Pennsylvania
Base Program Description
Appendices III - IV

Commonwealth of Pennsylvania
Environmental Resources
June 11, 1985
(717) 787-9870

bject: Review of Hazardous Waste Incinerator Applications

o: James K. Hambright, Director
Bureau of Air Quality Control

rom: Donald A. Lazarchik, Director
Bureau of Solid Waste Management

The attached is a draft Memorandum of Agreement which outlines the responsibilities of our Bureaus in the review of hazardous waste incinerator applications under RCRA standards.

Please review this draft and forward any comments to me so that we may finalize this agreement and expedite the Bureau of Solid Waste Mangement's process of getting RCRA authorization from EPA.

It will be necessary to set up a meeting as soon as possible between technical staff from your Bureau and staff from our Division of Facilities Management to outline the detailed steps required in the review of these applications.

If you have any questions, please contact me. We appreciate your cooperation in this matter.

Attachment

cc: Jim Snyder
Bill Pounds
Leon Kuchinski
File ✓
Reading file

JPS:KK:smt

MEMORANDUM OF AGREEMENT
JOINT PERMIT APPLICATION REVIEW
HAZARDOUS WASTE INCINERATORS OR OTHER THERMAL TREATMENT
BUREAU OF SOLID WASTE MANAGEMENT
AND
BUREAU OF AIR QUALITY CONTROL

PURPOSE: To insure that the most highly qualified technical expertise available to the Department of Environmental Resources will review and provide input into hazardous waste incinerator and thermal treatment permit applications and to prevent unnecessary duplication of work efforts.

SCOPE: The Scope of this Agreement shall be limited to cooperation between the Bureau of Solid Waste Management and the Bureau of Air Quality Control on the review of hazardous waste incinerator and thermal treatment permit applications.

PROCEDURES:

The Bureau of Solid Waste Management will take measures to insure that the Bureau of Air Quality Control receives appropriate budgetary augmentation to support hazardous waste incinerator and thermal treatment permit review activities.

The budgetary augmentation will be based upon AMIS data provided by the Bureau of Air Quality Control.

The Bureau of Air Quality Control permit application review will consider the incinerator design and combustion performance regulations and other requirements related thereto as set forth in Attachment A of this Agreement.

The Bureau of Air Quality Control will oversee the trial burn.

The Bureau of Solid Waste Management will consider the waste handling aspects of the permit application and will be responsible for insuring that all appropriate U.S. Environmental Protection Agency permit procedures are followed.

The Bureau of Air Quality Control and the Bureau of Solid Waste Management will cooperate in preparation of Fact Sheets for their respective parts of the permit application in a manner to provide for the most efficient utilization of staff time between the respective Bureaus. Fact Sheets will be prepared following the format described in Attachment B to this Agreement

The Bureau of Air Quality Control and the Bureau of Solid Waste Management will cooperate in the drafting of permits for their respective portions of permit review in a manner insuring the most efficient utilization of staff time between the Bureaus. Permits will be drafted consistent with the provisions of Attachment C.

The Bureau of Air Quality Control will complete the appropriate portions of the hazardous waste TSD Application Checklist as set forth in Attachment D of this Agreement.

— Both Bureaus will cooperate in the review and approval of modifications to Attachments A, B or C of this Agreement.

The Bureau of Air Quality Control will provide the Bureau of Solid Waste Management with details on the staffing requirements to implement this Agreement .

Donald A. Lazarchik, Director
Bureau of Solid Waste Management

8/30/85
Date

James K. Hambright, Director
Bureau of Air Quality Control

8/30/85
Date

ATTACHMENT "A"

US EPA STANDARDS TO BE APPLIED FOR INCINERATION OR THERMAL TREATMENT PURSUANT TO THE JOINT PERMIT APPLICATION REVIEW AGREEMENT BETWEEN THE BUREAU OF SOLID WASTE MANAGEMENT AND THE BUREAU OF AIR QUALITY CONTROL

40 CFR

264.13. General Waste Analysis

264.16. Personnel Training (PAOT 270 - Application include outline of training program).

Subpart G - Closure and Post-Closure

264.112(a). Closure Plan

Subpart) - Incinerator

264.341 Waste Analysis

264.342 Principal Organic Hazardous Constituents (POHC)

264.343 Performance Standard

209.344 Hazardous Waste Incinerator Permits

264.345 Operating Requirements

264.347 Monitoring and Inspection

265.13 General Waste Analysis

Subpart H - Financial Requirements

265.142 Cost Estimate of Facility Closure

Subpart - Thermal Treatment

265.373 General Operating Requirements

265.377 Monitoring and Inspection

EPA Regulations for Federally Administered Hazardous Waste Permit Program

270.14 General Requirements

270.14(b)(1), (2), (3), (5), (6), (7), (9). General Information Requirements

270.19 Specific Part B Information Requirements for Incinerators

270.19(b) Trial Burn Plan

270.19(c) Alternate to Trial Burn Plan

270.19(c)(1) Analysis of Each Waste

270.19(c)(2) Detailed Engineering Description of the Incinerator

270.19(c)(3) Comparative Analysis Between Next Test Burn and Available Inside Burn Data

270.19(c)(4) Comparative Incineration Analysis

270.19(c)(5) Descriptive Result From Any Previous Trial Burn

270.19(c)(6) Expected Incinerator Operations Information

270.19(c)(7) Supplemental Information

270.19(c)(8) Waste Analysis Data

270.19(d) Approval of Permit Application Without Trial Burn

Subpart C - Permit Conditions

270.31 Requirements for Recording and Reporting of Monitoring Results

270.32 Establishing Permit Conditions

Subpart F - Special Forms of Permit

270.62 Hazardous Waste Incinerator Permits

DER STANDARDS TO BE APPLIED FOR INCINERATION OR THERMAL TREATMENT CHAPTER 75

Section	Description
75.261(c)(2)(41)	Reuse, recycle of hazardous waste, qualified requires plan approved by Bureau of Air Quality Control as required by 75.264(w)(12) and 75.264(w)(6).
75.264(c)(1)(3)	General requirements for hazardous waste management approvals and analysis.
75.264(e)(1)	General inspection and construction inspection requirements.
75.264(e)(6)	Construction schedule, inspection and approval of construction phases.
75.264(i)	PPC Plan and Emergency Procedures.
75.264(o)	Closure and Post-Closure.
75.264(iv)	Incinerators.
75.264(iv)(2)	Written approval for trial burn.
75.264(iv)(3)	Analyses and quantification of wastes.

75.264(iv)(5)	Burning of new wastes, also relief from trial burn.
75.264(iv)(6)	Performance standards.
75.264(iv)(7)	Operating requirements.
75.264(iv)(8)	POHC Treatment and designation.
75.264(iv)(9)	Monitoring and inspection.
75.264(iv)(12)	Air Quality plan approval.
75.264(iv)(14)	Construction practices.
75.264(iv)(15)	Construction quality control.
75.264(iv)(17)	Odor and Noise Control.
75.264(iv)(18)	Equipment maintenance and capacity.
75.264(iv)(19)	Standby equipment.
75.265	Interim Status.
75.265(c)(1)	Chemical and physical analysis of waste.
75.265(c)(3)	Waste analysis.

75.265(e)(2)	Inspection schedule for all equipment and monitoring.
75.265(e)(6)	Schedule for construction providing for Department inspection and approval of each Phase.
75.265(i)	PPC Plan.
75.265(o)	Closure, Post-Closure.
75.265(w)(6)	Air Quality plan approval.
75.265(x)(1)	Thermal Treatment/air quality plan approval.
75.265(Z)	Hazardous waste maanagement permit program.
75.265(Z)(18)(i)	Operation concepts.
(19)(ii)	Maps and drawings.
(18)(iii)	Specifications.

PART V - INCINERATION

[Note: This part plus Part VI cover the four phases of incineration operation from (1) shakedown through (2) trial burn and (3) post-trial burn to (4) final operation. Part V is intended to set the design and construction parameters, plus the conditions for the final operation phase for both existing and new incineration facilities. The conditions in Part V are those which the Permittee must comply with during the full term of the permit.

Part VI covers the shakedown, trial burn and post-trial burn operating periods. The conditions in Part VI are applicable only until the conditions in Part V can be verified by a trial burn.

If the incineration facility meets the exemption criteria set forth in 25 Pa. Code §75.264(w)(26), then this Part will only contain condition A (construction/maintenance). The Waste Analysis Plan (condition II.B) must cover the requirements of 25 Pa. Code §75.264(w)(3), (4) and (10). Documentation of the basis for the exemption must be recorded in the administrative record.

For permits that do not include the exemption (i.e., those facilities that are permitted based on trial burns or data in lieu of a trial burn), compliance with certain incineration requirements should be set through conditions in other parts of the permit as set forth below:

Requirement	Subject	Part - Condition
75.264(w)(3)	Waste Analysis	II.C

The permit conditions and parameters presented below cover the remaining regulatory requirements of 25 Pa. Code §75.264(w)].

A. CONSTRUCTION [For new facilities]

The Permittee shall construct and maintain the incinerator in accordance with the attached plans and specifications, Attachment ___ [or equivalent]. The Permittee shall not feed hazardous wastes to the incinerator until compliance with Condition I.___ (Certification of Construction or Modification) has been attained.

1. Construction Practices. The Permittee shall use best engineering construction practices during all phases of installation and construction as required by 25 Pa. Code §75.264(w)(14).

2. Quality Control Measures. The Permittee shall use the quality control measures and tests specified in Attachment ___ to ensure that installation and construction conform to the design materials and construction specifications set forth in this permit as required by 25 Pa. Code §75.264(w)(15).

3. Professional Engineer Certification. The Permittee shall obtain a

written certification from a registered professional engineer for each phase of installation or construction as required by 25 Pa. Code §75.264(w)(16). Each such certification shall be submitted to the Department in accordance with the construction schedule, condition V.A.4.

