State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-5811

August 11, 1994

RECEIVED
AUG 15 1994
AIR AND RADIATION DIVISION
U.S. EPA, REGION V

Kendall Magnuson
USEPA - Region 5
AR-18J
77 West Jackson Boulevard
Chicago, IL 60604

Dear Kendall:

Enclosed is a copy of Chemetco's current lead monitoring plan and transmittal documents as received and approved by the Illinois EPA in August of 1993. From the plan's Table of Contents you will notice that Chemetco submitted an earlier report on recommended monitoring sites and copies of certain operating procedures as appendices to the plan. Please let me know if you need anything further.

Sincerely,

Bob

Robert Hutton, Manager
Monitoring Operations Unit
Bureau of Air

RH:jm/8.6

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State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
217/782-5811

2200 Churchill Road, Springfield, IL 62794-9276

8-16-93 KM

Michelle Reznack
Chemetco, Inc.
Post Office Box 187
Alton, Illinois 62002

Dear Michelle:

We have reviewed the Ambient Monitoring Plan, as revised on August 4 and August 11, 1993, for Chemetco's facility in Hartford, Illinois. This plan is acceptable to and approved by the Illinois EPA. We are assuming that the spare furnace parts stored north of the railroad loading dock, as viewed by Jim Henry on his August 10, 1993 visit, generally represent the conditions that will prevail there in the foreseeable future, i.e., we do not expect to see a major increase in parts storage such that air flow to the monitors is significantly disrupted for an extended period of time. Based upon my recent discussions with both you and Jim Henry, I believe the sampling program can and will be improved to overcome some of the past deficiencies, and we look forward to working with you toward that end. If we can be of any assistance, please feel free to call on Jim or me at any time.

Sincerely,

Bob

Robert Hutton, Manager
Monitoring Operations Unit
Bureau of Air

RH:lo/0367P/68

Chemetco
FIRST IN PEOPLE — QUALITY — SERVICE
P.O. BOX 187 • ALTON, ILLINOIS 62002

August 5, 1993

Bob Hutton
Air Monitoring Section
Illinois Environmental Protection Agency
Bureau of Air
P. O. Box 19276
Springfield, Illinois 62794-9276

RE: Revised Monitoring Plan

Dear Mr. Hutton,

Following please find two (2) copies of the revised Ambient Air Monitoring Plan for Chemetco, Inc. located in Hartford, Illinois.

If you have any questions concerning this plan, please do not hesitate to phone me at 618-254-4381, Ext. 219 or write to me at the above letterhead address.

Sincerely,

Michelle Reznack

Michelle Reznack
Environmental Coordinator

Enclosures

Chemetco

FIRST IN PEOPLE — QUALITY — SERVICE

P.O. BOX 187 • ALTON, ILLINOIS 62002

STATION OPERATING AND QUALITY ASSURANCE PROCEDURES FOR THE AIR QUALITY MONITORING STATIONS FOR CHEMETCO, INC.

August 1993

CHEMETCO, INC.
Rt. 3 and Oldenberg Road
Hartford, Illinois 62048

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APPENDICES

Appendix A - Versar, Inc. Report Recommended Monitoring Sites
Appendix B - Standard Operating Procedures
Appendix C - GMW Hi-Volume Air Samplers Operating Manual
Appendix D - CAPRICORN II Weather Station User's Manual

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1.0 INTRODUCTION

1.1 Purpose

Chemetco, Inc. at Hartford, Illinois is a secondary copper smelter. This document presents the plan for ambient air monitoring in compliance with Consent Order No. 88-CH-200 and subsequent amendments. The smelter is located in an agricultural area which is zoned for heavy industrial use. Hartford, Illinois is located about 10 miles northeast of St. Louis, Missouri. The major geographical/topographical features of the area are depicted in Figure 1-1.

Chemetco is designing and will implement and operate the monitoring program in such a way as to satisfy the requirements of the U.S. Environmental Protection Agency's (USEPA) Prevention of Significant Deterioration (PSD) regulations and the Illinois Environmental Protection Agency's (IEPA) permit regulations. Meteorological data collection is included in the monitoring program.

The general procedures used in designing the monitoring program are described in a document entitled "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans", (QAMS-005/80). However, the specific operating, maintenance, calibration, data reduction and quality assurance procedures for the Chemetco monitoring system are the subject of this document.

FIGURE 1-1
SITE LOCATION

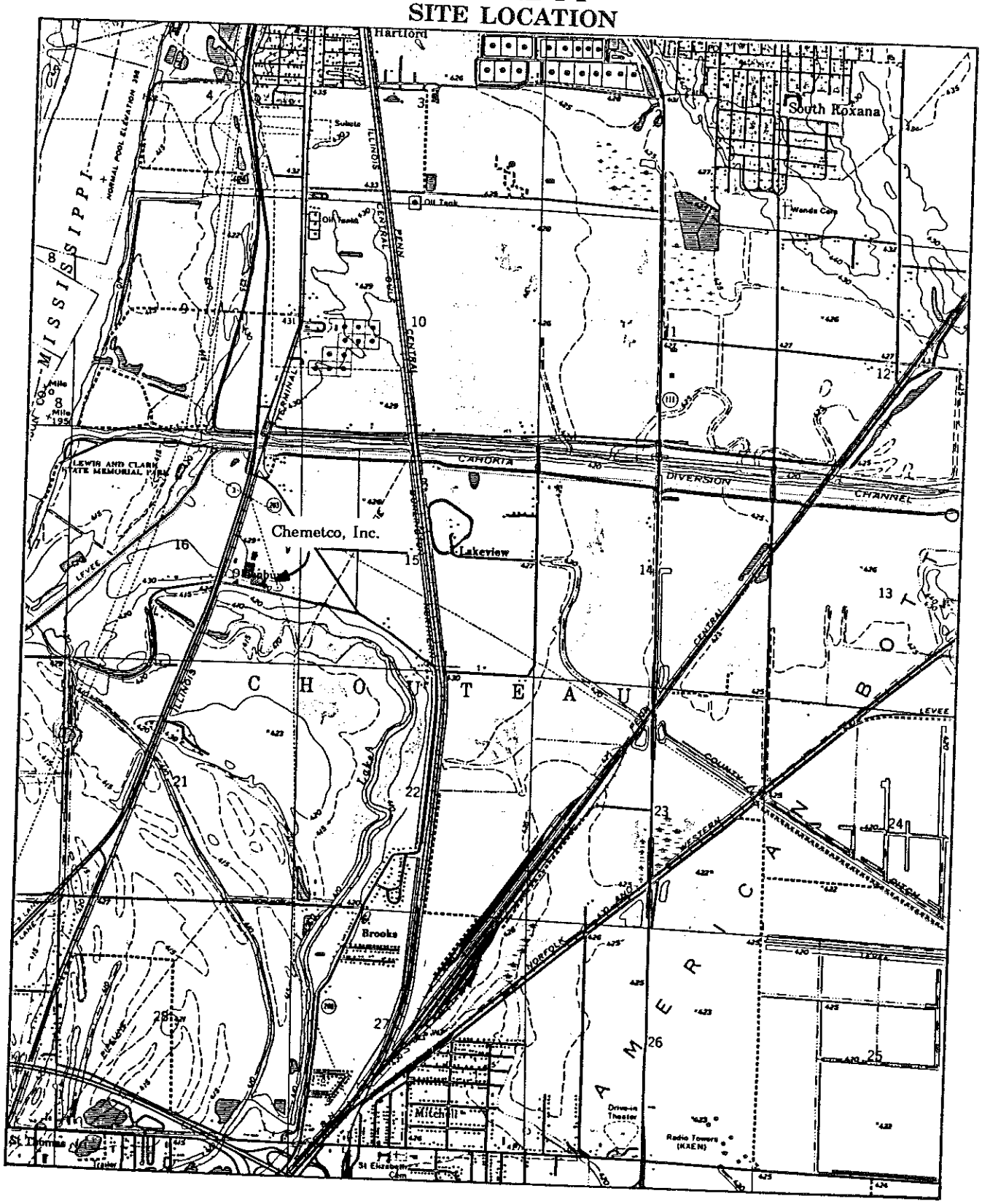
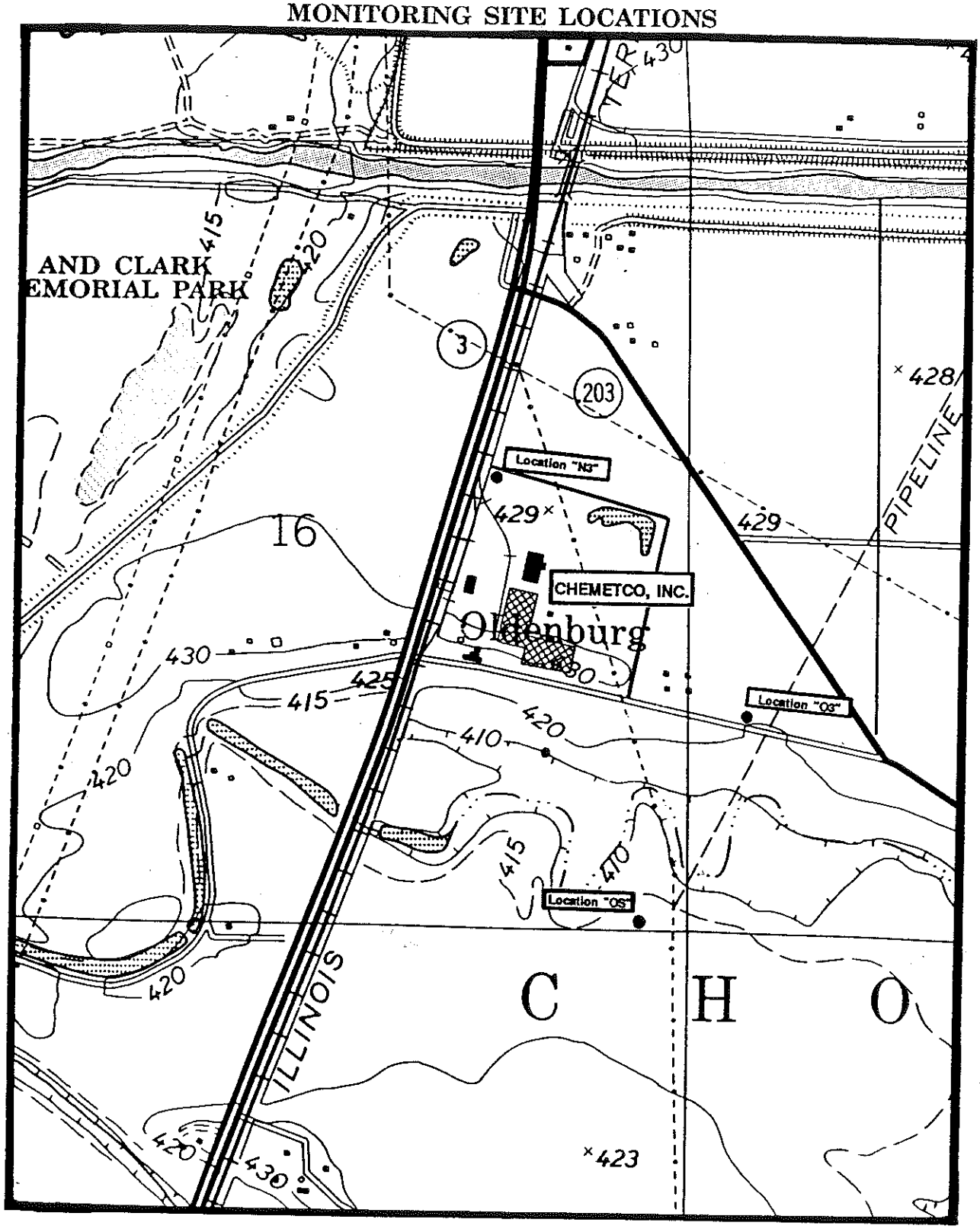


FIGURE 1-2
MONITORING SITE LOCATIONS



1.2 Program Description

Ambient air quality monitoring at the Chemetco site began beginning with the second quarter of 1991 and following IEPA approval of the monitoring plan and will continue until Chemetco has shown three consecutive years of compliance with the National Ambient Air Quality Standards for lead and particulate. Sampling for total suspended particulates and lead in the particulate will be performed on a once every sixth day basis. Should sampling fail to occur on a regularly scheduled day, every reasonable effort will be made to collect a replacement sample as soon thereafter as possible and before the next scheduled sampling day. Coincident to that, wind speed, wind direction, wind direction standard deviation (sigma), temperature, relative humidity and precipitation will be monitored. The meterological sensors are installed atop an 11 foot high building located at the facility.

The location of the monitoring sites are depicted in Figure 1-2. The locations have been chosen, based on the modeling report done by Versar, Inc., as areas likely to be higher in emissions from the foundry. Chemetco will notify IEPA in writing should it be necessary to move a sampler for any reason. If IEPA does not respond within 14 days, Chemetco will assume approval. In an emergency situation, Chemetco will act as necessary to ensure the security of the monitoring equipment and contanct IEPA as soon as possible by telephone and/or facsimile transmission. With the exception of spare furnace parts stored on the concrete pad north of the railroad loading dock, Chemetco will not place

obstructions or other devices near sampling locations such that airborne emissions from the foundry and its grounds are influenced.

Monitoring methods and instrumentation utilized will meet EPA reference (40CFR Part 50, Appendices B and G) or equivalent method requirements. IEPA will supply the calibrated motors and will perform a motor audit quarterly. IEPA will also supply the filters for use in the sampling. Chemetco will be responsible for conditioning, weighing and total suspended particulate determination. Table 1-1 presents a listing of monitoring equipment. The calibration and data acquisition equipment are listed in Table 1-2. Reports presenting data summaries and summarizing the monitoring activities will be issued quarterly after commencement of monitoring. Duplicates of all samples will be provided to IEPA once per month. Reports will be on a calendar quarter basis. The reports will be addressed to:

Illinois Environmental Protection Agency
Air Monitoring Section
c/o Terry Sweitzer
2200 Churchill Road
Springfield, Illinois 62706

and,

Illinois Environmental Protection Agency
Air Monitoring Section
c/o Jim Henry
2009 Mall Street
Collinsville, Illinois 62234

TABLE 1-1
MONITORING EQUIPMENT

Equipment	Manufacturer	Model No.	Units in Use	Backup Units
Accu-Vol Air Sampler	General Metal Works	2310	4	2
Flow Controller	same as above	GMW-310	4	2
Aluminum Shelter	same as above	GMW-8500	4	1
Blower Motor (from IEPA)	same as above	GBM 2000H	4	0
Stainless Steel Filter Holder	same as above	FH-2100	4	2
Timer/Programmer	same as above	GMW 801	4	1
Sampl-Saver	same as above	G8550	4	1
Filter Paper Cartridge	same as above	GMW-3000	4	2

TABLE 1-2
CALIBRATION AND DATA ACQUISITION EQUIPMENT

Equipment	Manufacturer	Model No.	Units in Use	Back-up Units
Elapsed Time Indicator	General Metal Works	GMW-901	4	1
Timer/Programmer	same as above	GMW-801	4	4
Well Type Manometer	same as above	GMW-8WT	4	0
Top Loading Adaptor	same as above	GMW-35	1	0
Calibration Kit	same as above	GMW-25	1	0
Digital Weather Computer	Capricorn	8130-0-1	1	0

1.3 Program Documentation

The specific requirements of IEPA were incorporated into these procedures. The station operator will have a copy of this document available for his own use and will be familiar with its contents. The operator will also have available manufacturers' operating and maintenance manuals for each piece of equipment in operation at the station. These manufacturers' manuals, in conjunction with the operating procedures manual, will provide basic day-to-day guidance in operation of the stations. Should any conflict arise between the requirements of these various documents, the conflict will be brought to the attention of the field monitoring coordinator who will take the appropriate steps to resolve the conflict.

1.4 Scope

This document, when used in conjunction with other information indicated above, is intended to provide complete instructions to the station operator in the operation and maintenance of the stations, and to provide a record of the operating and quality assurance procedures that are utilized for the reviewing agencies. As such, the manual contains sections on operating schedule, (routine operation, calibration, and maintenance), operating procedures, calibration procedures, maintenance procedures, and data analysis procedure.

2.0 OPERATING SCHEDULE

2.1 Routine Operation

The Hi-Vol operating schedule requires all three Hi-Vol Sampling Stations to run every sixth day. At one site, N3, a second Hi-Vol Sampler will be placed and will be set to run for Quality Control field duplicate samples. This sampler will be labeled N3-QC. The other two samplers are labeled OS and O3.

2.2 Calibration Schedule

All sampling station motors will be calibrated prior to the commencement of data acquisition, then they will be audited quarterly by IEPA.

Following notification, IEPA may perform non-scheduled calibrations after replacement of major equipment components which can affect the response of the samplers. They can also be performed when routine checks do not agree within ±10% of the prescribed value. The calibration discussed above is a one point calibration. Since this model is equipped with a flow controller, only one calibration point need be established. Once the prescribed flow has been set, it will maintain this standard flow rate independent of changes in barometric pressure, ambient temperature, line voltage and filter loading.

2.3 Maintenance Schedule

Maintenance procedures will be performed in association with the routine station checks for certain items that must be checked frequently. For most other items, maintenance checks will be performed in association with the calibration of the Hi-Vol monitoring stations and the meteorological system.

The detailed maintenance schedules are discussed in Section 3.4. The maintenance schedules are in accordance with the equipment manufacturers' suggestions.

3.0 MONITORING STATION PROCEDURES

3.1 Operating Procedures

A copy of each manufacturer's operating and maintenance manual for each piece of equipment installed in a station should be available in the station at all times. These manuals provide detailed descriptions of the equipment and instructions for such nonroutine operations as installation, start-up, shut-down, calibrations, maintenance, and trouble-shooting. These manuals should be referenced as necessary for all operations except calibration and maintenance, which are described in more specific terms in Sections 3.3 and 3.4 of this document.

Check sheets are provided for recording the status of all system parameters during routine operation. These are entitled "Hi-Vol Data Sheet", Figure 3-1. A separate detailed sheet is provided for each station and is presented and discussed in the Standard Operating Procedure "Operation of GMW Model 2310 TSP Sampler". A new sheet should be completed during each scheduled station visit. All meteorological parameters are included on another single logsheet (Figure 3-2). Any discrepancies or out-of-control conditions shall be reported to the supervisor.

3.2 Particulated (TSD) Hi-Vol Method - Operation

The Hi-Vol samplers are equipped with constant flow controllers which are adjusted to maintain the sample flow rate betweem 43 and 44.1 scfm (1.132

FIGURE 3-1
HI-VOL DATA SHEET

HI-VOL DATA SHEET

SECTION I - IDENTIFYING INFORMATION

Facility Name: _____ Phone Number: _____
Facility Address: _____ Station Number: _____
City/State/Zip: _____ Date: _____

Sampler: _____ Time (Military): _____

Hi-Vol Motor No: _____ Flowmeter No: _____

Filter No. _____

SECTION II - STATION PHYSICAL CONDITION

Vandalism: Yes _____ No _____
Details: _____

Weather Damage: Yes _____ No _____
Details: _____

Cleanliness: Yes _____ No _____
Details: _____

Other Remarks: _____

SECTION III - SAMPLE COLLECTION

Beginning/Ending Flow Rate: _____

Recalibration Required: Yes _____ No _____
If "yes", note date of recalibration: _____

Elapsed Time: End of Run _____
Start of Run _____
Total Run Time _____

Correct Time?: Yes _____ No _____
If "no", did you reset? _____

Correct Day of Week?: Yes _____ No _____
If "no", did you reset? _____

Were there any power failures?: Yes _____ No _____

Other Remarks: _____

SECTION IV - FILTER CONDITION

Air Leakage (around gasket)?: Yes _____ No _____

Other Remarks: _____

FIGURE 3-2
METEOROLOGICAL DATA SHEET

DAILY WEATHER LOGSHEET

Date	Wind Speed	Wind Direction	Sigma	Temperature	Relative Humidity	Precipitation

Conditions should be logged daily irregardless of whether the monitoring stations are operating. Completed sheets should be returned to the Environmental Coordinator.

m3/min.) over a wide range of filter loading. Therefore, so long as the controller is functioning properly, no detailed flow measurements or involved correction for temperature and pressure are necessary.

