ILLINOIS POLLUTION CONTROL BOARD
July 12, 1971

ROESCH ENAMEL & MANUFACTURING COMPANY	)	
v.	)	PCB 71-62
ENVIRONMENTAL PROTECTION AGENCY	)	

Mr. William D. Stiehl, for Roesch Enamel & Manufacturing Company
Mr. Fred Prillaman, for the Environmental Protection Agency

Opinion of the Board (by Mr. Dumelle)

Roesch Enamel and Manufacturing Company, an Illinois corporation (Roesch) filed a petition for variance on March 26, 1971 seeking (1) to be exempt from the general limitation prescribed for particulate emissions in the Rules and Regulations Governing the Control of Air Pollution and asking that separate standards be established for porcelain enameling plants and (2) seeking in the alternative to be granted a variance from the operation of the emission limitations rules for six months from the time its proposed air pollution control system is approved.

It is the decision of the Board that petitioner be granted a variance from the operation of Rule 3-3.111[1] terminating ninety days from this date subject to certain conditions hereinafter set forth in this opinion and order.

Roesch is a porcelain enamel plant and fabricating shop in the business of both producing consumer items and applying a ceramic coating to cast iron and steel products on a contract basis by either spraying or dipping. The company is mainly a job porcelain enamel plant applying a coating to other producers'products such as stove parts and restaurant and heating equipment parts. It also handles some of its own products such as cast iron cookware and barbeque pits (R.11-12). The subject of the instant variance request is the enamel spraying and attendant operations rather than any fabricating operations. The plant for which the variance is sought is located in a residential area of Belleville. It is bordered in one direction by retail businesses and residences, in another direction by a wooded area beyond which are residences, and in the other two compass directions by more residences located approximately 100 yards from the plant (R.80-81).

1] State of Illinois Air Pollution Control Board,
Rules and Regulations Governing the Control of
Air Pollution,
Rule 3-3.111 Limitations for Processes
Particulate matter emissions from any process shall be limited by process weight in accordance with Table 1 of Chapter III except as provided in Rule 3-3.300, or as provided by separate regulations for specific processes under Rule 3-3.200. Emissions from combustion for indirect heating shall be regulated by Rule 3-3.112.

On the question of the atmospheric discharge of particulate matter from the spraying operations, the principal matter on which evidence was heard, the most fundamental questions were simply not answered. That is, it was never determined with satisfactory specificity what the character and amount of the particulate emissions were. Witnesses for Roesch testified that the average rate of emission from the enamel spraying process was approximately four and a half pounds per hour with an average process weight of 400 pounds per hour (R.142-143, 182, 184). The allowable rate of emission for such a process weight is 1.4 pounds per hour. There is testimony of a wide range of variation in the mass rate of emission (R.150, Pet. Ex.24). The great disparity in test results is simply not dealt with on the record, it is unknown whether the differences are a function of a process change, inadequate test, both or neither.

The tests performed by the company to determine the amount and type of their emissions (R.179-183) fall far short of any recognized engineering standard for the determination of gas-borne particulate (R.275-276). Additionally the type of testing to be performed for the measurement of particulate matter is specified in the rules. [2] The ASME (American Society of Mechanical Engineers) procedures find widespread acceptance throughout the engineering profession and are incorporated in the rules of many jurisdictions.

There are cogent reasons for the specification of a testing method. It is possible to use sampling methods A or B (recommended as the best by different authorities) to sample contaminant X, with considerable differences in efficiency and result. Depending on the test method wide variations can be expected as regards accuracy, sensitivity and selectivity. Further the results of various testing methods can be greatly influenced by the skill, objectivity and working conditions of the person or persons performing the test. For these reasons reliance must be placed on standard procedures as much as possible. As regards the mass per unit volume determination of particulate matter it is extremely important that a representative sample be obtained. Sampling should be performed in such a way that, as far as possible, the gas stream carrying the particulate matter should undergo no disturbance or change of speed in entering the collection device. This is the isokinetic sampling so often referred to in discussions of aerosol sampling. Further, consideration

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2] State of Illinois Air Pollution Control Board
Rules and Regulations Governing the Control of Air Pollution
Rule 3-3.113 Source Emission Measurement
Measurement of emissions of particulate matter from a particular source will be made according to the procedures recommended in the ASME Power Test Code 27-1957, or other procedures approved by the Technical Secretary, and generally accepted by persons knowledgeable in the state of the art.

must almost always be given to errors caused by condensation of water vapor when hot, water-bearing gas streams are sampled. Another important aspect of particulate sampling not dealt with by Roesch is the characterization of the material by particle size range. Any use of the tests for selection or evaluation of collection equipment can only be done if the size range of the particles to be collected is known.

