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SYSTEM STUDY AND EVALUATION OF AIR POLLUTANT EMISSIONS REPORT

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Waste Management
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

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SYSTEM STUDY AND EVALUATION OF AIR POLLUTANT EMISSIONS REPORT

by

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Prepared for

ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Waste Management
Office of Air Quality Planning and Standards
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Publication No. EPA-450/3-75-061

TABLE OF CONTENTS

SECTION		PAGE
I.	INTRODUCTION	I-1
	A. BACKGROUND	I-1
	B. BRIEF HISTORY OF THE AIR POLLUTANT EMISSIONS REPORT (APER) FORM	I-1
	C. SCOPE OF PROJECT	I-2
	D. TECHNICAL APPROACH	I-7
	E. EVALUATION AND RECOMMENDATIONS	I-11
II.	SOURCES OF DATA	II-1
	A. PREPARATION OF REGIONAL QUESTIONNAIRES	II-1
	B. DATA FROM QUESTIONNAIRE RESPONSES	II-2
III.	SYSTEM REQUIREMENTS	III-1
	A. CHARACTERISTICS	III-1
	B. USES OF THE SYSTEM	III-1
	C. REQUIRED DATA ELEMENTS	III-3
IV.	ALTERNATIVE APPROACHES	IV-1
	A. NEW DATA	IV-1
	B. PERIODIC UPDATE	IV-3
V.	APPRAISAL OF ALTERNATIVES	V-1
	A. CRITERIA DESCRIPTION	V-1
	B. EVALUATION OF ALTERNATIVES	V-12
VI.	FINAL RECOMMENDATIONS	VI-1
	A. NEW SOURCES	VI-1
	B. PERIODIC UPDATES	VI-2
	APPENDICES	
	A. STATE OF WISCONSIN EMISSION INVENTORY SYSTEM FACILITY UPDATE COMPUTER PROGRAM	A-1
	B. EXAMPLES OF SPECIFIC INDUSTRY FORMS FOR THE STEEL INDUSTRY	B-1
	C. EXAMPLES OF SUPPLEMENTS TO TYPICAL SECTION 114 LETTERS	C-1

LIST OF FIGURES

FIGURE		PAGE
1.	ESTABLISHMENT OF NADB AS MANAGER OF APER DISTRIBUTION	I-3
2.	GROUND RULES FOR APER USES	I-5
3.	TRANSMITTAL LETTER TO ACCOMPANY QUESTIONNAIRE	I-9
4.	QUESTIONNAIRE FOR THE EVALUATION OF THE OMB FORM	I-10

LIST OF TABLES

TABLE		PAGE
1.	DATA FROM EPA SOURCES	II-3
2.	DEFICIENCIES FOUND IN EXISTING APER SYSTEM	II-10
3.	ADDITIVE WEIGHTING MATRIX	V-13

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I. INTRODUCTION

A. BACKGROUND

The Clean Air Act has recognized the national need for a comprehensive program to reduce air pollution in the United States and provides for extensive research and enforcement activities to meet this goal. A vital part of this program is the accumulation of basic data for a qualitative and quantitative evaluation of air pollution emissions from point sources. This basic information is being used to determine the sources of emissions in a given area and their impact on air quality. Examples of relevant uses of this information are:

- Emission inventories for modeling of Air Quality Control Regions (AQCRs);
- Recognition of point sources that are not in compliance with the requirements of State Implementation Plans (SIPs);
- Enforcement activities; and
- Augmentation of state programs.

The evaluation of individual sources of air pollution must consider fundamental operating procedures. This area of concern requires the knowledge of specific process data such as product, flow rates, both types and quantities of input materials, fuel usage, time of operation, seasonal operating time and details of air pollution control systems design and operation. Without this type of information, the reliability of the base line data would be greatly reduced and false starts in curtailment efforts may be caused.

B. BRIEF HISTORY OF THE AIR POLLUTANT EMISSIONS REPORT (APER) FORM

The APER form and data collection system was designed by EPA to be used to gather data for development of State Implementation Plans, determine compliance with these plans, and carry out emergency powers pursuant to Sections 110, 111, 112, 113, 114 and 303 of the Clean Air Act. After approval of the form by the Office of Management Budget (OMB) in early 1972, it was initially used by the Office of Air and

Water Programs (OAWP). When this system became available, requests for permission to use the APER were initiated by the Regional Offices and by the Division of Stationary Source Enforcement (DSSE). As a result of these requests, ground rules for the use of the form were prepared establishing NADB as the group to manage its distribution. A major concern was the duplicate use of the form. EPA wanted to avoid situations where more than one operating unit would send the same request to a source. The approach to avoiding this problem is detailed in the following communications:

- Figure 1 - letter from Robert E. Neligan
- Figure 2 - letter from Richard D. Wilson to Regional Enforcement Division Directors, Region I - X

These procedures stressed the importance of reviewing previous communications with a company to determine that a current request was not a duplication of data asked for at an earlier time.

To date APER has been used with some measure of success as a method for acquiring essential emission and operational data for use in inventories, enforcement actions and compliance evaluations. In many instances, however, supplemental data were requested either because the individual completing the form was not diligent in its preparation or the questions were misunderstood. The shortcomings of the system may best be characterized as trying to use a form for purposes other than those for which it was designed.

C. SCOPE OF PROJECT

The primary purpose of this project was to conduct a study of the uses of the APER form and to prepare a report regarding the areas of, and requirements for improvement in the form. The scope of the project was augmented during the initial stage of investigation to consider the applicability of a computer based system for requesting emission, operational and compliance data with a simplified procedure for information update. The investigation included interviews with

C O P Y

Procedures for Using EPA/OMB Approved Questionnaire (OMB Nr. 158-R75) to Acquire Data From Individual Sources

Mr. William Megonnell
Stationary Source Enforcement Division

Early this year the attached questionnaire was approved by OBM for use by EPA in acquiring emissions-related information directly from facilities discharging air pollutants into the atmosphere. Originally. it was intended that the questionnaire would only be employed by OAWP personnel, however, we are now receiving numerous requests from EPA Regional Offices and DSSE personnel for questionnaires to acquire emissions-related data for sources now being constructed. Moreover, we expect an increasing use of this questionnaire as various groups within EPA require source data to carry out their responsibilities in monitoring and evaluating pollution control activities and progress.

Due to the potential political complications that could arise from needlessly contacting private sources for information, it is mandatory that duplicate usage of these questionnaires be strictly avoided and that all information received be routinely incorporated into the National Emissions Data Bank (NEDB). To insure this, the National Air Data Branch (NADB) is managing distribution of the questionnaires. Strict control procedures are necessary to prevent unauthorized use of these questionnaires until EPA personnel are well aware of the potential political hazards. A list of those persons authorized to receive questionnaires is now being constructed by NADB. Please advise NADB (John Bosch: FTS 919-688-8491) of the name of one DSSE representative authorized to order and receive questionnaires. The two NEDS/SAROAD representatives in each EPA Regional Office will also be included on this list, together with the emission inventory contact in each Regional Office.

Administrative rules for using the questionnaires to solicit data directly from sources are specified in the attachment. These procedures shall be followed by all persons employing the questionnaire for data

Figure 1: ESTABLISHMENT OF NADB AS MANAGER OF APER DISTRIBUTION

acquisition. It must be emphasized that authorization for requiring sources to complete these questionnaires is needed in each instance and is the sole responsibility of those persons initiating the data-gathering program.

Robert E. Neligan
Director
Monitoring and Data
Analysis Division

Enclosures

cc:
John A.S. McGlennon, Region I
Gerald M. Hansler, Region II
Edward W. Furia, Jr., Region III
Jack E. Ravan, Region IV
Francis T. Mayo, Region V
Arthur W. Busch, Region VI
Jerome H. Svore, Region VII
John A. Green, Region VIII
Paul DeFalco, Jr., Region IX
James L. Agee, REgion X
Ken Berry, SIB

EIU:JBosch:fh:rm 647:Mu:ext 491:12:19:72

Figure 1 (continued)

C O P Y

Required Procedures for Using EPA/OMB Approved Questionnaire (OMB Nr. 158-R75) for Acquiring Emissions-Related Data From Individual Sources

To avoid duplication of effort and to insure that all collected data are systematically entered into the National Emission Data Bank (NEDB), the following procedures must be followed by all EPA personnel who utilize the OMB Nr. 158-R75 questionnaire for soliciting emissions-related data from private sources:

1. Prior to sending out any questionnaires, the project manager must access the National Emissions Data Bank (NEDB) to determine precisely what is already known by EPA about the sources to be interrogated. This query to NEDB must be made within 10 working days of questionnaire mailing due to regular changes in the data base. Questionnaires should not be sent to sources for which information is already available in the NEDB data bank.

2. After the questionnaires are returned by the sources, the project manager should detach the green copy and transmit it to the NEDS/SAROAD representatives in the appropriate EPA Regional Office.

3. The assigned NEDS/SAROAD representative in each Regional Office shall maintain a current "green copy" file of all questionnaires used within his regional jurisdiction. Within three weeks of receipt, the data must be transferred to the National Air Data Branch (NADB) for inclusion into the data bank using normal data flow procedures between regional offices and NADB that have been established.

4. Until remote interactive and batch terminals are fully operational in the Regional Offices for this purpose, inquiries regarding NADB should be directed to John C. Bosch whose address is listed below:

Figure 2: GROUND RULES FOR APER USES

C O P Y

John C. Bosch
Chief, Source Inventory Unit
National Air Data Branch
Room 650, Mutual Building
Research Triangle Park, N. C. 27711
FTS (919) 688-8491

5. The list of process codes attached to OMB Nr. 158-R75 is different than the NEDS Source Classification Coding System only because OMB Nr. 158-R75 was developed prior to finalization of NEDS. The National Air Data Branch is correcting this situation by recontacting OMB for approval to use SCC Codes in lieu of the present listing. In the interim, the coding list presently attached to the form should be used.

Figure 2 (continued)

users of APER, the evaluation of the use of APER in conjunction with "Section 114" letters requesting compliance related data; and a solicitation of any special requirements that could be inbedded in a new system to reduce the need for multiple requests to sources that must supply pertinent data.

D. TECHNICAL APPROACH

The approach to analyzing the existing method of gathering data for emission inventories and compliance evaluation embodied in the APER procedure began with an evaluation of the form. Among the factors considered were its original intended use, subsequent uses, data elements needed and the shortcomings of utilizing this form in a general, all encompassing, data gathering procedure. This task was accomplished by polling and interviewing frequent users of the APER form, obtaining descriptions of ongoing state systems, and drawing upon in-house experience. The users contacted were EPA personnel in several Regional Offices and in the Division of Stationary Source Enforcement; the state systems investigated are being used in Texas and Wisconsin; and the in-house experience related to previous project work conducted by the staff of Pacific Environmental Services, Inc. (PES) in the following areas:

- Emission inventories;
- Compliance status evaluation;
- Preparation of "114" letters;
- Compliance Data Systems (CDS) analysis;
- Field inspections for enforcement activities; and
- Source testing.

All data obtained from these sources were organized in tabular form to enable determination of the areas of ambiguity, places where more specific details were necessary, and information that was redundant. The results of this evaluation process formed the basis for the conclusions and recommendations set forth in this report.

1. Questionnaire

In order to quickly acquire pertinent data for this project, a questionnaire was designed and sent to a representative number of individuals in the EPA Regional Offices who have relied upon the APER as a means of accumulating air pollution emission data and process operational factors. The questionnaires were followed by interviews either in person or by telephone. The transmittal letter and questionnaire utilized are shown in Figures 3 and 4, respectively. A discussion of the design of the questionnaire is detailed in Section II.

2. Interviews

With the questionnaires serving as a stimulus for gathering opinions relative to modification or redesign of the APER process, a series of interviews were conducted with regional personnel to organize the positive and negative aspects of this approach to data acquisition. The intent of these interviews was to collect general as well as specific suggestions or complaints pertaining to the system. It was also suggested that the individuals interviewed discuss areas of the system that were not covered in the questionnaire. All of the EPA personnel contacted were anxious to cooperate in this program and provided PES with meaningful input and suggestions.

3. Review of Other Systems.

In interviews with the EPA personnel, several emission inventory data gathering systems developed by state air pollution offices were discussed. Two of these

Pacific Environmental Services (PES) is under contract to EPA and NADB, Durham, to evaluate the Air Pollution Emission Report (APER) commonly referred to as the OMB form. As a subtask of this evaluation, PES will be conducting interviews in several EPA Regional offices with individuals who have had experience in the reduction of data from these forms.

In preparation for these interviews, the enclosed list of pertinent questions is being forwarded for your comments. Please enumerate the problems encountered in the use of the OMB questionnaire so that more efficient use of the interview time may be provided.

A convenient time and place for your interview will be arranged as soon as possible. The interview may be conducted in your offices, in PES offices or by telephone.

Thank you for your cooperation, and if you have any questions, please feel free to contact me.

Very truly yours,

Arnold Stein
Executive Vice President
Director of Engineering Applications

Figure 3: TRANSMITTAL LETTER TO ACCOMPANY QUESTIONNAIRE

QUESTIONNAIRE FOR THE EVALUATION OF THE OMB FORM

1) How extensive has your use of the OMB form been?

2) For what type of projects has the OMB form been used to gather information (i.e. NEDS, compliance evaluation)?

3) Are you aware of any more efficient methods of data collection used by state and local agencies in your region?

4) What comments can you make concerning the instructions which accompany the OMB form to aid plant personnel in its completion? Would it be helpful to have a separate set of instructions for each section of the form?

5) It has been proposed to design a set of forms which would be used for information gathering from individual industries. Each form would acquire specific information for a particular industry. Whould this type of form be useful in your projects?

6) If you have found the OMB form to be insufficient for the needs of your projects, what alternative methods have been used for information gathering?

7) What problems have you encountered in the use of the OMB form? In particular, what information should be added or deleted? Please comment on the following specific problem areas.

   1) Units - Often, footnotes are ignored or overlooked and the quantity of material processed or burned is not determinable.

   2) Operating hours - Operating schedules are required for each general section of the report. These operating hours may not pertain to all of the sources within a section however.

   3) Process Descriptions - Footnotes pertaining to process codes are ignored or overlooked. Plants have sometimes used SCC codes or have been given verbal descriptions of processes.

   4) Pollutant Emissions - Plants don't often heed footnote (e) on Page 7 which requires an estimation method to be shown.

   5) Combining Sources - Data is sometimes given for each of the individual sources or sometimes for the entire combined source.