Proper flow controller operation is routinely verified in two ways. The first is by simply listening to the motor running smoothly with no rapid or large changes in rpm. The second is to connect the magnehelic, to the connection at the bottom of the motor and note the reading. The acceptable range for each motor is specified in the "Other Remarks" of Section III of the Hi-Vol Data Sheets. Visifloat meters can be used but they are both temperature and pressure sensitive and can only be used as ball park estimators of actual flow. If the visifloat measurement is within 10 percent of the set flow rate, the controller is assumed to be functioning properly at the flow rate set during calibration.

The Hi-Vol sampler is also equipped with a timer programmer which turns the sampler on or off at midnight on the selected days. Seven toggle switches representing the seven days of the week are used to select run days for the Hi-Vol.

The present day of the week is indicated by a red light under each toggle switch. The correct day of the week is set by sequentially pressing the "Day Reset" button. The clock is set to the actual time of day. An elapsed time indicator records run time to the nearest 0.1 minute. It is a cumulative meter similar to an odometer on a car and must be read before and after the sample is run and a subtraction made to determine actual run time.

Specific procedures for operating the Hi-Vol samplers on a once every sixth day schedule are presented in the SOP "Operation of GMW Model 2310 TSP Sampler." Filter preparation is detailed in the SOP "Filter Conditioning." Total suspended particulate is calculated following procedures in the SOP "Determination of Total Suspended Particulated in Ambient Air Filters" and lead content is derived from the procedures in the SOP "Lead Analysis in Ambient Air Filters." A complete list of Standard Operating Procedures that are relevant to this project are shown in Table 3-1.

3.3 Particulates (TSP) Hi-Vol Method - Calibration

The Hi-Vols are equipped with constant flow controller which are checked before and after sampling runs to ensure the flow is maintained at the desired setting. The allowable range of sampling flow rate is 40 to 60 scfm. The controllers are adjusted to a nominal flow of 40 scfm so that a significant amount of filter loading can be tolerated before the motor is unable to maintain the calibrated flow rate.

IEPA will supply the calibrated motors and will perform quarterly audits to determine if the motor is maintaining the prescribed flowrate. During normal operation and motor maintenance checks, if the operator feels there is an "out-of-control" situation, he's to inform the Project Coordinator who will in turn notify:

Jim Henry, IEPA Field Office, 346-5120

TABLE 3-1
APPLICABLE STANDARD OPERATING PROCEDURES

Determination of Total Suspended Particles in Ambient Air Filters

Filter Conditioning

Lead Analysis in Ambient Air Filters

Operation of GMW Model 2310 TSP Sampler

Packaging and Shipment of Samples

Note on the check sheet that the flow varies from its intended value and by what figure.

Before any calibration or adjustment, perform any scheduled or required maintenance as indicated in the following section.

3.4 Particulates (TSP) Hi-Vol Method -- Maintenance

Scheduled or preventative maintenance of the sampling equipment reduces the downtime and the remedial maintenance. Since the sampling equipment is operated only intermittently, the frequency of maintenance is a function of the actual hours of use. Normally, two or three remedial maintenance activities are required each year.

Hi-Vol maintenance consists mostly of simply keeping the unit clean by wiping inside around the filter area with a damp rag, cleaning the manometer as required, and replacing the motor brushes every 3 months (750 hrs of operations). The flow controller and timer/programmer require no periodic maintenance. Procedures for normal remedial maintenance are given below. Record maintenance activities in a logbook. Table 3-2 summarizes the quality assurance activities of major maintenance checks.

Maintenance is always performed in conjunction with calibration. It is performed after the initial flow rate determination and before any adjustments are made.

TABLE 3-2
SAMPLER MAINTENANCE QUALITY ASSURANCE

Equipment	Acceptance Limits	Frequency and method of measurement	Action if requirements are not met
Sampler Motor	750 hours of motor brushes operating; no malfunction	Visually check upon receipt & after each 400h of operation	Notify IEPA
Faceplate Gasket	No leaks at the filter seal	Visually check after each sampling period	Replace the gasket
Well Manometer	No foreign materials; stable operation	Visually check for each sample	Clean; replace if damaged
Motor Gaskets	Leak-free fit	Visually check after each 400h of operation	Replace gasket
Sampling head	No leaks	Visually check after each 200h of operation	Replace sampling head

3.4.1 Magnehelic

IEPA provides a calibrated magnehilic to Chemetco for use annually. There is no maintenance that Chemetco should have to provide with the exception of keeping the unit clean and the tubing intact.

3.4.2 Faceplate Gasket

A worn faceplate gasket is characterized by a gradual blending of the interface between the collected particulates and the clean filter border. Any decrease in the sharpness of this interface indicates the need for a new gasket.

1. Remove the old gasket with a knife.
2. Clean the surface thoroughly and properly.
3. Seal a new gasket to the faceplate with rubber cement or double-sided adhesive tape.
4. Record all gasket replacements with dates and operator's initials in the sampler log book.

3.4.3 Sampler Motor

Motor brushes usually require replacement after 750 hours (6 months) of operation. IEPA is providing the motors for Chemetco's samplers and will therefore also provide motor maintenance for the units before the 750 hours of operation is runout.

1. Replace the brushes before they are worn to the point that damage can occur to the Hi-Vol motor. The optimum replacement interval must be determined from experience.
2. As the motors belong to IEPA, the operator should report on the condition of the motor, but NOT perform any maintenance. The need for motor brush changing should be reported to IEPA who will perform maintenance activities and flow calibrations themselves.

3. Recalibrate the flow meter after the brushes are replaced. Do not recalibrate the motor until after an initial break-in period for properly seating the brushes against the armature; this period usually requires running the sampler against a resistance equivalent to a clean filter for several hours.

4. Record all sampler maintenance operations with dates performed and with the operator's initials in the sampler log book.

3.4.4 Sampling Head

Leaks in the sampling head are experienced infrequently. The welded seams and the condition of the guide pins on the top of the surface of the head should be chedked initially by visual inpection. Should a defect be suspected:

1. Assemble the sampling head to the motor.

2. Install a filter for resistance.

3. Apply soap solution to the suspect problem area.

4. Disassemple the sampling head.

5. Examine the inside of the head for soap solution.

6. Repair or discard the sampling head if a leak is indicated by soap solution being inside of the head.

3.4.5 Motor Gaskets

Two gaskets are used with each sampler. The top rubber gasket is approximately 3/16-in. thick and the bottom foam rubber gasket is approximately 3/4-in. thick.

1. Inspect both gaskets for wear.

2. Replace if necessary.

3.5 Meteorological System Maintenance

The only portion of the meteorological system requiring maintenance are the sensors and radiation shield located on the tower. All other components are solid-state electronic and require no maintenance.

All maintenance should be performed in conjunction with the calibrations between the initial response checks and the final response checks. Record maintenance checks performed on the "Meteorological System Maintenance Schedule and Log Sheet", Figure 3-4. Any maintenance should be performed as described in the Operator's Manual or if the solution to an observed problem is unknown, consult the manufacturer's service department.

FIGURE 3-4
METEOROLOGICAL SYSTEM MAINTENANCE LOG

	Weather Damage		Wind Speed		Barometric Pressure		Temperature		
Date	Sheild	Sensors	STL	Chemetco	STL	Chemetco	STL	Chemetco	Action

If the temperature or pressure disagree by more than 10%, the instrument may need calibration; if the wind speed is behaving erratically, the sensors or electronics may need to be fixed; if there is weather damage, the damaged pieces should be replaced. Notify the project coordinator if the instrument in out of order. Maintenance checks should be performed once a week.

4.0 DATA HANDLING AND ANALYSIS PROCEDURES

This section describes the procedure for ensuring that all data analyses for the study are correct and consistent with project objectives and are legibly and retrievably documented.

4.1 Auditing and Data Validation

Data Validation is accomplished through auditing procedures. An audit is an independent assessment of the accuracy of data. Independence is achieved by having the audit made by an operator other than the one conducting the routine measurements and by using audit standards and equipment different from those routinely used in monitoring. The audit should be a true assessment of the accuracy of the measurement process under normal operation; that is, without any special preparation or adjustment of the system. The precision of the entire measurement process is assessed by comparing measurements made by collocated samplers as described in Section 4.1.1. Routine quality assurance checks by the operator are necessary for obtaining good quality data, but they are not part of the auditing procedure. Table 4-1 shows the types of audits and the appropriate acceptance limits for data validation.

4.1.1 Single Instrument Precision for TSP

Calculation methods for precision and accuracy of individual integrated samplers are described below:

> Estimates of precision for ambient air quality measurements from the TSP method are calculated from results obtained from the collocation of two samplers at one sampling site. The Field Monitoring Coordinator will, at the end of each sampling quarter, calculate and report a precision probability interval using collocation sampler results. The calculated

TABLE 4-1
AUDITS AND ACCEPTANCE LIMITS

Audit	Acceptance Limits	Frequency and method of measurement	Action if requirements are not met
Flow rate audit	Percentage difference $d_i = \frac{(Y_i - X_i) \times 100\%}{X_i}$ within $\pm 7\%$	7 audits/100 samples use calibration procedure at on level of flow rate.	Calibrate before resuming sampling
Exposed filter reweighing	Audit weight = original weight ± 5 mg	7 audits/100 filters, or 4 audits/<50 filters; use analytical balance; condition filters for 24 h before weighing	Reweigh all filters in the lot
Data processing audit	(ug TSP/m^3) agrees with (ug TSP/m^3)$_a$ within round off error; (ug TSP/m^3)$_m$=measured concentration (ug TSP/m^3)$_a$ = audited concentration	Redo all calculations; readings of charts, etc, through recording of results	Recheck all calculations
Systems audit	Method described in this section	At beginning of a new monitoring system and periodically as appropriate, observe procedures and use check list	Initiate improved methods and/or training programs

precision at the one sampling site is considered indicative of the precision at all sampling sites for the TSP method. Directions for calculations are given below, and directions for reporting are given in Section 4.4

Sampler Precision Calculation

4.1.1.1 Using the paired measurements for the collocated Hi-Vols, let Y_i represent the concentration of TSP measured by the secondary sampler and X_i represent the calculation of pollutant measured by the designated official sampler during i^{th} sampling period.

4.1.1.2 Calculate the percentage difference (d_i) using Equation 1.

$$d_i = \frac{Y_i - X_i}{X_i} \times 100\% \qquad \textit{Eqn. 1}$$

4.1.1.3 Calculate the average percentage difference (d_j) and standard deviation (S_j) using Equations 2 and 3, respectively, where n = number of comparisons.

$$d_j = \frac{d_i}{n} \qquad \textit{Eqn. 2}$$

$$S_j = \frac{(d_i)^2 - n(d_j)^2}{n-1} \qquad \textit{Eqn. 3}$$

4.1.1.4 Calculate the 96 percent probability limits for precision using Equations 4 and 5.

$$\text{Upper Limit} = d_j + \frac{1.96(S_j)}{2} \qquad \textit{Eqn. 4}$$

$$\text{Lower Limit} = d_j - \frac{1.96(S_j)}{2} \qquad \textit{Eqn. 5}$$

EXAMPLE 4-1

As an example, consider the following TSP data obtained using collocated high-volume samplers:

Sampling Week	Duplicate Sampler, Y_i, ug/m3	Official Sampler, X_i ug/m3	Difference, d_i percent
1	53.0	51.9	2
2	69.9	66.6	5
3	-	67.8	-
4	58.4	55.7	5
5	48.5	46.4	5
6	61.6	58.9	5
7	57.9	59.0	-2
8	67.5	64.2	5
9	58.0	55.4	5
10	55.0	59.0	-4
11	60.0	58.1	3
12	55.8	53.1	5
13	51.4	52.8	-3
			$\overline{d_i} = +31$

Applying Equation 2 and 3:

$$d_j = \frac{+31}{12} \text{ X } 100\% = 2.6\%$$

$$S_j = \frac{217 - 12(6.76)}{11} = 3.5\%$$

Applying Equations 6 and 7:

$$\text{Upper limit} = 2.6 + \frac{1.96(3.5)}{2} = 7.4 \text{ or } 7\%$$

$$\text{Lower limit} = 2.6 - \frac{1.96(3.5)}{2} = -2.3 \text{ or } -2\%$$

On the Data Assessment Report (Figure 4-1), -2 is reported for the lower 95 percent limit and +7 is reported for the upper 95 percent limit for the TSP sampler precision.

FIGURE 4-1
DATA ASSESSMENT REPORT

Date:_____

Auditor:_____

Collocated Samplers

d_i = _____

d_j = _____

S_j = _____

Upper Limit = _____

Lower Limit = _____

Flow Rate Percentage Differences:

Sampler #1:_____ **Sampler #2:**_____

Sampler #3:_____ **Sampler #3':**_____

4.1.2 Single Instrument Accuracy for TSP

Estimates of accuracy for ambient air quality measurements from the TSP method are calculated from the results of independent audits. Once each sampling quarter, the flow rate of each high-volume sampler is audited. The IEPA Field Coordinator Coordinator will, at the end of each sampling quarter, report the accuracy for each TSP sampler.

Because the Hi-Vols are flow controlled, they are audited at only one flow rate and no resistance plates are used. The flow rate measured by the audit orifice (known rate), the flow rate as determined by the system operator (Hi-Vol response), and the percent difference are reported. This data is recorded on the Sample Data Assessment Report in the appropriate spaces.

4.2 Methods of Documentation

For each of the procedures, data sheets are designed to facilitate retrieval of the necessary data to perform calculations, make assumptions and determinations and to generate accurate reports. These forms include:

- station logbooks detailing maintenance, calibrations, malfunctions, etc.;
- Filter Conditioning and TSP Calculation Logsheet;
- Hi-Vol Data Worksheet;
- Hi-Vol Air Sampler Calibration Worksheet;
- Meteorological System Maintenance Schedule and Logsheet;
- Daily Meteorological Conditions Logsheet;
- laboratory analytical data;
- High Volume Air Monitoring WANG Program Review

All records and data sheets shall be placed in the central project file.

4.3 Data Reduction

Data Reduction is the process whereby all data collected is assembled into meaningful form to determine if the scope of the project has been met. Data reduction includes:

4.3.1 Calculations

All the calculations shall be documented in legible, reproduction-quality records. The records shall be complete enough to permit logical reconstruction by a qualified person other than the originator. Each set of calculations shall have a cover page which should contain:

- company name;
- project name and number;
- statement of purpose;
- total number of pages;
- date;
- originator's signature;
- calculation name precedding the types of calculations;
- assumptions and justifications;
- reference to input data source;
- all numerical calculations, showing all units;
- results.

4.3.2 Peer Review, Checking and Screening

All calculations for the project shall be verified by checking and screening by a qualified person other than the originator. This consists of determining the:

- appropriateness of method;
- appropriateness of assumptions;
- correctness of calculations;
- completness of references;
- completeness of record.

It is the responsibility of the reviewer to assure that the methodology used and results obtained are correct. This may require verification of each number in the calculation, but this is usually not necessary. Typically, spot checks of the calculations and visual inspection for the reasonableness constitute a sufficiently thorough check. For example, in a series of like calculations, a random spot check of 10% of the calculations would be adequate. If more than 2% of the results are wrong, it will be necessary to check the entire set of calculations.

If the reviewer recommends revisions to the methods used or recalculations, the reviewer and originator will confer until any disagreements are resolved. After determining that the calculations are acceptable, the reviewer will sign and date the cover page and initial and date the remaining pages.

4.4 Reporting

Reports will be submitted to the Illinois Environmental Protection Agency on a quarterly basis. The reports will contain, by location, a list of all samples collected; analysis results for all samples, or accounting for analysis missing; and a quarterly average calculated for both the total suspended particulate and lead content. The fourth quarter report will also include an annual average calculation for total suspended particulate.

Chemetco
FIRST IN PEOPLE — QUALITY — SERVICE
P.O. BOX 187 • ALTON, ILLINOIS 62002

August 1, 1993

RECEIVED
AUG 12 1993
Environmental Protection Agency
Bureau of Air
State of Illinois

Bob Hutton
Manager, Air Monitoring
Illinois Environmental Protection Agency
Bureau of Air
2200 Churchill Road
Springfield, Illinois 62794-9276

RE: Ambient Air Plan Revisions

Dear Mr. Hutton,

Following please find replacement pages for the ambient air plan submitted last week. I incorporated the language you provided today verbatim.

If there is anything else, please let me know.

Sincerely,

Michelle

Michelle Reznack
Environmental Coordinator

Enclosure
cc: Jim Henry
file

Replacement Pages

Remove pages "4 of 31" and "5 of 31", replace with new "4 of 31" and "5 of 31" dated August 11, 1993.

Reason for change: Language editing

1.2 Program Description

Ambient air quality monitoring at the Chemetco site began beginning with the second quarter of 1991 and following IEPA approval of the monitoring plan and will continue until Chemetco has shown three consecutive years of compliance with the National Ambient Air Quality Standards for lead and particulate. Sampling for total suspended particulates and lead in the particulate will be performed on a once every sixth day basis. Should sampling fail to occur on a regularly scheduled day, every reasonable effort will be made to collect a replacement sample as soon thereafter as possible and before the next scheduled sampling day. Coincident to that, wind speed, wind direction, wind direction standard deviation (sigma), temperature, relative humidity and precipitation will be monitored. The meterological sensors are installed atop an 11 foot high building located at the facility.

The location of the monitoring sites are depicted in Figure 1-2. The locations have been chosen, based on the modeling report done by Versar, Inc., as areas likely to be higher in emissions from the foundry. Chemetco will notify IEPA in writing should it be necessary to move a sampler for any reason. If IEPA does not respond within 14 days, Chemetco will assume approval. In an emergency situation, Chemetco will act as necessary to ensure the security of the monitoring equipment and contanct IEPA as soon as possible by telephone and/or facsimile transmission. With the exception of spare furnace parts stored on the concrete pad north of the railroad loading dock, Chemetco will not place

obstructions or other devices near sampling locations such that airborne emissions from the foundry and its grounds are influenced.