4. Construction Schedule. The Permittee shall construct or install the incineration facility in accordance with the following schedule: [Insert construction schedule, including interim dates and reporting requirements.]

A. MAINTENANCE [For existing facilities]

The Permittee shall maintain the facility in accordance with the attached design plans and specifications, Attachment ___ [or equivalent].

[The permit writer should note that under 25 Pa. Code §75.264(w)(6), the incinerator must be designed, constructed and maintained so that it will meet the performance standards when operated in accordance with the permitted operating conditions. The permit writer is responsible for assuring that the attached plans and specifications are sufficiently comprehensive and technically adequate to meet this regulatory requirement.]

B. PERFORMANCE STANDARD*

The Permittee shall [design, construct and] maintain the incinerator so that, when operated in accordance with the operating requirements specified in this permit, it will meet the following performance standards as required by 25 Pa. Code §75.264(w)(6):

1. The incinerator shall achieve a destruction and removal efficiency (DRE) of 99.99% for each Principal Organic Hazardous Constituent (POHC) designated in this permit or approval for each waste feed. DRE shall be determined for each POHC using the equation specified in 25 Pa. Code §75.264(w)(6)(i).

2. If the incinerator produces stack emissions of more than 1.8 kilograms per hour (4 pounds per hour) of hydrogen halide, then hydrogen halide emissions must be controlled such that the rate of emission is no greater than the larger of either 1.8 kilograms per hour or 1% of the hydrogen halide in the stack gas prior to entering any pollution control equipment.

3. The incinerator shall not emit particulate matter in excess of 180 milligrams per dry standard cubic meter based on the more stringent of the computation methods presented in 25 Pa. Code §75.264(w)(6)(iii)(A) and (B).

[25 Pa. Code §75.264(w)(6)(iii)(c) states that the Department may

specify an alternative (more stringent) particulate emission standard pursuant to Chapter 141, Section 141.1. An alternative standard is appropriate where emissions of metals threaten the protection of public health or where violations of air quality standards, as specified in Chapter 14, could occur.]

[Note: The data to be used in specifying permit conditions in V.C. and V.D. below must be based on the trial burn results (for those facilities conducting a trial burn) or on data in lieu of a trial burn showing that the performance standards specified above will be met.]

C. LIMITATION ON WASTES

Except during the periods specified in conditions VI.A, B and C [for facilities that conduct trial burns], the Permittee shall incinerate only the following hazardous wastes as required by 25 Pa. Code §75.264(w)(5).

—

[There are two options for identifying the allowable waste feed to the incinerator. The first option covers situations where it is not practical to list all of the wastes that a facility might be permitted to burn. In this option criteria are identified to establish limitations on the physical and chemical characteristics of the waste input to the incinerator. The second option is more appropriate for so-called "on-site" incinerators used as a part of a chemical process or manufactur-

ing operation. Here, it is usually straight-forward to specifically identify the wastes or classes of waste that the Permittee is permitted to burn. Examples of recommended language for these two options are presented below.]

OPTION 1:

- The Permittee shall not incinerate any hazardous organic constituent having a heat of combustion less than ____ Kcal/gm. [The specified heat of combustion should be that of the POHC with the lowest heat of combustion which was burned at a DRE of at least 99.99% in the trial burn (or which was so reported in the data submitted in lieu of a trial burn).]

- The ash content of the waste shall be no greater than ___%.

- The physical form of the waste shall be ___. [Specify whether the waste is in the form of a solid, liquid or contained gas. For example, for a liquid injection incinerator, specify a liquid with a maximum viscosity of ___ centipoise.]

OPTION 2:

Hazardous Waste Number	Description	Feed Rate
D003, D004, D008	Freezon 123t reactor bottoms	[Specify feed rates in

D001 Freezon 122b spent liquor appropriate units -- Kcal/hr or Kg/hr]

[The permit writer may impose other limitations on the waste feed as necessary to ensure compliance with the performance standards. All such limitations, however, should be derived from the results of the trial burn or from the data submitted in lieu of a trial burn.]

D. OPERATING CONDITIONS

Except during the periods specified in Conditions VI.A, B, and C [for facilities that conduct trial burns] the Permittee shall feed the wastes described in condition V.C. to the incinerator only under the following conditions as required by 25 Pa. Code §75.264(w)(7):

[It is possible that an incinerator can be permitted for more than one waste feed (e.g., the incinerator could operate on one definable waste feed during the summer and another during the winter.) In such cases, a complete set of operating limits must be specified for each waste feed.

Each set of operating conditions must directly relate to achieving the performance standards. If the Permittee complies with the permit operating conditions, but it is later shown that the performance stan-

dards are not being attained, the permit may be modified or revoked and reissued. Under such circumstances, enforcement actions cannot be taken. However, violation of the permit operating conditions could lead to enforcement action.]

1. Carbon monoxide (CO) level in the stack gas, measured as specified in condition V.F, shall not exceed ____ ppm at any time and shall not exceed ____ ppm for ___ consecutive minutes.

2. Waste feed rate, measured as specified in condition V.F., shall not exceed ____Kg/hour.

3. Combustion temperature, measured as specified in condition V.F, shall be maintained at ___°C or greater.

4. Residence time in the combustion chamber, measured as combustion chamber volume (in cubic meters) divided by the combustion gas velocity (in actual cubic meters per second, ACMS), shall be main- tained at ____ seconds or greater.

5. Combustion gas velocity, measured as specified in condition V.F, shall be no greater than ____ ACMS.*

[The Permittee may choose to monitor an indicator of combustion gas velocity, rather than measure combustion gas velocity directly. How- ever, the Permittee must demonstrate the correlation between the in-

dicator and combustion gas velocity on the permitted incinerator. Potential indicators include stack gas oxygen concentration, blower rotational speed and blower current draw.]

[Note: 25 Pa. Code §75.264(w)(7)(i)(E) allows for variations in incinerator system design or operating procedures, thus giving the permit writer some latitude if needed. However, such variations must be supported either from trial burn results or from data submitted in lieu of a trial burn.]

6. Opacity of the stack gas plume shall not be in excess of the standards set forth in 25 Pa. Code §123.41 when measured in accordance with the techniques specified in 25 Pa. Code §123.43.
[25 Pa. Code §75.264(w)(7)(i)(G) requires the permit writer to establish any other operating requirements that are necessary to ensure compliance with the performance standards. In addition to the permit conditions listed above, conditions must be established, where appropriate, to ensure compliance with the hydrogen halide removal standard and the particulate emissions standard. Examples of operating conditions that are applicable to hydrogen halide removal systems (scrubbers) are as follows:

- Make-up water flow rate to the scrubber system, measured as specified in condition V.F, shall be maintained at ____ cubic meters per hour or greater.

- o Scrubber water recirculation rate, measured as specified in condition V.F, shall be maintained at ____ cubic meters per hour or greater. [Alternatively, minimum pressure drop across the scrubber could be specified.]

- o The pH of scrubber water discharge, measured as specified in condition V.F, shall be maintained at ____ or greater.

Scrubbers and, to a limited extent, baghouse collectors and electrostatic precipitators could be used to control particulate emissions. Operating conditions for scrubbers are listed below. For baghouse collectors, maximum stack gas temperature shall be specified along with a range for pressure drop (in mm of mercury) across the baghouse. For electrostatic precipitators, minimum voltage or current draw should be specified. As with all the other operating conditions that are specified, the values of the operating conditions will be site-specific and based on trial burn results or data submitted in lieu of a trial burn.]

7. During start-up and shut-down of an incinerator, hazardous wastes shall not be fed into the incinerator unless the incinerator is operating within the specified operating conditions and achieves a steady state condition.

8. The Permittee shall control fugitive emissions from the combustion zone

by ____. [Under 25 Pa. Code §75.264(w)(7)(iii), the Permittee must specify one of three methods for controlling fugitive emissions. The first method is to keep the combustion zone totally sealed against fugitive emissions. The second method is to maintain a combustion zone pressure lower than atmospheric pressure. The third is an alternative means of control that is demonstrated to provide fugitive emissions control equivalent to maintenance of combustion zone pressure lower than atmospheric pressure. Any plans or specifications which delineate how fugitive emissions will be controlled under this third method should be referenced and attached.]

9. The Permittee shall cease operation of the incinerator when changes in waste feed (condition V.C), incinerator design (condition V.A), or operating conditions (condition V.D) exceed limits designated in this permit.

E. WASTE FEED CUT-OFF

The Permittee shall construct, maintain and calibrate the systems specified below to automatically cut off the hazardous waste feed to the incinerator at the levels specified below when the operating conditions deviate from the limits established in condition V.D.

System	Cut-Off Limits	Calibration Frequency	Test Frequency

[Description and purpose of systems used]	1. Failure of elements of input control system	[Frequency at which accuracy is checked]	[Frequency at which operating readiness is checked]
	2. Combustion (or atomizing steam system) failure		
	3. Current failure from the flame detector and other safety devices		
	4. Failure of electrical power supply to the facility		
	[Levels at which waste feed will be cut off for other systems]		

[Note: At a minimum, these conditions must meet the requirements of 25 Pa. Code §75.264(w)(7)(iv).]

F. FACILITY MONITORING

The Permittee shall monitor the incineration facility and record the data as specified below:

System	Purpose	Frequency of Monitoring	Frequency of Testing	Frequency of Calibration	Recording Method

[At a minimum, this condition must specify monitoring systems that meet the requirements of 25 Pa. Code §75.264(w)(9). In addition, condition V.D contains specifications for various operating parameters which must be monitored. Each of these parameters must be addressed above. If the application specifies all the above information in a convenient way, then

the permit writer should attach and reference the applicable sections rather than preparing the above table.]

G. WASTE ANALYSIS MONITORING

The Permittee shall conduct waste analyses as required by 25 Pa. Code §75.264(w)(4) to verify that the waste feed to the incinerator is within the physical and chemical composition limits specified in condition V.C. These analyses shall be conducted according to the plans and specifications in Attachment ____. [Note: Alternatively, this condition could be made a part of condition II.B.]

