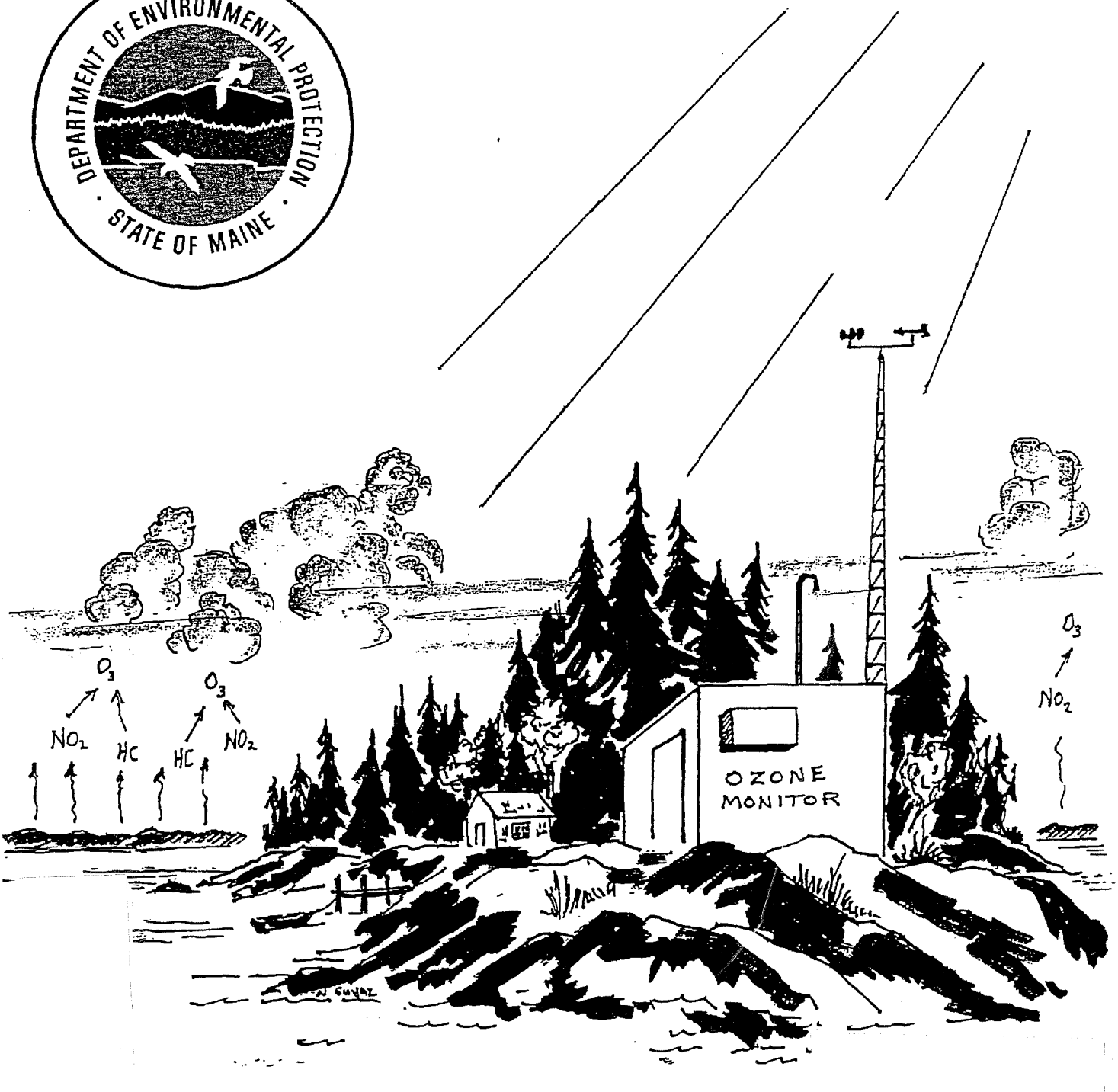
1991 ANNUAL REPORT



BUREAU OF AIR QUALITY CONTROL

STATE OF MAINE
Department of Environmental Protection

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JOHN R. McKERNAN, JR.
GOVERNOR

DEAN C. MARRIOTT
COMMISSIONER

MEMORANDUM

Date: November 18, 1992
To: Recipients of the 1991 Bureau of Air Quality Annual Report
From: *Dennis L. Keschl*, Director - Bureau of Air Quality Control
RE: Introduction to the 1991 Annual Report

Attached is a copy of a report on the Bureau's of Air Quality Control activities during the 1991 calendar year. I believe that you will find this report helpful in understanding the Bureau's organization, its accomplishments during 1991, and its future goals and direction.

The legislature established the Bureau in MRSA Title 38 Section 581, to provide for "a coordinated state-wide program to control present and future sources of emission of air contaminants to the end that air polluting activities of every type shall be regulated in a manner that reasonably insures the continued health, safety and general welfare of all of the citizens of the State; protects property values and protects plant and animal life."

We accomplish this by adopting state and regional strategies to control sources of air pollution. The scope of these activities has changed significantly over the past twenty years as science and technology have brought about a better understanding of the problems. For instance, we are currently developing strategies to control pollution from automobiles to reduce ambient concentrations of ground-level ozone, which is perhaps the most pervasive and significant environmental health threat we face in Maine. By moving forward to control the pollution release by the cars we drive we are also reducing our exposure to the air toxics they release.

The Clean Air Act Amendments of 1990 are also requiring many new changes in our approach to provide for healthy air. This federal law requires us to achieve even greater reductions of pollutants from industrial, automotive, and area sources. It requires us to charge fees based "the polluter pays" principle, and is mandating an aggressive program to reduce the emission of 189 listed "air toxics."

While we move in a traditional centralized "command and control" regulatory formats in many areas of air pollution control, there are new ideas emerging intended to provide for significant improvements in air quality while decreasing the costs to the regulated community and society as a whole. Strategies are being introduced which will allow the competitive nature of the market place to provide incentives to reduce the release of air pollutants. Successful pollution prevention initiatives, such as the Green Lights Program established by the United States Environmental Protection Agency (USEPA), prove that it does not have to cost more to achieve significant improvements in environmental quality. In fact, many programs pay back initial investments to establish them in a very short time, while achieving ongoing savings in real dollars expended.

These are exciting times for the Bureau, and we face the future with the belief that the challenges we face in the coming years are really opportunities to provide Maine with healthier air at significantly reduced costs. By working with "all" the people in Maine we will achieve this goal.

Please call me if you have any questions about this report or any of our air quality improvement initiatives.

1991

Annual Report

of the

Bureau of

Air Quality Control

covering calendar year 1991

State of Maine
Department of Environmental Protection

Dean C. Marriott, Commissioner
Dennis L. Keschl, Bureau Director

State House Station #17
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About the Cover

The cover illustration, by Air Bureau meteorologist Norm Guyaz, depicts one of the Bureau's coastal ozone monitors. Coastal ozone formation and transport became a major focus of attention in 1991. Formative steps were taken during the year toward organization of a cooperative research project on coastal ozone, among state, provincial and federal governments in both the U.S. and Canada. This project, to be known as the Gulf of Maine Study, is addressed on page 18.

Special Thanks

The Bureau extends its appreciation to Matt Thayer for his contribution to this report and to Terry Hanson and Paula Ripley for their help in preparing the report.

Bureau Overview

The Bureau of Air Quality Control is one of five bureaus of the Maine Department of Environmental Protection. The mission of the Bureau (as contained in state statute *38 M.R.S.A. §581*) is to coordinate a state-wide program to control air contaminant emission sources.

The purpose of the Bureau's work, as the statute goes on to note, is to assure the continued health, safety and general welfare of the citizenry, to protect property values, and to protect plant and animal life. To fulfill this mission, the Bureau has a two-pronged strategy: improve air quality in those areas with poor air quality; and prevent significant deterioration of air quality in areas which do not have significant air quality problems.

State and federal laws target several air pollutants for intensive regulatory control and set ambient air quality standards for them. These pollutants, known as *criteria* pollutants, include carbon monoxide, lead, particulate, nitrogen oxide, ozone, and sulfur dioxide.