Monitoring methods and instrumentation utilized will meet EPA reference (40CFR Part 50, Appendices B and G) or equivalent method requirements. IEPA will supply the calibrated motors and will perform a motor audit quarterly. IEPA will also supply the filters for use in the sampling. Chemetco will be responsible for conditioning, weighing and total suspended particulate determination. Table 1-1 presents a listing of monitoring equipment. The calibration and data acquisition equipment are listed in Table 1-2. Reports presenting data summaries and summarizing the monitoring activities will be issued quarterly after commencement of monitoring. Duplicates of all samples will be provided to IEPA once per month. Reports will be on a calendar quarter basis. The reports will be addressed to:

Illinois Environmental Protection Agency
Air Monitoring Section
c/o Terry Sweitzer
2200 Churchill Road
Springfield, Illinois 62706

and,

Illinois Environmental Protection Agency
Air Monitoring Section
c/o Jim Henry
2009 Mall Street
Collinsville, Illinois 62234

AMBIENT AIR MONITORING

QUARTERLY REPORT

JULY - SEPTEMBER, 1996

FOR

TOTAL PARTICULATE

AND LEAD

CHEMETCO, INC.
October 1996

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1.0 INTRODUCTION

This document presents the summary of the third 1996 calendar quarter ambient air monitoring performed at the Chemetco, Inc. facility in Madison County.

1.1 Monitoring Description

The third quarter ambient air monitoring began on July 2, 1996 and sampling for total suspended particulates and lead in the particulate was performed on a once every sixth day basis. The quarter sampling ended on September 30, 1996. Each day, a weather log was maintained documenting wind speed, wind direction, wind direction standard deviation (sigma), temperature, relative humidity and precipitation.

The location of the monitoring sites was based on a modeling report done by Versar, Inc. and approved by IEPA. All locations are shown on a map in Figure 1-1.

Standard operating procedures followed for the filter conditioning, sampling, sampler operation, analyses, etc, are shown in Table 1.1. Complete copies of the SOP's were provided in the Ambient Air Monitoring Quality Assurance/Quality Control Plan.

1.2 Monitoring Report

The following pages contain the results of the third quarter monitoring. Section 2 contains an accounting of all the test dates and reasons for eliminating data from certain test dates. Section 3 contains the quarterly averages, the quality assurance data and meteorological data. The Appendices include copies of the Filter Conditioning Logsheets with total suspended particulate calculation, the laboratory analysis, results of the laboratory's USEPA quality assurance samples, and the calculation worksheets.

FIGURE 1-1
MONITORING STATION LOCATIONS

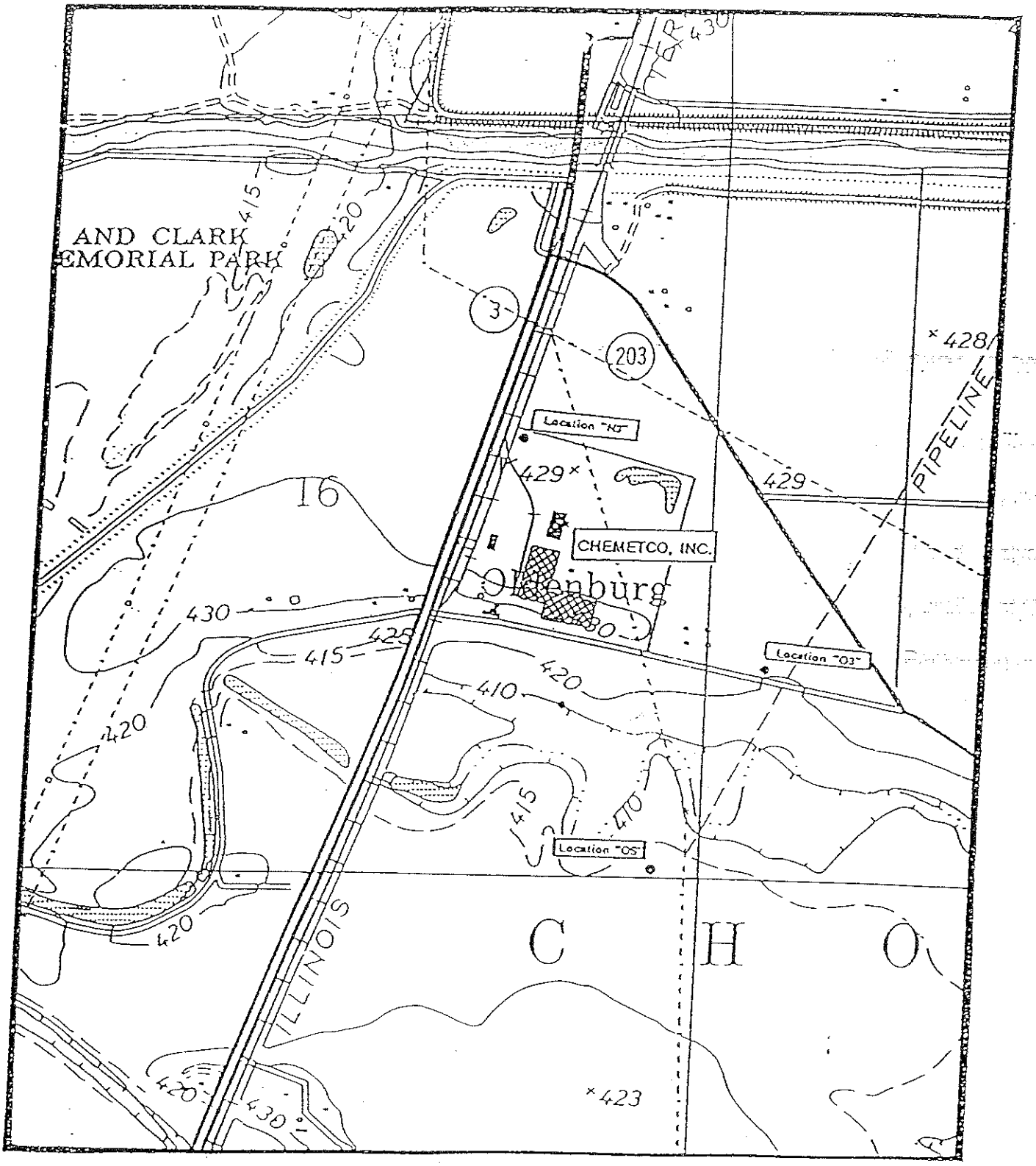

TABLE 1-1

STANDARD OPERATING PROCEDURES

Determination of Total Suspended Particulates in Ambient Air Filters

Filter Conditioning

Lead Analysis in Ambient Air Filters

Operation of GMW 2310 TSP Samplers

Packaging and Shipment of Samples

2.0 SAMPLING DATE ACCOUNTING

Following is a list of the dates the monitors were to have run. On several days, due to power failures, operator error or equipment malfunction, samples could not be collected. Table 2.1 accounts the dates and events.

TABLE 2.1 - Sample Date Accounting

DATE	SAMPLER	RUN STATUS	QUALIFICATION	ERROR REASON
7-2-96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
7-8-96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
7-14-96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
7-20-96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
7-26-96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
8-1-96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
8-7-96	N3-QC	No	No	Blown Fuse
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
8-13-96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
8-19-96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
8-25-96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
8-31-96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
9-6-96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	No	No	Motor Failure
9-12-96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	No	No	Motor Failure
9-18-96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
9-24-96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
9-30-96	N3-QC	No	No	Equipment Failure
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	

3.0 MONITORING DATA

After the receipt from the laboratory of all data for the quarterly report, averages for each monitoring site were calculated from the pool of data. In addition, at site N3, two samplers were set up for quality assurance purposes. A standard deviation, lower and upper range was determined based on those samples and under normal circumstances can be assumed to represent accuracy for all locations.

Each day, meteorological data was noted. These logs are shown in Figure 3.1 and quarterly averages are discussed in Section 3.2.

3.1 Quarterly Averages Calculation

From the pool of acceptable data, quarterly averages were calculated by using the simple arithmetic mean determination shown in Equation 1.

$$X = \frac{\Sigma X_i}{n} \qquad \textit{Equation 1}$$

where,

X_i = individual sampling data,

n = the number of valid sampling points in the quarter.

DAILY WEATHER LOGSHEET

Date	Wind Speed	Wind Direction	Sigma	Temperature	Relative Humidity	Precipitation	Barometric Pressure
7-1-96	9	180		85	91	0	30.02
⊛ 7-2	2	289	73.22	88	92	1.48	29.58
7-3	2	113		82	84	0	29.91
7-4	2	68		78	74	0	29.95
7-5	6	113		78	74	0	29.97
7-6	7	90		73	77	0	29.97
7-7	6	135		76	76	0	29.87
⊛ 7-8	3	2	60.93	89	77	0	29.43
7-9	4	203		81	79	.24	29.84
7-10	3	158		73	80	0	30.03
7-11	0	0		69	78	0	30.15
7-12	0	0		71	77	0	30.10
7-13	4	135		75	86	0	29.97
⊛ 7-14	3	218	59.35	83	83	0	29.54
7-15	6	248		76	85	.61	29.90
7-16	6	248		74	88	0	29.98
7-17	7	180		80	77	0	30.04
7-18	8	180		82	78	0	30.03
7-19	12	248		86	75	0	29.98
⊛ 7-20	5	221	52.97	89	83	.85	29.56
7-21	7	203		79	93	.02	29.90
7-22	8	135		74	96	.21	29.92
7-23	9	135		74	97	0	29.99
7-24	10	270		76	83	0	29.98
7-25	8	293		79	78	0	29.98

⊛ - Denotes Sampling Date

Conditions should be logged daily irregardless of whether the monitoring stations are operating. Completed sheets should be returned to the Environmental Coordinator.

FIGURE 3-1
METEOROLOGICAL DATA SHEET

FIGURE 3-1 (cont.)

DAILY WEATHER LOGSHEET

Date	Wind Speed	Wind Direction	Sigma	Temperature	Relative Humidity	Precipitation	Barometric Pressure
⊛ 7-26-96	3	301	36.87	79	90	0	29.68
7-27	0	0		72	89	0	30.16
7-28	3	45		72	92	0	30.17
7-29	3	45		74	99	2.03	30.18
7-30	7	135		75	97	.66	29.98
7-31	8	247		74	98	0	29.97
⊛ 8-1	1	277	54.26	77	97	.01	29.69
8-2	2	135		71	96	0	30.01
8-3	2	135		72	98	0	30.00
8-4	4	67		74	100	0	30.02
8-5	8	158		74	99	.01	30.01
8-6	8	180		82	88	0	30.02
⊛ 8-7	6	133	16.56	87	79	0	29.68
8-8	8	247		85	80	0	30.08
8-9	5	292		81	85	0	30.16
8-10	1	135		71	76	0	30.17
8-11	3	45		69	69	0	30.08
8-12	6	45		72	80	0	30.01
⊛ 8-13	3	341	17.19	80	90	0	29.66
8-14	1	157		74	88	0	30.09
8-15	6	293		77	78	0	30.08
8-16	6	157		79	72	.02	30.08
8-17	6	67		79	78	.06	30.06
8-18	7	112		75	87	0	30.03
⊛ 8-19	5	126	18.10	77	92	.17	29.69

⊛ - Denotes Sampling Date

Conditions should be logged daily irregardless of whether the monitoring stations are operating. Completed sheets should be returned to the Environmental Coordinator.

FIGURE 3-1 (cont.)

DAILY WEATHER LOGSHEET

Date	Wind Speed	Wind Direction	Sigma	Temperature	Relative Humidity	Precipitation	Barometric Pressure
8-20-96	7	180		80	85	0	30.14
8-21	6	180		83	79	0	30.17
8-22	5	202		83	76	0	30.14
8-23	7	248		84	81	0	30.14
8-24	8	180		82	86	1.30	30.16
⊛ 8-25	2	10	26.48	79	90	.01	29.78
8-26	6	113		76	90	0	30.02
8-27	6	203		79	94	0	29.96
8-28	2	135		78	96	0	30.04
8-29	2	45		76	95	0	30.13
8-30	3	90		73	83	0	30.11
⊛ 8-31	2	351	33.46	78	84	0	29.73
9-1	4	90		71	85	0	30.08
9-2	3	45		74	84	0	29.98
9-3	2	158		75	86	0	29.96
9-4	2	157		76	92	0	29.97
9-5	4	67		76	78	0	29.97
⊛ 9-6	4	4	19.84	81	85	0	29.61
9-7	4	247		76	90	.02	29.87
9-8	8	227		77	90	.03	29.85
9-9	8	270		75	95	0	29.97
9-10	3	157		72	95	0	30.06
9-11	3	157		72	95	0	30.06
⊛ 9-12	1	3	82.71	77	71	0	29.65
9-13	8	0		69	73	0	30.00

⊛ - Denotes Sample Date

Conditions should be logged daily irregardless of whether the monitoring stations are operating. Completed sheets should be returned to the Environmental Coordinator.

FIGURE 3-1 (cont.)

DAILY WEATHER LOGSHEET

Date	Wind Speed	Wind Direction	Sigma	Temperature	Relative Humidity	Precipitation	Barometric Pressure
9-14-96	6	135		62	87	0	29.97
9-15-96	1	135		57	84	0	29.93
9-16	6	23		55	88	.25	29.75
9-17	9	45		59	96	.27	29.82
⊛ 9-18	3	343	18.75	67	89	0	29.72
9-19	1	45		62	91	0	29.71
9-20	1	157		58	81	0	29.77
9-21	6	180		68	89	0	29.99
9-22	10	112		63	74	0	29.99
9-23	13	202		65	85	0	29.80
⊛ 9-24	2	328	37.57	71	89	1.26	29.71
9-25	8	247		55	81	0	30.05
9-26	4	113		60	77	0	30.17
9-27	13	202		65	85	.94	29.80
9-28	9	270		61	89	.12	29.90
9-29	8	247		55	81	0	30.05
⊛ 9-30	3	114	9.69	67	77	0	29.86

⊛ - Denotes Sample Date

Conditions should be logged daily irregardless of whether the monitoring stations are operating. Completed sheets should be returned to the Environmental Coordinator.

3.2 Sampler Quarterly Averages

The simple quarterly average for each set of data from a particular sampler are calculated in the following tables, 3.1 through 3.4.

TABLE 3.1 - Sampler Location N3

DATE	FILTER NO.	LEAD ug/m3	TSP ug/m3
07/02/96	3410201	0.07	43.27
07/08/96	3410221	0.58	51.61
07/14/96	3410224	1.09	56.83
07/20/96	3410227	0.94	53.62
07/26/96	3410207	0.40	48.98
08/01/96	3410214	0.02	66.73
08/07/96	3410236	1.63	92.80
08/13/96	3410242	0.08	83.44
08/19/96	3410183	6.37	230.44
08/25/96	3410248	0.52	54.44
08/31/96	3410256	0.07	57.35
09/06/96	3410261	0.22	75.60
09/12/96	3410269	0.18	45.79
09/18/96	3410272	0.24	36.49
09/24/96	5953078	0.11	35.23
09/30/96	5953084	2.87	76.12
	Averages	0.96	69.30

TABLE 3.2 - Sampler Location OS

DATE	FILTER NO.	LEAD ug/m3	TSP ug/m3
07/02/96	3410202	1.29	7.01
07/08/96	3410216	0.62	39.07
07/14/96	3410226	0.20	33.57
07/20/96	3410230	0.13	29.56
07/26/96	3410208	0.54	44.09
08/01/96	3410212	0.00	41.72
08/07/96	3410238	0.31	53.42
08/13/96	3410243	0.64	62.13
08/19/96	3410181	0.05	44.26
08/25/96	3410251	0.05	27.84
08/31/96	3410257	0.07	54.44
09/06/96	3410263	0.69	93.19
09/12/96	3410267	2.85	87.68
09/18/96	3410274	0.24	22.39
09/24/96	5953077	2.60	82.11
09/30/96	5953082	0	22.75
	Averages	0.64	46.58

TABLE 3.3 - Sampler Location O3

DATE	FILTER NO.	LEAD ug/m3	TSP ug/m3
07/02/96	3410203	2.51	101.71
07/08/96	3410219	0.92	55.62
07/14/96	3410225	0.93	23.86
07/20/96	3410229	0.13	28.94
07/26/96	3410209	0.20	37.58
08/01/96	3410211	1.51	64.81
08/07/96	3410234	1.35	64.81
08/13/96	3410244	1.26	77.16
08/19/96	3410182	0.05	48.73
08/25/96	3410250	0.05	31.47
08/31/96	3410258	0.03	47.72
09/06/96	(Motor Failure)		
09/12/96	(Motor Failure)		
09/18/96	3410276	0.18	19.37
09/24/96	5953076	1.00	84.04
09/30/96	5953083	0	15.98
	Averages	0.72	50.13

TABLE 3.4 - Filter Blank

DATE	FILTER NO.	LEAD ug/filter	TSP ug/filter
07/02/96	3410204	10	-5000
07/08/96	3410218	6	-6000
07/14/96	3410222	6	1000
07/20/96	3409827	45	5000
07/26/96	3410210	6	-3000
08/01/96	3410239	6	-2000
08/07/96	3410240	51	-2000
08/13/96	3410245	6	1000
08/19/96	3410184	91	-1000
08/25/96	3410247	106	-2000
08/31/96	3410259	6	-3000
09/06/96	3410265	6	-1000
09/12/96	3410270	107	-1000
09/18/96	3410275	192	-1000
09/24/96	5953075	6	-5000
09/30/96	5953081	6	-3000
	AVERAGES	41.00	-1750.00

*TSP - Total Suspended Particulate

3.3 Instrument Precision Calculation

The estimates of precision for ambient air quality measurements from the TSP method are calculated from results obtained from the collocation of two samplers at one sampling site, N3. The calculated precision from this one sampling site is considered indicative of the precision at all sampling sites for the TSP method.

Using the paired measurements for the official sampler, labeled "N3" and the secondary sampler, labeled "N3-QC," the precision was calculated from the following equations. These numbers are reported on the Data Assessment Report shown in Figure 3-2. Actual calculations are attached in Appendix E.

Percentage Difference, d_i

$$d_i = \frac{Y_i - X_i}{X_i} \times 100\%$$

where: Y_i = the concentration TSP measured by the secondary sampler; and
X_i = the concentration TSP measured by the official sampler.

Average Percentage Difference, d_j

$$d_j = \frac{\Sigma d_i}{n}$$

where: n = the number of comparisons.

Standard Deviation, S_j

$$S_j = \sqrt{\frac{\Sigma(d_i)^2 - n(d_j)^2}{n - 1}}$$

96% Probability Limits

$$\text{Upper Limit} = d_j + \frac{1.96(S_j)}{2}$$

$$\text{Lower Limit} = d_j - \frac{1.96(S_j)}{2}$$

FIGURE 3-2
DATA ASSESSMENT REPORT

Chemetco

FIRST IN PEOPLE – QUALITY – SERVICE

P.O. BOX 67 • ROUTE 3 & OLDENBERG • HARTFORD, IL 62046

DATA ASSESSMENT REPORT

Date: OCTOBER 31, 1996

Auditor: GREG COTTER

Collocated Samplers

d_i = -0.70

d_j = -0.05 %

S_j = 13.35 %

Upper Limit = 13.03 %

Lower Limit = -13.13 %

Flow Rate Percentage Differences:

Sampler #1: (SEE SECT. 3.4) **Sampler #2:** (SEE SECT. 3.4)

Sampler #3: (SEE SECT 3.4) **Sampler #3':** (SEE SECT. 3.4)

3.5 Documentation

For each of the sampling episodes, data packages have been assembled to facilitate the retrieval of necessary data to perform and check calculations, assumptions and determinations and to generate accurate reports. These packages are maintained in a central project file at Chemetco.

Data forms are attached with backup and confirmatory information in Appendices A through D. They include:

- Filter Conditioning and TSP Calculation Logsheet;
- calculation pages;
- laboratory Analyses Report Sheet; and
- Laboratory Audit Results.

APPENDIX A

CALCULATION COVER SHEET

Company Name: CHEMETCO, INC.

