Combined Air and Hazardous Waste Permit Renewal

Volume 1

3M Company

Cottage Grove Center

Cottage Grove, Minnesota

Air Quality Permit No. 23-AI-89-0-6

Hazardous Waste ID No. MND006172969

3M

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Combined Air and Hazardous Waste Permit Renewal

3M Cottage Grove Center

3M

3M Environmental Engineering and Pollution Control

PO Box 33331
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September 24, 1993

Subject: 3M Corporate Incinerator; MPCA RCRA Part B, Combined Air Emission and Hazardous Waste Treatment and Storage Facility Permit #23-AI-89-0-6, and USEPA Federal Permit #5H-12, Renewal Application: EPA ID; MND006172969

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St. Paul, MN 55155-3898

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Certified Mail

Mr. Charles Slaustas
Supervisor - RCRA Permitting Branch
U. S. Environmental Protection Agency
Region V
Waste Management Division
77 W. Jackson Blvd. HRP-8J
Chicago, Illinois 60604-3590

Dear Mr. Scherkenbach, Ms. Thorvig and Mr. Slaustas:

3M hereby submits application in four volumes for renewal of the MPCA RCRA Part B, Combined Air Emission and Hazardous Waste Treatment and Storage Facility Permit #23-AI-89-0-6 and USEPA Federal Permit #5H-12. These permits address operation of the 3M Corporate hazardous and nonhazardous waste treatment and storage (no disposal) facility at the 3M Cottage Grove Center, located in Cottage Grove, Minnesota.

This application is being filed prior to the applicable renewal date of September 29, 1993, i.e., 180 days prior to the expiration date of March 29, 1993.

In a letter to Mr. Scherkenbach and Ms. Thorvig dated August 6, 1993, 3M requested that the renewal permit remain a combined Air Emission and Hazardous Waste Treatment and Storage permit. We also request that the permit be written to satisfy the new MPCA Air Permitting Rules which address the requirements to Title V of the Clean Air Act Amendments.

3M believes that this will simplify the permit issuing process, it will improve the understanding and implementation of permit requirements at the facility as well as helping MPCA with inspection and enforcement of the permit requirements.

From follow up meetings with Fred Jenness and Peter Torkelson of your staff, it is our understanding that MPCA intends to maintain the combined permit, although it will be necessary to issue the permit in two stages, with the RCRA requirements of the permit being issued first. This is due to the timing of the USEPA approval of the new Minnesota Air Quality Rules. Further, it is our understanding that additional information will need to be submitted to MPCA after September 29, 1993, in order to satisfy the Title V permit application requirements. 3M intends to continue to work with MPCA staff to determine what information will be required and to provide that information in a timely manner.

Please note also that per request of MPCA Air Quality Division, 3M submitted the MPCA Air Quality Form A and related facility description on August 27, 1993. A more detailed facility description is provided in section A and a detailed engineering description is included in section S-4 of the enclosed permit application.

The format of the application follows an outline (attached to this letter), provided to us by Fred Jenness, titled 'Main Elements of a Part B Application' (for Sections A through R), which includes references to the applicable parts of the Minnesota Rules. In order to address two additional subjects not originally included in the outline, Waste Management Units and Federal 40 CFR 264 Subpart BB Requirements, we have added Sections 'S' and 'T' respectively.

In preparing the permit application, every effort was made to address the requirements of the Minnesota Regulations and to fully describe all of the equipment, systems and procedures in place at the facility today. In addition all required plans were reviewed and updated where appropriate. These are included in the appendices to the application.

There are a few areas where small changes to facilities or there designations are being incorporated into the application. Briefly these are:

1. Building 136 Tanker Unloading Building added to the list of Hazardous Waste Storage Facilities.

2. Building 77 New Barrel Shelter Area added to the list of Hazardous Waste Storage Facilities.

3. Request for Permit to use 3M common name designations for trailer lots (letter designation rather than numerical designation).

4. Conversion of Hazardous Waste Bulk Solids Storage and Handling Building from Waste Pile to Containment Building.

5. Implementation of Federal Subpart BB Emission Monitoring Program

6. Updated Closure Plan and Cost Estimate including transfer of the Specialty Materials Division Building #5 Storage Tanks out of the Part B Permit to Generator Tanks. (Re: Letter to Fred Jenness of July 30, 1993.)

7. Updated Waste Analysis Plan and procedures to fully incorporate the 3M Waste Stream Profile System.

Please note that this application is also meant to respond to USEPA Request for Subpart AA and BB Information, dated December 22, 1992, which requested a response by December 21, 1993. In response 3M has determined and hereby certifies that Subpart AA does not apply to this facility. As noted above, the application includes implementation of a new emissions monitoring program to satisfy the requirements of Subpart BB which does apply to this facility.

3M requests that the permit renewal address the 1990 trial burn rather than attempting to modify the existing permit during the application review process. 3M believes the 1990 trial burn results remain applicable to the operation because there has been no significant change to either the types of waste treated, the combustion process or the air pollution control equipment since that time.

Please contact George Mills at 778-5058 with any questions concerning this application or if any additional information is needed.

Sincerely,

George Mills

G. P. Mills
Environmental Engineering Specialist

Enclosure

cc: Peter Torkelson - MPCA Air Quality Division - 2 copies
Fred Jenness - MPCA Hazardous Waste Division - 2 copies
Wen Huang - USEPA Region V Waste Management - 1 copy
Cheryl Erler - Washington County Public Health - 1 copy

File: Cottage Grove Incinerator A 2

bcc w/o Attachments:

R. Bastian - Focus Environmental
R. Bringer - 21-2W-05
H. El-Gamal - 21-2W-05
D. Johnson - Cottage Grove 47-1
J. Muffat - 21-2W-05
C. Murphy - Cottage Grove 116-1
M. Nash - 220-12E-5
R. Pierson - 42-8W-09
M. Santoro - 21-2W-05
D. Schnobrich - Cottage Grove 47-1

Main Elements of the Part B Application

Section	Requirement	Minnesota Rules
A.	General Facility Description	7001.0560, Item A
B.	Waste Description	7001.0560, Item B 7045.0458, subpt.1
C.	Waste Analysis Plan	7045.0458. subpt.2
D.	Security Procedures	7045.0452, subpt.4
E.	Inspection Schedules	7045.0452, subpt.5 7045.0526, subpt.5 (containers) 7045.0528, subpt.5,7 (tanks) 7045.0534, subpt.6,8 (waste piles) 7045.0542, subpt.7 (thermal treatment)
F.	Preparedness and Prevention Plan	7045.0462 7045.0464
G.	Contingency Plan	7045.0466
H.	Preventive Procedures, Structures and Equipment	7001.0560, Items F and H
I.	Prevention of Accidental Ignition or Reaction of Ignitable, Reactive or Incompatible Waste	7045.0456
J.	Traffic Control	7001.0560, Item J
K.	Outlines for Introductory and Continuing Personnel Training	7045.0454
L.	Closure Plan	7045.0486 7045.0526, subp.9 (containers) 7045.0528, subp.9 (tanks) 7045.0534, subp.7 (waste piles) 7045.0542, subp.8 (thermal treatment)
M.	Closure Cost Estimate and Financial Assurance	7045.0502 7045.0504
N.	Corrective Action	7045.0512 7045.0514
O.	Liability Coverage	7045.0518
P.	Topographic Maps	7001.0560, Item R
Q.	Floodplain Information	7001.0560, Item S
R.	Application Fee	7046.0020
S.	Waste Management Units	
S1.	Container Storage	7001.0570 7045.0526
S2.	Tank Storage	7001.0580 7045.0528
S3.	Waste Piles	7001.0600 7045.0534
S4.	Thermal Treatment	7001.0630 7045.0542
T.	Subpart BB Requirements	270.25 (Federal Regulations) 264 Subpart BB (Federal Regulations)

Combined Air and Hazardous Waste Permit Renewal

Volume 1

3M Company

Cottage Grove Center

Cottage Grove, Minnesota

Air Quality Permit No. 23-AI-89-0-6

Hazardous Waste ID No. MND006172969

COMBINED AIR AND HAZARDOUS WASTE PERMIT RENEWAL

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of imprisonment.

Robert P. Bringer, Vice President
Environmental Engineering and Pollution Control
3M Company

Date 9/23/93

TABLE OF CONTENTS

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TABLE OF CONTENTS

TABLE OF CONTENTS (Cont.)

TABLE OF CONTENTS (Cont.)

TABLE OF CONTENTS (Cont.)

TABLE OF CONTENTS (Cont.)

APPENDICES

APPENDICES (Cont.)

APPENDICES (Cont.)

LIST OF ACRONYMS

APC	Air pollution control
ASTM	American Society for Testing Materials
BIFs	Boilers and Industrial Furnaces
Btu/hr	British thermal unit per hour
CEM	Continuous emissions monitoring (system)
CFR	Code of Federal Regulations
CPR	Cardiopulmonary resuscitation
DNI	Do Not Incinerate
DOT	U.S. Department of Transportation
DRE	Destruction and removal efficiency
dscfm	Dry standard cubic feet per minute
EE&PC	Environmental Engineering and Pollution Control
FRP	Fiberglass reinforced plastic
GC/MS	Gas chromatography/mass spectrometry
gpm	Gallons per minute
HAZWOPER	Hazardous Waste Operations and Emergency Response
HCl	Hydrogen chloride
HEPA	High-efficiency particulate air (filter)
HW	Hazardous waste
HWI	Hazardous waste incinerator
ID	Induced draft (fan)
IWTS	Incinerator Waste Tracking System
KVB	KVB, Inc.
KW	Kilowatts
lbs/hr	Pounds per hour
LDR	Land Disposal Restrictions
MPCA	Minnesota Pollution Control Association
M.R.	Minnesota Rules
MRI	Midwest Research Institute
MSDS	Material Safety Data Sheet
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration

LIST OF ACRONYMS (Continued)

P&ID	Piping and Instrumentation Diagrams
PCB	Polychlorinated biphenyl
PCDD	Polychlorinated dibenzo-p-dioxins
PCDF	Polychlorinated dibenzofurans
PHRIS	Plant Human Resources Information System
POHC	Principal organic hazardous constituent
ppm	Parts per million
QA	Quality assurance
QC	Quality control
RAC	Reference Air Concentrations
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RSD	Risk Specific Dose
SCBA	Self contained breathing apparatus
SCC	Secondary combustion chamber
SPCC	Spill Prevention Control and Counter Measure
SWMU	Solid Waste Management Units
THC	Total hydrocarbons
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage or Disposal
TSDF	Treatment, Storage or Disposal Facilities
USEPA	U. S. Environmental Protection Agency
WESP	Wet electrostatic precipitator
WSPP	Waste Stream Profile Program
WWTF	Wastewater Treatment Facility

LIST OF TABLES

Table

(All tables follow end of section)

LIST OF FIGURES

Figure

(All figures follow end of section)

SECTION A
General Facility
Description

SECTION A
GENERAL FACILITY DESCRIPTION

A.1 INTRODUCTION

Currently, eight 3M divisions operate manufacturing facilities at the 3M Cottage Grove Center, formerly 3M Chemolite Center, located in Cottage Grove, Minnesota, 15 miles south of St. Paul. The plant is owned and operated by:

3M Company
3M Center - General Offices
I-94 and McKnight Road
St. Paul, Minnesota 55144

The address of the Cottage Grove facility is:

3M Cottage Grove Center
10746 Chemolite Road
Cottage Grove, Minnesota 55016

3M Cottage Grove Center is a diversified manufacturing facility that produces a wide variety of products including specialty papers, magnetic oxide for video tapes, adhesives for 3M tapes, resins, chemicals, polymeric films and extrusions, lithographic plates and proofing systems, abrasive particles for 3M sandpaper, and hollow glass bead extenders.

Also located on the plant site are the 3M Corporate Incinerator, container storage areas, tank storage and waste piles. These facilities provide treatment and storage for 3M business related wastes which are generated by 3M's operating divisions throughout North America.

3M Cottage Grove Center is therefore classified as both a generator and a treatment/storage facility in accordance with the 1976 Resource Conservation & Recovery Act. No waste disposal is conducted on the site. The current federal and state TSDF permits cover the corporate incinerator, container storage areas, bulk tank storage and waste piles for the management of hazardous wastes.

A.2 THE 3M CORPORATE INCINERATION FACILITY

The 3M Cottage Grove Center incineration system was constructed in 1971. Subsequent additions and improvements at the facility have kept pace with technological advancements over the years, maintaining the incinerator system's state-of-the-art status and ensuring continuing conformation to government regulations. Upgrades at the 3M Corporate Incinerator in the past decade have included:

1982 - **wet electrostatic precipitator** (improves air emission control)
1983 - **waste heat recovery system** (provides ability to capture heat and produce steam for site use)
1983 - **bulk feed system** (expands incinerator handling capabilities to include soils and solids)
1984 - **metal recovery system** (removes steel from incinerator ash, reducing the amount of ash going to landfills)
1988 - **air pollution control retrofit** (upgrades scrubbing system and adds computerized process control system)
1989 - **bar coding system** (provides an incinerator-wide computerized tracking system, tracking waste from receipt through disposal)
1990 - **tanker unloading station** (makes handling of bulk liquids more efficient)
1990 - **sludge feed pump** (provides better handling and control of pourable materials)
1990 - **continuous emission monitor** (provides a continuous record of stack gases).

The 3M Corporate Incinerator handles the following types of materials:

- Containerized liquids
- Containerized sludges
- Containerized solids
- Bulk liquids
- Bulk solids
- Containerized gases.

A complete listing of hazardous waste stored and treated is found on Table B-1 in Section B of this Permit Renewal. The waste handling facility, which includes the incinerator, receives materials from on-site and off-site. These materials may be stored in tanks or container storage areas prior to treatment. Physical treatment (such as phase separation or blending) may be performed prior to feeding materials to the incinerator. The waste handling facility also serves as a staging center for the collection of wastes that are sent to commercial Treatment, Storage, or Disposal Facilities (TSDFs).

As shown in Drawing No. CHEM-888-C-142, Waste Management Areas, Appendix A, the facility consists of container storage areas in Buildings 60, 47, and 112; seven secured trailer container storage areas (lots A, B, C, D, J, K, and L); one 10,000 gallon decant tank; three 3,400 gallon blend tanks; eight 12,900 gallon bulk liquid storage tanks; a rotary kiln incinerator; an energy recovery system; air pollution control equipment; and an ash management system.

A.3 WASTE RECEIVING AND HANDLING

A.3.1 Containerized Waste Receiving, Storage, and Handling

Containerized wastes are shipped to the incineration facility in tractor trailers. Containers are primarily 55 gallon steel drums. However, wastes are also received in other types of containers, including various sizes of steel drums, totes, plastic and fiber drums, pails, boxes, and portable tanks. The types of containerized wastes that may be received include solids, pumpable sludges, organic liquids and aqueous liquids.

Containerized materials are received in Buildings 47, 60, and 112. A hand held radio frequency terminal with a bar code entry wand is used to enter information contained on the labels into the facility computer system. This data is compared to the information in the waste stream profile and on the manifest. Significant discrepancies are verified with the waste generator. A unique load ID bar code is affixed to each container to facilitate container tracking and proper disposal. Containerized materials may be either immediately staged in either Building 60 or Building 47 for treatment or disposal, or sorted in Building 47 or Building 112 and loaded back onto trailers for storage in a permitted trailer storage area. A detailed description of container storage can be found in Section S1 of this removal application.

When containerized liquids are moved from storage, they are typically transferred to the pump room in Building 47. Pumpable materials are transferred to either one of the 3,400-gallon blend tanks, a 10,000-gallon decant tank or directly into one of the 12,900 gallon storage tanks. Phase separations are performed in the decant tank. Each phase is transferred into an appropriate tank or the sludge pump.

When containerized solids are removed from storage, they are normally taken to the drum feeder staging area in Building 47.

A.3.2 Bulk Liquids Receiving, Storage, and Handling

Manifest for shipments of bulk liquid waste are received in Building 47 or 60 and waste manifest information is entered into a computerized waste inventory system. After analytical verification, bulk liquids are unloaded at a tanker unloading station. Organic liquid wastes are pumped into one of four 12,900-gallon solvent tanks (See Figure A-1) (Waste Solvent Tanks 3, 4, 5, or 6). Waste Solvent Tank 3 is an overflow tank for Solvent Tanks 4, 5, 6, 7, 9, and 10; blend tanks 1, 2, and 3; and the decant tank. Wastes from Waste Solvent Tanks can be blended by pumping materials to other tanks used for burner supply. Tanker trucks may be stored in trailer storage lots A, B, D, J, K, and L, or at docks at buildings 47, 60, 77, or 136. Refer to Appendix A.

Bulk aqueous wastes are received at the tanker unloading area and are pumped to the 12,900 gallon Aqueous Waste Tank No. 7.

A detailed description of tank storage is found in Section S2 of this application.

A.3.3 Bulk Solids Receiving, Storage, and Handling

Bulk solids handled at the facility consist primarily of soils and debris. This material is delivered by dump truck or roll-off box and unloaded inside a covered bulk solids storage building (Oakdale Building) adjacent to the incinerator feed chute. Refer to Appendix A. This area is currently managed as a waste pile and will be converted to Containment Building status as described in Section S3 of this Permit Renewal Application.

Bulk solids handling is described in detail in Section S3.2 of this application.

A.4 WASTE SHIPPING

The following waste materials may be received and staged prior to shipment to off-site TSDFs for treatment and/or disposal:

- Containerized solids, liquids, and sludges
- Bulk organic liquids
- Bulk aqueous liquids
- Containerized gases.

The following materials are generated at the incinerator and are shipped to off-site TSDFs for disposal:

- Bulk incinerator ash
- Bulk and containerized boiler flyash
- Bulk and containerized air pollution control (APC) sludge.

In addition to these materials, the magnetic portion of the kiln slag is separated by an electromagnet and is classified as scrap metal and is sent off-site for reclamation. Most empty steel drums are also sent off-site for reclamation.

A detailed description of the ash waste pile operation and the bulk waste containment buildings in Section S3 of this renewal application.

A.5 PROCESS EQUIPMENT

A schematic drawing of the 3M Corporate Incinerator is shown in Figure A-2 and an Incinerator Facility layout drawing is presented in Figure A-1. The major process areas in the facility are:

- Waste receipt and staging areas
- Waste feed systems
- Combustion systems
- Ash handling system
- Energy recovery system
- Air Pollution Control system
- Wastewater treatment system.

A brief description of the characteristics and functions of the process equipment in each area is presented below. A more detailed description is in Section S4 of this application.

A.6 WASTE FEED SYSTEMS

Six mechanisms are available to feed materials into the combustion system:

- Drum Feeder for containerized solids, liquids, sludges, and containerized gases

- Conveyor/Auger Feeder for bulk solids
- A-Burner, B-Burner, and C-Burner for organic liquid wastes
- Aqueous Lance for aqueous wastes
- Nonregulated Lance for nonhazardous wastes (previously referred to as latex lance)
- D-Burner and E-Burner for pumpable sludges.

A.6.1 Drum Feeder

The drum feeder (referred to as the pak feeder) and associated conveyors are used to convey containerized wastes into the rotary kiln. The feeder system consists of a series of powered roller conveyors, an air lock mechanism, a drum dumping or retrieval mechanism, and a feed chute.

On the last section of the conveyor, each container is automatically weighed on a built-in scale and the weights are recorded. Individual containers are transferred from the roller conveyor, through an airlock onto a feeding grid.

Drums and fiberpaks are placed onto a roller conveyor. Most containers are opened by the Incinerator Process Operator and inspected for excess liquids. Drums containing toxic wastes may not be opened.

A.6.2 Conveyor/Auger

Bulk solids are fed onto a pan or auger conveyor that drops the waste into an auger. The auger feeds the waste into the rotary kiln feed chute.

A.6.3 A-Burner, B-Burner and C-Burner

Waste materials from the waste solvent feed tanks, decant tank, or blend tanks can be pumped to either A-burner or B-burner in the rotary kiln or to C-burner in the secondary combustion chamber. No. 2/No. 6 fuel oil can be supplied to any of the three burners.

A.6.4 Aqueous Lance

Aqueous waste from the aqueous waste blend or decant tanks is pumped to the aqueous lance in the rotary kiln.

A.6.5 Nonregulated Waste Lance

Nonhazardous wastes are pumped into a 300-gallon tank located in Building 47 and drained by gravity through a lance into the feed chute. This has been referred to as the "latex lance" in previous correspondence.

A.6.6 D-Burner/E-Burner

The D-burner and E-burner use the same four-inch lance to transfer wastes into the kiln; the burner designations differentiate piping and transfer systems rather than actual burner mechanisms. The D-burner and E-burner cannot be utilized simultaneously.

A hydraulically controlled sludge pump is used to pump highly viscous sludges through the D-burner lance. Pumpable sludge is dumped into a sludge hopper by pump room personnel or pumped into the hopper from the decant tank. Waste from the hopper is driven down the sludge line to the D-burner sludge lance by the pump.

Certain waste can also be transferred directly from containers into this lance through the E-burner line either from the pump room or from an exterior location adjacent to the blend tanks.

A.7 COMBUSTION SYSTEMS

The combustion system consists of three major components:

- Rotary kiln incinerator
- Mixing chamber
- Secondary combustion chamber.

A.7.1 Rotary Kiln

The rotary kiln has an inside diameter of 11.1 feet and is 35 feet long. The maximum rated heat release in the rotary kiln (excluding the secondary) is 110 MM Btu/hr. When burning drummed wastes, the kiln temperature is normally maintained in excess of 2000 °F, the slagging temperature (i.e., the temperature at which the material in the kiln becomes molten). This temperature, needed to ensure burnout of the

drummed wastes, is achieved by keeping the mixing chamber temperature above 1600 °F as measured by either a pyrometer or a thermocouple.

A.7.2 Mixing Chamber

The mixing chamber is used for mixing the kiln off-gases to complete the combustion process and to allow ash to settle out of the combustion gas stream. Ash from the kiln falls into an ash quench sump at the bottom of the chamber.

A.7.3 Secondary Combustion Chamber (SCC)

The secondary combustion chamber (SCC) is 10 feet wide at the inside walls and 26 feet long. The maximum rated heat release in the SCC is 40 MM Btu/hr. The purpose of the SCC is to provide sufficient residence time at a high temperature to ensure complete combustion of organic materials. It is equipped with a dual fuel burner (C-burner) that is capable of firing either #2 or #6 fuel oil or waste organic solvents.

An emergency stack is located near the exit of the SCC. The emergency stack is activated by the process control system. Events that will trigger opening the emergency stack include loss of power, loss of the induced draft fan, or the operator initiating an emergency shutdown of the entire incineration system.

A.8 ASH HANDLING SYSTEM

The major components of the ash handling system include:

- Ash quench sump
- Ash quench conveyor
- Shredder
- Second ash quench sump
- Ash requench conveyor
- Ash transfer conveyors
- Magnetic separator
- Ash collection truck
- Magnetic material collection truck.

Ash falls from the end of the kiln into an ash quench sump. The ash is then moved by the ash quench conveyor from the ash quench sump up a dewatering incline. The ash is discharged into a hopper feeding a low-speed, shear-type shredder. The coarse shredded ash falls from the shredder into a second quench sump onto the ash requench conveyor and is transported on the belt up to a magnetic drum separator. Magnetic material is normally discharged into one trailer while nonmagnetic ash is normally deposited into a second trailer that is parked on a weigh scale. The magnetic material is sent to a scrap iron dealer for recycling. Nonmagnetic ash is disposed of off-site in a TSDF landfill.

A detailed description of the Ash House Waste Pile is in Section S.3 of this application.

A.9 ENERGY RECOVERY SYSTEM

The main components of the energy recovery system include:

- Superheater
- Evaporator
- Economizer
- Boiler feed water system.

Flue gas exits the secondary combustion chamber and normally flows directly to the energy recovery system. If the energy recovery system is bypassed, the flue gas flows directly to the bypass quench and subsequently to the air pollution control system.

The waste heat boiler consists of a superheater, an evaporator and an economizer. Flue gas enters the superheater and exits the economizer. Superheated steam can be converted into electrical energy with a turbine generator. Superheated steam can also be used to operate a boiler feed water pump. Superheated steam can also bypass the turbine and be reduced to the plant steam pressure. Steam produced by the boiler is used by the site's manufacturing facilities.

The boiler is equipped with a series of soot blowers to remove ash and slag from the boiler tubes. Ash and slag are collected in a series of hoppers located below the tube banks. When full, the hopper contents are shipped to an off-site hazardous waste landfill for disposal.

The boiler feed water can be supplied by an electric driven boiler feed water pumping system or a steam turbine driven boiler feed water pumping system.

A.10 AIR POLLUTION CONTROL SYSTEM (APC)

The major components of the air pollution control system include:

- Quench chamber (boiler on-line)
- Bypass quench (boiler off-line)
- Catenary grid scrubber
- Wet electrostatic precipitator (WESP)
- Packed tower
- Crossflow scrubber
- Scrubber water collection and neutralization system
- Induced draft (ID) fan
- Stack

A.10.1 Quench Chambers

Two quench chambers are incorporated into the air pollution control system; (1) the boiler quench and (2) the bypass quench. Flue gases pass through the boiler quench when the boiler is on line. The purpose of the bypass quench is to allow for the continuous processing of waste during periods when the boiler is down for maintenance. Each quench chamber is used to inject water into the flue gas and adiabatically cool the flue gas for the protection of down stream APC devices. The quench also conditions the gas to enhance the emission control efficiency of the downstream APC devices.

A.10.2 Catenary Grid

The catenary grid scrubber consists of a cylindrical fiberglass reinforced plastic vessel that contains two grids. The grids provide a large flue gas-to-water surface contact area. A centrifugal pump recirculates water through the scrubber creating a frothing action as the flue gas passes counter-current against the water flow. The catenary grid preconditions particulate by increasing size to increase removal efficiencies in subsequent units. At the appropriate air-to-water ratio this scrubber is very effective in removing large diameter particulate and acid gases.

A.10.3 Wet Electrostatic Precipitator (WESP)

The wet electrostatic precipitator consists of a vertical cylindrical fiberglass vessel containing a concentric series of ionizing and collection plates. The primary function of the WESP is to remove fine particulates

from the flue gas which flows upward between the plates. Particulates in the flue gas are charged from the ionizer section of the WESP and deposited on the collection plates. Water is transported through weirs and then flows downward over the surface of the collection plates to flush off collected particles.

A.10.4 Packed Tower

The primary function of the packed towers is to absorb acid gases from the flue gas and to collect any remaining charged particles exiting the WESP. The packed tower is a vertical, cylindrical fiberglass reinforced plastic vessel containing Tellerette packing material. Gases enter through the bottom of the tower and exit through the top of the tower. Water is continuously injected at the top of the tower for irrigation of the packing, and sprayed onto the diffuser plate at the bottom of the tower. Water is also intermittently used to flush the demister at the top of the packed tower.

A.10.5 Crossflow Scrubber

The crossflow scrubber is used to polish the gas and to collect vapor mists before the flue gas enters the ID fan. The gas stream passes horizontally through the device. Water is sprayed continuously perpendicularly to the gas flow at the entrance of the front demister section and intermittently at the rear of the front demister and at the front of the rear demister.

A.10.6 Scrubber Water Collection and Neutralization System

Wastewater from the APC system may be acidic. Scrubber water from the APC system is discharged to an agitated neutralization sump where lime and/or sodium hydroxide are added to raise the pH. A preconditioning polymer is also added in this sump to increase metals removal. The effluent from the neutralization sump is pumped to the 3M Cottage Grove Center wastewater treatment facility. At that facility, lime is added again to coagulate solids and a flocculant is added to agglomerate solids. The water in turn passes through three clarifiers in parallel where the solids are removed by settling. The water passes through the wastewater treatment plant and the solids enter a thickener. From the thickener the solids are directed through a belt filter press where they are dewatered to approximately 35%. Finally the APC sludge is shipped to a TSDF landfill for disposal.

A.10.7 ID Fan

A 500 horsepower constant-speed induced draft fan is used to force exhaust gases from the system. The fan creates a negative pressure within the system to prevent fugitive emissions. The flow at the fan is

controlled by positioning a damper at the fan inlet. ID fan power consumption is monitored as the combustion gas velocity indicator.

A.10.8 Stack

Cleaned gases exit the process through a stack. The top of the stack is 200 feet high and 60 inches in diameter at the inside walls. Materials of construction consist of a fiberglass reinforced plastic (FRP) liner and a steel shell. The breaching between the ID fan and the stack is equipped with sampling ports for the continuous emissions monitoring (CEM) system. The stack is equipped with ports at the 80 foot elevation which are used for emissions testing.

A.11 PROCESS MONITORING AND CONTROL

The process control system includes the following components:

- Field instrumentation
- Foxboro process control system
- WESP control system
- Expert control system
- Flame safety system
- KVB CEM system
- Strip chart recorders
- Remotely operated television monitoring and recording system.

A brief description of these components is presented below.

A.11.1 Field Instrumentation

Field instrumentation is the basis of the incineration process monitoring and control system. A comprehensive inspection, maintenance and calibration program, conducted at the 3M Corporate Incinerator facility in compliance with Minnesota Regulations, ensures that emissions monitoring equipment, process instrumentation and recording devices provide continuous, accurate process information.

A.11.2 Foxboro® Process Control System

Incineration is controlled by automated process controls. Field instruments transmit signals to a central control system consisting of a central processor and three operator's consoles. Most process functions can be monitored and controlled from the operator's console. A partial list of process parameters that can be monitored and controlled by the Foxboro® System include:

- Flue gas flow and drafts
- Flue gas temperatures
- Ash quench water temperature
- Water flow rates
- Burner fuel flow rates
- Steam flow rates
- Tank levels
- Effluent pH
- Water pressures
- Steam pressures
- Instrument air pressure
- WESP direct current kilovolts and direct current milliamps
- ID fan power
- Kiln rotation speed.

The Foxboro process control system also issues process alarms, performs data logging, and generates process reports.

A.11.3 WESP Control System

The wet electrostatic precipitator has a computerized control system that adjusts the voltage according to spark rate. The system also displays operating data.

A.11.4 Expert System

The incinerator's expert computer system maintains the comprehensive database for the facility. An expert system workstation in the control room allows the operator to monitor real-time process trends, quickly retrieve information on individual waste containers, and more carefully control the incineration process.

A.11.5 Flame Safety System (Detronics)

The flame safety system monitors and controls the flame detectors, air flows, atomizing pressures and valve positions to insure safe startup operation and shutdown of the combustion system. This system is interfaced with the Foxboro control system which provides combustion and control.

A.11.6 Continuous Emissions Monitoring System

A continuous emissions monitoring (CEM) system is the primary emissions monitoring system. The CEM uses an extractive-type flue gas sampling and conditioning system. Conditioned samples are pumped to a set of gas analyzers located in a building near the base of the stack. A sampling port is located on the breaching between the ID Fan and the Stack. This CEM system is used to continuously monitor stack gas for the following parameters:

- Carbon monoxide (CO)
- Carbon dioxide (CO_2)
- Oxygen (O_2)
- Total hydrocarbons (THC).

A.11.7 Strip Chart Recorders

Two multi-pen continuous strip chart recorders with tabular data capabilities, located in the control room, are used to continuously record analog points. Strip chart recorder No. 1 logs selected process data. Strip chart recorder No. 2 logs data from the KVB CEM system. The process variables logged by Recorder No. 1 are:

- ID fan power
- Mixing chamber temperature (thermocouple)
- Mixing chamber temperature (pyrometer)
- Secondary combustion chamber temperature
- Sludge pump speed (while loaded)
- Stack temperature at 80 ft
- Precipitator voltage
- Scrubber water pH (after lime addition)
- A burner fuel flow

- B burner fuel flow
- C burner fuel flow
- Aqueous Lance Waste Flow.

The process variables logged by Recorder No. 2 are:

- KVB CEM O_2
- KVB CEM CO
- KVB CEM CO_2
- KVB CEM THC
- CEM purge in progress
- CEM calibration in progress.

A.11.8 Television Monitoring and Recording System

Remotely operated television monitors allow the Incinerator Control Room Operator to visually observe key process operations. The layout and functions of these monitors are depicted in Figure A-3.

Two video cassette recorders are available to record the display from any two television monitors. The Incinerator Control Room Operator can manually select the television monitors whose output will be recorded.

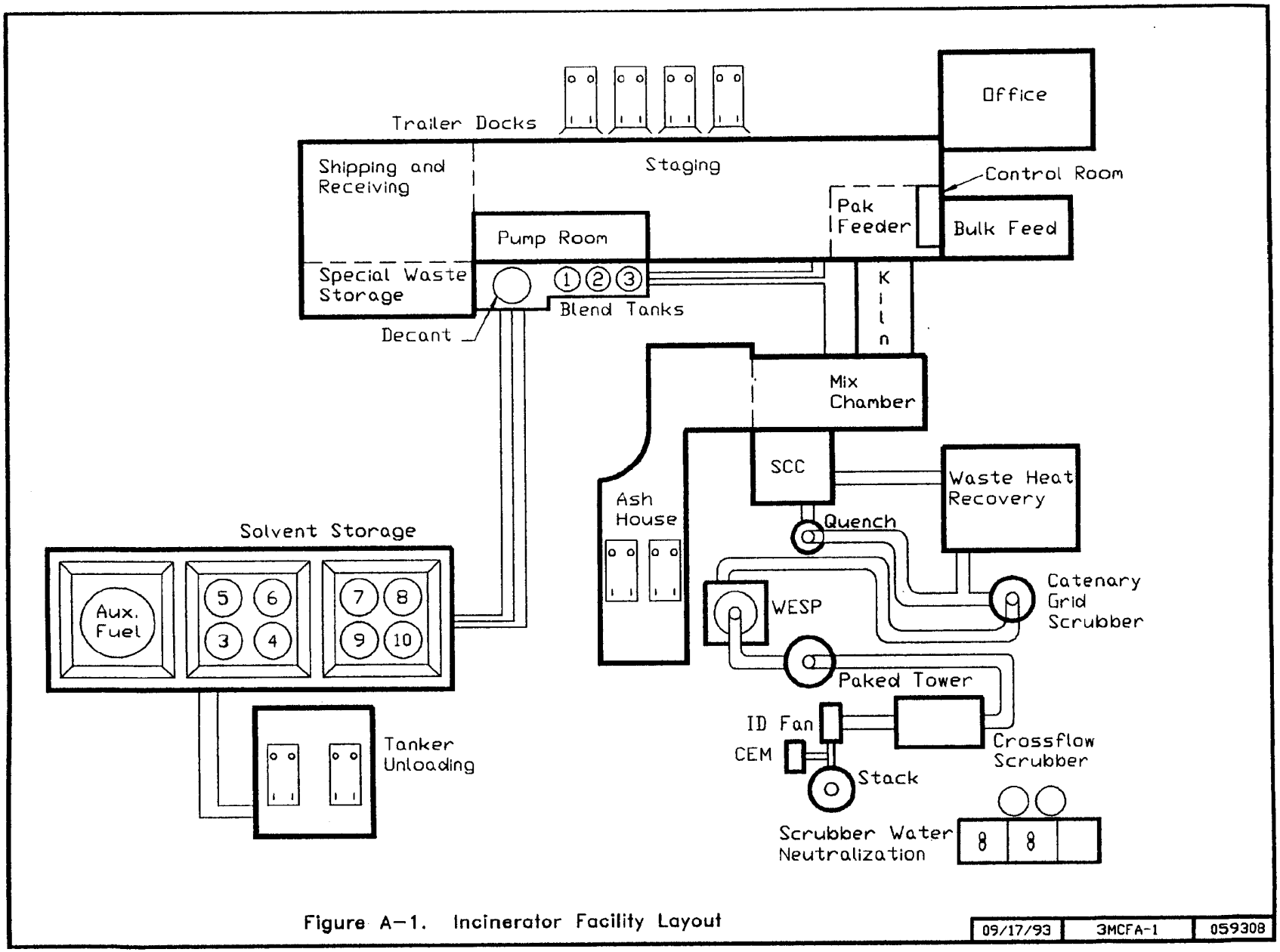


Figure A–1. Incinerator Facility Layout

09/17/93	3MCFA-1	059308

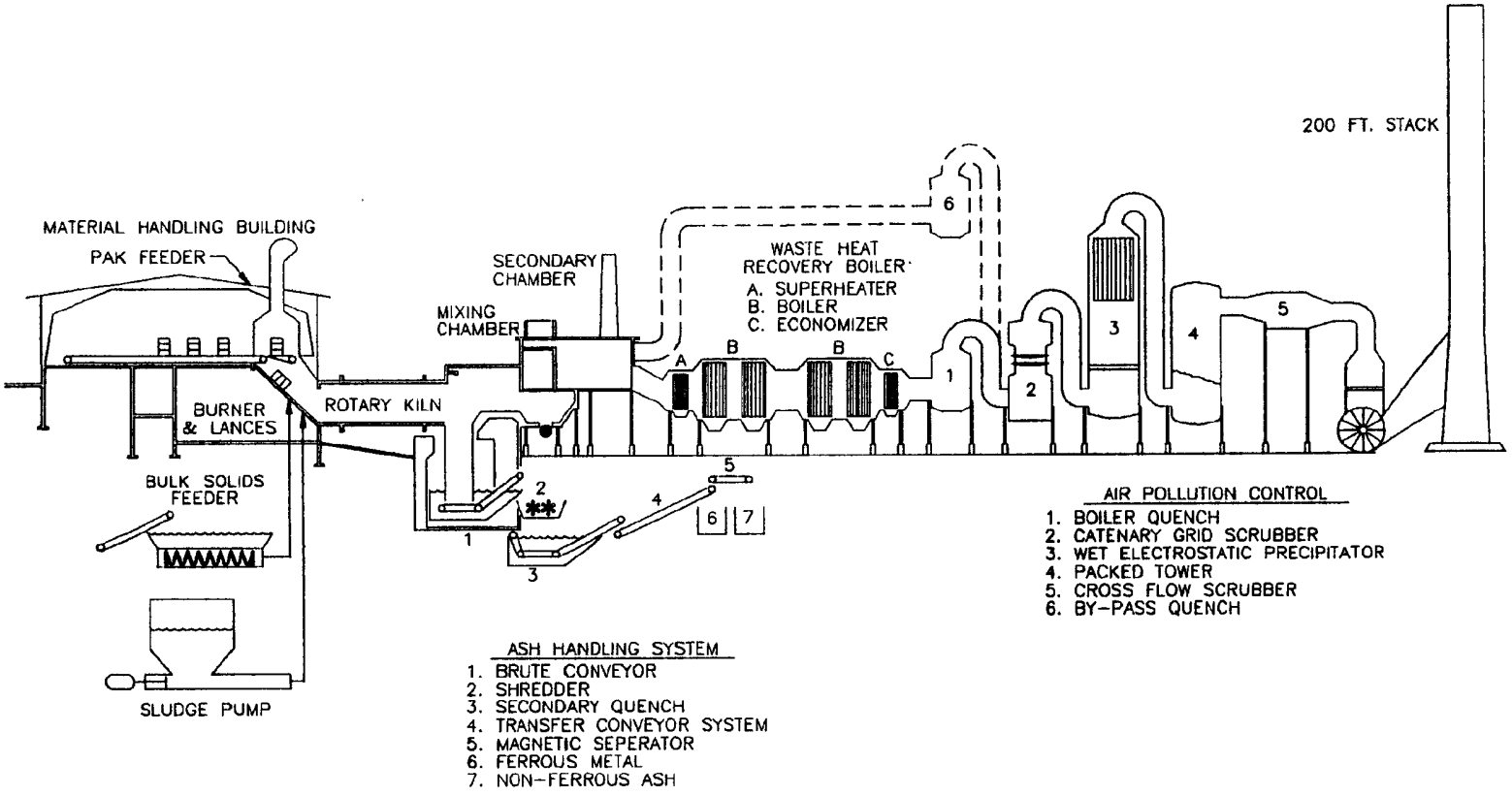
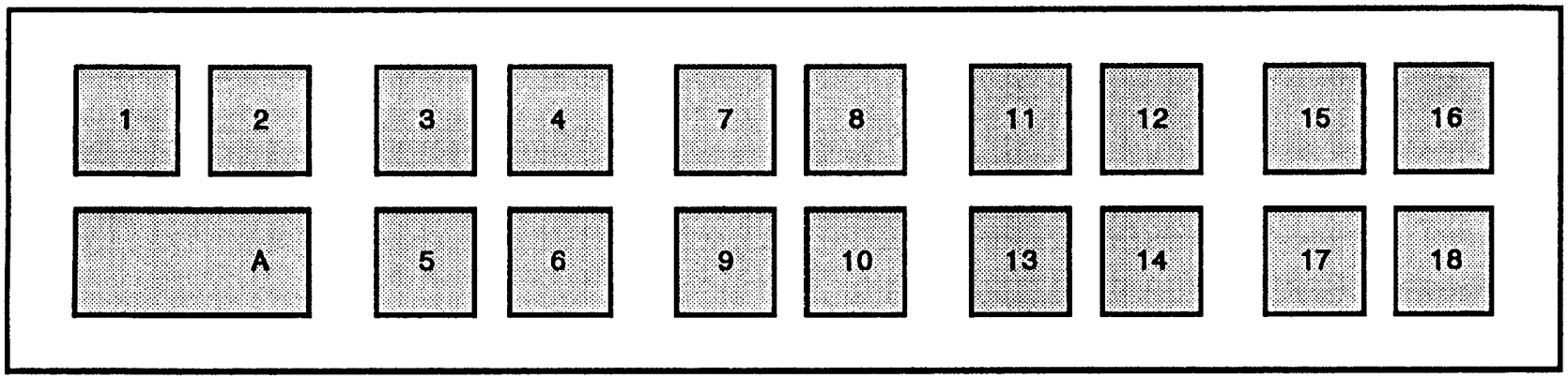


Figure A-2. 3M Corporate Incinerator Process Schematic

09/17/96	3MCFA-2	059308



A. Multi-channel Monitor: Tanker Unloading Station, Emergency Stack or Ash House Unloading

1. Ash Quench Sump Relief Panel
2. Kiln Shell and Thrust Rollers
3. Quench Top Relief Vents
4. Quench Side Relief Panel
5. Boiler Roof (pan neutralization area)
6. Ash House Roof (pans tank farm area)
7. Ash Belt Conveyor No. 5
8. Magnetic Separator/Vibrator Feeder
9. Magnetic Ash Storage Trailer
10. Nonmagnetic Ash Trailer
11. Ash Shredder
12. Feed Chute (side view)
13. Stack Exit
14. Pak Feeder Primary door
15. Kiln Feed Chute (end view)
16. Kiln View (rear to front)
17. Drum Storage and Handling Area
18. Drum Pumping Room

Figure A-3. Control Room Television Monitor Layout

SECTION B
Waste Description

SECTION B
WASTE DESCRIPTION

This section describes the chemical and physical nature of the hazardous wastes handled, stored and incinerated at the Cottage Grove Center. Procedures for waste analysis are described in the Waste Analysis Plan, in Section C of this Permit Renewal. The information in this section is in accordance with Minnesota Rules (M.R.) Part 7001.0560 (B).

