Air Pollution Control Permitting Handbook

(Revised April 1999)

State of Vermont
Department of Environmental Conservation
Air Pollution Control Division

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FOREWORD

Before embarking on a detailed description of the permitting requirements, it may be helpful to outline the underlying principles of the state's air pollution regulations. First, permits are required prior to commencing construction of a project. This is to ensure that air pollution control considerations are designed into the project. Incorporating controls during design - rather than during construction or operation - saves time and money for everyone. Second, it is far better not to create pollution in the first place than to treat it, measure it, and have the environment assimilate it once created. Third, sources constructed today will be in operation for years to come; they should be designed and built with the most advanced means of preventing and/or controlling air pollution to minimize the total amount of pollution released over the life of the operation. And fourth, the burden remains with the people planning or operating a pollution source to provide the data and technical analysis that demonstrates the source will be constructed and operated in continuous compliance with its requirements once it begins operations.

Laws governing air pollution control have been adopted at both the state and federal level. Under provisions of the federal Clean Air Act, Vermont has demonstrated through its State Implementation Plan for Air Quality (SIP) that its permitting program is at least as stringent as the federal New Source Review requirements. This demonstration allows that air pollution control permits issued by the Vermont Air Pollution Control Division ("Division") to satisfy both state and federal law. (Certain permits issued under this arrangement are subject to federal review, with their requirements enforced by federal agencies.) The Division has the responsibility to make permitting decisions from sound data provided by the applicant, supported by Division review, and subjected to public review.

This Handbook was developed to help prospective applicants understand what is technically required in submitting an application for an Air Pollution Control Permit, as well as to inform the public of the permitting process. The Division, the permit applicant, and the public each play an important role in the permitting process. The applicant is responsible for providing technical specifications, data, and analysis; the Division is charged with the responsibility to review permit applications independently and thoroughly and to develop additional information as needed to support its decisions; and the public has the responsibility to consider thoughtfully the application and the Division's actions in the context of the Regulations and to provide comments on the information used in the permitting process as well as on local issues and concerns regarding the permit. Carrying out these responsibilities in an informed and responsible manner provides sound environmental management.

INTRODUCTION

The goal of the state's air pollution control laws is to keep Vermont's air as clean as possible. Air pollution control permits are a mechanism used by the Agency of Natural Resources' Air Pollution Control Division to achieve this goal. Since many activities result in the release of contaminants (commonly called "pollutants") into the air, air pollution control permits are needed for many projects. The Division operates two permitting programs: (1) a construction permit program, and (2) an operating permit program. The construction permit program applies when a new project involving an activity which will create air emissions is being planned, or an existing one is being modified or replaced. The construction permit is applicable for the life of the project, and must only be reissued if changes are planned for the permitted activity which require a new permit review. The operating permit program applies to both new and existing activities. Applicability to the operating permit program is based on the type and quantity of contaminants that will be released into the air. Operating permits are intended to incorporate all the air pollution control requirements a facility is subject to into one document. The operating permit application process sorts through all the requirements and identifies those which are applicable to the source. The operating permit program also requires a renewal of the air pollution control operating permit every five years. At renewal any new regulation or requirements that were adopted in the interim period between issuance and renewal are incorporated into the new operating permit.

Discussion of the construction and operating permit programs in this Handbook will be handled separately. However, for many activities both permit programs may apply. Sections 5-1005(b) and 5-1007(c) of the Vermont Air Pollution Control Regulations (“Regulations”) provide the Division with the ability to combine both permits together. Whenever possible, the Division intends to process both the construction and operating permit for a source together. Further discussion of the combined permit process will be presented later in this Handbook.

The permit process ensures that with the start-up of a new project, or the modification of an existing one, air contaminants will be kept to a minimum and standards protecting the public and the environment will be met. As a permit applicant, it is your responsibility to meet the requirements of the state's clean air laws, and to provide the Division with information necessary to evaluate your situation. If you do need an air pollution control permit, it is important that you collect all necessary information before you submit your application. The Division's role is to make sure the information you submit is correct and complete. The Division can help in locating information you may need.

Construction Permit Process

The first half of this Handbook provides an overview of the construction permitting process. Information is organized by numbered squares, diamonds, and circles. These shapes correspond to the major steps in the construction permitting process as sketched in the "Air Pollution Control Permit Construction Process" chart. A copy of the flow chart is enclosed with this Handbook. You can locate information on any of the steps noted on the chart by referring to the numbered square, diamond, or circle and finding it in this Handbook. A square signals that the applicant is responsible for the particular step, a diamond signals a decision the applicant must make, and a circle signals that the Division is responsible for the step.

The steps in the text are arranged according to how an applicant needing a construction permit for a **major** new source or modification would proceed - the "middle" and "upper" routes on the flow chart. Following those routes is a description of how an applicant needing a construction permit for a **minor** source or modification would proceed - the "lower" route on the flow chart.

Operating Permit Process

The second half of this Handbook provides an overview of the operating permit process. Information is also organized by numbered squares, diamonds, and circles. These correspond to the major steps in the operating permit process as sketched in the "Air Pollution Control Permit Operating Process" chart. A copy of the flow chart

is enclosed with this Handbook. You can locate information on any of the steps noted on the chart by referring to the numbered square, diamond, or circle and finding it in this Handbook. A square signals that the applicant is responsible for the particular step, a diamond signals a decision the applicant must make, and a circle signals that the Division is responsible for the step.

KEY TERMS AND CONCEPTS

Familiarity with some key terms and concepts will help you understand the permitting processes more easily.

● "Construction permit" is a permit issued prior to commencing construction, installation, modification, replacement, or operation of a subject source.

● A "major source" is an operation that releases 50 tons per year or more of **any** air contaminant, or 5 tons per year or more of lead.

● A "minor source" is an operation that releases contaminants below the threshold levels for a "major source."

● A "major modification" is a modification of an existing major source that will result in a significant increase in actual emissions of any air contaminant.

● "Operating permit" is a permit issued to new and existing sources to incorporate all applicable requirements and is updated every five years.

● A list of what is considered a "significant" increase for a variety of air contaminants is contained in the "Regulations" in Section 5-101; the "significant" threshold can also be triggered if any cumulative contaminant release reaches 50 tons per year (5 tons for lead), regardless of whether the modification will be made to an existing major or minor source

● A "minor modification" is a modification of an existing source that will **not** result in a "significant" increase in actual emissions of any air contaminant.

● An "indirect" source is a source that may not itself emit substantial amounts of contaminants but may cause substantial air pollution due to motor vehicle traffic it engenders. Examples are a shopping mall, industrial-commercial business park, or ski resort.

● "Hazardous air contaminant" ("HAC") is a State designation that applies to a contaminant that could cause increased deaths or cause an increase in serious irreversible illnesses.

● "Hazardous air pollutant" is a federal designation that applies to a contaminant that could cause increased deaths or cause an increase in serious irreversible illnesses.

● "Technically Complete" means that, in the judgment of the Division, an application contains all information required and necessary to evaluate whether the applicant should be granted an air pollution permit.

● "Administratively Complete" means a good faith submission to the Division of all information required by the Division for an air pollution control permit application along with any necessary base application fee.

● "Applicable Requirement" means any term or condition of any construction permit and any standard or requirement of the state and federal Clean Air Act and the regulations promulgated thereunder.

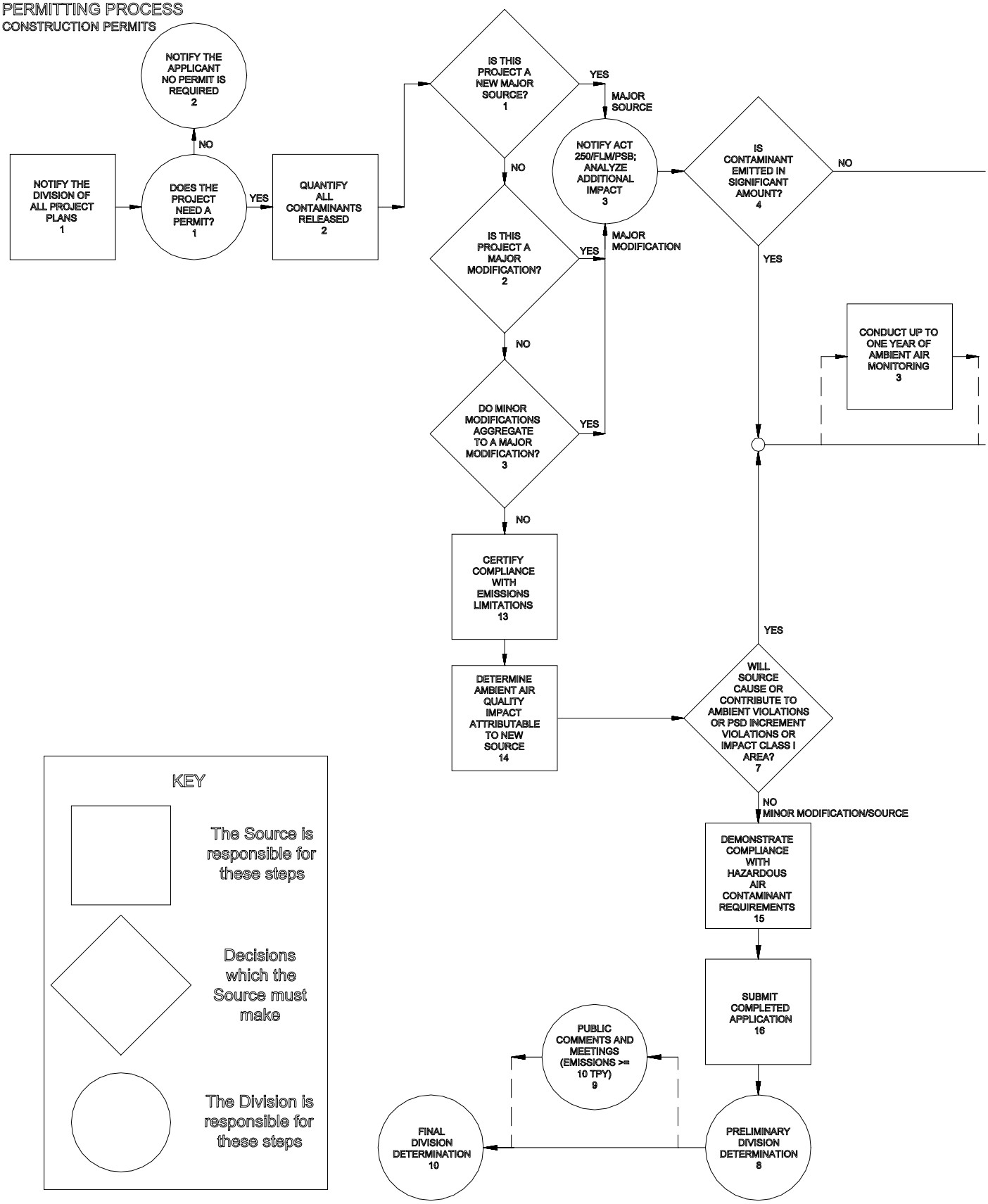
● "Subchapter X major source" is an operation identified in Section 5-401 of the Regulations that has the potential to release 10 tons per year or more of all air contaminants in the aggregate, excluding emissions resulting from insignificant activities.

