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MICHIGAN AIR POLLUTION CONTROL: A CASE STUDY

I. INTRODUCTION

The State of Michigan began its fight against air pollution with the passage of two Acts in 1965: the Air Pollution Act¹ and the Tax Exemption for Air Pollution Control Act.² In adopting these acts the legislature hoped to solve the state's special needs for immediate air pollution control, created by the heavy concentration of automobile manufacturers and their suppliers in the state.

The fight was to be waged through the efforts of a newly-created Air Pollution Control Commission³ and its staff. To present an evaluation of the success of these efforts, this comment concentrates upon two case studies of the enforcement of air pollution control upon one supplier of the automobile manufacturers, the Michigan foundry industry. The foundry industry was chosen because (1) it is an important producer in the state's economy, and (2) it presents complex problems to the commission resulting from financial problems existing in much of the industry. The case studies serve as a valuable basis for preliminary judgment about the effectiveness of the commission during the several years in which it has attempted to remedy Michigan's air pollution problems. These studies also provide data for several suggestions for reforming both the Air Pollution Act and the policies and procedures of the commission to further protect the public's interest in the state's air resources.

II. THE AIR POLLUTION ACT

The Air Pollution Act creates a nine-member commission, which is authorized to "promulgate rules and regulations for con-

¹ MICH. COMP. LAWS §§ 336.11-336.36 (1967).

² MICH. COMP. LAWS § 336.1-336.8 (1967).

³ MICH. COMP. LAWS § 336.13(2) (1967). The commission is composed of the state director of public health, the state director of natural resources, the state director of agriculture and six citizens appointed by the governor with the advice and consent of the senate. Of the six citizens:

2 shall be representative [sic] of industrial management, 1 of whom shall be a registered professional engineer trained and experienced in matters of air pollution measurement and control; 2 shall be representatives of local governing bodies, 1 of whom shall be a full-time air pollution control officer; 2 shall be representatives of the general public, 1 of whom shall be a licensed doctor of medicine who shall be experienced and competent in the toxicology of air contaminants.

trolling or prohibiting air pollution in areas of the state affected by air pollution. . . ."⁴ The rules and regulations to be developed by the commission are to form part of a general comprehensive plan for the control or abatement of existing and future air pollution.

Upon receipt of a written complaint or upon its own initiative, the commission is authorized to conduct investigations to determine the presence of a violation. If the commission finds a violation, it shall by "conference, conciliation, and persuasion"⁵ endeavor to convince the source of the pollution to effect its control. Should these methods fail the commission shall issue a complaint against the violator and order his presence at a hearing. Following the hearing, the commission shall again determine whether a violation exists. Then, the commission shall issue to the violator a statement specifically identifying the violation and a final order, subject to de novo review in the circuit courts, prescribing the means to procure compliance. Any person who fails to comply with the order of the commission within the time fixed by it shall be liable for money penalties. The commission may, however, upon a showing of unreasonable hardship, grant variances from its rules or regulations. The variance may be granted for a period of time not exceeding one year; although it may be renewed.

In giving effect to its rules and regulations, the commission is to cooperate with local governmental units which may make and enforce regulations more rigorous than those propounded by the commission. However, when confronted with a community that fails to respond to air pollution problems, the commission, after consultation with the local governing body, may take any appropriate action in order to enforce its rules and regulations.

The actual administration and enforcement of the act is largely accomplished by the staff members of the air pollution control section of the Michigan Department of Public Health's Division of Occupational Health.⁶ At present eight staff members, allocated to three regions of the state,⁷ are responsible for all of the

⁴ MICH. COMP. LAWS § 336.15(a) (1967).

⁵ MICH. COMP. LAWS § 336.18 (1967).

⁶ In 1967 the section had 12 staff members and a budget of \$147,000. *Hearings on Air Pollution—1967 (Air Quality Act) Before the Subcomm. on Air and Water Pollution of the Senate Comm. on Public Works, 90th Cong., 1st Sess., pt. 3, 1160-1283 (1967)*. In fiscal year 1968-69 there were 16 staff members operating with \$198,000; in 1969-70, 24 were paid \$245,000 of a \$302,000 appropriation. R. Rice, M.D., Program Plan of Michigan Department of Public Health 1969-70, at 220 (1970).

⁷ Prior to the regional organization, each field engineer was responsible for overseeing control programs for specific industrial categories, e.g., cement plants, utilities, foundries, etc. throughout the state. One disadvantage of this kind of specialization is indicated by the fact that one day three staff engineers chanced to meet each other in Alpena, Michigan—all there for different reasons.

field work. Their obligations include answering complaints, making investigation, urging sources of pollution to adopt emission control programs, and providing technical advice. The workings of staff members will be further discussed within the case studies, *infra*.

A. Rules: The Air Use Permit System

The commission's first discretionary power under section 5 is to "promulgate rules and regulations for controlling or prohibiting air pollution in areas of the state affected by air pollution. . . ."⁸ After countless commission meetings with various interest groups and industrial representatives, and two public hearings before the state legislature, the rules proposed pursuant to this power were approved by the Senate in August 1967, two years after the act was passed.⁹

The rules are divided into five sections. Part 1 enumerates relevant definitions. Part 2 of the rules provides the procedure of the "air use approval" permit system, which is central to the staff's control program. Part 3 sets forth the standards for density of emission, and Part 4 deals with procedures for testing and sampling.

Part 2 of the rules is entitled "Air Use Approval." It requires that "[a] person planning to construct, install . . . or alter any process, fuel-burning, refuse-burning, or control equipment pertaining thereto, which may be a source of air pollution shall submit plans and specifications [thereto] . . . for approval prior to the initiation of construction, installation, or alteration."¹⁰ Through this requirement of prior approval, the permit system not only provides information on control techniques that are being planned but also gives the staff the opportunity to advise industry on whether the approach chosen for control of the problem can reasonably be expected to succeed.¹¹ Where it is recognized that a control plan cannot accomplish its purpose, the commission may force a change through denial of the permit. Moreover, the tax exemption allowed under the Tax Exemption Act for the cost of

⁸ MICH. COMP. LAWS § 336.15(a) (1967).

⁹ [1954] Administrative Code of Michigan, R336.11-R336.62 (1967).

¹⁰ *Id.* R336.21 (1967); MICH. COMP. LAWS § 336.15(h).