H. OTHER DEPARTMENTAL PERMITS AND APPROVALS

The Permittee shall not operate the incinerator without making provisions for and receiving a Department permit and written approval for the disposal of ash (and scrubber water residues, scrubber water, and other residues as appropriate) as required by 25 Pa. Code §75.264(w)(11).

I. ACCESS ROADS

The Permittee shall construct and/or maintain access roads as required by 25 Pa. Code §75.264(w)(22) according to the plans and specifications in

Attachment ____.

J. BUFFER ZONE

The Permittee shall establish and maintain a buffer zone of 50 feet between the property line and the permitted facility within which no solid waste treatment, storage, or disposal activities shall occur as required by 25 Pa. Code §75.264(w)(13).

K. EQUIPMENT MAINTENANCE

The Permittee shall maintain the incineration facility equipment in operable condition and shall ensure that such equipment is of adequate capacity and performance capability so that facility operation will not be interrupted during normal working periods and so that the facility operation is in accordance with this permit as required by 25 Pa. Code §75.264(w)(18).

L. STANDBY EQUIPMENT

The Permittee shall maintain standby equipment on-site or readily avail-

able for use in the event of a major equipment breakdown as required by 25 Pa. Code §75.264(w)(19).

[OPTIONS]

__ INCINERATION FACILITY MODIFICATIONS

1. Construction Practices. The Permittee shall use best engineering construction practices during all phases of installation and construction as required by 25 Pa. Code §75.264(w)(14).

2. Quality Control Measures. The Permittee shall use the quality control measures and tests specified in Attachment ____ to ensure that installation and construction conforms to the design materials and construction specifications set forth in this permit as required by 25 Pa. Code §75.264(w)(15).

3. Professional Engineer Certification. The Permittee shall obtain a written certification from a registered professional engineer for each phase of installation or construction as required by 25 Pa. Code §75.264(w)(16). Each such certification shall be submitted to the Department in accordance with the construction schedule, condition _.4.

4. Construction Schedule. The Permittee shall construct or install the

incineration facility in accordance with the following schedule: [Insert construction schedule, including interim dates and reporting requirements.]

__ ODOR AND NOISE CONTROL

The Permittee shall conduct odor and noise control procedures as required by 25 Pa. Code §75.264(w)(17) and as specified in the Odor and Noise Control Plan, Attachment ____. [An Odor and Noise Control Plan should be required in order to prevent health hazards or nuisances. Most incineration facilities are not expected to require such a plan.]

__ UNLOADING AREAS

The Permittee shall maintain unloading areas to permit vehicles to unload promptly. [This condition should only apply to facilities handling wastes from off-site.]

__ WASTE TRACKING

The Permittee shall minimize or eliminate the tracking of waste by equipment or machinery within and outside the site as required by 25 Pa. Code

§75.264(w)(21). [For the most part, this condition should only apply to facilities receiving wastes from off-site. It could also be applied where wastes are transferred in several stages or across significant distances within a plant (i.e., the waste is generated at the north end of the chemical plant, but the incinerator is located at the south end of the plant).]

__ WEIGHING AND MEASURING FACILITIES

The Permittee shall provide, maintain, and operate weighing or measuring facilities as required by 25 Pa. Code §75.264(w)(23). [This condition does not apply to captive TSD facilities that handle liquids or flowable wastes (i.e., less than 20 percent solids) which are amenable to accurate flow measurement or to captive facilities that possess other waste inventory controls (i.e., volume controls.)].

__ OPERATING HOURS

The Permitee shall maintain a sign at the entrance to the facility displaying the hours of operation. The lettering shall be a minimum of four inches in height and of a color contrasting with its background as required by 25 Pa. Code §75.264(w)(24). [This condition only applies to facilities

handling waste from off-site.]

PART VI - SHORT TERM INCINERATOR PERMIT*

[Note: This part contains conditions that apply to an incineration facility only during the shakedown phase, trial burn phase and post-trial burn phase. After the post-trial burn phase (i.e., the final operation phase), this module is no longer valid. This module only applies to incineration facilities conducting a trial burn.

The purposes of this module are to permit the operation of an incineration facility in order to:

1. Determine operational readiness following completion of physical construction.

2. Control operating conditions after the trial burn and prior to any final modifications of the permit conditions in Part V to reflect the trial burn results.

3. Determine the feasibility of compliance with the performance standards, 25 Pa. Code §75.264(w)(6).

4. Determine adequate operating conditions that will ensure that the performance standards will be maintained.]

A. SHAKEDOWN PHASE

During the shakedown phase (the period beginning with the initial introduction of hazardous wastes into the incinerator and ending with the start of the trial burn), the Permittee shall comply with the following conditions: [Condition VI.A only applies to new incinerators. Existing incinerators operate under interim status.]

1. Duration of the Shakedown Period. The shakedown phase shall not exceed 720 hours of operating time for the treatment of hazardous wastes. The Permittee may petition the Department for extension of the shakedown phase for up to 720 hours. The Department may grant the extension when good cause is demonstrated in the petition in accordance with 25 Pa. Code §75.264(w)(25)(i).

2. Waste Feed Identification. During the shakedown phase, the Permittee may feed the following wastes to the incinerator, subject to the operating conditions specified in condition VI.A.3.

[The permit writer must specify which waste feeds the Permittee is allowed to incinerate during the shakedown phase. Any limitations on waste feeds must also be delineated. The format options presented in condition V.C

should be considered.

All limitations on the waste feed must be based on the permit writer's best judgment that the facility will meet the performance standards during the shakedown period. Thus, the permit writer may wish to limit the waste feed to easily incinerable materials during this period. In some cases, it may be appropriate to specify wastes that are always chemically and physically uniform. Identification may then be the process name of the waste or some equivalent identifier. For waste feeds whose chemical and physical properties vary, limitations for these variations must be specified.]

3. Operating Conditions. During the shakedown phase, the Permittee shall feed the wastes described in condition VI.A.2 to the incinerator only under the following conditions:

[For each of the waste feeds specified in condition VI.A.2, the permit writer must establish operating conditions that, in the permit writer's best judgment, ensure compliance with the performance standards. Information used to establish these conditions can include the facility's Part B application and operating data from other similar incineration facilities.]

a. Combustion temperature, measured as specified in condition VI.A.5,

shall be maintained at ___°C or greater.

b. Combustion gas velocity, measured as specified in condition VI.A.5, shall be no less than ____ ACMS and no greater than ____ ACMS. The residence time in the combustion chamber, measured as combustion chamber volume (in cubic meters) divided by the combustion gas velocity (in ACMS), shall be maintained between ____ and ____ sec.

c. Carbon monoxide (CO) levels in the stack gas, measured as specified in condition VI.A.5, shall not exceed ____ ppm at any time and shall not exceed ____ ppm for more than ____ minutes.

[For a new facility, the specification for carbon monoxide levels can be estimated based on a combustion of factors including engineering design, waste feed considerations and the operating history of other similar units. A realistic and precise value for CO levels should not be expected until the incinerator has had an opportunity to operate.]

d. Waste feed rate, measured as specified in condition VI.A.5, shall not exceed ____ kg/hr.

[Note: For a discussion of additional permit conditions relating to hydrogen halide removal efficiency and particulate emissions limitations,

see the discussion in Part V. Note, however, that the permit writer has the discretion to impose more stringent operating conditions during the shakedown phase than those specified for the long-term or final operation phase. Since acceptable performance of a new incinerator cannot be demonstrated until the trial burn, the permit writer may limit operations to a waste with a higher heat of combustion than the proposed POHC's and restrict operating parameters so that the DRE requirement is unlikely to be violated. Do not specify feed rates (or heat rates, Kcal/hr.) significantly less than the incinerator's design rate since any reduction in turbulence in the combustion chamber could reduce the DRE efficiency.]

e. Opacity of the stack gas plume shall not be in excess of the standards set forth in 25 Pa. Code §123.41 when measured in accordance with the techniques specified in 25 Pa. Code §123.43.

f. During start-up and shut down of an incinerator, hazardous wastes shall not be fed into the incinerator unless the incinerator is operating within the specified operating conditions and achieves a steady-state condition.

g. The Permittee shall control fugitive emissions from the combustion zone by _____. [Note: Compliance with 25 Pa. Code §75.263(w)(7) must be demonstrated.]

h. The Permittee shall cease operation of the incinerator when changes in waste feed (condition VI.A.2), incinerator design (condition

VI.A), or operating conditions (condition VI.A.3) exceed limits designated in this permit.

4. Waste Feed Cut-Off. The Permittee shall construct, maintain and calibrate the systems specified below to automatically cut off the hazardous waste feed to the incinerator at the levels specified below when the operating conditions deviate from the limits established in condition VI.A.3.

System	Cut-Off Limits	Calibration Frequency	Test Frequency
[Description and purpose of system]	[Level at which waste feed will be cut off]	[Frequency at which accuracy is checked]	[Frequency at which operational readiness is checked]

[Note: At a minimum, these conditions must meet the requirements of 25 Pa. Code §75.264(w)(7)(iv).]

5. Facility Monitoring. The Permittee shall monitor the incineration facility and record the data as specified below:

System	Purpose	Frequency of Monitoring	Frequency of Testing	Frequency of Calibration	Recording Method

[At a minimum, this condition must specify monitoring systems that meet the requirements of 25 Pa. Code §75.264(w)(9). In addition, condition VI.A.3 contains specifications for various operating parameters which must be monitored.

Each of these parameters must be addressed above. If the application specifies all the above information in a convenient way, then the permit writer should attach and reference the applicable sections rather than preparing a table.]

B. TRIAL BURN PHASE

1. Trial Burn Plan. The Permittee shall operate and monitor the incinerator during the trial burn phase as specified in the Trial Burn Plan, Attachment ___.