The direction and intensity of Bureau efforts is influenced by the criteria pollutants, the ambient air quality standards for them, and air quality problems in the State of Maine. These targeted pollutants and their respective ambient standards serve as a measure by which to gauge the progress and success of air quality improvement programs.

The Bureau is organized into three divisions: Field Services; Licensing & Enforcement; and Technical Services. Two support units, Policy & Procedures and Administrative, assist the three primary divisions in carrying out their responsibilities. (See Appendix A for the Bureau organizational chart.)

Bureau staff are located in Augusta and at regional offices in Portland, Bangor and Presque Isle. (See Appendix B for staff name and location information.) Fifty-three individuals currently staff the Bureau.

Field Services

The Field Services Division is responsible for air quality monitoring and air emission source compliance. This division is organized into two sections - Monitoring and Compliance.

The Monitoring Section is responsible for the collection, analysis and reporting of ambient air quality data. As part of its responsibilities, this section maintains the state's permanent and seasonal air quality monitors, conducts audits of industrial air monitoring systems, and issues daily Air Quality Index reports for ozone during the summer months.

In addition, the Monitoring Section reviews air quality analysis reports submitted by permit applicants to determine the background air quality levels to use in evaluating license applications.

The Compliance Section is responsible for assuring compliance of licensed sources with their permitted emissions levels. To assure compliance, this section conducts inspections of air emission sources. Both the Monitoring and Compliance Sections also respond to citizen complaints.

Both monitoring and compliance are conducted primarily out of the field offices. The director, two section managers, a chemist and a stack testing engineer coordinate these activities from Bureau headquarters.

Licensing & Enforcement

The Licensing and Enforcement Division is responsible for processing air emission license applications, and for initiating enforcement action against sources found to be in violation of air quality laws, regulations, or license conditions. The division is composed of three sections: Modeling; Licensing; and Enforcement.

The Modeling Section reviews the air emissions information supplied by license applicants to determine the modeled concentration and direction of dispersal of the proposed air emissions. The meteorologists ensure that the proposed emissions source will not cause, or contribute to, a violation of state or federal air quality standards.

They also review proposed emissions for incremental increases in contributions. This is done to prevent significant air quality deterioration in areas which currently are in attainment of air quality standards.

The Licensing Section reviews the modeling conclusions, control technology assessments and other application information to determine whether the proposed source could cause, or contribute to, violations of air quality laws, regulations, and guidelines.

The air licensing program is unlike all other programs in the Department of Environmental Protection because it issues state operating licenses that in most cases are *federally* enforceable. The federal government has, in other words, delegated its air licensing responsibility for Maine to the Bureau.

Maine is one of only a few states that have been given this responsibility through delegation of the federal Prevention of Significant Deterioration air program by the Environmental Protection Agency (EPA). The federal government, through the Clean Air Act Amendments of 1990, is now asking other states to develop similar programs.

The Enforcement Section is responsible for the coordination of enforcement activities once violations have occurred.

This section pursues a range of enforcement options from administrative resolutions to court action.

Technical Services

The Technical Services Division is responsible for a great variety of Bureau activity. The division is organized into three sections: Standards Evaluation; Air Toxics; and Data Management.

The Standards Evaluation Section develops the regulations needed to implement both state and federal air quality laws. This section also oversees the development and implementation of special air quality improvement programs, such as those now concentrating on mobile emission sources.

The Standards Evaluation Section also maintains the State Implementation Plan (SIP). The SIP is a key component of efforts to attain and maintain the National Ambient Air Quality Standards (NAAQS). The SIP also forms Maine's agreement with EPA on how Maine will meet its responsibilities under the Clean Air Act.

As part of the attainment demonstration, SIP activities include long-range emissions transport modeling. This modeling uses photochemical grid modeling and addresses issues such as ozone and acid rain.

The Air Toxics Section is responsible for implementing federal legislation which addresses toxic emissions. As part of this effort, the section is developing an inventory of toxic emissions in the state.

The Air Toxics Section and the Bureau of Health jointly develop a priority ranking and comprehensive risk assessment of hazardous air pollutants. Assessments have been produced on pollutants such as toluene, chlorine, perchloroethylene, formaldehyde, and wood smoke.

The Data Management Section is responsible for the maintenance of ambient air quality data and source emission data for licensed air emission sources. The Data Management Section also manages toxics inventory data, combustion and process source emissions data, mobile and area source emissions data, air regulation compliance data, inspection targeting data, and pollution increment tracking data.

The Data Management Section develops and implements procedures for the manipulation of ambient air quality data, meteorological data, and emission inventory data that must be entered into the Aerometric Information Retrieval System (AIRS) at EPA's National Computer Center. This mainframe database serves the entire United States as a repository of all air pollution and related data.

The Data Management Section also provides computer systems support for Bureau staff and technical information and databases to support state legislative initiatives.

Support Units

Two support units assist the Bureau divisions and the Bureau director in their efforts. These units are the Policy & Procedures Unit and the Administrative Unit.

The Policy & Procedures Unit is responsible for the following: coordination of legislative activities; the preparation of budgets and grant applications; the coordination of Bureau permit assistance; and the coordination of intra-Bureau and inter-Bureau projects.

The Administrative Unit provides clerical support to Bureau staff, coordinates Bureau purchasing, and provides licensing support.

Ambient Air Quality Advisory Committee

Although not formally a part of the Bureau, the Maine Ambient Air Quality Advisory Committee is important to the Bureau. The Committee has been formed to increase public participation in the development of Bureau policies and procedures, and to serve as a roundtable at which new issues can be discussed and relevant information readily disseminated.

The Committee is addressing important issues relevant both to Maine's air quality and to the need to foster growth and development opportunities in the state. The Committee is helping the Bureau to gain a better understanding of:

- how the Bureau can improve air quality in Maine;
- how the Bureau can improve its regulatory processes; and
- how to increase the public's access to the Bureau.

The Maine Ambient Air Quality Advisory Committee (see Appendix C for committee members names and affiliation) is composed of representatives of groups interested in environmental regulations, including the Natural Resources Council of Maine, the Maine Chapter of the American Lung Association, the Maine Chamber of Commerce and Industry, the Maine Development Foundation, the Paper Industry Information Office, the Maine Municipal Association, and a dozen other organizations.

The Year in Review

The Clean Air Act Amendments of 1990 produced a flurry of activity for the Bureau during calendar year 1991. The Clean Air Act specifies in Section 105 that EPA may provide funding to air pollution control agencies for the implementation of their air quality control programs. Receipt of this funding, otherwise known as the 105 Grant, is linked to the achievement of certain goals and commitments.

These goals and commitments, many of which were associated with Clean Air Amendment requirements, were major driving forces behind Bureau activities during 1991. These commitments led to initiatives in toxic emissions control and mobile source emissions control, and led to the development of a new emissions-based fee structure for the licensing system.

In addition to fulfilling these goals and commitments, the Bureau embarked on several other important efforts. These efforts were financed with competitive grants that EPA awarded to the Bureau. With this grant support, the Bureau launched projects including those to explore low-emission energy options available to Maine, and to digitize air emissions data onto the state geographic information system.

All of these efforts are discussed in this section.

Air Toxics Characterization

The Bureau completed a pilot research project to characterize toxic compounds in the air in one Maine community. Toxic air pollutants differ from the commonly targeted "criteria" pollutants in that the toxics have not yet had ambient air quality standards developed for them.

Toxics still can significantly impact the health of exposed human, plant and animal communities. The State of Maine classifies toxic air pollutants using a four-category toxicity rating system. Pollutants are ranked on a scale of 1 to 4 for their carcinogenicity, mutagenicity, ability to cause reproductive effects, and their ability to produce other acute effects, such as digestive and respiratory problems.

The Bureau initiated the Rumford toxics study because relatively little is known about the ambient concentration of toxics in Maine's air. The project succeeded in identifying several contaminants not previously associated with sources in the Rumford area, and in laying the groundwork for the future characterization of air toxics in other Maine communities.