¹¹ In 1968-69, applications for permits to install incinerators exceeded those for industrial control systems 400 to 100. In the first six months of fiscal 1969-70, about 100 applications have been received for each category. The practical difficulty is that only one engineer is available to accomplish this analysis, which for large industrial plants can be quite complicated. That engineer relies on the already over-extended field engineers to answer his questions about specific problems in the plans, but rarely has time to diagnose technical difficulties or evaluate a plan's actual operation. It has been indicated that two full-time assistants would be needed to catch up with followup.

so much of the planned facility as "is designed and operated primarily for the control, capture and removal of pollutants from the air" will be denied until a valid permit is granted.¹² Thus, the industry is encouraged to formulate an effective control plan.

Part 2 of the rules also creates 38 exceptions to the permit system.¹³ The scope of these exceptions, as well as any omitted or novel source of pollution, is limited by the general provisions of rule 46, R 336.46:

No person shall cause or permit the emission of an air contaminant or water vapor, including an air contaminant whose emission is not otherwise prohibited by these rules, or an air contaminant or water vapor which reacts or may react with any other air contaminant or natural air, and which causes or will cause damage to property or business.

Permits to install any fuel-burning, refuse-burning, or control equipment, may be granted with conditions necessary to insure that the plans will achieve compliance with the smoke and particulate emission limitations set forth in Part 3 of the rules. After the construction allowed by the permit has been completed "the commission *shall* issue a permit to operate the installation . . . subject to the notices and tests provided in Part 4" of the rules.¹⁴ (Emphasis supplied.)

Part 4 establishes procedures for field investigations and source sampling. The rules provide that the applicant is to notify the commission when the newly installed facilities will be tested so a staff member may assess the effect on air pollution. The staff may conduct separate or additional tests at any reasonable time. In addition, diagnostic sampling with specialized measuring equipment is conducted to determine what pollutants are being emitted and whether the emissions are beyond the limitations of the statute. The results of these tests are analyzed by one of the six staff members of the laboratory which serves both the occupational health and air pollution control staffs. These analyses provide the basis for advising the industry on the extent of its pollution and how to control it.

The permit to operate continues in effect so long as the in-

¹² MICH. COMP. LAWS § 336.3 (1967).

¹³ [1954] Administrative Code of Michigan, R336.31-R336.36 (1967). These exceptions include such individually minor but collectively significant sources as "equipment used for any mode of transportation" and "fuel burning, refuse burning and cooking equipment used in connection with a structure designed and used exclusively as a dwelling for not more than three families."

¹⁴ *Id.* R336.29.

stallation performs in accordance with the conditions upon which the permit is issued. If, at any time, evidence from field investigations and tests indicates that the installation is not performing in accordance with the conditions, the commission may after notice and hearing, rescind a permit and the installation must not be operated.

B. Programs Instituted Under the Rules

Two programs designed to detect and eliminate pollution problems are conducted by the staff pursuant to the procedures enumerated in Part 4 of the rules. One program involves a community air pollution study, initiated either at the request of a community, or, more typically, as a result of a problem discovered by the staff. This study involves a network of air sampling stations which ascertain kinds and amounts of contaminants and correlate this data with topography, climatology, and land usage patterns.¹⁵ The network may consist either of four mobile trailers with automatic sampling and measuring equipment connected with a data acquisition and retrieval system, or of conventional high volume air sampling and sulfation rate sampling devices (lead peroxide candles or Huey Dishes) at several locations in the city.

The second program involves the compilation of emission inventories. The inventories have three primary functions: a) to compile "basic facts relating to the amounts and character of the contaminant contributions made by manufacturing and service establishments, fuel-burning stationary sources, incineration and refuse-burning, and motor vehicles"; b) to "serve as a reference or comparison with past and future emissions" (to enable an evaluation of program achievement); and c) "to make recommendations that will serve as a guide for planning our future air pollution control activities" in the study area and the state.¹⁶

Initially the inventories were made by individual plant visits during which questions were asked about the type of industrial processing being conducted, the plant's production rates, the level of fuel consumption and the kind of waste disposal or air cleaning equipment in use. Recently, however, the staff has streamlined its procedures. Each plant receives a mailed questionnaire, followed by telephone inquiries and individual visits where necessary. The information so gained appears to be as reliable as that formerly

¹⁵ R. RICE, M.D., PROGRAM PLAN OF MICHIGAN DEPARTMENT OF PUBLIC HEALTH 1969-70, at 214 (1970).

¹⁶ MICH. DEPT. PUB. HEALTH, MUSKEGON COUNTY AIR POLLUTION EMISSION INVENTORY REPORT FOR 1968, at 1. (1970).

obtained, and the more efficient survey technique should eventually enable the staff to inventory each county every two years.¹⁷

III. THE STRUGGLE FOR COMPLIANCE: A CASE STUDY OF MICHIGAN FOUNDRIES

A. Background

The function of a foundry is to melt scrap metal and pour it into specially formed molds, usually made of silica sand bound by oil, resin, clay or other organic chemical compounds. The hardened products are called castings and are essential to almost every manufacturing process in the country.

There are basically three processes for melting scrap metal: the electrode furnace, the induction furnace, and the cupola. The first two use electricity as the primary energy source.¹⁸ The cupola, which uses coke fuel, is by far the oldest and most common foundry furnace, and produces the most air pollutants.¹⁹

Because of large auto industry requirements, the Michigan foundry industry has been consistently vital to the state's economy. Michigan employs more foundry workers than any other state (about 45,000), casts more metal than any other state (about 25,000 tons daily), and has annual gross sales of over \$1 billion.²⁰

The principal air contaminants emitted by iron foundries are iron oxide, sand particles, coke dust, carbon monoxide, silica fumes, oil mists, sulphur dioxide, fluorine and acrolein.²¹ This miasma forms brownish-gray clouds which interfere with visibility, have a characteristic odor, and make it difficult to breathe. The closer one lives to the source, the less his house is worth²² and the more likely it is that the air he breathes will contribute to his susceptibility to lung cancer, emphysema, bronchitis or asthma.²³

An American Foundrymen's Society survey found that the average emission of an uncontrolled cupola was approximately 17 lbs. particulate per ton melted.²⁴ This contrasts with the commis-

¹⁷ *Id.* at 3.

¹⁸ The scrap and other materials in an electrode furnace are melted by large electric arcs inserted from overhead, while an induction furnace heats the sides of the melting pot.