B.1 CHEMICAL AND PHYSICAL ANALYSIS

3M has a comprehensive Waste Analysis Plan which combines waste analysis performed on the generated waste with waste analysis performed at the incineration facility. The Plan assures that the facility operator has the waste composition knowledge needed in order to safely handle, store, properly incinerate, or ship each waste stream.

The Plan provides sufficient analysis of waste at the appropriate frequency for the following purposes:

- Waste management decision making
- Waste transportation
- Waste handling and storage
- Verification upon receipt at the TSDF
- Feed control and documentation for TSDF permit feed restrictions
- Treatment or disposal off-site if applicable.

The basis for the waste analysis is the Waste Stream Profile completed by the generator of the waste. Currently over 8000 individual waste stream profiles are on file. A copy of the current profile form and examples of completed profile reports are included in Appendix C. This analysis is adequate to meet all of the above purposes of the Plan. Backup for this Waste Profile may be either process knowledge or laboratory analysis since 3M is normally the generator of the waste or the waste is a result of 3M product usage.

B.1.1 Waste Generating Locations

The 3M Corporate Incinerator receives 3M business related wastes from throughout North America. 3M business-related wastes include the following:

(1) Wastes produced by facilities or processes which are owned, leased, or under the direct control of 3M.

(2) Any unused, off-specification, or contaminated 3M products which are returned by users to 3M.

(3) Wastes produced by any facility (i.e., vendor shops and contract manufacturing facilities) as a part of the manufacture of specific raw materials, chemical intermediates, or products which are used, purchased, or distributed by 3M.

(4) Any waste which is produced by a manufacturing process which utilizes 3M manufactured raw materials and feed stocks.

(5) Any waste accepted by 3M as a part of a product exchange.

3M exercises great control over the processes and facilities listed in Items (1), (2), and (3). 3M has intrinsic knowledge of wastes and products which are produced by 3M owned and leased facilities. In addition 3M has extensive knowledge of wastes which are produced by 3M vendor shops and contract manufacturing. At these facilities, 3M may purchase raw materials and maintain ownership of in-process inventory and produced products. 3M may also write process standards and provide direct supervision of the manufacturing process.

3M exercises less control over wastes which are produced as a part of Items (4) and (5). For this reason additional waste analysis will be conducted on these materials as a part of waste acceptance. These facilities are referred to as "Non-3M Manufacturing Wastes in Section C.4.2(c).

B.1.2 Waste Categories

The hazardous wastes to be stored and/or treated are listed in Table B-1 of this Permit Renewal. The wastes listed may be treated at the Cottage Grove facility and/or stored for processing off-site. The amounts of each hazardous waste received during 1992 were summarized by 3M Cottage Grove Center, Corporate Incinerator 1992 Annual Hazardous Waste Report included as Appendix B.

The following waste categories are permitted for storage and treatment at the facility:

- Containerized liquids

- Containerized sludges
- Containerized solids
- Bulk liquids
- Bulk solids
- Containerized gases.

B.1.3 Waste Storage Categories

Waste is stored on-site in containers and in bulk. Container storage, tank storage, storage in waste piles and storage in a Containment Building are described in Sections S1 through S3 of this application. Segregation and/or blending of various wastes result in the following storage categories:

- Bulk Aqueous Solvent
- Bulk Organic Solvent
- Containerized solids, liquids, sludges, and gases
- Bulk solids waste pile.

B.1.4 Incinerator Feed Categories

From the above waste storage categories waste is either blended with other waste or fed directly to the incinerator in the following feed categories:

- Bulk Aqueous Solvent
- Bulk Scrap Solvent
- Bulk Fuel Grade Solvent
- Pumpable Sludge
- Non-blendable Liquid
- Containerized Solids
- Bulk Solids
- Containerized Gases.

Several materials in these categories are sampled and analyzed on a routine basis as described in the Waste Analysis Plan. Results of these analysis are summarized in Table B-2. As summarized in correspondence to MPCA on December 14, 1990 (See Appendix B) 3M generated scrap solvent is subdivided into grades: fuel and scrap. Lower quality, scrap solvent will be either blended to fit the specifications of one of the better grades or shipped off-site. Monthly summary of fuel grade and scrap

grade solvent feed characterization is provided to MPCA on a quarterly basis. Specifications on the two grades of solvent are as follows:

1. Fuel Grade
   - Heat content > 12,000 Btu/lb
   - Ash content < 0.5%
   - Chlorine content < 5%
   - Viscosity < 100 centistokes
   - Sulfur content <0.5%.

2. Scrap Grade
   - Heat content > 9,000 Btu/lb
   - Ash content < 1.0%
   - Chlorine content < 15%
   - Viscosity < 400 centistokes
   - Sulfur content < 0.5%.

A Trial Burn, described in Section S4 of this Permit Renewal, was conducted by 3M in May and June, 1990. Waste feeds, including typical waste generated by 3M and normally treated by the incinerator, were used to perform the required performance testing. Representative materials were burned during the trial burn for each waste mixture. These wastes included:

- Liquid organic waste
- Chlorinated liquid organic waste
- Aqueous waste
- Semi-solids waste
- Containerized solid waste
- Bulk solid waste.

The analysis of each waste included:

- the heat value of the waste
- the ash content of the waste
- the viscosity of the waste where appropriate
- the total organic chlorine of the waste

- the volatile and semi-volatile principle organic hazardous constituents (POHCs) selected by USEPA and MPCA.
- the metals content of the waste

Trial burn waste characteristics were chosen to represent the normal variation and the full range of waste characteristics of the incinerator feed.

B.1.5 Waste for Off-site Treatment or Disposal

Wastes may be shipped off-site to maintain storage inventories at acceptable levels. Waste may also be shipped off-site because the 3M incinerator is either not permitted to treat the waste, Land Disposal Restrictions (LDR) prevent treatment by incineration, or the waste is a residue from treatment. This waste can be designated by the following off-site waste categories:

- Containerized liquid
- Containerized solid
- Containerized gases
- Bulk liquid
- Ash
- APC sludge.

B.2 CONTAINER STORAGE

Containers will be used to store the hazardous wastes listed in Table B-1.

Containers used to store, hold, and transport hazardous waste received at the 3M Cottage Grove Corporate Incinerator be in good condition. The containers will be new, used or reconditioned and will be free of structural defects, leaks, or cracks that might impair their ability to hold the waste. If a container begins to leak, the hazardous waste in the leaking container will be transferred to a container that can safely store the waste.

Hazardous waste will be stored only in containers that are constructed of materials that are compatible with the waste. Containers in compliance with DOT requirements, will be used to hold hazardous wastes generated at the facility and shipped off-site for treatment or disposal.

Selection of container materials of construction by the 3M generator will be based on knowledge of the processes from which the wastes are generated, of the materials of construction of those processes, physical and chemical analysis of the waste or on prior experience of container use with waste materials. If insufficient knowledge is available, waste compatibility studies such as Method 1110 of USEPA SW-846 or other methods as outlined in Section S1 may be conducted on proposed container materials of construction.

Containers holding hazardous waste will be managed to ensure safe operation as follows:

- Each waste will be analyzed or identified based on process knowledge in accordance with the Waste Analysis Plan.
- Containers will remain closed during storage and transportation except during sampling, filling, or removal of waste.
- Handling of containers will be conducted by trained operations personnel who have been instructed in hazardous materials handling.
- Hazardous wastes will not be added to an unwashed container that previously held a material that is incompatible with the wastes.
- Hazardous waste will not be added to a container holding material that is incompatible with the wastes.
- Containers will be made from or lined with materials that have been shown acceptable for handling the specific hazardous waste.
- All containerized hazardous wastes will be labeled to facilitate proper handling and management practices.

Details regarding container management practices and container storage area design and operation are presented in Section S1.

B.3 TANK STORAGE

Blend tanks, the decant tank, waste storage tanks, and burner supply tanks as described in Section S2 are used to store hazardous waste listed in Table B-1.

All hazardous waste handled or stored in tanks at the facility are analyzed in accordance with the waste analysis plan to account for compatibility with the materials of tank construction and compatibility with the contents of the tank prior to transfer of material. Prior to incineration, a representative sample from the tank is collected and analyzed for the following:

- Btu value
- Percent chlorine
- Percent ash.

Concrete containment dikes for each storage tank are sealed with a chemical resistant epoxy coating to protect and prevent penetration of spilled material into the concrete.

B.4 BULK SOLIDS STORAGE

Management of bulk solids and ash residue storage is described in detail is section S3 of this application. Analysis of these materials is in accordance with the waste analysis plan (Section C of this application).

B.5 INCINERATOR WASTE FEED

A complete description of the incineration process and the Trial Burn conducted in May - June, 1990 is described in Section S4 of this application. Waste analysis performed on all waste received and fed to the incinerator is in accordance with the Waste Analysis Plan. Samples of all liquid waste are collected as the waste is burned. Weekly composite analysis data for 1993 is summarized in Table B-2.

Table -- B1, List of Hazardous Waste Stored or Treated

WASTE NUMBERS										
D001	**D039**	P009	**P051**	P099	U017	U057	U095	U135	U174	U217
D002	**D040**	P010	P054	P101	U018	U058	U096	U136	U176	U218
D003	**D041**	P011	P056	P102	U019	U059	U097	U137	U177	U219
D004	**D042**	P012	P057	P103	U020	**U060**	U098	U138	U178	U220
D005	**D043**	P013	P058	P104	U021	**U061**	U099	U140	U179	U221
D006	F001	P014	**P059**	P105	U022	U062	U101	U141	U180	U222
D007	F002	P015	**P060**	P106	U023	U063	U102	U142	U181	U223
D008	F003	P016	P062	P107	U024	U064	U103	U143	U182	U225
D009	F004	P017	P063	P108	U025	U065	U105	U144	U183	U226
D010	F005	P018	P064	P109	U026	U066	U106	U145	U184	U227
D011	F006	P020	**P065**	P110	U027	U067	U107	U146	U185	U228
D012	F007	**P021**	P066	P111	U028	U068	U108	U147	U186	U229
D013	F008	P022	P067	P112	U029	U069	U109	U148	U187	U234
D014	**F009**	P023	P068	P113	U030	U070	U110	U149	U188	U235
D015	**F010**	P024	P069	P114	U031	U071	U111	U150	U189	U236
D016	**F011**	P026	P070	P115	U032	U072	U112	U151	U190	U237
D017	**F012**	P027	P071	P116	U033	U073	U113	U152	U191	U238
D018	**F019**	P028	P072	P118	U034	U074	U114	U153	U192	U239
D019	F020	P029	P073	P119	U035	U075	U115	U154	U193	**U240**
D020	F021	P030	P074	P120	U036	U076	U116	U155	U194	**U243**
D021	F022	P031	P075	P121	U037	U077	U117	U156	U196	**U244**
D022	F023	P033	P076	P122	U038	U078	U118	U157	U197	**U246**
D023	F024	P034	P077	**P123**	U039	U079	U119	U158	U200	**U247**
D024	F026	P036	P078	U001	U041	U080	U120	U159	U201	**U248**
D025	F027	**P037**	**P081**	U002	U042	U081	U121	U160	U202	**U249**
D026	F028	P038	P082	U003	U043	U082	U122	U161	U203	**U328**
D027	F039	P039	P084	U004	U044	U083	U123	U162	U204	**U353**
D028	MN01	P040	P085	U005	U045	U084	U124	U163	U205	**U359**
D029	MN02	P041	P087	U006	U046	U085	U125	U164	U206	
D030	MN03	P042	P088	U007	U047	U086	U126	U165	U207	
D031	P001	P043	**P089**	U008	U048	U087	U127	U166	U208	
D032	P002	P044	P092	U009	U049	U088	U128	U167	U209	
D033	P003	P045	P093	U010	U050	U089	U129	U168	U210	
D034	**P004**	P046	P094	U011	U051	U090	U130	U169	U211	
D035	P005	**P047**	P095	U012	U052	U091	U131	U170	U213	
D036	P006	**P048**	P096	U014	U053	U092	U132	U171	U214	
D037	P007	**P049**	P097	U015	U055	U093	U133	U172	U215	
D038	**P008**	**P050**	P098	U016	U056	U094	U134	U173	U216	

Note: Additions to the approved waste list appear in bold text.

Table B-2. Incinerator Waste Feed Analysis Results for 1993

FUEL GRADE (1/193 through 8/6/93)

CD (MG/KG)	CR (MG/KG)	PB (MG/KG)	HG (MG/KG)	BR (UG/G)	FL (UG/G)	1,1,1-TCE (MG/L)	MEK (MG/L)	SP GR (60/60 F)	VISC (SUS @ 100F)	ASH (%)	CL (UG/G)	S (%)	H_2O (%)	BTU (BTU/LB)
<2.1	<8.9	4.7	0.05	199	890	3149	72063	0.8590	30	0.15	4994	0.09	3.5	13104

SCRAP GRADE (1/1/93 through 8/6/93)

CD (MG/KG)	CR (MG/KG)	PB (MG/KG)	HG (MG/KG)	BR (UG/G)	FL (UG/G)	1,1,1-TCE (MG/L)	MEK (MG/L)	SP GR (60/60 F)	VISC (SUS @ 100F)	ASH (%)	CL (UG/G)	S (%)	H_2O (%)	BTU (BTU/LB)
2	9	18	0.05	306	737	3980	98015	0.8701	30	0.22	10709	.31	5.67	12932

AQUEOUS GRADE (1/1/93 through 8/6/93)

CD (MG/KG)	CR (MG/KG)	PB (MG/KG)	HG (MG/KG)	BR (UG/G)	FL (UG/G)	1,1,1-TCE (MG/L)	MEK (MG/L)	SP GR (60/60 F)	VISC (SUS @ 100F)	ASH (%)	CL (UG/G)	S (%)	H_2O (%)	BTU (BTU/LB)
9	18	28	0.04	337	330	60	3640	1.0323	38	2.46	2640	0.6	89.7	827

SLUDGE GRADE (1/1/93 through 7/31/93)

CD (MG/KG)	CR (MG/KG)	PB (MG/KG)	HG (MG/KG)	ZN (MG/KG)	BR (UG/G)	FL (UG/G)	ASH (%)	CL (UG/G)	S (%)	BTU (BTU/LB)	MOIS (%)
<17	<57	<105.5	<0.08	2940	<444	2272	3.80	7206	0.15	13125	12.20

SECTION C
Waste Analysis Plan

SECTION C
WASTE ANALYSIS PLAN

C.1 INTRODUCTION

The Waste Analysis Plan for the 3M Cottage Grove Corporate Incinerator describes the methods which 3M will use to comply with the waste analysis requirements found in 40 CFR 264.13 (M.R. Part 7045.0458); 40 CFR 264.17 (M.R. Part 7045.0456); and 40 CFR 264.341 (M.R. Part 7045.0542 subpart. 2); and 40CFR 268.7 (M.R. Part 7045 1315).

3M has a comprehensive Waste Analysis Plan which combines waste analysis performed by the waste generator with analysis performed at the incinerator. Its purpose is to assure that the incinerator operator has the sufficient knowledge needed in order to safely handle each waste stream, and to properly incinerate each waste stream, while maintaining full compliance with all emission limits.

The Plan provides sufficient analysis of waste at the appropriate frequency for the following purposes:

- Waste management decision
- Waste transportation
- Waste handling and storage
- Verification upon receipt at the TSDF
- Feed control and documentation for TSDF permit feed restrictions
- Treatment or disposal off-site if applicable.

In addition, the Plan is tied to a waste tracking system which documents authorization for storage and treatment, and tracks waste containers. The waste tracking system also documents when and how the waste has been treated.

3M is normally the generator of the waste or the waste is a result of 3M product usage. The basis for the waste analysis is the Waste Stream Profile completed by the generator of the waste. This analysis is adequate to meet all of the purposes of the plan outlined above. Backup for this waste stream profile may be either process knowledge or laboratory analysis.

Analysis at the storage and treatment facility has three purposes:

- Verification that the waste received is that waste described by the waste streams profile

- Analysis for safe handling, storage and feed control that documents compliance with incinerator permit feed and process emission restrictions
- Analysis for treatment or disposal off-site.

The incinerator consolidates shipments of some 3M manufacturing plant wastes for disposal at another hazardous waste facility. Analysis for treatment or disposal off-site is dependent upon the requirements of the off-site facility. Where the waste is not the result of treatment by the incinerator and not blended with other waste the waste profile may provide analysis for off-site transportation and management. Where the waste is a result of treatment by the incinerator (i.e.,. kiln or APC ash) sampling and laboratory analysis of this blended waste is required prior to transporting and/or management off-site. Analysis usually is conducted as a part of the waste profile approval and may be repeated when the waste is transported and/or managed off-site.

C.1.1 Waste Categories

The following waste categories are permitted for storage and treatment at the facility:

- Containerized solids
- Containerized sludges
- Containerized liquids
- Bulk solids
- Bulk liquids
- Containerized gases.

These waste categories can be further broken down for waste storage, incinerator feed, and treatment or disposal off-site.

C.1.2 Storage Categories

Waste is stored on-site in containers and in bulk. Bulk waste is segregated by its physical state and its water content (i.e.,. solid waste pile, solvent storage tank, aqueous storage tank). This results in the following storage categories:

- Bulk Aqueous Solvent
- Bulk Organic Solvent

- Containerized solids, liquids, sludges, and gases
- Bulk solids waste pile.

C.1.3 Incinerator Feed Categories

From waste storage categories outlined above waste is either blended with other waste or fed directly to the incinerator in the following feed categories:

- Bulk Aqueous Solvent
- Bulk Fuel Grade Solvent
- Pumpable Sludge
- Non-blendable liquid
- Containerized Solids
- Bulk Solids
- Containerized Gases.

All feeds are to the kiln only, except that fuel-grade bulk solvent may be fed to the Secondary Combustion Chamber.

C.1.4 Off-site Treatment or Disposal Categories

Waste to be shipped off-site is either waste which the 3M incinerator is not permitted to treat or is a residue from on-site treatment. This waste can be designated by the following off-site waste categories:

- Containerized liquid
- Containerized solid
- Containerized gases
- Bulk liquid
- Ash.

The following sections comprise the Waste Analysis Plan:

C.2 - 3M WASTE MANAGEMENT PROGRAMS, outlines the actions which 3M has taken to achieve a unique knowledge of the waste streams which are treated or stored at the Corporate Incinerator.

C.3 - PURPOSE OF WASTE ANALYSIS PLAN, outlines the purpose of the Waste Analysis Plan.

C.4 - WASTE RECEIPT, describes the methods which are used to receive wastes at the incinerator. It summarizes waste analyses which are conducted as a part of waste verification.

C.5 - WASTE HANDLING AND INCINERATION, discusses the methods which are used to prepare wastes for incineration and to transfer them into the rotary kiln. It summarizes any analyses which are conducted as a part of this process.

C.6 - CHEMICAL AND PHYSICAL ANALYSIS, details how 3M provides ongoing information on the chemical and physical properties of the wastes burned at the facility.

C.7 - SAMPLING & ANALYTICAL METHODS, provides details on the physical and chemical parameters to be evaluated for each type of hazardous waste received.

C.8 - ADDITIONAL WASTE ANALYSIS PLAN REQUIREMENTS, provides information on additional waste analysis plan requirements including land disposal restrictions, sampling methods, analytical methods, precautions for ignitable and incompatible wastes, quality assurance/quality control plans, recording analytical results, and non conforming wastes.

C.9 - CONCLUSION, summarizes the Waste Analysis Plan.

C.2 3M WASTE MANAGEMENT PROGRAMS

As a captive corporate incinerator, 3M has a unique and comprehensive knowledge of its waste streams. This knowledge is based on 20 years of operating experience, a close partnership with 3M generating locations, and specific corporate training and waste identification programs. These factors all serve as the basis of the Corporate Incinerator's Waste Analysis Plan.

The Corporate Incinerator has been in operation since 1972. During that period, the operating personnel have acquired an in-depth knowledge of 3M waste streams and developed a close working relationship

with 3M manufacturing locations. Staff from 3M generating locations frequently visit the Incinerator to discuss waste disposal issues and to further their knowledge of waste processing at the Incinerator. Likewise, both incinerator staff and corporate environmental staff visit plant locations to ensure that wastes are being properly characterized, packaged, labelled and manifested for shipment to the Incinerator.

In addition to these factors 3M has established several programs, described below, which give the Corporate Incinerator a unique knowledge of the waste streams managed at the facility.

C.2.1 Corporate Training Programs and Guidance Documents

Since 1980, 3M Corporate Environmental Engineering and Pollution Control (EE&PC) has provided annual training to 3M manufacturing and laboratory waste coordinators. In 1981, a 3M Waste Management Program Manual was provided to appropriate personnel at all 3M locations. The manual has been upgraded as required by the regulations, and remains current. This comprehensive Manual provides step-by-step instructions on hazardous waste disposal and provides generators with specific information on waste processing at the incinerator. A copy of the Table of Contents from this two-volume manual is included in Appendix C.

C.2.2 Waste Stream Profile Program

The 3M Waste Stream Profile Program (WSPP) is a customized waste identification system developed by and for 3M. Waste stream profiles have been prepared for all wastes which are received, stored, or treated at the Corporate Incinerator. Wastes are not accepted at the Incinerator without an approved waste stream profile.

Each profile provides a complete physical and chemical characterization of each waste stream. Each waste stream profile includes detailed information about a single waste stream, and instructions on the proper handling and disposal of waste materials.

Preparation and approval of a waste stream profile involves several steps. First the generating location completes the Waste Stream Profile Form included in Appendix C. The description of the chemical composition of the waste is completed by the generating locations using their knowledge of the raw materials and processes involved, and/or laboratory analysis. The waste stream profile form is then submitted to the EE&PC Waste Management Group for review, processing and approval. This review insures that the waste is properly classified in accordance with EPA and DOT regulations. The profiles are also reviewed by the Incinerator's Compliance Staff prior to waste acceptance. Over 8,000 such profiles

have been completed and approved. All waste stream profiles have been computerized and are accessible to the Incinerator operators. The profiles are updated whenever there is a significant change in waste constituents. Waste stream profiles are also recertified by the waste generator annually. Copies of these recertifications are maintained in the Incinerator's files.

The waste stream profiles provide significant information about each hazardous waste shipped to the Cottage Grove Corporate Incinerator. Examples of completed profile reports are included in Appendix C. Each profile is identified by a unique internal eleven digit 3M waste stream identification number. The profile provides the following information:

- Generator location information (including EPA ID No. and plant contact)
- Waste description
- Waste components and their concentration ranges
- Physical and chemical characteristics
- EPA waste numbers and DOT hazard description
- Approved management method
- Land Disposal Ban Restriction
- Packaging instructions
- Labelling and marking instructions
- Shipping descriptions
- Name of the approver and the approval dates
- Personal protective equipment to be used.

The WSPP will provide information on the hazardous constituents on a waste stream profile, as well as associated concentration ranges. Personal protective equipment requirements are also assigned to each waste stream. Through the WSPP and the Internal Waste Tracking System discussed below, all operators can easily determine the appropriate personal protective equipment to be used when handling nonroutine wastes.

In some cases the generator may provide a Material Safety Data Sheet (MSDS) or detailed chemical information to augment information on the waste stream profile. Those wastes are evaluated individually at the incinerator by the Compliance Staff during receipt and the information sent with the shipment will be retained with the manifests.

C.2.3 Incinerator Waste Tracking System

The 3M Cottage Grove Corporate Incinerator has designed an inventory monitoring system, known as the Incinerator Waste Tracking System (IWTS), for waste identification and tracking. New waste stream profiles, along with any needed modifications to existing profiles, are transferred daily to the computerized IWTS data base. This information is used for waste identification and verification.

The IWTS also provides Incinerator Operators with a system for tracking waste containers at the facility. During waste receipt, each waste container is assigned a unique load identification number and bar code. 3M's bar coding system enables 3M staff to track the movement of each hazardous waste container within the facility. The bar code system also allows 3M staff to obtain necessary information contained in the waste stream profile for a particular load identification number. A description of the IWTS, including the Corporate Incinerator's bar code system, is provided in Appendix C.

In addition to providing an inventory management system, the IWTS has been modified to provide other operational controls. Some wastes received at the corporate incinerator are not treated on-site. These include PCB wastes and several wastes for which the Land Disposal Restrictions specify an alternate treatment technology. The WSPP and IWTS have the capability of automatically imposing a DO NOT INCINERATE (DNI) flag on such wastes prior to processing, which will prevent operators from managing these wastes inappropriately. The DNI flags can also be added to a waste stream profile by the Compliance Staff.

C.2.4 Corporate Chemical Data Bases

3M has several corporate MSDS data bases which describe the chemical composition of purchased raw materials, chemical intermediates, and finished products. These data bases provide information on the proper handling and disposal of all chemicals used or produced at 3M facilities. The Corporate Incinerator has access to this information in microfiche files which are maintained on-site and are periodically updated, and through several computerized data bases including the Product Responsibility Information System Matrix (PRISM) and the Chemical Division Internal Material Safety Data Sheet data bases.

C.3 PURPOSE OF WASTE ANALYSIS PLAN

The purpose of the Waste Analysis Plan is to insure that incinerator operators have sufficient knowledge needed to:

- Protect the health and safety of workers handling and blending hazardous wastes
- Properly manage each waste stream
- Prevent the incineration of prohibited wastes
- Maintain full compliance with all emissions and feed rate limits, and permit monitoring requirements
- Provide quality assurance data as needed to insure the integrity of WSPP and IWTS.

Each item is discussed separately below.

C.3.1 Protect the Health and Safety of Workers Handling Hazardous Waste

Incinerator operators must have sufficient information to safely handle all wastes. Primary concerns in this area are personnel protective equipment and procedures, and waste compatibility.

The Waste Analysis Plan uses the WSPP to assure that each waste stream is properly characterized. The profile identifies the hazardous constituents and their concentration ranges present in the waste, including OSHA carcinogens, corrosive or reactive materials, and other toxic components. It also includes each waste's EPA waste numbers and DOT hazard class(es). Each profile contains personal protective equipment instructions which specify the personal protective equipment and methods required for processing the waste.

The Waste Analysis Plan also protects worker health and safety by requiring compatibility testing for liquid wastes. The compatibility tests, outlined in Appendix C, are designed to assure that workers are not exposed to the reaction of incompatible chemicals by screening the waste for incompatibility. In addition, Section C.5.2 of this Part B Permit Renewal Application outlines precautions taken at the Incinerator for ignitable and incompatible wastes.

C.3.2 Properly Manage Each Waste Stream

The Waste Analysis Plan provides sufficient information to assure that all wastes are properly managed. The WSPP specifies hazardous constituents and their concentration ranges. It provides the Incinerator Operator with physical/chemical information on the waste, including flash point range, Btu value range, and physical state. The WSPP/IWTS instructs each operator on the proper handling method for each of these wastes, and identifies those waste streams which cannot be incinerated at the site.

C.3.3 Prevent the Incineration of Prohibited Wastes

During the trial burn conducted in May and June, 1990, the 3M Cottage Grove Corporate Incinerator successfully demonstrated its ability to destroy the principal organic hazardous constituents (POHC's) selected by the US EPA and the MPCA. The incinerator is now permitted to burn a wide variety of RCRA wastes.

The Incinerator does receive and store wastes which it cannot incinerate. The Hazardous Waste Treatment and Storage Facility Permit for the Corporate Incinerator prohibits the incineration of polychlorinated biphenyls (PCB's) above 50 ppm, and incineration of the F-listed dioxin/furan contaminated wastes included in waste codes F020, F021, F022, F023, F026, F027, and F028. In addition, the Land Disposal Restriction Regulations also prohibit the incineration of certain wastes. There are other wastes which are not incinerated at this facility due to operational concerns.

The WSPP also specifies the approved management method for each waste stream. Profiles for these types of wastes will automatically receive a DO NOT INCINERATE flag. This flag is tied to the IWTS bar coding system and will automatically notify operators that these wastes should not be incinerated. If a waste is assigned a DO NOT INCINERATE flag, the IWTS system will prevent the accidental incineration of the waste.

Wastes affected by these restrictions are described below.

a. PCB-contaminated Wastes

During the early 1980's 3M replaced and/or removed all transformers and hydraulic equipment which contained PCB's. 3M does not use any raw materials which contain PCB's. 3M does produce a very limited quantity of PCB-contaminated wastes including capacitors and lamp ballasts. These articles are readily identified as potential PCB containing wastes.

b. Dioxin/Furan Contaminated Waste

3M does not typically use dioxin/furan contaminated materials, nor does the company generate dioxin/furan contaminated waste included in EPA waste codes F020, F021, F022, F023, F026, F027, and F028. On rare occasions these wastes may be received and later transported to an appropriate disposal facility. These materials are readily identified as potential dioxin/furan contaminated waste.

c. LDR Wastes

The EPA Land Disposal Restriction rules specify a treatment method other than incineration for certain wastes. These include some mercury containing wastes, nickel-cadmium batteries, lead-acid batteries, and several wastes listed in 40CFR 261.33. 3M is prohibited from burning such wastes.

C.3.4 Maintain Full Compliance With All Emissions and Feed Rate Limits, and Permit Monitoring Requirements

The permit establishes limits and monitoring requirements for different types of liquid and solid wastes. The waste analysis required for these wastes are discussed in this section.

Experience has shown that liquids with a high ash content, certain fine powdered wastes and wastes containing silicon, have the potential to increase particulate emissions. The WSPP assists in identifying these wastes. Analysis is conducted to identify ash in those wastes where the profile is not sufficiently descriptive to determine whether the wastes ash content will effect facility compliance.

C.3.5 Provide Quality Assurance Data as Needed to Insure the Integrity of WSPP and IWTS

The Waste Analysis Plan must also provide quality assurance data as needed to insure the integrity of the Waste Stream Profile Program and the Incinerator Waste Tracking System. Waste analyses used to meet these objectives are discussed in this Waste Analysis Plan.

C.4 WASTE RECEIPT

This section discusses the methods which are used to receive wastes at the facility, and discusses compatibility testing and fingerprint analyses performed as a part of waste receipt.

C.4.1 Wastes Received

The Cottage Grove Corporate Incinerator receives liquids, compressed gases, solids, and semi-solid wastes which are packaged in several types of containers. Liquid wastes are shipped to the Corporate Incinerator in pails, drums, totes and tankers. Solid wastes are transported to the Incinerator in a wide

variety of Department of Transportation (DOT) approved containers including cartons, totes, bags and in bulk.

The 3M Corporate Incinerator receives 3M business related wastes from throughout North America. 3M business-related wastes include the following:

(1) Wastes produced by facilities or processes which are owned, leased, or under the direct control of 3M.

(2) Any unused, off-specification, or contaminated 3M products which are returned by users to 3M.

(3) Wastes produced by any facility (i.e., vendor shops and contract manufacturing facilities) as a part of the manufacture of specific raw materials, chemical intermediates, or products which are used, purchased, or distributed by 3M.

(4) Any waste which is produced by a manufacturing process which utilizes 3M manufactured raw materials and feed stocks.

(5) Any waste accepted by 3M as a part of a product exchange.

3M exercises great control over the processes and facilities listed in Items (1), (2), and (3). 3M has intrinsic knowledge of wastes and products which are produced by 3M owned and leased facilities. In addition 3M has extensive knowledge of wastes which are produced by 3M vendor shops and contract manufacturing. At these facilities, 3M may purchase raw materials and maintain ownership of in-process inventory and produced products. 3M may also write process standards and provide direct supervision of the manufacturing process.

3M exercises less control over wastes which are produced as a part of Items (4) and (5). For this reason additional waste analysis will be conducted on these materials as a part of waste acceptance. These facilities are referred to as "Non-3M Manufacturing Wastes in Section C.4.2(c).

C.4.2 Waste Receipt and Manifest Verification

Containerized Shipments

Shipments containing drums, pails, totes, and cartons are received and bar-coded in Bldgs. 60, 47, or 112. Shipping and Receiving operators utilize a portable radio frequency bar code system described in Appendix C to communicate with the IWTS. At the beginning of shipment receipt, the operator enters the generating plant location and manifest number into the IWTS computer system. The operator will then affix a unique load identification number to each container, and enter the waste stream profile number into the bar code reader for each container. Wastes are not accepted without an approved waste stream profile number.

The bar code system will indicate the appropriate EPA Waste Code(s), DOT Hazard class(es), and approved container types for the waste.