[The trial burn plan must meet the requirements of 25 Pa. Code §75.264(w)(27). The permit writer should add conditions if professional

judgment indicates that this is necessary to ensure compliance with the performance standards.]

2. Trial POHC(s). The trial POHCs for which DREs must be determined are:

Waste Feed	POHC(s)

[If the applicant wishes to establish different operating conditions for different waste feeds, then POHCs may be selected for each feed or feed group suggested by the applicant. For example, a facility may wish to designate two waste feeds. One of the waste feeds is a combination of several waste streams that are relatively "easy" to burn based on the POHCs. The second waste feed consists of several waste streams that are "difficult" to burn based upon those POHCs. The incinerator operating conditions for these two feeds may be different.

Before selecting POHCs for the trial burn, the permit writer should review Chapter 2 of the Guidance Manual for Hazardous Waste Incinerator Permits.]

3. Trial Burn Determinations. During the trial burn (or as soon after the trial burn as practicable) the Permittee shall make the determinations required by 25 Pa. Code §75.264(w)(29).

[Any other determinations that the permit writer believes will be needed to ensure that the trial burn will ensure compliance with the performance standards should be described as required by 25 Pa. Code §75.264(w)(29)(i)(J).]

4. Trial Burn Submissions. The Permittee shall submit a copy of all data collected during the trial burn to the Department upon completion of the burn. The Permittee shall submit to the Department the results of the determinations required by condition VI.B.3 within ninety (90) days of the completion of the trial burn. All submissions must be certified in accordance with 25 Pa. Code §75.265(z)(13).

C. POST-TRIAL BURN PHASE

During the post-trial burn phase (the period starting immediately after completing the trial burn and ending with the Department's specification of the permit operating conditions in Part V), the Permittee shall comply with the following conditions: [Note: Condition VI.C applies only to new incinerators.]

1. Waste Feed Identification. During the post-trial burn phase the Permittee may feed the following wastes at the facility, subject to the

requirements of condition VI.C.2.

[Note: The permit writer must identify which waste feeds the Permittee is allowed to incinerate during the post-trial burn phase. Any limitations on waste feeds also must be delineated. The format options presented in condition V.C should be considered. In some cases, an incinerator may accept only wastes that are chemically and physically uniform. All limitations on the waste feed must be based on the permit writer's professional judgment and should ensure that the facility will comply with the performance standard.]

2. Operating Conditions. During the post-trial burn phase, the Permittee shall feed the wastes described in condition VI.C.1 to the incinerator only under the following conditions:

[For each of the waste feeds specified in condition VI.C.1, the permit writer must establish operating conditions that, in the writer's professional judgment, ensure compliance with the performance standards.]

a. Combustion temperature, measured as specified in condition VI.C.4, shall be maintained at ___°C or greater.

b. Combustion gas velocity, measured as specified in condition VI.C.4,

shall be no less than ____ ACMS and no greater than ____ ACMS. The residence time in the combustion chamber, measured as combustion chamber volume (in cubic meters) divided by the combustion gas velocity (in ACMS), shall be maintained between ___ sec. and ___ sec.

c. Carbon monoxide levels in the stack gas, measured as specified in condition VI.C.4, shall not exceed ____ ppm at any time and shall not exceed ____ ppm for more than ____ minutes.

[For a new facility, the specification for carbon monoxide levels can be estimated based on a combination of factors including engineering design, waste feed considerations and the operating history of other similar units. A realistic and precise value for CO levels should not be expected until the incinerator has had an opportunity to operate.]

d. Waste feed rate measured as specified in condition VI.C.4, shall not exceed ____ kg/hr.

[For a discussion of additional permit conditions relating to hydrogen halide removal efficiency and particulate emissions limitation, see the discussion in Part V. Note, however, that the permit writer has the discretion to impose more stringent operating conditions during the post-trial burn phase than those specified for the long-term or final operation phase. Since the acceptable performance of a new incinerator cannot be guaranteed

until the trial burn results are known, the permit writer may limit operations to a waste with a higher heat of combustion than the proposed POHCs and restrict operating parameters so that the DRE requirement is unlikely to be violated. Do not specify feed rates (or heat rates, KCal/hr) significantly less than the incinerator's design rate since any reduction in turbulence in the combustion chamber could reduce the DRE efficiency.]

e. Opacity of the stack gas plume shall not be in excess of the standards set forth in 25 Pa. Code §123.41 when measured in accordance with the techniques specified in 25 Pa. Code §123.43.

f. During start-up and shut-down of the incinerator, hazardous wastes shall not be fed into the incinerator unless the incinerator is operating within the specified operating conditions and achieves a steady-state condition.

g. The Permittee shall control fugitive emissions from the combustion zone by _____. [Compliance with 25 Pa. Code §75.264(w)(7) must be demonstrated.]

h. The Permittee shall cease operation of the incinerator when changes in waste feed (condition VI.C.1), incinerator design (condition VI.A) or operating conditions (condition VI.C.2) exceed limits designated in this permit.

3. Waste Feed Cut-Off. The Permittee shall construct, maintain and calibrate the systems specified below to automatically cut off the hazardous waste feed to the incinerator at the levels specified below when the operating conditions deviate from the limits established in condition VI.C.2.

System	Cut-Off Limits	Calibration Frequency	Test Frequency
[Description and purpose of system]	[Level at which waste feed will be cut off]	[Frequency at which accuracy is checked]	[Frequency at which operational readiness is checked]

[At a minimum, these conditions must meet the requirements of 25 Pa. Code §75.264(w)(7)(iv).]

4. Facility Monitoring. The Permittee shall monitor the incineration facility and record the data as specified below:

	Frequency of	Frequency	Frequency of	Recording

System Purpose Monitoring of Testing Calibration Method

[At a minimum, this condition must specify monitoring systems that meet the requirements of 25 Pa. Code §75.264(w)(9). In addition, condition VI.C.2 contains specifications for various operating parameters which must be monitored.

Each of these parameters must be addressed above. If the application specifies all the above information in a convenient way, then the permit writer should attach and reference the applicable sections rather than preparing a table.]

D. GENERAL PROVISIONS

During the shakedown phase, the trial burn and the post-trial burn phase, the Permittee shall comply with each of the conditions set forth below.

1. Waste Analysis Monitoring. The Permittee shall conduct waste analyses as required by 25 Pa. Code §75.264(w)(4) to verify that the wate feed to the incinerator is within the physical and chemical composition limits specified in conditions VI.A.2 and VI.C.1, as applicable. These analyses shall be conducted according to the plans and specifications

in Attachment ___.

2. Other Departmental Permits and Approvals. The Permittee shall not operate the incinerator without making provisions for and receiving the Departmental permit and written approval for the disposal of ash (and scrubber water residues, scrubber water, and other residues as appropriate) as required by 25 Pa. Code §75.264(w)(11).

3. Access Roads. The Permittee shall construct and/or maintain access roads as required by 25 Pa. Code §75.264(w)(22) according to the plans and specifications in Attachment ___.

4. Buffer Zone. The Permittee shall establish and maintain a buffer zone of 50 feet between the property line and the permitted facility within which no solid waste treatment, storage, or disposal activities shall occur as required by 25 Pa. Code §75.264(w)(13).

5. Equipment Maintenance. The Permittee shall maintain the incineration facility equipment in operable condition and shall ensure that such equipment is of adequate capacity and performance capability so that facility operation will not be interrupted during normal working periods and so that the facility operation is in accordance with this permit as required by 25 Pa. Code §75.264(w)(18).

6. Standby Equipment. The Permittee shall maintain standby equipment on-site or readily available for use in the event of a major equipment

breakdown as required by 25 Pa. Code §75.264(w)(19).

[OPTIONS]

___ INCINERATION FACILITY MODIFICATIONS

1. Construction Practices. The Permittee shall use best engineering construction practices during all phases of installation and construction as required by 25 Pa. Code §75.264(w)(14).

2. Quality Control Measures. The Permittee shall use the quality control measures and tests specified in Attachment ___ to ensure that installation and construction conforms to the design materials and construction specifications set forth in this permit as required by 25 Pa. Code §75.264(w)(15).

3. Professional Engineer Certification. The Permittee shall obtain a written certification from a registered professional engineer for each phase of installation or construction as required by 25 Pa. Code §75.264(w)(16). Each such certification shall be submitted to the Department in accordance with the construction schedule, condition ___.4.

4. Construction Schedule. The Permittee shall construct or install the incineration facility in accordance with the following schedule: [Insert construction schedule, including interim dates and reporting

requirements.]

__ ODOR AND NOISE CONTROL

The Permittee shall conduct odor and noise control procedures as required by 25 Pa. Code §75.264(w)(17) and as specified in the Odor and Noise Control Plan, Attachment ___. [An Odor and Noise Control Plan should be required in order to prevent health hazards or nuisances. Most incineration facilities are not expected to require such a plan.]

__ UNLOADING AREAS

The Permittee shall maintain unloading areas to permit vehicles to unload promptly. [This condition should only apply to facilities handling wastes from off-site.]

__ WASTE TRACKING

The Permittee shall minimize or eliminate the tracking of waste by equipment or machinery within and outside the site as required by 25 Pa. Code §75.264(w)(21). [For the most part, this condition should only apply to

facilities receiving wastes from off-site. It could also be applied where wastes are transferred in several stages or across significant distances within a plant (e.g., the waste is generated at the north end of the chemical plant, but the incinerator is located at the south end of the plant).]

__ WEIGHING AND MEASURING FACILITIES

The Permittee shall provide, maintain, and operate weighing or measuring facilities as required by 25 Pa. Code §75.264(w)(23). [This condition does not apply to captive TSD facilities that handle liquids or flowable wastes (i.e., less than 20 percent solids) which are amenable to accurate flow measurement or to captive facilities that process other waste inven- tory controls (i.e., volume controls).]

__ OPERATING HOURS

The Permittee shall provide a sign at the entrance to the facility displaying the hours of operation. The lettering shall be a minimum of four inches in height and of a color contrasting with its background as required by 25 Pa. Code §75.264(w)(24). [This condition only applies to facilities handling wastes from off-site.]