Energy Alternatives

The EPA also awarded the Bureau a grant to explore energy options available to Maine. This funding has made it possible for the Bureau to examine energy options available for the state, and to determine the potential associated pollution levels.

As part of this effort, the Bureau is working to identify at least one Maine community to benefit from the use of an alternative energy source, in this case compressed natural gas, to fuel municipal vehicles. As part of this project, propane and stored electric energy sources are also being explored as alternative motor vehicle fuels.

New Fee Structure for Operating Permits

Another major 1991 accomplishment for the Bureau was to secure legislative approval of a new fee structure. This bill established the mechanism by which the Bureau determines the fees charged to air emission sources.

The legislation replaces the former single-tier fee structure with a three-tier structure. The fees are assessed annually rather than on a five year schedule, although the license renewal period has remained at five years. Fees are assessed on license-allowed emissions of regulated pollutants with the exception of carbon monoxide, though licenses still contain carbon monoxide emissions limits.

The new fee structure is additive and is assessed as follows:

*Two dollars per ton for the first 1,000 tons or less of total licensed allowable emissions;

*Four dollars per ton for the next 3000 tons (between 1,001 and 4,000 tons inclusively); and

*Eight dollars per ton for all licensed allowed emissions greater than 4,000 tons.

*The legislation also established a minimum license fee of $100 and a maximum of $100,000.

The new fee structure has created a much needed additional source of revenue for the Bureau. In addition to authorizing seven new positions at the air bureau, the fee legislation authorized additional capital equipment funding to support the monitoring program.

Ozone Monitoring

Ozone monitoring continued to be a high priority for the Monitoring Section in 1991, due to Maine's continuing non-attainment of state and federal ozone standards. Ozone is photochemically produced, so it is a

problem primarily during the summer months.

The ozone monitoring season runs from April 1 to October 31. Ozone levels are monitored from Kennebunkport to Jonesport to Milford, so operating the 11-unit ozone monitoring network requires significant effort. The only year-round ozone monitor is operated by the National Park Service at Acadia National Park.

Compliance Inspections

The Bureau conducted 150 inspections during 1991. Several of these inspections unveiled violations of air quality laws, regulations, or license conditions. Each facility found to be in violation was issued a Letter of Warning by the field inspector, and referred to the Enforcement Section for possible formal enforcement action.

Facilities are selected for compliance inspections using a computerized system that ranks all licensed sources in order of their likelihood to cause air quality problems or to be in violation of license conditions. Maine is at the forefront of application of this EPA-developed program.

The Bureau also received and responded to 293 citizen complaints during 1991. These were referred to the Bureau's regional offices for investigation.

Application Processing

After reducing the number of pending license applications from 120 in January to 104 in November, the Bureau received a record 18 applications in December. By year's end, the number of pending license applications had increased to 122. Overall, the Bureau issued 92 licenses during 1991, and received 94 applications during the year. (See Table I for information on application processing activity in 1991.)

TABLE I
Air Emission License Application Flow

		License Flow	
Month	On hand	Received	Issued
Jan	120	6	8
Feb	118	5	3
Mar	120	13	11
Apr	122	8	20
May	110	10	1
Jun	119	4	9
Jul	114	7	3
Aug	118	6	11
Sept	113	6	10
Oct	109	3	8
Nov	104	18	6
Dec	116	8	2
Balance	122		
Total		94	92

In addition, the Modeling Section was transferred to the Licensing &

Enforcement Division from the Technical Services Division in 1991. This move was made to better coordinate the licensing process and to better serve the licensed community.

Increment Tracking Policy

The Bureau began to develop a formal increment tracking and evaluation policy in 1991. Though federal law specifies increment standards, or the levels by which a single emissions source may diminish air quality in a particular area, the EPA has never given direction to states on how to determine the incremental contributions to air quality deterioration of a particular source. Prior to 1991, the Bureau's own guidance was somewhat vague and not summarized in a single document. The bureau therefore initiated the development of an increment policy to better track increment standards across the state.

The Bureau has received a $100,000 grant from EPA to implement the necessary work. This policy is expected to be finalized in 1992. A baseline database, discussed on page 19, will be developed in accordance with this policy.

Enforcement Activity

The Bureau concluded 30 enforcement actions during 1991, ranging from administrative consent agreements to court cases. These were in addition to verbal warnings and letters of warning issued by inspectors.

The first step in formal enforcement action, the Notice of Violation, contains basic information on the nature of the violation. The Notice of Violation serves as formal notice of a documented violation, but is not a necessary prerequisite to initiating an enforcement action. The Bureau issued 14 such notices during 1991.

The administrative approach to an enforcement action is the negotiation of an Administrative Consent Agreement. Through the consent agreement process, the party in violation, the Board of Environmental Protection, and the Maine Attorney General agree to certain findings that establish the violation and agree to specific requirements to resolve the violation. The agreement contains penalties assessed for the violation.

During 1991, the state entered into nine consent agreements initiated by the Bureau. In addition, the state and the federal government participated jointly in two separate enforcement actions.

The final level of enforcement action is in the courts. This level begins with the referral of the case to the Attorney General, for the filing of a complaint in the court. Only one complaint was filed as part of a Bureau enforcement action during 1991.

Judicial action usually leads to the issuance of a Consent Decree against the violator. This Consent Decree is similar to the Consent Agreement, except that it is ordered by the court. Enforcement action led to the conclusion of four Consent Decrees in 1991.

The Bureau collected approximately 1.5 million dollars in penalties for calendar year 1991. See Table II for more details.

TABLE II

Enforcement Penalties Collected by the Air Bureau in Calendar year 1991

Type of Enforcement Action	Penalty Amount
Consent agreements (11)	$521,470
Consent decrees (4)	$980,442
Total for 1991	**$1,501,912**

Legislative Activity

The Policy & Procedures Unit worked with 39 bills during the 115th Legislature's 1st Regular Session. Several of these bills are especially significant to the Bureau because the Bureau has implementation responsibility for them. These bills are outlined below.

Legislative Document (L.D.) #2, "An Act Concerning Open Burning," updated the Department of Conservation's statute language pertaining to open burning. This change made the Department of Conservation language consistent with the Bureau regulation on open burning.

L.D. #112, "An Act Concerning Adequate Enforcement of Air Quality Law," resulted from a major Bureau policy development effort. As discussed earlier, this bill updated the fee structure for the air emissions licensing program to require an annual fee on the sum of all licensed pollutants. The bill set new fees, and established a new minimum and maximum fee. Several attachments to the bill made modifications to stack testing requirements, best practicable technology requirements, and meteorological data collection requirements. The new fee program was implemented in November 1991.

L.D. #131, "An Act to Further Regulate Ozone Depleting Products," banned the sale of several products that contain chlorofluorocarbon (CFC)-containing products. Banned products included cleaning sprays used for non-industrial purposes, fire extinguishers used for residential purposes, and party streamers or noisemakers.

L.D. #622, "An Act Relating to the Use of Material-separated Refuse Derived Fuel," defined and set specifications for material-separated refuse-derived fuel. This bill also established conditions under which refuse-derived fuel may be combusted.

L.D. #807, "An Act to Amend the Law Relating to Road Dust," eliminates the requirements for fugitive emission control on public or private roads that are not a part of a commercial or industrial facility.

L.D. #1063, "An Act to Broaden the Availability of Loans Under the Finance Authority of Maine to Improve the Environment," allowed loan or grant funding for installation and/or construction of gasoline service station vapor control.

The Bureau sponsored L.D. #1137, "An Act to Repeal Certain Redundant Laws Relating to the Bureau of Air Quality Control," to eliminate statutory language in Chapter 4 which was the same as Bureau regulatory language. All duplicate language was repealed with the exception of the low sulfur fuel provision.

L.D. #1629, "An Act Relating to Certain Unavoidable Equipment Malfunctions," allows industry to exempt certain periods of air emissions in excess of license limitations if the excess was due to an unavoidable equipment malfunction. This statute also requires that the Bureau consider allowances for excess emissions during cold start ups and planned shutdowns.