After all wastes have been entered into the system, the operator will produce a computerized summary of the shipment. This information will be compared against the manifest. The operator or incinerator staff will attempt to verify all manifest, labelling, and/or profile discrepancies. Manifests for shipments with no discrepancies will be forwarded to Data Processing for computer entry. Generators of waste shipments with significant discrepancies will be contacted to reconcile the waste shipment. Significant discrepancies include the following errors:

- Incorrect container count
- EPA waste code number mismatch
- DOT hazard class mismatch
- Missing or unknown WSPP number.

All container and manifest discrepancies will be reconciled before the waste is processed.

Bulk Liquids

A fingerprint analysis is conducted on all bulk shipments before they are transferred into one of the Incinerator storage tanks. The analyses conducted include:

Parameter	Frequency
Btu Content	All shipments
Chlorine	All shipments
Compatibility	All shipments
Ash Content	As required
Water Content	As required
Viscosity	As required
Flash Point	As required
Specific Gravity	As required
pH	As required

The information in the waste stream profile is used to determine the appropriate disposal method. The analysis described above is utilized to verify that the waste matches the profile description. At a minimum, all shipments will be analyzed for Btu and chlorine content, and checked for compatibility. Compatibility tests procedures for bulk liquids and sludges are included in Appendix C. The other analyses listed above may also be used to further identify wastes if necessary.

If the fingerprint analysis conducted does not match the information in the profile, the generator will be contacted to reconcile any discrepancies.

Finally, before wastes are transferred into one of the site storage tanks, a compatibility test will be conducted with the contents of that tank, if any. This compatibility test is described in Appendix C.

Non-3M Manufacturing Wastes

The waste receipt process for non-3M manufacturing waste would be consistent with the methods described above for containerized and bulk shipments. This waste approval will be augmented with additional verification of wastes from non-3M manufacturing facilities.

During receipt, a representative number of the containers will be randomly selected, opened, and inspected at the frequency described below:

Container Shipment Size	Percentage of Containers Sampled
< 5	50 %
5-20	20 %
> 20	10 %

Wastes containing solids will be verified through a visual examination. A composite sample of the liquid wastes will be collected, and a fingerprint analysis will be conducted to insure that the waste corresponds to the waste stream profile. Fingerprint analysis may include any or all of the following parameters as appropriate:

Btu Content
Chlorine
Ash Content
Water Content
Viscosity
Flash Point
Specific Gravity
Compatibility
pH
GC/MS Analysis

Wastes will not be processed until these analyses are completed. If the waste does not match the physical description or analytical results, the drum will be stored until the discrepancy is resolved with the generating location.

C.4.3 Nonconforming Wastes

3M has established internal procedures which plants must follow when shipping hazardous wastes to Cottage Grove. These procedures are documented in a Waste Management Program Manual, which is distributed to all 3M plants shipping wastes to the Cottage Grove Corporate Incinerator. Training in these procedures is provided to appropriate plant personnel on an annual basis.

Despite the procedures which the 3M Company establishes and the information which 3M disseminates, occasionally a waste may be received which does not match the waste stream profile. Nonconforming wastes may be discovered while comparing the manifest against the information on the waste container, by visual observation, or through sampling and analysis.

When a nonconforming waste is discovered, the generator will be contracted to reconcile the waste discrepancy. The waste will not be processed until the waste has been properly identified and a waste stream profile has been completed.

C.5 WASTE HANDLING AND INCINERATION

This section describes the methods which are used to store wastes and prepare them for incineration. It also describes the waste analysis methods which are used to make waste handling and incineration decisions.

C.5.1 Waste Storage and Handling

Most wastes shipped to the Cottage Grove Corporate Incinerator are thermally treated at the facility. Prior to treatment these wastes are stored in regulated container storage areas or in tanks. This storage can occur in several ways, as discussed below.

Transfer to Bulk Storage Tanks

3M may transfer liquid waste from containers or tanker trucks into storage tanks. 3M tanks store fuel grade solvent, scrap grade solvents, aqueous wastes, and chlorinated wastes. These materials may be incinerated on-site or shipped off-site for disposal. Some chlorinated waste is currently sent off-site for recycling, but may also be incinerated on-site. Section C.6.4 discusses the analytical parameters which are used for bulk solvents.

Storage in Trailer Unloading Areas and Storage Lots

3M also stores certain hazardous wastes (primarily non-liquid hazardous waste) in trailers in approved storage lots. Wastes may be stored in such areas until they are incinerated on-site, or until they are shipped to an off-site facility for recycling, treatment or disposal.

Storage in Buildings 47 and 60

Wastes may be stored in building 47 and 60 during waste receival, or prior to treatment or shipment off-site. Certain waste require special handling and are stored in the southeast half of building 60. This area is provided with concrete diking and segregated floor drains to prevent the mixture of the incompatible materials.

Wastes which may be stored in this area typically include flammable solids, oxidizers, certain polychlorinated biphenyls (PCBs), flammable liquids containing poisons, other toxic materials and other wastes awaiting further handling. Some wastes may be stored in this area until incinerated on-site, while other wastes await shipment to an off-site facility.

C.5.2 Waste Disposal Methods

The incinerator has several different methods of injecting liquid wastes into the rotary kiln and secondary combustion chamber. These injection points are described below:

Liquids

Name	Use
A-burner:	Fuel oil, fuel grade and scrap grade solvents
B-burner:	Fuel oil, fuel grade and scrap grade solvents
C-burner:	Fuel oil, fuel grade and scrap grade solvents
D/E burner:	Sludge pump and direct burn wastes
Aqueous lance	Wastes containing significant water
Nonregulated waste lance (or "latex lance")	Non-hazardous wastes.

Solids

3M can also charge non-liquid wastes into the rotary kiln incinerator in several ways. Each charging location is outlined below:

Drum Feeder for Containers

The feeder is used to discharge containers and/or their contents into the kiln.

Sludge Pump and Direct Burn Wastes

The sludge pump is used primarily to transfer high viscosity liquids, sludges and adhesives into the kiln. Wastes are transferred into a hopper either from containers or from site storage tanks and then augured into a high pressure positive displacement pump. These materials are transferred into the kiln through the dedicated sludge pump burner. Certain types of wastes may solidify and react with wastes that are typically processed through the sludge pump. These wastes are pumped through a "direct burn" line and also transferred through the D/E burner.

Bulk Solids

Bulk solids are placed on the floor of the Bulk Solids (Containment) Building. Solids are loaded into one of two conveyors and then metered into the feed chute, which discharges into the kiln. Wastes fed through this process typically consist of contaminated soils or bulk debris.

C.5.3 Precautions Taken For Ignitable and Incompatible Wastes

Ignitability

The 3M Cottage Grove Corporate Incinerator has selected material handling equipment used to transfer drums and containers in order to minimize sources of ignition. These are only three areas designated for opening containers of ignitable hazardous waste. These are the pump room, the pak feeder area, and the Bldg. 60 storage area. All three areas are designated Class I Division I and all equipment within these areas meet these requirements.

Drums on pallets are handled using forklifts. Before moving pallets of drums, the forklift driver observes the position of the drums to assure that they can be safely moved. 3M drum handling equipment also includes devices which attach to forklift tines, and which can move one or two drums at a time. The forklift normally used in the pump room area and in Tanker Unloading is an EX-rated unit approved for use in a Class I Division I area. The forklift attachments used in these areas are rubber clad with brass tips to prevent sparks.

The forklifts used to unload drums from trailers, and to move drums in the staging area, are LP-Special units approved for use in a Class I Division II area.

The Incinerator staff position the material handling and other equipment in order to minimize sources of ignition. Equipment which could produce sparks is not taken into areas where combustible vapors could accumulate. If spark producing equipment should be brought into such an area, the concentration of combustible vapors in the atmosphere will first be determined. Only after a safe condition has been verified could spark producing equipment be brought into such an area. This activity would require a spark permit, which can only be issued by the shift supervisor.

The facility operates material handling equipment in order to minimize sources of ignition. 3M provides periodic forklift training to all operators. Incinerator management requires that forklift operators obtain

experience in safe forklift operating procedures before being allowed to drive a unit in a Class I Division I area.

3M also eliminates shoe static by first using grounding meters located by common entrances to the incinerator area. If necessary, 3M supplies temporary grounding straps to workers and visitors. 3M provides training regarding its no smoking policy to all employees, and strictly enforces the policy. As discussed above, the Incinerator has a permit program in place for spark producing equipment.

Incompatibility

The Cottage Grove Corporate Incinerator does not routinely handle materials which meet the definition of reactivity. If such materials are received, they are managed in small volumes. Experience has demonstrated that such small volumes do not cause problems at the facility.

Incinerator staff do handle materials which are incompatible. Typically the concern is not heat generation or violent reaction, but rather solidification of polymers in piping, pumps or tanks. All bulk wastes will be tested for compatibility, as described in Section C.4.2 3M has identified such materials, and has taken steps to assure that incompatible wastes will not be mixed. The waste stream profile, the hazardous waste manifest, and the hazardous waste label will identify all significant waste constituents. Incompatible waste will not be placed in tanks. Such wastes may be directly burned or injected through the sludge pump; may be recontainerized into smaller volumes and slowly fed into the kiln; or may be shipped off-site for treatment or disposal. The sludge hopper and associated piping will be cleaned with an appropriate solvent after the pump is used to charge an incompatible chemical into the kiln.

C.5.4 Quality Assurance/Quality Control Plan

The 3M Environmental Laboratory in St. Paul, and the contract laboratories used by the Corporate Incinerator, each have written quality assurance/quality control plans. A copy of the table of contents from the 3M Environmental Laboratory Quality Assurance manual is included in Appendix C.

C.5.5 Recording Analytical Results

The Cottage Grove Corporate Incinerator will record the results of the analyses performed on-site using the forms included in Appendix C.

Laboratory analysis reports from the Environmental Laboratory, or from an outside contract laboratory, will be retained on-site as paper copy and/or in a computer data base.

C.6 CHEMICAL AND PHYSICAL ANALYSIS

This section discusses how 3M provides information on the chemical and physical properties of wastes being processed at the 3M Cottage Grove Corporate Incinerator. This information is needed to assure proper storage and/or thermal treatment of each waste stream.

Waste analysis discussed in this section include:

- visual confirmation of contents
- compatibility testing
- fingerprint analysis
- analysis of bulk liquid samples prior to incineration
- ongoing analysis for selected heavy metals.

The discussion below will detail how each of the components discussed above forms a comprehensive waste analysis plan for the following waste types shipped to the 3M Cottage Grove Corporate Incinerator. Confirmation steps and an analysis for fingerprint parameters, as well as ongoing confirmatory analysis, are detailed for the following waste types.

- Containerized solid wastes
- Sludge pump and direct burn wastes
- Bulk solids
- Bulk and containerized liquids

C.6.1 Containerized Solid Waste Analysis

The methods used to verify waste contents at receipt have been previously discussed in Section C.4.

Prior to incineration, an incinerator operator will visually examine the contents of most containers. Containers which may not be opened include the following:

i. Raw materials and products where the labels provide an adequate description of the container contents.
ii. Empty containers or packaging
iii. Lab packs which contain detailed descriptions of the contents in accordance with the 3M Lab Pack policy. See Appendix C.

iv. Biological and infectious wastes

v. Wastes containing highly toxic or reactive material where personnel exposure must be minimized.

The presence of significant quantities of high Btu free liquid in nonpumpable drums can cause operational problems. If there is a significant amount of free organic liquid in a container, the drum is first sent to the Pump Room to have the liquids removed, and then sent back to the Pak Feeder for incineration.

Drums will also be visually inspected for metal pipes, valves, and gas cylinders which could cause operational problems.

In addition, a number of containers from each shipment will be randomly selected during receipt and set aside for verification (See Section C.4.2). When these wastes reach the Pak-feeder, the operator will obtain a copy of the profile and visually verify the contents of the container. A copy of the verification form used for this evaluation is included in Appendix C.

C.6.2 Sludge Pump and Direct Burn Waste Analysis

Before any waste is transferred into the sludge pump hopper, a sample will be collected from the waste stream and mixed with the materials present in the hopper to insure its compatibility. These written compatibility procedures are outlined in Appendix C.

In addition, a number of containers from each shipment will be randomly selected during receipt for verification. When these wastes reach the pump room, the operator will obtain a sample from the container, and a fingerprint analysis will be used to verify the drum contents. Fingerprint parameters are summarized in Section C.4.2.

C.6.3 Bulk Solids Waste Analysis

All bulk solids wastes will be visually evaluated and compared to the waste stream profile prior to incineration, as discussed above.

C.6.4 Bulk and Containerized Liquids Waste Analysis

Upon Receipt

The methods used to receive both bulk and containerized liquids were discussed in Section C.4.

Prior to Incineration

The contents of bulk trailers and of containers which hold liquids will be transferred into storage tanks prior to incineration. A compatibility test is conducted before these materials are added to the tanks, as outlined in Appendix C.

The contents of hazardous waste tanks are mixed. Prior to incineration, a representative sample from the tank is collected and analyzed for the following:

- Btu value
- Percent chlorine
- Percent ash.

Other analysis may be conducted if necessary.

During Incineration

Samples of all liquid wastes are collected as the waste is burned. Weekly composites are prepared and analyzed for the following constituents:

Physical parameters	Chemical Parameters
Ash	Chlorine
Btu	Fluorine
Percent water	Bromine
Specific Gravity	Sulfur

In addition, separate samples of No. 2 and No. 6 fuel oil will be collected and analyzed quarterly for the same parameters.

Individual Waste Stream Analysis

All bulk tankers are analyzed upon receipt in accordance with the procedures listed in Section C.4. During container receipt, individual containers of liquids will be randomly selected for analysis. When these containers are transferred to the pump room, samples will be taken and analyzed for those fingerprint parameters listed in Section C.4.2 which will appropriately identify the material.

C.7 SAMPLING AND ANALYTICAL METHODS

C.7.1 Sampling Methods

Bulk tanker shipments are sampled from the tanker access port. The contents of storage tanks are sampled, after mixing, at a valve in the piping. Drums containing liquids are sampled using a coliwasa. Solids would be sampled using a trowel or other appropriate solids sampling device.

Samples are analyzed within the holding times specified in the U.S. EPA document "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Publication Number SW 846 (Third Edition, November, 1986). Samples are placed in sample containers which are specified in SW846, and preservatives are added if specified in that document. If no preservative is specified in SW846, then samples are preserved at 8°C. using ice. 3M does maintain chain of custody documentation on all samples.

C.7.2 Analytical Methods

The Cottage Grove Corporate Incinerator has the capability to perform several analyses on-site. Those analyses, and the test method used, are detailed below.

Parameter	EPA Test Method	or	ASTM Test Method
Btu	D240-87		
Flash point	1010		D3278-89
Percent ash			D482-87
Percent chlorine			D4208
Percent Water			D203-75
pH	9045 (solid) 9041 (liquid)		
Specific gravity			D1298-85

Some samples are sent to the 3M Environmental laboratory located at 900 Bush Avenue in St. Paul, Minnesota. Analyses at this laboratory are performed using procedures specified in SW846. The Environmental laboratory currently analyses metals for the incinerator. The specific metal preparation method and analytical method are specified below:

- 200.7 - Determination of Metals and Trace Elements in Water and Wastes by Inductive Coupled Plasma-Atomic Emission Spectrometry.
- 200.8 - Determination of Trace Elements in Waste and Wastes by Inductive Coupled Plasma - Mass Spectrometry.
- 245.1 - Determination of Mercury in Water by Cold Vapor Atomic Absorption Spectrometry.
- 245.5 - Determination of Mercury in Sediment by Cold Vapor Atomic Absorption Spectrometry.

The Cottage Grove Corporate Incinerator also sends samples to outside contract laboratories. These contract laboratories also use approved methods. Currently the following laboratories perform the analysis indicated below.

Laboratory	Parameters
Minnesota Valley Testing Lab Bismarck, ND Mn # 038-999-267	F, Br, percent Cl, Tot Halogens, percent Ash, percent Sulfur, percent Moisture, Btu, Specific Gravity
Bay West Analytical Lab St. Paul, MN Mn # 027-123-225	Metals, Organics
Braun Intertec Mpls, MN Mn # 027-053-117	Organics
WW Engineering & Science Grand Rapids, MI Mn # 026-999-161	Organics
3M Environmental Lab St Paul, MN Mn # 027-123-237	Metals

All of these laboratories are certified by the State of Minnesota Department of Health. All testing is done following standard methods which include:

Standard Methods for the Examination of Water and Wastewater
17th or 18th Edition

EPA SW-846
November 1986
3rd Edition

Methods for the Determination of Metals in Environmental Samples
EPA-600/4-91-010
June 1991

Methods for the Chemical Analysis of Water and Wastes
EPA-600/4-79-020
March 1983

A listing of the analytical procedures for organics used at one laboratory is listed in Appendix C.

A listing of the analytical procedures for metals used at that laboratory are shown in Appendix C.

C.7.3 Continuous Emissions Monitoring (CEM) Filter Analysis

3M collects samples from the continuous emissions monitoring (CEM) filters located in the induced draft fan discharge duct. The sampling method that has been used as described in Appendix C, The 3M CEM System. Samples of the CEM filters have been collected weekly and analyzed for heavy metals. Sample results indicate extremely low concentrations of heavy metals in the discharge, and provide evidence that repetitive analysis of 3M wastes for heavy metal is unnecessary.

On August 10, 1993 3M and its contractor MRI submitted a proposal for validation of 3M's Semi-continuous Metals Emission Monitoring Method using EPA Method 301. The proposed field validation test will consist of parallel sampling of 3M's HWI effluent flue gases, using the EPA Multiple Metals Method, drawing multiple-point samples isokinetically from the stack, and 3M's proposed method, drawing single-point samples from the breaching. A copy of this proposed test plan for validation is included as Appendix C.

C.8 ADDITIONAL WASTE ANALYSIS PLAN REQUIREMENTS

C.8.1 Land Disposal Restrictions

When an on-site or off-site 3M generator ships waste to the 3M Cottage Grove Corporate Incinerator or to another treatment, storage or disposal facility (TSDF), the generator prepares the appropriate Land Disposal Restriction (LDR) notifications and/or certifications as outlined in 40 CFR Part 268.7 (M.R. Part 7045.1315).

This information includes:

a. The generator's U.S. EPA hazardous waste number.

b. The corresponding treatment standard and all applicable prohibitions.

c. The manifest number for the waste shipment.

d. Available waste analysis information.

This information must accompany each shipment of hazardous waste to the Corporate Incinerator. The generating plant will maintain a copy of the LDR form at the plant for five years. The incinerator will also maintain a copy of the LDR form for each shipment for five years after shipment. The LDR form includes the notification required by 40 CFR Part 268.7 a.2.D. (M.R. Part 7045.1315 subpart. 1.B.2.). The LDR forms currently used by the Corporate Incinerator are included in Appendix C.

The Cottage Grove Corporate Incinerator will not accept a waste which is not accompanied by a proper LDR form. Should a hazardous waste be shipped to the Incinerator without an appropriate LDR form, 3M will request that the generating plant facsimile an LDR form.

The Corporate Incinerator ships ash and APC sludge to other TSDF facilities. The Incinerator also reships PCB wastes, mercury contaminated debris and other materials which are shipped to the Incinerator from 3M plants. Some of these wastes may be shipped in the original containers and others may be consolidated for shipment off-site. The Corporate Incinerator will perform all analysis required by the off-site TSDF facility, and will comply with all LDR requirements. Off-site facilities usually require the use of their own LDR forms.

C.9 CONCLUSIONS

3M has a unique knowledge of the types of waste destined for thermal treatment at the Cottage Grove Corporate Incinerator. 3M has gained this unique knowledge of waste composition through its twenty year history of incinerating 3M hazardous wastes; through its corporate training program and the development of tools such as the Waste Disposal Procedures Manual; through the development of the Waste Stream Profile Program and the Internal Waste Tracking System; and through the use of 3M computerized data bases.

3M has taken this unique knowledge of its wastes and enhanced this knowledge through the development of this Waste Analysis Plan. The Waste Analysis Plan is designed to protect the health and safety of workers; to provide the incinerator operator with the information needed to properly manage each waste stream received; to accurately identify those wastes which cannot be incinerated on-site; and to assure continued compliance with all permit limits.

SECTION D
Security

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SECTION D
SECURITY

D.1 INTRODUCTION

The information provided in this section is submitted in accordance with the requirements outlined by M.R. part 7045.0452, subpart 4. Security procedures and equipment in use at the 3M Cottage Grove site are described in the first section: General Site Security. Additional security measures at the incineration facility itself are detailed in the second section: Incineration Facility Security.

D.2 GENERAL SITE SECURITY

D.2.1 Perimeter Barriers

The entire developed portion of the 3M Cottage Grove Center site is enclosed within a single seven-foot high chain link fence. Certain sections of the fence are topped by three strands of barbed wire. The main entrance to the plant is on County Road 19, with a checkpoint at Building 65. This is normally the only entrance/exit to the plant. In an emergency, three other access points can be used for vehicular entrance or exit. These secondary entrances, shown in Figure P-1 of Appendix P, are located as follows:

1. Keats Road with gates at the railroad underpass.
2. Miller Road with a gate due north of Building 123.
3. Road to Cottage Grove Wastewater Treatment Plant with a gate northwest of the coal storage area.

Two other gates in the perimeter fence access dead-end roads. These gates are also depicted on Figure P-1. The gate east of the wastewater treatment area is used to provide access to the Mississippi River for sampling purposes. Access to Production Wells 5 and 6 is provided by a gate located near Building 36. With the exception of the main entrance, which is always attended by 3M security guards, all gates are normally locked.

D.2.2 24 Hour Surveillance System

Security at the 3M Cottage Grove site is maintained by a staff of trained security guards, who monitor entry and exit from the active portion of the facility and provide security measures within the plant premises.

The main security station, located in Building 65, is staffed with security personnel 24 hours a day, seven days a week. Guards normally work in eight-hour shifts with a crew of two guards. From 6:30 a.m. to 4:30 p.m., one guard will be stationed in Building 65 and one in Building 116. The guard in Building 65 checks employees for passes and directs visitors to Building 116 for registration. Contractors register at Building 129 during peak hours (6:30 a.m. - 8:30 a.m. and 2:30 p.m. - 4:30 p.m., Monday through Friday) and at Building 65 at all other times.

The guard in Building 116 registers all visitors, contractors, and non-Cottage Grove 3M employees and controls vehicular traffic in and out of the Building 116 gate through the use of stop arms.

From 4:30 p.m. to 6:30 a.m. one guard maintains control of plant access from Building 65 while one guard conducts inspections throughout the facility.

In addition to security staff, numerous television cameras are also used to provide continuous 24-hour surveillance of the plant site from Building 65. The location, type and observation area of the various cameras are described below:

Location	Type*	Observation Area
Bldg 65	PTZ	Main road south of Bldg 65
Bldg 116	PTZ	Main road west of Bldg 116
Bldg 47	PTZ	Entrance/exit road to incinerator
Bldg 41	PTZ	Employee entrance in Bldg 41
Bldg 41	FXD	Bldg 41 east lobby
Bldg 41	FXD	Employee pass reader in Bldg 41 east lobby
Bldg 116	PT	Employee entrance in Bldg 116 lobby
Bldg 22	PTZ	
Bldg 22 stockroom	FXD	Courtesy Gate-Main
Park Lot	FXD	Employee entrance

*PTZ-pan, tilt and zoom; PT-pan, tilt; FXD-fixed.

D.2.3 Means to Control Entry

All vehicles entering the plant are initially cleared through the Building 65 security center. Employees must show their identification cards as they drive through while contractors and other visitors are stopped.

Visitors are instructed to register in Building 116. Contractors register in Building 129 during peak hours (6:30 a.m. - 8:30 a.m. and 2:30 p.m. - 4:30 p.m., Monday through Friday) and in Building 65 at all other times.

As a rule, vehicular traffic is not allowed within the plant proper (i.e. beyond Building 116). Exceptions are:

1. Trucks making deliveries or pick ups.
2. 3M maintenance vehicles.
3. Contractors' vehicles bringing in equipment or supplies.
4. Each division has two "in-plant" parking passes for personal vehicles. These passes are issued by the respective plant managers based on need.

A shuttle van service is used from 6:30 a.m. to 4:30 p.m. to move 3M employees and visitors about in the plant.

Employees enter the plant proper at four locations:

1. Building 116 lobby.
2. Building 41 east lobby.
3. Courtesy gate in southeast corner of main parking lot.
4. Building 47 office complex.

The first three of these entrances have turnstiles operated by employee passes coded with magnetic strips. Building 47 has a door that is unlocked with an employee pass. All locations are monitored by television cameras from the security center in Building 65.

Employees working in Buildings 123 and the incinerator (Building 47/60) report directly to their work area where parking is provided for personal vehicles. The south-viewing Building 65 camera and the camera on the incinerator entrance gate are used to monitor traffic on the road to the incinerator.

All visitors, non-Cottage Grove 3M employees and contractors must register on log sheets either in Building 116 (visitors and non-Cottage Grove 3M employees) or in Building 129/Building 65 (contractors). Temporary daily passes are issued for each visitor to wear. When leaving the plant, each visitor must sign out and turn in the daily pass.

D.2.4 Security Procedures and Equipment

In addition to the general security provisions of fencing, gates and guards discussed above, several other features contribute to the prevention of unknowing or unauthorized access to the facility. Ample lighting is provided throughout the site. Security personnel are equipped with hand-held, two-way radios for immediate reporting of abnormal conditions. In addition to the two-way portable radios carried by the guards, a base station for the public address system is located at the security center (Building 65). The internal telephone system for the plant is also used for external communications.

Employees are required to show identification cards or vehicle parking passes when reporting for work in the main plant area. Visitors and contractors entering the main plant area or the incinerator must sign a log sheet and obtain visitors passes in Building 116 or Building 129.

D.2.5 Warning Signs

Signs, legible from a distance of 25 feet, are posted at all fence gates in the incinerator area. These signs are visible from all angles of approach and bear the legend "Danger - All Unauthorized Personnel Keep Out." Also "No Smoking" signs, legible for a distance of 25 feet, have been placed at building entrances.

D.3 INCINERATION FACILITY SECURITY

D.3.1 Perimeter Barriers

Within the 3M Cottage Grove site perimeter fence, the incinerator and its associated tank, container and bulk storage areas are enclosed with a second seven-foot high, chain link fence topped by three strands of barbed wire. Three gates are provided for access. The main gate is remotely controlled from the Building 47 Shipping & Receiving Office (Monday-Friday, 6 a.m. to 4 p.m.) or the Building 47 Control Room (after-hours, weekends and holidays). A second gate has been provided for access to the boiler ash landfill. The third gate, located northwest of the coal storage area, is provided as an emergency exit. Figure P-1 shows the location of the incinerator barriers.

D.3.2 24 Hour Surveillance System

In addition to the 24 hour surveillance provided by 3M Cottage Grove security personnel, television monitors in the Incinerator Control Room provide 24 hour surveillance of incineration facility entrances,

storage areas and process areas. Video monitors in both the Incinerator Control Room and the Shipping & Receiving Office pan the main gate area in order to monitor incoming and outgoing waste shipments. Additional video monitors in the Incinerator Control Room providing 24 hour surveillance of the following areas:

- 360° pan of neutralization
- Bulk unloading and entrance road areas (from boiler roof)
- 360° pan of tank and container storage area (from ash house roof)
- Drum storage and handling area
- Drum pumping room
- Ash house truck unloading area
- Tanker unloading area.

The layout of the television monitors in the Incinerator Control Room is depicted in Section A, Figure A-4.

D.3.3 Means to Control Entry

All 3M employees, contractors and visitors pass through an initial security check at the Building 65 Security Center on entering the site. Contractors and visitors sign in as outlined above before proceeding to the incineration facility.

Employees, contractors and visitors enter the incineration facility through an entrance lobby in the Building 47 office complex. From the lobby, a locked door with an opener activated by the magnetic strip on employee identification badges provides entry to the facility. Visitors and contractors are required to sign the incinerator log book before being allowed entry into the facility by the receptionist during weekday business hours or by the shift supervisor after business hours and on weekends.

Truck drivers making deliveries or pick-ups enter the shipping and receiving area through the remotely-controlled main gate. (The main gate is opened and closed from the Shipping and Receiving office during normal business hours and from the Incinerator Control Room during off hours. Television monitors with radio communication in both the Shipping and Receiving Office and the Incinerator Control Room provide surveillance of the main gate area.) Drivers are required to sign the visitor log book outside the Shipping and Receiving office.

D.3.4 Security Procedures and Equipment

In addition to the general site security provisions and the incineration facility security provisions discussed above, several other features contribute to the prevention of the disturbance of the waste or equipment by the unknowing or unauthorized entry onto the active portion of the facility. Daily inspection of tank and container storage areas and waste piles supplements the continuous surveillance of these areas via the television monitors in the incinerator control room. The three gates providing access to the incineration facility are also inspected daily. The structural integrity of the perimeter fence is inspected monthly. The two way radios and telephones that provide security communications are inspected daily. (For a detailed description of the incineration facility inspection schedule, see Section E, Table E-2.)

D.3.5 Warning Signs

Signs, legible from a distance of 25 feet, are posted at all fence gates around the incineration facility. Signs are also posted at all entrances from the Building 47 office complex into the incinerator process area and at the Shipping and Receiving Office entrance . These signs are visible from all angles of approach and bear the legend "Danger - All Unauthorized Personnel Keep Out." Also "No Smoking" signs, have been placed at building entrances.

SECTION E
INSPECTIONS

E.1 INTRODUCTION

Scheduled inspections of the hazardous waste treatment and storage facilities at the 3M Cottage Grove Center are conducted to identify equipment malfunctions, structural deterioration, operator errors, and discharges that could cause or lead to the release of hazardous waste constituents and adversely affect the environment or threaten human health. This program of scheduled inspections is in accordance with the requirements stipulated in M.R. Part 7045.0452, subpart 5: General Inspection Requirements. Table E-1 presents a general summary of the facility inspection and maintenance program. Inspections must be conducted in accordance with the facility inspection schedule, which is included in this document as Table E-2.

E.2 PERSONNEL RESPONSIBILITIES

Portions of the facility inspections are conducted by individuals filling the following positions:

- Incinerator Shift Supervisor
- Incinerator Process Operator
- Incinerator Control Room Operator
- Systems Control Technician
- Shipping and Receiving Operator.

The Incinerator Process Operator is responsible for inspecting all process equipment mechanical components, safety and emergency equipment in the process area, and facility security devices. The Incinerator Process Operator inspects the storage tanks, the decant tanks, the blend tanks, and the bulk solids feed storage area.

The Incinerator Control Room Operator is responsible for inspecting process monitoring parameters that are displayed in the Control Room. Inspection of these parameters is conducted to spot trends that may indicate that equipment maintenance may be required. The Incinerator Control Room Operator is also responsible for conducting a weekly test of alarms and the waste feed cutoff system and documenting the test on the Instrumentation Inspection Log (Appendix E).

The Systems Control Technician is responsible for inspecting field process monitoring instrumentation. Items inspected by the Systems Control Technician include the CEM systems, pH probes, thermocouples, pyrometers, level gauges, and pressure sensors.

The Shipping and Receiving Operator is responsible for inspecting container storage areas in Building 47 and Building 60 and for conducting inspections of all of the trailer storage areas except for Lot T. The Incinerator Shift Supervisor is responsible for container inspections at area Lot J (old coal pile), which is located near the wastewater treatment plant.

A list of specific items checked by each of these personnel is presented in the 3M Corporate Incinerator Inspection Plan, Table E-2. A Storage Inspection Log Form is included in Appendix E.

Daily facility inspections are conducted during the day shift (7:00 a.m. to 3:00 p.m.) on Monday through Friday at the 3M Cottage Grove Center. Daily inspections are also conducted during the day shift (7:00 a.m. to 3:00 p.m.) on Saturday and Sunday at the Corporate Incinerator. The Shipping and Receiving Operator and the incineration facility Systems Control Technician do not normally work on weekends. On weekends, the Incinerator Process Operator conducts inspections that are performed during the week by the Shipping and Receiving Operator. A Systems Control Technician from the Plant Maintenance personnel pool conducts inspections on weekends which are normally performed by the Incinerator's Systems Control Technician.

E.3 INSPECTION SCHEDULE

Table E-2 is the facility inspection schedule. Table E-2 lists items to be inspected on an area by area basis and is organized to facilitate inspections as an operator performs inspection rounds. Table E-2 also identifies the types of problems looked for, normal operating conditions, the frequency of inspection for each item, and the specific personnel responsible for performing each inspection.

Table E-2 describes inspection requirements for the following areas and equipment:

- Container storage areas
- Bulk Containment area
- Tank storage areas
- Incineration equipment

- Ash handling equipment
- Heat recovery system
- Air pollution control system
- Neutralization system
- Continuous emissions monitoring system (CEM)
- Security devices
- Safety and emergency equipment
- Control room monitoring equipment
- Process field instruments.

E.4 INSPECTION PROCEDURES

A brief description of procedures for inspecting major categories of items is presented below.

E.4.1 Container Storage Areas

Containers are stored in Building 47 and Building 60. In addition, Building 112 is used by Shipping and Receiving personnel to receive and sort incoming and outgoing shipments. Although no containers are stored in Building 112, containers being processed in this area are also inspected daily. The location of each building and each trailer parking area is depicted on Drawing No. CHEM-888-C-142 in Appendix A.

The procedure for inspecting container storage areas in Building 47 and Building 60 and containers being processed in Building 112 involves walking throughout each of the buildings and evaluating the condition (structural integrity, seals, labels) and placement (proper placement of ignitable, reactive, or incompatible wastes) of containers. The inspection should confirm that storage practices (stacking height, aisle space) meet the National Fire Protection Association (NFPA) flammable and combustible liquids code requirements described in Table E-3. These requirements are incorporated by reference into OSHA standards (29 CFR 1910.106). Secondary containment is inspected for structural integrity and the presence of any liquids accumulation.

Containers are also stored on trailers in the following permitted container storage lots:

- Lot A - Storage area adjacent to coal pile.
- Lot B - Supplemental trailer storage area
- Lot C - Asphalt pad

- Lot D - Diked storage area
- Lot J - Old coal pile area
- Lot K - Supplemental trailer storage area
- Lot L - Supplemental trailer storage area

The location of these lots is depicted in Drawing No. CHEM-888-C-142 in Appendix A. The storage lots were previously permitted with S-# designations. 3M is requesting the letter designation to be used in the future.

Individual trailers are visually inspected each day for evidence of container leakage or structural deterioration of the trailer and proper trailer location. In addition, the conditions of the storage area secondary containment systems are noted. For Lot D and Lot A, the dike drainage valve is checked to verify that it is normally closed. The quantity and quality of accumulated precipitation is also checked to see if drainage is required or if a leak is evident. Inspection of Lot J involves noting the water level and quality in the runoff pond. Lot C is examined to visually identify leaks or spills of hazardous materials.

E.4.2 Bulk Solids Storage

The Bulk Solids Storage building (Oakdale Building) is inspected daily. The integrity of the run-on control dike and the condition of the drains are checked.

E.4.3 Storage Tanks

Waste storage tanks are located at the incinerator storage tank farm and the incinerator decant and blend tank area. All tanks are located above ground and are easily accessible for inspections. The procedure for inspecting storage tanks involves visually examining each tank and its associated piping, connections, and valves, for indications of deterioration and/or leakage. Tank agitators are checked for unusual noises. Tank overfill controls are inspected daily for proper operation and accuracy. Overfill alarms are tested weekly.

In addition to the tanks themselves, secondary containment areas are examined for general integrity and evidence of tank leakage. Any liquids in secondary containment area are removed within 24 hours. The dike area has total containment (trenches and a sump with no outlet). Noncontaminated stormwater is removed by a vacuum truck and discarded into the wastewater system through the neutralization pit.

The transfer and burner pumps and sump pumps associated with the tank farm are inspected daily.

E.4.4 Drum Handling Facility

A drum handling facility located adjacent to the fuel oil unloading area. Any liquids in the secondary containment area are removed within 24 hours. The dike area has total containment (trenches and a sump with no outlet). Noncontaminated stormwater is removed by a vacuum truck and discarded into the wastewater system through the neutralization pit.

E.4.5 Tanker Unloading Building

Secondary containment areas for the Tanker Unloading Building, secondary containment areas are examined for general integrity and evidence of tank leakage. Any liquids in secondary containment area are removed within 24 hours. The dike area has total containment (trenches and a sump with no outlet) and the area is covered to prevent surface run-on.

E.4.6 Incinerator

Inspection of the incineration area mechanical equipment is conducted daily by an Incinerator Process Operator. Items included in these inspections are listed in Table E-2 under the Kiln Head Room and Rotary Kiln/Secondary areas . These inspections include instrumentation devices that have local readings and the following major and ancillary process equipment: burner guns, pak feeder hydraulic system, air compressors and dryers, aqueous tank glycol system, forced draft and pilot air fans, kiln end casing cooling fan, kiln drive, kiln plenum, front and back kiln seals and emergency stack cap seal. Kiln refractory is inspected frequently and replaced as needed on an annual or semi-annual basis.

E.4.7 Ash Handling System

Inspection of the ash handling area mechanical equipment is conducted daily by an Incinerator Process Operator. Items included in these inspections are listed in Table E-2. These inspections include instrumentation devices that have local readings and the following major and ancillary process equipment: ash quench sump, shredder, ash conveyors, and steam sparger. The ash storage trailers are also inspected daily.

E.4.8 Heat Recovery System

Inspection of the heat recovery system mechanical equipment is conducted daily by an Incinerator Process Operator. Items included in these inspections are listed in Table E-2. These inspections include instrumentation devices that have local readings and the following major and ancillary process equipment: ash hoppers, star valves, feedwater pumps, sight glasses, steam header, soot blower, and generator/turbine. Insulation is also inspected daily for tears.

E.4.9 Air Pollution Control System

Inspection of the air pollution control system mechanical equipment is conducted daily by an Incinerator Process Operator. Items included in these inspections are listed in Table E-2 and include instrumentation devices that have local readings and the following major and ancillary process equipment: glycol system, precipitator purge fan, recycle pumps, chemical feed systems, and ID fan.