Project Name: AMBIENT AIR MONITORING

Project Number: 96 QTR 3

Purpose: SAMPLER AVERAGES

Total Number of Pages: 6 (include this one)

Date: October 31, 1996

Originator's Signature: [signature]

1996 3RD QUARTER AVERAGE CALCULATION

LOCATION: N3-QC

DATE	FILTER NO.		TIME FINISH	TIME START	ELAPSED TIME	CFM	CUBIC METERS	LEAD ug/fltr	TSP ug/fltr	LEAD ug/m3	TSP ug/m3	WIND DIRECTION	WIND DEV.	WIND SPEED	PRECIPTTN
07/02/96	3410200		83128.2	81688.2	1440	46.9	2026	132	95000	0.07	46.89	289	73.22	2	1.48
07/08/96	3410217		84570.1	83130.1	1440	46.9	2026	1118	91000	0.55	44.91	2	60.93	3	0
07/14/96	3410223		86010	84570	1440	47.5	2052	1839	69000	0.90	33.63	218	59.35	3	0
07/20/96	3410228		87451.8	86011.8	1440	47.5	2052	759	90000	0.37	43.86	221	52.97	5	0.85
07/26/96	3410206		88893.9	87453.9	1440	46.9	2026	542	176000	0.27	86.87	301	36.87	3	0
08/01/96	3410213		90335.7	88895.7	1440	46.9	2026	113	140000	0.06	69.10	277	54.26	1	0.01
08/07/96	(BLOWN FUSE)											133	16.56	6	0
08/13/96	3410246		93220.3	91780.3	1440	48.1	2078	216	177000	0.10	85.18	341	17.19	3	0
08/19/96	3410180		94662.5	93222.5	1440	46.2	1996	12067	436000	6.05	218.45	126	18.1	5	0.17
08/25/96	3410249		96104.4	94664.4	1440	46.9	2026	1200	114000	0.59	56.27	10	26.48	2	0.01
08/31/96	3410255		97546.4	96106.4	1440	46.2	1996	136	121000	0.07	60.63	351	33.46	2	0
09/06/96	3410260		98988.6	97546.6	1440	47.5	2052	357	152000	0.17	74.07	4	19.84	4	0
09/12/96	3410268		100430.3	98990.3	1440	46.9	2026	593	90000	0.29	44.42	3	82.71	1	0
09/18/96	3410273		1872.1	432.1	1440	46.9	2026	372	72000	0.18	35.54	343	18.75	3	0
09/24/96	5953079		3322.9	1882.9	1440	48.3	2087	214	82000	0.10	39.30	328	37.57	2	1.26
09/30/96	(EQUIP. FAILURE)											114	9.69	3	0
									AVERAGES:	0.70	67.08				

LOCATION: N3

DATE	FILTER NO.		TIME FINISH	TIME START	ELAPSED TIME	CFM	CUBIC METERS	LEAD ug/fltr	TSP ug/fltr	LEAD ug/m3	TSP ug/m3	WIND DIRECTION	WIND DEV.	WIND SPEED	PRECIPTTN
07/02/96	3410201		81025.1	79585.1	1440	44.4	1918	132	83000	0.07	43.27	289	73.22	2	1.48
07/08/96	3410221		82467.1	81027.1	1440	44.4	1918	1118	99000	0.58	51.61	2	60.93	3	0
07/14/96	3410224		83909	82469	1440	44.4	1918	2100	109000	1.09	56.83	218	59.35	3	0
07/20/96	3410227		85350.8	83910.8	1440	44.9	1940	1831	104000	0.94	53.62	221	52.97	5	0.85
07/26/96	3410207		86793.7	85353.7	1440	44.9	1940	769	95000	0.40	48.98	301	36.87	3	0
08/01/96	3410214		88235.3	86795.3	1440	44.4	1918	34	128000	0.02	66.73	277	54.26	1	0.01
08/07/96	3410236		89678.9	88236.9	1440	44.9	1940	3165	180000	1.63	92.80	133	16.56	6	0
08/13/96	3410242		91119.2	89679.2	1440	45.5	1966	157	164000	0.08	83.44	341	17.19	3	0
08/19/96	3410183		92561.5	91121.5	1440	44.4	1918	12210	442000	6.37	230.44	126	18.1	5	0.17
08/25/96	3410248		94003.6	92563.6	1440	43.8	1892	981	103000	0.52	54.44	10	26.48	2	0.01
08/31/96	3410256		95446	94006	1440	44.4	1918	136	110000	0.07	57.35	351	33.48	2	0
09/06/96	3410261		96888.1	95448.1	1440	44.4	1918	430	145000	0.22	75.60	4	19.84	4	0
09/12/96	3410269		98330.3	96890.3	1440	45.5	1966	350	90000	0.18	45.79	3	82.71	1	0
09/18/96	3410272		99772.1	98332.1	1440	44.4	1918	462	70000	0.24	36.49	343	18.75	3	0
09/24/96	5953078		101216.9	99776.9	1440	46	1987	214	70000	0.11	35.23	328	37.57	2	1.26
09/30/96	5953084		2658.6	1218.6	1440	44.4	1918	5514	146000	2.87	76.12	114	9.69	3	0
									AVERAGES	0.96	69.30				

LOCATION: OS

DATE	FILTER NO.		TIME FINISH	TIME START	ELAPSED TIME	CFM	CUBIC METERS	LEAD ug/fltr	TSP ug/fltr	LEAD ug/m3	TSP ug/m3	WIND DIRECTION	WIND DEV.	WIND SPEED	PRECIPTTN
07/02/96	3410202		1440	0	1440	46.2	1996	2570	14000	1.29	7.01	289	73.22	2	1.48
07/08/96	3410216		1440	0	1440	46.8	2022	1250	79000	0.62	39.07	2	60.93	3	0
07/14/96	3410226		1440	0	1440	46.2	1996	404	67000	0.20	33.57	218	59.35	3	0
07/20/96	3410230		1440	0	1440	46.2	1996	259	59000	0.13	29.56	221	52.97	5	0.85
07/26/96	3410208		1440	0	1440	46.2	1996	1072	88000	0.54	44.09	301	36.87	3	0
08/01/96	3410212		1440	0	1440	45.5	1966	6	82000	0.00	41.72	277	54.26	1	0.01
08/07/96	3410238		1440	0	1440	45.5	1966	610	105000	0.31	53.42	133	16.56	6	0
08/13/96	3410243		1440	0	1440	46.2	1996	1277	124000	0.64	62.13	341	17.19	3	0
08/19/96	3410161		1440	0	1440	45.5	1966	91	87000	0.05	44.26	126	18.1	5	0.17
08/25/96	3410251		1440	0	1440	44.9	1940	106	54000	0.05	27.84	10	26.48	2	0.01
08/31/96	3410257		1440	0	1440	45.5	1966	136	107000	0.07	54.44	351	33.46	2	0
09/06/96	3410263		1440	0	1440	46.2	1996	1380	186000	0.69	93.19	4	19.84	4	0
09/12/96	3410267		1440	0	1440	46.2	1996	5691	175000	2.85	87.68	3	82.71	1	0
09/18/96	3410274		1440	0	1440	45.5	1966	462	44000	0.24	22.39	343	18.75	3	0
09/24/96	5953077		1440	0	1440	46.8	2022	5257	166000	2.60	82.11	328	37.57	2	1.26
09/30/96	5953082		1440	0	1440	46.8	2022	6	46000	0	22.75	114	9.69	3	0
									AVERAGES:	0.64	46.58				

LOCATION: O3

DATE	FILTER NO.		TIME FINISH	TIME START	ELAPSED TIME	CFM	CUBIC METERS	LEAD ug/fltr	TSP ug/fltr	LEAD ug/m3	TSP ug/m3	WIND DIRECTION	WIND DEV.	WIND SPEED	PRECIPTTN
07/02/96	3410203		55180.9	53740.9	1440	46.2	1996	5009	203000	2.51	101.71	289	73.22	2	1.48
07/08/96	3410219		58622.5	55182.5	1440	46.2	1996	1841	111000	0.92	55.62	2	60.93	3	0
07/14/96	3410225		58065	56625	1440	45.6	1970	1839	47000	0.93	23.86	218	59.35	3	0
07/20/96	3410229		59506.9	58066.9	1440	45.6	1970	259	57000	0.13	28.94	221	52.97	5	0.85
07/26/96	3410209		60948.9	59508.9	1440	46.2	1996	391	75000	0.20	37.58	301	36.87	3	0
08/01/96	3410211		62390.6	60950.6	1440	45	1944	2939	126000	1.51	64.81	277	54.26	1	0.01
08/07/96	3410234		63832.4	62392.4	1440	47.5	2052	2766	133000	1.35	64.81	133	16.56	6	0
08/13/96	3410244		65274.4	63834.4	1440	46.2	1996	2521	154000	1.26	77.16	341	17.19	3	0
08/19/96	3410182		66717	65277	1440	45.6	1970	91	96000	0.05	48.73	126	18.1	5	0.17
08/25/96	3410250		68158.9	66718.9	1440	45.6	1970	106	62000	0.05	31.47	10	26.48	2	0.01
08/31/96	3410258		69600.6	68160.6	1440	45.6	1970	61	94000	0.03	47.72	351	33.46	2	0
09/06/96	(Motor Failure)				0		0					4	19.84	4	0
09/12/96	(Motor Failure)				0		0					3	62.71	1	0
09/18/96	3410276		71045.6	69605.6	1440	46.6	2013	372	39000	0.18	19.37	343	18.75	3	0
09/24/96	5953076		72491.8	71051.8	1440	47.1	2035	2026	171000	1.00	84.04	328	37.57	2	1.26
09/30/96	5953083		73934.7	72494.7	1440	44.9	1940	6	31000	0	15.98	114	9.69	3	0
									AVERAGES:	0.72	50.13				

LOCATION: FB (Filter Blank)

DATE	FILTER NO.	LEAD ug/filter	TSP ug/filter	WIND DIRECTION	WIND DEV.	WIND SPEED	PRECIPITATION
07/02/96	3410204	10	-5000	289	73.22	2	1.48
07/08/96	3410218	6	-6000	2	60.93	3	0
07/14/96	3410222	6	1000	218	59.35	3	0
07/20/96	3409827	45	5000	221	52.97	5	0.85
07/26/96	3410210	6	-3000	301	36.87	3	0
08/01/96	3410239	6	-2000	277	54.26	1	0.01
08/07/96	3410240	51	-2000	133	16.56	6	0
08/13/96	3410245	6	1000	341	17.19	3	0
08/19/96	3410184	91	-1000	126	18.1	5	0.17
08/25/96	3410247	106	-2000	10	26.48	2	0.01
08/31/96	3410259	6	-3000	351	33.46	2	0
09/06/96	3410265	6	-1000	4	19.84	4	0
09/12/96	3410270	107	-1000	3	82.71	1	0
09/18/96	3410275	192	-1000	343	18.75	3	0
09/24/96	5953075	6	-5000	328	37.57	2	1.26
09/30/96	5953081	6	-3000	114	9.69	3	0
	AVERAGES	41.00	-1750.00				

CALCULATION COVER SHEET

Company Name: CHEMETCO, INC.

Project Name: AMBIENT AIR MONITORING

Project Number: 96 QTR 3

Purpose: SAMPLER PRECISION CALCULATION

Total Number of Pages: 2 (including this one)

Date: October 31, 1996

Originator's Signature: [illegible]

SAMPLER PRECISION CALCULATION (PARTICULATE)

SAMPLING DATE	DUPLICATE SAMPLER	OFFICIAL SAMPLER	DIFFERENCE	DIFFERENCE (SQUARED)
7-2-96	46.89	43.27	3.62	13.10
7-8-96	44.91	51.61	-6.70	44.89
7-14-96	33.63	56.83	-23.20	538.24
7-20-96	43.86	53.62	-9.76	95.26
7-26-96	86.87	48.98	37.89	1435.65
8-1-96	69.10	66.73	2.37	5.62
8-7-96	(BLOWN FUSE)	92.80	—	—
8-13-96	85.18	83.44	1.74	3.03
8-19-96	218.45	230.44	-11.99	143.76
8-25-96	56.27	54.44	1.83	3.35
8-31-96	60.63	57.35	3.28	10.76
9-6-96	74.07	75.60	-1.53	2.34
9-12-96	44.42	45.79	-1.37	1.88
9-18-96	35.54	36.49	-0.95	0.90
9-24-96	39.30	35.23	4.07	16.56
9-30-96	(EQUIP. FAILURE)	76.12	—	—
			$\Sigma d_i = -0.70$	$\Sigma d_i^2 = 2315.34$

$n = 14$

$$d_j = \frac{\Sigma d_i}{n} = \frac{-0.7}{14} = -0.05\%$$

$$S_j = \sqrt{\frac{\Sigma d_i^2 - n(d_j)^2}{n-1}} = \sqrt{\frac{2315.34 - 0.035}{13}} = 13.35\%$$

$$\text{UPPER LIMIT} = d_j + \frac{1.96(S_j)}{2} = 13.03\%$$

$$\text{LOWER LIMIT} = d_j - \frac{1.96(S_j)}{2} = -13.13\%$$

Official Average Particulate: 69.30 $\mu g/m^3$

Range: 60.20 to 78.33 $\mu g/m^3$

APPENDIX B

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 11-Jul-96

Sample type: HI-VOL AIR MONITORING PROGRAM

Sample Identification: listed below

Filter ID	location	Pb, ug/filter	TSP, mg/filter
3410200	N3-QC	132	95
3410201	N3	132	83
3410202	OS	2570	14
3410203	O3	5009	203
3410204	FB	10	-5

Results released by: Jane A. Burrough

Title: Laboratory Manager

MIDCO INDUSTRIES
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St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 12-Jul-96

Sample type: HI-VOL AIR MONITORING PROGRAM

Sample Identification: listed below

Filter ID	location	Pb, ug/filter	TSP, mg/filter
3410216	OS	1250	79
3410217	N3-QC	1118	91
3410218	FB	< 6	-6
3410219	O3	1841	111
3410221	N3-QC	1118	99

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 18-Jul-96

Sample type: HI-VOL AIR MONITORING PROGRAM

Sample Identification: listed below

Filter ID	location	Pb, ug/filter	TSP, mg/filter
3410222	FB	< 6	1
3410223	N3-QC	1839	69
3410224	N3	2100	109
3410225	O3	1839	47
3410226	OS	404	67

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 25-Jul-96

Sample type: HI-VOL AIR MONITORING PROGRAM

Sample Identification: listed below

Filter ID	location	Pb, ug/filter	TSP, mg/filter
3410227	N3-QC	759	90
3410228	N3	1831	104
3410229	O3	259	57
3410230	OS	259	59
3409827	FB	45	5

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
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Fax: 314-776-5529

Chemetco, Inc
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 02-Aug-96

Sample type: HI-VOL AIR MONITORING PROGRAM

Sample Identification: listed below

Filter ID	location	Pb, ug/filter	TSP, mg/filter
3410206	N3-QC	542	176
3410207	N3	769	95
3410208	OS	1072	88
3410209	O3	391	75
3410210	FB	< 6	-3

Results released by: Jane A. Burough

Title: Laboratory Manager

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Chemetco, Inc
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 07-Aug-96

Sample type: HI-VOL AIR MONITORING PROGRAM

Sample Identification: listed below

Filter ID	location	Pb, ug/filter	TSP, mg/filter
3410211	O3	2939	126
3410212	OS	< 6	82
3410213	N3-QC	113	140
3410214	N3	34	128
3410239	FB	< 6	-2

Results released by: Jane A. Burough

Title: Laboratory Manager

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St. Louis, Missouri 63110
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Fax: 314-776-5529

Chemetco, Inc
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 27-Aug-96

Sample type: HI-VOL AIR MONITORING PROGRAM

Sample Identification: listed below

Filter ID	location	Pb, ug/filter	TSP, mg/filter
3410234	O3	2766	133
3410236	N3	3165	180
3410238	OS	610	105
3410240	FB	51	-2

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
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Fax: 314-776-5529

Chemetco, Inc
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 27-Aug-96

Sample type: HI-VOL AIR MONITORING PROGRAM

Sample Identification: listed below

Filter ID	location	Pb, ug/filter	TSP, mg/filter
3410242	N3	157	164
3410243	OS	1277	124
3410244	O3	2521	154
3410245	FB	< 6	1
3410246	N3-QC	216	177

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
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St. Louis, Missouri 63110
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Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 30-Aug-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
3410180	N3-QC	12067	436
3410181	OS	91	87
3410182	O3	91	96
3410183	N3	12210	442
3410184	FB	91	-1

Results released by: Jane A. Burough

Title: Laboratory Manager

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Chemetco, Inc
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 30-Aug-96

Sample type: HI-VOL AIR MONITORING PROGRAM

Sample Identification: listed below

Filter ID	location	Pb, ug/filter	TSP, mg/filter
3410247	FB	106	-2
3410248	N3	981	103
3410249	N3-QC	1200	114
3410250	O3	106	62
3410251	OS	106	54

Results released by: Jane A. Burough

Title: Laboratory Manager

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Chemetco, Inc
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 06-Sep-96

Sample type: HI-VOL AIR MONITORING PROGRAM

Sample Identification: listed below

Filter ID	location	Pb, ug/filter	TSP, mg/filter
3410255	N3-QC	136	121
3410256	N3	136	110
3410257	OS	136	107
3410258	O3	61	94
3410259	FB	< 6	-3

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
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Chemetco, Inc
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 20-Sep-96

Sample type: HI-VOL AIR MONITORING PROGRAM

Sample Identification: listed below

Filter ID	location	Pb, ug/filter	TSP, mg/filter
3410260	N3	430	145
3410261	N3-QC	357	152
3410263	OS	1380	186
3410265	FB	< 6	-1

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
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St. Louis, Missouri 63110
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Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 24-Sep-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
3410267	OS	5691	175
3410268	N3-QC	593	90
3410269	N3	350	90
3410270	FB	107	-1

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 26-Sep-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
3410272	N3	462	70
3410273	N3-QC	372	72
3410274	OS	462	44
3410275	FB	192	-1
3410276	O3	372	39

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 2-Oct-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5953075	FB	< 6	-5
5953076	O3	2026	171
5953077	OE	5257	166
5953078	N3	214	70
5953079	N3-QC	214	82

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 4-Oct-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5953081	FB	< 6	-3
5953082	OS	6	46
5953083	O3	< 6	31
5953084	N3	5514	146