L.D. #1577, "An Act to Amend Certain Laws Affecting the DEP," allows for the operation of a rotary drum mix asphalt batch plant to process up to 10,000 cubic yards of soil contaminated by gasoline or #2 fuel oil per year, but only in areas that are in attainment for ozone. A facility will not be required to seek an air emission permit if it stays within this limit.

Regulatory Activity

The Bureau issued seven (see Table III for summary) new or amended regulations during 1991. Many of these were related to new air quality control requirements under the Clean Air Act Amendments of 1990.

Chapter 106, "Low Sulfur Fuel," establishes the maximum sulfur content of fossil fuels that may be burned in various air quality control regions in the state. This chapter was amended to make it consistent with state statute, and to correct minor deficiencies in the State Implementation Plan.

Chapter 109, "Emergency Episode Regulations," is intended to prevent air pollution from reaching levels that would cause imminent and substantial harm to human health by restricting air emissions during air pollution emergencies. This chapter was amended in 1991 to reflect the change in measurement of particulate matter from total suspended particulate to fine particulate.

Chapters 112, 118 and 120 are known as the gasoline marketing rules. These rules require the use of vapor control systems by gasoline storage terminals, tank trucks, and gas stations. Vapor control systems are required to reduce the volume of gasoline vapors lost

during transfer, storage and refueling operations. The gasoline marketing regulations were amended in 1991 to clarify the definition of tank truck.

Chapter 125, "Perchloroethylene Dry Cleaner Regulation," establishes the control technology required for all perchloroethylene-using dry cleaners in the state. Perchloroethylene causes liver cancer in animals and is a suspected human carcinogen. Dry cleaners account for over 80% of all perchloroethylene emissions in Maine. Controlling dry cleaning facilities will reduce the emission of perchloroethylene to the ambient air, thus improving overall air quality and providing greater protection of public health and welfare.

TABLE III

Air Quality Regulations Adopted or Amended in 1991

Chapter	Title of Regulation
106	Low Sulfur Fuel
109	Emergency Episode
112	Petroleum Liquids Transfer Vapor Recovery
118	Gasoline Service Stations Vapor Control
120	Gasoline Tank Truck Tightness Self Certification
125	Perchloroethylene Dry Cleaners
126	Capture Efficiency Test Procedures

Chapter 126, "Capture Efficiency Test Procedures," specifies the test procedures required to measure how much of the total volatile organic compound (VOC) emissions from a regulated source is captured and delivered to the device that destroys the VOCs. This regulation was needed in order to improve the Bureau's ability to enforce the volatile organic compound regulations concerning paper coating, and in the future graphic arts regulations.

Educational Outreach

Education was identified by the Commissioner as one of the top priorities for the DEP in 1991. Two Bureau staff members have served on the DEP's Education Task Force which seeks to identify how to improve educational outreach.

The Task Force has identified four major categories of educational outreach that need improvement: client (the regulated community) education; general public outreach; school/teacher educational outreach; and staff education.

Most of the current educational outreach is directed toward the regulated community in the form of public meetings, hearings, workshops and informational programs provided to private organizations. Major educational programs in 1991 addressed

tank truck tightness certification requirements and the 1990 Clean Air Act Amendments.

General public educational programs included the development of fact sheets on specific topics, and letters in response to informational questions. Topics of particular interest to the public in 1991 included ozone depletion, ground level ozone, the greenhouse effect, acid rain, and chlorofluorocarbon regulations.

School outreach activities in 1991 included Earth Day presentations, classroom presentations on global warming, ozone depletion and acid rain, and ground level ozone.

Bureau staff assisted the DEP Educational Task Force in the development of an environmental education grant proposal to EPA for the development of a proactive school education outreach program. The grant application proposed the formation of a coalition of environmental educators to participate in an environmental education interactive television (ITV) series for teachers in Maine. The grant application also proposed the acquisition and presentation of curriculum on top priority DEP issues and the establishment of a DEP technical assistance network for teachers. The Department was not awarded the grant, but will continue to seek other sources of funding.

Air Toxics Data Quality Assurance

The Bureau received a grant to provide quality assurance for the Toxic Release Inventory data compiled by the Maine Emergency Management Agency and the EPA. This data consists of toxic release information from manufacturing facilities various thresholds established by Congress as part of the Superfund Amendments and Reauthorization Act's Community Right to Know provisions.

The employment threshold specifies that the mandatory reporting requirements are in force only for emission sources with at least 10 full-time employees or an annual total of 20,000 part-time hours. To be required to report, these firms must also manufacture or process at least 25,000 pounds of chemicals or otherwise use 10,000 pounds of chemicals in the manufacturing process, and must fall between 20 and 39 in the Standard Industrial Code.

As a first step, Bureau staff verified that industrial manufacturers which met the threshold criteria have reported information on each chemical they used to both the Maine Emergency Management Agency and EPA, and that MEMA and EPA correctly input the data. Verification is achieved by cross-checking the data from the two sources, and then comparing that data with DEP information.

The second step of quality assurance is data verification through on-site facility inspection. The goal of inspection is to confirm that each facility has reported accurately for all designated chemicals. As part of the grant, the Bureau must inspect a minimum of 20% of Maine's 114 industrial manufacturers which meet or exceed the above thresholds. This includes all of the "kraft" paper mills in the state. The Bureau hopes to exceed this requirement and inspect 75% of emission sources.

The development of this database will result in an accurate inventory of the emissions from manufacturing facilities in Maine that meet the reporting thresholds, and will aid in the development of new regulations to improve air quality in Maine. This information will also provide a foundation for the development of future air toxic inventories in the state. The Bureau may be able to use this information to determine appropriate emission levels and toxic emissions licensing fees, once toxics licensing is initiated.

Ambient Air Data Quality Assurance

The Bureau has employed a mainframe based utility called COMPARE to begin checking the data integrity of ambient air quality data originally input into the Bureau's data management system and then converted and compiled on EPA's computer system at EPA's National Computer Center. Ten years worth of data, for 1979 through 1988, are currently being processed.

Emissions Inventory

As part of the ongoing process of updating and maintaining an emissions inventory database and, in particular, for developing the 1990 Base Year Emissions Inventory for ozone precursors, the Bureau's Data Management Section mailed questionnaires to all of the major point sources in the state. Additionally, smaller point sources of volatile organic compounds were identified by their Standard Industrial Classification codes and were mailed questionnaires. Area source emissions were estimated using techniques such as population-based or employment-based emission factors. An EPA mobile source model (Mobile 4.1 model) was run to calculate motor vehicle emissions.

All point source data was entered into a personal computer database. The mobile and area source emissions data will be entered into the EPA national computer system.

PM-10 Non-attainment Problem

The Bureau devoted major resources to the PM-10 (particulate matter less than 10 microns in size) non-attainment problem in Presque Isle. PM-10 filters were analyzed by the PIXE (Proton Induced X-ray Emission) technique, road samples were collected and analyzed using PIXE, and the Chemical Mass Balance computer model was run to verify that road-dust was the major contributor to the filter loading. A Memorandum of Understanding with the City of Presque Isle and a revision of the State Implementation Plan had to be accomplished in order to resolve this problem.

GIS Data Development

A $60,000 EPA grant to identify energy sources available in Maine and the pollution associated with each form of energy and alternative sources of energy was awarded to the Bureau. This funding provided for one full-time position at the Bureau and one part time position with the state Office of Geographic Information Systems (OGIS).

The objective of the GIS portion of the project is to design and implement a GIS database for emissions inventory data. The bureau's continued work with OGIS on this project will result in a region-wide geographical representation of the extent of air emissions from point, area and mobile sources, and will include data layers for the use, transport or disposal of various energy forms.

Another project being undertaken with OGIS is the *Gridded Emission Inventory for Ozone Precursors and Other Criteria Pollutants Using GIS*. This project is being funded by a $40,000 EPA grant with a 5% match from the State of Maine. The objective of this project is to develop a methodology for preparing an ozone precursor emission inventory for point, area, mobile and biogenic sources which is spatially located within 5 kilometer by 5 kilometer grids. This information will eventually be used for urban airshed modeling; until then either individual or grid-wide air emissions information will be retrievable for use by air managers.