E.4.10 Neutralization System

Neutralization system mechanical equipment is inspected daily. Items included in these inspections are listed in Table E-2 and include instrumentation devices that have local readings and the following major and ancillary process equipment; lime feed system, caustic storage tank, caustic feed pump, neutralization pit and pit bar screen and lift station pumps, emergency generator, batteries and air compressor. In addition, the lime silo is inspected for structural integrity.

E.4.11 Continuous Emissions Monitoring Equipment

The KVB CEM is inspected daily for the following items:

- Gas flow rate
- Vacuum pressure
- Potentiometer settings
- Gas conditioning system air infiltration
- Gas conditioning system moisture dropout efficiency
- Electronics hardware operation
- Acceptable readings.

In addition to routine inspections, the CEM system is calibrated in accordance with vendor specifications on a daily basis. All CEM inspections and instrument calibrations are conducted by the Systems Control Technician. (See Table E-2, Process Area.)

E.4.12 Security Devices

An Incinerator Process Operator inspects the three security gates at the incineration facility each day. All communications equipment including telephones and two way radios is also inspected daily. Each month the security fence is inspected for structural integrity, and warning signs are checked for legibility.

E.4.13 Safety and Emergency Equipment

Process areas are inspected to ensure that lights are working properly. Fire control equipment is inspected for operability and content of fire retardant chemicals (foam, inert gas, dry chemical, water, etc.). Spill control and safety equipment (breathing equipment and protective clothing) are inspected for operability and integrity (Details regarding spill control and safety equipment can be found in the Contingency Plan, Appendix G). Emergency showers and eyewash stations, alarms, and communication equipment are also inspected. Safety and emergency devices are inspected for the following:

- Adequate quantities of supplies
- Operability
- Suitable for the application.

The Shipping and Receiving Operator is responsible for inspection of these items in Building 60 and the Incinerator Process Operator is responsible for inspecting these items at other locations in the facility. The plant fire protection system is inspected semi-annually by an independent contractor.

E.4.14 Control Room Monitoring Equipment

The Incinerator Control Room Operator is responsible for daily verification of the performance of the process instrumentation listed in Table E-2 under the Control room area. Principle inspections include those for waste feed cutoffs, alarms, the emergency shutdown interlock system, and process control parameters (temperature, pressure, tank level, etc.). In addition to the inspection log, the Incinerator Control Room Operator also completes a Daily Operating Log every four hours.

The emergency waste feed cutoffs and associated alarms are tested at least weekly to verify operability. Some components of the weekly tests are conducted both by the Incinerator Control Room Operator and other components are conducted by the Systems Control Technician. The Incinerator Control Room Operator activates a series of instrumentation jumpers within the Foxboro process control system that send artificial signals to the field instrumentation. The performance of each instrumentation loop is checked to make sure that each feed shutoff interlock is working properly. The performance verification of these instruments is recorded on the Instrumentation Inspection Log.

E.4.15 Process Field Instruments

Process monitoring instrumentation with local readings is check daily by an Incinerator Process Operator as part of the routine inspection of the various process areas. In addition, process monitoring instrumentation is inspected and calibrated on a regularly scheduled basis by the Systems Control Technician. These devices include continuous emissions, flow, level, temperature, pressure, and pH measuring and control instruments. The Systems Control Technician conducts a weekly test of specific field transmitters to make sure that they are working properly. The inspection of these transmitters is recorded on the Instrumentation Inspection Log. See Table E-2, Process Area.

E.5 REMEDIAL ACTION

Inspectors note any abnormal condition or conditions that require remedial action on the back of the inspection logs. The Incinerator Shift Supervisors and the Shipping and Receiving Supervisor review inspection logs each day and schedule any required maintenance through plant maintenance services. Corrective maintenance procedures are initiated as a result of inspections performed by the various inspectors. If inspections reveal that nonemergency maintenance is needed, repairs are completed as soon as possible to preclude further damage and reduce the need for emergency repairs.

If a hazard is imminent or has already occurred during the course of an inspection or at any time between inspections, remedial action will be taken immediately. 3M personnel will notify the appropriate authorities as required by the permit or as specified in the Contingency Plan, if required, and initiate remedial actions. In the event of an emergency involving the release of hazardous constituents to the environment, efforts will be directed toward containing the hazard, negating it, and subsequently decontaminating the affected area(s). Procedures described in the facility Contingency Plan provide additional details on procedures to be taken in response to spills, releases, or emergencies.

E.6 RECORD KEEPING

The Storage Inspection Log, Process Equipment Inspection Log and Instrumentation Inspection Log are used to record the results of daily, weekly, and monthly inspections. Samples of the process equipment inspection log are included in Appendix E. Information that must be recorded on the inspection log sheets includes the inspector's initials, date and time of inspection, item(s) inspected, and status of the item(s). Space is provided on the back of each log for noting pertinent observations, corrective action requirements, and the date when corrective actions were taken.

After daily inspection log sheets are completed, they are stored in the appropriate Supervisor's office or in an area designated by the Supervisor. At the end of each month, all inspection logs are forwarded to the Incinerator's Compliance Office where they are permanently filed. Daily Inspection Logs are filed for each calendar year.

Calibration records are maintained and filed by the Systems Control Technician. A sample of the Calibration Data Sheet is included in Appendix E.

All inspection records are retained for at least three years from the date the inspection was conducted.

Table E-1. Inspection and Maintenance Program Summary

Equipment/Parameter	Key Inspection and Maintenance Criteria	Maintenance and Inspection Frequency				
		Monitoring and Operation Equipment			Emergency Systems	
		Calibration	Inspection	Service	Alarms	Waste Cutoff
Container storage areas Containers Trailer storage Areas	 Leaks, labeling, location acess Leaks, liquid in dikes	–	Daily	(a)	–	–
Tanks, pumps, piping	Leaks, secondary containment	–	Daily	(a)	–	–
Tank overfill controls	Proper operation and accuracy	–	Daily	(a)	Weekly	–
Incineration Equipment	Mechanical problems, air supply	–	Daily	(a)	–	–
Ash handling equipment	Mechanical problems, ash spills	–	Daily	(a)	–	–
Heat recovery system	Mechanical problems, water supply	–	Daily	(a)	–	–
Air Pollution control system	Mechanical problems, water recirculation, chemical feed	–	Daily	(a)	–	–
Neutralization system	Chemical feed, water flow	–	Daily	(a)	–	–
Continuous emissions monitors	Proper operation and accuracy	Daily	Daily	(a)	–	–
Security	Areas secured	–	Daily	(a)	–	–
Safety and emergency equipment	Operability, supplies	–	Daily	(a)	–	
Alarms and waste feed cutoffs	Proper operation and accuracy	–	Daily	(a)	Weekly	Weekly
Process Instrumentation Tank level indicators Fuel flowmeters Pressure sensors Thermocouples Pyrometers Steam pressure gauge Scrubber water pressure gauges Scrubber water flowmeters WESP voltage ID Fan vibration ID Fan power pH probes Transmitters (key)	 Values within permit limits Values within permit limits Values within permit limits Values within permit limits Values within permit limits Value within normal range Value within normal range Values within permit limits Values within permit limits Value within normal range Value within permit limits Values within permit limits Operability	 Semi-annually Semi-annually Quarterly Quarterly Weekly Semi-annually Semi-annually Semi-annually Semi-annually Quarterly Quarterly Daily Weekly	 Daily Daily Daily Daily Daily Daily Daily Daily Daily Daily Daily Daily –	 (a) (a) (a) (a) (a) (a) (a) (a) (a) (a) (a) (a) (a)	 – – – – – – – – – – – – –	 – – – – – – – – – – – – Weekly

(a) Equipment manufacturer's recommendation as recorded in MMS System

Table E-2. 3M Corporate Incinerator Inspection Plan

Area	Equipment	Specific Items to Check	Types of Problems	Normal Operating Conditions	Inspection Frequency	Inspector
Building 60	Trailer unloading docks	Trailer chocks	Not chocked	Trailers must be double chocked	Daily	S&R Oper
		Dock straps	Straps not in place	Straps must be in place @ empty docks	Daily	S&R Oper
		Trailer door position	Door not closed	Door closed	Daily	S&R Oper
	Containers	Container integrity	Leaks, corrosion, bulging, dents	No damage or deterioration	Daily	S&R Oper
		Container seals	Unsecured lids & bungs	Secured lids and bungs	Daily	S&R Oper
		Container labels	Missing data, unreadable	Readable, complete data	Daily	S&R Oper
		Location	Improper placement	Proper placement of reactive, incompatable, or special wastes	Daily	S&R Oper
				No pumpable waste in non-pumpable waste storage area	Daily	S&R Oper
		Container stacking height	Stack too high	Class 1B solvents in drums on pallets no more than 2 high	Daily	S&R Oper
				Class 1A flammables and gas aerosols no more than 5.0 feet high	Daily	S&R Oper
		Aisle space	Inadequate space	Adequate space	Daily	S&R Oper
	Secondary containment	Integrity	Cracks, erosion	Sound shape	Daily	S&R Oper
		Liquids accumulation	Liquids accumulated	No liquids (remove in 24 hours)	Daily	S&R Oper
		Floor trenches	Clogged	Not clogged	Daily	S&R Oper
	Housekeeping	Cleanliness	Not clean	Clean	Daily	S&R Oper
Building 112	Trailing unloading dock	Trailer chocks	Not chocked	Trailers must be double chocked	Daily	S&R Oper
		Dock straps	Straps not in place	Straps must be in place @ empty docks	Daily	S&R Oper
		Door position	Door not closed	Door closed	Daily	S&R Oper
	Containers	Container integrity	Leaks, corrosion, bulging, dents	No damage or deterioration	Daily	S&R Oper
Building 47	Containers	Container integrity	Leaks, corrosion, bulging, dents	No damage or deterioration	Daily	Proc Oper

Table E-2. 3M Corporate Incinerator Inspection Plan

Area	Equipment	Specific Items to Check	Types of Problems	Normal Operating Conditions	Inspection Frequency	Inspector
Building 47 (cont.)	Containers	Container seals	Unsecured lids & bungs	Secured lids and bungs	Daily	Proc Oper
		Container labels	Missing data, unreadable	Readable, complete data	Daily	Proc Oper
		Location	Improper placement	Proper placement of reactive, incompatable, or special wastes	Daily	Proc Oper
				No pumpable waste in non-pumpable waste storage area	Daily	Proc Oper
		Stacking Height	Stack too high	Class 1B solvents in drums on pallets no more than 2 high	Daily	Proc Oper
				Class 1A flammables and gas aerosols no more than 5.0 feet high	Daily	Proc Oper
		Aisle space	Inadequate space	Adequate space	Daily	Proc Oper
	Secondary containment	Integrity	Cracks, spalling	Sound shape	Daily	Proc Oper
		Liquids accumulation	Liquids accumulated	No liquids (remove in 24 hours)	Daily	Proc Oper
		Floor trenches	Clogged	Not clogged	Daily	Proc Oper
	Drum pumping station	Unusual noises	Bearings, balance	Normal noise	Daily	Proc Oper
		Seals	Leaks	No leaks	Daily	Proc Oper
		Screens	Clogged	Unclogged	Daily	Proc Oper
		Hoses	Leaks, worn	No leaks, good shape	Daily	Proc Oper
	Housekeeping	Cleanliness	Not clean	Clean	Daily	Proc Oper
Drum Storage Trailers	Drum storage trailers	Trailer structural integrity	Leaks	No leaks	Daily	S&R Oper
			Ground spots	Clean all spots	Daily	S&R Oper
		Trailer location	Improper trailer location	Trailers in proper permitted lots	Daily	S&R Oper
		Dikes	Cracks, erosion	Sound shape	Daily	S&R Oper
		Dike drainage valve S-1	Open	Closed	Daily	S&R Oper
		Run-off holding pond S-3	High liquid level	Adequate capacity	Daily	S&R Oper
		Leaking drums	Leaks	No leaks	Daily	S&R Oper
		Liquids accumulation	Liquids accumulated	No liquids (remove in 24 hours)	Daily	S&R Oper
Containment Bldg (Oakdale Bldg)	Bulk feed storage	Runoff control	Dike integrity	Good condition	Daily	Proc Oper
		Containment area	Waste outside contained area	Waste in contained area	Daily	Proc Oper

Table E-2. 3M Corporate Incinerator Inspection Plan

Area	Equipment	Specific Items to Check	Types of Problems	Normal Operating Conditions	Inspection Frequency	Inspector
Tank Farm	Storage tanks	Liquid level	Level too high or low	Acceptable level	Daily	Proc Oper
		Structural integrity	Leaks, spills	No leaks	Daily	Proc Oper
		Dikes	Water in dike	Dry (pump if liquid present)	Daily	Proc Oper
		Dike drainage valve	Open	Closed	Daily	Proc Oper
		Structural support	Concrete cracked or spalled	Structurally sound	Daily	Proc Oper
			Corroded pipe supports	Not corroded	Daily	Proc Oper
		Containment dikes	Cracks, spalling	No cracks, no spalling	Daily	Proc Oper
		Anchor bolts	Corrosion, distortion	No corrosion, no distortion	Daily	Proc Oper
	Storage tank agitators	Unusual noises	Excessive noise	Normal noise level	Daily	Proc Oper
		Operability	Not operating	Running	Daily	Proc Oper
	Transfer and burner pumps	Unusual noises	Bearings, balance	Normal noise	Daily	Proc Oper
		Seals	Leaks	No Leaks	Daily	Proc Oper
		Screens	Clogged	Unclogged	Daily	Proc Oper
		Temperature	High temperature	Normal temperature	Daily	Proc Oper
	Sump pumps	Power	No power	Power	Daily	Proc Oper
		Clogging	Clogged	Not clogged		
	Piping, valves, and fittings	Leaks	Leaking	Not leaking	Daily	Proc Oper
		Corrosion	Corroded	Not corroded		
	Secondary containment	Dike, trench, sump integrity	Cracks, spalling	Sound shape	Daily	Proc Oper
		Liquids accumulation	Liquids accumulated	No liquids (remove in 24 hours)	Daily	Proc Oper
Kiln Head Rm.	Burner guns	Burner oil pathway	Residue buildup, clogging	Clear flow pathway	Daily	Proc Oper
	Pak feeder hydraulic system	Oil level	Low oil level	Middle of sight glass	Daily	Proc Oper
		Hydraulic pressure	High/low pressure	450 – 500 psig		
	Air compressors and dryers	Leakage	Leaks	No leaks	Daily	Proc Oper
		Oil level	Low level	Middle of sight glass	Daily	Proc Oper
		Temperature	High temperature	180–185° F (kicks out at 250° F)	Daily	Proc Oper
	Aqueous tank glycol system	Glycol liquid level	Low level	Middle of sight glass	Daily	Proc Oper
		Glycol temperature	Steam Regulator	120–140° F on return 160–180° F out	Daily	Proc Oper
	Forced draft/pilot air air fans	Bearings, balance	Excessive noise	Normal noise	Daily	Proc Oper
		Vibration	Excessive vibration	No vibration	Daily	Proc Oper

Table E-2. 3M Corporate Incinerator Inspection Plan

Area	Equipment	Specific Items to Check	Types of Problems	Normal Operating Conditions	Inspection Frequency	Inspector
Rotary Kilns/ Secondary	End casting cooling fan	Bearings, balance Vibration	Excessive noise Excessive vibration	Normal noise No vibration	Daily Daily	Proc Oper Proc Oper
	Kiln drive	Motion	Running	Not running	Daily	Proc Oper
	Kiln plenum	Solids accumulation	High level of solids	Minimal solids accumulation	Daily	Proc Oper
	Front and back kiln seals	Tight seal Negative draft	Fugitive emissions	No fugitive emissions	Daily	Proc Oper
	Emergency stack cap seal	Tight seal Negative draft	Fugitive emissions	No fugitive emissions	Daily	Proc Oper
Ash Handling Building	Ash quench sump	Quench water temperature	High temperature	Normal water temp (140-185° F)	Daily	Proc Oper
	Shredder	Hoses and pumps Oil level	Leaks, wear and tear Low level	No leaks Middle of sight glass	Daily Daily	Proc Oper Proc Oper
	Ash conveyors	Quench water drain screens Oil temperature/pressure Hydraulic leaks Pulleys Belts (limit swithches) Ash spills Proper operation	Clogged drains High temp/pressure Leaks Loose, wobbling Broken/worn belts Spilled ash Jammed, clogged	Unobstructed flow Normal temperature/pressure No leaks Secure fit Good condition No spills No jamups or plugging	Daily Daily Daily Daily Daily Daily Daily	Proc Oper Proc Oper Proc Oper Proc Oper Proc Oper Proc Oper Proc Oper
	Steam sparger	Steam flow on	Loss of steam pressure	Adequate steam pressure	Daily	Proc Oper
	Ash trucks	Capacity Labels Ash conditions	Trailer full Hazardous waste labels Smoke or fire present	Adequate capacity No labels No fire or smoke	Daily Daily Daily	Proc Oper Proc Oper Proc Oper
	Ash Pile	Run-on Run-off Ash spills	Standing water Spilled ash	Capacity Capacity Capacity	Daily Daily Daily	Proc Oper Proc Oper Proc Oper
Heat Recovery Boiler	Ash hoppers	Slag	Too full	Empty as required	Daily	Proc Oper
	Starr valves	Motion detectors	Torn rings	Rings not torn	Daily	Proc Oper

Table E-2. 3M Corporate Incinerator Inspection Plan

Area	Equipment	Specific Items to Check	Types of Problems	Normal Operating Conditions	Inspection Frequency	Inspector
Heat Recovery Boiler (cont.)	Feedwater pumps	Pressure	High/low pressure	800 to 1000 psi	Daily	Proc Oper
		Seals	Leaks	No leaks	Daily	Proc Oper
		Oil level	Low level	Middle of sight glass	Daily	Proc Oper
	Blowdown sight glass	Flow	Low flow	Blowdown	Daily	Proc Oper
	Deaerator sight glass	Level	Low level	Middle of sight glass	Daily	Proc Oper
	Steam drum sight glass	Level	Low level	Middle of sight glass	Daily	Proc Oper
	Steam header	Header temperature	High temperature	Normal temperature	Daily	Proc Oper
		Header pressure	High pressure	Normal pressure	Daily	Proc Oper
	Insulation	Tears	Tears	No tears	Daily	Proc Oper
	Soot blowers	Seals/packings	Leaks	No leaks	Daily	Proc Oper
	Generator/turbine	Status	Less than desired capacity	At the desired capacity	Daily	Proc Oper
Air Pollution Control	APC equip glycol system	Liquid level	Above the sight glass	Middle of sight glass	Daily	Proc Oper
		Temperatures	High temperature	In-110° F; Out-140° F (winter)	Daily	Proc Oper
			High temperature	In-130° F; Out-160° F (summer)	Daily	Proc Oper
	APC devices	WESP purge fan belt	Worn belt, excessive noise	Belt not worn	Daily	Proc Oper
		WESP purge fan bearing	Rotating, excessive noise	Bearings not worn	Daily	Proc Oper
		WESP purge fan shaft	Not turning	Turning	Daily	Proc Oper
		WESP purge fan noise	Excessive noise	Normal noise	Daily	Proc Oper
	Recycle pumps	Leaks	Leaks	No leaks	Daily	Proc Oper
		Vibration	Vibration	No vibration	Daily	Proc Oper
		Pump noise	Excessive noise	Normal noise	Daily	Proc Oper
		Temperature	High temperature	Normal temperature	Daily	Proc Oper
		Pressure	Hihg/low pressure	50 - 60 psig	Daily	Proc Oper
		Pump seals	Leaks, low flow	No leaks, good flow	Daily	Proc Oper
		Bearings	Unusual noise	Normal noise	Daily	Proc Oper
		Screens	Clogged	Unclogged	Daily	Proc Oper
	Chemical feed systems	Chemical feed - descaler	Inadequate supply	Adequate supply	Daily	Proc Oper
			No flow	Proper flow	Daily	Proc Oper
		Chemical feed - algicide	Inadequate supply	Adequate supply	Daily	Proc Oper
			No flow	Proper flow	Daily	Proc Oper

Table E-2. 3M Corporate Incinerator Inspection Plan

Area	Equipment	Specific Items to Check	Types of Problems	Normal Operating Conditions	Inspection Frequency	Inspector
Air Pollution Control (cont.)	ID fan	Housing	High temperature	Touch with back of hand	Daily	Proc Oper
		Bearings	Vibration	Nrmal noise	Daily	Proc Oper
			High temperature	Normal temperature	Daily	Proc Oper
			Unusual noise	Normal noise	Daily	Proc Oper
		Water	Leaks	No leaks	Daily	Proc Oper
		Water drain	Clogged	Open	Daily	Proc Oper
		Oil level	Low oil	Adequate oil	Daily	Proc Oper
		Water spray	Leaks	No leaks	Daily	Proc Oper
Neutralization System	Lime silo	Level	Low level	Above the 16th step level	Daily	Proc Oper
		Silo area	Lime splashing	No lime spots or spills on ground	Daily	Proc Oper
		Structural integrity	Corroded	Not corroded	Daily	Proc Oper
	Lime feed system	Water flow	No water flow	Water flow	Daily	Proc Oper
		Agitator operation	Agitator(s) not running	Agitators on	Daily	Proc Oper
		Auger feeder inspection port	Clogged auger	Not clogged	Daily	Proc Oper
	Caustic storage tank	Lime level	Low level	Acceptable level	Daily	Proc Oper
		Temperature	Less than 60° F	Greater than 60° F	Daily	Proc Oper
		Panel lights	Nonfunctional	Functional	Daily	Proc Oper
	Caustic feed pump	Operability	Pumps not running	Pumps running	Daily	Proc Oper
		Noise	Unusual noise	Normal noise	Daily	Proc Oper
	Neutralization pit	Flow from pipe to pit	Clogged	Water flowing	Daily	Proc Oper
		Level	Water overflowing	Water not overflowing	Daily	Proc Oper
		Mixer motion	Operability	Not operating	Daily	Proc Oper
	Neutral. pit bar screen	Liquid flow	Clogged	Unclogged	Daily	Proc Oper
	Lift station	Pump noise	Vibration	Normal noise	Daily	Proc Oper
		Pump seals	Leaks	No leaks	Daily	Proc Oper
		Pump amps	High amperage	#1 & #2, 30 amps; #3, 40 amps	Daily	Proc Oper
		Water level	Water overflowing	Water not overflowing	Daily	Proc Oper
		Pump temperature	High temperature	Normal temperature	Daily	Proc Oper
		Pump pressure	High/low pressure	Normal pressure	Daily	Proc Oper
		Emergency generator	Not Running	Running	Daily	Proc Oper
		Air compressors	Low air pressure	Correct air pressure	Daily	Proc Oper
		Piping	Excessive vibration	Normal vibration	Daily	Proc Oper

Table E-2. 3M Corporate Incinerator Inspection Plan

Area	Equipment	Specific Items to Check	Types of Problems	Normal Operating Conditions	Inspection Frequency	Inspector
Security	Security gate	Locked or not locked	Not locked	Locked	Daily	Proc Oper
	Coal ash landfill gate	Locked or not locked	Not locked	Open on day shift – locked at all other times	Daily	Proc Oper
	Gate by Oakdale Bldg.	Locked or not locked	Not locked	Locked	Daily	Proc Oper
	Facility fence	Structural integrity	Damage to chain link or barbed wire	No damage	Monthly	Proc Oper
	Signs	Legibility	Obstructed, illegible	Warning signs clear & legible	Monthly	Proc Oper
All areas	Communications equipment	Telephones Radios	Non-functional Dead batteries	Functional Batteries charged	Daily Daily	Proc Oper Proc Oper
	Fire protection equipment	Fire extinguishers	Seal broken on fire extinguisher	Must be accessible Any empties must be filled immediately	Semi-annually, as used	Proc Oper
			Pressure, leakage	Normal pressure, no leaks	Semi-annually, as used	Proc Oper
		Light water systems	Leaks Inadequate supply	No leaks Adequate supply	Monthly, as used	Proc Oper
		CO_2 extinguishers	Seal broken on fire extinguisher	Must be accessible Any empties must be filled immediately	Semi-annually, as used	Proc Oper
			Pressure, leakage	Normal pressure, no leaks	Semi-annually, as used	Proc Oper
		Fire blankets	Condition, supply	Poor shape, out-of-stock	Monthly, as used	Proc Oper
		Sprinkler system	Leaks	No leaks	Bimonthly	Proc Oper
	Safety equipment	Safety showers and eyewashes	Inadequate water supply or pressure	Adequate water pressure No items stored on eyewashes No leakage	Monthly	Proc Oper
		Protective clothing, gloves, boots	Inadequate supply, holes wear and tear	Adequate supply, good condition	Monthly, as used	Proc Oper
		Self-contained breathing apparatus	Low air pressure	Sufficient air pressure	Monthly	Proc Oper

Table E-2. 3M Corporate Incinerator Inspection Plan

Area	Equipment	Specific Items to Check	Types of Problems	Normal Operating Conditions	Inspection Frequency	Inspector
All areas (cont.)	Safety equipment (cont.)	First aid equipment	Items out-of-stock	Items in-stock	Monthly, as used	Proc Oper
		Face shield, eyeglasses	Items out-of stock, broken dirty	Items in stock, good condition	Monthly, as used	Proc Oper
	Spill equipment	Spill equip. (sand, sandbags beams, floor dry)	Inadequate supply	Good supply	Monthly, as used	Proc Oper
		Spill sorbents	Out-of-date	Still usable	Monthly	Proc Oper
		Spill carts	Out of place	Proper placement	Monthly	Proc Oper
		55-gal. steel drums, empty	Corrosion, leaks	No corrosion, no leaks	Monthly	Proc Oper
	Lighting	Facility lighting	Bulbs burned out	Operational	Monthly	Proc Oper
		Emergency lighting	Burned-out bulbs	Operational	Monthly	Proc Oper
	Building ventilation	Fans Ducts	Inadequate draft Deterioration	Proper draft No corrosion	Monthly	Proc Oper
Control Room		WESP voltage	High voltage	25-35 kV	Daily	Ctr Rm Oper
		WESP amperage	High/low amperage	15-50 mA	Daily	Ctr Rm Oper
		Co, CO_2, O_2, THC monitors	Unacceptable readings	Acceptable readings	Daily	Ctr Rm Oper
		pH probes	Unacceptable readings	Acceptable readings	Daily	Ctr Rm Oper
		ID fan vibration	Bearings, balance	0-3 mils	Daily	Ctr Rm Oper
		ID Fan Power	Too high	See calibration chart (Readings must be within permit limits)	Daily	Ctr Rm Oper
		Boiler steam pressure	Gauge, feedwater loss	500-600 psi	Daily	Ctr Rm Oper
		Pyrometers	Unacceptable readings	Acceptable readings	Daily	Ctr Rm Oper
		Thermocouples	Unacceptable readings	Acceptable readings	Daily	Ctr Rm Oper
		Pressure sensors	Unacceptable readings	Acceptable readings	Daily	Ctr Rm Oper
		Flowmeters	Unacceptable readings	Acceptable readings	Daily	Ctr Rm Oper
		Level indicators	Unacceptable readings	Acceptable readings	Daily	Ctr Rm Oper
		Burner control system	Operational lights, alarms	Not operational	Daily	Ctr Rm Oper
		Alarms	Not operational	Operational	Weekly	Ctr Rm Oper

Table E-2. 3M Corporate Incinerator Inspection Plan

Area	Equipment	Specific Items to Check	Types of Problems	Normal Operating Conditions	Inspection Frequency	Inspector
Control Room (cont.)		Waste feed cutoffs	Not operational	Operational	Weekly	Ctr Rm Oper
		Emergency stack	Not operational	Operational	Monthly	Ctr Rm Oper
	Recorders	Strip chart recorders	Inadequate paper supply Pens not working	Adequate paper supply Pens operational	Daily	Ctr Rm Oper
Process Area	Field instruments	CO monitors	Not calibrated	Calibrated	Daily	Sys Ctr Tech
		CO_2 monitors	Not calibrated	Calibrated	Daily	Sys Ctr Tech
		O_2 monitors	Not calibrated	Calibrated	Daily	Sys Ctr Tech
		THC monitor	Not calibrated	Calibrated	Daily	Sys Ctr Tech
		pH probe	Not calibrated	Calibrated	Daily	Sys Ctr Tech
		Pyrometer	Not calibrated	Calibrated	Weekly	Sys Ctr Tech
		Secondary temp. transmitter	Not operational	Operational	Weekly	Sys Ctr Tech
		Secondary draft transmitter	Not operational	Operational	Weekly	Sys Ctr Tech
		ID fan power transmitter	Not operational	Operational	Weekly	Sys Ctr Tech
		CEM transmitters	Not operational	Operational	Weekly	Sys Ctr Tech
		Drum feed transmitter	Not operational	Operational	Weekly	Sys Ctr Tech
		Thermocouples	Not calibrated	Calibrated	Quarterly	Sys Ctr Tech
		Pressure sensors	Not calibrated	Calibrated	Quarterly	Sys Ctr Tech
		Level indicators	Not calibrated	Calibrated	Quarterly	Sys Ctr Tech
		Fuel flow meters	Not calibrated	Calibrated	Quarterly	Sys Ctr Tech
		Scrubber water flowmeters	Not calibrated	Calibrated	Quarterly	Sys Ctr Tech

Figure E-3. NFPA Flammable and Combustible Liquids Code Requirements

Material Classification	Maximum Storage Height (ft)	Minimum Aisle Width[1] (ft)	Maximum Quantity per Pile (gal)	Maximum Quantity (gal)
Class 1B (Solvents)	6.5	4.0	5,000	15,000
Class IA (Flammable, gas aerosols)	5.0	4.0	3,000	12,000

[1] Minimum aisle width for main aisles is 8 feet.

SECTION F
PREPAREDNESS AND PREVENTION

F.1 INTRODUCTION

The information provided in this section is submitted in accordance with the requirements outlined by M.R. Part 7045.0462, Preparedness and Prevention.

F.2 DESIGN AND CONSTRUCTION OF THE FACILITY

All on-site oil and hazardous materials storage tanks are equipped with secondary containment (concrete treated with a chemically resistant epoxy coating). The secondary containment area is large enough to contain the entire contents of the largest single tank plus sufficient freeboard to allow for precipitation (Capacity of secondary containment for hazardous waste storage tanks is detailed in Section S2). All tanks are equipped with high level alarms and gauges. Tanks are monitored from the Incinerator Control Room. Tank levels are recorded three times a day in the operating log and continuously in the incinerator database. All secondary containment areas are inspected daily.

The location of trailer storage lots are shown on Drawing No. CHEM-888-C-142 in Appendix A and discussed in Section S1). Regulated waste oil and oil products, although not always hazardous wastes, may be stored in the hazardous waste Trailer Storage Lots. All Trailer Storage Lots and secondary containment are inspected daily.

Buildings 47 and 60 have been designed and constructed to meet or exceed local, state and 3M fire, safety and health standards. All waste drums are handled in areas that are equipped with curbed, impermeable surfaces. Floor drains in areas where hazardous wastes are handled discharge to dead end sumps. Hazardous waste materials that require special handling are stored in the rear of Building 60 (formally referred to as the Special Waste area). Incompatible wastes are segregated in this area by distance and by a system of curbs and trenches. (See Section I, Figure I-1.) Trenches in this area are divided to eliminate the possibility of incompatible wastes mixing in the floor drains.

Drums are inspected daily for leaks and damage. All incinerator operations staff are trained to respond properly to hazardous material spills and leaks. Small spills are promptly cleaned up, and residues disposed of in the incinerator or at another permitted treatment, storage or disposal facility (TSDF). Larger

spills would be contained by curbing and dead end sumps, allowing residues to be vacuumed up by a contracting firm and disposed of properly.

The areas in Buildings 47/60 where waste containers are opened (pump room and pak feeder area) receive 13 air changes per hour to assure that explosive levels of vapors do not accumulate. The electrical wiring in these areas meets Class I, Division I standards. Other parts of the second floor in Buildings 47/60 (excluding office space) receive 3 air changes per hour. The electrical wiring in these areas meets Class I Division II standards. The stairways in the area of the incinerator are under positive pressure, thus preventing the accumulation of vapors in stairwells.

Building 112 is also used to receive and transport hazardous waste. However, waste shipments are merely staged in this area; all waste are removed when work in this area is discontinued. The floor inside the Tanker Unloading Station is sloped away from all doors and has a sump with a 10,000 gallon capacity. The capacity of the largest tanker to use the facility is 7,000 gallons. No. 6 fuel oil is unloaded outside the Tanker Unloading Station. This area is equipped with an impermeable surface and a sump that can hold up to 8,000 gallons. This sump also services the adjacent drum handling facility.

F.3 MAINTENANCE AND OPERATION OF THE FACILITY

The program of routine inspection of waste containers, waste storage areas, process equipment and instrumentation and safety equipment outlined in Table E-2 serves both to prevent and to minimize the effects of a fire, explosion, or any unplanned release to air, land or water of hazardous waste.

The computerized waste inventory system, by providing both the ability to track each waste container from the time it is received at the incinerator until its ultimate disposal and immediate access to information about the waste stream constituents in any waste container, decreases significantly the potential for incompatible waste to be stored together and allows the Process Control Operators to dispose of each container safely, properly and efficiently.

F.4 REQUIRED EQUIPMENT

The 3M Cottage Grove Center maintains an internal communications and alarm system capable of providing immediate emergency instruction by both voice and signal to incinerator personal. For a detailed description, see the Contingency Plan. Section 5.1 (Appendix G of this Permit Renewal). Locations of

evacuation alarms at the incinerator are depicted on Figures A-6 and A-7 of the Contingency Plan appendix.

Telephones that can be used to contact 3M Cottage Grove Security so that emergency assistance is summoned, are located in the incinerator Control Room, incinerator supervisor's office, Shipping and Receiving Office, Tanker Unloading Station and at various other locations throughout the incinerator and ancillary buildings. Locations of emergency telephones are depicted on Figures A-6 and A-10 of the incinerator appendix to the Contingency Plan). Workers making inspections of the hazardous waste trailer storage areas or in other process areas are equipped with two-way radios and are in contact with the Control Room.

Portable fire extinguishers and fire control equipment, spill control equipment and decontamination equipment are available at appropriate locations throughout the facility. The location and type of fire control equipment is depicted in Figures A-1, A-2, A-10 and A-11 of the Contingency Plan appendix. Table A-1 of the incinerator appendix lists the location, serial number, type and make of all portable fire extinguishers at the facility. Figures A-3 and A-11 of the Contingency Plan appendix show the location of spill control equipment and Table A-2 lists the minimum contents of a spill cleanup cart. (The minimum contents of a biological waste spill cabinet are listed in Table A-3.)

The 3M Cottage Grove Center has a fire water system independent of its plant supply water system. The system is described in section 5.2 of the Contingency Plan.

F.5 TESTING AND MAINTENANCE OF EQUIPMENT

Fire control equipment is inspected periodically as part of the incinerator's general inspections program. Spill cleanup equipment is restocked as used so that cleanup carts and cabinets maintain a proper inventory of supplies.

F.6 ACCESS TO COMMUNICATION/ALARM SYSTEM

All process areas are equipped with evacuation alarms that can be activated by operating personnel. Key telephones are located in the control room, supervisor's office, shipping and receiving office and the tanker unloading station. In addition, the control room operator constantly monitors key process areas via remote

video and can summon external emergency assistance promptly. Two-way radios are used during inspections of external incinerator areas including the trailer storage lots and storage tanks.

Emergency assistance from local police, fire and emergency response squads can be summoned at all times from the scene of operations. Standing arrangements with local emergency response units are detailed in Section 6.1 of the 3M Cottage Grove Center Contingency Plan.

F.7 AISLE SPACE

Waste containers are normally stored on pallets to minimize contact with precipitation or accidental discharges. Adequate aisle widths are maintained to facilitate easy movement of forklifts and other equipment and to allow for clear inspections of all containers.

NFPA Flammable and Combustible Liquids code requirements are followed for waste storage.

1. Eight foot wide main aisles are maintained in front of the truck docks, to and from the pump room, to Building 60 storage and in front of the pak feeder conveyor.
2. Drums are stored a maximum of two high in the Building 47 staging area, and one high in all other areas.
3. Secondary aisles are provided for drum inspection and access in the unlikely event of fire.
4. Contiguous groupings of drums are restricted to a maximum quantity of 5,000 gallons.

SECTION G
CONTINGENCY PLAN

G.1 GENERAL REQUIREMENTS

The 3M Cottage Grove Center Contingence Plan has been prepared and kept updated under 3M's current permit. Copies of the latest updated Plan and transmittal letters to local authorities are included in this application as Appendix G. Also included in Appendix G. Copies of transmittal letters to local authorities are The Contingency Plan has been designed to meet the provisions of M.R. Part 7045.0466 Subparts 2 to 6, parts 7045.0464, 7045.0468 and 7045.0470. It is designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents to air, land or water.

G.2 IMPLEMENTATION OF PLAN

As described under Item 3 of the Plan, the provisions of the plan would be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous constituents which could threaten human health or the environment.

G.3 CONTENT OF CONTINGENCY PLAN

The Plan addresses all of the individual facilities requiring a contingency plan at the 3M Cottage Grove Center with individual appendices addressing specific information for each facility. The Corporate Incinerator is one such facility addressed by an individual appendix.

The specific content of the plan includes the following:

- General Information
- Contingency Plan Objectives
- Contingency Plan Implementation
- Emergency Coordinators
- Emergency Equipment and Resources
- Coordination Agreements
- Emergency Response Procedures

- Evacuation Plan
- Post Emergency Procedures
- Amendments to Contingency Plan.