The company has characterized their effluvia as being composed of inert, non-toxic materials. We cannot, however, be so sanguine about their character with a total lack of qualitative analysis. The materials may be relatively inert from the spraying operations but this cannot be assumed of the effluvia from the baking process. Use of fluorine bearing materials such as fluorspar (calcium fluoride) at elevated temperatures may result in the atmospheric release of fluorides in gaseous or solid forms. The firing cycle of ferro-enamel operations may result in only a relatively small amount of fluoride emissions compared to those expected from other known fluoride emitting processes such as aluminum and fertilizer production nonetheless the immediate locale of the plant may be significantly affected. Fluorides, in general, and gaseous fluorides in particular have assumed great importance as air pollutants in recent decades because of the acute toxicity of certain fluorides to some plants and because all fluorides, particulate as well as gaseous, may be accumulated by forage to build up concentrations in excess of 30-50 ppm in the leaves of plants which may then be consumed by animals with a resulting detrimental effect.[3] Mr. Robert H. Osterle, president of Roesch, testified as to the composition of a typical steel enamel formula as being:

23 parts feldspar
33 parts borax
22 parts quartz
11 parts soda nitrate
4.2 parts fluorspar
3.9 parts clay
0.4 parts cobalt oxide
0.7 parts manganese dioxide
0.4 parts nickel oxide

which is then smelted into "glass" which is subsequently ground and blended with clay (sodium or potassium aluminum silicate) and water for application by spraying or dipping (R.12-13). The above formulation, Mr. Osterle stated, would be typical of the material being emitted from the plant (R.13). This is probably true for the spraying operation. However, the enameling formulation is applied to the product and is subsequently fired or baked on at temperatures in the range of 1350 to 1550°F. (R.144-145). It is probable that during the firing

3] See World Health Organization Monograph Series No. 46, Air Pollution, p. 233-278, esp. p. 244-260.

cycle materials such as the silicates, halogen compounds and carbonates react to form fumes and gaseous mixtures of carbonates, nitrates, chlorides and fluorides which are then discharged to the atmosphere. The record is simply incomplete on this point, virtually no evidence relating to this situation was adduced at the hearing. We are simply not informed as to whether the process is such that particulate matter may be picked up by combustion gases and discharged into the atmosphere along with gaseous products of reaction and combustion. As a condition of the variance we will require the company to perform a stack gas analysis of their firing process effluvia. Both quantitative and qualitative information is needed on this aspect of the operation. This requirement is prompted particularly by the testimony that vegetation damage which is symptomatic of the broadcast of fluorides may be occurring in the area of the plant (R.225).

The principal particulate emissions and those which we are mainly concerned with in this petition are from the spray application process although it is probable that emissions from the high temperature operations are accounting for some unknown amount of air pollution. It is clearly important in this case that adequate tests of the process discharges be performed to determine the identity and quantity of both the particulate and gaseous emissions from the plant. As a condition of the variance we will require the testing of both the spraying and baking operations.

The company has investigated several alternative methods of particulate collection and presently feels that what might be called the "Kohl" system will best serve their needs. The method is simply a low velocity exhaust system with baffles (R.128, 150). Mr. Voges, the company officer in charge of the project said that Roesch is proceeding to install the system in one of its spray booths (R.129). The "Kohl" system will cost approximately $1,000 per booth or 18 to 20 thousand dollars for the complete installation (R.119) as contrasted with $104,670 for the previously considered Type "W" system (R.117-120). The company, with estimated annual profits of $50,000 (R.30) on the enameling operations and estimated operating costs of $46,000 - $50,000 for the Type "W" system decided that they just could not afford the higher priced system (R.131). Even with modifications of the system it promised to be too expensive.

The control of particulate emissions is a relatively mature technology and it is safe to say that the means to control any stationary source without serious economic burden, or at least without exceeding the industry-wide burden that has come to be accepted is available. In this case we have heard that adequate control can be effected by more than one method and at vastly disparate cost estimates. The "Kohl" system which was said to be 95% efficient (R.153) has not been evaluated so we will require Roesch to perform proper tests on that system as well as one of their other spray booths.

We grant this variance to Roesch to continue their particulate discharges for 90 days from the present date by which time they are to have performed stack tests and submitted a supplemental petition for variance containing a complete detailed program for the Board to consider to grant a further extension of time. This variance is limited to 90 days - after that time the company will not be exempt from prosecution unless they will have secured an additional extension of the variance.

The company's first request in their petition, seeking to be exempt from the general process weight-based limitation on emissions is unsupported on the record. The following exchange between counsel for the EPA, Mr. Prillaman and vice-president of Roesch, Mr. Voges is illustrative:

Mr. Prillaman: Could you explain for me and for the Board your reasons why you think that your particular facilities should be treated any differently than other facilities who are bound to emit a certain amount of particulate matter per --

Mr. Voges: There's no reason we should be treated any differently. Our only point was if our material is so similar to the dust from the street and the road, why do we have to be cleaner than a foundry. I'm not saying that the foundry should be made to meet our requirement, but why should we be cleaner than a foundry when our material doesn't do the damage that a foundry's does. (R.144)

The request for special treatment borders on the frivolous, we find it wholly without merit and we deny it.