Figure 4.

systems were highly recommended and were investigated by the PES project staff.

a. The Texas Emissions Inventory Questionnaire was reviewed as an example of an industry specific data gathering system. In the Texas system, a specific questionnaire can be sent to any one of 76 different industrial sources. This type of versatility is helpful in obtaining very detailed information for emission inventory purposes and eliminates some of the need for sending 114 letters after the initial questionnaire to ask for additional information.

b. The other state system studied was the Wisconsin Emission Inventory System. The advantages of this system included the ability to directly code the data gathered into a computer useable form. This process reduces the need for complex data conversion by an engineer. Wisconsin's system facilitates data updating by providing a computer produced report which lists the information currently known about a source. Company personnel modify this data as required. An example of a typical computer produced report from the Wisconsin system is included in Appendix A.

E. EVALUATION AND RECOMMENDATIONS

The criticisms and recommendations of the regional personnel combined with PES' own observations, formed the basis for generating the alternatives for modifying APER and the recommendation of the option selected. Briefly stated the goals are the development of a system to:

- Provide the software to update NEDS. These programs would be limited to producing a computer generated form to be completed by the company requested to supply

the revised data. There would be no actual mechanical interface between this system and NEDS. However, after manual review of the form by EPA personnel, the data could be directly keypunched for inclusion into the NEDS update program.

- Forms design for new source data. Special forms and instructions for completion of the forms will be prepared so that the companies questioned can provide the necessary information for each new source. These forms will also be compatible with direct keypunching requirements.

- Validation procedure. After the software has been tested, several validation runs will be performed on actual information received by a Regional Office to validate the system and to correct any anomalies that may be uncovered.

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II. SOURCES OF DATA

A. PREPARATION OF REGIONAL QUESTIONNAIRES

Directors of emission inventory projects in seven of the ten EPA regions and several individuals in the Division of Stationary Source Enforcement were contacted for information regarding their experiences with the form's use. A preliminary questionnaire was sent out followed by personal interviews. The purpose of the preliminary questionnaire was to allow the EPA contact to gather data relative to the use of the APER form and to give him an opportunity to formulate opinions regarding the problems associated with its use before the interview.

The first part of the questionnaire was designed to assess the uses of the APER form. Initially, it was desired to determine how much of a background the individual contacted had in the form's use and the type of projects for which the form was employed. This information was primarily required to assess the present uses of the APER form. Also, it was hoped that possible misuses of the form could be revealed in projects for which it was not intended. Conceivably, this type of misuse could bias the user's viewpoint.

The most important function of the preliminary questionnaire and interview was to discuss any problems which had been encountered by the users of the form. Comments were requested pertaining to general problem areas as well as specific items on the form. Each EPA contact was asked to comment on items to be added to or deleted from the form as indicated by his particular uses. Recommendations for modifications to the form were then based on remedying these problem areas.

In addition, possible changes in the structure of the form were proposed to the users and comments were requested. EPA personnel contacted were asked to propose their own recommendations for alterations to the form. The evaluation procedure employed in Section III of this report has taken this information into account, and in this way, the needs of the potential users of the form have been considered.

B. DATA FROM QUESTIONNAIRE RESPONSES

All data obtained from EPA sources in response to the regional questionnaires is summarized in Table 1. This table shows the type of project for which the form has been utilized and the problems which have been encountered by each region.

1. Uses of the Existing APER Form

The APER form has been or is being used in most EPA Regional Offices as a convenient means of gathering data for emission inventory and enforcement projects. However, most regions have resorted to the use of the form only when the data gathered by these more localized entities proved unreliable or inadequate.

In a few cases, notably in Montana, the state agencies have requested sources in their area to complete APER forms and have subsequently forwarded the completed forms to the EPA Regional Office for evaluation. In most other instances, state and local agencies have developed their own forms and these are generally used for data gathering at this level.

As a source of raw data needed for completion of emission inventories (particularly NEDS), the APER form has been used by Region II, Region III, and Region VIII. Region II has found the form particularly unsuitable for gathering NEDS type data from the steel industry and incinerators. Region VIII is currently using data from APER forms supplied by the State of Montana Air Quality Bureau to perform an update of NEDS and perform compliance analyses. A few new minor sources (<100 tons per year) are also being coded for the first time from the Montana forms. In the majority of cases in these regions, it has been found necessary to clarify or complete the information supplied in the APER forms by sending additional Section 114 letters. Examples of supplements to typical Section 114 letters are shown in Appendix C.

The largest use of the APER form has been to determine the compliance status and relative significance of sources in a particular area. The information supplied on the form is often compared with information supplied by NEDS or a state agency. Region VI resorted to the use of APER forms in

Table 1. DATA FROM EPA SOURCES

Region	Name of Persons Contacted	Form Usage (Number of forms sent)		Problem Areas Encountered	Comments on Use of an Industry-Specific System	General Comments
		NEDS	Enforcement			
II	A. Salpeter	0	150	II. 1) Sources don't have necessary information. 2) Prefers verbal process descriptions to SCC codes. 3) Form does not provide sufficient cross-referencing. 4) Estimates of emissions are not given. 5) All emission points aren't identified.	II. Doesn't like the concept. Thinks that each form should be accompanied by a cover letter giving detailed instructions for that particular source.	II. Thinks that form is fairly good. The key is proper use - not the form itself.
III	L. Marshall R. Seraydarian E. Skernolis	0	35	III. 1) Have often had to send out "114" letters after the APER. 2) Data transfer to NEDS is too complicated. 3) Prefer a written description of process to SCC. 4) Sources don't get units straight. 5) Operating hours should be listed separately by point.	III. Would like to see a specific form for each industry and an instruction sheet to accompany it. Specifically, they would like to see forms for the steel industry, incinerators, volatile organic storage and loading facilities.	III. They think the form should be more complete and more specific. Besides being industry specific, the form should be expanded to include visible emission readings. They stated that Pennsylvania had developed a good system.
V	B. Bolka D. Wallgren	200	725	V. 1) Source codes are confusing and cross-referencing between sections of form is difficult.	V. They have already developed special forms for steel mills. Would like to see forms developed for other industries.	V. They have had extensive successful use of the form when sent with a modified set of instructions. They also have developed supplementary reactive hydrocarbon forms.
VIII	J. Dion	100		VIII. 1) Cross-referencing between control equipment and basic equipment was difficult to follow. 2) Sources didn't report all pollution generating processes. 3) Reported emission estimates were not referenced as to how they were determined. 4) Units of quantities reported were not designated.	VIII. Special forms for conical wood waste incinerators were developed for use in Montana. These were used successfully and they would like to see forms developed for other industries. The Texas system was recommended as a working example of this type of system.	VIII. They think the form can be used successfully for sources which employ experienced personnel in environmental matters. Problems arise when the form is sent to small sources which do not employ this type of personnel.
IX	T. Stumpf	0	400	IX. 1) Sources use parts of the present form to circumvent reporting detailed information. For example, in the pollutant emission estimate section of the APER, they would like to delete the statement, "If unknown, *please do not complete* these columns..." because sources use this to avoid completing the form.	IX. They think a system of this type would be helpful for small industries such as as asphalt batch plants, lumber mills, and cotton gins. They suggest that special forms be designed for the cases where there there are many small companies in an industry.	IX. They stated that, in general, the data elements requested in the existing APER are sufficient, and no additional data elements are necessary for this type of system.

Louisiana when the information available from other sources proved to be inadequate. Its use, however, was limited to those sources which had not previously received the form. Region IX indicated that the APER form has been used for the compliance analysis of approximately 400 sources from which no data had previously been received. In a majority of these cases, it has also been found necessary to follow up the APER form with a section 114 letter. Many individuals from the Regional Offices regard the data received on the APER form to represent a company's "official position" and to be the firmest basis from which legal action can be taken.

2. Statuatory Authority for Gathering Data

Section 114 of the Clean Air Act provides the Administrator of the Environmental Protection Agency or his authorized representative with authority to enter, conduct inspections or monitor emissions from any source covered by the New Source Performance Standards (NSPS). This authority has been used by the Regional Offices to obtain compliance information, by the National Air Data Branch (NADB) to secure emission inventory data and by headquarters to develop SIPs.

The APER states that:

"A. This report is to be used to obtain information for the purpose: 1) of developing or assisting in the development of any State Implementation Plan under § 110 or 111 (d) of the Clean Air Act, as amended (42 U.S.C. 1857 et seq), any standard of performance under § 111 of the Clean Air Act, or any emission standard under § 112 of the Clean Air Act; 2) of determining whether any person is in violation of any such standard or any requirement of such a plan; or 3) of carrying out § 303 (emergency powers) of the Clean Air Act.

B. Response on all applicable sections of this report is required under § 114 of the Clean Air Act, as amended. Compliance may be enforced under § 113 of the Act by an administrative order or a civil suit by the Environmental Protection Agency.

C. Information provided to the Environmental Protection Agency in this report will be available to the public, except that upon a showing satisfactory to the Agency by any person that such information or a

particular part thereof (other than emmission data), if made public, would divulge methods of processes entitled to protection as trade secrets of such person, the Agency will consider such information or particular portion thereof confidential in accordance with the purpose of Section 1905 of title 18 of the United States Code, except that such information may be disclosed to other officers, employees or authorized representatives of the United States concerned with carrying out the Clean Air Act or when relevant in any proceeding under the Act."[1]

One class of data requested is used as the basis for material balance calculations to evaluate emissions but the request may also take the form of a requirement for a company to submit source test results. Compliance data needs may include certified copies of construction contracts or purchase order for new process, equipment or air pollution control systems along with plot plans and other discipline material.

Under the provisions of this section it is also possible for the Administrator to designate individuals to make on-site inspections to verify any of the statements submitted by the "source" in response to a request for emissions or compliance related data. This authority may be delegated to the state if the procedures for carrying out this section of the Clean Air Act are approved by the Administrator. The Act further states that "Nothing in this subsection shall prohibit the Administrator from carrying out this section in a State."[2]

3. Problems With The Form As Presently Used

Problems encountered when using the APER form may vary depending on the type of project and on the type of source for which data is being gathered. During personal interviews, EPA regional personnel were able to cite many specific problems which they had encountered. In-house users of the form also enumerated problems they had encountered in their use of the form. Each user of the form described specific problems but several general problem areas were noted from all of the users. These problem areas were ranked in importance and the areas most in need of correction are described first in the following discussion:

---

[1] Environmental Protection Agency Air Pollution Emissions Report, OMB No. 158-R75, p.1.

[2] Clean Air Act, Section 114, June 24, 1974, (printed in Environment Reporter, the Bureau of National Affairs, Inc. p.16).

- Two of the most difficult problems were the interpretation of the process description in Section IV and the type of combustion unit in Section II. In the instructions which accompany the APER form, the company is directed to choose an appropriate identification number (SCC code) which describes its process or combustion unit. The company is told to use this code instead of a word description. However, despite the instruction's warning not to use the code unless it specifically describes the process, many companies list "other not classified" or "general/other" type codes and do not supply written descriptions of the process. Although the codes are designed to include all of the typical processes at a facility, most plants have some operations which are unique to that particular plant, and the SCC codes alone are inadequate for these. Small companies especially have problems interpreting code descriptions and hence, usually use general codes which do not accurately describe the process. Without a complete and specific description of a process, including flow charts, analysis can be very difficult.

- Another problem area related to process description codes is the confusion between source codes and process codes. Each item in Sections II, III, and IV of the form should be given a unique section source code, such as item IIa (Section II, first unit) or item IVc (Section IV, third process). The purpose of the section source code is to allow the company to relate the data in Sections V and VI to the appropriate processes or fuel burning units in Sections II, III and IV. Many companies, however, supply process identification numbers instead of section source codes and have no means of cross-referencing the data in the six sections of the form. In these situations, it is impossible to match air cleaning equipment and stack and pollutant emission data to the basic equipment source.

- A category of problem areas can be defined which is related to the lack of experience in dealing with emission inventory data on the part of company personnel completing the APER form. For instance, the concept of a point source is difficult for company personnel to define. The actual source of emission could be the unit of basic equipment or the associated control equipment or the exhaust stack. Multiple sources exhausting to a common stack are especially troublesome. Not only is it difficult to mechanically decide which sources should be included in the data supplied, but confusion exists about the distinction between "basic" and "control" equipment. For example, a CO Boiler on a cracking unit at a refinery could be coded as control equipment because it limits CO emissions, or it could be coded as basic equipment because it burns fuel to produce heat.

  Most emission inventory systems have provisions to deal with these problems, but, unless a company employs a trained environmental engineer, the person completing the form is not aware of these provisions and cannot complete the form correctly.

- The definition of input process weight can cause some companies more problems than others. In a rock crushing and screening operation, for instance, the input material is well defined and easily measurable. However, in the oil refining process, a fluid catalytic cracking unit can be interpreted as having input products consisting of oil, make-up catalyst, circulating catalyst, air, or any combination of the above. Also, in a paint spraying operation where hydrocarbons are emitted due to solvent evaporation, solvent, paint, or the items being applied can be interpreted as the inlet products. The ultimate decision as to what materials should be included in the process weight must be made by the particular agency gathering the data. Unless specifically directed to what materials to include, the company will usually not provide the correct information.

- In a few problem areas, the APER form does not ask for information which is necessary for emission inventory projects. It is particularly difficult to provide information about the storage and loading of organic liquids in the current state of the form. The form is very difficult to use for any unconfined process.

  It is difficult to specify operating hours for individual processes. The form does not specifically ask that units be given for process weight and other production figures. This is one of the most frustrating problems facing the interpreter of the data presented on a completed form.

- Finally, some of the data requested on the form cannot realistically be expected to be known by the company. The company is asked to predict future operating levels if they know in advance that the current data will change in a short time. However, companies, are not prepared to make definite predictions about their future operations until the changes are actually implemented.

Most of the problems encountered in the use of the APER form center around the inability of company personnel to understand the instructions accompanying the form and their subsequent inability to correctly complete the form. Except for a lack of requesting specific operating hours for each process and data for tanks and other unconfined processes, a properly completed form would provide all the information necessary for emission inventory purposes.

Larger companies usually employ environmental specialists who have an understanding of emission inventory needs. These organizations can usually be expected to complete APER forms which can be interpreted with few problems. Small companies, on the other hand, tend to be confused by the complexity of the form and hence, the data on the form is unreliable and often impossible to interpret.

Table 2 summarizes the deficiencies found in the existing APER system and the problems encountered in its use.

Table 2: DEFICIENCIES FOUND IN EXISTING APER SYSTEM

1. Doesn't provide for accurate process descriptions.
2. Cross-referencing between basic and control equipment is difficult.
3. Doesn't provide for a precise definition of all emission sources.
4. Operating hours cannot easily be specified for individual processes.
5. Units are not easily specified for process weight and other production figures.
6. Data transfer to NEDS is too complicated.
7. Emission estimation methods cannot easily be defined.
8. Parts of the form can be used for circumvention.
9. The system does not specifically define what materials are included in process weight.
10. Data for unconfined processes is difficult to report.