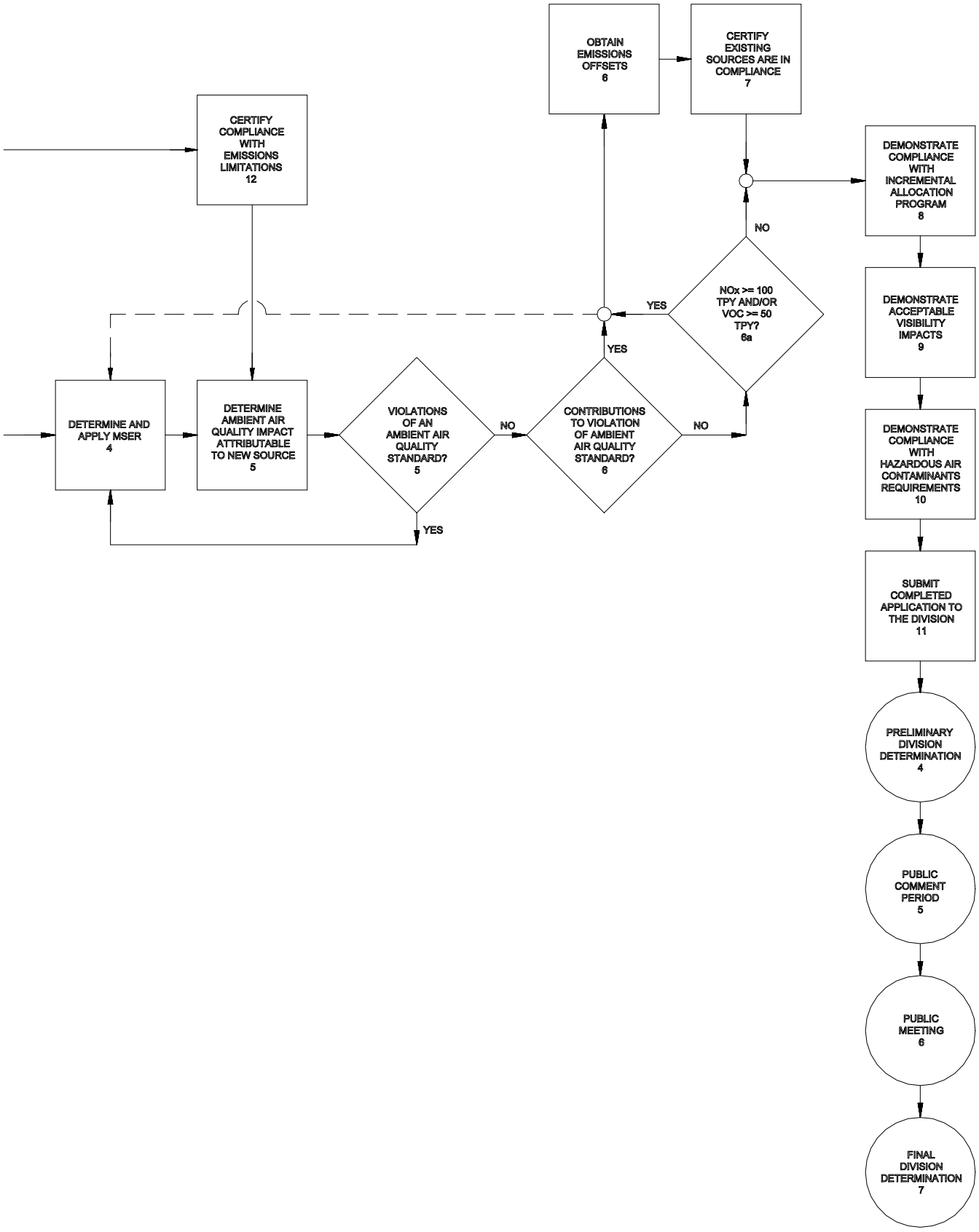
● "Title V subject source" is an operation subject to the operating permit requirements of Title V of the federal Clean Air Act and the Part 70 regulations promulgated thereunder. Vermont has delegation authority to issue Title V operating permits with federal oversight.

CONSTRUCTION PERMITS

AIR POLLUTION CONTROL PERMITTING PROCESS

CONSTRUCTION PERMITS




OBTAIN EMISSIONS OFFSETS 6
CERTIFY EXISTING SOURCES ARE IN COMPLIANCE 7
CERTIFY COMPLIANCE WITH EMISSIONS LIMITATIONS 12
DEMONSTRATE COMPLIANCE WITH INCREMENTAL ALLOCATION PROGRAM 8
NO
NOx >= 100 TPY AND/OR VOC >= 50 TPY? 6a
YES
DEMONSTRATE ACCEPTABLE VISIBILITY IMPACTS 9
YES
DETERMINE AND APPLY MSER 4
DETERMINE AMBIENT AIR QUALITY IMPACT ATTRIBUTABLE TO NEW SOURCE 5
VIOLATIONS OF AN AMBIENT AIR QUALITY STANDARD? 5
NO
CONTRIBUTIONS TO VIOLATION OF AMBIENT AIR QUALITY STANDARD? 6
NO
DEMONSTRATE COMPLIANCE WITH HAZARDOUS AIR CONTAMINANTS REQUIREMENTS 10
YES
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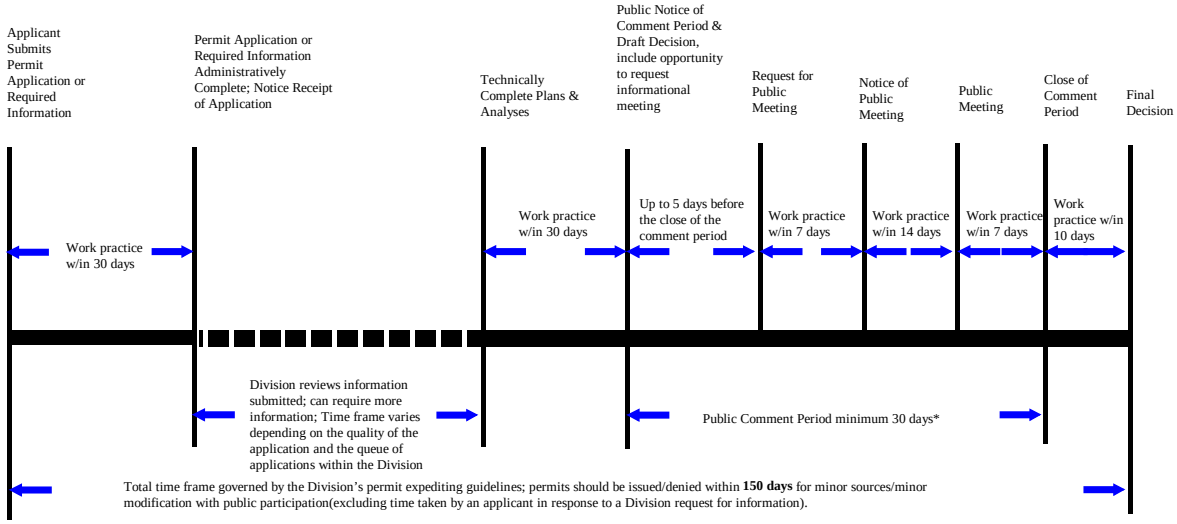
Construction Permit Process Time Line

Minor Stationary Source/Minor Modification with Public Participation



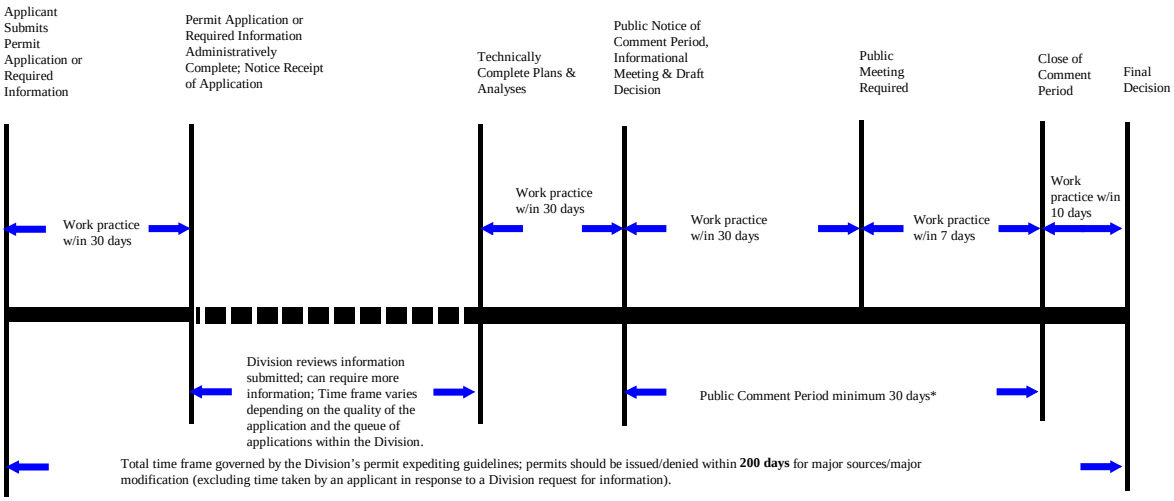
* If the Agency receives a request for an informational meeting, add approximately 30 days to the comment period.

Minor Stationary Source/Minor Modification without Public Participation

The time line for a minor source/minor modification without public participation is identical to that shown above, except no public participation is required. The total time to complete the permitting process is governed by the Division's permit expediting guidelines. Permits should be issued/denied within **90 days** for a minor source/minor modification without public participation (excluding time taken by an applicant in response to a Division request for information).

Construction Permit Process Time Line (continued)

Major Stationary Source/Major Modification



THE AIR POLLUTION CONTROL CONSTRUCTION PERMIT PROCESS

Many activities result in the discharge of air contaminants. The construction, modification, replacement and/or operation of such activities may be regulated by an air pollution control permit.

Construction permits are required under Subchapter V of the "Regulations" for new projects and changes to existing activities. A major source of air contaminants produces 50 tons per year or more of any one air pollutant, except for lead which is 5 tons per year. A major modification is a physical change or change in the method of operation of an existing major stationary source which will result in a significant increase in emissions. Major sources/modifications are subject to the permit requirements of Sections 5-501 and 5-502 of the "Regulations." A major source/modification is subject to a control technology analysis (termed MSER) for each significant emission; an air quality impact analysis for each air pollutant that will be emitted or increased by 10 tons per year; demonstrate compliance with all applicable state and federal emission standards; and public participation. A non-major source/modification (minor) is subject to the permit requirements of Section 5-501 of the "Regulations." A minor source/modification is subject to an air quality impact analysis for each air pollutant that will be emitted or increased by 10 tons per year; demonstrate compliance with all applicable state and federal emission standards; and public participation if air pollutant emissions will be emitted or increased by 10 tons per year.