Air Quality in 1991

Maine's air quality for 1991 recorded few significant changes over the levels measured during 1990. During 1991 Maine continued its monitoring programs for sulfur dioxide, nitrogen dioxide, ozone, lead, carbon monoxide, sulfate and particulate. Carbon monoxide and nitrogen dioxide were each monitored at one site during 1990. Sulfate levels were analyzed at four sites around the state. There did not appear to be any significant changes in these three pollutants during 1991.

The particulate monitoring program continued in 1991 with 25 sites measuring total suspended particulate and 39 sites measuring fine particulate. The total suspended particulate program has been continued at those sites which have previously recorded problems or are near sources with the potential to cause significant increases in either short term concentrations or annual geometric means. Fine particulate concentrations continue to be very low throughout the state, with the exception of the Presque Isle area, and even in Presque Isle levels have dropped. The maximum concentration recorded in Presque Isle during 1991 was 82% of the standard.

Sulfur dioxide monitoring was conducted at 17 sites around the state. During 1990 several sites had shown significant increases in the short term 24-hour concentrations of sulfur dioxide, including sites in Millinocket and Madawaska which had exceedences of the 24-hour standard. During 1991 Madawaska remained below the standard and Millinocket dropped to well below the standard. The annual averages for sulfur dioxide generally dropped during 1991 with the exception of Madawaska. The annual average in Madawaska climbed and was higher than the three previous years. Even with the increase in Madawaska the annual average is still less than half of the standard.

Ozone continues to cause problems in the state of Maine with all monitoring sites reporting exceedences of the state standard(a total of 854 hrs. in exceedance) and seven of the 11 sites operating during 1991 reporting violations of the federal standard (51 hrs. in exceedance). The site in Port Clyde led the state with 162 hours recorded in violation of the state standard. The site in Isle Au Haute reported five days in violation of the federal standard which was the most recorded for 1991. Because the meteorological conditions affect ozone levels, and those conditions can vary significantly around the state, it is difficult to evaluate trends at each of the sites. However, because of the number of days of federal standard exceedances, 1991 does appear to be significantly worse than 1989 and 1990. A map showing the ozone classifications for Maine as designated by the 1990 Clean Air Act Amendments can be found in back of this report. (See Appendix D - Maine Ozone Classifications.) The

least severe of the non-attainment classifications in Maine is *transitional*; the most severe category for Maine is *moderate*.

Lead continues to be a success story. Even though lead levels have been drastically reduced from ten years ago they are still showing improvements each year and 1991 continued the trend. The maximum 24-hour lead concentration recorded during 1991 was only 13% of the state standard and the maximum quarterly average at any site during 1991 was only 1.7% of the federal standard. The elimination of leaded gasoline has been the primary contributor to the decline of lead levels in the ambient air.

A more detailed review of Maine's air quality will be available in the 1991 Air Quality Report. Copies of that report will be available through the Bureau of Air Quality Control in Augusta and through each of the regional offices.

Objectives for the Coming Year

The Clean Air Act Amendments of 1990 and the regulations that EPA will promulgate to guide states in their compliance efforts are expected to generate much Bureau activity in the coming year. The Bureau is currently awaiting EPA's final regulations on the Title V permit program, chlorofluorocarbon recycling requirements, and nitrogen oxide Reasonably Available Control Technology requirements. Once these regulations are received, the Bureau will begin program development or other action to achieve compliance.

Cooperative efforts with other states and organizations will also generate several initiatives to be carried out by the Bureau. Because air pollution is a regional concern, especially in the Northeast, cooperative efforts may form the foundation for significant air improvement efforts in the coming year and beyond.

Expansion of Monitoring Activity

The Bureau will be expanding its monitoring activities in the coming year in several ways. This expansion will be in both the breadth and depth of monitoring coverage.

A better understanding of the ozone problem in Maine must be developed. To this end, the Bureau plans to add four new ozone monitoring sites to the eleven sites already in operation.

Several new parameters will be added to the ozone monitoring effort. As directed by the Clean Air Act Amendments, EPA is developing regulations for enhanced ozone monitoring stations. These sites, known as Photochemical Assessment Monitoring Stations (PAMS), will monitor for ozone, nitrogen oxide, and volatile organic compounds, as well as for meteorological data such as temperature and solar radiation. One or two of these enhanced monitoring sites will likely be established in Maine sometime next year, in the ozone non-attainment area.

The Bureau may initiate more inland sampling of air quality in both northern and western Maine. This geographical expansion of monitoring activities will be done in part to determine the extent of Canada's contribution to Maine's ozone non-attainment problem, as well as the significance of Maine's contribution to its ozone problem. This effort also will improve the Bureau's ability to understand and track plumes.

The Bureau also hopes to expand the *other* criteria pollutant monitoring efforts to areas for which little or no data has previously been gathered. This data is needed to improve the

determination of background air quality levels, in order to more effectively support the licensing program.

Gulf of Maine Initiative

The Bureau expects to be involved in a Gulf of Maine air quality research initiative slated to begin next year. The National Oceanic and Atmospheric Administration (NOAA) will track plumes over the Gulf of Maine, using NOAA planes and personnel. NOAA will be working with the Canadian government on this project, including both Canadian federal and provincial agencies, and may be joined by several regional air quality control agencies as well as the EPA, the National Park Service and many Canadian groups.

As part of this proactive effort, the Bureau expects to explore the possibility of installing a monitor on the Scotia Prince, a passenger ferry traveling the waters between Maine and Nova Scotia. The Gulf of Maine initiative may be just the beginning of an ongoing effort to learn more about ozone transport issues and the Gulf of Maine ozone transport corridor.

Support of Acid Rain Monitoring

The Bureau is actively soliciting continued funding to support the continued operation of several acid precipitation monitoring sites. The Bureau currently supports two acid precipitation monitoring sites. The other sites in Maine are operated by the U.S. Geological Survey and the National Oceanic & Atmospheric Administration.

The Clean Air Act Amendments have an entire chapter devoted to acid rain. The chapter requires a 10 million ton reduction in emissions to 1990 baseline levels. The acid rain chapter also directs EPA to develop an acid deposition standard. Acid rain monitoring needs to continue in order to effectively chart progress toward achievement of the emissions reduction and deposition standard.

Due to state budgetary cutbacks, however, the Maine State Legislature has abolished the Bureau's Acid Rain account. Funding for the acid rain monitoring effort will end during 1992 unless alternative funding can be found.

The Bureau has written letters to Congressional committee members to seek additional funding for acid rain research and monitoring activities. Congress, however, has approved drastic reductions for the federal acid rain programs as well.

Continued monitoring is imperative to prevent a gap from developing in this 10-year database. A gap would make the job of determining progress toward the new federal air quality goals more difficult.

Compliance Activity

The Bureau's Compliance Section hopes to establish a system under which water and air inspectors can share inspection responsibilities. A joint water and air compliance team could increase inspector productivity, and would benefit the regulated community by allowing a single facility to have only one inspector for both water and air compliance. This joint inspection program would involve the 4 air inspectors and 8 or 9 water inspectors in the DEP.

The Bureau also intends to inspect non-licensed air pollution emitters in the coming year. Such facilities could include dry cleaners, or gasoline terminals and stations, which are supposed to install vapor recycling systems under regulations adopted by the DEP.

Baseline Emissions Database Development

The Bureau received a $100,000 grant from EPA to develop a point-source baseline emissions database in the coming year. Point sources of air emissions are stacks and vents. Baseline emissions are the emissions of pollutants which occurred in the baseline year (1977 for Sulfur Dioxide and Particulate Matter and 1987 for Nitrogen Dioxide). Pollutant concentrations throughout the State are permitted to increase by limited incremental levels over those concentrations which occurred in the baseline year. Baseline emissions data are used to determine the concentrations which existed in the baseline year.

This project would put all of the historic emissions data into a single database, along with current emission levels and other emission-related information. Other emission-related information includes stack diameter and height, mass emission rates, and dimensions of nearby buildings which may cause downwash effects.