¹⁹ The cupola is a tall cylinder with a door toward the top to receive charges of scrap metal, coke fuel, and alloying and flux materials and a spout at the bottom from which the molten metal flows out into the molds.

²⁰ MICH. DEPT. PUB. HEALTH, *THE FOUNDRY INDUSTRY IN MICHIGAN* 2 (1967).

²¹ McIlvaine, *Air Pollution Equipment for Foundry Cupolas*, 17 J. AIR POLLUTION CONTROL ASS'N. 540, 541 (1967).

²² See *Effect of Air Pollution on House Values*, 43 LAND ECONOMICS No. 2, 181 (1967).

²³ MICH. DEPT. PUB. HEALTH, *AIR POLLUTION STUDY OF KENT COUNTY 1966-1967*, at 2 (1968), quoting former Secretary of H.E.W. John Gardner.

²⁴ McIlvaine, *supra* note 21, at 541.

sion limits for production foundries which varies from .4 to .15 lbs. particulate per ton melted.²⁵ Representative emission inventories from Kent, Saginaw and Muskegon counties report that foundries contribute significantly to the load of air contaminants in these areas.²⁶

Foundry management in Michigan, facing the necessity of complying with the state's control regulations, has a choice of three courses of action: a) it may decide that the cost of buying and maintaining control equipment is so high and the prospects for continuing profitable operations so low that a decision to cease doing business is warranted;²⁷ b) it may purchase increasingly expensive and efficient control devices;²⁸ or, c) it may change its process of melting metal.²⁹

Two other courses of action are not available in Michigan: a) installation of the least expensive equipment ("wet cap collectors," costing about \$50,000) which does not control emissions within the prescribed limits, and b) ignoring the rules altogether.

In May 1967, before Michigan's air pollution regulations became effective, the 157 grey iron foundries were operating 195 cupolas. Of these, 21 cupolas were then equipped with devices which controlled emissions within the limits promulgated in August. Another 44 cupolas were fitted with wet cap collectors or

²⁵ Minutes of the February 3, 1967, Michigan Air Pollution Control Commission meeting p. 6. The third draft proposed to the commission recommended emission limits of .40 lbs., .20 lbs. and .10 lbs. for each category of production foundry. The commission apparently felt .40 lbs., .25 lbs. and .15 lbs. would be more "practical."

²⁶ See MICH. DEPT. PUB. HEALTH, AIR POLLUTION STUDY OF SAGINAW COUNTY 1967, Table 6, Code No. 33 (1969). Also MICH. DEPT. PUB. HEALTH, MUSKEGON COUNTY AIR POLLUTION EMISSION INVENTORY REPORT FOR 1968, Tables 1 and 6, Category Code 33 (1970).

²⁷ Apparently only three Michigan foundries with which the Air Pollution Control Commission or Section staff has dealt have decided to close down rather than undertake control of their operations. MICH. DEPT. PUB. HEALTH, CURRENT STATUS OF AIR POLLUTION CONTROL ACTIVITIES IN MICHIGAN (excluding Wayne County) 83, 86, 138 (June 1970). Cf. B. Bloomfield, The Foundry and Air Pollution Control Legislation, 6, 9 (Paper presented at the 71st American Foundryman's Society Casting Congress, Pittsburgh, Pennsylvania, May 11, 1967): "We don't intend to put anyone out of business nor do we expect that foundries will relocate. This is hardly a reason for a plant moving."

²⁸ The first alternative for the foundryman who decides to stay in business and curtail emissions is to buy medium-priced control equipment costing from \$100,000 to \$300,000 per cupola which will keep emissions just under the limit if it is well-maintained. *Dust Collector Characteristics*, 8 MICHIGAN'S OCCUPATIONAL HEALTH, No. 1, 6 (1962). See particularly Table 2, C-4, or B-5.

A kind that is highly efficient costs from \$400,000 to \$1 million per cupola to purchase and install plus a significant sum per year to maintain power. Most managers of production foundries in Michigan have chosen this alternative for complying with the state's cupola emission limits. *Id.* Table 2, C-3, C-5, or D-1. See generally McIlvaine, *supra* note 21. Bloomfield, *supra* note 27, at 9.

²⁹ Use of induction furnaces in the U.S. is not widespread (approximately 400 throughout the country), but those who have had experience with them say that while they cost more initially than does cupola emission control equipment they require approximately the same fuel expense, a smaller though more skilled labor force, and produce far less particulate emission. Bloomfield, *supra* note 27, at 12.

the equivalent, and the remaining 130 cupolas had no air pollution control equipment.³⁰

By August 1970, of the 141 cupola melting furnaces, for which the commission was responsible:³¹

12 now have operating air pollution control equipment in conformity with the Rules; 34 are engaged in installing such equipment or are under contract for control equipment by December 31, 1970; [and] 24 are committed to control or replacement by other melting methods by December 31, 1972. Program decisions covering the remaining 71 are pending.³²

The commission has projected the number of cupolas *not* in compliance as of January 1 each year from 1967 to 1974 as follows:³³

1967 :	143
1968 :	140
1969 :	125
1970 :	115
1971 :	75
1972 :	46
1973 :	12
1974 :	4

By way of comparison, 120 of 140 asphalt pouring plants in Michigan are now in compliance, with the remainder "adequately controlled within one to two years."³⁴ Of the 147 coal fired boilers with a generating capacity of more than 10,000 pounds of

³⁰ *Id.* at 3-4.

³¹ The number of cupolas had been reduced from 157 to 141, principally because Wayne County had been granted jurisdiction to control air pollution problems within its boundaries—under standards equal to those of the state—as provided for by § 26 of the statute. B. Bloomfield, Michigan's Air Pollution Control Program—1970, at 4, 17 (Mich. Dept. Pub. Health, 1970).

MICH. COMP. LAWS § 336.36(1) (1967) provides:

Nothing in this act or in any rule or regulation which shall be promulgated pursuant to this act shall be deemed to invalidate any existing ordinances or regulations having requirements equal to or greater than the minimum applicable requirements of this act or prevent any political subdivision from adopting similar provisions if their requirements are equal to or greater than the minimum applicable requirements of this act.

³² Bloomfield, *supra* note 31, at 17.

³³ GRAPH, STATUS OF CUPOLA AIR POLLUTION CONTROL PROGRAM, June 1, 1970, (Mich. Dept. Pub. Health 1970).