Results released by: Jane Burrough

Title: Laboratory Manager

APPENDIX C

CHEMTECO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning			Post-Sampling Conditioning				
	Date In	Date Out	W_{tare} (mg)	Date In	Date Out	W_{gross} (mg)	W_{net} (mg)	W_{net} (ug)
3409827	4-24-95	4-25-95	4255.0	~~7-23-96~~	7-25-96	~~4260.0~~	~~5.0~~	~~5000~~
3409828	5-17-95	5-19-95	4326.8	6-5-95	6-6-95	4375.4	48.6	48,600
3409829	5-17-95	5-19-95	4315.6	6-5-95	6-6-95	4361.4	45.8	45,800
3409830	5-17-95	5-19-95	4350.3	6-5-95	6-1-95	4451.1	100.8	100,800
3409831	5-17-95	5-19-95	4367.3	6-5-95	6-6-95	4455.4	88.1	88,100
3409832	5-17-95	5-19-95	4357.4	6-5-95	6-6-95	4364.4	7.0	7,000
3409835	5-30-95	6-1-95	4372.3	6-9-95	6-12-95	4468.1	95.8	95,800
3409836	5-30-95	6-1-95	4351.9	6-9-95	6-12-95	4443.3	91.4	91,400
3409838	5-30-95	6-1-95	4402.9	6-9-95	6-12-95	4469.6	66.7	66,700
3409839	5-30-95	6-1-95	4420.2	6-9-95	6-12-95	4484.6	64.4	64,400
3409840	5-30-95	6-1-95	4379.1	6-9-95	6-12-95	4378.8	-0.3	-300
3409841	6-5-95	6-6-95	4346.4	6-14-95	6-16-95	4478.7	132.3	132,300
3409842	6-5-95	6-6-95	4361.2	6-14-95	6-16-95	4492.5	131.3	131,300
3409843	6-5-95	6-6-95	4401.2	6-14-95	6-16-95	4459.8	58.6	58,600
3409844	6-5-95	6-6-95	4376.3	6-14-95	6-16-95	4447.4	71.1	71,100
3409845	6-5-95	6-6-95	4416.9	6-14-95	6-16-95	4410.3	-6.6	-6,600

CERMICO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning Date In	Date Out	$W_{initial}$ (mg)	Post-Sampling Conditioning Date In	Date Out	W_{final} (mg)	W_{net} (mg)	W_{net} (ug)
3410164	5-6-96	5-7-96	4248.9	5-22-96	5-23-96	4346.8	97.9	97,900
3410165	5-6-96	5-7-96	4243.6	5-22-96	5-23-96	4241.9	-1.7	-1,700
3410166	5-23-96	5-29-96	4229.1	6-14-96	6-17-96	4261.5	32.4	32,400.
3410167	5-23-96	5-29-96	4234.4	6-14-96	6-17-96	4268.4	34.0	34,000
3410169	5-23-96	5-29-96	4245.7	6-14-96	6-17-96	4433.0	187.3	187,300
3410170	5-23-96	5-29-96	4220.7	6-14-96	6-17-96	4255.9	35.2	35,200
3410171	5-23-96	5-29-96	4189.9	6-14-96	6-17-96	4191.8	1.9	1,900
3410173	5-23-96	5-29-96	4190.4	6-21-96	6-25-96	4336.2	145.8	145,800
3410174	5-23-96	5-29-96	4215.4	6-21-96	6-25-96	4364.8	149.4	149,400
3410175	5-23-96	5-29-96	4166.7	6-21-96	6-25-96	4287.8	121.1	121,100
3410176	5-23-96	5-29-96	4172.3	6-21-96	6-25-96	4319.4	147.1	147,100
3410178	5-23-96	5-29-96	4187.4	6-21-96	6-25-96	4187.4	0	0
3410179	6-3-96	6-7-96	4163.7					
3410180	6-3-96	6-7-96	4180.1	8-22-96	8-27-96	4616.2	436.1	436,100
3410181	6-3-96	6-7-96	4178.4	8-22-96	8-27-96	4265.1	86.7	86,700
3410182	6-3-96	6-7-96	4148.3	8-22-96	8-27-96	4244.5	96.2	96,200

CHEMICO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning Date In	Date Out	W_{pre} (mg)	Post-Sampling Conditioning Date In	Date Out	W_{post} (mg)	W_{net} (mg)	W_{net} (ug)
3410183	6-3-96	6-7-96	4215.5	8-22-96	8-27-96	4657.4	441.9	441,900
3410184	6-3-96	6-7-96	4252.1	8-22-96	8-27-96	4250.9	-1.2	-1200
3410185	6-3-96	6-7-96	4188.2					
3410186	6-3-96	6-7-96	4228.9					
3410187	6-3-96	6-7-96	4248.1	7-9-96	7-10-96	4357.5	109.4	109,400
3410188	6-3-96	6-7-96	4226.0					
3410189	6-7-96	6-13-96	4278.8	6-25-96	6-28-96	4419.1	140.3	140,300
3410190	6-7-96	6-13-96	4287.5	6-25-96	6-28-96	4444.3	156.8	156,800
3410191	6-7-96	6-13-96	4264.1	6-25-96	6-28-96	4392.0	127.9	127,900
3410192	6-7-96	6-13-96	4236.1	6-25-96	6-28-96	4369.8	133.7	133,700
3410193	6-7-96	6-13-96	4244.8	6-25-96	6-28-96	4236.1	-8.7	-8,700
3410194	6-14-96	6-17-96	4234.9	7-1-96	7-2-96	4574.3	336.4	336,400
3410196	6-14-96	6-17-96	4238.0	7-1-96	7-2-96	4602.3	364.3	364,300
3410197	6-14-96	6-17-96	4228.4	7-1-96	7-2-96	4320.7	92.3	92,300
3410198	6-14-96	6-17-96	4228.8	7-1-96	7-2-96	4324.5	95.7	95,700
3410199	6-14-96	6-17-96	4232.7	7-1-96	7-2-96	4236.0	3.3	3300

CHEMTECO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning Date In	Date Out	$W_{i...}$ (mg)	Post-Sampling Conditioning Date In	Date Out	$W_{f...}$ (mg)	$W_{...}$ (mg)	$W_{...}$ (ug)
3410200	6-14-96	6-17-96	4318.5	7-9-96	7-10-96	4413.9	95.4	95,400
3410201	6-14-96	6-17-96	4365.5	7-9-96	7-10-96	4448.9	83.4	83,400
3410202	6-14-96	6-17-96	4335.7	7-9-96	7-10-96	4480.0	144.3	144,300
3410203	6-14-96	6-17-96	4318.2	7-9-96	7-10-96	4520.9	202.7	202,700
3410204	6-14-96	6-17-96	4331.2	7-9-96	7-10-96	4326.1	-5.1	-5100
3410206	6-21-96	6-25-96	4296.9	7-30-96	7-31-96	4472.7	175.8	175,800
3410207	6-21-96	6-25-96	4245.0	7-30-96	7-31-96	4339.8	94.8	94,800
3410208	6-21-96	6-25-96	4251.6	7-30-96	7-31-96	4339.4	87.8	87,800
3410209	6-21-96	6-25-96	4266.7	7-30-96	7-31-96	4341.3	74.6	74,600
3410210	6-21-96	6-25-96	4350.9	7-30-96	7-31-96	4347.9	-3.0	-3000
3410211	6-21-96	6-25-96	4336.7	8-2-96	8-6-96	4462.8	126.1	126,100
3410212	6-21-96	6-25-96	4349.2	8-2-96	8-6-96	4430.9	81.7	81,700
3410213	6-21-96	6-25-96	4316.1	8-2-96	8-6-96	4455.8	139.7	139,700
3410214	6-21-96	6-25-96	4327.1	8-2-96	8-6-96	4454.6	127.5	127,500
3410215	6-21-96	6-25-96	4294.5	~~8-2-96~~				
3410216	6-28-96	7-2-96	4163.2	7-10-96	7-11-96	4242.1	78.9	78,900

CHEMTECO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning Date In	Date Out	$W_{i...}$ (mg)	Post-Sampling Conditioning Date In	Date Out	$W_{f...}$ (mg)	$W_{...}$ (mg)	$W_{...}$ (ug)
3410217	6-28-96	7-2-96	4168.8	7-10-96	7-11-96	4259.6	90.8	90,800
3410218	6-28-96	7-2-96	4211.2	7-10-96	7-11-96	4205.3	-5.9	-5900
3410219	6-28-96	7-2-96	4191.4	7-10-96	7-11-96	4302.6	111.2	111,200
3410221	6-28-96	7-2-96	4273.2	7-10-96	7-11-96	4372.2	99.0	99,000
3410222	7-2-96	7-9-96	4268.1	7-16-96	7-17-96	4268.9	.8	800
3410223	7-2-96	7-9-96	4225.0	7-16-96	7-17-96	4293.7	68.7	68,700
3410224	7-2-96	7-9-96	4234.6	7-16-96	7-17-96	4343.6	109.0	109,000
3410225	7-2-96	7-9-96	4188.1	7-16-96	7-17-96	4234.8	46.7	46,700
3410226	7-2-96	7-9-96	4226.1	7-16-96	7-17-96	4293.2	67.1	67,100
3410227	7-10-96	7-16-96	4256.5	7-23-96	7-25-96	4346.6	90.1	90,100
3410228	7-10-96	7-16-96	4280.1	7-23-96	7-25-96	4383.7	103.6	103,600
3410229	7-10-96	7-16-96	4259.6	7-23-96	7-25-96	4316.7	57.1	57,100
3410230	7-10-96	7-16-96	4260.4	7-23-96	7-25-96	4318.9	58.5	58,500
3410231	7-10-96	7-16-96	4282.3					

CENSICO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning Date In	Date Out	$W_{...}$ (mg)	Post-Sampling Conditioning Date In	Date Out	$W_{...}$ (mg)	$W_{...}$ (mg)	$W_{...}$ (ug)
3410234	7-25-96	7-30-96	4314.8	8-13-96	8-14-96	4447.9	133.1	133,100
5	7-25-96	7-30-96	4307.2					
6	7-25-96	7-30-96	4197.9	8-13-96	8-14-96	4377.5	180.4	180,400
7	7-25-96	7-30-96	4222.2					
8	7-25-96	7-30-96	4219.5	8-13-96	8-14-96	4324.1	104.6	104,600
9	7-30-96	7-31-96	4197.0	8-2-96	8-6-96	4195.5	-1.50	-1500
40	7-30-96	7-31-96	4188.3	8-13-96	8-14-96	4186.5	-1.8	-1800
1	7-30-96	7-31-96	4189.3					
2	8-6-96	8-9-96	4192.8	8-16-96	8-21-96	4356.8	164	164000
3	8-6-96	8-9-96	4172.0	8-16-96	8-21-96	4296.7	123.9	123900
4	8-6-96	8-9-96	4188.6	8-16-96	8-21-96	4342.2	153.6	153600
5	8-6-96	8-9-96	4201.7	8-16-96	8-21-96	4202.3	0.6	600
6	8-6-96	8-9-96	4159.6	8-16-96	8-21-96	4336.4	176.8	176800
7	8-16-96	8-21-96	4221.3	8-27-96	8-28-96	4219.4	-1.9	-1900
8	8-16-96	8-21-96	4242.2	8-27-96	8-28-96	4345.5	103.3	103,300
9	8-16-96	8-21-96	4217.1	8-27-96	8-28-96	4330.8	113.7	113,700

CHEMRICO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning Date In	Date Out	$W_{i...}$ (mg)	Post-Sampling Conditioning Date In	Date Out	$W_{f...}$ (mg)	$W_{...}$ (mg)	$W_{...}$ (ug)
3410250	8-16-96	8-21-96	4252.6	8-27-96	8-28-96	4314.3	61.7	61,700
1	8-16-96	8-21-96	4271.5	8-27-96	8-28-96	4325.8	54.3	54,300
5	8-27-96	8-28-96	4332.7	9-4-96	9-5-96	4453.7	121.0	121,000
6	8-27-96	8-28-96	4293.4	9-4-96	9-5-96	4403.4	110.0	110,000
7	8-27-96	8-28-96	4282.4	9-4-96	9-5-96	4389.3	106.9	106,900
8	8-27-96	8-28-96	4313.0	9-4-96	9-5-96	4406.8	93.8	93,800
9	8-27-96	8-28-96	4308.0	9-4-96	9-5-96	4304.6	-3.4	-3400
60	8-29-96	9-3-96	4328.3	9-12-96	9-13-96	4472.8	144.5	
61	8-29-96	9-3-96	4301.5	9-12-96	9-13-96	4453.8	152.3	
3	8-29-96	9-3-96	4261.8	9-12-96	9-13-96	4447.4	185.6	
4	8-29-96	9-3-96	4232.5					
5	8-29-96	9-3-96	4329.4	9-12-96	9-13-96	4328.7	-.7	
66	9-3-96	9-5-96	4397.7					
67	9-3-96	9-5-96	4354.7	9-16-96	9-18-96	4529.4	174.7	
68	9-3-96	9-5-96	4328.4	9-16-96	9-18-96	4418.8	90.4	
69	9-3-96	9-5-96	4364.5	9-16-96	9-18-96	4454.7	90.2	

CHEMTECO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning Date In	Date Out	$W_{i...}$ (mg)	Post-Sampling Conditioning Date In	Date Out	$W_{f...}$ (mg)	$W_{...}$ (mg)	$W_{...}$ (mg)
3410270	9-3-96	9-5-96	4381.0	9-16-96	9-18-96	4380.5	-.5	
272	9-5-96	9-11-96	4303.6	9-24-96	9-25-96	4373.5	69.9	
273	9-5-96	9-11-96	4253.2	9-24-96	9-25-96	4325.2	72.0	
274	9-5-96	9-11-96	4285.2	9-24-96	9-25-96	4328.7	43.5	
275	9-5-96	9-11-96	4394.6	9-24-96	9-25-96	4393.3	-1.3	
276	9-5-96	9-11-96	4394.9	9-24-96	9-25-96	4433.6	38.7	

U. New Filters!

CEMBICO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning Date In	Date Out	$W_{...}$ (mg)	Post-Sampling Conditioning Date In	Date Out	$W_{...}$ (mg)	$W_{...}$ (mg)	$W_{...}$ (mg)
5953084	9-11-96	9-16-96	4413.2mg	10-1-96	10-2-96	4559.0mg	145.8	
3	9-11-96	9-16-96	4343.0mg					
2	9-11-96	9-16-96	4386.5mg	10-1-96	10-2-96	4417.8mg	31.3	
1	9-11-96	9-16-96	4491.3mg	10-1-96	10-2-96	4537.6mg	46.3	
80	9-11-96	9-16-96	4397.8mg	10-1-96	10-2-96	4395.1mg	-2.7	
79	9-19-96	9-20-96	4350.3mg	9-30-96	10-1-96	4431.9mg	81.6	
78	9-19-96	9-20-96	4370.9mg	9-30-96	10-1-96	4440.8mg	69.9	
77	9-19-96	9-20-96	4377.6mg	9-30-96	10-1-96	4543.8mg	166.2	
76	9-19-96	9-20-96	4363.9mg	9-30-96	10-1-96	4534.4mg	170.5	
75	9-19-96	9-20-96	4376.9mg	9-30-96	10-1-96	4372.4mg	-4.5	
74	9-25-96	9-27-96	4400.0mg					
~~73~~								
72	9-25-96	9-27-96	4365.1mg					
71	9-25-96	9-27-96	4428.2mg					
70	9-25-96	9-27-96	4427.2mg					
69	9-25-96	9-27-96	4368.6mg					

APPENDIX D

	HIGH VOLUME SAMPLER AUDIT FORM						SRA/10-2-94
	Pb	X	PM 10		QC	X	
SITE	**HARTFORD**			ORIFICE CALIBRATOR		**A14968**	
ADDRESS	**CHEMETCO N3-QC**			CAL. DATE	**7/19/96**		
AUDITOR	**J HENRY**			ISSUED			
DATE	**9/19/95**			EXP. DATE	**1/5/97**		
				SLOPE(K)	**27.64**		
				OFFSET(B)	**0.965**		
HI-VOL MOTOR NO.		**A00283**					
MOTOR CAL. DATE		**2/14/96**		HI-VOL MAG READING		3.7	
MOTOR INSTALLED		**3/15/96**		THEORETICAL FLOW		**46.2**	C.F.M.
MAGNEHELIC NO.		**99605**		AMBIENT TEMP. C		**25.3**	C+273.2= (T)
EXPIRATION DATE		**1/5/97**		STATION PRESSURE.		**742**	(P)
FLOW CONTROLLED		Y		MAN. IN. OF WATER		**6.85**	(M)
QS =	[(K x sqrt	M x	(T+ 273.2)	+ B]	(P)	(298)	
			P		760	T	
QS = [	27.64	x sqrt (Mx	298.5	) + B] (	742)	(298)	
			742		760	298.5	
QS = [	27.64	x sqrt (	M x T / P)	+ B]	(P / 760)	(298 / T)	
QS = [	27.64	x sqrt	2.7556941	0.965	0.9763158	0.998325	
QS = [	27.64	x	1.6600283	0.965	0.9763158	0.998325	
QS =			45.88	46.85	45.74	45.66	
		QS =	45.66	FT =	45		
		QS =	**45.7**				
		% DIFFERENCE = (FT - QS) / (QS) X 100					
		% DIFFERENCE =		**1.18**			
		1st AND 4th QUARTER CORRECTION TO FLOW					
		FT X 1.03=	**N.A.**	AA %DIFF	**N.A.**		
					Manufacturers		
					%D=		
	HIGH VOLUME SAMPLER AUDIT FORM						SRA/10-2-94

	HIGH VOLUME SAMPLER AUDIT FORM						SRA/10-2-94
	Pb	X	PM 10		QC		
SITE	**HARTFORD**			ORIFICE CALIBRATOR		**A14968**	
ADDRESS	**CHEMETCO N3**			CAL. DATE	**7/19/96**		
AUDITOR	**J HENRY**			ISSUED			
DATE	**9/19/95**			EXP. DATE	**1/5/97**		
				SLOPE(K)	**27.64**		
				OFFSET(B)	**0.965**		
HI-VOL MOTOR NO.		**A00174**					
MOTOR CAL. DATE		**4/11/96**		HI-VOL MAG READING		4.5	
MOTOR INSTALLED		**5/14/96**		THEORETICAL FLOW		**46.6**	C.F.M.
MAGNEHELIC NO.		**99605**		AMBIENT TEMP. C		**25.3**	C+273.2= (T)
EXPIRATION DATE		**1/5/97**		STATION PRESSURE.		**742**	(P)
FLOW CONTROLLED		Y		MAN. IN. OF WATER		**7.2**	(M)
QS =	[(K x sqrt	M x	(T+ 273.2) / P)	+ B]	(P) / 760	(298) / T	
QS = [	27.64	x sqrt (Mx	298.5 / 742)	+ B] (	742 / 760)	(298 / 298.5)	
QS = [	27.64	x sqrt (	M x T / P)	+ B]	(P / 760)	(298 / T)	
QS = [	27.64	x sqrt	2.896496	0.965	0.9763158	0.998325	
QS = [	27.64	x	1.7019095	0.965	0.9763158	0.998325	
QS =			47.04	48.01	46.87	46.79	
		QS =	46.79	FT =	45		
		QS =	**46.8**				
		% DIFFERENCE = (FT - QS) / (QS) X 100					
		% DIFFERENCE =		**-0.41**			
		1st AND 4th QUARTER CORRECTION TO FLOW					
		FT X 1.03=	**N.A.**	AA %DIFF	**N.A.**		
					Manufacturers		
					%D=		