State emission standards are contained in Subchapter II of the "Regulations." Federal emission standards are contained in Title 40 *Code of Federal Regulations* ("40 *CFR*") Parts 60, 61, and 63.

More information on the air quality impact analysis may be found in the Division's "Air Quality Impact Evaluation Guidelines." The MSER or control technology analysis is further described in Square 4 of the Construction Permit Handbook.

Public participation generally includes noticing (in a local newspaper within general circulation of the source) the receipt of an application, noticing the proposed permit, a minimum 30-day public comment period, and if sufficient interest exists, a public informational meeting.

Who Must Apply?

Construction permits are issued to approve the construction of a new source, the replacement of a source, or the modification of an existing source (such as the installation of a new piece of equipment). For new sources, the owner and/or operator of an activity listed in Section 5-401 of the "Regulations" must obtain Division approval prior to commencing construction of the activity. For existing sources, which are a listed activity in Section 5-401 of the "Regulations," a construction permit is necessary prior to commencing the installation of new equipment, replacement of equipment, or modification of existing equipment if the planned project meets the definition of "modification" in Section 5-101 of the "Regulations." Modification is defined as ". . .any physical change in, or change in the method of operation of, a stationary source which increases the actual emission rate of any air contaminant, regardless of any emission reductions achieved at the source. A physical change or change in the method of operation shall not include: (a) routine maintenance, repair and replacement; or (b) An increase in the hours of operation or in the production rate, unless such change is prohibited under any condition of a permit issued pursuant to these Regulations.

When Must You Apply?

At least 250 days prior to commencing the proposed construction or modification.

Square 1 ● Notify The Division Of All Project Plans

The first step in meeting the clean air requirements is for you to provide the Division with information regarding the air pollution potential of your project so it can determine if you need an air pollution control permit. If you do need a permit, your project will be reviewed to see how air pollution can be minimized and if the additional pollution will violate any state or federal clean air standards. If you don't need a permit, the Division will notify you.

Keep in mind that any changes to a project proposal may change the permit applicability decision. If in doubt, check with the Division.

The Vermont "Air Pollution Control Regulations" are contained in Chapter 5 of the state's "Environmental Protection Regulations." Section 5-401 of those regulations identify the following operations, processes, or activities as sources of air contamination for which a construction permit is needed:

1. Incinerators.
2. Asphalt hot-mix batching plants.
3. Electrical power generation facilities, including many diesel generators.
4. Wood products industries.
5. Mineral product industries, including mining, quarrying, and crushing operations.
Permits are not required for stone-quarrying, rock-drilling, and portable crushers processing bank-run gravel if the rated capacity of the crusher is less than 150 tons per hour at the crusher's largest possible setting. All crushers must provide adequate precautions to control dust.
6. Fuel-burning installations:
    a. Liquid and gaseous fossil fuel-burning equipment with a rated heat input greater than 10 million BTUs per hour. When several boilers or furnaces are involved, the aggregate input of the equipment must be used. Equipment that burns only natural gas or propane is exempted from the aggregate amount rule.
    b. Fuel burning equipment burning anthracite coal in individual units of 5 million BTUs per hour or more.
    c. Any fuel burning equipment burning bituminous coal.
    d. Wood fuel-burning equipment with a rated heat output greater than 90 horsepower.
    e. Stationary internal combustion engines using any fuel and having a rating of 450 brake horsepower output or greater. Engines used for emergency or stand-by purposes are not included provided the engine operates for a period no greater than 200 hours per calendar year.
7. Metal melting and reclamation furnaces.
8. Metal fabrication processes.
9. Surface finishing and coating operations, including application of paints, lacquers, solvents, and related materials.
10. Petroleum or petrochemical processing or marketing.
11. Manufacturing, processing, and application of chemicals, including the processing or application of plastics, rubbers, or resins.
12. Operations involving the handling or transferring of sand or dust-producing materials.
13. Kraft pulping processes used in paper manufacturing.
14. Leather tanning and finishing operations.
15. Animal byproduct processes (including commercial composting operations).
16. Any other types of sources that are regulated by the federal Clean Air Act. Contract the Division for more specific information.
17. Other sources, as may be designated by the state's Air Pollution Control Officer on a case-by-case basis. Examples are new landfills, coffee roasters, and other activities which have significant discharges of hazardous air contaminants.
18. Indirect sources, including but not limited to shopping center, roadways, airports, sports centers, drive-in theaters, recreation facilities, public or commercial buildings, or multiple residential buildings. This handbook does not explain all aspects of the construction permitting process for indirect sources; contact the Division for more information on this subject.

Again, for new sources, the owner and/or operator of an activity listed in Section 5-401 of the “Regulations” must obtain Division approval prior to commencing construction of the activity. For existing sources, which are a listed activity in Section 5-401 of the “Regulations,” a construction permit is necessary prior to commencing the installation of new equipment, replacement of equipment, or modification of existing equipment if the planned project meets the definition of “modification” in Section 5-101 of the “Regulations.”

If your project is on this list, notify the Division of your plans. Include the following information:

1. Who is doing the project or process?
2. Where is it located?
3. What, briefly, is your project or process?

Include, if available, information on what air contaminants will be released, and in what quantities.

It is to your benefit to contact the Division early in the design stage of your project so any contracts for equipment will meet the state's requirements. The need to meet clean air standards may affect the specifications you supply contractors.

Circle 1 ● Does The Project Need A Construction Permit?

The Division will use the information you provide to determine if you need a construction permit. If the determination cannot be made with the information you have supplied, the Division will ask for more.

Circle 2 ● Notify The Applicant No Construction Permit Is Required

If the Division determines your project does not need a construction permit, you are free to proceed with your project without any more review by the Division provided no changes are made. However, even if you don't need a construction permit, you must still meet general air quality standards and general provisions of the Air Pollution Control Regulations. Not needing a construction permit does not allow you to pollute.

Square 2 ● Quantify All Contaminants Released

If the Division determines your project needs a construction permit, the review process begins. The Division will send you an outline of all information you will be required to submit (see Appendix A of this document). The most important part of this information will be a list of the types and amounts of air contaminants your project will release to the outside air. This list will enable you to determine the level of review for your project.

There are many contaminants you must identify in your application. Some are covered by federal regulations, others by state regulations. You are subject to both.

The federal list includes numerous contaminants, including common ones such as carbon monoxide and sulfur dioxide. The state list includes those on the federal list plus about 200 contaminants, many of them toxic contaminants. They are identified in Appendix B of the "Regulations." This list is updated periodically, so check with the Division for the most current list.

Begin by first checking the following list. It contains the most common contaminants. Identify all those contaminants your project will release. (Consult the attached Construction Permit Application Requirements Outline in Appendix A for more details; refer to section D., "Quantification of Air Contaminant Emissions.")

1. Carbon Monoxide (CO)
2. Nitrogen Oxides (NO_x)

3. Sulfur Dioxide (SO_2)
4. Particulate Matter (PM)
5. Particulate Matter 10 microns and smaller (PM_{10})
6. Volatile Organic Compounds (VOCs)
7. Lead (Pb)
8. Arsenic (As)
9. Asbestos
10. Benzene
11. Beryllium (Be)
12. Mercury (Hg)
13. Vinyl Chloride
14. Fluorides
15. Sulfuric Acid Mist (H_2SO_4)
16. Hydrogen Sulfide (H_2S)
17. Total Reduce Sulfur (including H_2S)
18. Reduced Sulfur Compounds (including H_2S)
19. Methylene Chloride
20. Acetone
21. Methyl Acetate

You must next quantify how much of each contaminant will be released. The best source of such information is likely to be the equipment manufacturer, which might have test data taken during operation of similar equipment. If this data is not available, you may base your estimates on data contained in federal Environmental Protection Agency (EPA) publications or through the application of standard engineering techniques.

Estimates must be based on continuous operation at maximum capacity of your project. The Division may, on a case-by-case basis, accept self-imposed limits on your production rates or fuel use - if they are reasonable and enforceable.

You are responsible for all the pollution your project creates. That pollution might come from a specific process or activity that is part of your project or also from general activities associated with the project.

Specific emissions are usually called "point" emissions. They include releases from stacks, vents, and chimneys. General, or diffuse, emissions are usually called "fugitive" emissions. Examples include evaporation from an open container of solvent, loading or unloading of a product into or from a truck or conveyor belt, or the stirring up of road dust at a project site. If fugitive emissions from your project cannot be accurately estimated then it should be stated as such in the permit application.

You must consider all the ways emissions could be produced. If you need assistance, consult the EPA document AP42 ("Compilation of Air Pollutant Emission Factors") or contact the Division. The Division can supply you with information from the document.

Additional information relating to quantifying emissions may be found in Appendix L of this Handbook.

Applicability: Is Your Project Subject To Major Or Minor Review?

The Division divides projects into four basic categories for review purposes: major source, major modification, minor source, and minor modification.

You can determine which category your project fits into by reviewing what contaminants will be released, and in what quantities. Once the emission rates have been selected, the applicant then must perform various calculations in order to determine the size of the new source or modification and its resultant route of review.

The categories are grouped into two review "routes": major sources and major modifications are treated to one review process, and minor sources and minor modifications are treated to another.

These two routes are illustrated on the flow chart. Notice the series of diamonds on the left side of the chart; they represent decisions you must make to determine which review route your project will follow.

If your project is subject to "major" review, you follow the route that begins at Circle 3 and occupies the top two-thirds of the rest of the flow chart. If your project is subject to "minor" review, you follow the route along the bottom one-third of the chart.

Diamond 1 ● Is The Project A New Major Source?

You are a new major source if your project will release 50 tons per year or more of any air contaminant. For lead the threshold is only 5 tons per year.

Diamond 2 ● Is The Project A Major Modification?

The "Regulations" (5-101[66]) define a modification as "any physical change in, or change in the method of operation of, a stationary source which increases the **actual** emission rate of any air contaminant, **regardless of any emission reductions achieved at the source**. A physical change or change in the method of operation does not include routine maintenance, repair and replacement or an increase in the hours of operation or in the production rate, unless such change is prohibited under any condition of a permit..." The Division does view as a modification or new source, however, any reconstruction costing more than 50 percent of what a new piece of comparable equipment would cost.

A major modification is a modification of an existing major source that will result in a significant increase in actual emissions of any air contaminant. "Actual emissions" are a special concept defined in Section 5-101(3) of the "Regulations." Your project is considered a major modification, and therefore subject to the same review as that for a major source, if the planned emission increases for your existing major source are above "significant" levels for contaminants listed in Section 5-101(102) of the "Regulations" or if the emission increases are greater than 50 tons per year of any air contaminant (5 tons for lead), regardless of the present major/minor classification of your source.