³⁴ *Id.* at 19. The report notes that "arrangements have been made with the State Highway Department providing that no work will be let to any asphalt firm which does not satisfy Michigan Rules."

³⁵ *Id.* at 16.

steam per hour in 27 utility plants and 120 industrial plants, 36 are in compliance, 49 have equipment which does not control emissions within limits, 10 are upgrading their air pollution control equipment, 27 have made commitments to install control devices, and 25 have made no commitments.³⁵

The principal reason for the difference in levels of compliance is apparent from the following comparison of costs in the three industries of equipment installed or being installed to 1970:³⁶

Asphalt Plants:	\$ 2.5 million (120 plants)
Power Generation:	\$40.0 million (95 plants)
Foundries:	\$25.0 million (36 plants)

The barrier to prompt compliance in the foundry industry is unavailable capital to install cupola emission control apparatus. Frequently the high cost of control exceeds the capital value of the production facilities of the entire foundry. In a marginally profitable foundry, management, faced with the prospects of high new expenditures in a relatively short time, will re-evaluate their entire melting operations and canvass all possible control equipment alternatives to determine the least expensive combination of initial expense and subsequent maintenance and operations costs. Since the least-cost route still usually involves unprecedented outlays, it is an agonizing process. It is these marginal foundries that the commission hopes will reach compliance by 1974.

The problems of the industry and the approach of the staff have been summarized by the Chief of the Air Pollution Control Section, Bernard D. Bloomfield:

Essentially it's a matter of delaying the inevitable expenditure of sums ranging from \$50,000 to \$1 million. The control technology has been developed but the equipment costs are very high and . . . most foundries will not make the expenditures unless forced to do so . . .³⁷ [Yet, any] program implemented by our [staff] has to be applied to all foundries, almost uniformly [regardless of cost] and at the same time . . . because of the competitive aspect of the foundry business. . .³⁸

³⁶ *Id.*

³⁷ B. Bloomfield, *Air Pollution Control in Michigan—1967-68*, at 5 (Paper presented to the House of Representatives Air Pollution Meeting, Port Huron, Michigan, September 10, 1968).

³⁸ B. BLOOMFIELD, *MICHIGAN'S RULES AND REGULATIONS 9-10* (Michigan Dept. of Public Health, 1968).

B. Role of the Staff

A letter was sent to all foundries on October 20, 1967, informing them, in accord with the rules, that staff engineers were initiating plant examinations.³⁹ The initial staff visits combine elaborate plant surveys with efforts to persuade foundry management of the need for prompt emissions control.

If a plant inspection reveals excessive emissions, the initial visit is followed up by letters, phone calls, and returns to the plant. The success of these negotiations depends on the staff's strength in three areas: a technical engineering competence in developing specific realistic control plans; an ability to persuade management of the necessity to accomplish control as soon as possible; and a willingness to assert its technical opinion when questioned and to apply pressure by referring uncooperative cases to the commission when persuasion appears to fail.⁴⁰

Unfortunately there are not enough engineers to enable adequate follow-up on known problems and still allow the staff time to handle new complaints. Some indication of the nature of the staff's approach to a reluctant foundryman and the amount of staff time required to handle a problem may be obtained from the following synopsis of the history of a small western Michigan foundry:

1. October 20, 1967: The initial letter was sent by the commission.
2. January 2, 1969: An initial plant visit was made by a staff engineer. The company was advised of excessive emissions and was asked to agree to a two year program to achieve compliance with the emission limits of the rules.
3. February, 1969: The staff made a follow-up visit, and asked the company to submit plans and a schedule for compliance.
4. March 31, 1969: The commission received a letter from the company stating that the company was studying alternative courses of action and would submit a schedule when the study was completed.
5. April 22, 1969: The staff sent a letter to the company expressing understanding of the need for extensive in-

³⁹ The letter signed by the Chief of the Air Pollution Control Section, concluded:

We plan to have one of our staff engineers visit with you, by appointment, sometime within the next few months. Our purpose is to learn about any air pollution sources in your plant and to discuss the implementation of control procedures within a suitable time schedule.

⁴⁰ Interview with Dan Meyer, air pollution control section engineer, July 17, 1970.

vestigation into various possible solutions but asking to be informed when the proposed time schedule could be expected.

6. August 29, 1969: The staff once again visited the plant, apparently since the company did not respond.
7. October 8, 1969: A staff letter was sent to the company president, reading in part:

In our discussion with your representative on August 29, 1969, it was obvious that your company had, at present, no plans for controlling the cupola emissions nor does it appear that your company had made any particular effort to determine by what method compliance could be achieved.

It is necessary that your company comply with the Air Pollution Control Regulations and it is necessary that we receive from you a commitment and time schedule for this compliance. It is our intention to discuss this matter with the Air Pollution Control Commission at the first opening on the agenda and, in the event we have not received your commitment and schedule at the time of the Commission meeting, it will be necessary that we ask for a violation notice to be issued against your company. It is probable that this will come up during the December 1969 or January 1970 Commission meeting.

8. November 3, 1969: A letter from the company was received by the staff protesting that the staff's implication of the firm's "negligence" in developing a program was "incorrect and irresponsible." This letter expressed the firm's commitment to complying with the code and pointed out that extensive study of alternative means of doing so was needed because of the tremendous capital expenditure involved. In addition, the company outlined five steps the company planned to undertake over a four year period, including installation of afterburners, a natural gas injection system and a wet cap scrubber system.
9. November 26, 1969: A staff letter was sent in response, stating: "We were somewhat disappointed in that the program which you outlined did not guarantee compliance with the State Air Pollution Control Regulations nor did it provide a satisfactory time schedule for achieving control." It was recommended that the company investigate alternate forms of control equipment, such as medium energy wet scrubbers or high efficiency dry centrifugal collectors. The letter concluded: "The timetable covering the installation

you propose appears to be unduly long and this matter will therefore be presented to the Air Pollution Control Commission during their January 1970 meeting. Please plan on being represented at this meeting. A notice of the meeting time and place will be mailed to you.”