G.4 COPIES OF THE CONTINGENCY PLAN

Copies of the Contingency Plan are maintained at the facility; submitted to local police departments, fire departments, hospitals, and state and local emergency response teams; and are submitted to the MPCA Commissioner as modifications are made to the Plan.

SECTION H
PREVENTIVE PROCEDURES, STRUCTURES AND EQUIPMENT

H.1 INTRODUCTION

The facility maintains procedures, structures and equipment to prevent or mitigate the following conditions, outlined in M.R. Part 7001.0560, sub section H. Additional preventative procedures are discussed in Section F (Preparedness and Prevention) of this document.

H.2 PREVENTION OF HAZARDS IN LOADING/UNLOADING OPERATIONS

Spills are unlikely during loading operations; however, in the event of an accident, spilled materials will be contained with 3M Oil Sorbent or another absorbent product. Spill cabinets are located in close proximity to loading docks.

Unloading operations take place at the dock area of Building 47/60, the dock area of Building 112, the drum handling area, and the tanker unloading station at the incinerator waste solvent tank farm.

Several precautions have been taken to reduce the potential for hazards during loading/unloading operations in Building 47. First, off-load ramps are constructed to facilitate movement of a forklift truck in and out of storage trailers. Second, adequate aisle space is maintained at all times. Third, trailer wheels are chocked and dolly braces are placed underneath the front of the trailer for support in the event of a leg failure. The docks are also equipped with dock locks and intense lighting.

The unloading of bulk shipments of liquid waste at the incinerator waste solvent tank farm has also been safeguarded in numerous ways. All seven 12,900 gallon storage tanks have been located within a concrete-lined and diked storage area. In addition, all seven tanks have continuous readout level indicators and are equipped with high level alarms. The output for these indicators is remotely displayed in the incinerator control room. One of the tanks is used as an overflow tank for the rest of the system. This tank, normally left empty, is connected by overflow piping to the other tanks. A high level alarm on the overflow tank is used to alert the incinerator operators that an overflow condition exists. When a tank truck arrives for unloading, the incinerator operators choose one of the waste storage tanks to unload into based on the levels of the tanks, material compatibility and intended disposal method. An operator supervises the unloading procedure from beginning to end. The unloading area is paved and diked and drains to a concrete sump.

Spill containment supplies and fire extinguishers are kept in close proximity to the tanker unloading station. In addition, all incinerator operators receive SPCC training.

H.3 PREVENTION OF RUNOFF

Containers at the facility are stored on truck trailers parked in seven waste storage areas. Storing waste containers in trailers prevents contact with precipitation.

Lot D and Lot A are clay-lined, diked areas used for the storage of regulated hazardous waste. Runoff from each storage area is drained by design to one corner of the storage pad where a valve is used to control the discharge. The drainage valve is opened only when:

a. Routine inspections of the area have not revealed any accidental discharges;
b. A visual inspection of the accumulated water reveals no contamination; and
c. The accumulation of water impairs normal facility operation.

As soon as drainage is complete, the valve is returned to its normal closed position.

Lot J is also a clay-lined area used for the storage of regulated hazardous waste. Runoff from this area is collected in a holding pond. Discharge from the holding pond is only allowed when routine inspections of the area have not revealed any accidental discharges and a visual inspection of the accumulated water reveals no contamination. The accumulated water can be pumped to either the cooling water pond or the wastewater treatment area.

Lot C is a paved storage pad used to stage wastes prior to receipt. Lot B, Lot L, and Lot K were constructed using synthetic liners. For location of trailer storage lots, see Drwing No. CHEM-888-C-142 in Appendix A.

The two waste pile areas at the incinerator (one of which is being converted to a containment building as a part of this permit application) are both located within buildings, thereby precluding the possibility of precipitation run-on. Run-off from these areas is prevented through the use of drains and concrete berms.

H.4 PREVENTION OF CONTAMINATION OF WATER SUPPLIES

Groundwater and surface water contamination are eliminated by preventing the discharge of hazardous materials onto unprotected ground. Any accidental discharges that do occur are promptly cleaned up. Runoff is prevented by the procedures outlined above in section H.3.

All water used in process operations is sent into the wastewater treatment system to remove any contamination. Scrubber water, used to wash particulates from the flue gas, is drained through the mix box into the neutralization system. After pre-treatment with lime, caustic and polymer in the neutralization system, the water is pumped to the site's wastewater treatment plant. Water from the quenches used to cool kiln ash is treated in the same manner. Backflow preventers installed in the water lines prevent the contamination of water sources.

Water quality at the incinerator site is monitored by routine sampling and analysis.

H.5 MITIGATION OF EFFECTS OF EQUIPMENT AND POWER FAILURE

The effects of equipment failure are greatly minimized by the close and continuous monitoring of essential equipment provided by the automated control systems operating at the incinerator. In addition to providing incinerator personnel with constant feedback from the process, the systems provide appropriate process responses such as waste feed cut off or incinerator shutdown in the event of the failure of essential pieces of equipment.

In the unlikely event of a power interruption, the incinerator goes through an automatic shutdown procedure designed to protect both workers and equipment in the area. Emergency lighting is provided for any power failure. Once power is restored, the normal incinerator start-up procedure is executed.

H.6 PROTECTION OF PERSONNEL FROM EXPOSURE TO HAZARDOUS WASTE

Incinerator operators are protected from exposure to hazardous waste through proper ventilation (primary control) and the use of protective equipment (secondary control). Process areas where waste containers are opened (pump room and pak feeder area) are equipped with ventilation systems providing 13 air exchanges an hour. Other areas in Buildings 47/60 where waste containers are handled are serviced by a

ventilation system providing 3 air exchanges an hour. Proper ventilation prevents the accumulation of significant amounts of hazardous constituents in these areas.

Incinerator operators are also protected from exposure to hazardous waste through the proper use of protective equipment. A member of the incinerator compliance staff has evaluated each waste stream profile accepted for handling at the incinerator and determined the appropriate protective equipment for that waste.

All operators are provided with reusable uniforms. In addition, at a minimum, each operator is required to wear safety glasses, conductive footwear and chemically resistant gloves. Ear protection and chemically resistant bibs are also used in designated areas.

Additional protective equipment may be specified for individual waste streams or waste processing areas. This equipment includes: full/face waste respirator with appropriate cartridge (i.e. organic vapor/acid gas, formaldehyde, etc. with HEPA prefilter for particulate control); self contained breathing apparatus; nitrile, neoprene or rubber gloves and boots, and paper-coated tyvex or rubber coveralls. In addition, all container handling areas are provided with two SCBAs. Operators receive routine training in the use of this protective equipment.

SECTION I
PREVENTION OF ACCIDENTAL IGNITION OR REACTION OF IGNITABLE, REACTIVE OR INCOMPATIBLE WASTES

I.1 INTRODUCTION

Accidental ignition and reactions of incompatible wastes are prevented through: (1) proper waste classification and labeling, (2) segregation during storage, (3) proper handling of materials in designated areas and (4) compatibility testing. These procedures prevent reactions that generate extreme heat, pressure, fire or explosions, produce uncontrolled toxic mists, fumes, dusts or gases in sufficient quantities to threaten human health or the environment, or create uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion, as required by M.R. Part 7045.0456.

I.2 PROPER WASTE CLASSIFICATION AND LABELING

All waste materials received at the 3M Corporate Incinerator are to be properly labeled and packaged in containers which are compatible with the waste.

Proper labeling includes a waste stream profile number as discussed in Section C. A waste stream profile describes the constituent components of the waste stream and provides information about the generator. Each waste stream profile must be approved prior to the acceptance of any waste containers for that profile. Information in a waste stream profile is used to generate protective equipment/clothing codes and storage and handling codes. When waste is received, each container is given a unique barcoded load I.D. generated by the facility's computerized internal waste tracking system (IWTS). This barcode label provides incinerator personnel access via handheld barcode terminals to safety, storage and process information about each waste container, and facilitates proper segregation and handling of waste.

I.3 SEGREGATION DURING STORAGE

Containers are segregated during storage to prevent reactions of ignitable or incompatible wastes. Containers are normally stored on pallets to minimize contact with precipitation or accidental discharges. Containers are stacked no more than two containers high and adequate aisle widths are maintained to minimize the risk of a forklift's scraping or puncturing a container and to provide for easy inspection of containers.

All container storage areas are located a minimum of 700 feet from the nearest property line in compliance with the National Fire Code Standards for outdoor storage of containers holding ignitable or reactive wastes.

Special procedures have been established to minimize the hazards associated with the handling of explosives, poisons, oxidizers, containerized gases, carcinogens, biological wastes, and substances that may react violently or explosively with water or that may be capable of polymerizing violently. These wastes are stored either in designated trailers based on compatibility or segregated in Building 60. The floor plan of the container staging area, Figure I-1, shows how wastes are segregated into classified areas.

I.4 PROPER MATERIALS HANDLING

Site operations are organized to minimize the amount of drum and container movement required at the incinerator. All employees working at the incinerator are trained addressing the potential hazards associated with the contents of drums or containers.

Proper packaging greatly minimizes the possibility of internal ignition of the waste. To minimize the possibility of external ignition, all material handling areas are well ventilated and "No Smoking" signs are posted wherever ignitable wastes are stored. Spark resistant tools (Brass hammers, wrenches, etc.) are used on all containers and tanks storing ignitable materials.

Drums on pallets are handled using forklifts. Before moving pallets of drums, the forklift operator observes the position of the drums to assure that they can be safely moved. Drum handling equipment also includes various drum handlers that attached to forklift tines and can move one or two drums at a time.

Areas where ignitable waste containers are typically opened for processing are the Pak Feeder area, the pump room, the tanker unloading areas and Building 60. These locations are restricted as Class I, Division I, Group D areas. All equipment used in these areas during normal operations must meet or exceed the Class I, Division I, Group D rating. The forklift normally used in the pump room area and in the Tanker Unloading Station is an EX-rated unit approved for used in a Class I Division I area. The forklift attachments used in these areas are rubber clad with brass tips to prevent sparks. The forklifts used to unload drums form trailers and to move drums in the staging area are LP-Special units approved for use in a Class I Division II area.

Forklift training is periodically provided to all operators. Forklift operators are required to obtain experience in safe forklift operating procedures before being allowed to drive a unit in a Class I Division I area.

Material handling and other equipment is positioned to minimize sources of ignition. Equipment that could produce sparks is not taken into areas where combustible vapors could accumulate. If spark producing equipment must be brought into such an area, the concentration of combustible vapors in the atmosphere is first determined. Only after a safe condition has been verified is spark producing equipment allowed in such an area. This activity requires a 3M spark permit.

Shoe conductivity meters are located at the employee entrances to the incinerator. All persons who enter the production area must check for shoe conductivity on the meter. Persons whose shoes do not register adequately on the meter must wear static elimination grounding straps.

3M provides training regarding the no smoking policy to all employees. The policy is strictly enforced.

When a waste is determined to be reactive or polymerizable, it can be introduced into the incinerator by one of the following methods:

1. If the waste is pumpable and there is a significant quantity or material, the waste can be pumped into one of the three blend tanks. When the tanks mixed contents have been tested and meet either the fuel grade or scrap grade criteria, the material can be pumped into the kiln through the A or B burner. In this mode, no other wastes are mixed in the blend tank, thus preventing undesirable reactions.

2. Smaller amounts of wastes may be transferred directly into the kiln through the E-burner and would not be mixed with other materials prior to incineration.

3. If the waste is nonpumpable, small in quantity, highly toxic, or for some other reason it is undesirable to open the drum, the waste can be left in the drum and placed on the Pak Feeder line for delivery into the kiln.

I.5 COMPATIBILITY TESTING

In addition, compatibility testing is conducted as outlined in Section C, Waste Analysis Plan. This includes all transfers of bulk liquids into storage tanks, intertank transfers and the pumping or dumping of individual

containers into blend tanks or the sludge pump hopper. A copy of the compatibility testing procedures used are attached to this application in Appendix C.

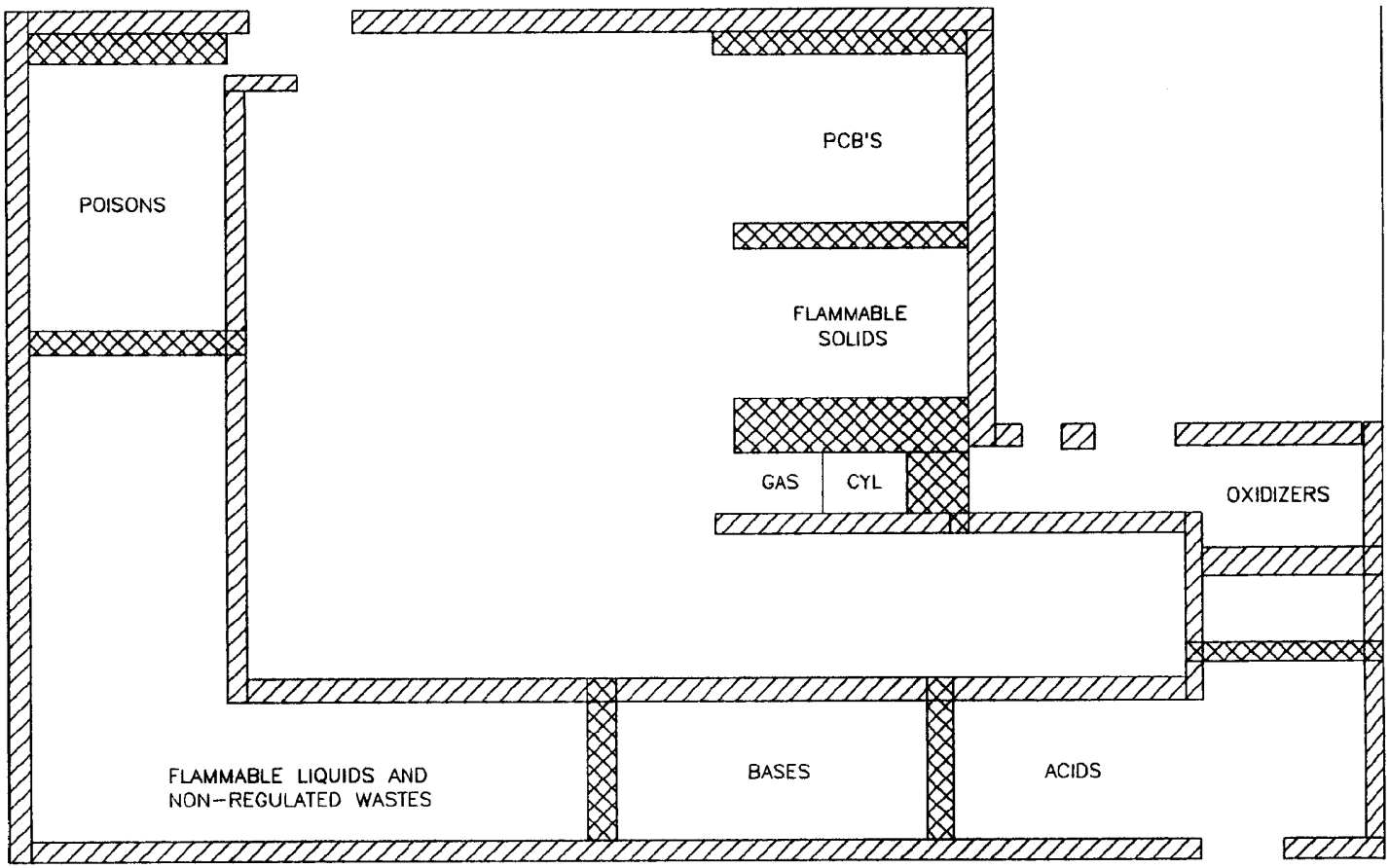

Figure 1-1. Building 60 Container Staging Area

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SECTION J
TRAFFIC CONTROL

The 3M Cottage Grove Center is accessed via Chemolite Road (County Highway 19), or Miller Road; both are two-lane paved public roads. This road provides adequate access for all incoming and outgoing vehicles. The distance to the nearest major highway, U.S. Highway 61, from the main gate is one mile. Immediately prior to entering the facility, the road crosses a pair of railroad tracks. This at-grade crossing is controlled by automatic flashing lights and barrier arm.

Traffic at the site moves primarily between the security entrance gate at Chemolite Road and the main parking lot north of Building 116. Vehicular traffic in the plant proper (beyond Building 116) is restricted. (See Section E.2.3.) Since Chemolite Road south of Highway 61 terminates at 3M Cottage Grove Center, there is no through traffic. Traffic, essentially employees' vehicles, peaks during shift changes. Approximately 950 3M employees work at the facility.

Traffic to the incineration facility moves west (right turn) to Building 47/60 immediately after entering the site. An additional parking lot southeast of Building 47 is provided for incinerator personnel. A stop sign at the intersection of the incinerator access road and Chemolite Road provides control of traffic exiting the site from incineration facility (left turn to Chemolite Road).

An average of 8 to 10 truck loads of waste per day are transported to the incinerator. The majority of waste is delivered in 48-foot or 53-foot tractor trailer trucks. Tanker trucks (generally 5,000 to 6,000 gallon capacity) deliver liquid waste. Bulk waste is delivered or shipped out in roll-off boxes or intermodal containers. Truck traffic to the incineration facility is a small fraction of the daily truck traffic to the manufacturing facilities.

Waste shipments from off-site enter the facility at the security entrance gate. The guards direct the truck to turn left and proceed to the incineration facility security gate. After being admitted to the incineration facility, truck drivers sign in at the Shipping and Receiving office, are instructed where to park their trailer, and exit through the incineration facility security gate. Trucks leave the plant by turning left on Chemolite road and exiting at the security gate. All waste shipments to the incineration facility from on-site travel north through the security barrier at Building 116, turning west (left turn) at the incinerator road.

All roads in the plant area carrying routine traffic, including shipments of waste to and from the incinerator, are constructed of asphalt or concrete paving and have a load bearing capacity of 9 tons axle weight.

SECTION K
Outlines for
Personnel Training

SECTION K

OUTLINES FOR INTRODUCTORY AND CONTINUING PERSONNEL TRAINING

The information contained in this section outlines the personnel training program for the 3M Cottage Grove Corporate Incinerator. This training program is conducted in accordance with the requirements of 40 CFR 264.16 (M.R. 7045.0454); 40 CFR 270.14 (b)(12) (M.R. 7001.0560); and 29 CFR 1910.120 (p)(7).

In addition to the minimum program requirements, 3M provides additional training which is also outlined in this section.

The training program has been designed to prepare personnel to operate and maintain the hazardous waste management units in a safe manner to ensure the protection of human health and the environment. The objectives of the training program are:

- To enhance workers' awareness of the potentials hazards at the facility
- To provide the knowledge and skill necessary to perform the work with minimal safety and health risks
- To enhance workers' awareness of the purpose, need, and limitations of safety equipment
- To ensure that workers can effectively respond to emergencies

K.1 JOB TITLES AND DUTIES

Figure K-1 shows the organization of personnel at the 3M Cottage Grove Corporate Incinerator. Currently 30 employees are directly involved with the management of hazardous waste at the Incinerator: one general supervisor, four operations supervisors, five people in Shipping and Receiving personnel, and 20 operators. There are five people on the regulatory compliance staff and eight management engineering, and office staff at the Corporate Incinerator. Each position at the facility is outlined in Table K-1. A detailed written job description of duties for each position is maintained at the facility. Maintenance personnel (i.e. electricians, millwrights, mechanics, etc.) may also work in waste handling areas, but do not handle wastes directly. The Corporate Incinerator receives support from the 3M Environmental Engineering and Pollution Control (EE&PC) Department, from 3M Industrial Hygiene Services, from 3M Corporate Safety and from Staff Engineering.

K.2 DIRECTOR OF HAZARDOUS WASTE TRAINING

The Corporate Incinerator hazardous waste training program is directed by the Administrator of Manufacturing Services. This person annually receives training in hazardous waste management procedures from a variety of governmental and nongovernmental sources. A listing of past hazardous waste management courses which this individual has successfully completed can be found in Table K-2.

K.3 EMPLOYEE TRAINING

Training is provided which fully meets the requirements of 29 CFR 1910.120 (p)(7). Incinerator staff receive hazardous waste training in several ways, combining classroom and on-the-job training. New employees receive initial training. All employees also receive specific training related to their job duties. In addition, 3M also provides special training programs annually to all incinerator employees. Each type of training program is discussed in detail below.

K.3.1 Initial Training Program

The orientation training program is conducted for the benefit of all new employees. Representatives of management at the incinerator, and members of the operations and technical staffs, conduct the orientation training program. This training lasts a minimum of eight (8) hours, and includes a discussion of the following topics:

- General site safety and emergency procedures.
- The capabilities of the facility, and restrictions imposed upon the facility.
- The types of wastes managed, and the processes and equipment used for waste treatment and storage.
- The regulatory requirements which apply to the facility.
- The importance of maintaining compliance.

Special emphasis is given to the following topics during this initial training:

- Basic review of the chemical and physical hazards of the materials, equipment, and wastes handled within the facility, including safety precautions which minimize risk of personal injury while performing job duties.

- Policies and procedures regarding monitoring equipment and controls.

- Contingency plans and emergency procedures including:

  i. safety equipment location and use
  ii. firefighting equipment location and use
  iii. spill control procedures and equipment
  iv. system waste feed cut-off procedures and controls
  v. emergency process shutdown procedures
  vi. emergency alarms
  vii. evacuation routes
  viii. proper notification procedures
  ix. other emergency response procedures.

Also included in the initial training program is a comprehensive review of the facility. This review covers all emergency equipment, emergency showers and eye wash stations, emergency shut-off controls, fire prevention and control equipment, alarm and communication systems, and primary and alternate evacuation routes. Table K-3 summarizes the content and amount of initial training received by each new person posting into the incinerator.

K.3.2 Job-Related Training Program

Following the successful completion of the initial training program, each new employee receives at least sixteen (16) hours of training which relates specifically to his or her new duties. This training program is conducted by the new employee's supervisor and other supervisory personnel. This segment of the training program involves extensive on-the-job training. All employees in positions related to hazardous waste management receives a minimum of 24 hours of initial training.

The job-related training program includes discussions of the same topics discussed in the initial training program. Additional details are provided to instruct the employee in how to execute their job safely and effectively. Areas not related specifically to the new employee's normal duties are also reviewed. The relationship of the new employee's job to the jobs of other personnel in the area is emphasized. Table K-4 summarizes the content and amount of initial job-related training received by each position.

K.3.3 Annual Training Programs

A series of ongoing training programs, which cover various emergency response and safety policies and procedures, is conducted for all employees on an annual basis. These training programs are arranged by the Administrator of Manufacturing Services and may typically include presentations by the incinerator compliance staff, 3M Corporate Safety, 3M Industrial Hygiene, 3M EE&PC, and by outside guest speakers. MPCA Air Quality and Hazardous Waste Enforcement personnel normally participate as well. A copy of the 1993 training agenda is included as Table K-5.

Emphasis at these sessions is placed on the safe operation of all equipment and the safe handling of all materials. Specialized training relating to specific duties is given to operations personnel.

The special training program also emphasizes emergency response to fires, spills, and other unusual occurrences which could threaten the environment, the health and safety of employees, or residents of surrounding communities. Training includes the location and proper use of all equipment used in an emergency response, the procedures for notifying appropriate authorities, and the policies and procedures for working with local, state, and federal response groups.

A list of some of the available 3M training programs as listed in the Plant Human Resources Information System (PHRIS) is shown in Table K-6. The training programs specifically designed for the Corporate Incinerator have "INC" as the first three letters of the course code.

K.3.4 Annual Review

Facility personnel take part in an annual review of initial training. This is summarized in Table K-7.

K.4 JOB-SPECIFIC TRAINING

The training program is tiered to provide training to personnel which is relevant to their positions. For example, the incinerator operations supervisors receive training in recordkeeping and other procedures required for compliance, whereas the operators do not. Operators are more specifically trained to maintain proper and safe operating conditions and to respond effectively in the event of a spill or other emergency.

K.5 TRAINING FOR EMERGENCY RESPONSE

The 3M Cottage Grove Incinerator training program is designed to ensure that personnel not only handle hazardous wastes in a safe manner but also properly respond to emergency situations. Training elements addressing nonroutine and emergency situations (unscheduled shutdowns and startups related to storms, power outages, fires, explosions, spills, etc.) include:

- Procedures for locating, using, inspecting, repairing, and replacing facility emergency and monitoring equipment.
- Key procedures for automatic waste feed cutoff systems.
- Emergency communication procedures and alarm systems.
- Response to fires or explosions.
- Procedures for containing, controlling, and mitigating spills.
- Procedures for shutdown of operations and power failure.
- Procedures for evacuation.

In addition to the incinerator's hazardous waste management personnel, 3M Cottage Grove maintains an emergency squad for response to all fires and other plant emergencies. This emergency squad has received both classroom and field firefighting training, as well as instruction in first aid and cardiopulmonary resuscitation (CPR).

K.6 IMPLEMENTATION OF TRAINING PROGRAM

The director of the training program and all current personnel involved with the management and handling of hazardous waste have been fully trained at the time of this submittal. In the future, all new personnel who will be involved in the hazardous waste management program will complete this training program within six months of assignment to the Corporate Incinerator. New employees will not be permitted to work in unsupervised positions until they have completed the required personnel training.

K.7 RECORDKEEPING

The Cottage Grove Corporate Incinerator maintains records regarding the hazardous waste training program on all current employees and all former employees according to the requirements of 40 CFR 264.16 (M.R. 7045.0454 Subpart 7). These records document the job title for each position, the

employee filling the position and include a detailed written job description. This written job description describes the duties and responsibilities, minimum qualifications and required training for each position. The records document the content and amount of initial, job-specific and annual training required for each position and document that the specified training has been completed by each employee working at the facility.

K.8 OTHER TRAINING PROGRAMS

The Cottage Grove Corporate Incinerator provides additional training beyond that required by the hazardous waste rules. Training is also provided to employees in fulfillment of rules administered by the Occupational Safety and Health Administration (OSHA) and the Department of Transportation (DOT), or to comply with 3M internal policies. A listing of these training areas is included below.

- Employee Access to Medical Records
- Hazard Communication Program
- Hazardous Waste Operations and Emergency Response (HAZWOPER)
- Consent Order Training
- Spill Prevention Control and Countermeasure (SPCC) Plan Training
- Special Scrap Labeling Procedures
- SARA Title III
- Forklift Training
- Fire Extinguisher Training
- Respirator Fit Testing/Physical Requirements
- Hearing Conservation Training/Noise Standards
- Job Safety Analysis Training
- Industrial Hygiene Information Training
- Blood Borne Pathogens Training
- Electrical Safety Related Work Practices
- Confined Space Entry Training
- Lockout/Tagout Training
- Line Breaking Permit Procedures
- Personal Protective Equipment
- Injury & Illness Reporting Training
- Contractor Representative Training
- Supervisor Training for Contractor Interfacing
- Process Safety

- Department of Transportation General Awareness Training (HM-126)
- Toxic Substances Control Act (TSCA) Training.

3M maintains a Process Training Manual which is designed for those classroom and hands-on training specific to the needs of the incinerator operator. This program reinforces regulatory compliance requirements and standard operating and maintenance procedures. Its contents include the following:

- Organizational structure
- Personnel training
- Process description
- Shipping and receiving procedures
- Waste sampling and analysis procedures
- Process operating procedures
- Control system operations
- Inspections
- Maintenance
- Recordkeeping
- Reports, plans, and notices
- Contingency Plan
- Spill Prevention, Control and Countermeasure Plan
- Job Safety Analysis Procedure
- Hazard Communication Program
- Respirator Program.

Table K-1. 3M Cottage Grove Corporate Incinerator Staff List

Job Title	Job Title Code
Facility Manager	Fac Mgr
Superintendent of Support Services	Superint Sup Ser
Administrator of Manufacturing Services	Admin Mfg Ser
Incinerator Process Engineer	Inc Proc Engr
Incinerator Laboratory Technician	Inc Lab Tech
Maintenance Supervisor	Maint Super
Systems Control Technician	Sys Ctr Tech
Systems Supervisor	Systems Super
Support Services Secretary	Sup Ser Sec
Incineration Records Clerk	Inc Rec Clerk
Incineration Records Clerk	Inc Rec Clerk
Shipping and Receiving Supervisor	S & R Super
Shipping and Receiving Operator – PO2	S & R Oper
Shipping and Receiving Operator – PO2	S & R Oper
Shipping and Receiving Operator – PO2	S & R Oper
Shipping and Receiving Operator – PO2	S & R Oper
Shipping and Receiving Operator – PO2	S & R Oper
Shipping and Receiving Operator – PO2	S & R Oper
Shipping and Receiving Operator – PO2	S & R Oper
Plant Supervisor	Plant Superint
Incinerator Shift Supervisor	Inc Shift Super
Incinerator Shift Supervisor	Inc Shift Super
Incinerator Shift Supervisor	Inc Shift Super
Incinerator Shift Supervisor	Inc Shift Super
Incin. Control Room Operator – PO1	Inc Ctr Rm Oper
Incin. Control Room Operator – PO1	Inc Ctr Rm Oper
Incin. Control Room Operator – PO1	Inc Ctr Rm Oper
Incin. Control Room Operator – PO1	Inc Ctr Rm Oper
Incinerator Process Operator – PO2	Inc Proc Oper
Incinerator Process Operator – PO2	Inc Proc Oper
Incinerator Process Operator – PO2	Inc Proc Oper
Incinerator Process Operator – PO2	Inc Proc Oper
Incinerator Process Operator – PO2	Inc Proc Oper
Incinerator Process Operator – PO2	Inc Proc Oper
Incinerator Process Operator – PO2	Inc Proc Oper
Incinerator Process Operator – PO2	Inc Proc Oper
Utility Helper	Util Help
Utility Helper	Util Help
Utility Helper	Util Help
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Utility Helper	Util Help
Utility Helper	Util Help
Utility Helper	Util Help
Utility Helper	Util Help

Table K-2. Training Received by the Director of Hazardous Waste Training

Date	Training Program	Hours
04-07-90	Supervisory Spill Control School, Corpus Christi St. Univ.	8 hrs.
04-20-90	National Spill Control School, Corpus Christi State Univ.	40 hrs.
08-08-90	Chemolite Compliance Accomplishments (Overview) Shipping-Sampling	1 hr.
08-08-90	Shipping & Receiving Inventory Control, Record Keeping	3 hrs.
08-08-90	Fire Training - SCBA Training	4 hrs.
08-09-90	Inspection Plan	1.5 hrs.
08-09-90	Plant Inspection Scenarios	1.5 hrs.
08-09-90	Spill Control Demonstration Patching Drum	1 hr.
08-09-90	Right to Know	1 hr.
08-09-90	Contingency Plans	0.5 hr.
08-09-90	Respirator Training Fit Testing	2 hr.
08-09-90	Maintenance Problems Mechanical Instrumentation	1 hr.
08-10-90	Forklift Training	1 hr.
08-10-90	MPCA Perspectives - Air Quality, Hazardous Waste	1 hr.
08-10-90	Environmental Compliance, 3M Legal	1 hr.
08-10-90	Record Keeping - Reports, Plans, Notices	1.5 hrs.
08-10-90	Safety Procedures	1.5 hrs.
10-25-90	Lubrication Fundamentals Training	2 hrs.
02-14-91	Infectious Waste Training	2 hrs.
02-16-91	Solvent Burning Plans and Compliance	2 hrs.
04-91	Wastewater Operator Training	24 hrs.
10-01-91	Contingency Plan and Evacuation	1 hr.
10-01-91	Field Spill Response Drill and Evaluation	2 hrs.
10-01-91	Demonstration of Acids and Reactives	0.5 hr.
10-01-91	PH Measurement and Controls	1 hr.
10-01-91	Classroom Exercise - Emergency Simulations	2 hrs.
10-02-91	Fire Training - SCBA Training	4 hrs.
10-02-91	Confined Space Entry Training	4 hrs.
10-03-91	Noise and Hearing Conservation	1 hr.
10-03-91	Safety - Site Directors Program	3 hrs.
10-03-91	Forklift Training Driver Certification Test	1 hr.
10-03-91	Respirator Training and Fit Testing	3 hrs.
10-04-91	Introduction to Toxicology - Effects of Chemicals on Body	2 hrs.
10-04-91	Protective Clothing	1 hr.
10-04-91	Air Quality (MPCA)	1 hr.
10-04-91	Hazardous Waste (MPCA)	1 hr.

Table K-2. Training Received by the Director of Hazardous Waste Training (Cont.)

Date	Training Program	Hours
10-04-91	HAZWOPER	1 hr.
10-04-91	The Importance of Compliance	1 hr.
10-11-91	Combustion Control at the Incinerator	1 hr.
10-11-91	Air Pollution Controls and Equipment	1 hr.
10-11-91	Waste Profile - What is it, How will it Work (Hot Drum Program)	2.5 hrs.
10-11-91	Lockout-Tagout	1 hr.
10-11-91	LEL Monitoring	1 hr.
10-11-91	Stack Testing Procedures	1 hr.
10-21-91	Air Hood Training	2 hrs.
10-24-91	Computer Control Training	1 hr.
01-02-92	Basic Rigging - Hoist Training	4 hrs.
04-15-92	Revised Lockout-Tagout	2 hrs.
05-15-92	HAZWOPER Review - University of Minnesota	8 hrs.
09-28-92	Fire Training	4 hrs.
09-28-92	Spill Cleanup Exercise	4 hrs.
09-29-92	Emergency Response, Evacuation, SPCC and HAZWOPER (What if Training)	2 hrs.
09-29-92	Surcharge and Recharge System	1 hr.
09-29-92	Waste Stream Profiles	1 hr.
09-29-92	MSDS Information on Reader	1 hr.
09-29-92	Incompatible Waste Testing Procedures	1 hr.
09-30-92	Respirator Training and Fit Testing	3 hrs.
09-30-92	Check - Hearing/Noise Protection	1 hr.
10-01-92	Confined Space Entry (Review)	2 hr.
10-01-92	Tour Chemolite CHemical Division for Review of Labeling and Packaging Procedures	2 hr.
10-02-92	Wastewater Control	1.5 hrs.
10-06-92	Handling of Consent Order Waste	0.5 hr.
10-06-92	Inspection Logs, Documentation and Incident Reporting	0.5 hr.
10-06-92	Safety	1 hr.
10-06-92	Air Quality Continuous Monitoring System	0.5 hr.
10-06-92	Hazardous Waste Enforcement - Handling Hazardous Waste	0.5 hr.
10-06-92	Importance of Compliance	0.5 hr.
04-93	Wastewater Operator Training	24 hrs.
04-15-93	Electrical Safety Related Work Practices (video)	0.5 hr.

Table K-3. Initial Training

Course Category	Course Title	Course Length: Initial Training (Hours)	Course Length: Continued Training (Hours)
Health and Safety	Right to Know/Hazard Communications/MSDS	2	1
	Safety Procedures	1	1
	Safety and Fire Regulations	1	
	Industrial Hygiene	1	
	Chemistry Fundamentals	4	4
	Chemical Safety Training	2	
	Back Safety	1	1
	Respirator Training	1	
	Care/Use of Self Contained Breathing Apparatus	1	
	Self Contained Breathing Apparatus Fitness Test	1	1
Emergency Response	General Emergencies/Contingency Plan	1	
	Spill Control and Containment	1	1
	Emergency Response/Evacuation Procedures	2	2
Fires/Explosions	Fires and Explosions	2	
	Closed Container Fires	1	1
Plant Operations	Fork Lift Training and Certification	8	
	Introduction to Plant Operations [a]	4	
	Standard Operating Procedures [a]	4	
	Computer Bar Coding	1	
	Special Scrap Label Identification	1	
Total		40	12

[a] Position specific training

Table K-4. Initial Training by Position

Course Category/Title	Administrative								Clerical	
	Admin Mfg Ser	Compl Officer	Envr Engr Spec	Fac Mgr	Inc Proc Engr	Plant Superin	Superin Sup Ser	System Super	Sup Ser Sec	Inc Rec Clerk
Health and Safety										
Right to Know/Hazard Communications/MSDS (hrs)	2	2	2	2	2	2	2	2	2	2
Safety Procedures (hrs)	1	1	1	1	1	1	1	1	1	1
Safety and Fire Regulations (hrs)	1	1	1	1	1	1	1	1	1	1
Industrial Hygiene (hrs)	1	1	1	1	1	1	1	1		
Chemistry Fundamentals (hrs)										
Chemical Safety Training (hrs)	2	2	2	2	2	2	2	2		
Back Safety (hrs)	1	1	1	1	1	1	1	1		
Respirator Training (hrs)	1	1	1	1	1	1	1	1		
Care/Use of Self Contained Breathing Apparatus (hrs)	1	1	1	1	1	1	1	1		
Self Contained Breathing Apparatus Fitness Test (hrs)	1	1	1	1	1	1	1	1		
Emergency Response										
General Emergencies/Contingency Plan (hrs)	1	1	1	1	1	1	1	1	1	1
Spill control and Containment (hrs)	1	1	1	1	1	1	1	1		
Emergency Response/Evacuation Procedures (hrs)	2	2	2	2	2	2	2	2	2	2
Fires/Explosions										
Fires and Explosions (hrs)	2	2	2	2	2	2	2	2		
Closed Container Fires (hrs)	1	1	1	1	1	1	1	1		
Plant Operations										
Fork Lift Training and Certification (hrs)										
Introduction to Plant Operations (hrs)	4	4	4	4	4	4	4	4		
Standard Operating Procedures (hrs)	4	4	4	4	4	4	4	4		
Computer Bar Coding (hrs)								1		1
Special Scrap Label Identification (hrs)								1		1
Total (hrs)	26	26	26	26	26	26	26	28	7	9

Table K–4. Initial Training by Position (Continued)

Course Category/Title	Operations									Maintenance	
	Inc Lab Tech	Inc Shift Super	Inc Ctr Rm Oper	Inc Proc Oper	H/S&T Engr	Prod Proc Oper	S&R Super	S&R Oper	Util Help	Maint Super	Sys Ctr Tech
Health and Safety											
Right to Know/Hazard Communications/MSDS (hrs)	2	2	2	2	2	2	2	2	2	2	2
Safety Procedures (hrs)	1	1	1	1	1	1	1	1	1	1	1
Safety and Fire Regulations (hrs)	1	1	1	1	1	1	1	1	1	1	1
Industrial Hygiene (hrs)	1	1	1	1	1	1	1	1	1	1	1
Chemistry Fundamentals (hrs)	4	4	4	4	4	4	4	4	4	4	4
Chemical Safety Training (hrs)	2	2	2	2	2	2	2	2	2	2	2
Back Safety (hrs)	1	1	1	1	1	1	1	1	1	1	1
Respirator Training (hrs)	1	1	1	1	1	1	1	1	1	1	1
Care/Use of Self Contained Breathing Apparatus (hrs)	1	1	1	1	1	1	1	1	1	1	1
Self Contained Breathing Apparatus Fitness Test (hrs)	1	1	1	1	1	1	1	1	1	1	1
Emergency Response											
General Emergencies/Contingency Plan (hrs)	1	1	1	1	1	1	1	1	1	1	1
Spill control and Containment (hrs)	1	1	1	1	1	1	1	1	1	1	1
Emergency Response/Evacuation Procedures (hrs)	2	2	2	2	2	2	2	2	2	2	2
Fires/Explosions											
Fires and Explosions (hrs)	2	2	2	2			2	2	2	2	2
Closed Container Fires (hrs)	1	1	1	1			1	1	1	1	1
Plant Operations											
Fork Lift Training and Certification (hrs)		8		8			8	8	8		
Introduction to Plant Operations (hrs)	4	4	4	4	4	4	4	4	4	4	4
Standard Operating Procedures (hrs)	4	4	4	4	4	4	4	4	4	4	4
Computer Bar Coding (hrs)											
Special Scrap Label Identification (hrs)											
Total (hrs)	30	38	30	40	27	27	40	40	40	30	30

Table K-5. 1992 Shutdown Schedule
Revised 8-25-92

Day 1 - September 28th (Monday)

GROUP A

7:00 A.M. - 11:00 A.M.	Fire training @ Fire training area (also SCBA and smokehouse)

GROUP B

7:00 A.M. - 7:30 A.M.	Introduction
7:30 A.M. - 7:45 A.M.	Transportation
7:45 A.M. - 11:00 A.M.	Exercise

Spill exercise @ Bldg. 47 (split two groups for field exercise)
Introduction and wrap-up @ Bldg. 3 training room.