PART VII - THERMAL TREATMENT

[Note: The regulations for thermal treatment in 25 Pa. Code §75.265(x) currently are based on the federal interim status regulations. The 25 Pa. Code §75.265(x) regulations are not as comprehensive as Department regulations covering the operation of other hazardous waste processes such as incineration. For example, the thermal treatment regulations do not contain performance standards, automatic waste feed cut-off provisions or warning sign requirements. Permit conditions can only be set forth in this part where they are supported by specifically applicable Department regulations.

Because the thermal treatment regulations are not comprehensive, the permit writer is encouraged to issue permits using this part only where no other parts are applicable. In many cases, other parts can be used as discussed below.

In 25 Pa. Code §75.260, thermal treatment is defined as "the treatment of hazardous waste in a device which uses elevated temperatures as the primary means to change the chemical, physical, or biological character or composition of the hazardous waste. Examples of thermal treatment processes are incineration, molten salt, pyrolysis, calcination, wet air oxidation, and microwave discharge."

Thermal treatment in incinerators in subject to the comprehensive regulations of 25 Pa. Code §75.264(w). Incinerator permit conditions are provided in Parts V and VI. Many other thermal treatment processes could also be covered by

these conditions because they meet the 25 Pa. Code §75.260 definition of an incinerator: "an enclosed device using controlled flame combustion, the primary purpose of which is to thermally break down hazardous waste." These processes include oxygen incineration, calcination, boilers, and high temperature fluid wall incineration. Other thermal processes which do not directly utilize controlled flames, but which still could be covered by the incinration conditions include catalytic incineration, pyrolysis, molten salt incineration, and plasma arc pyrolysis. It is likely that the incineration condition and removal efficiency could not be applied per se since relatively large concentrations of products of incomplete combustion leave the oxidation vessel in liquid form).

Microwave discharge, noted above in the Department's definition of thermal treatment, is still in the early stages of development.

Other thermal processes such as distillation, evaporation and stream stripping can be covered by Part IV - Tanks.

Therefore, the most significant application of this module is for the detonation of waste explosives.

[Note that waste analysis conditions pursuant to 25 Pa. Code §75.264(c), inspection requirements pursuant to 25 Pa. Code §75.265(x)(4)(iii), and closure conditions pursuant to 25 Pa. Code §75.265(x)(5) for thermal treatment facilities should be included in Part II.]

A. CONSTRUCTION [For New Facilities]

The Permittee shall construct and maintain the thermal treatment facility in accordance with the attached plans and specifications, Attachment ___ [or equivalent]. The Permittee shall not feed hazardous wastes to the thermal treatment facility until compliance with condition I.D.11 (certification of construction or modification) has been attained.

B. MAINTENANCE [For Existing Facilities]

The Permittee shall maintain the facility in accordance with the attached design plans and specifications, Attachment ___ [or equivalent].

C. LIMITATION OF WASTES

The Permittee shall thermally treat only the following hazardous wastes as required by 25 Pa. Code §75.264(c).

[There are two options for identifying the allowable waste feed to a thermal treatment facility. The first option covers situations where it is not practical to list all of the wastes that a facility might be permitted to thermally treat. In this option, criteria are specified to establish limiations on the physical and chemical characteristics of the waste input to the facility. The second option simply entails identifying

each waste or class of waste that the Permittee is permitted to thermally treat. Examples of recommended language for these two options are presented below.]

OPTION 1:

- The physical form of the waste shall be ___. [Specify whether the waste is in the form of a solid or liquid.]

- The facility shall detonate only those waste explosive classified as DOT Class ___ [A, B or C]. [Class A explosives can detonate from a spark, flame, or small to moderate shock. Class A explosives include nitroglycerine, lead, ozide, and black powder. Class B explosives pose a hazard because they are rapidly combustible. Photographic flash power is a Class B explosive. Class C explosives do not ordi- narily detonate in restricted quantities and, thus, are a minimum explosion hazard. Flares and small arms ammunition are examples of Class C explosives. Classes B and C explosives ordinarily explode only under extreme temperatures.]

- No more than ___kg of waste explosives can be detonated as a single charge.

OPTION 2:

Hazardous Waste Number	Description	Charge Amount
K045	Spent carbon from the treatment of wastewater containing explosives	[Specify allowable quantities that can be detonated at any one time
P081	Nitroglycerine	
P112	Tetranitromethane	

C. ANALYSIS OF NEW WASTES

The Permittee shall analyze any type of waste which has not been previously treated in the thermal treatment process as required in 25 Pa. Code §75.265(x)(3) to establish and maintain appropriate operating conditions [such as waste charge quantities or auxiliary fuel requirements] and to determine the type of pollutants which might be emitted.

D. OPERATING CONDITIONS [For Continuous Process Operations]

Before adding hazardous waste, the Permittee shall bring the thermal treatment process to steady state conditions of operation, including operating temperature, using auxiliary fuel or other means as described in Attachment ___.

1. At steady state conditions, operating temperature will be maintained at no less than ___°C and no greater than ___°C.

2. Waste feed rate, measured as specified in condition VII.E, shall not exceed ___kg/hour.

3. Process operating pressure, measured as specified in condition VII.E, shall not exceed ___ atmosphere.

[The above three conditions apply primarily to thermal treatment processes that are closed systems (i.e., those not having stacks for exhaust gas). Such systems include distillation and evaporation. Additional process operating conditions could be specified if the permit writer determines that further constraints are necessary to assure protection of human health and the environment.]

E. OPERATING CONDITIONS [For Open Burning Of Waste Explosives]

The Permittee shall openly burn or detonate waste explosives in accordance with the requirements of 25 Pa. Code §75.265(x)(6) and 25 Pa. Code §75.265(x)(7) and the plans and specifications in Attachment ___.

F. MONITORING

The Permittee shall monitor the thermal treatment facility and record the data as specified below:

System	Purpose	Frequency of Monitoring	Frequency of Testing	Frequency of Calibration	Recording Method

[At a minimum, system operating temperature must be monitored at least every 15 minutes. In addition, if an emission control device is present, then its operating characteristics (e.g., scrubber recirculation flow rate, make-up water rate, pressure drop, temperature, precipitator voltage and amperage draw) must also be monitored at least every 15 minutes. Waste feed rate, auxiliary fuel feed rate, relevant process flow rates and level indicators must also be monitored at least every 15 minutes accord- ing to 25 Pa. Code §75.265(x)(4)(i).

Where applicable, the stack plume must be observed visually at least once each hour for color and opacity. 25 Pa. Code §75.265(x)(4)(ii) requires that the Permittee take any corrective actions necessary to correct apparent emissions from the stack and adjust the plume to its normal

appearance.]

PART V

INCINERATION CONDITIONS

Part V of the permit sets forth conditions for incinceration with which the Permittee must comply. All regulatory citations listed below refer to the Department's hazardous waste management regulations as codified in Title 25 of the Pennsylvania Code (25 Pa. Code).

Permit Condition	Subject	Regulation (25 Pa. Code)	Location in Application
V.A	Construction [For new facilities]	75.264(h)(1)	

V.__	Waste Tracking [if applicable]	75.264(w)(21)
V.__	Weighing and Measuring Facilities [if applicable]	75.264(w)(23)
V.__	Operating Hours [if applicable]	75.264(w)(24)

PART VI

SHORT-TERM INCINERATOR CONDITIONS

Part VI of the permit sets forth conditions for short-term incineration with which the Permittee must comply. All regulatory citations listed below refer to the Department's hazardous waste management regulations as codified in Title 25 of the Pennsylvania Code (25 Pa. Code).

Permit Condition	Subject	Regulation (25 Pa. Code)	Location in Application
VI.A	Shakedown Phase		
VI.A.1	Duration of the Shakedown Period	75.264(w)(25)(i)	
VI.A.2	Waste Feed Identification	75.264(w)(5)	
VI.A.3	Operating Conditions	75.264(w)(7)	
VI.A.4	Waste Feed Cut-off	75.264(w)(7)(iv)	
VI.A.5	Facility Monitoring	75.264(w)(9)	
VI.B	Trial Burn Phase		
VI.B.1	Trial Burn Plan	75.264(w)(27)	
VI.B.2	Trial Burn POHC(s)	75.264(w)(8)(i)	
VI.B.3	Trial Burn Determinations	75.264(w)(29)	

VI.B.4	Trial Burn Submissions	75.264(w)(29)(iii)and (iv)	
VI.C	Post-Trial Burn Phase		
VI.C.1	Waste Feed Identification	75.264(w)(8)	
VI.C.2	Operating Conditions	75.264(w)(7)	
VI.C.3	Waste Feed Cut-off	75.264(w)(7)(iv)	
VI.C.4	Facility Monitoring	75.264(w)(9)	
VI.D	General Provisions		
VI.D.1	Waste Analysis Monitoring	75.264(w)(4)	
VI.D.2	Other Departmental Permits & Approvals	75.264(w)(11)	
VI.D.3	Access Roads	75.264(w)(22)	
VI.D.4	Buffer Zone	75.264(w)(13)	
VI.D.5	Equipment Maintenance	75.264(w)(18)	
VI.D.6	Standby Equipment	75.264(w)(19)	
VI.D._	Incineration Facility Modifications [if applicable]		
VI.D.__.1	Construction Practices	75.264(w)(14)	
VI.D.__.2	Quality Control Measures	75.264(w)(15)	
VI.D.__.3	Professional Engineer Certification	75.264(w)(16)	
VI.D.__.4	Construction Schedule	75.264(w)(16)	
VI.D.__	Odor and Noise Control [if applicable]	75.264(w)(17)	
VI.D.__	Unloading Areas [if applicable]	75.264(w)(20)	
VI.D.__	Waste Tracking [if applicable]	75.264(w)(21)	
VI.D.__	Weighing and Measuring Facilities [if applicable]	75.264(w)(23)	

Permit Condition	Subject	Regulation (25 Pa. Code)	Location in Application

VI.D.__ Operating Hours [if applicable] 75.264(w)(24)

PART VII

THERMAL TREATMENT CONDITIONS

Part VII of the permit sets forth conditions for thermal treatment with which the Permittee must comply. All regulatory citations listed below refer to the Department's hazardous waste management regulations as codified in Title 25 of the Pennsylvania Code (25 Pa. Code).