10. December 26, 1969: The staff revisited the company's plant, apparently in response to representations by the company that it planned to install new melting equipment in the summer of 1970, and would decide whether to do so by March 1, 1970.
11. January 14, 1970: A staff letter to the company indicated that, in light of the company's investigation into a new metal melting facility, the January appearance before the commission had been postponed until March 17, 1970. The company was reminded that a firm commitment with an acceptable timetable was required to be submitted by March 1, 1970. A permit form was enclosed.
12. February 5, 1970: The staff revisited the company's plant to discuss its progress. The company asked that the March 1 deadline be postponed until April 1, so that the company president could meet with the staff.
13. March 9, 1970: A staff letter informed the company that the staff representative would meet with the company on March 20th, and that the matter would be referred to the commission on April 21, 1970 unless the staff was able to get a commitment and a time schedule.
14. March 20, 1970: Apparently no commitment or timetable for compliance could be agreed upon.
15. April 15, 1970: A letter to the commission from the city council indicated that the city council had approved a motion accepting the company's proposal to the council that it control its emissions within three years.
16. April 17, 1970: A staff activity report to the commission summarized the history above,⁴¹ described the nature and extent of the problem, and recommended that the company

⁴¹ Full staff activity reports are written for the commission only when a company is scheduled for appearance before it. They summarize the situation under subject headings of Respondent [name, address, city]; History of the Problem; Attitude of Local Government Officials; Zoning, Topography & Meteorology; Action by Company to Effect Control; Staff Evaluation of the Situation; Staff Recommendations. These statements are drafted by the staff engineer who has been working with the company, and are based on plant visits, interviews with local officials and citizens, weather charts, zoning maps, and topographical survey maps. When a company appears before the commission the staff engineer presents his report orally (the commission members each have a written copy) and answers any questions from members of the commission before the representative of the company speaks.

be required to comply by December 31, 1972, not the summer of 1973, as the company requested. The staff activity report indicated its recommendation called for more time for compliance than usual, but said this appeared reasonable in light of the fact that the emissions were not resulting in a public health hazard and in light of the fact that the nuisance effects of the foundry did not appear as serious as those with most foundries.

17. The commission gave the foundryman until July 1, 1973, to comply.

The staff has so far been successful in getting commitments from all but 13 of the foundries for which it is responsible.⁴² With two or three exceptions, discussed below, most foundries which hold out for their "day in court" before the commission feel they are so small that they contribute very little to the state's air pollution.⁴³ As a general rule staff engineers give a foundry 14 to 18 months from the date of its decision requiring equipment installment to achieve compliance.⁴⁴

C. Role of the Commission

The responsibility of the commission is to control and abate air pollution in the state. If investigation reveals a violation of the rules, the statute requires that the commission "shall, by conference, conciliation and persuasion, endeavor to the fullest extent possible to effect such control of emissions from such source[s]"⁴⁵ before issuing him a written notice of violation of a rule. (Emphasis supplied). Several provisions give the commission authority for the ample exercise of discretion.⁴⁶

The Act further provides that the commission may grant variances for as long as a year on the condition that the grantee make periodic progress reports to the commission or contingent upon any "other and different reasonable requirements with which the

⁴² Minutes, May 19, 1970 Commission meeting.

⁴³ Interview with Lee E. Jager, air pollution control section engineer (formerly in charge of the foundry control program), June 12, 1970.

⁴⁴ Interview with Dan Meyer, air pollution control section engineer, August 7, 1970.

⁴⁵ MICH. COMP. LAWS § 336.18 (1967).

⁴⁶ MICH. COMP. LAWS § 336.17(4) (1967) provides:

In exercising the power conferred upon it by this act, the commission shall give due recognition to the fact that the quantity, types or characteristics, quantities and circumstances or [sic] air contaminants or the duration of their presence in the atmosphere, which may cause air pollution in one area of the state, may cause less or no air pollution in another area of the state . . . and also the fact that a rule or regulation and the degree of conformance therewith which may be proper as to an essentially residential area of the state may not be proper as to a highly developed industrial area of the state.

person receiving the variance shall comply."⁴⁷ In "hardship" cases where the costs of compliance outweigh the benefits, the statute appears to *require* a variance unless the applicant "is causing air pollution which is injurious to the public health."⁴⁸

Where the staff cannot obtain a foundry's reasonable compliance with the air pollution regulation, it refers the case to the commission for a final decision. The commission considers its landmark decision to be the Muskegon foundries case, where it denied a foundry appeal for an eight year term to control pollution and directed the foundry to meet a 2½ to 3 year total control deadline. The problem of the Muskegon foundries was well formulated in the commission minutes of October 25, 1967:

The Muskegon situation is particularly critical since 6000 employees are involved and the two large foundries [Campbell, Wyant and Cannon, hereinafter C.W.C., and Lakey] will have to face up to very large expenditures. There is serious question whether Lakey has the money to do the job and whether Textron Corporation, the parent corporation of which C.W.C. is a part will be willing to make the investment.⁴⁹

The manner in which the commission resolved these problems merits review.⁵⁰

The two Muskegon foundries, C.W.C. and Lakey, employ nearly 20% of Muskegon's working population. Eighty-five percent of the workers are black and unskilled in any other occupation. Approximately 40% have developed silicosis conditions severe enough to preclude all but foundry employment. Muskegon's unemployment rate of 6.3% is the highest of any city in Michigan's lower peninsula.⁵¹

Lakey Foundry's five cupolas, none of which have pollution control equipment, melt about 375 tons per day. C.W.C. operates

⁴⁷ MICH. COMPS. LAWS § 336.30 (1967).

⁴⁸ MICH. COMP. LAWS § 336.31 (1967) provides:

The commission *shall* grant a variance from any rule . . . to . . . any person who shows in the case of . . . the activity which the person then operates that a compliance by him with the rule . . . and that the acquisition, installation, operation and maintenance of facilities and equipment required . . . to accomplish the compliance, would constitute an undue hardship on the person and would be out of proportion to the benefits to be obtained thereby. [Emphasis supplied].

⁴⁹ Minutes of the October 25, 1967, Michigan Air Pollution Control Commission meeting, p. 5.

⁵⁰ The following summary of the Muskegon foundry's cases is based on staff activity reports, tape recordings of public hearings and meetings of the commission, company annual statements, and interviews with the staffs of the Air Pollution Control Section and the Muskegon County Health Department.