GROUP A

12:00 P.M. - 12:30 P.M.	Introduction
12:30 P.M. - 12:45 P.M.	Transportation
12:45 P.M. - 4:00 P.M.	Exercise

GROUP B

12:00 P.M. - 4:00 P.M.	Fire training @ Fire training area (also SCBA & smokehouse)

Day 2 - September 29th (Tuesday) — Bldg. 3 Training Room

7:00 A.M. - 9:00 A.M.	Emergency response, evacuation and SPCC plan (What If Training)
9:00 A.M. - 10:00 A.M.	Surcharge & Recharge
10:00 A.M. - 11:00 A.M.	Handling codes-profiles (Future changes)

Table K-5. 1992 Shutdown Schedule (Cont.)

CREW #1	
12:30 P.M.	MSDS information on microfiche reader
1:30 P.M.	Incompatible waste & waste stream
CREW #2	
12:30 P.M.	Incompatible waste & waste stream profile data
1:30 P.M.	MSDS information on microfiche reader
Day 3 - September 30th (Wednesday)	Bldg. 116, Conf. Room "C"
7:00 A.M. - 11:00 A.M.	Respirator training & hearing/noise protection
CREW #3	
12:30 P.M.	MSDS information on microfiche reader
1:30 P.M.	Incompatible waste & waste stream profile data
CREW #4	
12:30 P.M.	Incompatible waste & waste stream profile data
1:30 P.M.	MSDS information on microfiche reader
Day 4 - October 1st (Thursday)	
GROUP A	
7:00 A.M - 9:00 A.M.	Confined space entry (review) Bldg. 116, Conference Room "C"
9:00 A.M - 11:00 A.M.	Tour Chemical Division

Table K-5. 1992 Shutdown Schedule (Cont.)

GROUP B

7:00 A.M - 9:00 A.M.	Tour Chemical Division
9:00 A.M - 11:00 A.M.	Confined space entry (review) Bldg. 116, Conference Room "C"
12:30 P.M.	RECEIVING MSDS information on microfiche reader Waste stream profile data
1:30 P.M.	ENGINEERING, ETC. MSDS information on microfiche reader Waste stream profile data

Day 5 - October 2nd (Friday)

1:00 P.M. - 3:00 P.M.	Tour Hennepin County Incinerator

Day 6 - October 6th (Tuesday)	Tartan Park
7:00 A.M. - 7:30 A.M.	Handling of consent order waste
7:30 A.M. - 8:00 A.M.	Inspection logs, documentation and incident reporting
8:15 A.M. - 9:15 A.M.	Safety
9:30 A.M. - 10:00 A.M.	MPCA Air Quality Continuous Monitoring System
10:00 A.M. - 10:30 A.M.	MPCA Hazardous Waste Enforcement Handling hazardous waste
10:45 A.M. - 11:15 A.M.	Importance of Compliance

Table K–6. Plant Human Resource Information System (PHRIS)

Course Code	Course Type	Course Title	Course Description
002	S	Respirator Training/Fitness Testing	
AS112000	HR	3M Harassment Policy	Review of review procedures.
AS112001	R	Acid & Caustic Handling	
AS112002	S	Hearing Conservation	Review hearing conservation program.
AS112003	S	New Employee Safety Orientation	Bldg. safety orientation for new employees, walk thru required.
AS112004	S	Working With Dust	Review working in dusty conditions.
AS112005	S	Emergency Procedures	Review emergency procedures manual for bldg. 112.
CAP19000	S	Hoist Training	Lecture: "Overhead Materials Handling Systems".
CDC70020		3M Team Conference	
CDC70021	HR	Quest for Excellence Conference	
CDC70022	E	Pressure Sensitive Adhesive Tech.	
CDC70023	S	Chemical Process Relief System Design	
CDC70024	M	Waste Water Treatment Seminar	
CDC70099	S	DAR's Safety in the Plant	Eager to learn
CP111000	S	Consumer Products Evacuation Plan Routes	
CP111001	S	Fire Extinguisher Information	
CP111002	E	MS–1 Line Equipment, Location & Type	
CPP17001	S	Lock–out & Tag Procedures	The purpose of this procedure is to protect workers from injury, perhaps save a life, and protect equipment from damage. It is to be used where controls operate equipment which would jeopardize the safety of a worker engaged in dismantling, repairing, cleaning or assembling equipment.
CPP17002	S	Emergency Evacuation	1. Review possible reasons for building evacuation. 2. Review communication procedures. 3. Describe safe areas when an evacuation is determined. 4. Review other contingency plans.
CPP17003	S	Confined Space Entry	Conditions for confined space defined. Examples of confined space reviewed.

Table K–6. Plant Human Resource Information System (PHRIS) (Continued)

Course Code	Course Type	Course Title	Course Description
HR116000	HR	Working With Diversity	
HR116001	HR	Supv. Training/Presenteeism Program	
HR116002	HR	Suprv. Training Drug/Alcohol Policy	
HR116003	HR	Suprv. Training/90–91 Update	
HR116004	HR	PHRIS Training for Safety Coordinators	
HR116005	HR	3M Harassment Policy	
HR116007	HR	Suprv. Training/Legal Implica Emp. Pract	
HR116010	HR	Value of the Person	
INC47000	S	Safety Procedures/Chemcial Handling	Proper procedures for chemical handling and safe handling for incinerator processes. This course and those taking this class will be entered into PHRIS by incinerator personnel.
INC47001	S	Safety and Fire Regulations	Waste at the Incinerator operations. (Potential hazards involved).
INC47002	S	Industrial Hygiene	Proper protective equipment for handling hazardous waste at the incinerator. Proper measuring techniques to establish safe levels of operations at the incinerator. Training records to be entered into PHRIS by incinerator personnel only.
INC47003	S	Chemistry Fundamentals	Basic chemistry course in the fundamentals of mixing of compatible and noncompatible waste.
INC47004	S	Chemistry Safety Training	Chemical handling and the proper procedure by which to handle hazardous waste at the incinerator.
INC47005	S	Back Safety	Proper lifting techniques to be used when handling drums and other heavy equipments at the incinerator operation.
INC47006	S	Care/Use of Self Contained Breathing App	This covers the proper procedure for using SCBA unit in the event of any type of emergency.

Table K–6. Plant Human Resource Information System (PHRIS) (Continued)

Course Code	Course Type	Course Title	Course Description
INC47007	S	Gen. Emerg./Contingency Plan	Proper procedures to be followed during an emergency incident at the incinerator. This includes notification, evacuation and procedures to be followed during an emergency, required of all incinerator personnel.
INC47008	S	Fire & Explosions	Reactions of different chemicals and potential of their dangers as well as proper handling of explosive materials.
INC47009	S	Closed Container Fires	Process to be used in an emergency of a container fire, drums, etc.
INC47010	P	Introduction to Plant Operations	Help familiarize new employees to the incinerator operation.
INC47011	P	Standard Operating Procedures	Proper operating procedures for operating the incinerator safely and within regulations of all regulatory requirements.
INC47012	P	Computer Bar Coding	Proper use of the incinerator bar coding system for tracking waste at the incinerator.
INC47013	S	Special Scrap Label Identification	Provide an understanding of special scrap labels and their use in identifying hazardous waste material handled at the incinerator.
INC47014	M	Welcome to Chemolite	New employee orientation for incinerator personnel. The course gives the new employee of the incinerator an understanding of general site operations and its size. It also includes providing the new employee understanding of how other divisions operate at the site.
INC47015	RG	Chemical Hazards: You Need to Know	This course outlines the general information needed in the workplace and gives the employee general guidelines on where to find information on different hazards that the employee might be exposed to in the workplace. This is not the same as "Right to Know", but includes MSDS sheets. This is done by video tape at the incinerator operations at Chemolite.

Table K–6. Plant Human Resource Information System (PHRIS) (Continued)

Course Code	Course Type	Course Title	Course Description
INC47016		Chemolite Compliance Accomplishments	Of all government agencies and 3M, this is an overview of how the incinerator an Chemolite has met the regulatory requirements.
INC47017	P	Process Operations – Permit Conditions	Covers permit conditions procedures, sampling and record keeping at the 3M Corporate incinerator.
INC47018	RG	Inspection Plan	This covers the proper procedures for inspecting the different areas of the incinerator to comply with all regulations.
INC47019	S	Plant Inspection and Scenario's	Explains to the employee the general guidelines to be used if incident is discovered at the incinerator operation.
INC47020	RG	Spill/Control Demonstration (Patch–Drums)	Demonstrates to the employee different methods used for spill control and containment.
INC47021	P	Maintenance Problems & Changes	Covers the problems and changes in PLT Engineering coverage provided by mechanics and instrumentation personnel and the required paperwork necessary to it explains the guidelines that maintenance must follow in order to meet regulatory requirements on machines and equipment at the incinerator.
INC47022	R	MPCA Perspectives – Air Quality & Haz. Waste	This was a visit by the MCPA at the incinerator advising and informing incinerator personnel about what the state agencies look at and evaluate in an inspection.
INC47023	S	Environmental Compliance – 3M Legal	In this course, an understanding of 3M obligations meet the regulatory requirements for handling hazardous waste at the Chemolite Incinerator.
INC47024	R	Record Keeping – Reports, Plans, Notices	This class covers the regulatory reports, and documents that EE&PC must file on behalf of 3M. It stresses the importance of accuracy and the timeliness of reporting as well at the value associated with having the priviledge to incinerate here at Chemolite.

Table K-6. Plant Human Resource Information System (PHRIS) (Continued)

Course Code	Course Type	Course Title	Course Description
INC47025	RG	Infectious Waste Training	Training given to the employees on proper procedures for handling infectious waste. This could be hospital waste (nurse's station), or our life science development lab waste material that requires disposal.
INC47026	RG	Solvent Burning Plans & Compliance	This is the procedure for incinerating solvent at the incinerator and the necessary documentation associated with hazardous waste.
INC47027	RG	Chemical Safety: Fire & Explosion & Test	This is a video tape explaining where the danger of handling explosive types of materials at the Chemolite Incinerator.
INC47028	RG	Chemical Safety: Health Hazards & Test	This is a test that are performed to give us general guidleines and procedures as to how to handle certain chemicals that must be disposed of at the incinerator.
INC47029	M	Incinerator Overview & Tour	Same as "Welcome to Chemolite" INC47014 but does exclude this course which includes a tour of the incinerator and other buildings associated with the operation.
INC47030	S	Bobcat Safety Program	A video presentation on the proper procedure and handling of the Bobcat machine used to load ash and snow at the incinerator. Also included is training in the operation of the Bobcat by a certified instructor. This training includes but not limited a comprehensive safety training program on the Bobcat.
INC47031	S	Dupont Forklift Training & Test	A 4 series video presentation on the proper use, function and handling of a forklift. This also includes a knowledge test and certification all incinerator employees required to operate forklifts at the incinerator. This includes on-the-job operations of the forklift and related equipment.

Table K–6. Plant Human Resource Information System (PHRIS) (Continued)

Course Code	Course Type	Course Title	Course Description
INC47032	S	Now You See It & Now You Don't	This is a 3 tape series explaining the proper method on packaging, labeling and disposing of materials coming to the Chemolite incinerator. Tape prepared by Mr. Thomas Baltutis of Chemolite General Admission.
INC47033	S	We've Got You Covered/Protective Clothes	This is a video illustrating the proper use, and manner of dressing and undressing with protective clothing when working with hazardous waste. This course covers the
INC47034	S	Lubrication Fundamentals Training	proper oils and lubricants as well as procedures for changing lubricants and oils in all the machinery and equipment being operated at the incinerator and related building. The course was developed by Rollins Oil Company from St. Paul, Minnesota.
INC47035	R	3M Guide to Conduct	All 3M employees share responsibility for keeping the 3M workplace safe, efficient and orderly. In order to accomplish this, certain employer expectations are necessary. This guide outlines some of the work habits and work rules that experience has shown effective in maintaining a productive work environment. The guide is reviewed with employees so that they may have some understanding of 3M expectations & understand that disciplinary action is possible in the event conduct and expectations are not met.
INC47036	S	Emergency – 3M Nurse's Office	This is a tour of 3M Chemolite Center's medical department. The tour allows the employee to get to know the nurses of the department. Also, the medical dept. explains and demonstrates how to handle emergency situations and injuries on the job. A explanation of their role and function is explained as well.

Table K–6. Plant Human Resource Information System (PHRIS) (Continued)

Course Code	Course Type	Course Title	Course Description
INC47037	S	Eye Protection Seminar	This is a course on the use of safety glasses and the protection of the employees vision in their daily work activity at Chemolite Center.
IS110000	S	Emergency Evacuation	Where to go, what to do; general description of evacuation of building 101/110/74.
PP111000	S	Safety Protection – Right to Know	Fire extinguisher training, and explanation of sprinkler head system.
PP111001	RG	Hazardous Material Handling	Training on the use and handling of hazardous material.
PP111002	S	Evacuation	Training on evacuation and/or actual evacuation exercise.
PP111003	S	Environmental Concerns	Educating employees on emissions and water pollution.
SA116000	RG	Basic Hazardous Waste Training	This course covers hazardous waste characteristics, classifications, and hazards. The waste stream profiles are reviewed and the procedures for the proper labeling of the hazardous waste are described. Emergency response procedures are discussed as part of a review of the division's contingency plan. Spill procedures are reviewed. Proper handling and packaging of wastes are discussed. Accumulation rules (storage time limits, closed containers, satellite accumulation, outdoor storage, ailse space, incompatible wastes) are reviewed as applicable. Training to be conducted annually.
SA116001	RG	Advanced Hazardous Waste Training	This course covers inspections of waste storage areas, RCRA documentation requirements, waste minimization programs, waste storage tank requirements (as applicable), and a detailed review of emergency response procedures. Training to be conducted annually.

Table K–6. Plant Human Resource Information System (PHRIS) (Continued)

Course Code	Course Type	Course Title	Course Description
SA116002	RG	Hazardous Waste Shipping Requirements	This course covers the proper preparation of shipping papers for hazardous wastes. Proper procedures for staging wastes prior to transport are also reviewed. Training to be conducted annually.
SA116003	RG	Forklift Training	One–time certification. Annual training review.
SA116004	S	Fire Training	Identify types of fires; Learn to fight insipient stage fires and to use teamwork; identify the proper extinguisher for the work environment.
SA116005	RG	Respirator Training	
SA116006	RG	RCRA Coordinator Training	This course provides a division's RCRA coordinator with a comprehensive review of RCRA requirements. It prepares the person to conduct further training for the others in the division. Training to be conducted annually.
SA116007	RG	Right–to–Know Training	This training informs building personnel where they may find and use material safety data sheets (MSDS).
SA116008	S	Adult CPR	
SA116009	R	3M Designated Rep. Training	
SA116010	RG	Chemolite Hearing Conservation Program	
SA116011	S	Hazard Communication Training	
SA116012	S	Hazardous Waste Handling & Labeling	This training consists of informing building personnel on how to label and package hazardous material for shipment. Training to be conducted by safety coordinators.
SA116013	S	Confined Space Entry and Rescue	This course instructs 3M personnel on the mandatory requirements for safe entry into confined space; demonstrate and practice proper rescue techniques from confined spaces. The course covers regulation (3M Manual 80, Vol. 2) hazardous conditions, respiratory protection, monitoring equipment, entry equipment, pemit, system, and rescue exercises.

Table K–6. Plant Human Resource Information System (PHRIS) (Continued)

Course Code	Course Type	Course Title	Course Description
SA116014	S	Lockout/Tagout Procedures (OSHA CFR 29)	This section requires employers to establish a program of lockout/tagout and utilize procedures for affixing appropriate lockout devices or tagout devices, to energy isolating devices, and to otherwise disable machines or equipment to prevent unexpected startup or energization or release of stored energy in order to prevent injury to employees; defines what situations will require a lock to be utilized and where locks are not capable of being placed on equipment (petrochemical and utilities company application), a tag must be used in lieu of locks. After Jan. 2, 1990, major repairs, modifications to machines, and replacements will require such machines, or equipment to be designed to accept a lockout device.
SA116020	RG	Spill Prevention and Response Training	This course covers procedures for preventing spills and steps to be taken by employees when a spill occurs. Spill identification, notification, personal protective equipment, containment, cleanup, disposal, and decontamination procedures are covered. Training to be conducted annually. All other courses titled "Spill Prevention, Control, and Countermeasure", "Spill Response", or similar should be reviewed and deleted if they are redundant. Training given to employees using these redundant titles should be changed to this new title, description and site admin. code.
SPF17001	S	Lock–out & Tag Procedures	The purpose of this procedure is to protect workers from injury, perhaps save a life, and protect equipment from damage. It is to be used where controls operate equipment which would jeopardize the safety of a worker engaged in dismantling, repairing, cleaning, or assembling equipment.

Table K-6. Plant Human Resource Information System (PHRIS) (Continued)

Course Code	Course Type	Course Title	Course Description
SPF17002	S	Emergency Evacuation	1. Review possible reasons for building evacuation. 2. Review communication procedures. 3. Describe safe areas when an evacuation is determined. 4. Review other contingency plans.
SPF17003	S	Confined Space Entry	Conditions for confined space defined. Examples of confined space reviewed.
TM111000	Q	Optimized Operations	
TM111001	Q	Minnesota Quality	
TM111002	P	Hutchinson Tape Plant Visit	
TM111003	Q	Quality Awareness	
TM111004	Q	SPC Training	
TM111005	Q	Run Charting	
TM111006	P	Equipment Compounding	
TM111007	P	Equipment – Degasser	
TM111008	P	Equipment – Converting	
TM111009	Q	Testing Training	
TM111010	S	Accident Prevention	
TM111011	S	CO_2 Flooding	
TM111012	P	Converting and Reporting for Slitters	
TM111013	E	Thermal Oxidizer	
TM111014	RG	Hazardous Waste Labels	
TM111015	P	Ink Jet/Label Printing	
TP102000		Value of the Person	
TP102001	RG	TPTC – "Special" Right to Know	This course is to be used to inform anyone of the use of a "one time" only hazardous material, that was not covered in the annual "Right to Know" course.

Table K-7. Annual Training

Course Category	Course Title	Course Length: Annual Training (Hours)	Course Length: Optional Training (Hours)
Health and Safety	Right to Know/Hazard Communications/MSDS	1	
	Safety Procedures	1	
	Safety and Fire Regulations		1
	Industrial Hygiene		1
	Chemistry Fundamentals		4
	Chemical Safety Training		2
	Back Safety		1
	Respirator Training	1	
	Care/Use of Self Contained Breathing Apparatus		1
	Self Contained Breathing Apparatus Fitness Test	1	
	Cardiopulmonary Resuscitation (CPR)	4	
Emergency Response	General Emergencies/Contingency Plan	1	
	Spill Control and Containment	1	
	Emergency Response/Evacuation Procedures	2	
Fires/Explosions	Fires and Explosions		2
	Closed Container Fires		1
	Fire Training Exercise		4
Plant Operations	Fork Lift Training and Certification		1
	Introduction to Plant Operations [a]		4
	Standard Operating Procedures [a]		4
	Computer Bar Coding		1
	Special Scrap Label Identification		1

[a] Position specific training

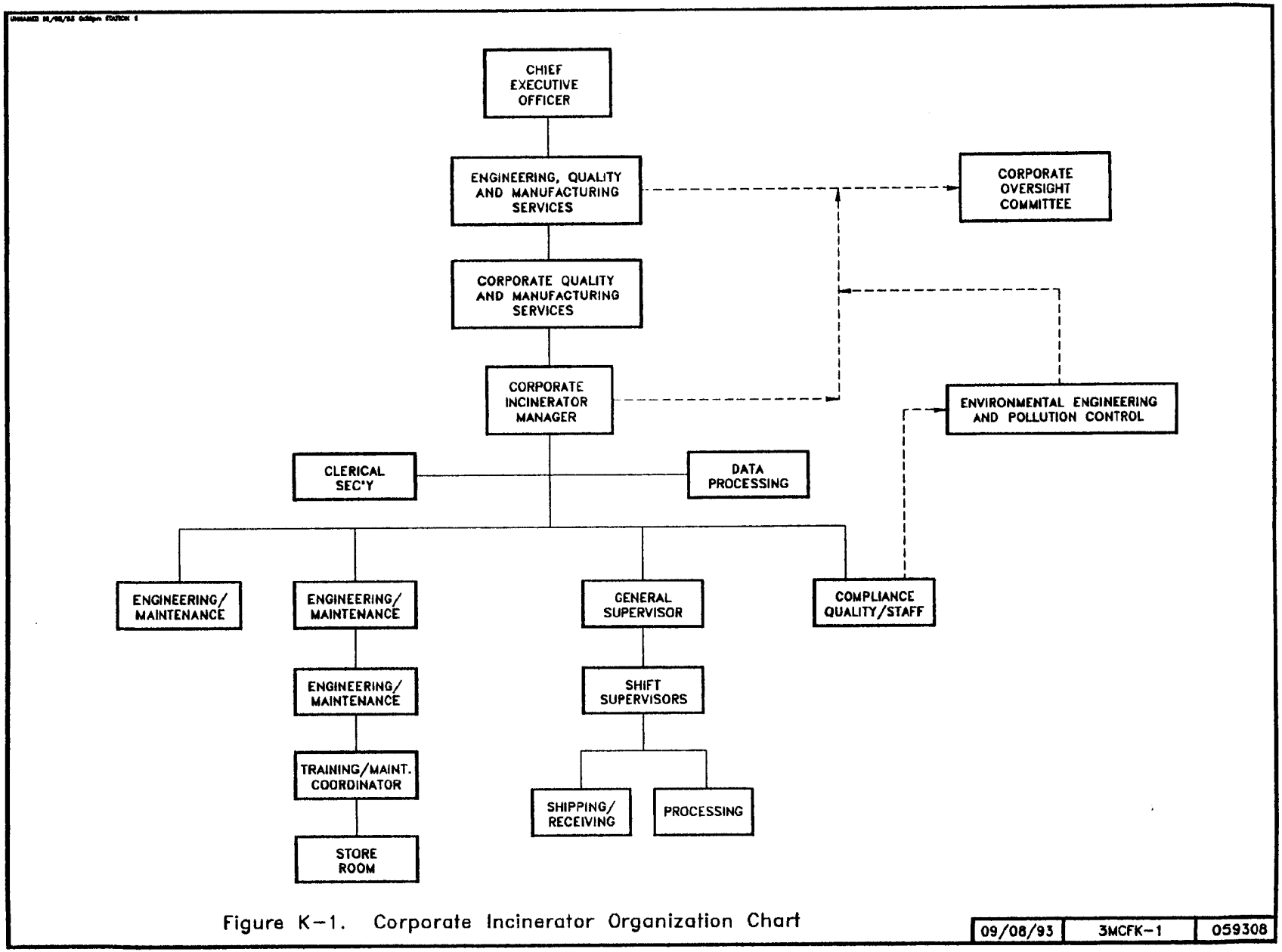

Figure K-1. Corporate Incinerator Organization Chart

09/08/93	3MCFK-1	059308

SECTION L
Closure
Plan

3MA00288805

SECTION L
CLOSURE PLAN

L-1 CLOSURE PLAN

This section is submitted in accordance with the requirements under Minnesota Pollution Control Association (MPCA) Hazardous Waste (HW) Sections 7045, .0486, .0490, .0492, .0494, .0496, .0498, .0502, .0504, .0506, .0508, .0516, .0518, and 0.0594. This plan identifies all steps necessary to partially or completely close the 3M Cottage Grove Corporate Incineration facility at any point during its intended operating life. The plan addresses the conditions and reasons under which partial closure would occur. A post-closure plan is not required because the facility is not a disposal facility and all hazardous wastes stored for treatment will be removed at closure.

Copies of the closure plan and any revisions to the closure plan will be stored at the 3M Corporate Incinerator at Cottage Grove until the certification of closure completeness has been submitted and accepted by EPA Region V and the MPCA. The Regional Administrator and the MPCA Commissioner will be notified at least 180 days prior to the commencement of final closure. The final closure date of this facility has not been determined, but is estimated to be around 2036. Upon completion of closure, a statement of certification will be submitted to the Regional Administrator and the Agency Director by 3M, and signed by a local independent registered professional engineer. This certification will verify that the facility has been closed in accordance with the specifications in the approved closure plan.

Steps and procedures necessary for the treatment and/or removal of all hazardous wastes and decontamination of the containment systems, equipment, and structures are presented in this closure plan for all hazardous waste management units at the 3M Corporate Incinerator and Storage Facilities at the 3M Cottage Grove facility.

The closure plan has been designed to: (1) ensure that each closed hazardous waste management unit will not require future maintenance or post-closure activities and (2) prevent the release of hazardous waste to the environment during closure. 3M Corporate Incineration facility personnel will respond to any release of hazardous waste in accordance with guidelines stated in Section G, Contingency Plan. Appropriate health and safety practices will be followed during all phases of closure to protect personnel from exposure to hazardous waste in accordance with guidelines stated in Section G, Contingency Plan. Appropriate health and safety practices will be followed during all phases of closure to protect personnel from exposure to hazardous waste constituents as required under OSHA and agreed upon by EPA, MPCA, and 3M personnel assigned to the closure.

This plan is hereby amended (September 1993) to remove two tanks (20,000 gallons each) located at the Specialty Materials Building #5. These tanks will continue to operate as hazardous waste generator tanks limited to 90 day storage requirements. Future closure of these tanks will be handled under generator closure requirements. This will not change the closure cost estimate because the estimate previously assumed the tanks would return to generator use after closure.

The closure plan will be further amended if any changes occur in the applicable regulations, operating plans, or treatment equipment that affect the closure plan (such as unit size or capacity, maximum closure inventory, or closure schedule or costs). The plan will also be amended, as required, if there are any technical changes such as application of a new technology, changes in monitoring requirements, or new operating plans or contingencies. Amendments will be made within 60 days of any of the above mentioned changes.

The maximum inventory of all wastes and non-wastes in storage will be:

Trailers (hazardous waste)	1,460,000 gallons
Trailers (nonhazardous waste)	390,000 gallons
Tanks (hazardous wastes)	150,500 gallons
(Phase III sludge)	40,000 gallons
Tanks (No. 2 and 6 fuel oils)	225,000 gallons
Docks and Buildings (hazardous and nonhazardous waste)	100,000 gallons
Laboratory operations (including samples)	100 gallons.

The above quantities are based on a maximum of 50 gallons of waste per drum.

L2 CLOSURE PERFORMANCE STANDARD

The 3M Cottage Grove hazardous waste management unit closure plan has been developed to eliminate the need for any post closure maintenance. It has been designed to protect and prevent threats to human health and to minimize or eliminate the release of hazardous wastes, hazardous waste constituents, waste decomposition products, or contaminated runoff to the ground, groundwater, surface water, or the atmosphere. All hazardous wastes and hazardous waste residues will be removed from the facility. If there is evidence of contaminated soil, an evaluation will be made as to whether the soil can be decontaminated or excavated and disposed of at a permitted disposal facility. Proper disposal and handling practices will be used for all contaminated materials.

L.3 PARTIAL AND FINAL CLOSURE ACTIVITIES

L.3.1 Partial Closure Activities

Partial closure of the waste receiving, storage, and handling areas or the incinerator operations areas are not planned at this time. In the event that future circumstances lead to discontinuing or modifying a particular area or process component, the closure plan will be amended accordingly.
Implementation of any partial closure plan will not adversely affect the ability of the facility to meet the performance standards (i.e., combustion temperature, destruction efficiency, emissions limits, etc.) required by the combined facility permit.

L.3.2 Final Closure Activities

Past Closure Activities

The boiler ash landfill area formally used as a processing surface for the incinerator ash and sludge were closed in 1984. All incinerator ash and sludge on the surface of the landfill were removed and properly disposed of either by shipping to a permitted landfill or recycling as scrap metal.

Planned Closure Activities

Each hazardous waste management unit will be closed in accordance with the following assumptions:

1. On-site accumulated wastes would be treated on-site whenever possible.
2. An approved permitted facility can receive the material requiring off-site disposal.
3. A widespread release of contaminated material has not occurred.
4. The 3M Cottage Grove Center wastewater treatment plant (WWTP) will be used to treat the wastewater from waste storage tank and process equipment wash down and rinse operations if the wastewater meets the requirements of RCRA; otherwise, the wastewater will be collected and treated on-site by appropriate technology to levels meeting RCRA requirements for treatment by the on-site wastewater treatment facility. Only as a last resort would the wastewater be transported to a permitted, off-site treatment, storage, or disposal facility (TSDF).
5. Remaining hazardous solid, liquid, sludge, and gaseous wastes will be transported to an approved off-site TSDF once the existing incineration equipment has been shutdown.

6. Likewise remaining nonhazardous wastes will be transported either to a sanitary landfill or to appropriate disposal/treatment facilities.

L.4 MAXIMUM WASTE INVENTORY

The following represents the maximum inventory of waste that is expected to be in storage at any time during the life of each hazardous waste management unit:

1. Trailer Storage Area - An equivalent of 27,500 55-gallon drums (1,375,000 gallons) of hazardous waste and 7,500 55-gallon drums (375,000 gallons) of nonhazardous waste are stored together in the hazardous waste trailer storage areas. These numbers are based on 323 permitted parking spaces within seven permitted lots for trailers in these storage areas. An additional 128 spaces are available for trailers containing empty drums and drums of nonhazardous waste. With a maximum of 132 drums/trailer for nonpumpable wastes and 88 drums/trailer for pumpable wastes, the above number of drums was calculated. The 55-gallon drums were assumed to contain an average of 50 gallons of waste. A significant percentage of the 3M wastes shipped to the facility are nonhazardous.

2. Docks and Buildings - An equivalent of 2000 55-gallon drums (100,000 gallons) of a combination of hazardous and nonhazardous waste. Normally a significant number of these drums would contain nonhazardous waste.

3. Storage Tanks - Twelve (12) tanks (150,000 gallons) of hazardous waste in the storage tanks. This includes 6 waste storage tanks (each 12,900 gallons), 3 blend tanks (each 3,400 gallons), 1 decant tank (10,000 gallons), 1 tank (12,900 gallons) of aqueous waste, and the sludge thickener (40,000 gallons of incinerator sludge) at the wastewater treatment plant.

   Two tanks (each 20,000 gallons) located at the Specialty Materials Facility in Building 5 have been removed from this closure plan and from the TSD Permit. These tanks continue to operate as generator tanks and future closure will be handled by that facility.

4. Combustion/APC systems - The incinerator feed lines, ash handling trailers, APC sumps and process lines, and WWT sump and process line systems are filled to capacity.

5. Laboratory - 100 gallons of laboratory waste, reagent-grade commercial chemicals, laboratory samples, and waste chemical products are in the laboratory.

Tanks containing No. 2 and No. 6 fuel oils (220,000, 17,000, and 8,000 gallons, respectively) are not included as wastes to be disposed of during closure. Fuel oils will be transferred to other storage tanks at the 3M Cottage Grove Center manufacturing facility.

L.5 INVENTORY REMOVAL, DISPOSAL, AND DECONTAMINATION OF EQUIPMENT

L.5.1 Inventory Removal and Disposal

Table L-1 lists the wastes handled by 3M Cottage Grove and the disposal options available to 3M at closure. Case I lists the closure procedures 3M plans to use for closure of the facility. Case II lists the alternate procedures 3M will use if the procedures listed in Case I cannot be used for closure of the facility. Hazardous waste which 3M Cottage Grove is permitted to incinerate will be incinerated before shutting down the incinerator. All other hazardous wastes will be disposed of at an approved, off-site TSDF by a third party. If for some reason it is not possible to incinerate approved hazardous wastes, those wastes will also be sent for disposal to an approved, off-site TSDF. Complete manifest records will be kept as to the date of shipment, waste characterization, waste quantity, the disposal facility used and other appropriate information.

Hazardous waste transportation to an off-site TSDF will be performed in accordance with DOT regulations. At the time of closure, trailers used to store containers (i.e., 55-gallon drums) will be inspected by 3M after removal of all containers and before the trailers leave the facility. Containers (drums cylinders, etc.) located at receiving docks and inside building storage areas will be treated first, and then the containers in the storage trailers will be treated, until all the waste has been processed. Hazardous wastes in tanks, except the sludge thickener, will be treated along with the drummed wastes until the tanks are empty. Once the incinerator portion of the facility has been closed, the two scrubber water collection sumps, the WESP recirculation sump, the Building 75 containment basin, the neutralization tank, the pump station wetwell; all located at the incinerator facility; and the mix tanks, the three wastewater settling tanks all located at the wastewater treatment plant, will be emptied by pumping to the sludge thickener and from there to the belt filter press. Each tank would then be cleaned in sequence, pumping the wash/rinse water to the next downstream tank until only the thickener remained. The contents of the thickener would then be pumped through the belt filter press. The filtrate will be pretreated if necessary and returned to the inlet of the wastewater treatment plant.

Wastes generated from closure operations (i.e., kiln ash, scrubber sludge, and decontamination wastes) will be placed in the appropriate containers or trucks for shipment to approved off-site facilities.

L.5.2 Decontamination of Equipment

Following removal of all wastes, all piping to and from the storage tanks will be disconnected, dismantled, and decontaminated. Chemical neutralizers and spill control pillows will be used in the event of a spill resulting from pipe drainage during the dismantling process. 3M personnel will supervise all decontamination and decommissioning operations to be performed by a third party. Personnel performing the dismantling and decontamination will be equipped with appropriate safety clothing and equipment. Extreme caution will be taken during all decontamination and cleanup activities. Non-sparking tools and equipment will be used as required.

Major equipment to be decontaminated are identified in Section L.5.3 for the container storage areas, in Section L.5.4 for the tank farm areas, and Section L.5.5 for the incinerator. Those sections also describe the decontamination procedures. Other major equipment that will require decontamination are cranes, forklifts, and portable pumps used in the closure activities and the sampling equipment used in the laboratory. These items will be flushed with water. The wastewater will be collected and sent to the 3M Cottage Grove Center WWTP if it meets the requirements of RCRA; otherwise, the wastewater will be treated with appropriate technology to meet RCRA requirements for discharge to the WWTP. Only as a last resort would the wash/rinse water be sent to an off-site permitted TSDF in containers or tank trucks.

The truck unloading station will serve as the location for decontamination of process equipment when possible. Stationary equipment which can be readily disassembled will be decontaminated at the tanker unloading building. Major process equipment will be decontaminated in place. Temporary containment berms will be installed as necessary to contain the decontamination materials. The equipment will be internally and externally flushed with water, detergent, and/or solvents depending upon the nature of the waste handled in the past. Equipment will be decommissioned and decontaminated on-site in an appropriate manner. Any spill occurring during equipment decommissioning will be contained and cleaned up, and the area will be decontaminated.

3M Cottage Grove will have process knowledge or analyses of the wastes which have been processed through the hazardous waste incinerator during its operation. Only those Appendix VIII and RCRA-listed hazardous waste constituents, which are known to have been in the wastes handled in the area being closed, will be specified for testing of the rinsate from the equipment and from the area surfaces to ensure

decontamination is complete. Decontamination procedures will be repeated (wash and rinse) until the collected samples reach decontamination specifications.

Soils in the immediate area of process equipment are not expected to be contaminated. Some superficial surface soil contamination may occur in these areas during the dismantling procedures. If evidence of soil contamination (in the form of discoloration or odor) exists, the soil will be removed and either decontaminated or sent to a permitted off-site TSDF.