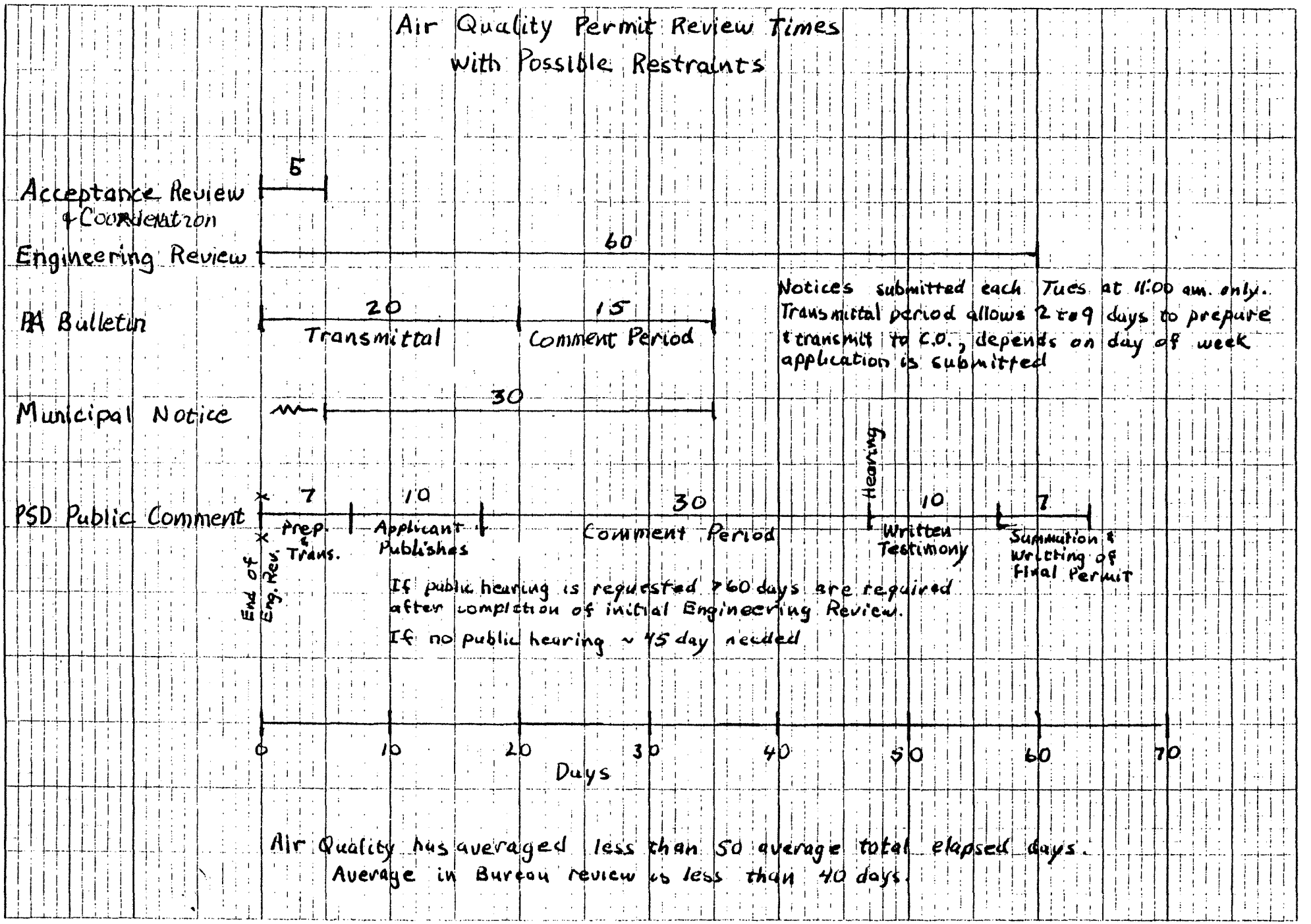
Permit Condition	Subject	Regulation (25 Pa. Code)	Location in Application
VII.A	Construction [For new facilities]	75.264(h)(1)	
VII.A	Maintenance [For existing facilities]	75.264(h)(1)	
VII.B	Limitation on Wastes	75.264(c)	
VII.C	Analysis of New Wastes	75.264(x)(3)	
VII.D	Operating Conditions [For Continuous Process Operations]	75.264(x)(7)	
VII.E	Operating Conditions [For Open Burning of Waste Explosives]	75.265(x)(6) and (7)	
VII.F	Monitoring	75.264(x)(4)	

PART VIII

WASTE PILE CONDITIONS

Part VIII of the permit sets forth conditions for waste piles with which the Permittee must comply. All regulatory citations listed below refer to the

Air Quality Permit Review Times with Possible Restraints



Air Quality has averaged less than 50 average total elapsed days.
Average in Bureau review is less than 40 days.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
BUREAU OF AIR QUALITY CONTROL

Application for Plan Approval to Construct,
Modify or Reactivate an Air Contamination Source
and/or Air Cleaning Device and for a Permit to Operate

Read the instruction carefully before completing this form. Submit duplicate copies.

Section A Identity and Location of Air Contamination Source

1A. Application is being made for:

- ☐ Construction of New Source/Operating Permit
- ☐ Reactivation of a Source/Operating Permit
- ☐ Modification of Existing Source/Operating Permit
- ☐ Installation of Air Cleaning Device/Operating Permit
- ☐ Amendment to a Previous Application
  Previous Application No. ___-____-___

OFFICIAL USE ONLY

Application No. ___-____-___
Plant Code _____ Unit ID _____
Date Received _____
Reviewed by _____

Potential Emissions (TPY)

PM _____ SO_2 _____ VOC _____
NOX _____ CO _____ Other _____

Actual Emissions (TPY)

PM _____ SO_2 _____ VOC _____
NOX _____ CO _____ Other _____

Change in Actual Emissions (+ or –)

PM _____ SO_2 _____ VOC _____
NOX _____ CO _____ Other _____

1B. Type of source

1C. Plant in which source is located
☐ NEW ☐ EXISTING

1D. If source is new, does it replace another source ☐ YES ☐ NO
(describe source replaced)

1E. Expected date of completion

2A. Owner of source

2B. Employer I.D. No. (Federal IRS No.)
___-_______

3A. Owners designation of source and/or plant if any

3B. Location of source (Street address or Route No.) Political Subdivision (Township, etc.) County

3C. Mailing address (Street or P.O. Box, City, Zip Code)

3D. Telephone No.

4A. Person to contact regarding this Application (name and title)

4B. Mailing address (Street of P.O. Box, City, State, Zip Code)

4C. Telephone No.

5. Official signing application must be an agent of the Company having primary responsibilities for operation of the facility to which this application applies. Although he may not have participated in the design of the facility he should be responsible for approval of the design.

AFFIDAVIT

I _____, being duly sworn according to law depose and say that I am the official having primary responsibility for the design and operation of the facilities to which this application applies and that the information included in the foregoing application is true to the best of my knowledge, information and belief.

Sworn to and subscribed before me this
_____ day of _____,

_____
Signature

_____
Notary Public

_____
Title

Section B.1 Incinerators and Flares

1. INCINERATOR AND WASTE

A. Manufacturer	B. Model	C. Class	D. ☐ Multiple chambered ☐ Controlled air
E. Rated capacity	F. Type of waste	G. BTU content as fired	
H. If type 5,6 or special waste attach proximate and ultimate analysis	I. Density of waste (lbs/cu. yd.)	J. Daily amount ☐ Estimated ☐ Actual	

2. PRIMARY COMBUSTION CHAMBER

A. Volume (cu. ft.)	B. Effective grate area (sq. ft.)	C. % Excess air
D. % Air applied as overfire air	E. % As underfire	
F. Ignition burner type and fuel	G. Number of burners	H. Capacity of each (BTU/hr.)

3. SECONDARY COMBUSTION CHAMBER AND/OR AFTERBURNERS

A. Volume (cu. ft.)	B. Max. gas velocity (ft./sec.)	C. Temperature (°F)
D. Estimated hold time of gases (sec.) Show calculations		
E. Burner type and fuel	F. Number of burners	G. Capacity of each (BTU/hr.)

4. DRAFT CONTROLS

☐ A. Barometric damper Windshielding ☐ Yes ☐ No

☐ B. Guillotine or sliding damper

☐ C. Induced draft fan
Capacity (SCFM)

5. Total Heat Release (if multiple chambered) Excluding Ash Pit in BTU/hr./cu. ft.

6. MISCELANEOUS DEVICES AND CONTROLS

☐ A. Automatic loading device (Describe)

☐ B. Self-closing doors

☐ C. Spark arrestor

☐ D. Flame failure protection equipment

☐ E. Method of creating turbulence for combustion gases (Describe)

☐ F. Method of cleaning secondary or settling chamber (Describe)

☐ G. Other interlocking devices or controls (Describe)

7. ☐ Outdoor Installation
☐ Indoor Installation (Describe method of supplying combustion air)

8. FLARES

A. Maximum and average SCFM burned

B. % Sulfur of waste gas

☐ C. Automatic ignition system

☐ D. Controls to prevent smoking

☐ E. Steam injection

☐ F. Noise reducing device

9. OPERATING SCHEDULE

_____ hours/day _____ days/week _____ weeks/year

10. SEASONAL PERIODS (MONTHS)

Operating _____ to _____

Non-Operating _____ to _____

11. If incinerator is rated at 50 tons per day or more, describe fully the facilities provided to record the daily burning rate and hours of operation.