⁵¹ [1969]MICHIGAN EMPLOYMENT SECURITY COMMISSION, ANNUAL REPORT, Statistical App., Table 21.

six plants in which fourteen cupolas, six of which have wet caps, and seven electric arc furnaces pour an average of 830 tons of metal per day. The heavy load of particulates from the cupolas, as well as from the sand handling and casting cleaning systems, falls principally upon the business districts of Muskegon and surrounding communities. The success of an urban renewal project in Muskegon scheduled for completion in 1974 depends, in part, upon the abatement of the pollution. Not many residences are located nearby, but those close to some of C.W.C.'s plants—particularly a low-rent housing project for minority group citizens—have suffered damage and reduced value. Complaints also come from employees in Muskegon businesses who worry about their health and complain about damage to their car finishes, and from residents of the area who point out how unpleasant it is to shop downtown. Muskegon city officials and businessmen feel that emissions from Lakey Foundry should be promptly curtailed, but not at the expense of cutting back the foundry's operations.

Both Lakey and C.W.C. have outdated plants and melting facilities which must be thoroughly modernized if the companies are to remain competitive. Both companies depend heavily on one or two large customers—C.W.C. on Chrysler and General Motors, Lakey on manufacturers of military trucks. Moreover, Lakey has current money problems which reportedly stem from short-sighted policies of former managements. In fiscal year 1968 Lakey lost \$336,000 and the total book value after depreciation of the company's land, plant and equipment was \$2,125,000.

C.W.C.'s membership in the wealthy Textron Corporation conglomerate assures ample financial resources provided C.W.C. can demonstrate sufficient profit-making potential to warrant further investment. C.W.C. has undertaken a long-range modernization plan of phasing out its inefficient equipment and consolidating its melting facilities in order to improve its efficiency and profitability, with each step conditional on the financial success of the preceding one.

An overview of testimony revealing local attitudes toward foundry pollution and of efforts made at this level to institute controls may also help place the commission's efforts in proper perspective. The Muskegon County Health Department which has conducted a local air pollution control program since 1963, has found it increasingly difficult to justify requiring smaller sources to control their emissions when Lakey and C.W.C. remain uncontrolled. An active Citizens for Clean Air group, campaigned vigorously for the foundries to finally comply with county

and state rules after 20 years of nothing but statements, and other citizens unsuccessfully sought injunctions against the plants' operations. Representatives of medical groups in Muskegon testified that the incidence of emphysema and tuberculosis was higher in that county than elsewhere in the state due to air pollution, and there was testimony citing instances in which air pollution had forced people to quit jobs, including teaching in downtown schools.

Lakey Foundry first asked for a variance on February 15, 1968 complaining it had no money for air pollution control, although it could comply "in time." The commission decided to give Lakey six months "to return with additional information on the cost of process changes and/or installation of control equipment which will . . . meet the rules. . . ." The next month the commission sent a letter to Lakey requesting it to investigate possible outside sources of financial assistance, such as the Small Business Administration, the urban renewal program, or local banks. It also wrote the city of Muskegon asking if it could float revenue bonds to provide funds to install control equipment at Lakey.

Lakey again appeared before the commission on September 17, 1968, and indicated it would start taking quotations on air pollution control equipment by February 1971. Installation was scheduled to commence in March 1973 with completion by the end of that year.

The commission requested Lakey to submit a letter confirming its detailed compliance plan, and completion dates. Lakey never sent the requested letter or information. Thus, when it was reported in early 1969 that neither Lakey nor C.W.C. gave any indication of progress toward compliance the commission decided to hold a public hearing in Muskegon, as had been initially contemplated in October, 1967.

At the hearing the staff reported that Lakey's proposed December 1973 compliance date was unsatisfactory. It alternatively suggested that the company be required to submit a detailed control program with a delineation of scheduled objectives within six months and totally comply within three years.

The commission asked whether the schedule offered in September should be considered Lakey's formal proposal for compliance. The company's representative replied that the president who possessed sole authority to answer that question was not presently available.

The afternoon session began with the staff report on the C.W.C. situation which concluded:

It is the opinion of the staff that air pollution from C.W.C.

foundries creates one of the most serious problems in the State of Michigan. The company has indicated it is unable financially to undertake air pollution control programs at this time or to suggest a schedule for compliance with emission limits in the foreseeable future.

C.W.C. is owned by Textron Corporation of Providence, Rhode Island. There appears to be no question of the financial ability of Textron to meet the regulatory requirements but rather the question is whether they want to make the necessary investment in a particular division of the corporation from a strictly business point of view. The ownership arrangement should not be allowed to become a barrier to compliance with state regulations.

The staff believes that complete control can be achieved over a three year period and recommends that this become the goal of the Commission.

C.W.C.'s president outlined its five-step, five-year plant modernization plan, but did not propose a schedule for compliance with the statutory air pollution restrictions.

At the next meeting of the commission, Lakey asserted its inability to shorten its time for compliance, whereupon the commission passed a motion to give Lakey notice of a violation. During the afternoon C.W.C. again reviewed its proposed five year modernization plan and conceded that its immediate plans would not bring any of the plants within the state's standards. Its president argued this was all C.W.C. could presently afford and hoped the commission could grant C.W.C. permission for continuing its "non-conforming use."

When asked whether C.W.C. could commit itself to a timetable for controlling *all* its facilities, the president stated that Textron would neither approve nor finance such an expansive plan. In addition, it was asserted that if C.W.C. were given notice of a violation, the money requested of Textron for modernization might be denied in which case C.W.C. would be forced to close all but the two currently efficient plants, resulting in a reduction in the number of employees from 3500 to 750. In view of this, the commission went into closed session and granted C.W.C. a 30 day continuance to prepare a definitive schedule for compliance. In the interest of fairness, Lakey was also given 30 days to present a reasonable plan for the abatement of air pollution from its foundry.

The lapse of 30 days failed to change materially the positions of Lakey or C.W.C., and the commission issued notice of violations to both companies in June. This action resulted in what C.W.C. termed unfair press allegations that C.W.C. had demonstrated a

do-nothing attitude in its discussion with the commission, which caused the management of two of C.W.C.'s customers to initiate inquiries about the desirability of C.W.C. as a future supplier. The inquiries led C.W.C. again to approach Textron for the funding of air pollution control.

On July 1, representatives of C.W.C. appeared before the commission accompanied by Textron's vice presidents for operations and future planning. It was agreed that a formal request for a variance would be submitted on the basis of a good faith intention on the part of the company to abate air pollution in accordance with the staff-recommended time schedule.

Lakey, in view of the notice of violation, promptly submitted a revised compliance schedule. The deadlines for compliance suggested by the staff and accepted by Lakey were January 1972 for one foundry and January 1973 for the other. In comparison, the latest compliance date allowed C.W.C., presumably because of available financing, was July 1972.