		Pb	X	PM 10		QC		
	SITE	**HARTFORD**			ORIFICE CALIBRATOR		**A14968**	
	ADDRESS	**CHEMETCO OS**			CAL. DATE	**7/19/96**		
	AUDITOR	**J HENRY**			ISSUED			
	DATE	**9/19/95**			EXP. DATE	**1/5/97**		
					SLOPE(K)	**27.64**		
					OFFSET(B)	**0.965**		
	HI-VOL MOTOR NO.		**A00196**					
	MOTOR CAL. DATE		**11/27/95**		HI-VOL MAG READING		3.5	
	MOTOR INSTALLED		**1/3/96**		THEORETICAL FLOW		**45.5**	C.F.M.
	MAGNEHELIC NO.		**99605**		AMBIENT TEMP. C		**28.6**	C+273.2= (T)
	EXPIRATION DATE		**1/5/97**		STATION PRESSURE.		**742**	(P)
	FLOW CONTROLLED		Y		MAN. IN. OF WATER		**6.9**	(M)
	QS =	[(K x sqrt	M x	(T+ 273.2) / P)	+ B]	(P) / 760	(298) / T	
	QS = [	27.64	x sqrt (Mx	301.8 / 742)	+ B] (	742 / 760) (	298) / 301.8	
	QS = [	27.64	x sqrt (	M x T / P)	+ B]	(P / 760)	(298 / T)	
	QS = [	27.64	x sqrt	2.806496	0.965	0.9763158	0.9874089	
	QS = [	27.64	x	1.67526	0.965	0.9763158	0.9874089	
	QS =			46.30	47.27	46.15	45.57	
			QS =	45.57	FT =	45		
			QS =	**45.6**				
			% DIFFERENCE = (FT - QS) / (QS) X 100					
			% DIFFERENCE =		**-0.15**			
			1st AND 4th QUARTER CORRECTION TO FLOW					
			FT X 1.03=	**N.A.**	AA %DIFF	**N.A.**		
						Manufacturers		
						%D=		
		HIGH VOLUME SAMPLER AUDIT FORM						SRA/10-2-94
		Pb	X	PM 10		QC		

SITE	**HARTFORD**			ORIFICE CALIBRATOR		**A14968**		
ADDRESS	**CHEMETCO O3**			CAL. DATE	**7/19/96**			
AUDITOR	**J HENRY**			ISSUED				
DATE	**9/19/95**			EXP. DATE	**1/5/97**			
				SLOPE(K)	**27.64**			
				OFFSET(B)	**0.965**			
HI-VOL MOTOR NO.		**A22209**						
MOTOR CAL. DATE		**9/9/96**		HI-VOL MAG READING		4.5		
MOTOR INSTALLED		**9/17/96**		THEORETICAL FLOW		**46.6**	C.F.M.	
MAGNEHELIC NO.		**99605**		AMBIENT TEMP. C		**26**	C+273.2= (T)	
EXPIRATION DATE		**1/5/97**		STATION PRESSURE.		**742**	(P)	
FLOW CONTROLLED		Y		MAN. IN. OF WATER		**6.8**	(M)	
QS =	[(K x sqrt	M x	(T+ 273.2) / P	) + B]	(P) / 760	(298) / T		
QS = [	27.64	x sqrt (Mx	299.2 / 742	) + B] (	742 / 760	) (298 / 299.2)		
QS = [	27.64	x sqrt (	M x T / P)	+ B]	(P / 760)	(298 / T)		
QS = [	27.64	x sqrt	2.7419946	0.965	0.9763158	0.9959893		
QS = [	27.64	x	1.6558969	0.965	0.9763158	0.9959893		
QS =			45.77	46.73	45.63	45.44		
		QS =	45.44	FT =	45			
		QS =	**45.4**					
		% DIFFERENCE = (FT - QS) / (QS) X 100						
		% DIFFERENCE =		**2.54**				
		1st AND 4th QUARTER CORRECTION TO FLOW						
		FT X 1.O3=	**N.A.**	AA %DIFF	**N.A.**			
					Manufacturers			
					%D=			

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AMBIENT AIR MONITORING

QUARTERLY REPORT

October - December, 1996

FOR

TOTAL PARTICULATE

AND LEAD

CHEMETCO, INC.
January 1997

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1.0 INTRODUCTION

This document presents the summary of the fourth 1996 calendar quarter ambient air monitoring performed at the Chemetco, Inc. facility in Madison County.

1.1 Monitoring Description

The fourth quarter ambient air monitoring began on October 6, 1996 and sampling for total suspended particulates and lead in the particulate was performed on a once every sixth day basis. The quarter sampling ended on December 29, 1996. Each day, a weather log was maintained documenting wind speed, wind direction, wind direction standard deviation (sigma), temperature, relative humidity and precipitation.

The location of the monitoring sites was based on a modeling report done by Versar, Inc. and approved by IEPA. All locations are shown on a map in Figure 1-1.

Standard operating procedures followed for the filter conditioning, sampling, sampler operation, analyses, etc, are shown in Table 1.1. Complete copies of the SOP's were provided in the Ambient Air Monitoring Quality Assurance/Quality Control Plan.

1.2 Monitoring Report

The following pages contain the results of the third quarter monitoring. Section 2 contains an accounting of all the test dates and reasons for eliminating data from certain test dates. Section 3 contains the quarterly averages, the quality assurance data and meteorological data. The Appendices include copies of the Filter Conditioning Logsheets with total suspended particulate calculation, the laboratory analysis, results of the laboratory's USEPA quality assurance samples, and the calculation worksheets.

FIGURE 1-1
MONITORING STATION LOCATIONS

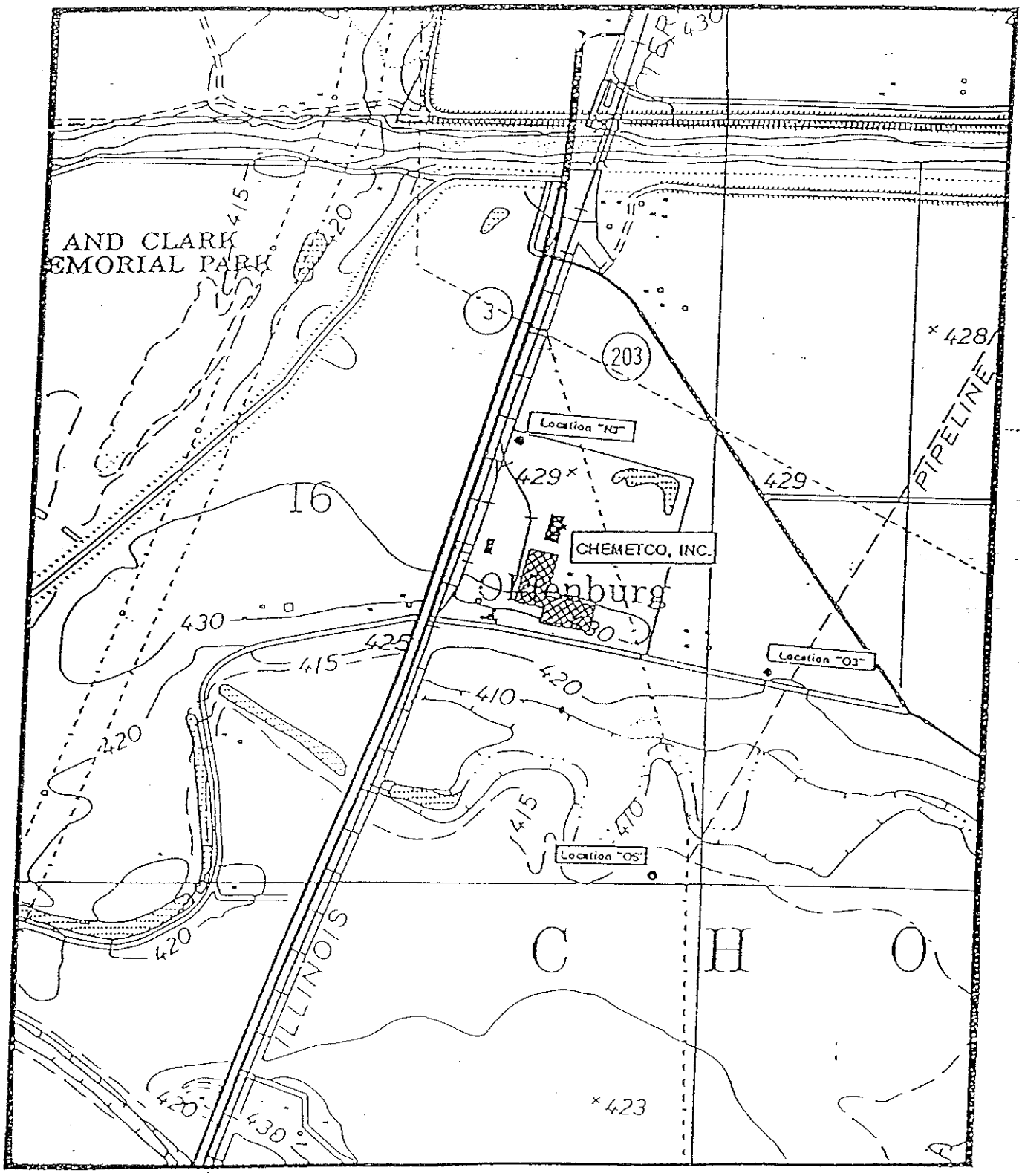

TABLE 1-1

STANDARD OPERATING PROCEDURES

Determination of Total Suspended Particulates in Ambient Air Filters

Filter Conditioning

Lead Analysis in Ambient Air Filters

Operation of GMW 2310 TSP Samplers

Packaging and Shipment of Samples

2.0 SAMPLING DATE ACCOUNTING

Following is a list of the dates the monitors were to have run. On several days, due to power failures, operator error or equipment malfunction, samples could not be collected. Table 2.1 accounts the dates and events.

TABLE 2.1 - Sample Date Accounting

DATE	SAMPLER	RUN STATUS	QUALIFICATION	ERROR REASON
10/6/96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
10/12/96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
10/18/96	N3-QC	No	No	Equip. Failure
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
10/24/96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
10/30/96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
11/5/96	N3-QC	No	No	Motor Failure
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
11/11/96	N3-QC	No	No	Motor Failure
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
11/17/96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
11/20/96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
11/23/96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
11/26/96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
11/29/96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
12/5/96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	No	No	Power Failure
	O3	OK	Yes	
12/11/96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
12/17/96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
12/19/96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	No	No	Operator Error (no day switch set)
	O3	OK	Yes	
12/23/96	N3-QC	OK	Yes	
	N3	OK	Yes	
	OS	OK	Yes	
	O3	OK	Yes	
12/29/96	N3-QC	No	No	Power Failure
	N3	No	No	Power Failure
	OS	OK	Yes	
	O3	OK	Yes	

3.0 MONITORING DATA

After the receipt from the laboratory of all data for the quarterly report, averages for each monitoring site were calculated from the pool of data. In addition, at site N3, two samplers were set up for quality assurance purposes. A standard deviation, lower and upper range was determined based on those samples and under normal circumstances can be assumed to represent accuracy for all locations.

Each day, meteorological data was noted. These logs are shown in Figure 3.1 and quarterly averages are discussed in Section 3.2.

3.1 Quarterly Averages Calculation

From the pool of acceptable data, quarterly averages were calculated by using the simple arithmetic mean determination shown in Equation 1.

$$X = \frac{\sum X_i}{n} \qquad \textit{Equation 1}$$

where,

X_i = individual sampling data,

n = the number of valid sampling points in the quarter.

DAILY WEATHER LOGSHEET

Date	Wind Speed	Wind Direction	Sigma	Temperature	Relative Humidity	Precipitation	Barometric Pressure
10-1-96	0	0		63	85	0	30.19
10-2	4	113		64	97	0	30.12
10-3	8	135		64	83	0	30.23
10-4	8	68		60	74	0	30.28
10-5	6	112		54	71	.15	30.24
⊛ 10-6	2	120	18.73	67	90	0	29.84
10-7	0	0		61	95	0	30.13
10-8	5	0		65	93	0	30.00
10-9	6	135		62	96	.16	29.93
10-10	5	270		56	95	.01	30.00
10-11	4	135		50	95	0	30.20
⊛ 10-12	7	138	18.71	64	86	0	29.81
10-13	6	202		57	69	0	30.16
10-14	8	248		65	70	0	30.14
10-15	5	248		68	79	0	30.10
10-16	5	225		69	75	0	30.01
10-17	10	202		69	71	0	29.23
⊛ 10-18	4	239	43.02	54	75	.81	29.68
10-19	5	135		56	81	0	30.03
10-20	3	68		49	72	0	29.98
10-21	7	158		53	67	0	29.86
10-22	8	180		59	86	.54	29.77
10-23	13	202		56	93	.82	29.08
⊛ 10-24	4	144	35.39	57	82	.12	29.61
10-25	7	208		48	75	0	29.91

⊛ - DENOTES SAMPLING DATE

Conditions should be logged daily irregardless of whether the monitoring stations are operating. Completed sheets should be returned to the Environmental Coordinator.

FIGURE 3-1
METEOROLOGICAL DATA SHEET

FIGURE 3-1 (cont.)

DAILY WEATHER LOGSHEET

Date	Wind Speed	Wind Direction	Sigma	Temperature	Relative Humidity	Precipitation	Barometric Pressure
10-26-96	11	135		54	84	0	29.92
10-27	9	180		61	95	0	30.01
10-28	6	270		63	90	.15	30.25
10-29	7	248		60	85	0	30.07
⊛ 10-30	8	270	37.05	58	72	.06	29.55
10-31	14	292		58	55	0	29.45
11-1	6	158		47	54	0	30.15
11-2	5	158		42	55	0	30.17
11-3	3	158		38	62	0	30.22
11-4	5	90		37	64	0	30.25
⊛ 11-5	6	137	17.03	62	65	.05	29.71
11-6	8	180		53	77	0	29.02
11-7	9	90		61	88	2.25	29.81
11-8	8	135		54	91	1.11	29.88
11-9	9	270		41	79	.02	29.99
11-10	10	293		39	77	0	30.09
⊛ 11-11	2	307	25.00	36	80	0	30.14
11-12	5	158		31	66	0	30.54
11-13	6	45		31	82	0	30.65
11-14	8	67		32	72	0	30.59
11-15	13	90		31	69	0	30.51
11-16	15	135		36	73	0	30.34
⊛ 11-17	7	219	68.67	49	90	.18	29.87
11-18	8	90		48	86	.29	30.16
11-19	2	23		43	82	0	30.18

⊛ - DENOTES SAMPLING DATE

Conditions should be logged daily irregardless of whether the monitoring stations are operating. Completed sheets should be returned to the Environmental Coordinator.

FIGURE 3-1 (cont.)

DAILY WEATHER LOGSHEET

Date	Wind Speed	Wind Direction	Sigma	Temperature	Relative Humidity	Precipitation	Barometric Pressure
⊛ 11-20-96	4	66	54.08	41	85	0	29.62
11-21	8	67		38	90	.03	29.80
11-22	7	68		39	91	.06	30.08
⊛ 11-23	6	120	22.19	43	87	0	29.68
11-24	10	90		39	93	.01	30.02
11-25	13	0		40	94	1.05	30.07
⊛ 11-26	5	301	18.75	31	85	1.06	30.15
11-27	6	157		38	80	0	30.00
11-28	5	270		48	78	0	30.54
⊛ 11-29	7	116	16.87	43	77	0	29.71
11-30	6	248		38	86	.30	29.56
12-1	13	293		43	95	.09	29.71
12-2	10	270		41	93	.05	29.81
12-3	13	248		39	79	0	29.93
12-4	13	202		38	84	0	30.14
⊛ 12-5	7	166	50.14	41	94	0	29.46
12-6	13	158		35	76	.22	29.69
12-7	10	203		40	66	0	29.73
12-8	11	270		44	66	0	29.89
12-9	10	270		40	71	0	30.06
12-10	4	135		33	80	0	29.99
⊛ 12-11	6	221	76.00	54	83	0	29.36
12-12	5	247		50	93	0	29.70
12-13	3	158		44	98	.02	30.06
12-14	3	68		39	93	0	30.19

⊛ - DENOTES SAMPLING DATE

Conditions should be logged daily irregardless of whether the monitoring stations are operating. Completed sheets should be returned to the Environmental Coordinator.

FIGURE 3-1 (cont.)

DAILY WEATHER LOGSHEET

Date	Wind Speed	Wind Direction	Sigma	Temperature	Relative Humidity	Precipitation	Barometric Pressure
12-15-96	10	158		40	93	0	30.02
12-16	7	90		42	85	.01	30.12
⊛ 12-17	6	281	27.66	31	83	0	29.65
12-18	16	292		29	74	0	29.98
⊛ 12-19	7	237	29.65	16	63	.01	29.65
12-20	10	270		22	72	0	30.22
12-21	8	225		13	72	0	30.20
12-22	11	180		26	66	0	30.01
⊛ 12-23	11	174	48.28	53	77	0	29.50
12-24	19	225		48	78	.35	29.97
12-25	15	270		31	75	0	30.29
12-26	7	225		17	76	0	30.47
12-27	7	135		25	84	.02	30.12
12-28	8	135		34	96	0	29.98
⊛ 12-29	2	296	37.97	41	98	0	29.83
12-30	10	225		41	98	0	30.14
12-31	9	225		39	98	0	30.19

⊛ - DENOTES SAMPLING DATE

Conditions should be logged daily irregardless of whether the monitoring stations are operating. Completed sheets should be returned to the Environmental Coordinator.

3.2 Sampler Quarterly Averages

The simple quarterly average for each set of data from a particular sampler are calculated in the following tables, 3.1 through 3.4.

TABLE 3.1 - Sampler Location N3

DATE	FILTER NO.		LEAD ug/m3	TSP ug/m3
10/6/96	5953070		3.02	129.92
10/12/96	5953063		3.45	129.33
10/18/96	5953060		0.16	23.60
10/24/96	5953053		3.85	103.63
10/30/96	5953048		0.03	34.54
11/5/96	5953039		0.00	35.57
11/11/96	5953026		0.00	19.08
11/17/96	5953007		2.35	38.67
11/20/96	5072162		0.55	65.98
11/23/96	5072164		0.81	47.04
11/26/96	5072156		0.00	34.93
11/29/96	5953003		4.81	179.41
12/5/96	5072176		0.00	16.39
12/11/96	5072198		0.07	26.29
12/17/96	5072211		0.41	46.09
12/19/96	5953020		0.01	26.34
12/23/96	5072207		1.15	23.20
12/29/96	(POWER FAILURE)			
		AVERAGES:	1.22	57.65

TABLE 3.2 - Sampler Location OS

DATE	FILTER NO.		LEAD ug/m3	TSP ug/m3
10/6/96	5953071		0.01	35.12
10/12/96	5953064		0.10	39.15
10/18/96	5953061		0.04	16.64
10/24/96	5953056		0.00	29.18
10/30/96	5953049		0.35	29.36
11/5/96	5953037		6.25	60.83
11/11/96	5953022		1.35	35.53
11/17/96	5953008		0.02	8.48
11/20/96	5072160		0.30	39.18
11/23/96	5072165		0.01	18.04
11/26/96	5072154		5.51	63.92
11/29/96	5953004		0.00	11.86
12/5/96	(POWER FAILURE)			
12/11/96	5072199		0.30	31.03
12/17/96	5072210		0.49	22.55
12/19/96	(OPERATOR ERROR)			
12/23/96	5072205		3.00	80.13
12/29/96	5953044		0.01	26.96
		AVERAGES:	1.11	34.25

TABLE 3.3 - Sampler Location O3

DATE	FILTER NO.		LEAD ug/m3	TSP ug/m3
10/6/96	5953072		0.81	71.46
10/12/96	5953065		0.06	39.25
10/18/96	5953062		7.53	58.37
10/24/96	5953055		0.00	23.65
10/30/96	5953050		2.77	58.12
11/5/96	5953035		0.03	33.00
11/11/96	5953028		0.32	27.63
11/17/96	5953009		3.01	27.84
11/20/96	5072161		0.00	28.68
11/23/96	5072168		0.01	32.48
11/26/96	5072153		0.15	35.97
11/29/96	5953002		0.21	16.28
12/5/96	5072177		3.41	82.02
12/11/96	5072200		1.89	75.27
12/17/96	5072209		1.29	73.21
12/19/96	5953016		0.01	20.11
12/23/96	5072206		0.01	15.90
12/29/96	5953045		0.16	25.26
		AVERAGES:	1.20	41.36

TABLE 3.4 - Filter Blank

DATE	FILTER NO.	LEAD ug/filter	TSP ug/filter
10/6/96	5953074	102	-5000
10/12/96	5953067	41	-6000
10/18/96	5953058	317	-3000
10/24/96	5953057	6	-3000
10/30/96	5953051	6	-8200
11/5/96	5953038	6	-3000
11/11/96	5953025	6	-3000
11/17/96	5953010	35	-5000
11/20/96	5072159	6	-1000
11/23/96	5072167	6	-3000
11/26/96	5072152	6	-2000
11/29/96	(NO FILTER USED)		
12/5/96	5072179	6	-2000
12/11/96	5072196	136	-2000
12/17/96	5072208	133	-3000
12/19/96	5953024	11	-6000
12/23/96	(NO FILTER USED)		
12/29/96	5953042	13	-5000
	AVERAGES:	52.25	-3762.50

*TSP - Total Suspended Particulate

3.3 Instrument Precision Calculation

The estimates of precision for ambient air quality measurements from the TSP method are calculated from results obtained from the collocation of two samplers at one sampling site, N3. The calculated precision from this one sampling site is considered indicative of the precision at all sampling sites for the TSP method.