III. SYSTEM REQUIREMENTS

Headquarters and Regional Offices of EPA have a need for a systematic means of obtaining information from facilities which emit pollutants into the atmosphere. The basic use of such a system is the maintenance of accurate and current emission inventory data. This data will in turn be employed by various branches within EPA and by state and local pollution control agencies for enforcement activities, modeling work and program evaluation.

A. CHARACTERISTICS

The system must be capable of performing two general functions:

- Collection of data for sources for which no emission inventory data exists; and
- Periodic updating of existing emission inventory data.

In order to achieve these objectives the system should consist of the following components:

1. Questionnaire type forms to be completed by plants.
2. Review procedures for validating data submitted by plants and adding the codes and identifying numbers required by NEDS.
3. Keypunch instructions which facilitate data entry directly from the forms after review.
4. Computer programs which can produce "completed" fascimiles of the form containing data which currently exists in NEDS and which the plant can readily update.

A system which embodies these characteristics will meet the goal of providing current emission inventory data at minimum cost to EPA and to the sources.

B. USES OF THE SYSTEM

The user of the system will be personnel in the Surveillance and Analysis and Enforcement branches of EPA Regional Offices. They will use the system to obtain emission inventory and operational data. Re-

gardless of the specific purpose of a particular request to a source for information, the data reported on the form will be used to update the NEDS data base.

1. Surveillance and Analysis

   Surveillance and Analysis personnel will be using the system to facilitate their responsibilities for maintaining the NEDS data base. The APER form will be sent to sources identified as potential large emitters for which no data currently exists in NEDS. Surveillance and Analysis personnel may make use of the form for periodic updating of NEDS data in situations where the state and local agencies are not adequately maintaining the NEDS data base.

2. Enforcement

   Enforcement Branch personnel frequently require data to determine compliance status of plants. A first step in gathering the necessary information is the examination of emission inventory data. The questionnaire will be used either to obtain information on a source not in NEDS or to get more current information. In either case data will be entered into NEDS as well as utilized by the Enforcement personnel. It should be emphasized that the APER form will not replace the "114" letter currently utilized by the Enforcement Branch. Frequently information of a more detailed nature than that required by NEDS is necessary to make compliance determinations. This information is specifically related to a particular plant and could not be covered in a generalized procedure. Hence, some use of "114" letters is still envisioned. However, the basic emission inventory data will be obtained via the APER form.

C. REQUIRED DATA ELEMENTS

The process of determining or defining data elements runs counter to the flow of information generally depicted in an information accumulation system. The objectives and data files needed must first be established in order that the elements of information which are necessary can be enumerated. That appears to be the principle problem with the APER form as used for emission inventories and for compliance evaluation. The form was designed to be employed in developing State Implementation Plans and found subsequent uses in several other programs. If properly completed the form will provide a significant amount of pertinent data for inventories and compliance evaluation. The problems arise in a lack of specificity in instructions, the need for simplified forms for industrial categories where the numbers of facilities are large but the equipment is mechanically simple, i.e. wood waste burners, and in a requirement for industry specific forms.

Data elements for compliance and inventory needs fall into several basic categories. These are:

- Descriptive
- Operational
- Operating times - hrs/day, days/wk, wks/yr - seasonal

Descriptive elements of data for processes which may emit or control the emission of air contaminants pose an intricate problem. Names and codes have been devised by many agencies to simplify the descriptive process but the success of these efforts have been limited. In any complicated chemical process or mechanical system, the fundamental piece of data is the equipment location drawing which doesn't lend itself to ready storage in most automated data retrieval systems. This is one informational document which probably will be stored in a filing cabinet but which is part of the descriptive data base for most facilities that are of interest to the data system to be designed. In a large facility the precise location of a stack may be essential for land-use planning and air quality modeling studies. Other descriptive data elements include:

1. SIC code
2. SCC code
3. Company identification designator, i.e. "xyz" boiler No. 3.
4. Basic equipment description including modifiers to more closely define a process. For example, a natural gas fired reverberatory furnace, 20' x 40' overall dimensions, 6' x 8' hearth, 3' diameter stack 40' high used for secondary smelting of brass.
5. Air pollution control system description, stating specifically the operations, equipment and processes (cross-referenced to the company identification system) served by the control device.
6. If applicable, the name and model number of the company that built the system or equipment should also be stated.
7. In-plant designator to identify the specific boiler, incinerator, or process unit to which the NEDS record applies.

Operational factors affect the use, anticipated emissions, efficiency and expected life of systems of interest to this study. Required data must include:

1. Fuel usage
   a. Rate of consumption (hourly, daily, weekly, annual)
   b. Type of fuel (solid, liquid, gaseous, combination)
   c. Chemical and physical characteristics (grade or quality, sulfur content, ash content, etc.)
   d. Firing details (types of burners, stokers, preheat requirements, % excess air, firing point on burner locations, etc.)
2. Process weight

   This area of data acquisition has proven to be very complicated. Questions which have arisen include: where does a process begin and end; is intermittent storage or a surge tank the end of a process; is there such a thing as completely closed integrated system; how do you treat parallel and series operation; and are several systems venting to one stack considered a single or multiple operation? These questions must be realistically dealt with in a system for storage, retrieval and manipulation of air pollution emissions data. The only sound approach seems to be the setting of ground rules considering these and many more options and fitting as many situations as possible into the prescribed form. However, the basic information required to evaluate process weight is:

a. Type and quantity (exclusive of fuel and air) of all materials introduced into a process.

b. Rate of introduction of the materials.

3. Continuous or intermittant process

a. Hours of operation

b. Explanation of why the operation may either be continuous or intermittant (batch loading and product removal, 24-hour per day continuous operation as in a refinery, etc.)

4. Measured or calculated emission

a. Source test data

b. Material balance calculations

c. Observation of visible emissions by a trained observer

d. Applicable state or local air pollution control regulations.

5. Anticipated modifications to equipment or change of product may affect emissions.

Operating times, whether daily or seasonal, are important data for air pollution control programs. These programs may contain requirements for supplementary control strategies, emergency shut-down operations or other curtailment plans which specify a need to know when a facility or system is in operation. Therefore, the hourly, daily, weekly and seasonal operating times for sources of interest are mandatory.

The data described will be broken down into the finest detail necessary to support the requirements of the system to be designed. It is also recognized that cross-referencing is essential to avoid confusion among the systems reported in large intricate facilities and for ease in handling inventory data.

IV. ALTERNATIVE APPROACHES

There are several alternative approaches to satisfying the requirements set forth above. Each alternative is described below.

A. NEW DATA

A clear cut sentiment expressed by EPA personnel surveyed was that the current APER questionnaire was a difficult form for data entry. Accordingly, the new questionnaire will be designed in a fashion consistent with modern data entry requirements. The form will embody the following features:

- Verbal data to be filled in, such as name, address, plant contact, etc. will be entered in boxes preprinted on the form. Below these boxes, keypunch column numbers will be printed. Hence, this data will be keypunched directly.
- Numeric data which does not require interpretation by the reviewing engineer, such as telephone number or hours of operation, will be handled in the same manner as the verbal data described above.
- Data elements to be added by the reviewing personnel, such as plant and point ID numbers, SCC codes, etc. will be placed below a broad line on the form (or in a separate box) clearly marked "For EPA Use Only."

Many of these features were incorporated in the Wisconsin Emission Inventory System as shown in Appendix A.

The design of the form will be such as to make it readily comprehendible to the plant and EPA user and will combine the source document and keypunch form on the same physical record. This procedure will result in reduced data entry costs, simpler review and control procedures, more rapid NEDS update, and more accurate data reporting. This method of forms design will be utilized in the entire proposed questionnaire.

The types of questionnaires which have been proposed by PES staff and by EPA personnel can be summarized into four following alternatives:

- Generalized form with generalized instructions;
- Generalized form with specific instructions for classes of industries;

- Generalized form with specific sections tailored to classes of industries;
- Simple specific forms for specific industries.

Each of these alternatives is examined in detail below.

1. General Form With General Instructions

This type of form would essentially involve restructuring the existing APER form to include the defined data elements and redesigning the form to facilitate data entry. A generalized form simplifies EPA's work in that only one form would be used. The resulting questionnaire would suffer from some of the same problems of interpretation that the existing APER form elicits.

2. General Form With Industry Specific Instructions

The form utilized in this approach would again be a restructured APER type form. The significant differences would be a set of instructions and examples particularly tailored to a class of industry. This approach overcomes many of the objections to the APER form involving interpretation of processes and throughput. However, it creates an additional burden on the part of EPA personnel in ensuring that the correct sets of instructions are sent to sources. Also, where one plant is engaged in multiple operations, many sets of instructions would be required. This could present an overly complex appearance to the plant engineer.

3. General Form With Specific Sections

This approach would, in principle, be similar to the Federal Income Tax form, where everyone completes the basic form, and additional sections are completed as required. By utilizing this approach, the forms would reflect the jargon of a particular industry. For example, the section for grain loading would request data about tons of grain conveyed,

rather than "process weight." This approach facilitates completion of the questionnaire by the source. However, EPA's responsibilities are greater in that the correct "package" of forms must be sent to each source. Also, if an incorrect section is sent, the source would not be able to make sense of it (e.g., a section for grain loading could be sent to a chemical plant).

4. Simple Specific Forms For Classes Of Industry

In this approach, completely separate questionnaires would be designed for each identifiable class of industry. In some cases, such as a lumber mill, the form would be very short and simple, whereas questionnaires for oil refineries would be quite complex. A specific set of forms for sources in the steel industry has been developed and used in the EPA Region V offices. Examples of these forms are shown in Appendix B. This approach greatly simplifies completion of the questionnaire by the source. However, the problem of sending the right questionnaire to the right source could be difficult. Also, if diverse processes are operated by the same plant, more than one questionnaire would be required. This would force the source to repeat some common identifying information.

B. PERIODIC UPDATE

Updating data presents a somewhat different problem than the original data collection process. In some cases, nothing except the date of data changes, while in other cases entirely new processes are added. In addition, the update process requires that the NEDS update procedures be followed. This involves the correct combination of Add, Change, and Delete cards. Three approaches to the update process are examined below:

1. Use of Same Form As Original Data Collection

This is the simplest method. No matter which alternative is selected, the form, or collection of forms would be sent to plants on a regular basis. The sources would be required

to complete the entire form. Old NEDS data would be deleted, and the data resulting from the new form would be added to NEDS. This is the least satisfactory approach, since it demands redundant work on the part of EPA and the source.

2. Use of Computer Produced Facsimile

In this approach a computer program would print a facsimile of the original form. Old NEDS data would be printed or output by the system and blank spaces would be printed where the plant could fill in current data. Boxes would be printed where sources could indicate closed facilities. Additionally, blank forms would be included for use when new processes are added to plants. This approach would require the EPA reviewer to determine the required NEDS action code (A,C, or D) when a card is to be punched. The source's efforts are minimized, particularly where no changes have occurred. The data entry load is minimized, since cards are punched only when a change is indicated.

3. Automated Facsimile

This approach embodies 2 above. However, it further simplifies EPA's procedures by automatically determining the NEDS action code. It would require a computer program to compare cards punched from the questionnaire with the existing NEDS data base. This comparison will indicate whether a card should have an A,C, or D code.

V. APPRAISAL OF ALTERNATIVES

In order to appraise the alternatives and select the most desirable one, the technique of additive weighting is being employed. Additive weighting is a procedure that encourages the user to logically choose among his alternatives. The process involves defining independent evaluation criteria and evaluating the alternatives relative to the criteria. The user defines the criteria and assigns a weighting factor to each. The weighting factors should describe the relative importance of each criteria.

Values are assigned to each alternative for each of the criteria. These values have a relative importance for each alternative and criterion. If the alternative appears favorable under the criterion it should be awarded a high value, and vice versa for an unfavorable assessment.

The evaluation process begins with a definition of the criteria.

A. CRITERIA DESCRIPTION

1. Comprehendibility by Plant Personnel

The plant engineer or manager must be able to readily understand what data are desired and how to report them correctly. This is considered to be the most important criteria for judging the alternative strategies because in many cases, the plant personnel have the desired information available but are not able to report it because of confusion over the wording and/or structure of the reporting forms and their accompanying instructions. The wording of the form and the instructions can be especially helpful to the plant personnel if jargon from the particular industry is used. Examples of correctly reported data can also be very helpful to individuals who are not familiar with emission inventory data.

With these factors in mind, the grading of the alternatives and

the existing APER was performed with respect to the criterion of comprehendibility by plant personnel. The existing APER was given a grade of 1 corresponding to a very poor evaluation. The APER suffered from the inherent drawback of a general form with general instructions. Its wording was required to address all sources and could not use specific terms. Instructions which accompanied the APER were void of even general examples of correctly reported data. Also, footnoted instructions printed on the forms were unsuccessful in helping the plant personnel and caused more confusion.

The first alternative replacement, a redesigned general form with rewritten general instructions, would suffer from the same inherent drawbacks as the APER. However, the addition of generalized examples and a clear description of the desired data elements would improve the comprehendibility of the system, so this alternative was given a slightly below-average grade of 4.

Comprehendibility by the plant would be greatly enhanced in the remaining alternatives since they all would make use of industry-specific language to request the desired data. Of the three alternatives, the general forms with industry-specific sections would be slightly less comprehendible than the other two alternatives. Since these forms would be accompanied by general instructions, no specific examples of correctly reported forms would be supplied. Also, if the plant was sent specific sections which were not applicable to the processes being reported, the added clarity of this alternative would be lost and comprehendibility would be reduced. This alternative was assigned a grade of 7 which is equivalent to very good comprehendibility by plant personnel.

Alternatives 2 and 4 were both given grades of 8. They were rated slightly higher than alternative 3 but were still not

given excellent grades in comprehendibility. The generalized form with specific instructions would contain specific examples of correctly completed forms for the particular industry. Some of the confusion caused by a generalized form would still be inherent in this system. The entirely specific forms would be the most comprehendible by plant managers unless an inappropriate form was sent. In this case, the source personnel would be very confused and not able to provide any pertinent information.

2. Process Description

One of the most important tasks in the compilation of an emission inventory is the estimation of pollutant emissions. Detailed process information is important to the completion of this task and an exact process description is the most critical piece of information required. The need for the information is twofold. Firstly, the process description must provide enough data to allow the EPA reviewer to determine emission factors for the process so that emission estimates may be calculated. Secondly, for NEDS purposes, the EPA reviewer must be able to correctly determine an SCC code for the process. For enforcement purposes, a precise process description is necessary to determine applicable air pollution control regulations for a process. This criterion is given a slightly higher weighting factor than the other emission estimate criteria because clear process descriptions allow the EPA reviewer to have a good understanding of exactly what is being done at the plant.