D. Policies, Priorities, and Procedures

The policies, priorities, and procedures revealed by the commission's handling of the Muskegon foundry cases may be summarized as follows:

Policies

1. Avoid, to the greatest possible extent, the risk of contributing to a rise in unemployment and a decline in a community's tax base.
2. Avoid placing a foundry at a competitive disadvantage by treating it no more differently from other foundries than circumstances absolutely require.
3. Avoid citing a foundry for a violation if it is in any way possible to get a commitment from it that it will comply.
4. Avoid allowing a foundry to install devices which would not control emissions within the limits but would be an interim step toward full compliance. Instead, permit a somewhat longer period for the foundry to purchase and install equipment which will achieve the required level of compliance.
5. Give prior consideration to situations involving substantial numbers of complaints.

Priorities

1. Large foundries affecting many people are more important than small foundries in predominantly non-urban locations.

2. If a foundry has only sufficient financial resources to afford either in-plant dust control apparatus or air pollution control equipment, the in-plant control takes precedence.
3. Economic damage to a community's businesses is more serious than damage to its citizens' car finishes and house values.
4. Unemployment is worse than pollution.

Procedures

1. A foundry customarily receives a variance, usually of six months, at its first appearance before the commission in order to investigate alternative sources of control and to develop a control program.
2. The commission usually requires control programs submitted for its approval to include checkpoint dates by which stages in the program will be achieved.
3. The commission normally compromises between the compliance deadline recommended by the staff and that requested by the variance applicant.
4. Year to year variances are renewed if satisfactory progress is made on the applicant's control program.
5. A foundry executive's word is to be trusted until he clearly appears evasive or dilatory.

IV. EVALUATION AND SUGGESTIONS

A. Evaluation of Past Performance

Assuming that the quality of air needs improvement in many parts of the state, the obvious question is whether the air is any cleaner after three years of control efforts. Unfortunately, the data which would show whether contaminant loads are increasing, leveling off, or declining does not yet exist. Clearly, the comparison of figures for pounds of foundry-produced particulate in Muskegon's air in 1968 is not encouraging—only 4% less than the 1960 level—but the comparison antedates the commitments of Lakey and C.W.C. to undertake a control program. One hopes those commitments will make a difference.

Eventually, sufficient air sampling data will have been gathered to determine whether particular contaminants in an area are being reduced. This information, plus follow-up emission inventories establishing total loads, is needed as soon as possible. Should it reveal that Michigan's air is getting no cleaner because of increasing demands of more people for goods, services and energy, then tighter emission limits will be required and sources of pollution will have to comply with the limits more promptly.

The air pollution control section staff evaluates its accomplishments in terms of the sums of money industries spend on control equipment, the number of completed installations, and the number of commitments to programs for control. Dollar figures for amounts spent or committed to be spent on control devices may be impressive, but they are no real measure of progress. The figures may be inaccurate. Regardless, they are a poor indication of how promptly a source is achieving compliance.

The criteria of 1) "commitments to programs for control;" 2) "equipment under construction;" and 3) "equipment installed and operating" are more meaningful but have their own weaknesses. The real questions are: 1) how bona fide are the promises to comply; 2) will the control equipment operate properly when it is installed; and 3) how much of the time is the control equipment operating at maximum efficiency.

The manner in which one assesses the commission's performance to date depends on how grievous he regards the effect on air pollution control of the discrepancies between the commission's pronouncements and its actual decisions, and how he determines which priorities are in "the public interest," to wit, how serious he believes Michigan's air pollution problems are.

Initially, the commission did not undertake aggressive enforcement of the Act. The commission recognized that industries needed time to develop plans to comply and should not be forced into immediate decisions involving substantial expense. In addition the commission members themselves needed to become familiar with the variety and complexity of the problems associated with achieving control. In view of this the commission at first sought to persuade foundrymen to comply. However, it was eventually forced to conclude that the barriers of high expense and the competitive disadvantage of going ahead voluntarily made foundrymen reluctant to act without uniform, firm enforcement.

The commission believes that the deleterious effects of air pollution must be balanced with the potential negative results of enforcing the air pollution control law too severely. These negative results may include unemployment, loss of tax revenues for communities already providing inadequate public services, and the effect on Michigan's competitive posture in attracting industrial development vis-a-vis Ohio or Indiana where air pollution control is virtually nonexistent.

This balancing of the need for prompt control against the adverse effects of such control has often led the commission to simply compromise between the compliance deadlines recom-

mended by the staff and those requested by industry.⁵² Only if the violation creates a threat to public health will the commission order immediate compliance. The commission is especially likely to accept the industry's economic plea instead of the staff's suggestion to immediately halt the further destruction of our air if no one but the staff complains of the emissions. Thus, the commission has generally placed greater emphasis on the economic problems compliance will cause the violator than on the possible long-range effects of the pollution. Yet, if one believes, as an increasing number of people do, that air pollution and industrial society's other environmental depredations are a severe threat to continued life on earth, then the commission's solicitude for the financial stability of foundries like those in Muskegon may be difficult to justify.

Nevertheless, one must realize that the short-sighted considerations of the commission are, in part, dictated by the information available to it. One of the most constraining factors to an intelligent, planned approach to achieving air pollution control is the absence of relevant information. The only relatively hard data the commission can rely on in making its decisions are incidence rates for bronchitis correlated with particulate loading, the number of jobs lost by a plant's closing, and the percentage decrease in the tax base. True, a community might attract different, more efficient industries if its sole polluting foundry were to close, but that is a very speculative benefit. There may also be fewer species of flora and fauna in Michigan now than twenty years ago, but if so, no one has produced evidence showing air pollution is a principal cause. Increased rainfall from high particulate loads may wash away crops or promote more frequent flooding, but it may not be possible to measure the economic costs of that potential externality. Unfortunately, until the commission is made aware of these costs of air pollution, it will continue to approach air pollution exclusively as a matter of public health and short-term conveniences.

B. Proposals for Legislative Action

In its five years of existence the Air Pollution Control Commission has surely alleviated any legislative fears that it would rush recklessly around the state closing down businesses at the slightest puff of smoke. Its careful consideration, caution, and relative

⁵² This practice of compromise was acknowledged in an interview with Commissioner Kelly and occurred, for example, in the small western Michigan foundry case discussed in the text at pages 32-35.

effectiveness in dealing with the Michigan air pollution problem justify relieving the commission of some statutory burdens under which it presently operates.