Using the paired measurements for the official sampler, labeled "N3" and the secondary sampler, labeled "N3-QC," the precision was calculated from the following equations. These numbers are reported on the Data Assessment Report shown in Figure 3-2. Actual calculations are attached in Appendix E.

Percentage Difference, d_i

$$d_i = \frac{Y_i - X_i}{X_i} \times 100\%$$

where: Y_i = the concentration TSP measured by the secondary sampler; and
X_i = the concentration TSP measured by the official sampler.

Average Percentage Difference, d_j

$$d_j = \frac{\Sigma d_i}{n}$$

where: n = the number of comparisons.

Standard Deviation, S_j

$$S_j = \sqrt{\frac{\Sigma(d_i)^2 - n(d_j)^2}{n - 1}}$$

96% Probability Limits

$$\text{Upper Limit} = d_j + \frac{1.96(S_j)}{2}$$

$$\text{Lower Limit} = d_j - \frac{1.96(S_j)}{2}$$

FIGURE 3-2
DATA ASSESSMENT REPORT

Chemetco

FIRST IN PEOPLE – QUALITY – SERVICE

P.O. BOX 67 • ROUTE 3 & OLDENBERG • HARTFORD, IL 62048

DATA ASSESSMENT REPORT

Date: FEBRUARY 3, 1997

Auditor: GREG COTTER

Collocated Samplers

d_i = -28.05

d_j = -2.00 %

S_j = 23.78 %

Upper Limit = 21.30 %

Lower Limit = -25.30

Flow Rate Percentage Differences:

Sampler #1: (SEE SECT 3.4) **Sampler #2:** (SEE SECT 3.4)

Sampler #3: (SEE SECT 3.4) **Sampler #3':** (SEE SECT 3.4)

3.4 Single Instrument Accuracy

Estimates of accuracy for ambient air quality measurements from the TSP method are calculated from the results of independent audits. Once each sampling quarter, the flow rate of each high-volume sampler is audited.

Jim Henry with the IEPA Collinsville Field Office audited the sampler motors on December 10, 1996. The results for the motor audits were provided to Chemetco and are located in Appendix D of this report.

TABLE 3.5 - Annual Total Suspended Particulate Average and Mean

DATE	N3	OS	O3
1/4/96	125.41	28.56	32.07
1/10/96	25.6	27.06	24.55
1/16/96	142.06	45.59	39.58
1/22/96	155.19	36.58	19.54
1/28/96	45.88	49.1	34.55
2/3/96	86.1	35.61	133.26
2/9/96	29.66	17.04	78.48
2/15/96	60.91	44.02	
2/21/96	45.55	42	41.87
2/27/96		21.49	74.56
3/2/96	61.56		
3/4/96	274.8	31.57	115.49
3/10/96	70.54	23.55	34.11
3/16/96	74.75	40.56	
3/22/96	56.43	28.19	69.1
3/28/96	34.52	37.08	36.01
4/3/96			
4/9/96	107.23	54.7	66.89
4/15/96	37.65	16.6	214.95
4/21/96	30.15	27.2	78.66
4/27/96		39.07	38.08
5/3/96	65.84	42.54	42.09
5/9/96	159.82	76.67	83.67
5/15/96	144.92	41.55	49.1
5/21/96	44.34	57.12	80.17
5/27/96	36.47	32.07	33.57
6/2/96	30.93	63.81	41.59
6/8/96	17.3	95.14	17.54
6/14/96	76.82	62.38	71.64
6/20/96	69.08	71.23	77.49
6/26/96	187.66	46.1	47.38
7/2/96	43.27	7.01	101.71
7/8/96	51.61	39.07	55.62
7/14/96	56.83	33.57	23.86
7/20/96	53.62	29.56	28.94
7/26/96	48.98	44.09	37.58
8/1/96	66.73	41.72	64.81
8/7/96	92.8	53.42	64.81
8/13/96	83.44	62.13	77.16
8/19/96	230.44	44.26	48.73
8/25/96	54.44	27.84	31.47
8/31/96	57.35	54.44	47.72
9/6/96	75.6	93.19	
9/12/96	45.79	87.68	
9/18/96	36.49	22.39	19.37
9/24/96	35.23	82.11	84.04
9/30/96	76.12	22.75	15.98
10/6/96	129.92	35.12	71.46
10/12/96	129.33	39.15	39.25
10/18/96	23.6	16.64	58.37
10/24/96	103.63	29.18	23.65
10/30/96	34.54	29.36	58.12
11/5/96	35.57	60.83	33
11/11/96	19.08	35.53	27.63
11/17/96	38.67	8.48	27.84
11/20/96	65.98	39.18	28.68
11/23/96	47.04	18.04	32.48
11/26/96	34.93	63.92	35.97
11/29/96	179.41	11.86	16.28
12/5/96	16.39		82.02
12/11/96	26.29	31.03	75.27
12/17/96	46.09	22.55	73.21
12/19/96	26.34		20.11
12/23/96	23.2	80.13	15.9
12/29/96		26.96	25.26
AVERAGE	71.90033	41.4323	52.92017
MEAN	57.57204	36.3629	44.8012

3.5 Documentation

For each of the sampling episodes, data packages have been assembled to facilitate the retrieval of necessary data to perform and check calculations, assumptions and determinations and to generate accurate reports. These packages are maintained in a central project file at Chemetco.

Data forms are attached with backup and confirmatory information in Appendices A through D. They include:

- Filter Conditioning and TSP Calculation Logsheet;
- calculation pages;
- laboratory Analyses Report Sheet; and
- Laboratory Audit Results.

APPENDIX A

CALCULATION COVER SHEET

Company Name: CHEMETCO, INC.

Project Name: AMBIENT AIR MONITORING

Project Number: 96 QTR 4

Purpose: SAMPLER AVERAGES

Total Number of Pages: 6 (including this one)

Date: FEBRUARY 3, 1997

Originator's Signature: [signature]

1996 4TH QUARTER AVERAGE CALCULATION

LOCATION: N3-QC

DATE	FILTER NO.		TIME FINISH	TIME START	ELAPSED TIME	CFM	CUBIC METERS	LEAD ug/filtr	TSP ug/filtr	LEAD ug/m3	TSP ug/m3	WIND DIRECTION	WIND DEV.	WIND SPEED	PRECIPITATIO
10/6/96	5953069		5487.1	4047.1	1440	47.7	2061	1062	109000	0.52	52.90	120	18.73	2	0
10/12/96	5953068		6928	5488	1440	48.3	2087	8394	309000	4.02	148.09	138	18.71	7	0
10/18/96	(EQUIP. FAILURE)				0		0					239	43.02	4	0.81
10/24/96	5953052		10533.7	9092.6	1441.1	48.9	2114	5865	199000	2.77	94.13	144	35.39	4	0.12
10/30/96	5953046		11975.6	10535.6	1440	48.9	2112	272	76000	0.13	35.98	270	37.05	8	0.06
11/5/96	(MOTOR FAILURE)				0		0					137	17.03	6	0.05
11/11/96	(MOTOR FAILURE)				0		0					307	25	2	0
11/17/96	5953006		14861.8	13421.8	1440	45.5	1966	13339	137000	6.79	69.70	219	68.67	7	0.18
11/20/96	5072157		16303.7	14863.7	1440	44.4	1918	1148	130000	0.60	67.78	66	54.08	4	0
11/23/96	5072163		17745.2	16305.2	1440	45	1944	1528	89000	0.79	45.78	120	22.19	6	0
11/26/96	5072155		19186.2	17746.2	1440	45	1944	12	72000	0.01	37.04	301	18.75	5	1.06
11/29/96	5953005		20626.7	19186.7	1440	46.1	1992	9331	351000	4.69	176.25	116	16.87	7	0
12/5/96	5072174		22068.2	20628.2	1440	47.2	2039	639	33000	0.31	16.18	166	50.14	7	0
12/11/96	5072197		22382.2	23822.2	1440	45.5	1966	213	51000	0.11	25.95	221	76	6	0
12/17/96	5072212		25266.5	23826.5	1440	45.5	1966	1232	88000	0.63	44.77	281	27.66	6	0
12/19/96	5953019		26707.6	25267.6	1440	45.5	1966	190	60000	0.10	30.53	237	29.65	7	0.01
12/23/96	5072203		28157.4	26717.4	1440	47.7	2061	3043	59000	1.48	28.63	174	48.28	11	0
12/29/96	(POWER FAILURE)				0		0					296	37.97	2	0

1996 4TH QUARTER AVERAGE CALCULATION

LOCATION: N3

DATE	FILTER NO.		TIME FINISH	TIME START	ELAPSED TIME	CFM	CUBIC METERS	LEAD ug/filtr	TSP ug/filtr	LEAD ug/m3	TSP ug/m3	WIND DIRECTION	WIND DEV.	WIND SPEED	PRECIPITATIO
10/6/96	5953070		4100.4	2660.4	1440	44.9	1940	5852	252000	3.02	129.92	120	18.73	2	0
10/12/96	5953063		5542.7	4102.7	1440	46	1987	6852	257000	3.45	129.33	138	18.71	7	0
10/18/96	5953060		6992.6	5545.3	1447.3	44.9	1950	317	46000	0.16	23.60	239	43.02	4	0.81
10/24/96	5953053		8436.5	6996.5	1440	44.9	1940	7471	201000	3.85	103.63	144	35.39	4	0.12
10/30/96	5953048		9880.2	8440.2	1440	44.9	1940	53	67000	0.03	34.54	270	37.05	8	0.06
11/5/96	5953039		11323.2	9883.2	1440	44.9	1940	6	69000	0.00	35.57	137	17.03	6	0.05
11/11/96	5953026		12766.6	11326.6	1440	44.9	1940	6	37000	0.00	19.08	307	25	2	0
11/17/96	5953007		14209.1	12769.1	1440	44.9	1940	4560	75000	2.35	38.67	219	68.67	7	0.18
11/20/96	5072162		15650	14210	1440	44.9	1940	1076	128000	0.55	65.98	66	54.08	4	0
11/23/96	5072164		17091.1	15651.1	1440	43.8	1892	1528	89000	0.81	47.04	120	22.19	6	0
11/26/96	5072156		18532.3	17092.3	1440	44.4	1918	6	67000	0.00	34.93	301	18.75	5	1.06
11/29/96	5953003		19972.9	18532.9	1440	44.9	1940	9331	348000	4.81	179.41	116	16.87	7	0
12/5/96	5072176		21414	19974	1440	46.6	2013	6	33000	0.00	16.39	166	50.14	7	0
12/11/96	5072198		22271.5	23711.5	1440	44.9	1940	136	51000	0.07	26.29	221	76	6	0
12/17/96	5072211		25178.3	23738.3	1440	45.7	1974	809	91000	0.41	46.09	281	27.66	6	0
12/19/96	5953020		26618.7	25178.7	1440	45.7	1974	11	52000	0.01	26.34	237	29.65	7	0.01
12/23/96	5072207		28067.1	26627.1	1440	46.9	2026	2330	47000	1.15	23.20	174	48.28	11	0
12/29/96	(POWER FAILURE)											296	37.97	2	0

1996 4TH QUARTER AVERAGE CALCULATION

LOCATION: OS

DATE	FILTER NO.		TIME FINISH	TIME START	ELAPSED TIME	CFM	CUBIC METERS	LEAD ug/filtr	TSP ug/filtr	LEAD ug/m3	TSP ug/m3	WIND DIRECTION	WIND DEV.	WIND SPEED	PRECIPITATIO
10/6/96	5953071		1440	0	1440	46.8	2022	19	71000	0.01	35.12	120	18.73	2	0
10/12/96	5953064		1440	0	1440	47.3	2043	195	80000	0.10	39.15	138	18.71	7	0
10/18/96	5953061		1440	0	1440	47.3	2043	87	34000	0.04	16.64	239	43.02	4	0.81
10/24/96	5953056		1440	0	1440	46.8	2022	6	59000	0.00	29.18	144	35.39	4	0.12
10/30/96	5953049		1440	0	1440	47.3	2043	708	60000	0.35	29.36	270	37.05	8	0.06
11/5/96	5953037		1440	0	1440	44.9	1940	12130	118000	6.25	60.83	137	17.03	6	0.05
11/11/96	5953022		1440	0	1440	44.3	1914	2575	68000	1.35	35.53	307	25	2	0
11/17/96	5953008		1440	0	1440	43.7	1888	35	16000	0.02	8.48	219	68.67	7	0.18
11/20/96	5072160		1440	0	1440	44.9	1940	578	76000	0.30	39.18	66	54.08	4	0
11/23/96	5072165		1440	0	1440	44.9	1940	20	35000	0.01	18.04	120	22.19	6	0
11/26/96	5072154		1440	0	1440	44.9	1940	10686	124000	5.51	63.92	301	18.75	5	1.06
11/29/96	5953004		1440	0	1440	44.9	1940	6	23000	0.00	11.86	116	16.87	7	0
12/5/96	(POWER FAILURE)				0		0					166	50.14	7	0
12/11/96	5072199		1440	0	1440	45.5	1966	598	61000	0.30	31.03	221	76	6	0
12/17/96	5072210		1440	0	1440	46.2	1996	978	45000	0.49	22.55	281	27.66	6	0
12/19/96	)PERATOR ERROR)											237	29.65	7	0.01
12/23/96	5072205		1440	0	1440	46.8	2022	6075	162000	3.00	80.13	174	48.28	11	0
12/29/96	5953044		1440	0	1440	45.5	1966	13	53000	0.01	26.96	296	37.97	2	0

1996 4TH QUARTER AVERAGE CALCULATION

LOCATION: O3

DATE	FILTER NO.		TIME FINISH	TIME START	ELAPSED TIME	CFM	CUBIC METERS	LEAD ug/fltr	TSP ug/fltr	LEAD ug/m3	TSP ug/m3	WIND DIRECTION	WIND DEV.	WIND SPEED	PRECIPITATIO
10/6/96	5953072		75411.2	73971.2	1440	46	1987	1602	142000	0.81	71.46	120	18.73	2	0
10/12/96	5953065		76853	75413	1440	46	1987	118	78000	0.06	39.25	136	18.71	7	0
10/18/96	5953062		78296.4	76856.4	1440	46	1987	14962	116000	7.53	58.37	239	43.02	4	0.81
10/24/96	5953055		79738.3	78298.3	1440	46	1987	6	47000	0.00	23.65	144	35.39	4	0.12
10/30/96	5953050		81180.7	79740.7	1440	46.6	2013	5585	117000	2.77	58.12	270	37.05	8	0.06
11/5/96	5953035		82623.7	81183.7	1440	44.9	1940	55	64000	0.03	33.00	137	17.03	6	0.05
11/11/96	5953028		84065.3	82625.3	1440	44.4	1918	609	53000	0.32	27.63	307	25	2	0
11/17/96	5953009		85507.1	84067.1	1440	44.9	1940	5831	54000	3.01	27.84	219	68.67	7	0.18
11/20/96	5072161		86949.6	85509.6	1440	44.4	1918	9	55000	0.00	28.68	66	54.08	4	0
11/23/96	5072166		88390.1	86950.1	1440	44.9	1940	20	63000	0.01	32.48	120	22.19	6	0
11/26/96	5072153		89831.1	88391.1	1440	44.4	1918	283	69000	0.15	35.97	301	18.75	5	1.06
11/29/96	5953002		91271.5	89831.5	1440	45.5	1966	419	32000	0.21	16.28	116	16.87	7	0
12/5/96	5072177		92715.6	91275.6	1440	46	1987	6781	163000	3.41	82.02	186	50.14	7	0
12/11/96	5072200		94158.4	92718.4	1440	44.9	1940	3675	146000	1.89	75.27	221	76	6	0
12/17/96	5072209		95604.7	94164.7	1440	44.9	1940	2500	142000	1.29	73.21	281	27.66	6	0
12/19/96	5953016		97045.4	95605.4	1440	44.9	1940	11	39000	0.01	20.11	237	29.65	7	0.01
12/23/96	5072206		98504.7	97064.7	1440	46.6	2013	11	32000	0.01	15.90	174	48.28	11	0
12/29/96	5953045		99945.8	98505.8	1440	44.9	1940	313	49000	0.16	25.26	296	37.97	2	0

1996 4TH QUARTER AVERAGE CALCULATION

LOCATION: FB (Filter Blank)

DATE	FILTER NO.		LEAD ug/filter		TSP ug/filter		WIND DIRECTION	WIND DEV.	WIND SPEED	PRECIPITATION	
10/6/96	5953074		102		-5000		120	18.73	2	0	
10/12/96	5953067		41		-6000		138	18.71	7	0	
10/18/96	5953058		317		-3000		239	43.02	4	0.81	
10/24/96	5953057		6		-3000		144	35.39	4	0.12	
10/30/96	5953051		6		-8200		270	37.05	8	0.06	
11/5/96	5953038		6		-3000		137	17.03	6	0.05	
11/11/96	5953025		6		-3000		307	25	2	0	
11/17/96	5953010		35		-5000		219	68.67	7	0.18	
11/20/96	5072159		6		-1000		66	54.08	4	0	
11/23/96	5072167		6		-3000		120	22.19	6	0	
11/26/96	5072152		6		-2000		301	18.75	5	1.06	
11/29/96	(NO FILTER USED)						116	16.87	7	0	
12/5/96	5072179		6		-2000		166	50.14	7	0	
12/11/96	5072196		136		-2000		221	76	6	0	
12/17/96	5072208		133		-3000		281	27.66	6	0	
12/19/96	5953024		11		-6000		237	29.65	7	0.01	
12/23/96	(NO FILTER USED)						174	48.28	11	0	
12/29/96	5953042		13		-5000		296	37.97	2	0	

CALCULATION COVER SHEET

Company Name: CHEMETCO, INC.