Baseline emissions database development is an important project for the entire Bureau because it will increase efficiency and possibly effectiveness. Engineers currently have to hand assemble this data in order to model a source or advise a consultant, and they have no organized way to retain this information. This project will provide the meteorologists and engineers with direct access to a listing of all sources within a given radius of an applicant, and baseline emissions associated with these sources. The system would benefit the regulated community by reducing the time required for the Bureau to provide model input parameters for sources other than the applicant.

Maine is at the forefront of this development. Most other states have yet to begin developing a baseline emissions database.

Air Quality Modeling Guidelines

The Bureau also will establish guidelines for air quality modeling in the State of Maine. These guidelines, the development of which was mandated by the state legislature in 1992, will provide a general framework for air quality analyses performed by air emission license applicants.

The modeling guidelines will result in improved consistency and quality of modeling analyses received by the Bureau. The regulated community will be in a better position to anticipate the time and cost associated with preparation of an air quality analysis. With improved quality of work received, efficiency of the Bureau's review of air quality analyses is expected to improve dramatically.

Mobile Source Strategy

The Bureau is devoting a great deal of energy into the development and the adoption of a Mobile Source Strategy for Maine. Mobile source emissions are one of the major contributors to ozone formation in the state of Maine; consequently mobile source emisions control represents the most cost effective method of reducing ozone forming pollutants.

The three points of the Mobile Source Strategy are as follows: the design, manufacture and certification of new vehicles to cleaner tailpipe emissions standards (through adoption of the California low emission vehicle (LEV) program); the development of an inspection and maintenance (IM) program to reduce emissions from in-use vehicles; and the use of less-polluting gasoline and alternative fuels.

A key element of the Mobile Source Strategy is the Inspection & Maintenance (IM) Program. Since motor vehicles represent the single greatest source of ozone forming compounds, the Clean Air Act Amendments of 1990 require Maine and other states exceeding the federal air quality standard for ozone to institute inspection and maintenance programs for vehicles in certain areas. Maine's Motor Vehicle Inspection Program will establish mandatory tailpipe and evaporative emissions inspections for all 1968 and later model-year gasoline powered vehicles under 10,000 pounds in weight. The program is designed to identify those poorly maintained vehicles that make up only 20% of the motor vehicle fleet, yet are responsible for 80% of the motor vehicle emission problem.

Initially, the program will be confined to the seven non-attainment counties in southern coastal Maine, but program coverage may be expanded in the future. Under the program, each vehicle will be inspected on a biennial basis, and upon successful completion of the inspection will be issued a certificate of compliance. In the event

a vehicle does not pass the inspection, the owner will be required to repair the faulty emission control system component(s), or receive a waiver before he or she will be eligible to receive a Maine Motor Vehicle Safety Inspection Sticker.

Our Mobile Source Strategy also provides for an initiative is to bring cleaner vehicles to Maine through adoption of the California Low Emission Vehicles (LEV) program in Maine. Along with Maine, eleven other northeastern states and the District of Columbia, jointly known as the Ozone Transport Commission, have agreed to adopt the California Low Emission Vehicle program. The California Low Emission Vehicle program is more stringent than the federal emissions reduction program, and will achieve substantial emissions reductions for the state. The improvement to air quality in Maine to the state should be dramatically increased because of the regional nature of the solutions being pursued.

The final aspect of Maine's Mobile Source strategy is the adoption of the federal reformulated gas program created in the Clean Air Act Amendments of 1990. This program requires that cleaner burning fuels be sold in all participating states by 1995. Reformulated gasoline will produce 15% fewer ozone forming emissions and toxic emissions by 1995, and at least 25% fewer of each by 2000.

Average vehicle miles traveled has doubled in the last 20 years, and is growing at 2-3% per year. By 2005, the growth in vehicle miles traveled could erode emissions reductions gained through implementation of less stringent federal mobile source controls. The Bureau hopes that implementation of its more stringent, multi-faceted Mobile Source Strategy will reduce sufficiently the vehicular component of Maine's ozone precursor emissions so that transportation control strategies will not need to be developed.

Educational Outreach

Future education outreach to the regulated community will be increased with the implementation of the Small Business Technical Assistance Program (SBTAP). In response to Clean Air Act mandates, the Bureau will initiate legislation through the Office of Pollution Prevention to establish a SBTAP in the coming year. Technical assistance on air quality issues would then be expected to be available in November 1992.

Bureau staff will pursue the acquisition of Air Quality curriculum guides and Non-Point Source curriculum guides for distribution to Maine teachers. The Bureau will explore options for distributing the curriculum guides and providing training and technical assistance for educators. A model for the effective utilization of interactive television will be developed for the Bureau by a Coalition task force, as a means of presenting these programs for educators and students beginning in 1993.

Bureau staff is also developing a plan for the DEP on the presentation of special staff training seminars to acquaint new personnel with the various Bureaus, their regulations, policies and procedures, and with the DEP's environmental mission and how best to fulfill it.

Air Toxics Risk Management

The Bureau has several projects planned for the coming year. Of primary importance is to continue with its risk management program. Based on comprehensive air toxic risk assessments developed by the Maine Bureau of Health, the Air Toxics Section plans to develop and recommend either emissions standards or ambient air quality standards for formaldehyde and chlorine.

GIS Database Development

The Air Toxics Section also has as a priority to complete the TRI (toxic release inventory) Data Capabilities Grant. One of the Bureau's commitments is to enter the data into the state GIS system. This data will help to alert Bureau staff to areas of the state that may need additional attention to air quality.

Bureau staff will also be working to obtain traffic and link/node information from the state Department of Transportation's Transportation Integrated Network Information System (TINIS) for the Portland metropolitan statistical area. This database contains road lengths and the type and volume of traffic over them. Once this information is digitized onto the state GIS database, mobile source emissions for each of the identified links may be calculated and digitized onto GIS.

Challenges & Opportunities

The Bureau faces several challenges and opportunities in the coming year that will influence its operations. These include the following: a delay in the issuance of federal air quality guidance and regulations; state funding cutbacks; the need to reach out to impacted communities; and the need to address air quality issues at a regional level.

Delay in Federal Directives. The recent Clean Air Act Amendments was signed into law in November 1990. In the succeeding year, the EPA was required to release guidance to air quality management agencies on how to approach implementation of the amendments. EPA was scheduled to issue regulations that specified the precise requirements of the amendments. EPA has not succeeded in issuing much of the required guidance and many of the regulations in a timely manner, and is an average of six months to a year behind its targeted release dates.

The delay in receipt of federal guidance and regulations has made the Bureau's effort to bring Maine into compliance with the Clean Air Act an even greater challenge. The delay could mean that Maine may not comply with certain aspects of the Clean Air Act by the mandated deadlines, leaving the Bureau vulnerable to citizen lawsuits.

State Budget Cutbacks. The Bureau has been challenged by state government budget cutbacks. At a time when the Bureau needs increased funding to implement the 1990 Clean Air Act Amendments, state funding for the Bureau has been reduced.

State budget cutbacks have also led to a sizable reduction in the number of work hours available in the employee work year. Bureau staff must take between 17 and 30 furlough days per year, and are only allowed to work 39 hours per week. This amounts to approximately 5.7 person-years lost due to the reductions. This cutback in staff time at the job has heightened the challenge of implementing the Clean Air Act Amendments within the mandated deadlines.

The challenge the Bureau faces as a result of the budget cuts is further exacerbated by employment opportunities in the private sector. Industry's need to comply with the Clean Air Act Amendments will continue to make for an increasingly competitive air quality job market.

Reaching Out. The Bureau must reach out to the general public, a group that now falls within the scope of those directly impacted by air quality regulations as a result of the broadened focus of the new Clean Air Act requirements. At the same time the Bureau must assure effective communication with its traditional

regulated community, the industrial sector.

The Bureau is building on its effective communication with the industrial sector by making sure that industry is aware of the new requirements and deadlines of the Clean Air Act. The Bureau also is keeping industry informed about the Bureau's range of regulatory options and is asking for their inputs.