In the grading of the alternatives, the APER received a very poor grade of 1. The existing system required the plant to supply an SCC code description for each process. This was an unrealistic request for most plants, and the resulting process descriptions were often impossible to interpret.

A revised general system should not require SCC codes, and therefore, would be graded higher than the existing APER. How-

ever, without specific examples of complete process descriptions, the plant could supply incomplete or confusing descriptions. This alternative was given a slightly below average grade of 4.

The system of general forms with industry specific sections and the system of entirely specific forms both suffer from the inability to allow the source to supply process descriptions. In the construction of specific forms, typical processes are assumed, and data is requested for these typical processes. The plant is not given the opportunity to describe any processes which are not typical. Therefore, these alternatives were both graded as slightly below average.

The alternative of using general forms and industry-specific instructions provides the best opportunity for complete and clear process descriptions. Examples of typical descriptions would be included in the instructions, but the general form would allow the source to give descriptions of atypical processes. This latter alternative provides the best opportunity for the source to provide accurate process descriptions and was rated as very good.

3. Definition of Process Weight

Another piece of necessary information supplied by plant personnel for the determination of emission estimates is a reasonable approximation of the applicable process weight for each source. Using the process weight and emission factors, the EPA reviewer can make reasonable emission estimates for each source. Process weight is defined in most SIP regulations as the material introduced to a process which causes emissions. In a specific process, however, many varied interpretations can exist as to what materials are included in process weight. It is therefore very important that in cases where ambiguous interpretations may occur, an

approved definition of process weight is presented to the plant personnel.

Since no explanations of this kind can be provided in a general form, the existing APER and the revised generalized system were both given poor grades of 2. Industry-specific systems, on the other hand, are capable of defining these ambiguous areas and providing accepted interpretations of what materials should be included in process weight. The alternative of generalized forms with specific instructions would be able to clarify what is meant by process weight for typical processes but would not provide this guideance for atypical processess which could be reported on the general form. The industry specific forms would not request data on these atypical processes so any ambiguous definitions in the normal process would be clarified in the construction of the form. The two industry specific form systems received grades of 9, and the system utilizing industry specific instructions was given a slightly lower, but still very good grade of 8.

4. Definition of Required Units

It is obvious that any numerical information, including process weight, is meaningless unless units are clearly identified. This piece of information is particularly critical when the preparation of emission inventory data base information is considered. Since a standard set of units is understood for numerical information in the data base, all reported information must be convertible into that standard set. The weighting factor for this criterion is no higher or lower than any of the other emission estimation criteria since all are needed to complete the critical inventory categories.

The specification of units in a specific system of forms is straightforward in that the required data units are defined on the form. The only disadvantage occurs when the source must

convert data units from their recorded units to the system's required units.

In specific instructions accompanying general forms, suggested units can be indicated and the general form can provide space for the source to specify the units of the data reported. This system would be graded as high as the two specific form systems except for the fact that the company's specified units may not be convertible to the required units without further information.

The generalized system suffers from the drawbacks inherent with general forms as presented above. Also, specific examples of industry units would not be available to the source, so this alternative was graded well below the other alternatives.

In the existing APER, little specification of units is requested, so the reported numeric data is often meaningless. The existing system is given a very poor grade based on this criterion.

5. Specification of Hours of Operation

The final emission estimation criterion is the specification of operating hours for each piece of basic equipment or process. This data is necessary for the completion of the NEDS hours of operation category. Also, in many enforcement regulations, emission limits are based on hourly operating rates, so the operating hours are necessary to convert yearly rates to hourly rates. Emission estimates may sometimes be given in hourly rates and yearly estimates for NEDS may be calculated if operating hours are known. The weighting factor for this criterion is the same as the previous emission estimation criteria since all are equally important in the calculation of emission estimates.

The grading of the proposed alternatives does not differentiate between the four systems since all could equally satisfy the requirements of this criterion. Whether the system is general or specific, operating hours must be requested for each process

which is reported. The existing APER system does not request this information specifically so this system was given a very poor grade of 1.

6. Cross-Referencing Between Basic and Control Equipment

This criteria also relates to the task of making accurate estimates of pollutant emissions from equipment and processes. Emission factors may be determined from process descriptions and uncontrolled emissions may be estimated in this manner. If pollution control equipment is associated with the equipment or process, the emissions will be reduced. Therefore, it is important that the source be able to readily report any pollution control equipment and associate it with the basic equipment or process controlled. This criterion is weighted slightly below the other emission estimation criteria since estimates of uncontrolled emissions can be made without control information.

In a generalized system, cross-referencing is established between the sections of the form which relate control equipment to basic equipment. In the APER system, this was especially confusing and difficulties arose when control equipment served multiple sources. In a revised generalized system, control and process information would still be reported in separate sections and a cross-referencing scheme would have to be utilized. Any such scheme would be confusing to source personnel so this alternative was assigned a poor grade of 3. The addition of specific instructions could help alleviate some of this confusion but the inherent drawbacks of the general form would still be present. This alternative was given a score of 5 corresponding to an average evaluation in this criterion.

A special section of a generalized form would address specific control devices on particular processes or basic equipment. This would require cross-referencing between sections, but

since only specific data would be associated, confusion would be reduced. This alternative was given a very good score of 8 with respect to this criterion.

Specific forms would be designed to allow the source to report pollution control equipment in the same section as the associated basic equipment information. This would eliminate the need for a confusing cross-referencing scheme and would be the most accurate method of relating data items. Therefore, it was given a score of 9.

7. Complete Identification of All Points

In order to compile a complete emission inventory, the system used must allow the source to provide data for all pollutant emission points. The data gathering system should include instructions addressing the definition of a point source and should allow plant personnel to report data for all the processes which are in operation at his facility. In the weighting of this criterion, its importance was regarded as being slightly lower than the emission estimation criteria. The reasoning for this decision was that correctly coded information for the reported processes was more desirable than incomplete data for all processes.

The grading of the specific form alternatives reflected an inability of these forms to allow for complete reporting of all emission points. In these alternatives, certain processes which are typical to the particular industry are investigated and data for atypical processes are not requested. The general form with specific sections would allow some ability to report data for these other processes, but these data could not be expected to be complete. The entirely specific system was assigned a poor grade of 2 while the general form with industry-specific sections was given a slightly below-average grade of 4.

The generalized system provide a better opportunity for data reporting for all processes. These systems range in effectiveness from the existing APER, which was graded as average to the general form with specific instructions which received a high score of 9. The industry-specific instructions could be very effective in pointing out the particular processes which should be included in the data report. Somewhat less effective would be generalized instructions containing general definitions of required point sources so this alternative was given a score of 7.

8. Unconfined Process Data

Certain processes cannot readily be defined as having specific emission points. These processes are identified as unconfined processes and include such operations as storage and loading facilities for volatile organics. Although these processes cannot be easily defined, they may contribute significant pollutant emissions and therefore should be included in the emission inventory. The weighting of this criterion is significant in relation to the other criteria, but is not as high as the emission estimation criteria. The rationale for this is similar to that used in assigning a weighting factor for the "complete identification of all points" criterion-- complete data for reported processes is more desirable than incomplete data for all processes.

Since unconfined processes would be determinable for particular industries, the specific systems were graded high with respect to this criterion. Also, since these processes are very difficult to define, less responsibility given the source corresponds to greater success in receiving complete data. For this reason, the entirely specific system was given a 9, the highest grade with respect to this criterion. The system of forms with specific sections was graded slightly lower at 8 and the general forms with specific instructions received a

grade of 7.

Neither the existing APER or the revised generalized system could provide sufficient guidance to allow the plant to report complete data relative to unconfined processes. Therefore, both of these systems were assigned poor scores.

9. EPA Review

Another criterion for evaluating the alternatives is the amount of review which will have to be performed by EPA personnel when the completed form is received. This review will mainly consist of analyzing the data elements reported and converting them into suitable emission inventory data elements. Included in the analysis will be such tasks as determining process SCC codes and converting reported units to standard system units. This criterion is not regarded as being as critical to the quality of data compiled as were the previous criteria. Accordingly, the associated weighting factor is significantly lower than the other criteria.

The use of the entirely specific form would require the least amount of EPA review. Since the form would request data in standard system units, no conversion would be necessary. And since only typical processes would be reported, SCC codes for these processes would be previously determined. The EPA personnel would be required to check the reasonableness of the data and so would have to be familiar with each of the specific forms and the associated industry. This alternative received a grade of 7.

Increasingly general systems would require more EPA review. This is reflected in the grades of the remaining alternatives. The generality and the confusing nature of the existing APER make it the most difficult to review so a grade of 2 was given to this system.

10. Implementation

In order to satisfy the emission inventory needs of EPA, the alternative system must be able to be implemented in a reasonable length of time. Additionally, the system should cause minimal amounts of internal disruption to the existing EPA data gathering activities. Although these are necessary characteristics of an alternative system, this is considered to be one of the least important of the evaluation criteria.

The grade given to each alternative is a function of the development which must preceed the use of the system. Naturally, no further development would be required if the existing APER were still used. Small changes resulting in a revised general system would require very little development time. The remaining systems are successively more specific and in turn are less compatible with the existing system.

11. Ease of Data Entry

This criterion strictly refers to the ease with which data can be keypunched from the forms. After EPA review, the data on the forms would be keypunched into emission inventory records which would be suitable for computer input. The weighting of this criterion reflects that while this is a desirable characteristic, it is not critical to the quality of the data and is the least important of the evaluation criteria.

The more general alternatives were graded higher with respect to this criterion since a simple set of keypunch instructions could suffice for keypunching from one general form. More complex instructions would be needed as the forms become more specific.

B. EVALUATION OF ALTERNATIVES

Table 3 illustrates the application of the additive weighting process to the APER situation. The criteria are listed in the first column with their associated relative weights in the second column. The columns headed I, II, III, IV and APER contain the evaluations for each alternative and for the current procedure. The first number gives the relative value for the alternative in terms of the criterion in the same row. The number in parenthesis is the raw score for each matrix element (criteria weight multiplied by the alternative value for that criterion). The row marked TOTAL shows the sum of the raw scores.

Table 3: ADDITIVE WEIGHTING MATRIX

Criteria \ Alternatives	Weight	I*	II*	III*	IV*	APER
1. Comprehendibility	12	4 (48)	8 (96)	7 (84)	8 (96)	1 (12)
2. Process Description	10	4 (40)	8 (80)	4 (40)	4 (40)	1 (10)
3. Process Weight	9	2 (18)	8 (72)	9 (81)	9 (81)	2 (18)
4. Units Specification	9	5 (45)	8 (72)	9 (81)	9 (81)	1 (9)
5. Hours of Operation	9	8 (72)	8 (72)	8 (72)	8 (72)	1 (9)
6. Basic and Control	8	3 (24)	6 (48)	8 (64)	9 (72)	1 (8)
7. All Points	7	7 (49)	9 (63)	4 (28)	2 (14)	5 (35)
8. Unconfined Process	6	3 (18)	7 (42)	8 (48)	9 (54)	2 (12)
9. EPA Review	3	4 (12)	4 (12)	6 (18)	7 (21)	2 (6)
10. Implementability	2	9 (18)	2 (4)	5 (10)	3 (6)	10 (20)
11. Data Entry	2	7 (14)	7 (14)	5 (10)	4 (8)	1 (2)
TOTAL		358	575	530	545	141

*ALTERNATIVE DESCRIPTIONS

I - Generalized form with generalized instructions

II - Generalized form with specific instructions for classes of industries

III - Generalized form with specific sections tailored to classes of industries

IV - Simple specific form for specific industries

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VI. FINAL RECOMMENDATIONS

A. NEW SOURCES

Application of the technique of additive weighting to evaluate the four alternative systems using eleven criteria previously described indicates that Alternative II, the use of a generalized questionnaire with specific instructions and examples appropriate to the operation being investigated, is the most satisfactory. It should be noted that Alternatives II, III, and IV are all relatively close.

The one criterion which was not included thus far is cost; each alternative's "score" was determined strictly by technical criteria. There are two costs associated with each alternative:

1. Development Costs

Development costs for Alternatives II, III, and IV would be approximately equivalent, since the same in-depth understanding of specific industry operation would be required. Alternatives III and IV would involve more work in forms design, but this is relatively minor when compared with the technical investigation necessary to understand a variety of different industries. While the development costs of Alternative I are significantly lower than the others, the lack of instructions and examples specific to a particular operation make this alternative unacceptable, in our opinion.

2. Operational Costs

Continuing costs incurred by using each alternative system include time spent in deciding which forms and instructions are to be used for each specific case, reviewing responses, and keypunching relevant data. Again, Alternative I has the lowest cost, because of its simplicity. Operational costs of Alternatives III and IV would be similar since both involve selection of specific forms, review of specific forms, and

keypunching from a variety of different forms. Alternative II exhibits lower operational costs, since data entry personnel would be dealing with the same form in all cases, and the decision concerning instructions to be sent to a specific source is easier to make than a decision regarding specific questions to ask particular source personnel.

Viewing technical and cost factors, it is clear that Alternative II represents the best approach to emission inventory data gathering directly from sources. While it is not the least expensive approach, it is the least expensive alternative consistent with the level of detail necessary to achieve accurate results. Additionally, the added clarity provided by specific instructions should allow smaller companies to report data in a useable form.

B. PERIODIC UPDATES

Recommendations for periodic updating of emission inventory data are intimately related to the recommended procedure for gathering data from new sources. The proposed method involves printing a computer-produced facsimile of the generalized form with data currently existing in the NEDS data base printed in the appropriate blanks on the form. Sources would be asked to revise existing data and add data for any new points. In the review process, EPA personnel would supply the appropriate NEDS action codes for updating the NEDS data base. This method could be utilized for any of the proposed alternatives. Use of Alternative II's generalized form simplifies programming and review requirements.

APPENDIX A

STATE OF WISCONSIN EMISSION INVENTORY SYSTEM
FACILITY UPDATE COMPUTER PROGRAM

A-2

W I S C O N S I N

DEPARTMENT OF NATURAL RESOURCES

300001

BUREAU OF AIR POLLUTION CONTROL AND SOLID WASTE DISPOSAL

EMISSION INVENTORY

FACILITY UPDATE

THE OPERATIONAL DATA BELOW WAS SUBMITTED BY YOUR COMPANY FOR 1973. NR101 AND NR154 REQUIRE THIS INFORMATION TO BE UPDATED ANNUALLY.