As regards the filing of the required Air Contaminant Emission Reduction Program (ACERP) by Roesch, we have on this record a clear abnegation of responsibility. Roesch filed a timely letter of intent in which they stated that an ACERP would be filed on or before April 15, 1968 (R.83-84). Such a program was never in fact filed. The ACERP is a legal requirement which all manufacturers who were discharging particulate matter in excess of that allowed by the rules were required to comply with. The company's disregard of the law cannot be excused lightly. As a further condition to the grant of the variance we will require Roesch to pay a money penalty of $5,000 to the State of Illinois. A variance is an extraordinary privilege, it is unquestionably a license to pollute. In considering whether to grant such a license the Board must consider all the facts and ultimately use its best judgement coupled with the expertise it is statutorily presumed to embody to determine if compliance with the rule from which exemption is being sought will impose an arbitrary or unreasonable hardship on the petitioner. This hardship must then be balanced against the harm done to the environment. It should be noted that the money penalty in this case would undoubtedly have been greater were it not for the fact that we are requiring Roesch to perform tests which may involve considerable expenditure on its part.

The Environmental Protection Act gives this Board the authority to impose such conditions, in the granting of variances, which shall further the purposes of the Act which in their broadest recognition are the prevention of potential and actual environmental pollution.[4] We have on earlier occasions used this authority to impose money penalties in the granting of variances[5] and we deem it appropriate in this case.

As another condition to this variance grant we shall require the posting of a security in the approximate amount of the value of the work to be performed, that is, $20,000, to assure the satisfactory completion of the job. (See Ozark-Mahoning Co. v. EPA decided December 22, 1970). The security shall be conditioned, the bond amount forfeited, on the operation of the plant with inadequate control facilities after the date, to be decided after Roesch's submission of a detailed control program and supplemental petition, by which compliance with the rules is to be achieved.

This opinion constitutes the Board's findings of fact and conclusions of law.

4] Environmental Protection Act, § 36(a)
"In granting a variance the Board may impose such conditions as the policies of this Act may require..."

Environmental Protection Act, § 2(b).
"It is the purpose of this Act. . . to restore, protect and enhance the quality of the environment, and to assure that adverse effects upon the environment are fully considered and borne by those who cause them."

5] See Marquette Cement Mfg. Co. v. EPA, PCB 70-23;
City of Springfield v. EPA, PCB 70-55;
Malibu Village Land Trust v. EPA, PCB 70-45;
Greenlee Foundries, Inc., v. EPA, PCB 70-33;
City of Mattoon v. EPA, PCB 71-8;
GAF v. EPA, PCB 71-11.

ORDER

The Board, having considered the petition, recommendation, transcript and exhibits in this proceeding, hereby grants the request of Roesch Enamel & Manufacturing Company (Roesch) for a variance subject to the following conditions:

1. This grant of variance extends for ninety days from date to allow the discharge of particulate matter from the company's enamel spraying operations in excess of the limits prescribed by the existing rules. This variance is granted to allow the company to perform tests and complete its plans to install air pollution control equipment to meet the particulate discharge limitations.

2. Roesch shall submit a supplemental petition for variance containing a complete air pollution control program to the Environmental Protection Agency (EPA) and the Board within 60 days specifying with appropriate detail the steps to be followed to put its operations in conformity with the regulations within six months from date. Such complete supplemental petition to extend the present variance may be acted upon without a hearing.

3. Roesch shall perform stack tests (in conformance with Rule 3-3.113) on both its spraying and high temperature baking operations. The tests shall be performed on at least one spray booth discharge without the "Kohl" system, one spray booth discharge with the "Kohl" system and the discharges from the baking operations. The tests shall be of both a qualitative and quantitative nature and shall identify as well as characterize (gas flow, particle size, mass rate of emission) the gaseous and particulate effluvia from the operations. At least seven days before the test the EPA shall be notified and shall be given a copy of the test procedures to be employed. The EPA shall be present while the tests are in progress. If the EPA suggests any changes in the test procedures which are not accepted by Roesch the EPA shall so report to the Board. The tests, with appropriate replicates, are to be performed within 45 days and a report submitted to the EPA and the Board within 14 days thereafter.

4. Roesch shall post with the EPA on or before August 12, 1971 a bond or other adequate security in the amount of $20,000 and in such form as is satisfactory to the EPA, which sum shall be forfeited to the State of Illinois in the event the plant shall be operated with emissions in excess of those provided for by regulation after the initial or extended (if any) period of variance is expired. Any extended date will be determined after Roesch's submission of their petition and program as required by paragraph no. 2.

5. Roesch shall pay to the State of Illinois, on or before August 12, 1971 the sum of $5,000 as a penalty for the failure to file an Air Contaminant Emission Reduction Program in accordance with the Rules and Regulations Governing the Control of Air Pollution.

6. The failure of Roesch to adhere to any of the conditions of this order shall be grounds for revocation of the variance.

I, Regina E. Ryan, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above Opinion and Order on the 12 day of 1971.

Regina E. Ryan, Clerk
Illinois Pollution Control Board