Diamond 3 ● Do Minor Modifications Aggregate To A Major Modification?

If your new project is not a major modification, you must determine if all the minor modifications that have been made to your operation since July 1, 1979, plus the proposed modification, add up to a major modification (unless the prior modifications were reviewed previously as major modifications).

In other words, you must calculate the cumulative effect of each modification's additional contaminant releases. Your project is considered a major modification if the modification will be made to an existing major source and any

cumulative contaminant release reaches a "significant" level as found in Section 5-101(102) of the "Regulations."

Also, if any cumulative contaminant release reaches 50 tons per year (5 tons for lead), regardless of whether the modification will be made to an existing major or minor source, it is considered a major modification.

The cumulative increase in emissions from minor modifications is determined using the following method:

Size of modification = A + B - C + D

where:

A: Allowable emissions from new equipment

B: Allowable emissions from existing equipment that is affected by the new modification

C: Actual emissions from equipment included in Step B which either was installed prior to July 1, 1979 or was previously reviewed under 5-502

D: Allowable emissions from all modifications since July 1, 1979 which have never been reviewed under 5-502

Data from two previous years representative of actual emissions rates are used to determine existing levels, not the past permitted levels. The cumulative increase is performed on a pollutant-by-pollutant basis. An example of the cumulative increase calculation may be found in Appendix B of this Handbook.

Circle 3 ● Notify Act 250/FLM/PSB; Analyze Additional Impact

Since you have determined that you are a major pollution source, the Division will contact other public officials who might be involved in the review process. These include district environmental coordinators who are involved with Act 250 permits, state utility regulators who issue Section 248 ("Certificate of Public Good") approvals, and federal land managers (FLM) in charge of any federal "Class I" area. Class I areas are pristine areas protected under federal law where only minimal impacts on air quality are allowed. At present there is one federal Class I area in Vermont: the Lye Brook Wilderness Area in the southern part of the state. There are two other Class I areas that may be important to applicants seeking permits within Vermont: Great Gulf Wilderness Area and Dry River Wilderness Area, both in New Hampshire.

The district environmental officers and the utility regulators may require that you have a permit from the Division before you receive an Act 250 permit or Section 248 certificate. Federal land managers may study your project to see if there will be any significant impact on a Class I area (including those in New Hampshire), particularly if the project is within 100 kilometers of the Class I area.

As a new major pollution source, you are also required to describe any impact contaminants from your project might have on soils, vegetation, and visibility, and what "induced growth" your project might cause. "Induced growth" means any secondary development or construction that might result because of your project.

These additional impact analyses are sent by the Division to district environmental officials and, in the case of power-generation projects, to the state Public Service Board.

Diamond 4 ● Is Contaminant Emitted In Significant Amount?

As a new major source or major modification, you are subject to the requirements in Section 5-502 of the "Regulations." These rules require you perform the following:

1. A most stringent emission rate (MSER) determination for each contaminant that is released in significant amounts.
2. An air quality impact evaluation for particulate matter (total suspended particulate and PM_{10}), sulfur dioxide, lead, oxides of nitrogen, carbon monoxide, and sulfates - if the net increase of any of these contaminants is expected to be 10 tons per year of more. An air quality impact evaluation may also be

required, under Section 5-261, for hazardous air contaminants (listed in Appendix B of the "Regulations").
3. Sometimes (depending on the situation) preconstruction ambient air monitoring to determine existing levels of pollutants.
4. If, after the modification, allowable emissions of nitrogen oxides or volatile organic compounds equal or exceed 100 tons per year and 50 tons per year, respectively, then you may be obligated to obtain legally binding offsetting emission reductions from existing sources.

First determine which contaminants will be released in "significant" amounts. The list of applicable contaminants, and the threshold rates, are found in Section 5-101(102) of the "Regulations." They are as follows:

1. Carbon Monoxide (CO), 50 tpy.
2. Nitrogen Oxides (NO_x), 40 tpy.
3. Sulfur Dioxide (SO_2), 40 tpy.
4. Particulate Matter (PM), 25 tpy.
5. Particulate Matter 10 microns and smaller (PM_{10}), 15 tpy.
6. Volatile Organic Compounds (VOCs), 40 tpy.
7. Lead (Pb), 0.6 tpy.
8. Asbestos, 0.007 tpy.
9. Beryllium (Be), 0.0004 tpy.
10. Mercury (Hg), 0.1 tpy.
11. Vinyl Chloride, 1 tpy.
12. Fluorides, 3 tpy.
13. Sulfuric Acid Mist (H_2SO_4), 7 tpy.
14. Hydrogen Sulfide (H_2S), 10 tpy.
15. Total Reduce Sulfur (including H_2S), 10 tpy.
16. Reduce Sulfur Compounds (including H_2S), 10 tpy.

Some of these contaminants, as well as others, will be addressed later in the application process.

If no contaminants are released in "significant" amounts, proceed to Square 12, described under the section "Nonsignificant Pollutants For Major Sources."

Square 3 ● Conduct Up To One Year Of Ambient Air Monitoring/Meteorological Monitoring

Ambient air monitoring or meteorological monitoring is sometimes required for certain new major source projects. It is important that you determine, well in advance of preparing an application, whether your project is subject to this requirement because monitoring can be required for up to a year. Valuable time can be lost if you start other parts of the permit process without first conducting the monitoring. If pre-construction monitoring is required, it typically must be completed prior to submitting a permit application.

The Division uses EPA guidelines to determine if monitoring will be necessary. Consult Appendix A ("Procedures to Determine if Monitoring Data will be Required for a PSD Application") of EPA publication EPA-450/4-87-007, May 1987 ("Ambient Monitoring Guidelines for Prevention of Significant Deterioration [PSD]). Guidance on performing meteorological monitoring may be found in the EPA document entitled “On-Site Meteorological Program Guidance For Regulatory Modeling Applications” EPA-450/4-87-013, June 1987. Copies of these documents are available from the Division.

Basically, the guidelines mandate monitoring when accurate, current data is not available for a specific site. If your project will emit any contaminant in significant amounts, contact the Division immediately.

Square 4 ● Determine And Apply MSER

One of the overall goals of the air pollution control laws is to prevent emissions, or to reduce them as much as possible. For major new sources, this goal is addressed through a most stringent emission rate (MSER) analysis for each contaminant your project will release in "significant" amounts.

An MSER analysis (as defined in 5-502[3][b] of the "Regulations") describes the range of control technologies which in practice have been used to achieve the lowest emissions rate for a source or process similar to your project. Your project must use the technology that achieves the lowest rate unless you can demonstrate that achieving that rate is not possible because of technical constraints or economic, environmental, or energy costs. Costs are given less weight for sources in"non-attainment" areas, or areas in which air pollution standards are being violated. Also, for major sources of the air contaminants NO_x and VOC, costs are given less weight because of Vermont's inclusion in the "Ozone Transport Region." In no case can emissions from your project exceed any federal or state emission standards.

If the Division finds that achieving the lowest emission rate is not possible, you must then meet the next lowest rate. You are again given the opportunity to demonstrate that this level isn't possible to achieve; if the Division again agrees, then you must go on to the next lowest rate, and so forth, until the lowest achievable emission rate is found.

Several analyses may, in fact, be necessary before the appropriate MSER is determined. Subject to the Division's approval, you may propose a design, equipment, work practice, operational standard, or combination of these where a rate of emissions is not appropriate or measurable.

The Division can supply you with guidance materials on conducting an MSER analysis.

If you are not a new major source but a major modification, you must apply MSER to all equipment - existing or new - that is producing or contributing to the significant increase of contaminants.

Square 5 ● Determine Ambient Air Quality Impact Attributable To The New Source

Once MSER has been determined and applied, you must complete an air quality impact evaluation for each air contaminant that will increase by 10 tons per year or more, as described in Section 5-502(4) of the "Regulations." The evaluation must simulate, or "model," the operation of the new source, taking into account the effects of nearby existing sources, buildings, terrain, meteorological conditions, and other factors affecting the dispersion of the pollutants.

Remember that you are responsible for all the pollution your project creates. That pollution might come from a specific process or activity of the project ("point" emissions) or from general or diffuse project activities ("fugitive" emissions).

You must consider all the ways emissions affect air quality. If you need assistance, consult the EPA regulations [40 CFR Part 51 Appendix W - "Guidelines on Air Quality Models (Revised)"] or contact the Division. The Division has developed a guidance document to assist applicants in the preparation of an air quality impact evaluation ("Air Quality Impact Evaluation Guidelines"). Contact the Division for a copy of this document.

The evaluation must assess three things:

1. Compliance with ambient air quality standards.
2. Compliance with PSD increments.
3. Visibility impact on Class I and state-designated sensitive areas (state-designated sensitive areas are areas above 2,500 feet, as well as the Lye Brook Wilderness Area - see Appendices C, D, and E for maps detailing these areas).

Several types of models and levels of complexity can be used in your evaluation; the types you choose must be appropriate to your project and must meet EPA and Division requirements. **The Division asks that you submit a pre-application modeling protocol before you begin your air quality impact evaluation.** The protocol should outline the procedures and assumptions that will be used in the evaluation. The Division will then review and comment on the modeling protocol. This will help avoid serious problems with the evaluation during the formal review of your application, saving time and money.

For example, in many cases a "background" value may not adequately take into account emissions from nearby sources. In these cases, "interactive" modeling is required to show the combined effect of nearby sources and your new planned source. If the nearby sources were not taken into account in the modeling analysis, the analysis would have to be re-done. Another example is the use of meteorological data. If the Division does not agree that the data used in the analysis is representative of your situation, the analysis must be re-done. In some cases, sources must collect their own meteorological data on-site. See discussion in Square 3 of this document for more information.

If you are not a new major source but a major modification, portions of the ambient air quality evaluation may not be necessary if there is no net increase in the source's allowable emissions of the air contaminants PM_{10}, total suspended particulate, sulfur dioxide, nitrogen dioxide, carbon monoxide, sulfates, and lead. Contact the Division for more information.

Diamond 5 ● Are There Any Violations Of An Ambient Air Quality Standard?

There are both primary and secondary ambient air quality standards. The primary standards define ground-level air quality judged adequate to protect the public health; secondary standards are those judged adequate to protect the public welfare, prevent injury to animal or plant life or property, and prevent unreasonable interference with the enjoyment of life or property. You must apply both the primary and secondary standards to your project. None of the standards may be exceeded.

The ambient air quality standards cover sulfur dioxide, total suspended particulate, PM_{10}, carbon monoxide, nitrogen dioxide, ozone, lead, and sulfates. The standards can be found in Subchapter III of the "Regulations."

If your air quality impact evaluation shows that your project will cause a new violation of an ambient air quality standard, you have the option of trying to obtain more emission reductions.

Diamond 6 ● Are There Any Contributions To An Existing Violation Of An Ambient Air Quality Standard?