Personnel involved in decontamination and decommissioning activities will wear protective clothing and equipment to prevent exposure to the hazardous waste constituents and to minimize human health hazards. The personnel protective equipment and decontamination equipment will be sampled and evaluated to determine if disposal and/or decontamination of this equipment will be required.

L.5.3 Closure of Container Storage Areas

3M plans to close all container storage areas as stated in Case I in Table L-1.

Following the removal of all trailers, the area designated as trailer storage lots will be inspected. Visibly contaminated areas will be excavated up to 12 inches depending upon the extent of discoloration. Samples will then be taken from the bottom of the excavated areas, and other areas will be randomly sampled. These samples will then be tested for contamination. Should the testing indicate contamination levels greater than those agreed to in advance by the 3M and MPCA personnel assigned to the closure, then additional material will be excavated until the site meets those levels. The excavated material will then be thermally treated on-site and the decontaminated residue hauled in covered trucks to a permitted facility.

Enclosed container handling and storage area (i.e., docks and buildings) will be dry swept, washed down with water (and detergent, if required), and rinsed with water. If necessary, high-pressure steam may be used to remove contamination. Each area will be given a final rinse with water. Wash water and rinse solutions will be collected and sent to the 3M Cottage Grove Center WWTP if they meet the requirements of RCRA; otherwise, the wash/rinse water will be treated with appropriate technology to RCRA approved levels prior to discharge to the on-site WWTP. Representative samples of the rinsate will be taken for analysis. Rinsate samples will be tested for designated Appendix VIII hazardous waste constituents. Process knowledge or analyses of the wastes will be the basis for determining which constituents will be analyzed. Decontamination procedures will be repeated (wash and rinse) until the collected samples reach decontamination specifications.

A visual inspection of the concrete floor in the container storage areas for cracks and other signs of migration of hazardous waste constituents will be made to verify that no migration into the concrete has taken place. No migration of contaminants into the concrete is expected since the containers are stored on pallets, the floors are sealed with a chemically resistant coating, and action is taken immediately to clean up any observed spills.

L.5.4 Closure of Tanks

All hazardous wastes will be removed from each tank, and all associated process lines will be drained in preparation for decontamination. High-pressure steam will be used to remove contamination from tank wall surfaces. A solvent will be pumped through the associated process lines to the incinerator if the solvent is fuel-grade solvent, or pumped to a tanker truck for disposal at a permitted, off-site TSDF if the solvent is water. Water (and detergent, as required) will be added and agitated to enhance cleaning. The water will be pumped through the tank process lines to the 3M Cottage Grove Center WWTP if it meets RCRA requirements. This procedure will be repeated two times, and then the tank and process lines will be rinsed with water. Representatives rinsate samples will be tested for those Appendix VIII hazardous waste constituents that are known to have been in the hazardous waste storage tank. Process knowledge or analyses of the wastes stored will be the basis for determining which constituents will be analyzed. Decontamination procedures will be repeated (wash and rinse) until the collected samples reach decontamination specifications.

After the tank decontamination process is completed, the tank secondary containment system will be dry swept, washed down with water (and detergent, as required), and rinsed with water. Wash water and rinse solutions will be collected and sent to the 3M Cottage Grove Center WWTP if they meet the requirements of RCRA; otherwise, they will be transferred to a tanker truck for disposal at a permitted, off-site TSDF. The containment system will then be rinsed with a second water rinse. Representative samples of the second rinsate will be tested for those Appendix VIII hazardous waste constituents that are known to have been in the hazardous waste storage tanks located within the secondary containment system. Process knowledge or analyses of the wastes stored will be the basis for determining which constituents will be analyzed. Decontamination procedures will be repeated (wash and rinse) until the samples collected reach decontamination specifications. If necessary, high-pressure steam may be used to remove contamination. The hazardous waste constituent levels in the plant well water will be the basis for background values.

L.5.5 Closure of the Incinerator

When the incinerator is to be shut down for decontamination and decommissioning, the incinerator system will be operated with No. 6 fuel oil for 24 hours to ensure burnout of any hazardous wastes in the system. Material and residue from the incinerator feed system, the ash handling system, and the APC devices will be containerized and transported to a permitted, off-site TSDF. Wastewater from the APC devices will be sampled and analyzed according to RCRA requirements. The wastewater will be pumped to the 3M Cottage Grove Center WWTP if it meets RCRA requirements; otherwise, it will be transferred to tank trucks and transported to a permitted, off-site TSDF. The incinerator system (rotary kiln, secondary combustion chamber, gas cooling system, gas cleaning system, and ash removal system) and its associated systems and equipment (feed system, feed preparation equipment, and scrubber water collection and pretreatment equipment) will be decommissioned. All surfaces which contacted waste, ash, flue gases or scrubber water will be washed and rinsed with water (and detergent, as required). These surfaces will have a second water rinse. The wash and rinse solutions will be transferred to tank trucks and transported to an approved, off-site TSDF. Representative samples of the second rinse will be tested for those Appendix VIII hazardous waste constituents that are known to have been processed through the incinerator system. Process knowledge or analyses of the wastes processed will be the basis for determining which constituents will be analyzed. Decontamination procedures will be repeated (wash and rinse) until the samples collected reach decontamination specifications. If necessary, high-pressure steam may be used to remove contamination.

The wastewater treatment plant facilities (the mix tanks, the three setting tanks, and the sludge thickener) will be washed and rinsed to remove solids and then turned over to the wastewater treatment plant to be used to treat other plant wastewater.

L.5.6 Closure of Waste Piles

3M conducts waste pile management practices in accordance with regulations under M. R. 7045.0534. Contaminated soils and incinerator ash may be stored in the Bulk Solids Storage Building (Oakdale building). The Oakdale building is completely enclosed to prevent run on. Contaminated soils are processed on a very infrequent basis. Incinerator ash is stored briefly only when extra storage is needed and before the ash is transferred into trucks for transporting to a permitted, off-site TSDF. All waste stored in waste piles will be transported to a permitted, off-site TSDF. The areas used for waste pile storage will be decontaminated following removal of the waste.

L.5.7 Closure of Surface Impoundments

There are no hazardous waste surface impoundments at the 3M Cottage Grove facility.

L.5.8 Closure of Landfills

There are no hazardous waste landfills at the 3M Cottage Grove facility.

L.5.9 Closure of Land Treatment

There are no hazardous waste land treatment units at the 3M Cottage Grove facility.

L.6 SCHEDULE FOR CLOSURE

Figure L-1 presents the proposed schedule for closure of the 3M Cottage Grove facility. The EPA Regional Administrator and MPCA will be notified at least 180 days before implementing final closure procedures.

All hazardous and nonhazardous wastes in the container storage areas and storage tanks at the commencement of closure activities will be incinerated and/or removed off-site for disposal within 120 days after the receipt of the final volume of waste. All decontamination and decommissioning activities will be completed within 180 days after the receipt of the final volume of waste.

Closure operations will be supervised and certified by 3M personnel as well as by an independent professional engineer as required.

L.7 EXTENSIONS FOR CLOSURE TIME

Unforeseen circumstances may result in extending the closure schedule. However, it does not appear that it will take longer than 180 days to complete final closure.

L.8 POST-CLOSURE PLANS

Post-closure care will not be needed for this facility because it is not a disposal facility and all hazardous wastes will be removed during the closure activity.

L.9 NOTICE IN DEED AND NOTICE TO LOCAL LAND AUTHORITY

Because the 3M Cottage Grove plant is permitted as a hazardous waste generator, storage, and treatment facility, notification is not necessary in the deed informing potential purchasers of restrictions associated with a disposal site.

Table L-1. Closure Disposal Options for 3M Waste Categories

Waste Category	Waste Type	Disposal Options Case 1	Case 2
Liquids	Solvents	On-site Incineration	Recycler[1]
(Pumpable)	Waste Fuels	On-site Incineration	Recycler[1]
	Aqueous	On-site Incineration	Off-site TSDF[2]
	Special	On-site Incineration	Off-site TSDF[2]
	Customer	On-site Incineration	Off-site TSDF[2]
Sludges	Pourable	On-site Incineration	Off-site TSDF[2]
(Pumpable)	(Semi-Solid)		
Solids	**Homogeneous Solids**		
(Nonpump)	Contaminated Soils	On-site Incineration	Off-site TSDF[2]
	Jelled Wastes	On-site Incineration	Off-site TSDF[2]
	Solid Products	On-site Incineration	Off-site TSDF[2]
	Special	On-site Incineration	Off-site TSDF[2]
	Kiln Ash	Off-site TSDF[2]	Off-site TSDF[2]
	Scrubber Sludge	Off-site TSDF[2]	Off-site TSDF[2]
	Magnetic Kiln Ash	Recycler[1]	Recycler[1]
	Nonhomogeneous Solids		
	Lab Wastes	On-site Incineration	Off-site TSDF[2]
	Plant Trash	On-site Incineration	Off-site TSDF[2]
Gases	Aerosol Cans	On-site Incineration	Off-site TSDF[2]
	Cylinders [3]	On-site Incineration	Off-site TSDF[2]

[1] Approved off-site recyclers such as Avganic for solvent.
[2] Approved off-site TSDFs such as US PCI.
[3] Vent slowly into kiln feed chute.

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Figure L-1, Closure Schedule for the 3M Cottage Grove Facility Hazardous Waste Management Units

No.	Task	Schedule in Days: 0 30 60 90 120 150 180 210 240 270 300 330 360 390
1	Notification toMPCA & EPA Regional Administrator of Intentions to Close Facility	
2	Preparation of Operations Protocol for Closure Activities	
3	Receipt of Final Shipment of Hazardous Waste	
4	Removal/Shipment of Inventory Wastes and Residual Process Wastes to Approved, Off-Site TSDFs	
5	Decontamination of Receiving Areas, Tanks, and Ancillary Equipment	
6	Decontamination of Incinerator Feed, Incinerator, Ash Handling, APC, and WWT Systems	
7	Sample and Analyze for Designated Hazardous Constituents	
8	Removal/Shipment of Decontamination Wastes to Approved, Off-Site TSDFs	
9	Inspection and Certification	

Activity

Review Meeting

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SECTION M
Closure Cost
Estimate

SECTION M
CLOSURE COST ESTIMATE AND FINANCIAL ASSURANCE

M.1 CLOSURE COST ESTIMATE

Details of the closure plan cost estimate for the 3M Cottage Grove Center facility are contained in Appendix M. The cost estimate is based on the disposal of the maximum permitted waste storage volume. The cost estimate is calculated based on Case II, Table L-1 in which most wastes (hazardous and nonhazardous) at the 3M Corporate Incinerator will be disposed of on-site prior to final closure. Upon notice of intended closure to the MPCA, all wastes shipments to the facility would be terminated and the process of treating the stored wastes would commence on an around the clock basis until it was all treated.

An estimated $3,006,363 (as of September 1993) will be needed to close the 3M Cottage Grove Center facility. The estimate for closure of the hazardous waste incineration management units is based on Case II of Table L-1 and cost data as of September 1993. Closure activities include:

1. Treatment/disposal of on-site wastes
2. Decontamination of equipment and materials
3. Disposal of decontamination residues
4. Transportation of some wastes to permitted, off-site facilities
5. Sampling and analytical work
6. Manpower
7. Regulatory assistance
8. Contingency and administration
9. Closure certification.

No salvage credits are included in the closure cost estimate. The estimated cost is for decontamination of the site and not demolition/restoration.

A copy of the 3M Cottage Grove Center closure plan and cost estimate will be kept on file at the facility. The closure cost estimate will be adjusted (1) annually for inflation within 60 days prior to the date the closure estimate was prepared and (2) when changes in the closure plan affect the cost of closure.

M.2 FINANCIAL ASSURANCE MECHANISM FOR CLOSURE

3M meets the financial test and corporate guarantee for closure as discussed in Section M.2.1, and therefore need not establish a financial trust to insure the required funds are available to cover the closure costs.

M.2.1 Financial Test and Corporate Guarantee for Closure

Given in Appendix M are letters regarding financial assurance for closure of the 3M Cottage Grove facility. These letters certify that 3M meets the Financial Test and Corporate Guarantee for closure.

M.3 POST-CLOSURE COST ESTIMATE

Since all wastes will be disposed off-site, there will be no post-closure activities or costs.

M.4 FINANCIAL ASSURANCE MECHANISM FOR POST-CLOSURE

Since all wastes will be disposed off-site, there will be no post-closure activities or costs.

SECTION N
Corrective
Action

SECTION N
CORRECTIVE ACTION

This section addresses the requirements of M.R. Parts 7045.0484, 7045.0485, 7045.0512 and 7045.0514. 3M has operated a waste pile as described in Section S3 of this renewal. The corrective action plan for this regulated unit is described in Section N.1. No corrective action measures have been identified for this regulated unit or any of the Solid Waste Management Units identified by the RCRA Facility Assessment (RFA) completed by MPCA in 1987.

N.1 CORRECTIVE ACTION PLAN FOR WASTE PILE

As described in Section S3 of this Permit Renewal Application, incinerator ash is managed in a container on a coated concrete floor. There is no potential for groundwater contamination from this operation. Therefore no corrective action plan for this waste pile area is necessary.

N.2 CORRECTIVE ACTION FOR SOLID WASTE AND HAZARDOUS WASTE MANAGEMENT UNITS

Fifteen solid waste management units (SWMU) are identified in the RCRA Facility Assessment completed in June 1987 by MPCA. The actions suggested by that report for each of the identified SWMUs are summarized in Table N-1.

N.3 COST ESTIMATE FOR CORRECTIVE ACTION

N.3.1 Cost Estimate for Waste Pile Corrective Action

No cost estimate for waste pile corrective action has been prepared since the character of the ash, design and procedure of handling ash prevents any current or potential future contamination of groundwater.

N.3.2 Cost for Monitoring at Solid Waste Management Units (SWMU)

Currently, no corrective action is anticipated at any of the SWMU identified by the 1987 RFA. Monitoring of groundwater is conducted as several production and monitoring wells. Data associated with this

monitoring is submitted to MPCA on a quarterly basis. Cost of the monitoring program is approximately $1,000 per year.

N.4 FINANCIAL ASSURANCE FOR CORRECTIVE ACTION

Since no corrective action beyond monitoring has been identified a financial assurance statement relative to corrective action is not required.

Table N-1. Summary of Suggested Further Actions

	Unit	Suggested Further Actions
1.	Coal Pile Runoff Pond	Continue on-site ground water monitoring and monitoring production wells. No further action suggested at this time.
2.	Waste Storage Runoff Pond	Continue on-site ground water monitoring and monitoring of production wells. No further action suggested at this time.
3.	Cooling Water Ponds	Continue monitoring under NPDES Permit. No further action suggested at this time.
4.	Wastewater Treatment Polishing Ponds	Continue monitoring under NPDES Permit. No further action suggested at this time.
5.	Fire Training Area Runoff Pond	Establish ground water monitoring under NPDES Permit. No further action suggested at this time.
6.	Concentrated Ammonium Sulfate Ponds	Continue monitoring new wells MW-15 and MW-16. No further action suggested at this time.
7.	Iron Oxide Drying Bed	Continue production well monitoring. Nor further action suggested at this time.
8.	Site D1, HF Neutralization Pit	This site has been closed and capped, the existing on-site ground water monitoring and the production well pumping and monitoring will continue at the Chemolite Center.
9.	Site D2, Sludge Disposal Area	This site has been closed and covered. No further action is suggested at this time.
10.	Site D3, Boiler Ash Site	This site has been excavated. No further action is required.
11.	Site D4, Phenolic Waste Pit	This area has been closed. No further action is suggested at this time.
12.	Site D5, Solids Burn Pit Area	This area has been closed. No further action is suggested at this time.

Table N-1. Summary of Suggested Further Actions (Continued)

	Unit	Suggested Further Actions
13.	Site D6, Active Ash Disposal Area	This area is to be closed and capped. The site will continue the ground water monitoring under the existing Solid Waste Permit.
14.	Site D7, Pit Burning Area	This site will continue monitoring of the production wells.
15.	Site D8, Waste Disposal Area	This area is to be closed and capped. The site will continue the ground water monitoring and monitoring of the production wells.

SECTION O
LIABILITY COVERAGE

O.1 LIABILITY INSURANCE

O.1.1 Sudden Accidental Insurance

The 3M Company is self-insured in case of bodily injury and property damage to third parties caused by sudden accidental occurrences arising from operation of this hazardous waste treatment facility. Appendix O contains a copy of the letter stating self-insurance sent to the EPA Region V Administrator.

O.1.2 Non-Sudden Insurance

Requirements for non-sudden insurance apply only to surface impoundments, landfills, or land treatment disposal facilities, none of which applies to the 3M Cottage Grove Center facility.

O.1.3 Variance and Adjustment Procedures

It is not anticipated that the 3M Company will petition the EPA Region V Administrator or MPCA for a reduction in the liability amounts.

If future legislation increases the amounts of liability coverage or imposes non-sudden liability coverage requirements to incinerators, 3M Company will adjust the insurance provisions discussed previously to comply with the revised requirements.

O.2 STATE ASSUMPTION OF RESPONSIBILITY

It is not anticipated that 3M Company will request state assumption of the legal or financial responsibilities.

SECTION P
Topographic
Maps

SECTION P
TOPOGRAPHIC MAPS

Topographic maps, prepared August 27, 1993, showing the 3M Cottage Grove Center site are contained in Appendix P, Figure P-1 and P-2. Figure P-1 shows the extents of the Cottage facility at a scale 1"=180'. Figure P-2 details the extents of the incinerator facility at a scale 1"=100. Each figure shows the location of the property line, fences and gates, drainage divides, drainage flow direction; drainage structures, storm sewer lines/culverts, fire water systems, chemical sewers, and intermediate streams. All buildings are shown with a solid red outline. Buildings used in treatment and storage of hazardous waste are shown in Drawing No. CHEM-888-C-142 in Appendix A, of this permit.

Appendix P also contains a Windrose Map, the City of Cottage Grove Zoning Map, and the Locations of all Production and Monitoring Wells at the 3M Cottage Grove Center.

The Cottage Grove Center site does not fall within the 100-year floodplain. Subsequently, the 100-year flood plan is not depicted on the facility drawings. Section Q provides specific details regarding flood plain information.

SECTION Q
Floodplain
Information

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SECTION Q
FLOODPLAIN INFORMATION

The 3M Cottage Grove Center site does not fall within the 100-year floodplain. The natural contour of the site precludes the occurrence of a 100-year flood from effecting the site. This is based on a copy of the Federal Insurance Administration flood map found in Appendix Q. The Cottage Grove Center facility falls in areas designated outside a 500-year flood.

SECTION R
Application
Fee

SECTION R
APPLICATION FEE

Based on the criteria outlined in M.R. 7046.0020, Hazardous Waste Fees, 3M has assessed a permit reissuance application fee as shown in Table R-1. The calculated fee for reissuance of the Part B permit for the Cottage Grove facility is $34,132.00. The fee has been calculated according to the combination facility schedule, Subpart 3, C. of the Rule, based on the activities associated with thermal treatment and storage of hazardous waste at the Cottage Grove facility.

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Table R-1. Permit Reissuance Fee Cost Sheet

Item	Category	Type	Qualifier	Cost
A.	Storage	Tanks and Containers Indoors	Total capacity greater than 550 gallons	$1,070.00
		Tanks and Containers Outdoors	Total capacity greater than 550 gallons	$2,150.00
		Piles		$6,440.00
		Surface Impoundment	NA	$0.00
		Subtotal Storage		$9,660.00
		Subtotal Storage X 0.20 (Combination facilities)		$1,932.00
B.	Disposal and Treatment	Surface Impoundments	NA	$0.00
		Thermal Treatment	Not including open burning	$32,200.00
		Land Treatment	NA	$0.00
		Land Disposal	NA	$0.00
			Total Fee	**$34,132.00**

SECTION S
WASTE MANAGEMENT UNITS

Section S describes the four types of waste management units operated at the 3M Cottage Grove Center Facility. These include the following:

Container Storage Areas	Section S1
Tank Storage	Section S2
Waste Piles/Containment Building	Section S3
Incinerator	Section S4

SECTION S1
Container
Storage

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SECTION S1
CONTAINER STORAGE

S1.1 INTRODUCTION

The container storage section for the 3M Cottage Grove Corporate Incinerator describes where hazardous waste is stored in containers, and outlines how those containers are handled. Containers are managed in accordance with 40CFR Subpart I (M.R. Part 7045.0526). This section provides the information required by 40CFR270.15 (M.R. Part 7001.0570).

Section S is divided into several parts:

- Section S1.2, CONTAINERS, TANKER TRUCKS & TRUCKS RECEIVED, describes containers in which hazardous waste maybe received.

- Section S1.3, CONTAINER STORAGE AREAS, outlines each of the storage areas used at the Corporate Incinerator to store hazardous wastes in containers, and provides information on storage capacity.

- Section S1.4, DESCRIPTION OF CONTAINER STORAGE AREAS, provides detailed information on each container storage area.

- Section S1.5, INFORMATION ON CONTAINER TYPE, WASTE TYPE AND COMPATIBILITY, provides information on the types of containers used, and the compatibility of wastes and their containers.

- Section S.6, HAZARDOUS WASTE CONTAINER OPERATIONS MANUAL, describes procedures used to assure proper management of hazardous waste containers.

- Section S.7, SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES, documents compliance with setback requirements.

- Section S.8, SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES, provides information relevant to these requirements.

S1.2 CONTAINERS, TANKER TRUCKS AND TRUCKS RECEIVED

Hazardous and nonhazardous wastes are transported to the Cottage Grove Corporate Incinerator by truck in a variety of DOT approved containers, in tanker trucks, as well as in truck shipments of bulk materials.

S1.2.1 Containers

Hazardous wastes are generally shipped to the incinerator in DOT approved drums. Other approved containers received include overpack drums, portable tanks, boxes, fiber and plastic drums, bags and pails. Container selection, packaging and labeling are specified in the waste stream profile for each waste, as described in Section C, Waste Analysis Plan. Such wastes may be received and stored in several areas, as described in this section. Section C.2.3 describes the waste tracking system and Appendix C contains a description of the IWTS which includes the barcode system for containers.

Labels on the hazardous waste drums denote whether each drum contains pumpable (free liquid) or nonpumpable (without free liquid) waste. Upon arrival at the incinerator dock, operating personnel segregate the pumpable from the nonpumpable drums (see Section S1.6 and Section A.3). If the staging area for drummed pumpable waste in the Material Handling Building (Building 47/60) is full, the drums are loaded into storage trailers. When a storage trailer has been filled, it is moved from the incinerator dock to a permitted trailer storage area. These storage areas are fully described in this Section.

S1.2.2 Tanker trucks

Hazardous waste liquids are also received in tanker trucks. Tanker truck shipments are received in the Tanker Unloading Building (B-136). Wastes are analyzed for fingerprint parameters, and then pumped into an appropriate storage tank for injection into the kiln or shipment to an off-site facility. Tank storage is discussed in Section T.

S1.2.3 Bulk Solid Materials

Bulk solid shipments of hazardous and nonhazardous waste are received at the incinerator and unloaded in the Bulk Solids Handling building (Oakdale building). Bulk wastes are deposited in a hopper equipped with a feed conveyor, which transports the bulk solids into the kiln. Bulk material storage is described in Section S3, Waste Piles/Containment Building.

S1.3 CONTAINER STORAGE AREAS

The following storage areas are currently included in the incinerator's current Part B permit, (Section VI K.1.).

AREA	MAXIMUM CAPACITY
Building 47 and 60	2,000 drums
New storage Lot A	100 trailers
Trailer storage Lot B	20 trailers
Trailer storage Lot C	36 trailers
Trailer storage Lot D	64 trailers
Trailer storage Lot J	78 trailers
Trailer storage Lot K	6 trailers
Trailer storage Lot L	14 trailers

In addition to tanker truck storage at the Tanker Unloading building, tanker trucks may also be stored in any of the approved trailer storage lots. A tanker truck would normally be stored in Lot B.

In addition to these storage areas now included in the Part B Permit, the Corporate Incinerator has requested and received permission from the MPCA to manage hazardous waste containers in several waste management areas:

AREA	CAPACITY (Trailers)	Containers or Volume
Building 112 and docks	Seven trailers	630 drums
Building 77 Drum Staging	two trailers (bulked or drummed)	14,000 gallon or 200 drums
Building 136	two trailers (bulked or drummed)	14,000 gallons or 200 drums

On occasion, hazardous waste containers may also be stored in Tanker Unloading Building 136, in the Ash House, and in the Bulk Solids Storage Building (Oakdale Building).

A schematic of the hazardous waste storage areas is included in Drawing No. CHEM-888-C-142 in Appendix A. Construction materials are noted on this diagram.

S1.4 DESCRIPTION OF CONTAINER STORAGE AREAS

S1.4.1 Incinerator Material Handling Building.(47/60)

Hazardous waste are transferred to and from Bldg. 47/60 through one of twelve (12) docks on the East end of buildings 47/60. (See Drawing No. CHEM-888-C-142 in Appendix A.) Containers may be removed to and from trailers in groups or individually depending upon the needs in the receiving and processing areas. Containers are managed as described in Section S.6., Container Operations Manual. Containers may be stored at the dock in trailers for longer than 24 hours awaiting receival, usually over weekends or during shutdowns. Containers may be stored in the following indoor areas of the Material Handling building:

- In the pak feeder room in building 47
- In the short term staging area outside the pak feeder room in building 47
- In the pumproom in building 47
- In Shipping & Receiving in building 60
- In the southeast end of building 60 (formally the Special Waste Area).

Each of these areas is discussed in detail below.

Interior areas of buildings 47/60

The floors in buildings 47/60 are concrete. In those waste processing areas equipped with floor drains, the drains are concrete and either slope to a 600 gallon concrete sump area or have no outlet. Spilled liquids would be pumped out of the floor drain or sump, containerized and incinerated. The floor drain or sump would be cleaned with a suitable solvent (usually water), which is also collected and incinerated on-site.

The capacity of these areas is sufficient to handle ten percent of the volume of containers stored in the area. All concrete surfaces are sufficiently impervious to contain leaks and spills. Run-on and run-off are prevented because the area is located indoors. Indoor container storage areas are inspected on every shift. If a spill did occur, it would be promptly cleaned up.

Floor trenches in the back of Building 60 are divided to eliminate the possibility of incompatible wastes mixing in the floor drains. Wastes stored in this area typically include flammable solids, oxidizers, certain corrosives, polychlorinated biphenyls (PCB's), flammable liquids containing poisons, containerized gases, other toxic materials, and other wastes awaiting further handling.

Buildings 47/60 dock area

The exterior of the twelve (12) docks at buildings 47/60 are constructed of concrete. The ramps of the docks are concrete, and are sloped towards the docks. A trench is provided along the length of the building. Dock areas are continually under the observation of the operators during use. Sufficient absorbent material is immediately available to contain a spill in this area. Tanker trucks may also be staged in this area occasionally.

S1.4.2 Trailer Staging Area (Lot C)

Trailers may be stored in the Staging Area lot located directly behind (to the West of) the Tanker Unloading facility. This storage area is used to stage van trailers after they arrive at the site and prior to waste receipt. Lot C is paved with asphalt which is sufficiently impervious to prevent a spill from migrating through the asphalt until the next daily inspection, at which time the spill would be cleaned up. In addition, this area is visited and observed several times a day by facility staff.

S1.4.3 Trailer Storage Lots A,B,D,J,K, and L

Containers of hazardous waste are stored in dedicated off-the-road semi-trailers in six permitted trailer storage areas.

These trailer storage lots are each equipped with a compacted bentonite clay liner (Lots A,D,J) or impermeable synthetic liners (Lots B,K,L). The bentonite clay has been mixed with a polymer to greatly increase chemical resistance. The synthetic liners are also chemically resistant. The bentonite and synthetic liners are protected with a layer of crushed rock in each trailer storage area. The liners are sufficiently impervious to contain leaks, spills and precipitation. There is sufficient capacity in each bermed trailer storage area to contain ten percent of the volume of the containers stored there.

A berm surrounding each hazardous waste trailer storage area prevents run-on and run-off. Each trailer storage area is sloped (generally to the North). Lots A,B,D and J are equipped with manually operated valves. Rain water will be visually examined to ensure compliance with water quality standards before discharge occurs. Rainwater is pumped out of the remaining lots after visual examination.

Each trailer storage lot is inspected daily for leaks and spills, as discussed in Section E of this Permit Renewal Application.

Lots A, C, and D are equipped with a continuous 8 foot wide strip of concrete. These pads uphold the front metal trailer supports. Trailers are parked in rows, with each trailer allotted a space of 10 feet by 50 feet. A lane extends between each row of trailers which is 60 feet wide. The spacing between the trailers in each row averages 2 feet.

S1.4.4 Building 112

Some hazardous waste is received at the docks at building 112, which are currently assigned to the Corporate Incinerator. (please refer to Drawing No. CHEM-888-C-142 in Appendix A) Indoor areas are covered with impervious concrete. The exterior dock areas are also concrete and are sloped to the dock.

S1.4.5 Building 77 Drum Staging

Building 77 was recently constructed as an outdoor covered container storage area next to the Tanker Unloading building. Please refer to Drawing No. CHEM-888-C-142 in Appendix A. This area has several intended purposes. The secondary containment area will provide additional storage for bulk tankers when Bldg. 77 is being fully utilized. The docks and shelter will also be used to stage and transfer containers between trailers particularly for off-site shipments This area will also be used to unload trailers which are suspected of having a leaking container. The trailer would be managed according to the following sequence:

a. The trailer would pull up to the dock at this structure
b. The trailer would be ventilated
c. The drums would be unloaded in the barrel storage area
d. The leaking container would be located and repaired or overpacked
e. The barrels would be reloaded onto the trailer
f. The trailer would either be pulled back up to buildings 47/60 or to a trailer storage lot.

This area is open on all four sides, but is equipped with a roof. The impervious concrete floor in this storage area is bermed to hold spills and leaks. The berm has sufficient capacity to hold the contents of an entire tanker. 3M will apply a flexible elastomer sealant to the concrete floor by November 1, 1993.

Run-on and run-off are prevented by the secondary containment berm. This storage area is inspected daily. Precipitation would be pumped out of the area, since the berm has no outlet. Spilled material would be removed promptly.

S1.4.6 Building 136 Tanker Unloading Building

Bulk tankers are stored in bldg. 52 while the waste contents are being transferred into one of the hazardous waste tanks. Occasionally the content or partial contents of the trailers are transferred into drums or tanks. These will also be conducted in Bldg 52. Containers may also be staged in Bldg. 52 while the contents are being transferred are being transferred into a bulk tanker for transportation to an off-site facility.

S1.4.7 Ash House

The Corporate Incinerator may store containers of hazardous waste for longer than 24 hours in the Ash Building, which is described more fully is Section S3.3.

S1.4.8 Tanker Unloading

The incinerator may store containers of hazardous waste for longer than 24 hours in the Tanker Unloading Building, which is described in Section S2.6.

S1.4.9 Bulk Solids Storage Building

The incinerator may also store containers of hazardous waste for longer than 24 hours in the Bulk Solids Storage Building (Oakdale Building), which is discussed in Section S3.2.

S1.5 INFORMATION ON CONTAINER TYPE, WASTE TYPES & COMPATIBILITY

The 3M Cottage Grove Corporate Incinerator is currently permitted to accept a wide variety of hazardous and non-hazardous wastes. As described in Section C, Waste Analysis Plan, each waste stream sent to the Corporate Incinerator must first have a waste stream profile developed and approved. Among the information specified in the waste stream profile is the approved DOT container type(s) and size(s) for each waste. All containers will be compatible with the waste, and will be in good condition.

S1.6 HAZARDOUS WASTE CONTAINER OPERATIONS MANUAL

3M has established procedures to handle, transport, label and dispose of hazardous substances and contaminated soils, liquids and other residues in accordance with all applicable requirements. Shipments of hazardous waste arrive at 3M Cottage Grove from off-site locations via licensed hazardous waste transporters.

Shipments of drums are received at buildings 47/60 and at building 112. These drums are unloaded at a dock and inspected for damage and manifest verification. The drums are on pallets, and are unloaded using a forklift. Before being moved, all drums will be inspected by the forklift operator to assure that they can be moved safely. Drums are either placed into a staging area in buildings 47/60 for immediate incineration, or are reloaded onto dedicated storage semi-trailers and moved to one of 3M's permitted container storage areas. Drums are eventually moved to buildings 47/60, unloaded at the docks, moved to the staging area, and placed into the incinerator.

Drum movement is minimized. The movement of each hazardous waste drum is tracked by a computerized electronic bar coding system, as described in Section A.3 of the Permit Renewal Application.

Drums and containers used during spill cleanups meet all appropriate DOT, OSHA and EPA regulations for the wastes which they contain. Drums and containers are inspected, and container integrity is assured prior to being moved. 3M maintains a supply of salvage drums and containers which meets (DOT) specifications.

3M also maintains suitable quantities of inert absorbent material, which are available to be used in areas where spills, leaks or ruptures may occur. Where major spills may occur, a spill containment program is implemented to contain and isolate the entire volume of the hazardous substance being transferred or handled. These spill procedures are outlined in the 3M Cottage Grove Center Hazardous Waste Contingency Plan, which is discussed in Section G. Drums and containers used to ship hazardous waste off-site are DOT approved.

Unlabelled drums and containers would be considered to contain hazardous substances and would be handled accordingly until their contents were positively identified. Appropriate labels would be provided after positive identification were made.

Site operations are organized to minimize the amount of drum and container movement required at the Incinerator. All employees working at the Incinerator are warned of the potential hazards associated with the contents of the drums or containers.

Drum or container staging areas at the Incinerator are kept to the minimum number necessary to identify and classify materials safely, and to prepare materials for transport off-site or incineration on-site. Pallets of drums are placed in the staging area in designated areas only. This maintains adequate aisle space between drums.

The 3M Cottage Grove Corporate Incinerator has selected material handling equipment used to transfer drums and containers in order to minimize sources of ignition, as described in Section I.

Drums are stacked a maximum of two high. Due to the relatively rapid drum processing rate, the normal drum retention time is 24 hours with a normal maximum of about 3 days over holiday weekends. Inspection aisles are maintained between every 4 rows of stacked drums. Main aisles for the forklift trucks are always maintained in front of the loading docks, to and from the pump room, to the adjacent warehouse, and directly in front of the drum feeder conveyor.

S1.7 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

All waste container storage and handling areas are at least 700 feet from the facility's property line, as outlined in Section I.3.

S1.8 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

Incompatible wastes are not put into the same container. The 3M Waste Stream Profile Program discussed in Section C specifies materials which are incompatible with a given waste stream. The incinerator also performs compatibility screening as discussed in that same section, to assure that incompatible wastes are not mixed together in operational equipment.

SECTION S2
Tank Storage

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SECTION S2
TANK STORAGE

S2.1 INTRODUCTION

Tanks are used to blend liquid hazardous wastes and store them prior to incineration or shipment to an off-site TSDF. Each of the tanks has a primary purpose, although any of the tanks is capable of blending and storing any waste handled at the incinerator. The location of the tanks is shown in Section A, Figure A-1.

The hazardous waste tanks located at the 3M Cottage Grove Incinerator are:

Tanks	Tank Capacity In Gallons	Dike Capacity In Gallons
Blend Tank #1	3,400	14,750
Blend Tank #2	3,400	
Blend Tank #3	3,400	
Decant Tank	10,000	10,500
Overflow Tank #3	12,900	38,930
Waste Solvent Tank #4	12,900	
Waste Solvent Tank #5	12,900	
Waste Solvent Tank #6	12,900	
Aqueous Waste Tank #7	12,900	38,930
#2 Fuel Oil Tank #8 (Non-hazardous)	17,000	
Waste Solvent Tank #9 (Burner Supply)	12,900	
Waste Solvent Tank #10(Burner Supply)	12,900	

Tanks are grouped in the sealed concrete dike that contains them as shown above. Each dike's storage volume exceeds the storage volume of the largest tank in the dike plus sufficient capacity for rainfall. Tank diking meets the requirements of secondary containment.

Figures S2-1 through S2-4 show the piping, instrumentation and process flow for the hazardous waste tanks. All figures and additional tank specifications and dimensions are provided in Appendix S2.

S2.2 BLEND TANKS 1, 2 & 3

Three 3,400 gallon blend tanks accept waste pumped from drums in the Building 60 pump room. Aqueous or solvent waste may be routed from the pump room directly to any one of the three Blend Tanks. Blend tank contents are mixed by agitators and transfer pump recirculation.

Two Blend Tank transfer pumps route waste between the Blend Tanks or from the Blend Tanks to the Tank Farm. These transfer pumps are automatically stopped if a high level is sensed in any of the Tank Farm Tanks (i.e. Tanks 3, 4, 5, 6, 7, 9, or 10).

A Blend Tank Burner pump routes waste directly from any one of the three Blend Tanks to the A burner, B burner or Aqueous Lance for disposal. A back pressure control valve in the Blend Tank burner line regulates pressure in the return line.

Blend Tank level is monitored via the control system displays, an indicator in the pump room, and an indicator at the base of each tank. A high level alarm is activated if any tank level reach 95% of capacity. An overflow line, provided on each tank, routes excess contents to Overflow Tank #3 in the Tank Farm should an overflow occur.

Blend Tanks 1, 2 and 3 are structurally identical tanks. Blend Tank specifications and dimensions are included in Appendix S2.

Pumping incompatible waste to the Blend Tanks is prevented by drum labeling, operator training and compatibility testing. (A copy of the compatibility test procedures is provided in Appendix C.) Any solid materials that accumulate in the tanks are removed by opening the tank access doors and using high pressure water hoses to remove the contents manually. Materials removed in this manner are drummed for subsequent burning.