12. Describe modifications to incinerator in detail.

13. Has application been made for a Solid Wastes Disposal Permit?

☐ Yes ☐ No

14. Briefly describe the method of handling any waste water from this installation and associated air pollution control equipment (Is a Water Quality Management Permit needed? ☐ Yes ☐ No)

15. Attach any and all additional information necessary to perform a thorough evaluation of the extent and nature of emissions from this incinerator.

Section D — Flue And Air Contaminant Emission Information

1. STACK AND EXHAUSTER

A. Exhauster static pressure _____ in w.g. _____ HP @ _____ RPM

B. Stack height above grade (ft)	C. Stack diameter (ft) or outlet duct area (sq ft)	D. Weather cap
Grade elevation (ft)		☐ Yes ☐ No

E. Indicate on an attached sheet the location of sampling ports with respect to exhaust fans, breeching, etc. Give all necessary dimensions.

F. Can the control equipment be bypassed? (If Yes, explain) ☐ Yes ☐ No

2. ATMOSPHERIC EMISSIONS

A. Particulate matter emissions (lbs/hr or gr/SCF Dry)

B. Gaseous contaminant emissions

	Contaminants	*Concentration*		*VOC Contaminants*	*Concentration*	
(1)	SO_X	_____ppm (Vol.)	_____lbs/hr	(4) _____	_____ppm (Vol.)	_____lbs/hr
(2)	NO_X	_____ppm (Vol.)	_____lbs/hr	(5) _____	_____ppm (Vol.)	_____lbs/hr
(3)	CO	_____ppm (Vol.)	_____lbs/hr	(6) _____	_____ppm (Vol.)	_____lbs/hr

C. Outlet volume of exhaust gases

_____ CFM

@ _____ °F

_____ % Moisture

Section E — Miscellaneous Information

1. Describe fully facilities to monitor and record the emission of air contaminants. Provide detailed information to show that the facilities provided are adequate. Include cost and maintenance information. Periodic maintenance reports are to be submitted to the Department.

   ☐ Opacity monitor

   ☐ SO_x monitor

   ☐ Other _____

   If checked provide manufacturer name, model no. and pertinent technical specifications

2. Attach Air Pollution Episode Strategy (if applicable)

3. Briefly describe the general nature of the area in which the source is lcoated.

4. Attach calculations and any additional information necessary to thoroughly evaluate compliance with all the applicable requirements of Article III of the Rules and Regulations of the Department of Environmental Resources and those requirements promulgated by the Administrator of the United States Environmental Protection Agency pursuant to the provisions of the Clean Air Act.

5. List all attachments made to this Application.

BUREAU OF AIR QUALITY CONTROL
NUMBER AND GRADE OF AIR POLLUTION CONTROL ENGINEERS
WHO ARE IN AIR QUALITY PERMIT REVIEW
(ENGINEERING SERVICES)

Region	No.	Grade
I	1	IV
	1	III
	1	II
II	1	IV
	2	III
III	1	IV
	3	III
IV	1	IV
	1	III
V	1	IV
	2	III
VI	1	IV
	2	III
C.O.	1	V
	2	III

Commonwealth of Pennsylvania
Environmental Resources
January 12, 1983
(717) 787-4324

Subject: Hazardous Waste Regulations
Guide for Air Quality Permit Reviews

To: ALL ENGINEERING SERVICES CHIEFS

From: DOUGLAS L. LESHER, Chief
Engineering Services Section
Division of Abatement and Compliance

Through: Chief, Division of Abatement and Compliance M.A.M.

The following is intended to highlight the Hazardous Waste Management (HWM) regulations as they would pertain to an air quality permit review of a hazardous waste incinerator or a process or boiler using hazardous waste as a fuel. This is not to be used as a substitute for a careful reading of the regulations prior to conducting a review. I doubt that I will address all possible problems that you will run into but I will try to give further guidance as you get into your actual reviews. Attached is a copy of the September 4, 1982 Pennsylvania Bulletin publication of the HWM regulations. The provisions of particular concern to us are: 75.261(e)(2)(vi), page 2990, which requires an air quality permit for using a hazardous waste as a fuel to burn a fuel mixture; 75.264(w), pages 3052-3054, which deals with new or existing sources applying for a permit; and, 75.265(w) and (x), pages 3070-3072, which is applicable to new or existing sources which have interim status.

There are sources which are grandfathered under air quality regulations but these will be placed under air quality permits because of 75.261(e)(2)(vi). Any source which combusts hazardous waste must have an Air Quality Permit even if it has done this since prior to July 1, 1972.

INCINERATORS

The discussion that follows addresses requirements for both existing incinerators with interim status (issued by EPA) and new incinerators. All sources with interim status must obtain State permits. References to the appropriate sections (75.264 or 75.265) and careful study should help distinguish the difference.

Waste Analysis

All incinerators with interim status have been sent a copy of our Air Quality Incinerator Applications. This was done by HWM in a mass mailing shortly after the regulations were published. 75.264(w)(3) specifies the analysis of the waste that should be submitted. If our application does not have this information attached to it, obtain a copy from the HWM application. Subsection (4) provides for the conducting of regular analysis, the frequency which must be determined in consideration of how variable the waste might be. A contractor taking waste from a number of sources should conduct analysis more frequently than a company burning only waste from their own processes which are not expected to vary.

Operating Conditions

Operating conditions must be established by the permit for each waste that is to be burned. These conditions are to include the following (see 75.264(w)(7) and 75.265(w)(4):

A. CO level in exhaust gas.

B. Waste feed rate.

C. Combustion temperature.

D. Air feed rate to the combustion system.

E. Allowable variations in incinerator system design or operating procedures.

F. Opacity of the Plume.

G. Operating requirements necessary to insure that the performance standards are met.

Steady state operations must be achieved before incineration of waste can begin (see 75.264(w)(7)(ii) and 75.264(w)(2)).

Performance Standards

A. For each Principle Organic Hazardous Constituent (POHC) present in the waste, a destruction and removal efficiency (DRE) of 99.99% must be achieved. The criteria for designation of the POHC is set forth in 75.264(w)(8). The POHC are chosen based on:

   1. Acceptable ambient concentrations (AAC) of POHC and/or hazardous by-products of combustion considering the degree of difficulty of incineration.

   2. Relative amounts in its waste feed system.

   3. Physical characteristics of the incinerator.

4. Background concentrations of POHC.

AAC are defined as:

(a) An ambient air quality standard set in air quality regulations;

(b) Threshold limit values (TLV); and,

(c) A formula containing lethal concentration 50% (LC_{50}) or lethal dose 50% (LD_{50}). (b) and (c) do not in our estimation represent AAC but may be used for ranking POHC. See Jack McGrogan's August 30, 1982 memo to Gary Galida (copy attached).

B. If a waste contains more than 0.5% halogens, hydrogen halide should be controlled by 99%.

C. Particulate matter emissions should be limited to 0.08 gr./dscf when corrected to 12% CO_2.

Fugitive Emissions

Fugitive emissions should be controlled by:

A. Keeping the combustion zone totally sealed.

B. Maintain a negative combustion zone pressure.

C. Alternate demonstrated means.

Automatic Waste Feed Cut-Off

The incinerator should have an automatic waste feed cut-off which is actuated when the operating conditions vary from those specified in the permit or if any of the following fail:

A. Elements of the input control system.

B. Combustion or atomizing air blower.

C. Current from the flame detector and other safety devices.

D. Electrical power to the facility.

The operation of this cut-off is to be checked daily to verify proper operation. Although not mentioned in the regulation, if the incinerator is to operate continuously 24 hours per day and the check of the shut-off would disturb the steady state operation of the incinerator, the cut-off checks could be made on a less frequent basis.

Monitoring and Inspection

Combustion temperature, waste feed rate, and air feed rate are to be read on a continuous basis. CO is also to be read on a continuous basis at a point downstream of the combustion zone and prior to release to the atmosphere.

The owner or operator shall identify sources of fugitive emissions and their means of control, and at least daily inspect for leaks, spills, and fugitive emissions.

Source Sampling and Analysis

Sampling and analysis of the waste and exhaust emissions is to be conducted before issuance of an operating permit and the HWM permit (i.e., during a trial burn) and then at a frequency specified in the permit. Initially we will require stack testing to be done at least annually. The sampling and analysis shall include the following:

A. A quantitive analysis of the exhaust gas for the concentration and mass emissions of POHCs, CO_2, O_2, and hazardous combustion by-products.

B. A quantitive analysis of the scrubber water, ash residues and other residues for POHCs.

C. A total mass balance of POHCs.

D. Modeling of ambient air quality impact.

E. Computation of DRE.

F. Computation of halogen removal, if waste contain more than 0.5% halogens.

G. A particulate emission test.

The initial tests during the "trial burn" are an important provision of these regulations, since they set the operating conditions that are to be specified in the operating permit. As noted above, HWM will not issue their permit until after the trial burn and establishment of the operating conditions.

Other Requirements

A number of other requirements are specified. I will identify them according to the subparagraphs of 75.264(w) in which they are found:

(13) A buffer zone of at least 50 feet is required between facility and property line.

(14), (15) and (16) Requires that a professional engineer certify each phase of construction, the best engineering construction practices be employed and quality control measures and tests to be employed to insure construction conforms to all design, materials and construction specifications.

(17) An odor and noise control program is required.

(18) and (19) In essence, an operation and maintenance program is required.

(20) and (21) This deals with the prompt unloading of vehicles in specified unloading areas. Since they deal with the handling of the waste, responsibility for enforcement will be left with HWM. Coordination of these requirements will be needed, any problems you note in this area should be referred to HWM.

(22) Sets specifications for access roads.

(23) The Department may require weighing or measuring facilities. Weighing devices are to be certified by the Pennsylvania Department of Agriculture.

(24) Hours of operation must be displayed at the entrance of facilities receiving wastes from off-site sources.