(1) PLACE 1974 OPERATION CHANGES IN THE PARANTHESES ( ) TO THE LEFT OF THE 1973 VALUES SHOWN.
(2) COMMON ABBREVIATIONS USED ARE: GAL3 = 1,000 GALLONS; CF6 = MILLION CUBIC FEET.
(3) SIGN FORM AT BOTTOM IN SPACE PROVIDED. UNSIGNED FORMS CANNOT BE ACCEPTED.
(4) RETAIN THE BOTTOM COPY FOR YOUR RECORDS.
(5) COMPLETE AND RETURN FORM BY JANUARY 15, 1975 TO: DNR, SOUTHEAST DISTRICT
2300 WEST CAPITOL DRIVE
MILWAUKEE, WISCONSIN 53222
TELEPHONE 414-463-5360

( ) ANACONDA AMERICAN BRASS CO

NEW LOCATION	PRESENT LOCATION	NEW MAIL ADDRESS	PRESENT MAIL ADDRESS
( )	) 1420 63RD ST	( )	) 1420 63RD ST
( )	) KENOSHA	( )	) KENOSHA ( )53140
			( ) COUNTY KENOSHA

THE PRESENT DATE (NO. MONTH, DAY, & YEAR) IS (__) MONTH, (__) DAY, 197(_).
THE ENCLOSED INFORMATION REPRESENTS CALENDAR YEAR 197(_).
OF TOTAL PRODUCTIONS: (_) 20 % OCCURS FROM JANUARY THRU MARCH
(__) 30 % OCCURS FROM APRIL THRU JUNE
(__) 30 % OCCURS FROM JULY THRU SEPTEMBER
(__) 20 % OCCURS FROM OCTOBER THRU DECEMBER

SIZE OF OPERATION IS (_____) 31 ACRES.
AVERAGE NUMBER OF EMPLOYEES IS (____) 1200
OPERATING SCHEDULE IS (__) 8 HOURS PER DAY
(_) 5 DAYS PER WEEK
(___) 250 DAYS PER YEAR

NEW PARENT

( ) PARENT CORPORATION 147 ____

IF APPLICABLE, MONITORING FEES WILL BE PAID BY ( ) PARENT ( ) ANACONDA CO
(X) COMPANY ( ) 25 BROADWAY
( ) NEW YORK
(__) NY (_____) 10004

5

SIGNATURE OF PERSON CERTIFYING FORMS (_____)

PERSON CERTIFYING THESE FORMS
( ) C L OTIS
( ) ENGR MGR
NEW PHONE (___-___-____ EXT. ____) PHONE 414-657-5111 EXT. 235
(__) 6 STACKS REPORTED (__) 7 TOXIC REPORTS

10

STACK NO 10 SERVES ( ) BOILERS ( ) 1 PROCESSES ( ) INCINERATORS THE ID NUMBERS ARE 30
HEIGHT ( ) 50 FEET DIAMETER ( ) 0.0 FEET OPERATES ( ) 24 HOURS PER DAY AND ( ) 260 DAYS PER YEAR
EXHAUST GAS VOLUME IS ( ) ACTUAL CUBIC FEET/MINUTE AND TEMPERATURE IS ( ) DEGREES FAHRENHEIT

15

PROCESS NO 30 ANNEALLING & HEATING

25 NOTE: 13 ANNEALLING FURNACES AND 5 HEATING FURNACES

OPERATING SCHEDULE IS: (__) 24 HOURS PER DAY, (_) 5 DAYS PER WEEK, (___) 260 DAYS PER YEAR
% OF TOTAL PRODUCTION BY SEASON: (__) 20% WINTER, (__) 30% SPRING, (__) 30% SUMMER, (__) 20% FALL

THROUGHPUT RATES: (_____.) 0 PER YEAR (_____._) 0.0 PER HOUR MAXIMUM

FUEL USEAGE: TYPE OF FUEL: ( ) LIQUID PROPANE
(_____.) 3267 GALS PER YEAR (____._) 0.8 GALS PER HOUR MAXIMUM
20 ANALYSIS: (__._) 0.0 % ASH (_.__) 0.01% SULFUR

PARTICLE COLLECTOR ( ) NO DUST COLLECTOR
(__._) 0.0 % DESIGN EFFICIENCY
(__._) 0.0% PRESENT EFFICIENCY

•••••••••• DNR USE ONLY ••••••••••
• EFC CC DNR UNIT SIC IPP
• 20 0 0.0 0 0
• -- -- --.- ---- ---- --
•
• PART SOX NOX
• 0.00 0.00 0.00
• ----.-- ----.-- ----.--
•
• CO HC HC EXMPT
• 0.00 0.00 0
• ----.-- ----.-- -
•••••••••• DNR USE ONLY ••••••••••

30

STACK NO 11 SERVES ( ) BOILERS ( ) 1 PROCESSES ( ) INCINERATORS THE ID NUMBERS ARE 31
HEIGHT ( ) 40 FEET DIAMETER ( ) 6.0 FEET OPERATES ( ) 24 HOURS PER DAY AND ( ) 260 DAYS PER YEAR
EXHAUST GAS VOLUME IS ( ) 100000 ACTUAL CUBIC FEET/MINUTE AND TEMPERATURE IS ( ) 70 DEGREES FAHRENHEIT

PROCESS NO 31 INDUCT MELT BRASS

NOTE: 7 LINEMELTS INDUCTION MELTING FURNACES STATIONS 1-7
DUST IS IN THE RANGE OF 0 TO 5 MICRONS

OPERATING SCHEDULE IS: (__) 24 HOURS PER DAY, (_) 5 DAYS PER WEEK, (___) 260 DAYS PER YEAR
% OF TOTAL PRODUCTION BY SEASON: (__) 20% WINTER, (__) 30% SPRING, (__) 30% SUMMER, (__) 20% FALL

THROUGHPUT RATES: (________.) 39396 TONS PER YEAR (____._) 10.5 TONS PER HOUR MAXIMUM

FUEL USEAGE: TYPE OF FUEL: ( ) NO FUEL USED HERE
(________.) 0 NONE PER YEAR (____._) 0.0 NONE PER HOUR MAXIMUM
ANALYSIS: (__._) 0.0 % ASH (.___) 0.00% SULFUR

PARTICLE COLLECTOR ( ) BAGHOUSE (SHAKING)
(__._) 99.9 % DESIGN EFFICIENCY
(__._) 99.9% PRESENT EFFICIENCY

•••••••••• DNR USE ONLY ••••••••••
• EFC CC DNR UNIT SIC IPP
0 34 99.5 TONS 0 0
• __ __ __._ _____ ____ __
•
• PART SOX NOX
2.00 0.00 0.00
• ____._ ____._ ____._
•
• CO HC HC EXMPT
0.00 0.00 0
• ____._ ____._ -
•••••••••• DNR USE ONLY ••••••••••

STACK NO 12 SERVES ( ) BOILERS ( ) 1 PROCESSES ( ) INCINERATORS THE ID NUMBERS ARE 32
HEIGHT ( ) 60 FEET DIAMETER ( ) 0.0 FEET OPERATES ( ) 24 HOURS PER DAY AND ( ) 260 DAYS PER YEAR
EXHAUST GAS VOLUME IS ( ) 195200 ACTUAL CUBIC FEET/MINUTE AND TEMPERATURE IS ( ) 70 DEGREES FAHRENHEIT

60

PROCESS NO 32 INDUCT MELT BRASS

70 NOTE: 7 AJAX INDUCTION MELTING FURNACES STATION 8-14

OPERATING SCHEDULE IS: (__) 24 HOURS PER DAY, (_) 5 DAYS PER WEEK, (___) 260 DAYS PER YEAR

% OF TOTAL PRODUCTION BY SEASON: (__) 20% WINTER, (__) 30% SPRING, (__) 30% SUMMER, (__) 20% FALL

THROUGHPUT RATES: (_________.) 24837 TONS PER YEAR (_____._) 5.3 TONS PER HOUR MAXIMUM

FUEL USEAGE: TYPE OF FUEL: ( ) NO FUEL USED HERE

(_________.) 0 NONE PER YEAR (_____._) 0.0 NONE PER HOUR MAXIMUM

65 ANALYSIS: (__._) 0.0 % ASH (_.__) 0.00% SULFUR

PARTICLE COLLECTOR ( ) NO DUST COLLECTOR

(__._) 0.0 % DESIGN EFFICIENCY

(__._) 0.0% PRESENT EFFICIENCY

********* DNR USE ONLY *********

EFC	CC	DNR	UNIT	SIC	IPP
0	0	0.0	TONS	0	0

PART	SOX	NOX
2.00	0.00	0.00

CO	HC	HC EXMPT
0.00	0.00	0

********* DNR USE ONLY *********

75

STACK NO 15 SERVES ( ) BOILERS ( ) 1 PROCESSES ( ) INCINERATORS THE ID NUMBERS ARE 33

HEIGHT ( ) 50 FEET DIAMETER ( ) 1.8 FEET OPERATES ( ) 8 HOURS PER DAY AND ( ) 180 DAYS PER YEAR

EXHAUST GAS VOLUME IS ( ) 8500 ACTUAL CUBIC FEET/MINUTE AND TEMPERATURE IS ( ) 60 DEGREES FAHRENHEIT

80
PROCESS NO 33 VAPOR DEGREASING
90 NOTE: TRICHLOROETHYLENE

OPERATING SCHEDULE IS: (__) 8 HOURS PER DAY, (_) 4 DAYS PER WEEK, (___) 180 DAYS PER YEAR
% OF TOTAL PRODUCTION BY SEASON: (__) 20% WINTER, (__) 30% SPRING, (__) 30% SUMMER, (__) 20% FALL

THROUGHPUT RATES: (________.) 2800 GALS PER YEAR (____._) 0.0 GALS PER HOUR MAXIMUM

FUEL USEAGE: TYPE OF FUEL: ( ) NO FUEL USED HERE
(________.) 0 NONE PER YEAR (____._) 0.0 NONE PER HOUR MAXIMUM
85 ANALYSIS: (__._) 0.0 % ASH (_.__) 0.00% SULFUR

PARTICLE COLLECTOR ( ) NO DUST COLLECTOR
(__._) 0.0 % DESIGN EFFICIENCY
(__._) 0.0% PRESENT EFFICIENCY

********* DNR USE ONLY *********

EFC	CC	DNR	UNIT	SIC	IPP
0	0	0.0	GALS	0	0

PART	SOX	NOX
0.00	0.00	0.00

CO	HC	HC EXMPT
0.00	10.00	0

********* DNR USE ONLY *********

= =

145
STACK NO 13 SERVES ( )03 BOILERS ( ) PROCESSES ( ) INCINERATORS THE ID NUMBERS ARE 20 21 22
HEIGHT ( )0165 FEET DIAMETER ( )10.5 FEET OPERATES ( ) 24 HOURS PER DAY AND ( ) 350 DAYS PER YEAR
EXHAUST GAS VOLUME IS ( ) 018000 ACTUAL CUBIC FEET/MINUTE AND TEMPERATURE IS ( )0400 DEGREES FAHRENHEIT

= =

150
BOILER NO 20 SPACE HEATING REQUIRES (___) 84% OF HEAT OUTPUT. RATED CAPACITY IS (____._) 50.0 MILLION BTU'S PER HOUR

NEW FUEL TYPE INFORMATION

FUEL TYPE NO. 1 _ __ • BITUMINOUS COAL
BOILER TYPE __ • PULVERIZED GENERAL
ANNUAL FUEL CONSUMPTION • (_______._) 8000.0 TONS PER YEAR
DAYS THIS FUEL USED • (___) 300 DAYS PER YEAR
MAX HOURLY CONSUMPTION • (___.___) 6.000 TONS PER HOUR, MAXIMUM ***DO NOT USE*
AVG HOURLY CONSUMPTION • (___.___) 6.000 TONS PER HOUR, AVERAGE * DNR USE ONLY
FUEL HEAT CONTENT • (____._) 24.0 MILLION BTU'S PER TONS
ASH CONTENT (MAX-AVG) • (__._) 8.0% MAX (__._) 7.7% AVG *COL CODE__ 0
SULFUR CONTENT (MAX-AVG) • (_.__) 1.50% MAX (_.__) 1.30% AVG
TYPE OF PARTICLE COLLECTOR • ( ) NO DUST COLLECTOR *EST EFF 0.0%
COLLECTOR EFFICIENCIES • (__._) 0.0% DESIGN (__._) 0.0% PRESENT __._
*PAGE _1 OF _1
152 NOTE: BOILER NO 1 - USED FOR STANDBY ONLY IN 1974

155 BOILER NO 21 SPACE HEATING REQUIRES (___) 84% OF HEAT OUTPUT. RATED CAPACITY IS (____._) 50.0 MILLION BTU'S PER HOUR

			NEW FUEL TYPE INFORMATION	
FUEL TYPE NO. 1 _ __	• BITUMINOUS COAL	•	•	
BOILER TYPE __	• PULVERIZED GENERAL	•	•	
ANNUAL FUEL CONSUMPTION	• (_____._) 5400.0 TONS PER YEAR	•	•	
DAYS THIS FUEL USED	• (___) DAYS PER YEAR	•	•	
MAX HOURLY CONSUMPTION	• (___.___) 6.000 TONS PER HOUR, MAXIMUM	•	•	•••DO NOT USE•
AVG HOURLY CONSUMPTION	• (___.___) 6.000 TONS PER HOUR, AVERAGE	•	•	• DNR USE ONLY
FUEL HEAT CONTENT	• (___._) 24.0 MILLION BTU'S PER TONS	•	•	•
ASH CONTENT (MAX-AVG)	• (__._) 8.0% MAX (__._) 7.7% AVG	•	•	•COL CODE__ 0
SULFUR CONTENT (MAX-AVG)	• (_.__) 1.50% MAX (_.__) 1.30% AVG	•	•	•
TYPE OF PARTICLE COLLECTOR	• ( ) NO DUST COLLECTOR	•	•	•EST EFF 0.0%
COLLECTOR EFFICIENCIES	• (__._) 0.0% DESIGN (__._) 0.0% PRESENT	•	•	• __._
		•	•	•PAGE _1 OF _2
157 NOTE: BOILER NO 2		•	•	••••••••••••••
				••••••••••••••

158 BOILER NO 21 SPACE HEATING REQUIRES (___) 84% OF HEAT OUTPUT. RATED CAPACITY IS (_____._) 50.0 MILLION BTU'S PER HOUR