Project Name: AMBIENT AIR MONITORING

Project Number: 96 QTR 4

Purpose: SAMPLER PRECISION CALCULATION

Total Number of Pages: 2 (including this one)

Date: FEBRUARY 3, 1997

Originator's Signature: [signature]

SAMPLER PRECISION CALCULATION (PARTICULATE)

SAMPLING DATE	DUPLICATE SAMPLER	OFFICIAL SAMPLER	DIFFERENCE	DIFFERENCE (SQUARED)
10-6-96	52.90	129.92	-77.02	5932.08
10-12-96	148.09	129.33	18.76	351.94
10-18-96	–	23.60	–	–
10-24-96	94.13	103.63	-9.50	90.25
10-30-96	35.98	34.54	1.44	2.07
11-5-96	–	35.57	–	–
11-11-96	–	19.08	–	–
11-17-96	69.70	38.67	31.03	962.86
11-20-96	67.78	65.98	1.80	3.24
11-23-96	45.78	47.04	-1.26	1.59
11-26-96	37.04	34.93	2.11	4.45
11-29-96	176.25	179.41	-3.16	9.98
12-5-96	16.18	16.39	-.21	.04
12-11-96	25.95	26.29	-.34	.11
12-17-96	44.77	46.09	-1.32	1.74
12-19-96	30.53	26.34	4.19	17.56
12-23-96	28.63	23.20	5.43	29.48
12-29-96	–	–	–	–
			$\Sigma d_i = -28.05$	$\Sigma d_i^2 = 7407.39$

$n = 14$

$$d_j = \frac{\Sigma d_i}{n} = \frac{-28.05}{14} = -2.00\ \%$$

$$S_j = \sqrt{\frac{\Sigma d_i^2 - n(d_j)^2}{n-1}} = \sqrt{\frac{7407.39 - 14(-2)^2}{14-1}} = 23.78\ \%$$

$$\text{UPPER LIMIT} = d_j + \frac{1.96(S_j)}{2} = -2.00 + 23.30 = 21.30\ \%$$

$$\text{LOWER LIMIT} = d_j - \frac{1.96(S_j)}{2} = -2.00 - 23.30 = -25.30\ \%$$

Official Average Particulate: 57.65 $\mu g/m^3$

Range: 43.07 to 69.93 $\mu g/m^3$

APPENDIX B

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 11-Oct-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5953069	N3-QC	1062	109
5953070	N3	5852	252
5953071	OS	19	71
5953072	O3	1602	142
5953074	FB	102	-5

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 16-Oct-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5953063	N3	6852	257
5953064	OS	195	80
5953065	O3	118	78
5953067	FB	41	-6
5953068	N3-QC	8394	309

Results released by: Jane A. Burroughs

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 25-Oct-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5953058	FB	317	-3
5953060	N3	317	46
5953061	OS	87	34
5953062	O3	14962	116

Results released by: Jane A. Burrough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 29-Oct-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5953052	N3-QC	5865	199
5953053	N3	7471	201
5953055	O3	<6	47
5953056	OS	<6	59
5953057	FB	<6	-3

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 5-Nov-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5953046	N3-QC	272	76
5953048	N3	53	67
5953049	OS	708	60
5953050	O3	5585	117
5953051	FB	<6	-8.2

Results released by: Jane A. Burrough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 11-Nov-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5953035	O3	55	64
5953037	OS	12130	118
5953038	FB	< 6	-3
5953039	N3	< 6	69

Results released by: Jane A. Burrough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 14-Nov-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5953022	OS	2575	68
5953025	FB	< 6	-3
5953026	N3	< 6	37
5953028	O3	609	53

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter Date: 20-Nov-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5953006	N3-QC	13339	137
5953007	N3	4560	75
5953008	OS	35	16
5953009	O3	5831	54
5953010	FB	35	-5

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 25-Nov-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5072157	N3-QC	1148	130
5072159	FB	< 6	-1
5072160	OS	578	76
5072161	O3	9	55
5072162	N3	1076	128

Results released by: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 26-Nov-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5072163	N3-QC	1528	89
5072164	N3	1528	89
5072165	OS	20	35
5072166	O3	20	63
5072167	FB	< 6	-3

Results released by: Jane A. Burrow

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 4-Dec-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5953002	O3	419	32
5953003	N3	9331	348
5953004	OS	< 6	23
5953005	N3-QC	9331	351

Analyst: John A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 4-Dec-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5072152	FB	< 6	-2
5072153	O3	283	69
5072154	OS	10686	124
5072155	N3-QC	12	72
5072156	N3	< 6	67

Analyst: Jane A. Burough

Title: Laboratory Manager

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St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 10-Dec-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5072174	N3-QC	639	33
5072176	N3	< 6	33
5072177	O3	6781	163
5072179	FB	< 6	-2

Analyst: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 17-Dec-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5072196	FB	136	-2
5072197	N3-QC	213	51
5072198	N3	136	51
5072199	OS	598	61
5072200	O3	3675	146

Analyst: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 20-Dec-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5072208	FB	133	-3
5072209	O3	2500	142
5072210	OS	978	45
5072211	N3	809	91
5072212	N3-QC	1232	88

Analyst: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 30-Dec-96

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5072203	N3-QC	3043	59
5072205	OS	6075	162
5072206	O3	11	32
5072207	N3	2330	47
5953016	O3	11	39
5953019	N3-QC	190	60
5953020	N3	11	52
5953024	FB	11	-6

Analyst: Jane A. Burough

Title: Laboratory Manager

MIDCO INDUSTRIES
700 South Spring
St. Louis, Missouri 63110
314-776-5600
800-344-3134
Fax: 314-776-5529

Chemetco, Inc.
Rt. 3 at Chemetco Lane
Hartford, IL 62048

ATTN: Greg Cotter

Date: 8-Jan-97

Sample type: Hi-Vol Air Monitoring Program

Sample Identification: Listed below

Filter ID	Location	Pb, ug/filter	TSP, mg/filter
5953042	FB	13	-5
5953044	OS	13	53
5953045	O3	313	49

Analyst: Jane A. Burough

Title: Laboratory Manager

APPENDIX C

U New Filters!

CHEMTECO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning Date In	Date Out	$W_{initial}$ (mg)	Post-Sampling Conditioning Date In	Date Out	W_{final} (mg)	W_{net} (mg)	W_{net} (mg)
5953084	9-11-96	9-16-96	4413.2mg	10-1-96	10-2-96	4559.0mg	145.8	
3	9-11-96	9-16-96	4343.0mg					
2	9-11-96	9-16-96	4386.5mg	10-1-96	10-2-96	4417.8mg	31.3	
1	9-11-96	9-16-96	4491.3mg	10-1-96	10-2-96	4537.6mg	46.3	
80	9-11-96	9-16-96	4397.8mg	10-1-96	10-2-96	4395.1mg	-2.7	
79	9-19-96	9-20-96	4350.3mg	9-30-96	10-1-96	4431.9mg	81.6	
78	9-19-96	9-20-96	4370.9mg	9-30-96	10-1-96	4440.8mg	69.9	
77	9-19-96	9-20-96	4377.6mg	9-30-96	10-1-96	4543.8mg	166.2	
76	9-19-96	9-20-96	4363.9mg	9-30-96	10-1-96	4534.4mg	170.5	
75	9-19-96	9-20-96	4376.9mg	9-30-96	10-1-96	4372.4mg	-4.5	
74	9-25-96	9-27-96	4400.0mg	10-9-96	10-10-96	4395.1mg	-4.9	
—	—	—						
72	9-25-96	9-27-96	4365.1mg	10-9-96	10-10-96	4507.1mg	142.0	
71	9-25-96	9-27-96	4438.2mg	10-9-96	10-10-96	4509.2mg	70.9	
70	9-25-96	9-27-96	4427.2mg	10-9-96	10-10-96	4679.2mg	252.0	
69	9-25-96	9-27-96	4368.6mg	10-9-96	10-10-96	4477.1mg	108.5	

CERMICO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning Date In	Date Out	W_{pre} (mg)	Post-Sampling Conditioning Date In	Date Out	W_{post} (mg)	W_{net} (mg)	W_{net} (mg)
5953068	10-1-96	10-2-96	4415.1	10-15-96	10-16-96	4723.9	308.8	
67	10-1-96	10-2-96	4438.3	10-15-96	10-16-96	4432.8	-5.5	
66								
65	10-1-96	10-2-96	4428.5	10-15-96	10-16-96	4506.4	78.1	
64	10-1-96	10-2-96	4404.6	10-15-96	10-16-96	4484.8	80.2	
63	10-1-96	10-2-96	4437.6mg	10-15-96	10-16-96	4694.7	257.1	
5953062	10-3-96	10-4-96	4441.2mg	10-22-96	10-23-96	4557.1	115.9	
61	10-3-96	10-4-96	4400.7mg	10-22-96	10-23-96	4434.5	33.8	
60	10-3-96	10-4-96	4444.7mg	10-22-96	10-23-96	4490.9	46.2	
59	10-3-96	10-4-96	4455.2mg					
58	10-3-96	10-4-96	4441.4mg	10-22-96	10-23-96	4438.2	-3.2	
57	10-16-96	10-18-96	4417.0	10-28-96	10-29-96	4414.4	-2.6	
56	10-16-96	10-18-96	4458.0	10-28-96	10-29-96	4517.2	59.2	
55	10-16-96	10-18-96	4461.5	10-28-96	10-29-96	4508.7	47.2	
53	10-16-96	10-18-96	4469.4	10-28-96	10-29-96	4670.2	200.8	
52	10-16-96	10-18-96	4477.2	10-28-96	10-29-96	4675.8	198.6	

CHEMTECO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning Date In	Date Out	W_{tare} (mg)	Post-Sampling Conditioning Date In	Date Out	W_{final} (mg)	W_{net} (mg)	W_{net} (ug)
595 3051	10-28-96	10-29-96	4470.5	11-1-96	11-4-96	4462.3	-8.2	
50	10-28-96	10-29-96	4444.0	11-1-96	11-4-96	4561.0	117.0	
49	10-28-96	10-29-96	4443.5	11-1-96	11-4-96	4503.6	60.1	
48	10-28-96	10-29-96	4463.0	11-1-96	11-4-96	4530.4	67.4	
46	10-28-96	10-29-96	4456.5	11-1-96	11-4-96	4532.3	75.8	
45	10-29-96	10-30-96	4448.9	1-6-97	1-7-97	4497.4	48.5	
44	10-29-96	10-30-96	4406.3	1-6-97	1-7-97	4459.3	53.0	
43	10-29-96	10-30-96	4432.6					
42	10-29-96	10-30-96	4427.4	1-6-97	1-7-97	4422.2	-5.2	
41	10-29-96	10-30-96	4924.1					
39	10-30-96	10-31-96	4466.9	11-8-96	11-11-96	4538.1	69.2	
38	10-30-96	10-31-96	4395.4	11-8-96	11-11-96	4392.5	-2.9	
37	10-30-96	10-31-96	4433.2	11-8-96	11-11-96	4550.8	117.6	
36	10-30-96	10-31-96	4449.7					
35	10-30-96	10-31-96	4438.0	11-8-96	11-11-96	4501.6	63.6	

CHEMTCO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

595 Filter Number	Pre-Sampling Conditioning Date In	Date Out	$W_{i...}$ (mg)	Post-Sampling Conditioning Date In	Date Out	$W_{f...}$ (mg)	$W_{...}$ (mg)	$W_{...}$ (mg)
595 - 3034	10-31-96	11-1-96	4440.6	1-6-97	1-7-97	4435.3	-5.3	
				1-6-97				
32	10-31-96	11-1-96	4468.8	1-6-97	1-7-97	4515.3	46.5	
31	10-31-96	11-1-96	4427.7	1-6-97	1-7-97	4518.0	90.3	
30	10-31-96	11-1-96	4438.4	1-6-97	1-7-97	4580.0	141.6	
29	10-31-96	11-1-96	4439.7	1-6-97	1-7-97	4701.0	261.3	
28	11-4-96	11-5-96	4445.0	11-12-96	11-13-96	4498.0	53.0	
26	11-4-96	11-5-96	4444.7	11-12-96	11-13-96	4481.6	36.9	
25	11-4-96	11-5-96	4425.9	11-12-96	11-13-96	4423.2	-2.7	
24	11-5-96	11-8-96	4425.9	12-26-96	12-26-96	4419.6	-6.3	
23	11-4-96	11-5-96	4457.9					
22	11-4-96	11-5-96	4494.9	11-12-96	11-13-96	4563.2	68.3	
20	11-5-96	11-8-96	4446.3	12-26-96	12-27-96	4498.0	51.7	
19	11-5-96	11-8-96	4475.9	12-26-96	12-27-96	4535.8	59.9	

CHEMTCO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning Date In	Date Out	W_{tare} (mg)	Post-Sampling Conditioning Date In	Date Out	W_{final} (mg)	W_{net} (mg)	W_{net} (ug)
595. 3018	11-5-96	11-8-96	4463.8					
3017	11-5-96	11-8-96	4412.1					
3016	11-11-96	11-12-96	4383.5	12-26-96	12-27-96	4422.1	38.6	
15	11-11-96	11-12-96	4345.0					
14	11-11-96	11-12-96	4388.6					
12	11-11-96	11-12-96	4477.7					
11	11-11-96	11-12-96	4477.3					
10	11-13-96	11-14-96	4457.4	11-18-96	11-19-96	4452.5	-4.9	
9	11-13-96	11-14-96	4439.7	11-18-96	11-19-96	4493.9	54.2	
8	11-13-96	11-14-96	4496.9	11-18-96	11-19-96	4512.4	15.5	
7	11-13-96	11-14-96	4502.3	11-18-96	11-19-96	4577.6	75.3	
6	11-13-96	11-14-96	4464.3	11-18-96	11-19-96	4601.1	136.8	
5	11-14-96	11-14-96	4489.3	12-2-96	12-3-96	4840.4	351.1	
4	11-14-96	11-14-96	4511.4	12-2-96	12-3-96	4534.8	23.4	
3	11-14-96	11-14-96	4475.4	12-2-96	12-3-96	4823.3	347.9	

CHEMTECO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning Date In	Date Out	$W_{i,n}$ (mg)	Post-Sampling Conditioning Date In	Date Out	W_{final} (mg)	W_{net} (mg)	W_{net} (ug)
3002	11-14-96	11-15-96	4660.6	12-2-96	12-3-96	4493.0	32.4	
5072152	11-15-96	11-15-96	3629.8	12-2-96	12-3-96	3627.7	-2.1	
2153	11-15-96	11-18-96	3611.8	12-2-96	12-3-96	3680.8	69.0	
2154	11-15-96	11-18-96	3677.0	12-2-96	12-3-96	3800.8	123.8	
2155	11-15-96	11-18-96	3675.3	12-2-96	12-3-96	3747.5	72.2	
2156	11-15-96	11-18-96	3652.6	12-2-96	12-3-96	3719.3	66.7	
2157	11-18-96	11-19-96	3572.3	11-20-96	11-22-96	3702.2	129.9	
2159	11-18-96	11-19-96	3645.7	11-20-96	11-22-96	3644.7	-1.0	
2160	11-18-96	11-19-96	3695.8	11-20-96	11-22-96	3771.3	75.5	
2161	11-18-96	11-19-96	3645.2	11-20-96	11-22-96	3700.5	55.3	
2162	11-18-96	11-19-96	3690.7	11-20-96	11-22-96	3818.5	127.8	
2163	11-19-96	11-21-96	3663.5	11-25-96	11-26-96	3752.5	89.0	
2164	11-19-96	11-21-96	3588.4	11-25-96	11-26-96	3676.9	88.5	
2165	11-19-96	11-21-96	3588.8	11-25-96	11-26-96	3624.1	35.3	
2166	11-19-96	11-21-96	3594.9	11-25-96	11-26-96	3657.8	62.9	
2167	11-19-96	11-21-96	3650.1	11-25-96	11-26-96	3647.4	-2.7	

CERMETCO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning Date In	Date Out	W_{tare} (mg)	Post-Sampling Conditioning Date In	Date Out	W_{gross} (mg)	W_{net} (mg)	W_{net} (mg)
5072168	11-22-96	11-25-96	3642.7					
2170	11-22-96	11-25-96	3726.4					
2171	11-22-96	11-25-96	3698.1					
2172	11-22-96	11-25-96	3645.6					
2173	11-22-96	11-25-96	3605.2					
2174	11-26-96	11-27-96	3642.3	12-9-96	12-10-96	3675.6	33.3	
2176	11-26-96	11-27-96	3600.8	12-9-96	12-10-96	3633.3	32.5	
2177	11-26-96	11-27-96	3603.3	12-9-96	12-10-96	3766.2	162.9	
2178	11-26-96	11-27-96	3591.3					
2179	11-26-96	11-27-96	3645.2	12-9-96	12-10-96	3643.5	-1.7	
2180	11-27-96	12-2-96	3643.4					
2181	11-27-96	12-2-96	3615.2					
2182	11-27-96	12-2-96	3533.1					
2184	11-27-96	12-2-96	3607.4					
2185	11-27-96	12-2-96	3654.5					
2186	12-3-96	12-5-96	3596.1					

CHEMETCO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

Filter Number	Pre-Sampling Conditioning			Post-Sampling Conditioning				
	Date In	Date Out	W_{tare} (mg)	Date In	Date Out	W_{gross} (mg)	W_{net} (mg)	W_{net} (mg)
5072189	12-3-96	12-5-96	3641.01					
2189	12-3-96	12-5-96	3546.3					
2190	12-3-96	12-5-96	3548.0					
2191	12-3-96	12-5-96	3554.6					
2192	12-5-96	12-6-96	3614.1					
2193	12-5-96	12-6-96	3607.9					
2194	12-5-96	12-6-96	3646.9					
2196	12-5-96	12-6-96	3663.4	12-13-96	12-17-96	3661.2	-2.2	
2197	12-5-96	12-6-96	3613.3	12-13-96	12-17-96	3664.0	50.7	
2198	12-6-96	12-9-96	3573.3	12-13-96	12-17-96	3624.2	50.9	
2199	12-6-96	12-9-96	3602.9	12-13-96	12-17-96	3664.2	61.3	
2200	12-6-96	12-9-96	3606.3	12-13-96	12-17-96	3753.8	145.5	
2201	12-6-96	12-9-96	3580.5					
2202	12-6-96	12-9-96	3580.6					
2203	12-10-96	12-11-96	3569.2	12-26-96	12-27-96	3628.6	59.4	
2204	10-12-96	12-11-96	3637.2					

CHEMETCO ENVIRONMENTAL MANAGEMENT
FILTER CONDITIONING LOGSHEET

	Filter Number	Pre-Sampling Conditioning			Post-Sampling Conditioning			W_{net} (mg)	W_{net} (ug)
		Date In	Date Out	W_{tare} (mg)	Date In	Date Out	W_{gross} (mg)		
507	2205	12-10-96	12-11-96	3,6291	12-26-96	12-26-96	3790.6	161.5	
	2206	12-10-96	12-11-96	3,6005	12-26-96	12-26-96	3632.3	31.8	
	2207	12-10-96	12-11-96	3,509.8	12-26-96	12-26-96	3557.0	47.2	
	2208	12-11-96	12-12-96	3518.9	12-19-96	12-20-96	3545.5	-3.4	
	2209	12-11-96	12-12-96	3.5865	12-19-96	12-20-96	3728.5	142.0	
	2210	12-11-96	12-12-96	3637.4	12-19-96	12-20-96	3682.1	44.7	
	2211	12-11-96	12-12-96	3577.9	12-19-96	12-20-96	3669.3	91.4	
	2212	12-11-96	12-12-96	3616.2	12-19-96	12-20-96	3703.9	87.7	

APPENDIX D