If the area your project will impact is already in violation of either a primary or secondary ambient air quality standard, your project's emissions may not significantly contribute to the violation. (Contact the Division to determine which parts of the state are nonattainment areas, or areas already in violation of a standard.) Levels of significance are given in Table 3 of the "Regulations." If you exceed any of these levels, you have the option of going back to review if you can achieve lower emission rates for the release, or of obtaining "offsets" (see Square 6).

Square 6 ● Obtain Emissions Offsets

The "Regulations" (5-502[6]) require that if any emissions from your project significantly contribute to a violation of an ambient air quality standard, or if your project is a major modification of VOCs and/or NOx and total facility emissions of VOCs and NOx will equal or exceed 50 tpy and 100 tpy, respectively, you must secure legally binding "offsetting emission reductions" from existing sources in the same area or affecting the same area. The criteria for acceptable emission reductions are identified in Section 5-502[6][c] of the "Regulations."

This means room can be made, or may have to be made in the case of VOCs and NOx, for your new emissions by having existing polluters reduce their emissions. It is necessary to obtain offsets even if you must purchase or obtain them from existing pollution sources not under your ownership.

Diamond 6a ● NO_x Emissions $\geq$ 100 tpy and/or VOC Emissions $\geq$ 50 tpy

Recognizing the regional influence of pollution on the formation of ground-level ozone (also commonly called, smog) in the northeast, Congress developed the 1990 Clean Air Act Amendments to address this problem on a regional basis. The 1990 Clean Air Act Amendments created the "Ozone Transport Region," which includes Vermont, and promulgated standards and requirements that apply within this region. As a consequence of this designation, Vermont is treated as a "moderate" non-attainment area for ozone. Emissions of NO_x and VOCs have been identified as primary culprits leading to the formation of ground-level ozone. The 1990 Clean Air Act Amendments require a reduction of these pollutants in the region. Therefore, regardless of whether or not your project will cause or contribute to a violation of an ambient air quality standard or PSD increment, you may be required to secure legally binding offsetting emissions for NO_x and/or VOCs. You will be required to obtain legally binding offsetting reductions from existing sources if your project satifies the following:

1. your project will produce a significant increase of NO_x and total facility emissions of NO_x will equal or exceed 100 tons per year; and/or

2. your project will produce a significant increase of VOCs and total facility emissions of VOCs will equal or exceed 50 tons per year.

In addition to offsetting your project's total emissions increase, you must also secure offsets to reduce existing emissions by another 15% (see Square 6).

Square 7 ● Certify That Existing Sources Are In Compliance

The "Regulations" (5-502[6][a][ii] and 5-502[6][b][iii]) require that if you must obtain emissions offsets and you own or operate any other existing projects that are subject to the state's air pollution control laws, you must also certify that these projects are complying with all applicable air pollution rules or are meeting compliance schedules contained in any administrative order or court decree. For more specific information, contact the Division.

Square 8 ● Demonstrate Compliance With Incremental Allocation Program

Once emissions from your project have been shown to conform to ambient air quality standards, the "Regulations" (5-502[4c and 5]) require that you must show that your project will not take up more than a set share of the remaining clean air. The contaminants for which you must demonstrate compliance are PM_{10}, sulfur dioxide, and nitrogen dioxide. Annual releases from your project can't exceed more than 25 percent of the remaining annual PSD increment, and short-term releases can't exceed more than 75 percent of the remaining 24-hour PSD increment. The remaining increments are determined by the secretary of the Agency of Natural Resources; total increments are given in Table 2 ("Prevention of Significant Deterioration Increments") of the "Regulations."

When you have demonstrated your project will comply with the increment allocation program, the appropriate portion of the increment will be allocated to you. Local and regional participation is sometimes sought by the Division before the allocation is made, however.

Square 9 ● Demonstrate Acceptable Visibility Impacts

The increase in emissions from your project may not cause an adverse impact on visibility in any federal Class I area or any sensitive area, and may not interfere with maintaining or achieving statewide visibility standards. You must submit this demonstration to the Division and to the appropriate federal land manager at least 60 days prior to the close of the public comment period on your project. The federal Class I areas in Vermont and New Hampshire are Lye Brook Wilderness Area (Vermont), and Great Gulf Wilderness Area and Dry River Wilderness Area (New Hampshire). A sensitive area is any area in Vermont above 2,500 feet.

Square 10 ● Demonstrate Compliance With Hazardous Air Contaminant Requirements

Appendix B of the "Regulations" lists the hazardous air contaminants whose releases into the air are limited. (The list is periodically updated, so contact the Division to make sure you have the most current list.)

The guidance document "Control of Hazardous Air Contaminants," which is available from the Division, describes in more detail this entire aspect of the permitting process for HAC releases. Note that the document lists as sources subject to the hazardous air contaminant regulations (Section 5-261 of the "Regulations") stationary industrial, commercial, or institutional sources which emit air contaminants into the ambient air (except fuel-burning equipment that combusts "virgin" liquid or gaseous fuel), fuel-burning equipment which combusts solid fuel (except those installed or constructed prior to January 1, 1993), municipal solid waste incinerators or resource recovery facilities, some waste oil-burning equipment, and some types of open burning. The exceptions are, or will be, covered under special rules.

Here is an outline how you must meet the requirements of this part of the air pollution control laws:

First determine if your project will be releasing any hazardous air contaminant. If it will, you must next quantify the releases. This is done using the most appropriate of several methods: mass balance, emission factors, emission test results from similar sources, and emission testing. The method is obviously different for a planned new source versus an existing source.

The type and quantity of the contaminants being emitted will determine the level of review that is necessary for your project. There are three levels.

Level 1 review is applied if all hazardous emissions are below the "Action Level" identified for each contaminant in Appendix C of the "Regulations." Conditions requiring you to track emissions once your project is operating might be imposed in your permit, but there is no further review of hazardous air contaminants during the permitting process.

Level 2 review is applied if any emission is above the contaminant's Action Level. You must achieve the hazardous most stringent emission rate (HMSER) for each contaminant. HMSER is the lowest rate of emissions achievable for a source based on actual practice, using either control technology, pollution prevention, or other emission reduction techniques. If this rate is below the Action Level, no further review is necessary. It should be noted, however, that Action Levels are not simply standards which limit emissions; they are levels that trigger review, and the goal of the review is to limit emissions as much as possible - not just stay within the Action Levels.

As with MSER, applicants able to demonstrate that HMSER cannot be achieved because of technical constraints or cost may use the techniques that produce the next lowest emission rate. However, at no time can emissions cause ambient levels in excess of any Hazardous Ambient Air Standard (HAAS) or Stationary Source Hazardous Air Impact Standard (SSHAIS) or federal or state ambient air quality standards. The HAAS and/or SSHAIS are given in Appendix C of the "Regulations"; federal ambient air quality standards are given in Title 40 of the Code of Federal Regulations, Part 50, and state ambient air quality standards are given in Subchapter III of the "Regulations."

Various conditions may be set on a permit under Level 2 review, including reporting requirements, equipment maintenance requirements, emission standards, and emission testing requirements.

Level 3 review is applied if, after achieving HMSER, the emission of any hazardous contaminant still exceeds the contaminant's Action Level. You will likely be required to perform an air quality impact evaluation to demonstrate that the allowable emissions will not cause or contribute to the exceeding of any HAAS or SSHAIS. If ambient data is available, you must add your new emissions to the existing ambient levels when demonstrating compliance with a HAAS. Existing ambient levels are determined by contacting the Division to see if it has any appropriate existing data, or by pre-construction monitoring. The air quality impact evaluation must be performed in accordance with the "Air Quality Impact Evaluation Guidance Document," which is available from the Division.

If the emission does cause or contribute to the exceeding of a HAAS or SSHAIS, you must then perform more refined atmospheric dispersion modeling. The modeling must demonstrate that your project's emissions won't cause or contribute to the exceeding of any HAAS or SSHAIS. The dispersion modeling must meet requirements in the "Air Quality Impact Evaluation Guidance Document." Any permit issued under Level 3 could, as with other reviews, carry certain conditions.

If - after applying HMSER, performing refined atmospheric dispersion modeling, and exploring all emission reduction alternatives - emissions from your project still cause or contribute to the exceeding of any HAAS or SSHAIS, you will not be granted a permit. In this case, you may be able to request a variance from the Air Quality Variance Board, but only after a permit decision is made. If you do request a variance, you must notify a number of individuals and official bodies (see "Regulations" 5-261[8]). Variances are valid for specific time periods.

The HMSER for any hazardous contaminants released by your project remains in effect for five years, unless the project is modified or reconstructed. At the end of five years the determination expires unless you demonstrate that the rate still represents HMSER.

Square 11 ● Submit Completed Application To The Division

Once you have completed your application, submit it along with the appropriate processing fee to the Air Pollution Control Division of the Agency of Natural Resources. The fee for a major source/major modification permit application is $11,000.

Circle 4 ● Preliminary Division Determination

Upon receipt of your application and fee, the Division must first determine if the application is administratively complete. If it is not, the Division will request additional information. The Division will notice the receipt of an administratively complete application in a newspaper of general circulation in the area where the source will be located. Once the application has been determined administratively complete, the Division may commence its review of the technical merits of the application. If the application is found to be deficient from a technical standpoint, the Division may request additional information.

Once the Division determines that the application is technically complete, it will notify you and begin the process of preparing (or denying) a permit, and public notification.

Circle 5 ● Public Comment Period

Within 30 days of determining that the application is technically complete, the Division will propose to issue or deny your project a permit, and must publish public notice of any proposed permit. The public may usually comment on the proposed action for a minimum period of 30 days from the date of the notice. The application, and other relevant documents, such as the Division's review and proposed permit and an analysis from a federal land manager, will be available for public inspection in the Division office and in the area where your project will be located.

Circle 6 ● Public Informational Meeting

A public informational meeting will be held within the comment period in the area where your project will be located.

Circle 7 ● Final Determination

Upon completion of the public comment period, the Division must assume it has received all relevant information on the proposed project, and the application is closed for submission of new information.

Generally, within 10 days of the close of the public comment period, the secretary of the Agency of Natural Resources will issue or deny a permit for your project. The Agency must take into account all information and comments that have been submitted during the permitting process.

Nonsignificant Pollutants For Major Sources

If you have determined that your project is a major source but no contaminants are emitted in significant amounts, follow the "upper" route from Diamond 4 then rejoin the "middle" route at Square 5.

Square 12 ● Certify Compliance With Emissions Limitations

Many emissions are limited in Subchapter II of the "Regulations." You must show your project will comply with all limitations.

Among the most important of the emissions, and their limitations, are these:

- Visible air contaminants. For any period, or aggregate of periods, six minutes or more, the contaminants may not have a shade, or density, greater than 20 percent opacity (No. 1 of the Ringelmann Chart). At no time may visible emissions exceed 60 percent opacity. There are some exceptions for wood fuel-burning equipment. Consult the "Regulations" (5-211[3]) for more information.