			NEW FUEL TYPE INFORMATION	
FUEL TYPE NO. 2 _ __	• #6 OIL TANGENTIAL	•	•	
BOILER TYPE __	• INDUSTRIAL SIZE	•	•	
ANNUAL FUEL CONSUMPTION	• (_______._) 265.0 GAL3 PER YEAR	•	•	
DAYS THIS FUEL USED	• (___) 30 DAYS PER YEAR	•	•	
MAX HOURLY CONSUMPTION	• (___.___) 0.604 GAL3 PER HOUR, MAXIMUM	•	•	•••DO NOT USE•
AVG HOURLY CONSUMPTION	• (___.___) 0.250 GAL3 PER HOUR, AVERAGE	•	•	• DNR USE ONLY
FUEL HEAT CONTENT	• (___._) 154.0 MILLION BTU'S PER GAL3	•	•	•
ASH CONTENT (MAX-AVG)	• (__._) 0.0% MAX (__._) 0.0% AVG	•	•	•COL CODE__ 0
SULFUR CONTENT (MAX-AVG)	• (_.__) 1.53% MAX (_.__) 1.53% AVG	•	•	•
TYPE OF PARTICLE COLLECTOR	• ( ) NO DUST COLLECTOR	•	•	•EST EFF 0.0%
COLLECTOR EFFICIENCIES	• (__._) 0.0% DESIGN (__._) 0.0% PRESENT	•	•	• __.__
		•	•	•PAGE _2 OF _2
				••••••••••••

160 BOILER NO 22 SPACE HEATING REQUIRES (___) 84% OF HEAT OUTPUT. RATED CAPACITY IS (_____._) 50.0 MILLION BTU'S PER HOUR

			NEW FUEL TYPE INFORMATION	
FUEL TYPE NO. 1 _ __	• BITUMINOUS COAL	•	•	
BOILER TYPE __	• PULVERIZED GENERAL	•	•	
ANNUAL FUEL CONSUMPTION	• (_______._) 3600.0 TONS PER YEAR	•	•	
DAYS THIS FUEL USED	• (___) DAYS PER YEAR	•	•	
MAX HOURLY CONSUMPTION	• (___.___) 6.000 TONS PER HOUR, MAXIMUM	•	•	•••DO NOT USE•
AVG HOURLY CONSUMPTION	• (___.___) 6.000 TONS PER HOUR, AVERAGE	•	•	• DNR USE ONLY
FUEL HEAT CONTENT	• (___._) 24.0 MILLION BTU'S PER TONS	•	•	•
ASH CONTENT (MAX-AVG)	• (__._) 8.0% MAX (__._) 7.7% AVG	•	•	•COL CODE__ 0
SULFUR CONTENT (MAX-AVG)	• (_.__) 1.50% MAX (_.__) 1.30% AVG	•	•	•
TYPE OF PARTICLE COLLECTOR	• ( ) NO DUST COLLECTOR	•	•	•EST EFF 0.0%
COLLECTOR EFFICIENCIES	• (__._) 0.0% DESIGN (__._) 0.0% PRESENT	•	•	• __.__
		•	•	•PAGE _1 OF _2
161 NOTE: BOILER NO 3		•	•	••••••••••••
				••••••••••••

163

BOILER NO 22 SPACE HEATING REQUIRES (___) 84% OF HEAT OUTPUT. RATED CAPACITY IS (____._) 50.0 MILLION BTU'S PER HOUR

			NEW FUEL TYPE INFORMATION	
FUEL TYPE NO. 2 _ __	• #6 OIL TANGENTIAL	•	•	
BOILER TYPE __	• INDUSTRIAL SIZE	•	•	
ANNUAL FUEL CONSUMPTION	• (_____._) 285.0 GALS PER YEAR	•	•	
DAYS THIS FUEL USED	• (___) 90 DAYS PER YEAR	•	•	
MAX HOURLY CONSUMPTION	• (___.___) 0.504 GALS PER HOUR, MAXIMUM	•	•	•••DO NOT USE•
AVG HOURLY CONSUMPTION	• (___.___) 0.250 GALS PER HOUR, AVERAGE	•	•	• DNR USE ONLY
FUEL HEAT CONTENT	• (___._) 154.0 MILLION BTU'S PER GALS	•	•	•
ASH CONTENT (MAX-AVG)	• (__._) 0.0% MAX (__._) 0.0% AVG	•	•	•COL CODE__ 0
SULFUR CONTENT (MAX-AVG)	• (_.__) 1.53% MAX (_.__) 1.53% AVG	•	•	•
TYPE OF PARTICLE COLLECTOR	• ( ) NO DUST COLLECTOR	•	•	•EST EFF 0.0%
COLLECTOR EFFICIENCIES	• (__._) 0.0% DESIGN (__._) 0.0% PRESENT	•	•	• __.__
		•	•	•PAGE _2 OF _2
				••••••••••••••

165

STACK NO 14 SERVES ( ) BOILERS ( ) PROCESSES ( ) 01 INCINERATORS THE ID NUMBERS ARE 40
HEIGHT ( ) 23 FEET DIAMETER ( ) 2.0 FEET OPERATES ( ) 08 HOURS PER DAY AND ( ) 260 DAYS PER YEAR
EXHAUST GAS VOLUME IS ( ) UNKNOWN ACTUAL CUBIC FEET/MINUTE AND TEMPERATURE IS ( ) DEGREES FAHRENHEIT

170

WASTE NO 40 BURNING TYPE(_) 0 WASTE THAT IS (__) 99 % COMBUSTIBLE
ANNUAL AMOUNT BURNED (_____) 900 TONS• ( )INDUSTRIAL MULTICHAMBER
THE BURNING RATED CAPACITY IS (_____) 1000 POUNDS PER HOUR•
MAX• AMOUNT ACTUALLY BURNED IS (_____) 1000 POUNDS PER HOUR•
OPERATING SCHEDULE (__) 7 HOUR PER DAY,(___) 260 DAY PER YEAR•

PARTICLE COLLECTOR ( ) NO DUST COLLECTOR

(__._) 96.0 % DESIGN EFFICIENCY	•••••••• DNR USE ONLY ••••••••						
(__._) 98.0 % PRESENT EFFICIENCY	• IC	CC	DNR	EM FAC			
	• 2	6	96.0	1.4			
	• __	__	__.__	___.__			

NOTE: GAS FIRED •••••••• DNR USE ONLY ••••••••

	TOXIC SOURCE -- 60 --- 1	• ANTIMONY & COMPDS • NEW TOXIC SOURCE
800		• •
	TOXIC SOURCE DESCRIPTION	• ALLOY PREPARATION •
	TOXIC SOURCE OPERATES	• (___) 260 DAYS PER YEAR AND (__) 24 HOURS PER DAY •
		• •
	NAME OF SUBSTANCE AS USED	• ( ) CADMIUM •
	POUNDS OF SUBSTANCE USED	• ( ) 24 POUNDS PER YEAR •
805		• •
	PRIMARY COLLECTOR TYPE	• ( ) BAGHOUSE •
	SECONDARY COLLECTOR TYPE	• ( ) •
	OVERALL COLLECTOR EFFICIENCY	• ( ) 99.9 PERCENT •
		• •
	NAME OF SUBSTANCE AS EMITTED	• ( ) CADMIUM •
	POUNDS OF SUBSTANCE EMITTED	• ( ) 0 POUNDS PER YEAR •
810		• •
	CHEMICAL FORM OF EMISSION	• ( ) 1 LARGE SETTLEABLE PARTICLES OR DROPLETS •
		• (XXX) 2 SMALL SUSPENDED PARTICLES OR DROPLETS •
		• ( ) 3 GASEOUS FORM •
		• ( ) 4 PARTICULATES OR DROPLETS AND GASES •
		• •
	EMISSION WAS DETERMINED BY:	• ( ) 1 NOT APPLICABLE (NO EMISSIONS) •
		• (XXX) 2 STACK TEST OR OTHER MEASUREMENT •
		• ( ) 3 MATERIAL BALANCE •
		• ( ) 4 CALCULATED BY EMISSION FACTOR •
		• ( ) 5 ESTIMATION METHOD •

	TOXIC SOURCE __ 61 ___ 1	• ANTIMONY & COMPDS • NEW TOXIC SOURCE
-20		• •
	TOXIC SOURCE DESCRIPTION	• ALLOY PREPARATION •
	TOXIC SOURCE OPERATES	• (___) 260 DAYS PER YEAR AND (__) 24 HOURS PER DAY •
		• •
	NAME OF SUBSTANCE AS USED	• ( ) COPPER •
	POUNDS OF SUBSTANCE USED	• ( ) 89310705 POUNDS PER YEAR •
A25		• •
	PRIMARY COLLECTOR TYPE	• ( ) BAGHOUSE •
	SECONDARY COLLECTOR TYPE	• ( ) •
	OVERALL COLLECTOR EFFICIENCY	• ( ) 99.9 PERCENT •
		• •
	NAME OF SUBSTANCE AS EMITTED	• ( ) COPPER •
	POUNDS OF SUBSTANCE EMITTED	• ( ) 320 POUNDS PER YEAR •
A30		• •
	CHEMICAL FORM OF EMISSION	• ( ) 1 LARGE SETTLEABLE PARTICLES OR DROPLETS •
		• (XXX) 2 SMALL SUSPENDED PARTICLES OR DROPLETS •
		• ( ) 3 GASEOUS FORM •
		• ( ) 4 PARTICULATES OR DROPLETS AND GASES •
		• •
	EMISSION WAS DETERMINED BY:	• ( ) 1 NOT APPLICABLE (NO EMISSIONS) •
		• (XXX) 2 STACK TEST OR OTHER MEASUREMENT •
		• ( ) 3 MATERIAL BALANCE •
		• ( ) 4 CALCULATED BY EMISSION FACTOR •
		• ( ) 5 ESTIMATION METHOD •

300001 PAGE 11

	TOXIC SOURCE __ 62 ___ 1	• ANTIMONY & COMPDS • NEW TOXIC SOURCE
840		•
	TOXIC SOURCE DESCRIPTION	• ALLOY PREPARATION •
	TOXIC SOURCE OPERATES	• (___) 260 DAYS PER YEAR AND (__) 24 HOURS PER DAY •
		•
	NAME OF SUBSTANCE AS USED	• ( ) LEAD •
	POUNDS OF SUBSTANCE USED	• ( ) 1909725 POUNDS PER YEAR •
845		•
	PRIMARY COLLECTOR TYPE	• ( ) BAGHOUSE •
	SECONDARY COLLECTOR TYPE	• ( ) •
	OVERALL COLLECTOR EFFICIENCY	• ( ) 99.9 PERCENT •
		•
	NAME OF SUBSTANCE AS EMITTED	• ( ) LEAD & LEAD OXIDE •
	POUNDS OF SUBSTANCE EMITTED	• ( ) 15 POUNDS PER YEAR •
850		•
	CHEMICAL FORM OF EMISSION	• ( ) 1 LARGE SETTLEABLE PARTICLES OR DROPLETS •
		• (XXX) 2 SMALL SUSPENDED PARTICLES OR DROPLETS •
		• ( ) 3 GASEOUS FORM •
		• ( ) 4 PARTICULATES OR DROPLETS AND GASES •
		•
	EMISSION WAS DETERMINED BY:	• ( ) 1 NOT APPLICABLE (NO EMISSIONS) •
		• (XXX) 2 STACK TEST OR OTHER MEASUREMENT •
		• ( ) 3 MATERIAL BALANCE •
		• ( ) 4 CALCULATED BY EMISSION FACTOR •
		• ( ) 5 ESTIMATION METHOD •

	TOXIC SOURCE __ 63 ___ 1 • ANTIMONY & COMPDS • NEW TOXIC SOURCE	
860	• •	
	TOXIC SOURCE DESCRIPTION • ALLOY PREPARATION •	
	TOXIC SOURCE OPERATES • (___) 260 DAYS PER YEAR AND (__) 24 HOURS PER DAY •	
	• •	
	NAME OF SUBSTANCE AS USED • ( ) MANGANESE •	
	POUNDS OF SUBSTANCE USED • ( ) 73743 POUNDS PER YEAR •	
865	• •	
	PRIMARY COLLECTOR TYPE • ( ) BAGHOUSE •	
	SECONDARY COLLECTOR TYPE • ( ) •	
	OVERALL COLLECTOR EFFICIENCY • ( ) 99.9 PERCENT •	
	• •	
	NAME OF SUBSTANCE AS EMITTED • ( ) MANGANESE DIOXIDE •	
	POUNDS OF SUBSTANCE EMITTED • ( ) 2 POUNDS PER YEAR •	
870	• •	
	CHEMICAL FORM OF EMISSION • ( ) 1 LARGE SETTLEABLE PARTICLES OR DROPLETS •	
	• (XXX) 2 SMALL SUSPENDED PARTICLES OR DROPLETS •	
	• ( ) 3 GASEOUS FORM •	
	• ( ) 4 PARTICULATES OR DROPLETS AND GASES •	
	• •	
	EMISSION WAS DETERMINED BY: • ( ) 1 NOT APPLICABLE (NO EMISSIONS) •	
	• (XXX) 2 STACK TEST OR OTHER MEASUREMENT •	
	• ( ) 3 MATERIAL BALANCE •	
	• ( ) 4 CALCULATED BY EMISSION FACTOR •	
	• ( ) 5 ESTIMATION METHOD •	

	TOXIC SOURCE __ 64 ___ 1	• ANTIMONY & COMPDS	• NEW TOXIC SOURCE
880		•	•
	TOXIC SOURCE DESCRIPTION	• ALLOY PREPARATION	•
	TOXIC SOURCE OPERATES	• (___) 260 DAYS PER YEAR AND (__) 24 HOURS PER DAY	•
		•	•
	NAME OF SUBSTANCE AS USED	• ( ) NICKEL	•
	POUNDS OF SUBSTANCE USED	• ( ) 3067796 POUNDS PER YEAR	•
885		•	•
	PRIMARY COLLECTOR TYPE	• ( ) BAGHOUSE	•
	SECONDARY COLLECTOR TYPE	• ( )	•
	OVERALL COLLECTOR EFFICIENCY	• ( ) 99.9 PERCENT	•
		•	•
	NAME OF SUBSTANCE AS EMITTED	• ( ) NICKEL	•
	POUNDS OF SUBSTANCE EMITTED	• ( ) 1 POUNDS PER YEAR	•
890		•	•
	CHEMICAL FORM OF EMISSION	• ( ) 1 LARGE SETTLEABLE PARTICLES OR DROPLETS	•
		• (XXX) 2 SMALL SUSPENDED PARTICLES OR DROPLETS	•
		• ( ) 3 GASEOUS FORM	•
		• ( ) 4 PARTICULATES OR DROPLETS AND GASES	•
		•	•
	EMISSION WAS DETERMINED BY:	• ( ) 1 NOT APPLICABLE (NO EMISSIONS)	•
		• (XXX) 2 STACK TEST OR OTHER MEASUREMENT	•
		• ( ) 3 MATERIAL BALANCE	•
		• ( ) 4 CALCULATED BY EMISSION FACTOR	•
		• ( ) 5 ESTIMATION METHOD	•