COMBUSTION UNITS AND PROCESSES

The incinerator requirements should be considered when reviewing combustion units and processes. Although the incinerator performance standards do not apply, they can be used as a guide. The review will generally center on ambient air quality impacts and will not differ greatly from what we have done in the past. A detailed procedure written by HWM is attached.

We will send further guidance to you as it is developed. Your comments on this will be welcome.

Attachments

Addendum:

The trial burn for a hazardous waste incinerator is a rather rigorous exercise and we will have to carefully work our way through the first few we receive. For a combustion unit or process, particularly if only non-halogenated solvents are involved, we need not be as particular if good combustion will take place. HWM has voiced a concern that we do not allow a company to protract a trial burn so that a supply of a particular POHC can be destroyed before the tests are analyzed.

Definition: This is professional work in air pollution control engineering.

An employe in this class performs plant inspections, field investigations, sampling surveys and prepares technical engineering reports for the control and abatement of air pollution. Work assignments usually require the interpretation and application of well established criteria and guidelines. The employe's freedom to act is normally limited to completing assignments within the bounds of these criteria and guidelines and to making technical recommendations where applicable. General supervision is received from higher level engineers but becomes more specific on very difficult or unique assignments. Supervision may be exercised over a small number of technicians. Work is reviewed by a higher level engineer upon completion for compliance with technical standards, departmental policies and procedures and adequacy of results.

Examples of Work Performed: Conducts field investigations of air pollution complaints, makes community surveys, investigates plant processes, and confers with plant and community officials; prepares technical reports of these investigations.

Supervises a small number of technicians in the collection of samples of air pollutants such as dust, gases, vapors, odors and fumes; operates and makes adjustments and modifications on technical equipment used in obtaining the samples; assists in constructing new air sampling equipment.

Conducts municipal and area air pollution studies; collects data to determine the extent, nature, and sources of atmospheric contaminants; makes recommendations for the reduction of air pollution in the study area.

Examines plans and specifications for air pollution control equipment; makes recommendations for modifications or overall change of this equipment.

Participates in the testing of air pollution control devices; recommends equipment modifications.

Provides consultant services to industrial and municipal representatives.

Performs related work as required.

Required Knowledges, Skills, and Abilities: Knowledge of commercial and industrial operations and processes particularly as they affect the emission of atmospheric pollutants.

Knowledge of the types, operation, characteristics and proper application of air pollution control devices.

Knowledge of the techniques and instruments used in source and general atmospheric sampling.

Knowledge of basic engineering principles as applied to air pollution.

Knowledge of the principles of combustion.

Knowledge of the basic principles of chemistry and calculus.

Some knowledge of state and Federal laws, regulations and rules as they pertain to air pollution.

Ability to utilize technical equipment in source and general atmospheric sampling and to conduct technical investigations applying engineering principles and procedures.

Ability to make computations and calculations involving the application of air pollution engineering mathematics.

Ability to analyze and present technical data in clear, concise engineering reports.

Ability to establish and maintain effective working relationships with associates; government, local, professional and non-professional groups and individuals; and

Ability to communicate ideas clearly and concisely in oral and written form.

Minimum Experience and Training: One year of experience as an Air Pollution Control Engineer I.

or

One year of experience in the field of air pollution control engineering or closely related work and a bachelor's degree with major course work in chemical, civil, industrial, mechanical or electrical engineering, or in a closely related engineering field. Appropriate graduate study may be substituted for the required experience on a year-for-year basis.

Necessary Special Requirement: Possession of a valid automobile operator's license.

Est: 1-62
Rev: 6-70

Definition: This is advanced professional work in air pollution control engineering. An employe in this class reviews plans for installation of air pollution control equipment and air contamination sources, supervises or participates in the investigation of complaints, determines violations of Commission regulations, conducts source sampling, investigates plant processes and recommends modifications to reduce emissions of air pollutants, or performs work of equivalent scope and complexity in the field or central office. Work assignments are given with general instructions and the employe is responsible for independently selecting and interpreting applicable guidelines. The employe normally has the authority to make technical decisions within the assigned scope of responsibility, but program goals and administrative policy matters emanate from a higher level. Supervision may be exercised over a small number of technicians or engineers. Work is reviewed by a higher level engineer upon completion for compliance with technical standards, departmental policies, procedures and adequacy of results.

Examples of Work Performed: Organizes and directs the more difficult field surveys, investigations and source samplings to insure that plant operations are in compliance with Commission regulations.

Organizes and directs a small number of engineers and technicians who conduct segments of special air pollution control studies or projects; investigates new sampling methods and procedures for the detection and evaluation of air contaminants; aids in conducting large scale community and area air pollution surveys; or operates and makes adjustments and modifications on complex technical equipment used in transmitting and processing data.

Prepares or directs the preparation of technical engineering reports on permit applications and field surveys and directs the formulation of recommendations.

Assists higher level engineers in the coordination and evaluation of a specialized phase of the statewide air pollution control engineering program.

Consults with and advises the general public, consulting engineers, public health and industrial and municipal officials and sanitarians for the purpose of promoting and advancing the interest of the public health for air pollution control.

Performs related work as required.

Required Knowledges, Skills, and Abilities: Considerable knowledge of commercial and industrial operations and processes, particularly as they affect the emission of atmospheric pollutants.

Considerable knowledge of the types, operation, characteristics and proper application of air pollution control devices.

Considerable knowledge of the techniques and instruments used in source and general atmospheric sampling.

Considerable knowledge of basic engineering principles as applied to air pollution.

Knowledge of state and Federal laws, regulations and rules as they pertain to air pollution.

Knowledge of the principles of combustion.

Knowledge of the basic principles of chemistry and calculus.

Ability to utilize technical equipment in source and general atmospheric sampling and to conduct technical investigations applying engineering principles and procedures.

Ability to make computations and calculations involving the application of air pollution engineering and mathematics.

Ability to analyze and present technical data in clear, concise engineering reports.

Ability to establish and maintain effective working relationships with associates; government, local, professional and on-professional groups and individuals; and the general public.

Ability to communicate ideas clearly and concisely in oral and written form.

Minimum Experience and Training: Two years as an Air Pollution Control Engineer II.

or

Three years of progressively responsible experience in the field of air pollution control engineering or closely related work and a bachelor's degree with major course work chemical, civil, industrial, mechanical or electrical engineering, or in a closely related engineering field. Appropriate graduate study may be substituted for the required experience on a year-for-year basis.

Necessary Special Requirement. Possession of a valid automobile operator's license.

Est: 6-70

Definition: This is supervisory and professional work in air pollution control engineering.

An employe in this class directs air pollution control activities in an air basin, or supervises the planning and developing of a phase of a statewide air pollution control program in the central office, or performs work of equivalent scope and complexity in the field or central office. Work encompasses the supervision of the investigation of plant processes and air pollution complaints and determination of the course of action or the development of engineering program guidelines for implementation in the state or Federal air pollution urban control regions. Work assignments are performed with little or no technical instructions and require the independent selection of courses of action for which well established guidelines are not available. The employe normally has the authority to make final technical decisions and to recommend the procedures for program implementation within the assigned scope of responsibility, but program goals and administrative and policy matters emanate from a higher level. Supervision is usually exercised over a professional and technical staff. Work is reviewed by a higher level engineer upon completion for compliance with departmental policies and for program effectiveness.

Examples of Work Performed: Supervises the air pollution control activities in an air basin, encompassing the surveillance of all existing or potential air pollution hazards in the air basin, investigation of air pollution complaints and determination of courses of action, investigation of plant processes and recommendation of modification for reducing emission of atmospheric pollution, determination and reporting of violations of Commission regulations and departmental orders and review of engineering plans and proposals for air pollution control equipment and air contamination sources.

Applies alert emergency regulations in accordance with regulatory criteria.

Conducts continuous evaluation studies in a region or air basin of air pollutant emissions for determination of compliance with rules and regulations.

Prepares educational and promotional material designed to further the objectives of the Air Pollution Control Act; recommends and presents training material to professional and technical personnel.

Supervises, coordinates, plans and implements special projects such as the statewide air pollutant emission inventory project, the statewide air monitoring project or the computer control information center.

Serves as an advisor in all electronic data processing operations of the air pollution control program.

Establishes liaison with other governmental agencies, private contracting firms and various interested groups.

Performs related work as required.

Required Knowledges, Skills, and Abilities: Considerable knowledge of commercial and industrial operations and processes, particularly as they affect the emission of atmospheric pollutants.

Considerable knowledge of the types, operation, characteristics and proper application of air pollution control devices.

Considerable knowledge of the techniques and instruments used in source and general atmospheric sampling.

Considerable knowledge of basic engineering principles as applied to air pollution.

Knowledge of state and Federal laws, regulations and rules as they pertain to air pollution control.

Knowledge of the principles and practices of effective supervision.
Knowledge of the principles of combustion.
Knowledge of the basic principles of chemistry and calculus.
Ability to utilize technical equipment in source and general atmospheric sampling and to conduct technical investigations applying engineering principles and procedures.
Ability to make computations and calculations involving the application of air pollution engineering and mathematics.
Ability to analyze and present technical data in clear concise engineering reports.
Ability to apply the principles of effective supervision.
Ability to establish and maintain effective working relationships with associates; government, local, professional and non-professional groups and individuals; and the general public.
Ability to communicate ideas clearly and concisely in oral and written form.

Minimum Experience and Training: Two years of experience as an Air Pollution Control Engineer III.

or

Five years of progressively responsible experience in the field of air pollution control engineering and a bachelor's degree with major course work in chemical, civil, industrial, mechanical or electrical engineering, or in a closely related engineering field. Appropriate graduate study may be substituted for the required experience on a year-for-year basis.

Necessary Special Requirement: Possession of a valid automobile operator's license.

Est: 3-68
Rev: 6-70

Regulation Processing 12/83

Graphics - J. Cain
Legal - M. Woelfling
Analytic - W. Carr
Regulations - P. Buckley