be exceeded more than two times in any 7 consecutive days.

c - Not to be exceeded on more than 1.0 days per calendar year as determined under the conditions indicated in Chapter 173-475 WAC.

Note: Reprinted with corrections from "Washington State Air Monitoring Data for 1988" 9/89.