The Bureau must also continue to strengthen communication with the new group in its regulated community - the general public. Communication on air quality issues with this sector used to be primarily source-specific. Air quality efforts nationwide, having made significant progress with industrial sources, are broadening their scope. Attention is now being given to the importance of mobile sources of air emissions - the automobile.

New regulatory items which focus on the automobile, and all *mobile sources*, will for the first time directly impact the general public. The Bureau is committed to reach out to the public in the coming year, to be sure that the public is aware of the new requirements of the Clean Air Act, of the options available to address automotive emissions, and of the likely impacts and benefits of new regulations on the automobile owner.

Regional Cooperation. The nature of the air quality problem requires that Maine cooperate with other states in New England and the Northeast to achieve ambient air quality standards. This year, with the focus of regulatory efforts expanded to include the automobile, regional cooperation is even more important.

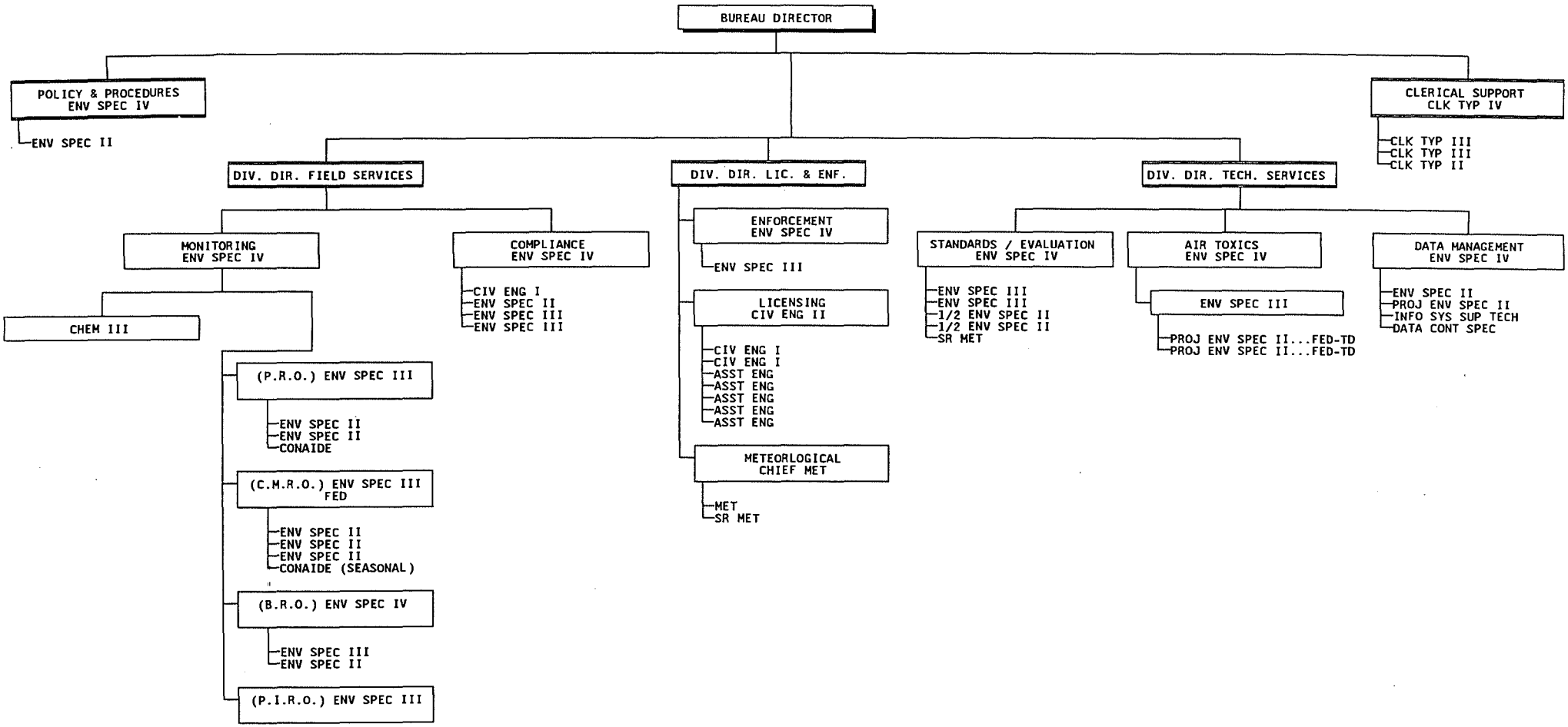
Prior to 1990, regional cooperative efforts were voluntary. In the late 1960s Maine joined in the formation of the New England States for Coordinated Air Use Management (NESCAUM), formed to work on a broad range of air quality issues. This association proved to be successful, and was later expanded to include New York and New Jersey.

Regional cooperation is no longer voluntary. The Clean Air Act Amendments *required* the formation of a broad-based regional air quality organization in the northeast, called the Ozone Transport Commission (OTC). The OTC, composed of 12 northeastern states and the District of Columbia, is charged with leading the effort to bring the northeastern corridor into compliance for ozone. This year Dean Marriott, Commissioner of the Maine DEP, has been selected as OTC chair.

By reaching out to the regulated communities and the general public, and working productively in regional solutions, Maine will meet the challenges that are posed by the requirements of the Clean Air Act Amendments of 1990, the lack of timely federal guidance, and limits on our resources.

Appendix A - Bureau Organizational Chart

OEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY CONTROL



Appendix B - Employee Distribution List

Employee Distribution by Division & Office
Bureau of Air Quality Control
Dennis Keschl, Bureau Director

Field Services
Leighton Carver, Div. Dir.

Monitoring
Andrew Johnson, ES IV
Richard Mayo, Chem III

Compliance
Louis Fontaine, ES IV
Scott Mason, CE I

Licensing & Enforcement
Bryce Sproul, Div. Dir.

Enforcement
Kevin Macdonald, ES IV
Mike Mendel, ES III

Licensing
Vacant, CE II
Marc Cone, CE I
Ed Benedikt, CE I
Kathy Malokie, Asst. Eng.
Rick Creswell, Asst. Eng.
Karen Morrison, Asst. Eng.
Robert Hartley, Asst. Eng.
Kim Hibbard, Asst. Eng.

Modeling
Vacant, Chief Met
Norm Guyaz, Met
Tom Downs, Sr. Met.

Technical Services
John Chandler, Div. Dir.

Standards Evaluation
Ron Severance, ES IV
Jeff Crawford, ES III
Andrea Lapointe, ES III
Deb Avalone, ES II
Carolyn Wheeler, ES II
Cliff Michaelsen, Sr. Met.

Air Toxics
Ellen Doering, ES IV
Rich Greves, ES III
Jeff LeDoux, Project ES II
Mark Chase, Project ES II

Data Management
Jerry Bernier, ES IV
Rick Dawson, ES II
John Devine, Project ES II
Paula Ripley, Sup. Tech.
Janet Vafiades, Data Spec.

Policy & Procedures
James Brooks, ES IV
Richard Limouze, ES II

Administration
Gladys Keene, CT IV
Rita Rancourt, CT III
Terry Hanson, CT III
Jaye Libby, CT II

Regional Offices

Augusta
Denise Cormier, ES III
Robert Kerr, ES III
Scott Wilson, ES II
Rick Perkins, ES II
Vacant, ES II
Vacant, Conserv. Aide

Bangor
Jeff Emery, ES IV
Don Darling, ES III
Ted Perkins, ES III
Paul Nichols, ES II

Portland
Cathy Richardson, ES III
Alan Morrison, ES III
Roy Rike, ES II
Marylee Mullen, ES II
Angela Hight, Conserv. Aide