	TOXIC SOURCE __ 65 ___ 1	• ANTIMONY & COMPDS	• NEW TOXIC SOURCE
902		•	•
	TOXIC SOURCE DESCRIPTION	• ALLOY PREPARATION	•
	TOXIC SOURCE OPERATES	• (___) 260 DAYS PER YEAR AND (__) 24 HOURS PER DAY	•
		•	•
	NAME OF SUBSTANCE AS USED	• ( ) PHOSPHORUS	•
	POUNDS OF SUBSTANCE USED	• ( ) 3900 POUNDS PER YEAR	•
905		•	•
	PRIMARY COLLECTOR TYPE	• ( ) BAGHOUSE	•
	SECONDARY COLLECTOR TYPE	• ( )	•
	OVERALL COLLECTON EFFICIENCY	• ( ) 99.9 PERCENT	•
		•	•
	NAME OF SUBSTANCE AS EMITTED	• ( ) PHOSPHORUS	•
	POUNDS OF SUBSTANCE EMITTED	• ( ) 0 POUNDS PER YEAR	•
910		•	•
	CHEMICAL FORM OF EMISSION	• ( ) 1 LARGE SETTLEABLE PARTICLES OR DROPLETS	•
		• (XXX) 2 SMALL SUSPENDED PARTICLES OR DROPLETS	•
		• ( ) 3 GASEOUS FORM	•
		• ( ) 4 PARTICULATES OR DROPLETS AND GASES	•
		•	•
	EMISSION WAS DETERMINED BY:	• ( ) 1 NOT APPLICABLE (NO EMISSIONS)	•
		• (XXX) 2 STACK TEST OR OTHER MEASUREMENT	•
		• ( ) 3 MATERIAL BALANCE	•
		• ( ) 4 CALCULATED BY EMISSION FACTOR	•
		• ( ) 5 ESTIMATION METHOD	•

920	TOXIC SOURCE __ 66 ___ 1	• ANTIMONY & COMPDS	• NEW TOXIC SOURCE
	TOXIC SOURCE DESCRIPTION	• ALLOY PREPARATION	•
	TOXIC SOURCE OPERATES	• (___) 260 DAYS PER YEAR AND (__) 24 HOURS PER DAY	•
	NAME OF SUBSTANCE AS USED	• ( ) TIN	•
925	POUNDS OF SUBSTANCE USED	• ( ) 564617 POUNDS PER YEAR	$
	PRIMARY COLLECTOR TYPE	• ( ) BAGHOUSE	•
	SECONDARY COLLECTOR TYPE	• ( )	•
	OVERALL COLLECTOR EFFICIENCY	• ( ) 99.9 PERCENT	•
	NAME OF SUBSTANCE AS EMITTED	• ( ) TIN OXIDE	•
	POUNDS OF SUBSTANCE EMITTED	• ( ) 0 POUNDS PER YEAR	•
930		•	•
	CHEMICAL FORM OF EMISSION	• ( ) 1 LARGE SETTLEABLE PARTICLES OR DROPLETS	•
		• (XXX) 2 SMALL SUSPENDED PARTICLES OR DROPLETS	•
		• ( ) 3 GASEOUS FORM	•
		• ( ) 4 PARTICULATES OR DROPLETS AND GASES	•
	EMISSION WAS DETERMINED BY:	• ( ) 1 NOT APPLICABLE (NO EMISSIONS)	•
		• (XXX) 2 STACK TEST OR OTHER MEASUREMENT	•
		• ( ) 3 MATERIAL BALANCE	•
		• ( ) 4 CALCULATED BY EMISSION FACTOR	•
		• ( ) 5 ESTIMATION METHOD	•

TOXIC SUBSTANCE SUMMARY - TOTAL FACILITY

POUNDS/YR	SUBSTANCE CATEGORY	CODE
338	ANTIMONY & COMPDS	1
0	ARSENIC & COMPDS	2
0	ASBESTOS	99
0	BARIUM & COMPDS	3
0	BERYLLIUM & COMPDS	4
0	BROMINE	5
0	CADMIUM & COMPDS	6
0	CHLORINE	7
0	CHROMATES & ACID	8
0	CHROMIUM & COMPDS	9
0	COBALT FUME & DUST	10
0	COPPER FUME & DUST	11
0	CYANIDES	12
0	FLUORIDE	13
0	HYDROGEN CHLORIDE	14
0	HYDROGEN FLUORIDE	15
0	IRON, SOL SALTS	16
0	LEAD & COMPDS	17
0	MANGANESE & COMPDS	18
0	MERCURY (ALKYL)	19
0	MERCURY & COMPDS	20
0	MOLYBDENUM & COMPDS	21
0	NICKEL CARBONYL	22
0	NICKEL & SOL COMPDS	23
0	NITRIC ACID & ANHYD	24
0	PHOSPHIC ACID & ANHYD	25
0	PHOSPHORUS (YELLOW)	26
0	PLATINUM, SOL SALTS	27
0	SELENIUM & COMPDS	28
0	SULFURIC ACID & ANHY	29
0	THALLIUM, SOL SALTS	30
0	TIN & COMPDS	31
0	URANIUM & COMPDS	32
0	VANADIUM & COMPDS	33

APPENDIX B

EXAMPLES OF SPECIFIC INDUSTRY FORMS FOR THE STEEL INDUSTRY

ENVIRONMENTAL PROTECTION AGENCY
AIR POLLUTANT EMISSIONS REPORT

Plant Name: _____

_____

Plant Address: _____
(street)

_____
(city) (state) (zip code)

Person to contact regarding this report:

_____

Title _____

Telephone _____

Mailing address: _____
(street or box number)

_____
(city) (state) (zip code)

Basic Oxygen Process (each furnace).

1. Average heat capacity _____ tons/cycle

2. Maximum heat capacity _____ tons/cycle

3. Raw material used in furnace _____ lb/hr.

4. Final product generated by process _____ lb/hr.

5. Following information for one complete furnace cycle.

   a. Time taken in charging _____ minutes

   b. Time for oxygen blow _____ minutes

   c. Time for furnace tap _____ minutes

   d. Time for testing and misc. _____ minutes

   e. Total time of furnace cycle _____ minutes

6. Percent yield of average heat _____%

7. Percent slag of average heat _____%

8. Percent loss due to other factor (i.e. oxidation, refractory losses, material handling - not including amount collected by control devices) _____%

9. Effluent gas flow rate _____scfm

10. Types of control equipment and collection efficiency (design and actual). (Specify Process Controlled)

_____ design _____ %
(BOF Vessel)

actual _____ %

_____ design _____ %
(Reladling Station)

actual _____ %

_____ design _____ %
(Track Hopper)

actual _____ %

_____ design _____ %
(Flux Bin)

actual _____ %

_____ design _____ %
(Slag Skimmer)

actual _____ %

11. Pressure drop across collection device _____ (inches of water)

12. Inlet loading of control device _____ lb/hr

13. Outlet loading of control device _____ lb/hr

14. Total waste product collected by each control device _____ tons/day

15. Number of furnaces in melt shop _____

16. Melt shop size (average length, width, and height - in feet)

BOF Mass Balance

17. Hot metal _____lb/hr + scrap _____ lb/hr +

additives _____lb/hr + others _____ lb/hr

steel _____lb/hr + slag losses _____lb/hr

+ oxidation losses _____ lb/hr +

refractory losses _____ lb/hr +

material handling losses _____lb/hr + losses from

charging and tapping emissions _____ lb/hr +

ladle emissions _____lb/hr

COKE BATTERY QUESTIONNAIRE

ITEM	UNITS			
1. Annual Average Rate of Coal Input	Tons/Year			
2. Design Hourly Rate of Coal Input	Lbs./Hr.			
3. Maximum Hourly Rate of Coal Input	Lbs./Hr.			
4. Annual Average Coke Production Rate	Tons/Year			
5. Design Hourly Coke Production Rate	Lbs./Hr.			
6. Maximum Hourly Coke Production Rate	Lbs./Hr.			
7. Normal Operating Schedule	Hours/Year			
8. Number of Ovens	Number			
9. Normal Coking Time	Hours/Cycle			
10. Annual Average Coking Time	Hours/Cycle			
11. Is Staged Charging Used	Yes/No			
12. Does Quench Tower Have Baffles	Yes/No			
13. Date of Last Battery Rehabilitation	Month/Yr.			
14. Age of Battery	Years			
15. Type of Door Sealing Mechanism	-			
16. Stack Height	Ft.			
17. Stack ID At Top	Ft.			
18. Stack Gas Velocity	Ft./Sec.			
19. Stack Exit Gas Temperature	Of.			
20. Stack Exit Gas Flow Rate - Average	ACFM			
21. " " " " " - Maximum	"			
22. Fuel Used in Underfiring	-			
23. Sulfur Content in Underfiring Fuel	Weight %			
24. Annual Average Underfiring Fuel Use	As appropriate			
25. Sulfur Content in Coking Coal	Weight %			
26. Sulfur Content in Coke Oven Gas	Weight %			

SCARFING QUESTIONNAIRE

ITEM	UNITS	
1. Rated capacity	Tons/hr	
2. Maximum capacity as percent of rated capacity	%	
3. Effluent gas flow rate	SCF/min	
4. Type of control device used on scarfer	----------	
5. Operating efficiency of above	%	
6. Is stack test data available for the above control device (if "yes" enclose a copy of most recent test report)	yes/no	
7. Elevations above grade of stack outlets and other discharge points	feet	
8. Inside diameter of each stack	feet	
9. Temperature of effluent gas stream from each stack	°F	
10. Exit velocity of each stack effluent	feet/sec	

BLAST FURNACES (PER FURNACE) QUESTIONNAIRE

ITEM	UNITS	
1. Maximum Hourly Production Rate	Lbs./Hr.	
2. Daily Production Rate	Tons/Day	
3. Normal Operating Schedule	Hours/Year	
4. Average Heat Time	Hours/Minutes	
5. Average Slag Content	%	
6. Average Ladle Capacity	Tons	
7. Number of Ladles Transferred to Melt Shop Daily	#/Day	
8. Average Hot Metal Supply to Melt Shop	Tons/Day	
9. Is Any Hot Metal Lost in Cast House	Yes/No	
10. If Above is "Yes" Estimate This Amount	Tons/Day	
11. Is Cast House Enclosed For This Furnace	Yes/No	
12. Type of Control Device at Cast House Hot Metal Transfer Station	----------	
13. Operating Efficiency of Above	%	
14. Is Stack Test Data Available For Control Device Specified in Item 12 (If "Yes" Enclose A Copy of Most Recent Test Report)	Yes/No	
15. Date of Last Furnace Rebuild	Month/Year	

SINTER PLANT QUESTIONNAIRE

ITEM	UNITS	
1. Annual Average Sinter Production Rate	Tons/Year	
2. Normal Operating Schedule	Hours/Year	
3. Type of Control Device on Main Windbox End	----------	
4. Operating Efficiency of Above	%	
5. Is Stack Test Data Available for the Above Control Device (If "Yes" Enclose A Copy of Most Recent Test Report)	Yes/No	
6. Type of Control Device on Discharge End	----------	
7. Operating Efficiency of Above	%	
8. Is Stack Test Data Available for Control Device in Item 6 (If "Yes" Enclose A Copy of Most Recent Test Report)	Yes/No	
9. Rated Capacity	Tons/hr	
10. Maximum capacity as percent of rated capacity	%	
11. Effluent gas flow rate from main windbox	SCF/min	
12. Effluent gas flow rate from sinter discharge end	SCF/min	
13. Elevations above grade of stack outlets and other discharge points	feet	
14. Inside diameter of each stack	feet	
15. Temperature of effluent gas stream from each stack	°F	
16. Exit velocity of each stack effluent	feet/sec	
17. Enclose a ducting and process flow diagram for the plant		

ENVIRONMENTAL PROTECTION AGENCY
AIR POLLUTANT EMISSIONS DATA

Plant Name: _____

_____

Plant Address: _____
(street)

_____
(city) (state) (zip code)

Person to contact regarding this data:

_____

Title: _____

Telephone: _____

Mailing address: _____
(street or box number)

_____
(city) (state) (zip code)

Electric-Arc Furnace (each furnace).

1. Average heat capacity _____ tons/cycle

2. Maximum heat capacity _____ tons/cycle

3. Raw material used in furnace _____ lb/hr

4. Final product generated by process _____ lb/hr

5. Following information for one complete furnace cycle.

    a. Time taken in charging _____ minutes

    b. Time for melt & refining _____ minutes

    c. Time for furnace tap _____ minutes

    d. Time for testing and misc. _____ minutes

    e. Total time of furnace cycle _____ minutes

6. Percent yield of average heat _____ %

7. Percent slag of average heat _____ %

8. Percent loss due to other factors (i.e. oxidation, refractory losses material handling-not including amount collected by control devices)

    _____ %

9. Effluent gas flow rate _____ scfm

10. Types of control equipment and collection efficiency (design and actual). (Specify Process Controlled)

_____ design _____%
(Electric-Arc Direct Evacuation)

actual _____%

_____ design _____%
(Hood or Building Evacuation)(Specify Type)

actual _____%

_____ design _____%
(Other)

actual _____%

11. Pressure drop across each collection device _____(inches of water)

12. Inlet loading of control device _____lb/hr

13. Outlet loading of control device _____lb/hr

14. Total waste product collected by each control device _____tons/day

15. Number of furnaces in melt shop _____

16. Melt shop size (average length, width, and height - in feet)

_____

Electric-Arc Mass Balance

17. Scrap _____lb/hr + additives _____lb/hr +

others _____lb/hr steel _____lb/hr

slag losses _____lb/hr + oxidation losses _____lb/hr

refractory losses _____ lb/hr + material handling

losses _____ lb/hr + losses from charging and tapping

emissions _____ lb/hr + Ladle emissions _____ lbs

18. Type of steel manufactured _____

19. Maximum transformer capacity _____KVA

20. Oxygen Useage _____CU FT/TON

21. Power Consumption _____KW/TON

APPENDIX C

EXAMPLES OF SUPPLEMENTS TO TYPICAL SECTION 114 LETTERS

Draft Second "114" letter

Date:

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Company Name:
Company Address:
Company Contact:

Dear Sir:

The U.S. Environmental Protection AGency is currently updating the air pollution inventory for the State of Montana. We have been evaluating the possible sources of air pollution associated with your company's operations and find that we need additional information to complete this evaluation. If you would supply us with replies to the enclosed questions this will allow us to complete our analysis.

Please submit your replies as soon as possible.

Information gathered from this survey will not be used contrary to the confidentiality provisions in Section 114(c) of the Clean Air Act Amendments of 1970 concerning the divulgence of methods of processes entitled to protection as trade secrets.