S2.3 DECANT TANK

The 10,000 gallon Decant Tank is used as a waste storage and phase separation tank. Waste liquid can be transferred from any storage tank or any blend tank to the decant tank. After quiescent settling, the higher quality waste solvent (high Btu and low solids liquid) separates to the top of the tank while the sludge settles to the bottom.

Low density solvents may be drawn off the upper portion of the tank by the blend tank transfer pumps. Settled waste or sludge may be transferred to the A-Burner, B-Burner, Aqueous Lance or sludge pump via the decant sludge pump.

Tank level is monitored via the control systems displays, an indicator in the pump room, an indicator in the unloading station and an indicator on the decant tank. A decant tank high level alarm is generated should the tank reach 95% of its capacity.

An overflow line on the decant tank routes excess contents to overflow tank #3 in the tank farm should an overflow occur.

S2.4 WASTE STORAGE TANKS

The tank farm stores waste solvents in Tanks #4, #5, #6 and stores aqueous waste in Tank #7. Tank #3 is used as an overflow tank for all other storage tanks.

Bulk tankers may be unloaded directly into any one of the waste storage tanks. The contents of the blend tanks can also be transferred to any one of the waste storage tanks.

Waste Solvent Transfer Pumps 3 and 5 route waste from any waste solvent tank to any other waste solvent tank or to the blend tanks.

Waste storage tank level is monitored via the control system displays, an indicator in the unloading station, and an indicator at the base of the respective tank. A Tank #4, #5 ,#6 or #7 high level alarm is generated if any tank level reaches 95% of capacity.

An overflow line, provided on each tank, routes excess contents to Overflow Tank #3 in the tank farm should an overflow occur. An alarm is generated if a flow switch at the inlet of Overflow Tank #3 senses a flow or if Tank #3 reaches 25% of capacity.

Waste Storage Tanks #3, #4, #5, #6 and #7 are structurally identical tanks. Waste storage tank specifications and dimensions are included in Appendix S2.

S2.5 BURNER SUPPLY TANKS

Waste Solvent Tanks #9 and #10 supply the kiln A burner, the kiln B burner and the secondary combustion chamber C burner with solvent fuel.

Burner supply tank level is monitored via the control system displays, an indicator in the unloading station, and an indicator at the base of each tank. A Tank #9 or #10 high level alarm is generated should either tank level reach 95% of capacity.

An overflow line is provided on each tank, routing excess contents to Overflow Tank #3 in the Tank Farm should an overflow occur.

Burner Supply Tanks #9 and #10 are structurally identical tanks. Burner Supply Tank specifications and dimensions are included in Appendix S2.

S2.6 TANKER UNLOADING BUILDING

Tanker trucks or tanks of waste may be transferred directly into a blend, decant or storage tank in the Tanker Unloading Building. The contents of tankers may also be transferred into drums or totes in this area.

The Bulk Tanker Unloading Building is contained within a sloped, diked area with a capacity of 10,000 gallons. This area is more than sufficient to contain the largest tanker volume of 7,000 gallons.

Two tanker unloading pumps located in the Tanker Unloading Building are used to transfer waste solvent, aqueous waste, No. 6 fuel oil or No. 2 fuel oil from incoming tanker trucks to the tank farm. The pumps may also be used to pump waste from a waste storage tank to an awaiting tanker.

Tanker unloading pumps 1 and 2 stop automatically if a high level is sensed in any of the tank farm tanks (i.e. 3, 4, 5, 6, 7, 8, 9, or 10 or the #6 fuel oil tank).

An imminent tanker overflow alarm monitors the process of pumping waste into a tanker. In this process, incinerator personnel insert a dual probe (one long, one short) into the tanker's top manway port. When the tanker level reaches the long probe, a horn sounds and an alarm light flashes in the unloading station. If the tanker level continues to rise until it covers the short probe for 15 seconds, waste solvent transfer

pumps and burner pumps 3, 5, 9 and 10 are automatically stopped, the horn sounds again, and the alarm light flashes again in the unloading station. An alarm is also printed in the main control room.

S2.7 TANK INSPECTION AND MONITORING

Hazardous waste tanks and their associated piping, connections and valves are visually inspected daily for leakage. The containment dikes are also examined daily for integrity and evidence of tank leakage. The dike drainage valve is checked daily to ensure that it is closed. These inspections are logged on a daily basis. Inspection logs are kept on file.

If water is present in the dike area, its presence is noted on the inspection log. Remedial action (pumping the water to the neutralization system for wastewater pretreatment) is taken within 24 hours. If visual inspection of the water should indicate the presence of liquid waste from the tanks, the water is pumped to the aqueous waste tank (Tank #7) for disposal through incineration.

Tanks are continuously monitored in the control room by the operator. Tank levels are recorded three times a day in the operator's log. Tank level alarms and tanker unloading alarms are displayed and printed as they occur.

S2.8 TANK CORROSION AND EROSION

All tanks were designed with corrosion allowances as listed in the applicable specification. Each year two tanks are tested for metal wall thickness and visually inspected for corrosion inside and out.

All the hazardous waste tanks were checked in 1984 using a Krautkramer Branson ultrasonic thickness tester. In 1990, Waste Storage Tanks #4 and #7 were tested for metal thickness and inspected inside and out for corrosion. In 1991, Blend Tank #2 was tested and thoroughly inspected. In 1992, Burner Supply Tanks #9 and #10 were tested and inspected. In Feb. 1993, Blend Tank #1 was completely replaced with an essentially identical tank. Waste Storage Tanks #5 and #6 are slated for inspection in the second half of 1993. Tank inspections records are kept on file.

Since the hazardous waste tanks rest on concrete and steel columns elevating them several feet above the ground, any leak would be easily spotted. Should any tank develop a leak, it will be immediately taken out

of service, emptied, cleaned, inspected and checked for remaining metal thickness and cause of the leak. It will then be repaired or replaced before being returned to service.

Containment dikes, constructed of coated Portland cement, are sealed with a chemical resistant epoxy coating to prevent dike leaks and dissolution. (See Drawing No. CHEM-888-C-142 in Appendix A).

S2.9 TANK MANAGEMENT PRACTICES

Incompatible pumpable wastes received at the facility are stored in separate tanks. When waste is received on-site, a test is performed to determine its compatibility with other wastes currently in storage as outlined in Section C. A sample of the new waste is mixed with a sample of the destination tank contents. The test sample is observed for polymerization, bubbling and other adverse reactions.

If it is determined that the waste must be stored in a separate empty tank, a check is made to determine the composition of previously stored waste. If the wastes are not compatible, the tank is cleaned to remove any residual waste from the tank.

Tank cleaning involves spraying the inside of the tank with a high pressure washer and removing the aqueous solution. This solution is then drummed for subsequent on-site incineration.

SECTION S3
Waste Piles/
Containment Bldg.

SECTION S3
WASTE PILES/CONTAINMENT BUILDING

S3.1 INTRODUCTION

This Waste Piles section describes the two waste pile areas which are included in the 3M Cottage Grove Corporate Incinerator current Part B Hazardous Waste Facility Permit. This section also describes the Corporate Incinerator plans to convert the existing hazardous waste bulk solids storage building (the Oakdale building) into a containment building as prescribed in 40CFR, Part 264, Subpart DD. This section also outlines 3M's waste pile procedures in accordance with requirements used in 40CFR, Part 264, Subpart L (Minnesota Rules (M.R.) Part 7045.0534) and (M.R. Part 7001.0600).

S3.2 HAZARDOUS WASTE BULK SOLIDS CONTAINMENT BUILDING

S3.2.1 Bulk Solids Storage Building Usage

The Bulk Storage Building is detailed in Drawing No. CHEM-047-A-800, Appendix S3. This Butler-type building was originally constructed in 1983 to handle contaminated soils from a site remediation project. It has a floor dimension of 30 feet by 40 feet and is approximately 24 feet high. The unit is provided with a large retractable door which allows tractor trailer end dumps to discharge their contents onto the building floor. When this overhead door is lowered the building is completely enclosed. Pedestrian access and windows are also provided. Nine feet tall, 1/4" steel sheeting has been welded to the sides of the building to contain wastes. The walls have sufficient structural strength to support the material stored in the building and no material is allow to contact doors or windows. A concrete curb is constructed in front of the door to prevent precipitation run-on from entering the building.

Waste may be transferred into the kiln through either a pan or auger conveyor. Each of these augers is provided with its own feed hopper. The auger conveyor is used for fine grained materials and soils while the pan conveyor is used bulk solids. Both conveyors transfer waste to a single auger conveyor which transfers waste into the kiln feed chute.

This building was initially used to transfer contaminated soils into the kiln. Currently the unit is used primarily for the staging of incinerator ash prior to shipment to off-site landfills.

Since the promulgation of the Containment Building provisions found in 40CFR Part 264, Subpart DD, the Corporate Incinerator has made the commitment to upgrade the existing bulk solids storage building to a containment building.

S3.2.2 Upgrade to Containment Building

Several minor changes will be made which will allow the building to fully meet all of the Containment Building requirements found in 40CFR, 264 Subpart DD. Recently, 3M expended the containment walls upwards for another three (3) feet, making the containment walls nine (9) feet high. Wastes will not be piled in the containment building higher than this level. All walls will be seam welded and of sufficient strength to support themselves and the waste contents. The concrete floor will be coated with a chemically resistant coating, and joints will be sealed with a flexible elastomer sealant. The steel walls will also be coated with a flexible elastomer coating. At steel-concrete and concrete-concrete joints, a flexible chemical barrier will be installed to prevent the migration of hazardous waste through these joints.

Experience has shown that incinerator ash from the quench tank does not contain free liquid as defined by the paint filter test. Thus, the secondary liquid containment requirements specified in 40CFR, 264.1101 (b) are not applicable at this bulk solids handling building. Any free liquid which accumulates in this area will be immediately removed.

Experience has also shown that incinerator ash does not pose a fugitive dust emissions problem. 3M will not deposit other wastes in this building which may have fugitive dust emissions without first taking measures to control those fugitive dust emissions. 3M will not allow visible emissions from the building to occur.

All wastes placed in the Bulk Solids Containment Building will be chemically compatible with building materials. Incompatible chemicals will not be placed in the containment building.

The equipment used to handle wastes include a Bob-cat front-end loader and end dumps. Several methods will be used to prevent the tracking of hazardous waste out of the unit. When end-dumps deposit their contents on the building floor a small amount of material may come in contact with the rear tires. As the end dump exits the building any residual material will be removed with brooms, brushes, or a HEPA vacuum cleaner.

The Bob-cat front end loader will remain in the building while materials are being handled to eliminate tracking waste out of the unit. If the loader is removed from the building after waste processing, the loader

will be decontaminated with brushes, brooms, or a HEPA type vacuum cleaner. A portable decontamination unit will be used if water is needed to adequately decontaminate the loader.

S3.2.3 Time Frames for Completion

The remaining work necessary to convert this building to a containment building meeting all of the regulations will be completed within one year of the date of this Permit Renewal Application.

S3.2.4 Certification

Upon completion of this construction, 3M will obtain the certification of a qualified registered professional engineer that the containment building meets the requirements of 40CFR, 264, Subpart DD.

S3.3 ASH HOUSE WASTE PILE

S3.3.1 List of Wastes to be Placed in Waste Pile

Nonmagnetic incinerator ash may occasionally be stored in a waste pile in the Ash House.

S3.3.2 Exemption from 7045.0534, Subpart 2, Items A and B and 7045.0484

Karst Topography

The 3M cottage Grove Corporate Incinerator is not located in an area with Karst topography features.

Free Liquids

There are small amounts of free liquids in the incinerator ash as it is removed from the quench system. Water from the quench tanks quickly drains from the incinerator ash back onto the quench tank conveyors and into the tanks. Trenches and sumps are provided to keep water in the quench system. Operational experience has shown that incinerator ash, once it leaves the conveyor, does not contain free liquids as defined by the paint filter test.

The floor in the Ash House consists of portland cement. A flexible, chemically resistant sealant has been provided to almost all of this building. This work will be completed by November 1, 1993.

Run-On

Run-on is prevented because the waste pile is located indoors.

Dispersal by Wind

The waste pile is located indoors. Experience has shown that incinerator ash does not pose a fugitive dust emissions problem.

Leachate Generation

Incinerator ash removed from the quench tank is chemically inert. It will not generate leachate through decomposition or other reactions.

S3.3.3 Design Construction, Operation, and Maintenance

Since there is no free liquid in the incinerator ash placed in waste piles in the Ash House, there is no leachate collection system. The coated concrete floor inside the building serves as the liner for the waste pile. Run-on and run-off are not a problem at this unit, as discussed in this section. The Ash House is cleaned on a daily basis.

S3.3.4 Inspections

The waste pile in inspected weekly to detect evidence of deterioration and the presence of liquids. Inspection procedures are outlined in Section E of this Permit Renewal Application. If the inspection reveals a deficiency, 3M would notify the MPCA of the condition and of the remedies which will be taken to eliminate the deficiency.

S3.3.5 Ignitable or Reactive Wastes

Ignitable or reactive wastes are not placed in the waste pile.

S3.3.6 Closure

Closure procedures are outlined in Section L of this Renewal Application Procedure.

S3.3.7 Dioxin Contaminated Wastes

Materials contaminated with F020, F021, F022, F023, F026, F027, and F028 wastes will not be placed in the waste pile.

SECTION S4
3M Corporate
Incinerator

SECTION S4
3M CORPORATE INCINERATOR

This section provides information which satisfies the requirements of Minnesota Rules (M.R.) Part 7001.0630 B and 7001.0070.

3M conducted an approved Trial Burn at the Cottage Grove Corporate Incinerator in 1990. Four test runs were conducted at two test conditions, for a total of eight runs during the period of May 31 through June 7, 1990. The Trial Burn Report of the results of that testing was submitted to MPCA September 7, 1990. Since no significant changes to the waste that is treated at the Cottage Grove incinerator have occurred since the completion of this testing, and since there have been no significant changes to the waste feed systems, to the combustion process, or to the air pollution control system, 3M proposes that the results of this testing be used to establish the operating conditions that will ensure that the performance standards in part 7045.0542 will be met.

The approved Trial burn test was conducted to determine:

- The destruction and removal efficiency (DRE) of three selected Principle Organic Hazardous Constituents (POHC) – naphthalene, methyl ethyl ketone, and 1,1,1-trichloroethane.
- The stack gas particulate matter concentration.
- The stack gas hydrogen chloride (HCl) emissions and HCl removal efficiency.
- PCDD/PCDF concentrations in the stack emissions.
- Emissions and removal efficiency for fourteen metals (Ag, As, Ba, Be, Cd, Cr, Fe, Hg, Na, K, Pb, Sb, Tl, and Zn)

S4.1 TRIAL BURN PLAN

The Trial Burn Plan submitted to MPCA on September 28, 1989 and the final revision #1 dated May 2, 1990 included the following information:

a. The results of the waste analysis of each waste mixture which was burned. Representative materials were burned during the trial burn for each waste mixture. These wastes included:

- Liquid organic waste
- Chlorinated liquid organic waste
- Aqueous waste
- Semi-solids waste
- Containerized solid waste
- Bulk solid waste.

The analysis of each waste included:

- the heat value of the waste
- the ash content of the waste
- the viscosity of the waste where appropriate
- the total organic chlorine content of the waste
- the volatile and semi-volatile POHCs in the waste
- the metals content at the waste.

b. A detailed engineering description of the Cottage Grove Corporate incinerator. An up dated description is attached as Appendix S4 of this permit renewal.

c. A detailed description of air pollution control equipment and stack gas monitoring equipment and pollution control monitoring systems. An updated description is attached as part of the Engineering Description of the Incinerator in Appendix S4.

d. A detailed description of sampling and monitoring procedures. These can be found in Volume II Appendix A of the Trial Burn Report submitted to MPCA, September 7, 1990.

e. A detailed test schedule

f. A detailed test protocol

g. A description of operating conditions for emission control equipment

h. Procedures for rapidly stopping waste feed, shutting down the incinerator and controlling emissions in the event of an equipment malfunction. No equipment malfunctions occurred during the Trial Burn.

S4.2 TRIAL BURN TEST RESULTS

The approved Trial Burn was conducted in accordance with M.R. Part 7001.0700 Subpart 6. The Trial Burn Report includes the following:

a. A quantitative analysis of the trial principal organic hazardous constituents in the waste feed. This is summarized in Section 4.1.1 of the Trial Burn Report. Volume I of the Trial Burn Report is included in Appendix S4 of this permit renewal.

b. A quantitative analysis of the exhaust gas for the concentration and mass emissions of the trial principal organic hazardous constituents, oxygen, and hydrogen chloride. These are summarized in sections 4.3, 4.4, 4.2 and 4.5 of the Trial Burn Report respectively.

c. A quantitative analysis of the scrubber water and ash residues. These are summarized in sections 4.9 and 4.10 of the Trial Burn Report.

d. A computation of destruction and removal efficiency. This is summarized in sections 4.3 and 4.4 of the Trial Burn Report.

e. A computation of hydrogen chloride removal efficiency. This is summarized in section 4.5 of the Trial Burn Report.

f. A computation of particulate emission. This is summarized in section 4.2 of the Trial Burn Report.

g. An identification of sources of fugitive emissions and the means of control. Fugitive emissions from the incineration process with the I.D. fan, are controlled by maintaining negative pressure as measured by Secondary Combustion Chamber (SCC) pressure.

h. A measurement of average, maximum, and minimum temperatures of the thermal treatment zone and combustion gas velocity. Incinerator operating data is summarized in section 3.2; combustion gas velocity in section 3.3 of the Trial Burn Report.

i. A continuous measurement of carbon monoxide, oxygen, and carbon dioxide in the exhaust gas. Continuous emission monitoring data for oxygen, carbon dioxide, carbon monoxide, total hydrocarbons and sulfur dioxide are summarized in section 4.11 of the Trial Burn Report.

j. Other analyses. Other data collected as part of the approved trial burn included mass balance data for fourteen metals of concern, PCDD/PCDF concentrations in the stack emissions, and stack gas fluoride emissions. These are summarized in sections 4.12, 4.8 and 4.6 of the Trial Burn Report respectively.

S4.3 PERMIT CONDITIONS BASED UPON TRIAL BURN RESULTS

This section of the Permit Renewal Application justifies 3M's belief that the approved Trial Burn conducted in 1990 demonstrates that the Cottage Grove incinerator meets the performance requirements of 40 CFR 264 Subpart O (M.R. Part 7045.0542) and that operating conditions for the incinerator may be established according to 40 CFR 264.345 (M.R. Part 7045.0542 subpart 6).

S4.3.1 Waste Analysis

Analysis of the waste that 3M stores and treats at the Cottage Grove Facility has been provided in Section B and C of this application and as part of the Trial Burn Plan submitted to MPCA. As stated in that approved plan, the Corporate Incinerator treats a variety of hazardous wastes from 3M North American business operations. The physical and chemical properties of the wastes vary considerably from day-to-day. Therefore any Appendix VIII compound may be fed into the incinerator, with the exception of PCB's and F020, F021, F022, F023, F026 and F027 wastes.

Throughout normal operation 3M conducts waste analysis according to the Waste Analysis Plan submitted as Section C of this application. This waste analysis is adequate to verify that the waste feed is within the physical and chemical composition limits specified in the permit.

S4.3.2 Principal Organic Hazardous Constituents

The three selected and approved principal organic hazardous constituents (POHCs) were naphthalene, methyl ethyl ketone, and 1,1,1-trichloroethane. Naphthalene is categorized as a Class 1 compound on the EPA Thermal Stability Index. Successful demonstration of destruction and removal efficiency (DRE) of this Class 1 compound and the two other selected POHCs demonstrated the incinerator's ability to achieve a similar DRE for any of the Appendix VIII compounds.

S4.3.3 Performance Standards

Destruction and Removal Efficiency (DRE)

The average DRE for all POHCs tested in the 1990 Trial Burn exceeded 99.999%, which exceeds the performance criteria of 99.99%. Results are presented in the Trial Burn Report sections 4.3 and 4.4 (See Appendix S4 of this permit renewal).

Hydrochloric Acid (HCl) Removal

The average HCl removal in the 1990 Trial Burn exceeded 99.6%, which exceeds the performance criteria of 99%. Maximum chlorine feed rate demonstrated was 746 lbs/hr in Run 6. Results are presented in the Trial Burn Report section 4.5.

Particulate Emissions

The average particulate emissions in the 1990 Trial Burn were 0.0624 gr/dscf corrected to 7% oxygen for Test Condition A Runs 1 - 4 and 0.0593 for Test Condition B Runs 5 - 8. Both tests exceeded the required performance standard of 0.08 gr/dscf. Maximum ash feed rates were demonstrated in Test Condition A. Average total ash feed was 10,000 lbs/hr in all feeds, 49 lbs/hr is liquid feeds with maximum concentration in the organic liquid of 0.8% and the aqueous liquid waste of 1.68%. Results are summarized in section 4.2 of the Trial Burn Report.

In addition to the trial burn testing, 3M has conducted periodic particulate testing as required under the facility's current permit. These test results, submitted regularly to the MPCA, have continuously demonstrated compliance with required particulate emission standards.

Metals Emissions

In addition to performing a Trial Burn to meet the performance requirements addressed above, 3M addressed the control of toxic metals in order to demonstrate system performance of the system for removal of specified metals, and to demonstrate conformance with 40 CFR 266.106. These regulatory standards to control metals emissions are applicable to Boilers and Industrial Furnaces (BIFs), and are used as guidance for establishing controls on hazardous waste incinerators. These regulations specify either feed rate limits, emission rate limits or a combination of feed rate and emission rate limits for 10 toxic metals on the basis of projected health risk from exposure to these metals.

3M has informed both the MPCA and USEPA that 3M has been developing a method for monitoring metals emissions from the incinerator stack since 1989. 3M has provided data relative to this Continuous Emission Monitoring (CEM) program to both agencies. A summary of that data for 1991, 1992 and 1993 is included with this application as part of Appendix S4. Also included in this appendix is a description of the 3M CEM System, which utilizes the 1990 Trial Burn data to demonstrate the appropriateness of the continuous metal (particulate) collection system. 3M believes that this system can be utilized to demonstrate metal emissions limit compliance on a continuous basis. A current proposed test method validation procedure is included in Appendix C.

During 3M's 1990 Trial Burn, aqueous waste feed was spiked with compounds containing six metals (cadmium, chromium, iron, mercury, lead and zinc). Waste feeds were analyzed for these six metals and six other metals (silver, arsenic, barium, beryllium, antimony and thallium). Results of the metals testing is summarized in section 4.1.2, 4.7 and 4.12 of the Trial Burn Report.

Calculation of metal emission compliance during the trial burn is summarized in Table S4-1. This table utilizes the metal feed and emission data from the trial burn and summarizes system removal efficiencies and emission rates. Emission rates are compared to the applicable standard for each of the 10 RCRA metals (antimony, barium, lead, mercury, silver, thallium, arsenic, beryllium, cadmium and chromium). Comparing to the BIF Reference Air Concentration (RAC) or Risk Specific Dose (RSD) all ten metal emissions were below their respective standard. Demonstration of compliance with the aggregate risk factor for the four carcinogenic metals is also demonstrated by the data collected. All metal emission rates measured meet the appropriate criteria.

In addition to demonstrating compliance with the applicable standards during the 1990 trial burn testing, 3M has demonstrated compliance in previous testing and with data collected from the CEM system. This information has been summarized in correspondence to Mr. Fred Jenness of the MPCA on April 12, 1992. A copy of that correspondence is included with this application as Appendix S4.

S4.3.4 Operating Requirements

Based on the Trial Burn data summarized in the 1990 Trial Burn Report and CEM data which is collected weekly and submitted to MPCA quarterly, operating requirements for the Cottage Grove Corporate Incinerator can be established that meet the requirements of M.R. Part 7045.0542 subpart 6. These include:

(1) Carbon monoxide level in the stack exhaust gas

Maximum carbon monoxide (CO) levels were established by Test Condition B of the Trial Burn while feeding containerized solid waste and demonstrating DRE on Class 1 Compound naphthalene.

The Trial Burn results (See table 4-44 of the Trial Burn Report) show a range in average CO for Test Runs 4 - 8 of 107 - 280 ppm corrected to 7% on a dry basis. Since DRE was demonstrated at CO levels above 100 ppm, 3M would propose rolling-hour average limits on both total hydrocarbons (THC) and CO. THC data from the Trial Burn demonstrates levels below the BIF guidance value of 20 ppm corrected to 7% on a dry basis.

(2) Waste feed rate

Maximum heat inputs during Test Condition A of the Trial Burn were near the nominal rated maximum capacity of 120 MMBtu/hr, ranging from 94 - 121 MMBtu/hr. Maximum mass feed rate during this test condition ranged from 22,147 - 28, 222 lb/hr. The maximum liquid organic (scrap solvent), aqueous liquid, bulk solids and extruder(semi-solids) feed rates were demonstrated by this condition. The maximum containerized solid feed rate was 40 containers/hr as demonstrated in test condition B. The maximum liquid organic (scrap solvent) waste feed averaged 2576 lbs/hr and ranged from 2483 - 2777 in Runs 1 - 4. The maximum aqueous waste feed including an additional 5 gpm of water averaged approximately 4000 lbs/hr and ranged from 3690 - 4285 lbs/hr. The maximum semi-solid feed rate averaged 4100 lbs/hr and ranged from 3926 - 4234 lbs/hr. The maximum bulk solids feed averaged 13,817 lbs/hr and ranged from 10,573 - 16,875 lbs/hr. This waste feed rate information is summarized in Table 4-18 of the Trial Burn Report.

(2a) Chlorine feed rate

The maximum chlorine feed rate was demonstrated during Test Condition B. Feed rate averaged 664 lbs/hr and varied from 600 - 747 lbs/hr.

(2b) Ash feed rate

Maximum ash feed rates were demonstrated in Test Condition A. Average total ash feed was 10,000 lbs/hr in all feeds, 49 lbs/hr in liquid feeds with maximum concentration in the organic liquid of 0.8% and the aqueous liquid waste of 1.68%. Results are summarized in section 4.2 of the Trial Burn Report.

(3) Treatment process temperature

Minimum Kiln Exit Temperature (Mixing Chamber Temperature)

Minimum kiln temperature exit averaged 1820 °F for the 8 runs of the Trial Burn. Minimum temperatures during each run measured at 15 minute intervals ranged from 1625 °F - 1750 °F. The normal operating range for this parameter is 1600 °F - 2500 °F measured at 10 second intervals.

Minimum Secondary Combustion Chamber (SCC) Exit Temperature

The SCC exit temperature averaged 1500 °F for the 8 runs of the Trial Burn. Minimum temperatures during each run measured at 15 minute intervals ranged from 1339 °F to 1516 °F. The normal operating range for this parameter is 1300 °F - 2000 °F measured at 10 second intervals.

(4) Indicator of combustion gas velocity

Combustion gas flow averaged 38,600 dscfm for the 8 runs of the Trial Burn and ranged from 38,100 - 39,500 dscfm. Fan power averaged 384 KW and ranged from 381 - 387 KW. A correlation of stack gas flow to fan power and fan draft is supplied as Figure 3-8 of the Trial Burn Report. This correlation is updated periodically, at least 3 times/year.

(5) Allowable variations in treatment system operating procedures

Waste Feed Variation

3M receives a variety of wastes from its generating locations in North America. These wastes vary in physical state, chemical composition and heat input to the process. For these reasons the Cottage Grove Corporate Incinerator has 6 feed systems that were demonstrated by the 8 runs of the Trial Burn. Flexibility on waste feed rate to these 6 systems must be maintained to allow various combinations of feed to account for the waste feed rate that utilizes the tested capacity of approximately 120 MMBtu/hr. Examples of these variations that 3M needs to maintain include the following:

- Use of fuel grade solvent in either the kiln or the SCC as an auxiliary fuel.
- Feed of either bulk solids or containerized solids.
- Operating the SCC in either a fired or non-fired condition.

System Operation

The Corporate Incineration process includes a waste heat boiler. 3M needs to maintain the operating flexibility allowing bypass of this boiler when required for maintenance.

(6) Other operating requirements

Metal Emissions - As discussed in section S-5.3.3 above, 3M proposes that metal emission limits be monitored on a continuous basis utilizing the 3M CEM System which has been in development since 1989. A combination of the Trial Burn Data and the CEM data can be used to establish emission limits which assure continued demonstration of compliance with the metal emission limits of the BIF Regulations. Correspondence discussing emission limits based upon this data was made to MPCA on April 12, 1992 (See Appendix S4).

Fugitive Emissions - Fugitive emissions are controlled by maintaining the SCC pressure lower than atmospheric.

S4.4 IMPACT ASSESSMENT

S4.4.1 Cottage Grove Site Environmental Monitoring Study

3M and the MPCA have been conducting a joint environmental monitoring study (EMS) around the Cottage Grove facility. The objectives are:

- to test for background levels of selected chemical constituents
- to provide a baseline for the evaluation of the accumulation of the constituents
- to help project long-term effects.

Implementation of the EMS began in 1992. A network of five ambient air monitoring stations and a meteorological monitoring station was established. Beginning in November, 1992, the ambient air monitoring stations began collecting 24-hour duration samples every six days for one year. Samples are analyzed for particulate and for constituents of concern, primarily metals. Actual data, to date, show little or no statistical significance between the high and low impact locations as previously predicted by initial air dispersion modeling. The air monitoring network will continue operation through November 1993.

From August to October, 1992, more than 100 discrete surface soil samples were collected from 11 different locations in both agricultural and forest settings. Samples were tested for selected metals and soil characteristics. Results show that no significant accumulation levels of the targeted chemical constituents exist above the expected background concentrations.

Communication of project developments and findings occur on an ongoing basis with MPCA Coordinator, Cuff Twaroski, and the independent study review team.

Presentation of the overall study findings were made to MPCA's Air Quality Committee on July 26, 1993.

S4.4.2 Health Risk Assessment of the Chemical Emissions from the 3M Corporate Incinerator

A health risk assessment of a variety of chemical pollutants emitted from the Cottage Grove Corporate Hazardous Waste Incinerator has been conducted by J.B. Stevens & Associates (See Appendix S4). The potential incremental health risks to the surrounding populace was quantified for the following substances:

- cadmium
- lead
- mercury
- chromium
- nickel
- HCl
- carbon tetrachloride
- hexachlorobenzene
- polychlorinated dibenzo-p-dioxins (PCDD)
- polychlorinated dibenzofurans (PCDF).

Actual stack emission data were used as input to this risk assessment.

Health-risk impact related to the incinerator is also summarized in the April 12, 1992 correspondence to MPCA also included in Appendix S4.

Table S4-1. Calculation of Metals Emissions Compliance During 1990 Trial Burn

Constituent	Feed Concentrations		Metal Feed Rates (lb/hr)			SRE [a]	Emission Rate (lb/hr)	Estimated MGLC ($\mu g/m^3$)	BIF RAC or RSD ($\mu g/m^3$)	Fraction of Standard
	Solids (mg/kg)	Liquids (mg/l)	Solid Feed	Liquid Feed	Total					
NONCARCINOGENIC METALS										
Antimony	50	< 3	0.85	< 0.01	0.85	89.80	0.087	1.65E-03	0.3	0.005
Barium	1,630	27	27.71	0.05	27.76	99.70	0.083	1.58E-03	50	0.00003
Lead	1,050	275	17.85	0.55	18.40	93.20	1.251	2.38E-02	0.09	0.264
Mercury	0.85	13	0.01	0.03	0.04	94.50	0.002	4.22E-05	0.08	0.0005
Silver	382	0.2	6.49	0.0004	6.49	99.90	0.006	1.23E-04	3	0.00004
Thallium	< 30	< 6	< 0.51	< 0.012	< 0.52	ID [b]	< 0.003	< 5.70E-05	0.3	< 0.0002
CARCINOGENIC METALS										
Arsenic	3.25	0.10	0.06	0.0002	0.06	96.40	0.0020	3.79E-05	0.0023	0.016
Beryllium	< 0.50	< 0.10	< 0.01	< 0.0002	< 0.01	ID [b]	< 0.0002	< 3.80E-06	0.0042	< 0.0009
Cadmium	24	249	0.41	0.50	0.90	87.60	0.1121	2.13E-03	0.0056	0.380
Chromium [c]	137	182	2.33	0.36	2.69	97.20	0.0151	2.86E-04	0.00083	0.345

Organic Liquid Density (lb/gal) =	8.3
Solids Feed Rate (lb/hr) =	17,000
Organic Liquid Feed Rate (gpm) =	4
Dispersion Factor ($(\mu g/m^3)/(lb/hr)$) =	0.019

Aggregate Risk Factor [c] = 0.74

Notes:

a) SRE is the average from trial burn runs 1 through 4.

b) Insufficient Data – Metal was not detected in the feeds or stack.

c) Calculations assume 20% of total chromium emission are hexavalent.

SECTION T
SUBPART BB REQUIREMENTS

The 3M Corporate Incinerate utilizes a number of piping systems to transfer liquid organic wastes into and between storage tanks and the rotary kiln. This section will describe the methods which will be used to comply with 40 CFR 264 Subpart BB - Air Emissions from Equipment Leaks. A summary of the equipment which is affected by these regulations is provided in Table T-1, in Appendix T, Summary of Monitored Equipment. In preparing these equipment listings, 3M has made the following assumptions:

1) All wastes processed in this equipment will have a hazardous liquid content greater than 10%.

2) All wastes are "light liquid".

Frequently the wastes handled at the incinerator contain less than 10% organic hazardous wastes and/or are technically "heavy liquid". In these situations, the monitoring methods and frequencies would be less.

T.1 EQUIPMENT SUMMARY

Specific equipment which is being monitored as a part of this program are listed in Tables 1 through 16 in Appendix T, Summary of Monitored Equipment. Included in these tables are the following:

1) Unique equipment I.D. number

   Each piece of equipment has been tagged with a unique identification number. Exemptions are discussed under Item (7).

2) Drawing number which contains equipment location

   The location of each piece of equipment is noted on several 3M P&ID drawings.

3) Type of equipment

   See Nomenclature Table T-2, Appendix T, Summary of Monitored Equipment.

4) Percent Total Organic

All items listed indicate Light Liquid. This table will be modified if 3M determines the type of waste changes permanently.

5) Site Location

This column provides a general description of the equipment location which will assist field personnel in leak monitoring.

6) Method of Compliance

This column lists inspection frequency on methods. See Table T-2, Appendix T for the nomenclature description.

7) Exempt Equipment

Certain pieces of equipment are exempt from monitoring requirements. The reason for this exemption is listed in this column.

T.2 MONITORING CONDUCTED

Equipment covered under this regulation will be monitored for leaks as discussed below:

1) Valves

Each valve will be monitored monthly with a Hydrocarbon analyzer for leaks. The results of the monitoring will be summarized for each testing date. A leak is defined as an instrument reading of 10,000 ppm or greater. If a leak is detected an attempt will be made to repair the leak within five days. All repairs will be made within 15 days or the equipment will be taken out of service.

2) Pumps

Tables 1 through 16, Appendix T, Summary of Monitored Equipment, list the pumps which are currently in service at the incinerator. 3M will be using several methods to comply with the leak detection requirements for pumps. Pumps will be visually inspected weekly for leaks. They will also be monitored with an organic vapor analyzer monthly unless the pump is equipped with a dual mechanical seal system that includes a barrier system which meets the requirements of 264.1052(d) or is designated as having "no detectable emissions" as described under 264.1052(e).

The results of the monitoring will be summarized for each testing date. A leak is defined as an instrument reading of 10,000 ppm or greater. If a leak is detected an attempt will be made to repair leak within five days. All repairs will be made within 15 days or the equipment will be taken out of service.

3) Flanges

Flanges are monitored daily for a visual, olfactory, or audible sign of a leak. Any flange suspected of leaking will be monitored with a hydrocarbon analyzer within five days. If a leak is detected an attempt will be made to repair the leak within five days. A leak is defined as an instrument reading of 10,000 ppm or greater. All repairs will be made within 15 days or the equipment will be taken out of service.

T.3 MONITORING PROCEDURES

Equipment monitoring will be conducted in accordance with Method 21 procedures. The monitoring procedures will be summarized in this section. A more detailed description of the monitoring procedure along with monitoring point figures can be found in Appendix T, Detailed Procedures for Monitoring Equipment.

When a piece of equipment is monitored, the analyzer inlet is placed at the surface of the leak interface where leakage could occur. The probe must then be moved along the interface while observing the instrument readout. If an increased meter reading is observed, the probe is slowly moved along the interface where leakage is indicated until the maximum meter reading is obtained. The probe inlet should be left at this maximum reading location for approximately two times the instrument's response time. The maximum reading is recorded as the screening value.

Care should be taken to avoid getting the probe tip dirty. A piece of Teflon tubing can be put on the end of the probe to extend its reach and keep the probe from becoming dirty. This must be cleaned periodically to insure that the analyzer has the proper inlet flow rate.

This general procedure can be used to screen equipment such as valves, flanges, pumps and compressors, pressure relief devises, and other potential sources of VOC leakage (See Appendix T, Detailed Procedures for Monitoring Equipment).

T.4 LEAKING EQUIPMENT

If a leak is discovered in a valve, pump, flange, or fitting, it will be documented in a form found in Appendix T, Leak Inspection forms. When the leak is found, the log of Leaking Equipment is filled out and the following identification protocol will be implemented:

- A weatherproof, readily visible identification tag marked with the leaking equipment I.D. number will be attached to the leaking equipment.
- The identification tag on the pump or flange may be removed after the leak has been repaired.
- The identification tag on a leaking valve may be removed only after it has been monitored for two successful months and no leak has been detected.

T.5 NOTIFICATIONS

The Regional Administrator will be notified when monitoring begins. The Administrator will be notified in the event that 3M determines that it will comply with any of the alternative standards listed in 264.1042. The administrator will be notified whenever the equipment listed in Table 1-16 of Appendix T, is modified.