Presque Isle
Jim Gramlich, ES III

Appendix C

Maine Ambient Air Quality Advisory Committee

List of Present Members and the Organization Each Represents

MAINE AMBIENT AIR QUALITY ADVISORY COMMITTEE

*C*hair *P*erson: Mr. Dennis L. Keschl, Director
*S*taff *P*erson: Mr. James P. Brooks
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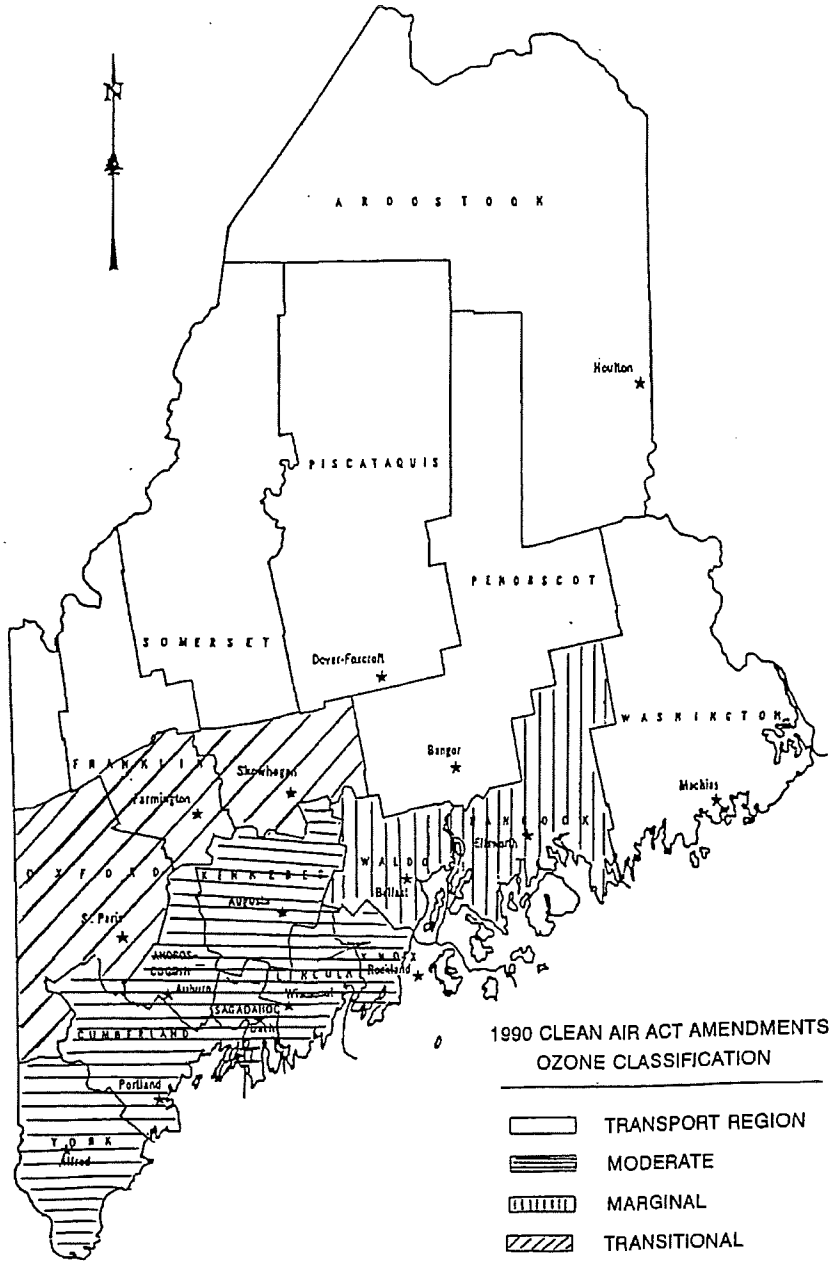
*Commissioner, DEP
*Deputy Commissioner DEP
*Division Directors, BAQC
*Policy & Procedures Unit, BAQC

Appendix D

Maine Ozone Classification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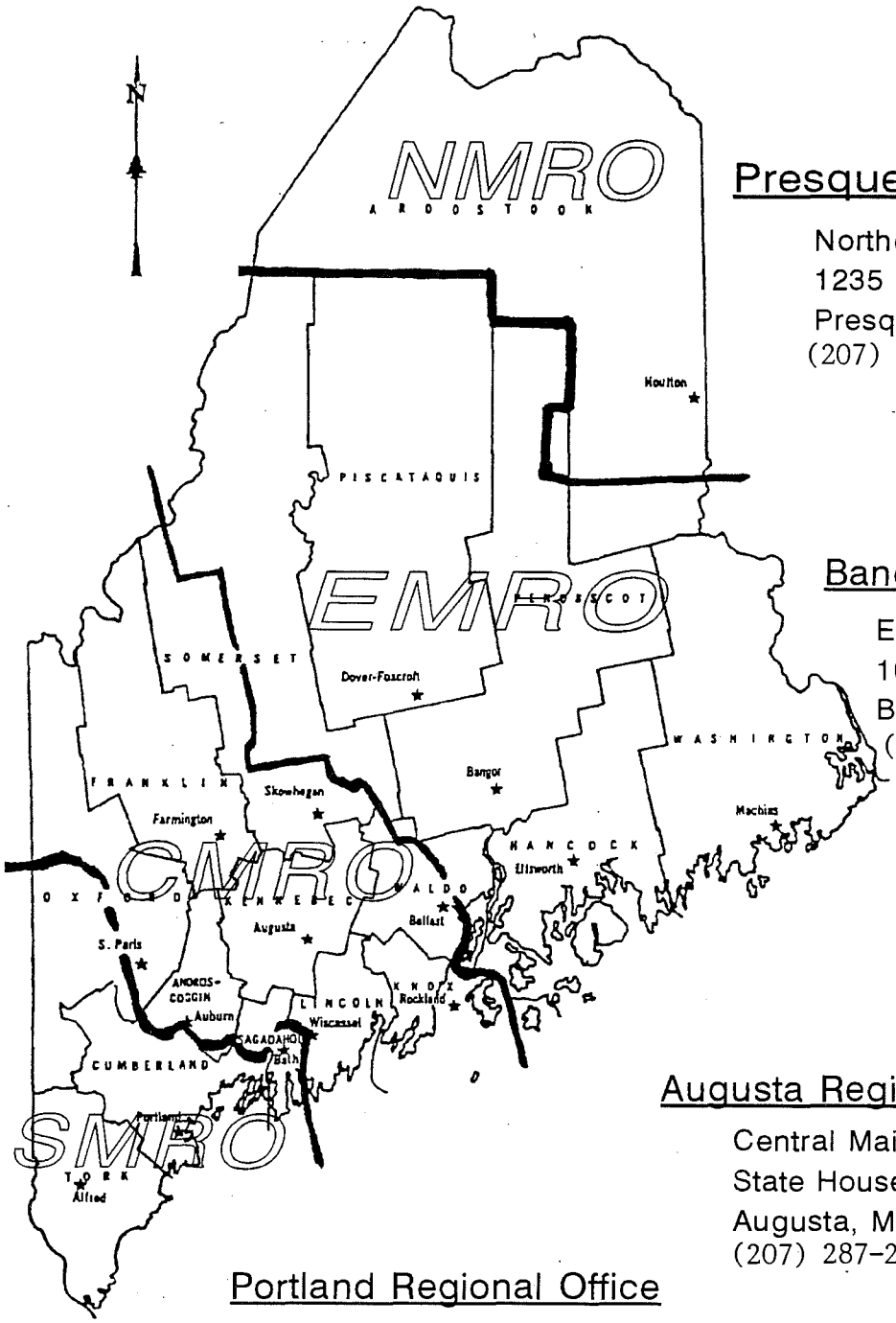
AROOSTOOK
Houlton
PISCATAQUIS
PENOBSCOT
SOMERSET
Dover-Foxcroft
WASHINGTON
Bangor
Machias
FRANKLIN
Farmington
Skowhegan
OXFORD
KENNEBEC
Augusta
WALDO
Belfast
HANCOCK
Ellsworth
S. Paris
ANDROS-
coggin
Lewiston
Auburn
LINCOLN
Rockland
SAGADAHOC
Bath
CUMBERLAND
Portland
YORK
Alfred
1990 CLEAN AIR ACT AMENDMENTS
OZONE CLASSIFICATION
TRANSPORT REGION
MODERATE
MARGINAL
TRANSITIONAL

BAQC Regional Offices



Presque Isle Regional Office

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Bangor Regional Office

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Augusta Regional Office

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Portland Regional Office

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