- Sulfur in fuel. To control sulfur dioxide emissions, sulfur in fuels is limited to 2 percent by weight.

- Waste oil. The burning of waste oil that meets certain limits is allowed, but there are restrictions. Consult the "Regulations" (5-221[2]) for more information.

- Particulate matter. The release of particulate matter from industrial processes, incinerators, fuel-burning equipment, rock crushers, and asphalt concrete plants is limited. Consult the "Regulations" (5-231) for specific limitations.

- Contaminants causing a nuisance or having an objectionable odor. The release of any contaminant causing injury, detriment, a nuisance, or annoyance to any considerable number of people or to the public, or to businesses or property, is prohibited. Odors must be controlled through incineration or a method that is just as effective.

- Nitrogen oxides. Limitations on the release of nitrogen oxides vary depending on fuel type and the size of fuel-burning equipment used. Consult the "Regulations" (5-252) for more information.

- Sulfur dioxide. Sulfur dioxide releases from equipment burning liquid and solid fossil fuels are limited based on the size of the equipment. Consult the "Regulations" (5-252) for more information.

- Volatile organic compounds. Control devices or the use of low-VOC emitting processes/products may be needed to prevent the release of volatile organic compounds that are being stored, used or applied in a process. The release of such compounds from a variety of sources must also be controlled. Consult the "Regulations" (5-253) for more information.

In addition to the state requirements contained under Subchapter II of the "Regulations," you must also demonstrate compliance with any applicable federal regulation contained in 40 CFR Parts 60, 61 and 63. A list of the various federal regulations may be found in Appendix F and G of this Handbook.

Once you have certified compliance with emissions limitations, return to the "middle" route on the flow chart, at Square 5.

Minor Sources And Modifications

If you have determined that your project is not subject to review as a major source or major modification, follow the "lower" route from Diamond 3.

Square 13 ● Certify Compliance With Emissions Limitations

Subchapter II of the "Regulations" limits a great many practices and emissions that affect air quality. You must demonstrate compliance with these limitations.

A more detailed discussion of the limitations can be found in the section of this guide under Square 12. But here is a list of some of the most important of the emissions that are limited: visible air contaminants, sulfur in fuel, waste oil, particulate matter, contaminants causing a nuisance or having an objectionable odor, nitrogen oxides, sulfur dioxide, volatile organic compounds, and hazardous air contaminants.

In addition to the state requirements contained under Subchapter II of the "Regulations," you must also demonstrate compliance with any applicable federal regulation contained in 40 CFR Parts 60, 61 and 63. A list of the various federal regulations may be found in Appendix F and G of this Handbook.

Square 14 ● Determine Ambient Air Quality Impact Attributable To The New Source

Once you have certified compliance with emissions limitations, you must complete an air quality impact evaluation for each air contaminant emitted at a rate of 10 tons per year or more.

If you are not a new source but a modification, an ambient air quality evaluation isn't necessary if there is no net increase of 10 tons per year or more in the source's allowable emissions of the air contaminants PM_{10}, total suspended particulate, sulfur dioxide, nitrogen dioxide, carbon monoxide, sulfates, and lead.

For more information on conducting an air quality impact evaluation, see Square 5.

Diamond 7 ● Will Source Cause Or Contribute To A Violation Of An Ambient Air Quality Standard Or PSD Increment, Or Impact A Class I Area?

If you performed an air quality impact evaluation and the results show that your project will cause or significantly contribute to a violation of any ambient air quality standard or PSD (prevention of significant deterioration) increment, or impact a Class I area, you must apply most stringent emission rate (MSER) technology to reduce the emissions and are treated as a major source.

If you did not have to perform an evaluation, or if the results of your evaluation show that your project will not cause or contribute to a violation of any ambient air quality standard or PSD increment, nor impact a Class I area, proceed to Square 15.

Ambient air quality standards and PSD increment reviews are described more fully in the section of this guide under Diamond 5 and Diamond 6. The standards cover sulfur dioxide, total suspended particulate, PM_{10}, carbon monoxide, nitrogen dioxide, ozone, lead, and sulfates.

A Class I area is a specially designated federal area overseen by a federal land manager. There is one in Vermont, the Lye Brook Wilderness Area, and two in New Hampshire, Great Gulf and Dry River wilderness areas.

A source is considered to impact a Class I area if the air quality impact evaluation shows that emissions will cause impacts greater than 1 microgram per cubic meter (24-hour average). If a source is located more than 100 kilometers from a Class I area, it is assumed the impact of the source's emissions is negligible.

Square 15 ● Demonstrate Compliance With Hazardous Air Contaminant Requirements

A great many substances are toxic if released in sufficient quantity, and their emissions are therefore regulated.

A list of hazardous air contaminants is given in Appendix B of the "Regulations." The list is periodically updated, so contact the Division to make sure you have the most current list.

A detailed discussion of how you must demonstrate compliance with the hazardous air contaminant regulations is found in the section of this guide under Square 10.

Square 16 ● Submit Completed Application

Once you have completed your application, submit it along with the appropriate processing fee to the Air Pollution Control Division of the Agency of Natural Resources. The base fee for a minor source permit is $585. Additionally, supplemental fees may be required to be paid prior to final issuance of a permit, based on the level of application review necessary by the Division or the requirements of the permit.

The schedule for supplemental fees is as follows:

Engineering Review	$1,460
Air Quality Impact Analysis	
Screening Model	$ 585
Refined Model	$1,170
Observe and Review Emissions Tests	$1,750
Audit Performance of Continuous Emissions Monitoring	$1,750
Implement Public Comment Requirements	$ 290
Audit Performance of Ambient Air Monitoring	$1,750

The Division has a procedure which defines when such supplemental fees are necessary. Contact the Division for further information.

Circle 8 ● Preliminary Division Determination

Upon receipt of your application and fee, the Division must first determine if the application is administratively complete. If it is not, the Division will request additional information. The Division will notice the receipt of an administratively complete application in a newspaper of general circulation in the area where the source will be located. Once the application has been determined administratively complete, then the Division may commence its review of the technical merits of the application. If the application is found to be deficient from a technical standpoint, then the Division may request additional information.

Once the Division determines that the application is technically complete, it will notify you and begin the process of review and, in some cases, public notification.

Circle 9 ● Public Comments And Informational Meeting

Within 30 days of determining that the application is technically complete, the Division will propose to issue or deny your project a permit, and may publish public notice of any proposed permit. New public participation requirements have been adopted in 10 VSA §556 that require public comment for new projects or projects resulting in an increase in allowable emissions of 10 tons per year or more (in aggregate). Public participation for projects with emissions below this level remain at the discretion of the Division. The public may usually comment on the proposed action for a minimum period of 30 days from the date of the notice. If public comment is solicited, the Division will provide the public with the opportunity to request an informational meeting on your project. If a request for an informational meeting is received, the Division will issue a second public notice (in a local newspaper with general circulation in the area of the project) fourteen days in advance of a scheduled informational meeting. Also, if sufficient public interest exists, the Division may on its own decide to require an informational meeting as part of the original public notice. If public comments are solicited, the application, and other relevant documents such as the Division's review and proposed permit and an analysis from a federal land manager, will be available for public inspection in the Division office and possibly also in the area where your project will be located.

Any required public informational meeting will be held within the comment period in the area where your project will be located.

Circle 10 ● Final Determination

Unless public comments are solicited or a public meeting held, the secretary of the Agency of Natural Resources generally will issue or deny a permit for your project within 30 days of the Division's having notified you that the application is technically complete. If there is public input, a determination will usually be made within 10 days of the close of the public comment period.

POST-CONSTRUCTION PERMIT PROCESS ISSUES

The decision to grant a permit ends one process but begins another. Whereas the permitting requirements focus on the design and possible impact of your proposed project, the permit you've been issued and the need to continue meeting Air Pollution Control Regulations shift your focus to the construction and operation of the facility.

The first thing to do once you have received a permit is to read the final version to ensure that you understand your responsibilities. Construction may begin once all other necessary approvals have been secured.

Remember to incorporate into the scheduling process all required notices and reports to the Division.

The permit may require that you conduct emission compliance testing (also known as "stack testing") before commencing routine operation. Planning and coordination with the Division are essential to complete this requirement successfully. Consult the conditions of your permit and plan accordingly.

Permits generally contain reporting and operational conditions. Be familiar with them; consult the Regulations. Remember, compliance is your responsibility.

In addition to the conditions set forth in the permit, the Division has the general authority to require reports when necessary and to inspect your facility on a routine basis, with or without prior notice.

With limited exceptions, most permitted air pollution sources are required to register annually with the Division. See the requirements in Subchapter VIII of the Regulations for more information.

Modifications of the Permit

The permit may need to be amended if you plan to alter your operations and the change satisfies the definition of a "modification" (Section 5-101). An application and fee must be submitted to the Agency consistent with the requirements of Subchapter V of the Regulations. See Square 1 of this Handbook for more information.

Administrative amendments of the permit may be made upon request in writing to the Agency. Administrative amendments include modifications of the permit to correct typographical errors, reflect changes in ownership, and other miscellaneous changes to the conditions of the permit which do not qualify as a modification (Section 5-101). A $60.00 fee must accompany a request for an administrative amendment of the permit.