Pursuant to the authority granted in Section 113 and 114 of the Clean Air Act, as amended, 42 U.S.C. 1857c-9, we hereby require you to provide the information to the U.S. Environmental Protection Agency at the following address, within twenty (20) days of the receipt of this letter.

U.S. Environmental Protection Agency
Region VIII
1860 Lincoln Street
Denver, Colorado 80203

If you have any questions concerning this matter please contact Mr. Jonathan Dion, Project Officer, at (303) 837-4261.

Sincerely,

In reference to the Air Pollutant Emissions Report (OMB form 158-R75) that you submitted on January 14, 1975:

1. In section V of the form (enclosed) you refer to a "Bailey Smoke Density Transmissometer and Fuel Control."

   a. Is the Bailey meter installed on the Seattle Boiler Works boiler, the York Shipley boiler or the Lausmann incinerator?

   b. Explain briefly how its efficiency of 85-95% was determined.

   c. When you refer to "Fuel Control" does this refer to the wood shavings or to any auxiliary fuel (i.e. No. 6 fuel oil)?

2. Is the No. 6 Fuel oil used solely in the York Shipley boiler?

   If not, state how much is used in a) the York Shipley boiler
   b) the Lausmann incinerator
   c) the Seattle Boiler Works boiler

3. Apart from the Bailey meter and the Lausmann incinerator, are there any other air pollution control devices (e.g. cyclones, scrubbers, etc.) in use at your facility? If there are, state:

   a. the type

   b. the equipment it operates in conjunction with

   c. its control efficiency. Explain briefly how this value was obtained

   d. its installation date.

4. Give stack data for the Seattle Boiler Works boiler and for the York Shipley boiler. For each, state:

   a. Stack height above grade

   b. Stack exit diameter

   c. Stack exit temperature (^{o}F)

d. Volume of exit gas in actual cubic feet per minute.

If exact information is not available, please make your best estimate.

A simple schematic diagram, showing equipment and points of air pollutant emissions can be drawn, if necessary, to clarify any of your responses to these questions.

Name and Address

Attention: Responsible Individual

Facility: Name of Plant

1. In the Air Emissions Inventory, dated October 1974, on pages 12-14, is given an explanation on the product in boiling ranges. A further description of the product (Butane, Toluene, etc.) is necessary.

2. What are the units on the vapor pressure listed in the tables (PSIA, PSIG, etc)?

3. What is the type (floating roof, fixed roof, etc.) of each of the tanks listed? What is the compliance status, in reference to LACC Regulation A22.3, for each tank?

4. What is the throughput, in gal/day, of the loading facilities? Are provisions made to prevent spillage during attachment or disconnection of filling lines? Is the loading facility equipped with vapor collection and disposal system or an equivalent means as stated in LACC Regulations A22.5?

5. In reference to OMB Form 158-R75, dated November 19, 1974, pages 2 & 3, what are the units that should be applied to the quantities of fuel given as the annual and hourly consumption rates? Does source code CH75 consume 20,126 CF or 20,126,000 CF of natural gas per hour? Do all combustion units burn the same amount of fuel?

6. Are the operating hours of each combustion unit (as given 8520 Hr/yr) the same?

7. Do numerous units have a common stack? (For example, do the 8 units classified as CH74 have a common stack or do the 6 units classified as DH74 have a common stack, etc.?)

8. Which of these combustion units are boilers and which units are process heaters?

9. Are there any controls on the vacuum distillation unit? What is the capacity of the distillation unit?

10. What is the capacity, in barrels, of the refinery?

11. What other refinery facilities (cooling towers, process drains, catalytic crackers, etc.) are located at Cotton Valley Solvents Co.? Supply operating and emission data for each.

12. State the name and mailing address of the chief executive officer of the corporation or of the owners of the enterprise.

Name and Address

Attention: Responsible Individual

Facility: Name of Plant

A. In reference to the power boiler:

1) Supply the average and maximum amount of fuel burned per hour. For bark fuel state if the fuel usage is on a dry or wet basis and supply the percent moisture of the bark.

2) Supply the BTU content of the fuel used. For bark fuel state if this is on a dry or wet basis.

3) On subpage 6 of 11 of your April 18, 1975 permit request to the Louisiana Air Control Commission, you submitted emission data for the stack servicing the power and package boiler. For the hourly average and maximum emission rates for particulate matter and nitrogen oxides you listed the emission estimation method as actual stack test. Supply the stack test data and provide explanations for any deviations in the method used from those noted in the December 23, 1971 Federal Register.

4) The stack test data supplied for the April 5, 1973 test on the power boiler showed considerable more particulate matter being emitted than the emission data supplied in your permit request. Explain this discrepancy.

5) For your April 5, 1973 test you stated, "Deviations from procedure as noted in the December 23, 1971 Federal Register:

    1. Sampled 12 locations rather than the 48 specified by Figure 1-1.
    2. Only 10' from each sample port was used.
    3. Dried then desiccated samples rather than desiccating to dryness."

    State the reasons for your deviations and give an explanation why you considered the results valid.

6) What per cent reinjection do you employ in your fly-ash reinjection system (design and actual)?

7) Do you have any plans to conduct stack tests on the power boiler in the near future? If so, when are they to be conducted?

8) During an EPA inspection on May 21, 1975, company personnel stated that soot is blown in the power boiler for 20 minutes every hour. Ringelmann numbers during this time range from number 1.5 to 2. Do you still operate at these conditions? What are present typical Ringelmann numbers during soot blowing? Does the smoke from the power boiler ever exceed Ringelmann #1? If so, for what duration does this occur?

9) What type of continuous Ringelmann monitor do you employ in the stack? How and when do you recalibrate the instrument?

B. In reference to the package boiler:

1) Supply the average and maximum amount of fuel burned per hour.

2) What is the stack gas exit velocity servicing this stack?

C. In reference to the recovery boiler:

1) What is your current average and maximum hourly natural gas and black liquor consumption rates?

2) The stack test data supplied for the June 12, 1973 test on the east and west precipitator outlets gave three deviations from the stack testing procedures outlined in the December 23, 1971 Federal Register. State the reasons for these deviations and give an explanation why you considered the results valid.

3) When will the new electrostatic precipitator servicing the recovery boiler be put into service? When will stack tests be performed on the unit to verify compliance? What type of maintenance program do you plan to employ with the new precipitator?

4) What is the current average and maximum hourly pulp production rate for the recovery furnace in equivalent tons of unbleached air-dry kraft pulp? How were these values derived?

5) What is the current average and maximum hourly pollutant emission rates for the unit? Supply sample calculations and the latest stack test data available.

D. In reference to the lime kiln:

1) What is the current average and maximum hourly natural gas consumption rates?

2) The stack test data supplied for the April 6, 1973 test on the Peabody Scrubber servicing the lime kiln showed three deviations from the stack testing procedures outlined in the December 23, 1971 Federal Register. State the reasons for these deviations and give an explanation why you considered the results valid.

3) What is the current average and maximum hourly pulp production rate for the lime kiln in equivalent tons of unbleached air-dry kraft pulp? How were these values derived?

4) What is the current average and maximum hourly pollutant emission rate for the unit? Supply sample calculations and the latest stack test data for the emissions you supply. Do you plan to run stack tests on this unit in the near future?

E. In reference to the smelt dissolver vent:

1) What is the current average and maximum hourly pulp production rate for the smelt dissolver tank in equivalent tons of unbleached air-dry kraft pulp? How were these values derived?

2) Particulate emissions shown on the April 18, 1975 permit request and the particulate emissions shown in the February 6, 1973 stack test data are different values. Explain this discrepancy. Supply the current average and maximum hourly pollutant emission rate for this unit. Supply sample calculations and the latest stack test data for the emissions you supply. Do you plan to conduct stack tests on this unit in the near future? If so, when?

3) For your February 6, 1973 stack test on the smelt dissolver vent what deviations, if any, did you use from the procedures outlined in the December 23, 1971 Federal Register? State the reasons for any deviations and an explanation why you consider the results valid.

F. In reference to the tall oil reactor:

1) Supply a complete description of the tall oil reactor showing maximum and average hourly material flow into and out of the unit.

2) Provide average and maximum hourly emission rates with sample calculations.

Name and Address

Attention: Responsible Individual

Facility: Name of Plant

1. Supply a plot plan of the facility showing the location of all units and emission points.

2. Provide process flow diagrams for the operations you employ.

3. List any revisions to the 11/19/73 OMB form 158-R75 submitted to EPA which you may have.

4. Provide a short description of the blunger tank, ribbon and orbital mixer, asphalt blending unit, and the bulk clay loading operation.

5. Provide copies of quarterly (or monthly) fuel useage reports for the last four quarters. Indicate the sulfur content of any fuel or mixture of fuels as % sulfur by weight. Explain and provide data for any sulfur averaging techniques used.

6. List all units or control measures which are planned for service after 8/1/75. Include a brief description of the unit or control measure and the anticipated date to be brought into service.

7. List all storage tanks over 40,000 gallons capacity storing organic material. Provide the average and maximum daily throughput, true storage vapor pressures, and vapor control devices employed.

8. Do any single or multiple compartment organic material water separators exist which receive effluent water containing 200 gallons of organic material or more per day having a true vapor pressure of 1.5 psi or greater? If so, explain the system and the type of vapor control device used.

9. For any organic material loading operations list the material loaded, true vapor pressure, total daily throughput, date of installation, and vapor control devices employed.

10. Provide stack test data and estimates of pollution emissions (as outlined on OMB form 158-R75, page 7) for all emission sources.

11. Submit source test data available on any emission source.

12. List the procedures employed in controlling the emissions from the asphalt oxidizers. If the emissions are burned in boilers or heaters provide the gas composition, per cent sulfur by weight, and the BTU content.

13. Describe any soot blowing procedures you employ.

14. Describe any procedures you employ during upset conditions.

1. Supply a plot plan of the facility showing the location of all units and emission points.

2. Provide process flow diagrams for the operations you employ.

3. List any revisions to the 11/19/73 OMB form 158-R75 submitted to EPA which you may have.

4. Provide a short description of the blunger tank, ribbon and orbital mixer, asphalt blending unit, and the bulk clay loading operation.

5. Provide copies of quarterly (or monthly) fuel usage reports for the last four quarters. Indicate the sulfur content of any fuel or mixture of fuels as % sulfur by weight. Explain and provide data for any sulfur averaging techniques used.

6. List all units or control measures which are planned for service after 8/1/75. Include a brief description of the unit or control measure and the anticipated date to be brought into service.

7. List all storage tanks over 40,000 gallons capacity storing organic material. Provide the average and maximum daily throughput, true storage vapor pressures, and vapor control devices employed.

8. Do any single or multiple compartment organic material water separators exist which receive effluent water containing 200 gallons of organic material or more per day having a true vapor pressure of 1.5 psi or greater? If so, explain the system and the type of vapor control device used.

9. For any organic material loading operations list the material loaded, true vapor pressure, total daily throughput, date of installation, and vapor control devices employed.

10. Provide stack test data and estimates of pollution emissions (as outlined on OMB form 158-R75, page 7) for all emission sources.

11. Submit source test data available on any emission source.

12. List the procedures employed in controlling the emissions from the asphalt oxidizers. If the emissions are burned in boilers or heaters provide the gas composition, per cent sulfur by weight, and the BTU content.

13. Describe any soot blowing procedures you employ.

14. Describe any procedures you employ during upset conditions.

15. Describe any combustion control monitors on heaters and boilers, such as oxygen analyzers and smoke alarms.

16. Describe any ground level monitoring equipment which exists at this facility. Provide results of any monitoring for the past year.

17. List all units or control measures which are planned for service after 8/1/75. Include a brief description of the unit or control measure and the anticipated date to be brought into service.

Name and Address:

Attention: Responsible Individual

Facility: Name of Plant

1. According to the Air Pollutant Emissions Report (OMB Form 158-R75), the facility has two (2) combination natural gas and pitch boilers (Source Code IIa). Is the information given (input in 10^6 BTU/Hr, annual and average fuel consumption) representative of each boiler or does it represent the two boilers combined? Do these two boilers use a common stack?

2. For each boiler listed on OMB form 158-R75, what is the maximum rated input capacity in 10^6 BTU/Hr?

3. What was the production rate in 1974 of each of the facility's various products?

4. Do any of the raw materials or finished products emit any hydrocarbons? If so, what type? Are they considered to be volatile organic compounds by the Louisiana Air Control Commission? If so, is the plant considered to be in compliance with LACC Regulation 22.0 and A22.0? What steps have been taken and are planned for the control of volatile organic compounds, if applicable? Describe any air pollution control devices employed for the control of hydrocarbons and the equipment they operate in conjunction with.

5. Supply a flow diagram of the facility's processes. Show raw materials in-put, air pollution control devices, loading facilities, etc.

6. Supply best estimates of the emissions from each source within the plant. This should include lb/hr maximum and lb/hr average emissions. Also supply stack data, i.e. height above grade, inside diameter and exit gas velocity (ft/sec), temperature (^{o}F) and flow rate (CFM, average and maximum). If any air pollution control equipment is used state the type, efficiencies (design and operating), inlet gas temperature (^{o}F) and flow rate (CFM), and exit gas pressure (PSI)

7. Have the stack tests been performed on the boilers as stated in your compliance schedule, dated November 29, 1972? If so, supply a copy of this data.

8. Have you submitted your hydrocarbon compliance schedule? Does this schedule contain data on all tanks, including volatility of contents, size, working vapor pressure and type of tank? If not, supply this data.

9. State the name and mailing address of the chief executive officer of the corporation or of the owners of the enterprise. State also the name and mailing address of the person responsible for the operation of this facility.

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO.	2.	3. RECIPIENT'S ACCESSION NO.
EPA-450/3-75-061		

4. TITLE AND SUBTITLE	5. REPORT DATE
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16. ABSTRACT The objective of this study was to conduct an evaluation of the Air Pollutant Emissions Report (APER) as a data gathering system for emission inventory and compliance evaluation tasks. Users of the system in EPA Regional Offices provided information concerning the types of projects for which the form is employed and the problems which have been encountered in its use. Many of the problems related by APER users were inherent to any generalized data gathering system which must apply to a wide variety of industrial sources.

The results of this evaluation led to recommendations for modifications and improvements to the APER system. Several types of alternative systems were proposed and appraised by an additive weighting technique. The evaluation criteria used in this appraisal included 1) comprehendibility by plant personnel; 2) ability to gather emission inventory data such as process description, process weight, hours of operation, and control equipment description; 3) ability to be coded into NEDS format; and 4) ability to be implemented in existing EPA data gathering programs. Based on these criteria, a system consisting of general forms and industry specific instructions was found to be the most satisfactory alternative to the existing APER system.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
APER - Air Pollution Emissions Form Point Sources Area Sources Collection of Source Information		

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