The most obvious way to enhance the effectiveness of the staff is to increase the appropriation for air pollution control in the budget of the Department of Public Health.⁵³ The present staff is spread too thinly to do everything required for a comprehensive control program. The delay in checking compliance commitments and in responding to complaints, with subsequent damage from uncontrolled emissions, are the common and direct results of an insufficiently staffed program.

In addition, the legislature should pass a specific appropriation to cover the annual salary of a full-time attorney to be assigned to the commission and staff. The commission's present counsel is so overburdened that he frequently does not have time from one meeting to the next to prepare answers to questions asked by the commission. This lack of time accounts, in part, for the frequent delay in preparing legal papers necessary to issue a notice of violation. The commission also needs additional legal counsel to conduct necessary research into the commission's powers and limitations, and to draft proposed revisions or additions to its rules and to the Air Pollution Act itself. Also, staff engineers have expressed a need to be accompanied by an attorney when negotiating compliance schedules with industries that are represented by counsel.

If the commission cannot achieve compliance by the "conference, conciliation and persuasion" required by section 8 of the Act, section 9 requires a public hearing within fifteen days of issuing a written notice of violation. The procedures provided for the commission hearings are unnecessarily extended and complex. As a result, the commission has been hesitant to utilize the hearing as a device to gain prompt compliance from recalcitrant polluters.

Commissioner Sterling, however, expressed the opinion at the August 1970 meeting of the commission that it supported the staff 90 percent of the time, and when it did not it was because the staff's inadequate reporting of the facts left the commission in a compromised position when faced with a respondent's unexpected argument or disclosure of information.

Commissioner Rasmussen stated at the same meeting that the commission was indeed becoming more "hard-nosed," and that any evaluation of it should take account of this tendency.

⁵³ One means of providing increased funds is presented in House Bill 4851, a bill which establishes surveillance fees chargeable to sources of air pollution. These fees should be earmarked for the budget of the administering agency and staff, rather than for the general legislative fund, as H.B. 4851 proposes. Moreover, the total amount of the fees levied by the commission should not be limited by factors other than the amount of emissions, such as the amount of the annual budget of the agency. House Bill 4851 is still in the Michigan House of Representatives Committee on Conservation.

At the hearing a company may be represented by counsel who has the right to cross-examine, subpoena witnesses and records, and require testimony under oath. Although the commission may appoint a hearing referee in its place to conduct the lengthy proceeding, it must then hold a hearing, after due notice, on the record made in the referee's hearing. Following the hearings at least six of the nine members of the commission must vote for any final order or determination.

This procedure should be abbreviated. It is clearly contrary to the intent of the new Michigan Administrative Procedure Act of 1969,⁵⁴ and in practice permits industries to avoid prompt compliance with the air pollution regulations. Moreover, section 13 provides that if the company appeals, the commission bears the burden of proving the correctness of its final orders or determinations in a de novo circuit court review. Such a requirement renders the administrative hearings a useless procedure,⁵⁵ and makes the commissioners reluctant to take decisive action. It is much more sensible to permit the reviewing court to consider the administrative record and such additional evidence as the court may in its discretion believe advisable. The Air Pollution Control Commission was created to provide efficient and expert resolution of the state's air pollution problems. De novo review can prevent the accomplishment of both these goals.

The Air Pollution Act vests the power of enforcement in the commission. Unfortunately, this specific grant of power has effectively precluded the state from enforcing the compliance of minor violators. If the staff sees an isolated instance of discharges in excess of the emission limits, it can only warn the polluter. The staff has no power to fine, even for a clear violation; yet, the commission does not have time to consider such relatively unimportant matters. Increased monitoring and follow-ups by the staff are pointless unless effective enforcement authority stands behind them. The remedy might be to amend section 16 of the Act to provide for staff authority to impose fines for minor violations with a right of appeal to the commission. If the staff's authority to fine were limited to a standard dollar amount per violation within a fixed period of time, pressure would be brought to bear on the minor polluter to comply and the commission would remain free to consider important cases and matters of policy.

A final suggestion for legislative reform derived from the argu-

⁵⁴ MICH. COMP. LAWS §§ 24.201-313 (Supp. 1970).

⁵⁵ A similar provision has been deleted from the Water Resources Commission Act (P.A. 167 of 1968).

ments against de novo review. Section 25 presently provides that a final order or determination of the commission shall not be used as evidence of presumptive air pollution in a suit filed by a private citizen.⁵⁶ It seems unnecessary to force a private plaintiff, who has suffered damages, to bear the burden of proof on the initial question of the existence of a violation when the commission has already determined an infraction exists. Surely the law should permit both the commission and a private citizen a presumption of pollution under those circumstances. This would not only increase the efficacy of the commission hearings, but would undoubtedly encourage compliance through "conference, conciliation and persuasion" as provided for in section 8 of the Act.

In 1967 Michigan's air pollution control section chief Bernard Bloomfield said, "[i]f we in state and local governmental agencies don't bring about control of our air pollution problems, we had better plan to step aside and let someone else do it for us." His reference indicated the potential for the federal government to assume the responsibility for control of air pollution. Today in Michigan private citizens may take the initiative, under the New Public Act 127,⁵⁷ to gain cleaner air. In addition, if Michigan's legislature will grant to the commission and its staff the necessary financing and more effective powers, these entities can perform the functions necessary for prompt and efficient air pollution control.

The Michigan Air Pollution Commission and the staff of the Department of Public Health have not demonstrated that "someone else should do it for them." Yet it is clear that they could use some help, both from the people of Michigan and from the legislature. The critical factor in the enlightened operation of air pollution controls is an informed and active public presenting rational alternatives.

— *William A. Irwin**

⁵⁶ MICH. COMP. LAWS § 336.35 (1967).

This creates a negative presumption that a commission finding of a violation may be used as a presumption of air pollution in a suit involving the commission. This would seem to be applicable in a de novo review of a commission order. However, Section 13(1), which establishes the right of de novo review of commission orders and determinations, provides: "In such de novo review, the commission shall have the burden of proving the correctness of its order or determination."

Thus the implication of a commission presumption in Section 26 is explicitly eliminated in Section 13(1).

⁵⁷ In July, the Michigan legislature enacted P.A. 127 of 1970, a law enabling private citizens to bring suit to enjoin environmental deprecations. It is yet unclear what effect this law may have upon the commission's efforts to control air pollution.

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