Operating Permits

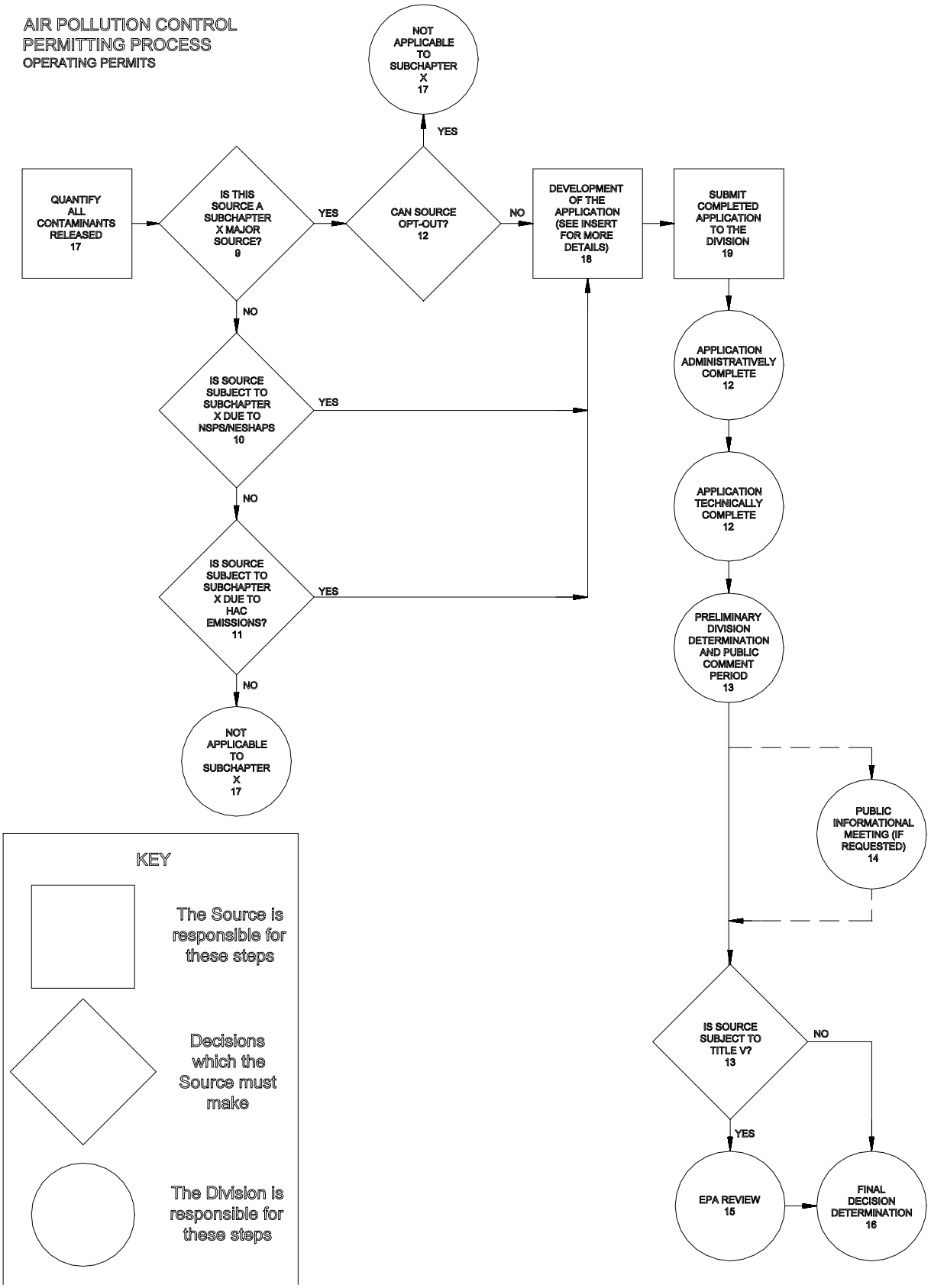
Your project may also be subject to the operating permit program. See the next section of this Handbook for information on this process.

If appropriate, the Agency may process an application as a combined permit application that addresses both requirements for a construction and operating permit. **Any application for a combined permit must satisfy the application requirements of each program.** The combining of the permit review may assist in streamlining the permitting process, since the public participation requirements of each program may be addressed together. However, it should be noted that for Title V subject sources, issuance of the construction permit may be delayed as a result of EPA review of the operating permit and their ability to object to the issuance of an operating permit under Title V of the Clean Air Act.

OPERATING PERMITS

AIR POLLUTION CONTROL PERMITTING PROCESS

OPERATING PERMITS



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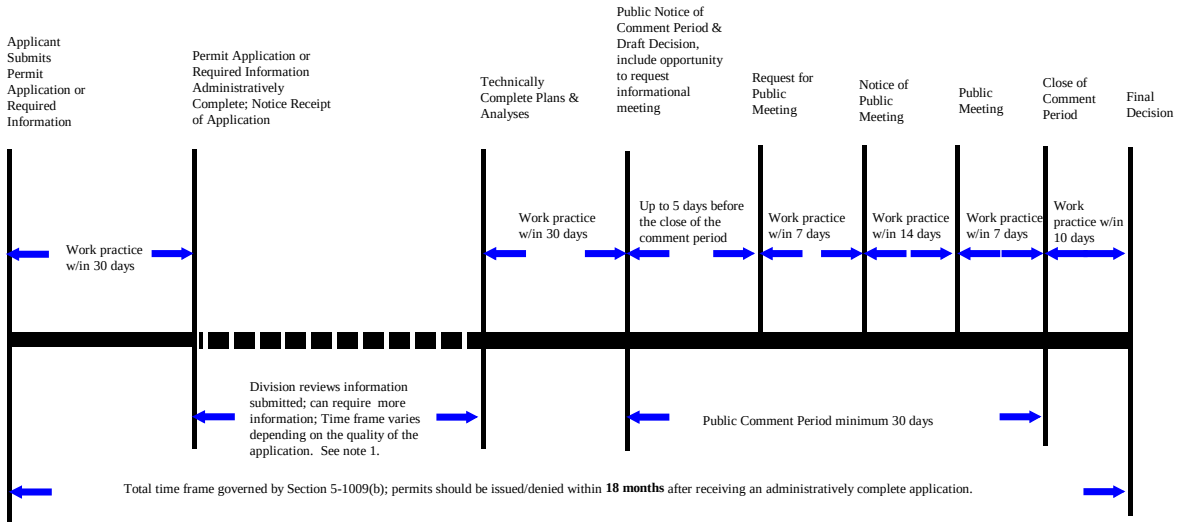
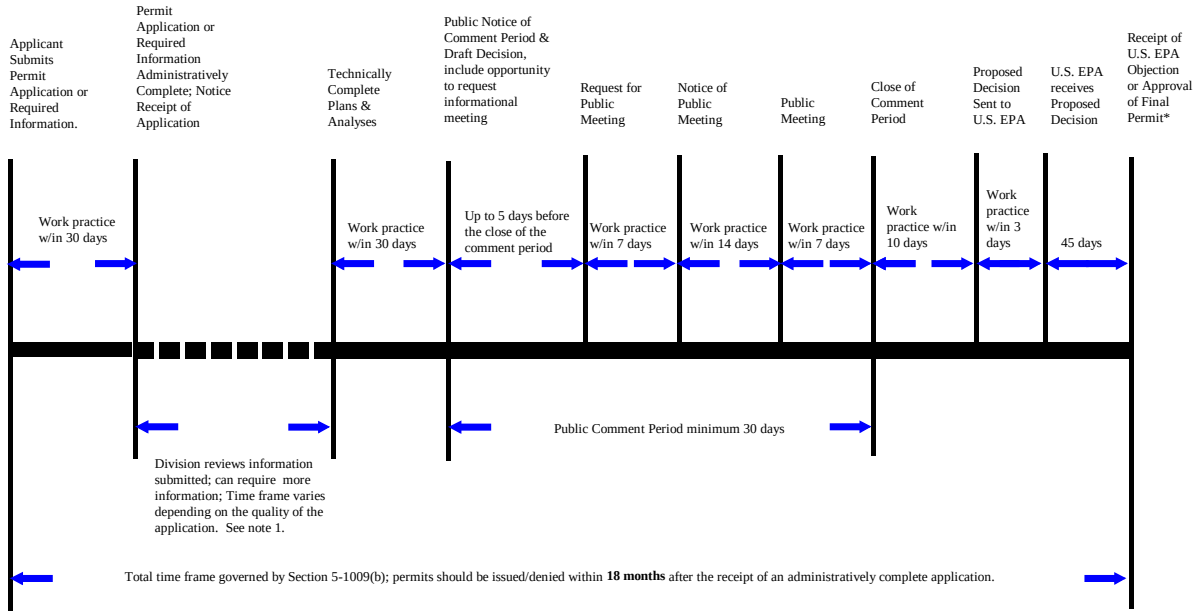
Operating Permit Process Time Line

Non-Title V Subject Source (e.g., Subchapter X Major Source)



Note 1: The Division may request additional information prior to declaring an application administratively or technically complete. The applicant must submit the requested information within 30 days of notification by the Division that such information is necessary or within such other period of time specified by the Division in writing. An application is automatically deemed administratively complete within 60 days of receipt by the Division, unless the Division requests additional information. An applicant who fails to submit any relevant facts or who has submitted incorrect information in an application must, upon becoming aware of such failure or incorrect submittal, submit supplementary facts or corrected information within 5 working days or within such other period specified in writing by the Division. In addition, an applicant will provide additional information necessary to address any requirements that become applicable to the subject source after the date it files an administratively complete application but prior to the release of a draft operating permit.

Title V Subject Source



* See 40 CFR Part 70 §70.8 for more information regarding time frame and sequence of events for permits involving a U.S. EPA objection.

Note 1: The Division may request additional information prior to declaring an application administratively or technically complete. The applicant must submit the requested information within 30 days of notification by the Division that such information is necessary or within such other period of time specified by the Division in writing. An application is automatically deemed administratively complete within 60 days of receipt by the Division, unless the Division requests additional information. An applicant who fails to submit any relevant facts or who has submitted incorrect information in an application must, upon becoming aware of such failure or incorrect submittal, submit supplementary facts or corrected information within 5 working days or within such other period specified in writing by the Division. In addition, an applicant will provide additional information necessary to address any requirements that become applicable to the subject source after the date it files an administratively complete application but prior to the release of a draft operating permit.

THE AIR POLLUTION CONTROL OPERATING PERMIT PROCESS

Who Must Apply?

Operating permits are issued to establish a source's ongoing compliance with the requirements of state and federal air pollution control regulations. Activities which satisfy the below listed criteria are subject to the operating permit requirements of Subchapter X of the "Regulations:"

1. Sources engaged in operations or activities listed in Section 5-401 of the "Regulations" that have the potential to emit ten (10) tons of all air contaminants per year or more;
2. Sources applicable to the federal New Source Performance Standard ("NSPS");
3. Sources applicable to the federal National Emission Standard for Hazardous Air Pollutants ("NESHAP"); or,
4. Sources subject to the requirements of Section 5-261 of the "Regulations" at the discretion of the Secretary of the Agency of Natural Resources. The Secretary's discretion is based on whether or not the toxicity and quantity of hazardous air contaminants emitted may adversely affect susceptible populations. Additional information on these criteria may be found under Diamond 11 of this Handbook.

When Must You Apply?

Initially, all subject sources must submit an administratively complete application by March 31, 1996.

New sources applicable to Subchapter X must submit an operating permit application within twelve (12) months after the commencement of operations. Note that for sources required to obtain a construction permit as well as an operating permit, in most cases the two may be combined into one document which serves both purposes.

For a renewal of the operating permit, an operating permit application must be submitted twelve (12) months prior to the date of operating permit expiration.

Square 17 ● Quantify All Contaminants Released

If you determine that your source requires an operating permit, you should contact the Division for an up-to-date list of the information necessary for an operating permit application. A list of these requirements is included with this Handbook, but you should contact the Division to ensure it is the most recent list. The most important part of this information will be a list of the types and amounts of air contaminants your source will release to the outside air.

You are obligated under Section 5-1006(3) of the "Regulations" to estimate allowable emissions of all air contaminants generated by your source. Activities which are considered insignificant activities or activities exempted under Subchapter X of the "Regulations" need not be considered for establishing applicability to Subchapter X of the "Regulations." Insignificant activities are listed in Section 5-1002(h) of the "Regulations." Activities exempted under Subchapter X of the "Regulations" are identified under Section 5-1003(b) of the "Regulations." However, many insignificant activities must be included for the purposes of establishing applicability to other state and federal requirements. Consult the EPA guidance document "White Paper for Streamlined Development of Part 70 Permit Applications" for more information.

Note allowable emissions must be calculated assuming the processes and equipment are operated at their maximum possible capacity and at continuous operation (8760 hours per year), unless the source operates under enforceable limitations on the operation. Enforceable limitations include: restrictions that exist in a construction permit issued under Subchapter V of the "Regulations," state or federal standards, or other limiting regulation. An applicant may propose to place a restriction on the operation of the source in order to limit the allowable emissions from the source. If the Division accepts such a restriction, such limitation may be incorporated by the Division as a condition of the

operating permit. Acceptability of the operating restriction is based on a determination that the restriction may be enforced in a practical manner.

A more detailed discussion of quantifying emissions can be found in the section of this guide under Square 2.

Diamond 9 ● Is Source A Subchapter X Major Source?

You are a Subchapter X Major Source if your activities will release 10 tons per year or more of all air contaminants, excluding emissions from insignificant activities (see Section 5-1002[h] of the "Regulations") and those activities exempted from Subchapter X of the "Regulations" (see Section 5-1003[b] of the "Regulations"). Air contaminant generating activities are listed in Section 5-401 of the “Regulations.”

Diamond 10 ● Is Source Subject to Subchapter X Due to Applicability to Federal NSPS/NESHAPs?

The New Source Performance Standards ("NSPS") are contained in Title 40 CFR Part 60. The National Emission Standards for Hazardous Air Pollutants ("NESHAPs") are contained in Title 40 CFR Parts 61 and 63. The NSPS and NESHAP are listed in Appendix F and G of this Handbook. If your activity is subject to a NSPS or NESHAP, you are subject to the operating permit requirements contained in Subchapter X of the "Regulations." Additionally, the EPA plans to adopt additional NESHAPs in the future. Appendix G of this Handbook contains a list of the proposed and planned NESHAPs.

Diamond 11 ● Is Source Subject to Subchapter X Due to Hazardous Air Contaminant Emissions?

A stationary source subject to Section 5-261 of the "Regulations" may be required to obtain an operating permit under Subchapter X of the "Regulations" at the discretion of the Secretary of the Agency of Natural Resources (see Section 5-1003[a][5] of the "Regulations"). The Secretary's discretion is based on a determination that the toxicity and quantity of hazardous air contaminants emitted may adversely affect susceptible populations. The Division has adopted guidance to determine when a source will be subject to the operating permit requirements using the above criteria. The Division guidance is summarized as follows:

1. Allowable emissions of a Category I hazardous air contaminant greater than its Action Level contained in Appendix C of the "Regulations" and a sensitive receptor located within 200 meters of the point of emission;

2. Allowable emissions of a Category II hazardous air contaminant greater than 2 times its Action Level contained in Appendix C of the "Regulations" and a sensitive receptor located within 200 meters of the point of emission; or,

3. Allowable emissions of a Category III hazardous air contaminant greater than 3 times its Action Level contained in Appendix C of the "Regulations" and a sensitive receptor located within 200 meters of the point of emission.

The term, sensitive receptor, includes a private residence, day care facility, school, hospital, infirmary, or nursing home.

Diamond 12 ● Can the Source Limit Allowable Emissions to Opt-Out of Subchapter X?

Section 5-1016 of the "Regulations" provides an opportunity for sources with actual emissions of less than 10 tons per year, which are required to obtain an operating permit solely because their allowable emissions are greater than 10 tons per year, to avoid the need to secure an operating permit provided the source meets specific criteria. These criteria are as follows:

1. The source submits a "Limiting Allowable Emissions Operating Permit Opt-Out Application" to the Division which demonstrates that actual emissions during the preceding calendar year did not exceed 10 tons;

2. The source is not considered a Title V Subject Source (see Section 5-1002[r] of the "Regulations");

3. The source is not subject to a NSPS or a NESHAP (see Diamond 11 of this Handbook); and

4. The source is not subject to Subchapter X of the "Regulations" because of hazardous air contaminant emissions (see Diamond 11 of this Handbook).

If the Division approves the opt-out request, you will be required to submit an annual report to the Division certifying that emissions from your source for the previous year were below 10 tons per year. The Division reserves the right to approve the opt-out request, based on a consideration of the actual emissions. Should the Division believe there is sufficient potential for actual emissions to exceed 10 tons per year during any given year, then the opt-out request may be rejected and you will be required to obtain an operating permit. Additionally, should an opt-out request be approved, and actual emissions are projected to exceed 10 tons per year, you will be required to obtain an operating permit before the source can increase emissions above 10 tons per year.

To avoid confusion concerning limitations, the Division recommends that if your source is limited by an existing construction permit (which grants you the ability to generate emissions of 10 tons per year or more) that you apply for an operating permit regardless of the level of actual emissions.

Square 18 ● Development of the Application

The requirements for an administratively and technically complete operating permit application are identified in Section 5-1006 of the "Regulations." The Division has prepared an outline of the operating permit application requirements and they are included with this Handbook. Check with the Division to make sure you have the latest version of the operating permit application requirements. Rather than repeat these requirements in detail, this section of the Handbook will focus on specific areas of application development where you, as the applicant, should pay special attention.

Description of the Source - Provide a narrative description of the activities that are performed at the source. Identify the points or areas where emissions are generated. Include a process flow diagram, information on the processing rates, raw material inputs, and the operational parameters that are monitored to ensure the process is functioning properly. Additionally, include equipment specifications for the various processes. Appendix A of the **application requirements** contains a specific list of equipment specifications that the Division has prepared for common equipment used in Vermont. Consult this list to see if your equipment is included.

Applicable Requirements - Applicable requirements include: any condition or term of a construction permit, the requirements of Subchapters II, V, VIII, IX, and X of the "Regulations," and any applicable federal regulation. Federal regulations include: Sections 111, 112, 114[a][3], 129, 183, and 504[b] of the Clean Air Act, and Titles IV and VI of the Clean Air Act (including the regulations promulgated thereunder).

Section 111 of the Clean Air Act identifies the NSPS (see Appendix F of this Handbook for a list of the NSPS). The text of the NSPS may be found in 40 CFR Part 60.

Section 112 of the Clean Air Act identifies the NESHAPs (see Appendices F and G of this Handbook for a list of the NESHAPs). The text of the NESHAPs may be found in 40 CFR Part 61 and Part 63.

Title IV of the Clean Air Act contains the acid rain program which applies to utility-sized steam electric generating units. The text of the acid rain program may be found in 40 CFR Part 72 through Part 79.

Section 504[b] and Section 114[a][3] of the Clean Air Act identify the requirements for enhanced monitoring. Enhanced monitoring is required at any source that is applicable to Title V of the Clean Air Act. Title V sources include: major sources with allowable VOC emissions of 50 tons per year or greater; sources with 100 tons per year or greater of nitrogen oxides, carbon monoxide, sulfur dioxide, or particulate matter; and sources applicable to the NSPS or NESHAPs. Contact the Division for additional information on the enhanced monitoring requirements. The text of the enhanced monitoring program will be included in 40 CFR Part 64.

Section 183 of the Clean Air Act contains the federal ozone measures. These measures are to be implemented in order to bring areas of the U.S. into attainment with the federal ozone air quality standard. Since Vermont is in the "Ozone Transport Region," many of these requirements will apply. These requirements relate primarily to VOC standards on a source category basis. Appendix I of this Handbook contains more information on the requirements of Section 183 of the Clean Air Act.

Title VI of the Clean Air Act contains the requirements promulgated to protect stratospheric ozone. It establishes dates for the phase-out of certain federally designated Class I and Class II chlorofluorocarbons (CFCs). Sections 574 and 574a of Vermont Statutes Annotated regulate the phaseout of ozone depleting chemicals also. This state phaseout schedule is more stringent than the federal schedule.

Section 129 of the Clean Air Act contains regulations governing solid waste incineration.

Alternative Operating Scenarios - The operating permit allows for some flexibility in source operation. Alternative operating scenarios is one area in the air pollution control permit program where such flexibility may exist in the operating permit. Your source will be able to operate using whatever scenarios are defined in the operating permit, provided the scenario does not qualify as a modification under Subchapter V (the construction permit process). You will be able to switch your operations from one scenario to another without the need to modify your permit.

Compliance Plan/Compliance Certification - You are required to identify and describe applicable requirements for your source. In addition, you must include a description of the source's compliance status with each applicable requirement, and a method for certification of compliance. For requirements with which the source is not in compliance, the compliance plan must include a schedule for getting into compliance and a schedule for submission of certified progress reports documenting progress towards achieving compliance. For requirements with which the source is in compliance, the compliance plan must include a statement that the source will continue to comply with the applicable requirement. (Appendix J of this Handbook contains a sample format for the compliance plan.) At a minimum, certification of compliance is required annually.

Demonstrate Compliance with Hazardous Air Contaminant Requirements - See Square 10 of this Handbook to find a description of how to demonstrate compliance with Section 5-261 of the "Regulations." It is important to note that HMSER must be at least as stringent as the federal "maximum achieveable control technology" (MACT) standard for your source.

Reasonably Available Control Technology - If your activity is a Subchapter X major source, then you are required under Section 5-1010 of the "Regulations," to install, maintain, and use reasonably available control technology (RACT) to limit the discharge of air contaminants from each process unit and fuel burning equipment unit at your source, if required by the conditions of an operating permit. RACT is defined in Section 5-101[90] of the "Regulations." Basically, RACT is the same as MSER (see Square 4 of this Handbook), but with more emphasis on “reasonable cost” of the control option. The Division will determine RACT on a case-by-case basis, and may require you to submit information prior to taking final action in order to establish whether RACT can be achieved by your source. Note a process unit or fuel burning equipment unit is considered to have achieved RACT under Section 5-1010 of the "Regulations," if the unit has achieved RACT for VOCs (see Section 5-253.20 of the "Regulations") or nitrogen oxides (see Section 5-251[3] of the "Regulations"), or MSER within 10 years prior to the operating permit

application being deemed administratively complete.

Permit Shield - You may request a permit shield from specific state and federal regulations and standards if they are **not** applicable to your source. Such shield may have legal effect only if it satisfies certain conditions (see Section 5-1015[a][11][i] of the "Regulations"). Additionally, the shield does not prohibit the Division from reopening and amending the operating permit to correct an erroneous permit shield. Other limitations with the permit shield provisions are listed in Section 5-1015[a][11] of the "Regulations."

Certification of Truth, Accuracy, and Completeness - You are obligated, as part of a complete application, to have a "responsible official" sign a certification of truth, accuracy, and completeness form. Responsible official is defined in Section 5-1002[n] of the "Regulations."

Square 19 ● Submit Completed Application to the Division

Once you have completed your operating permit application, submit it to the Air Pollution Control Division of the Agency of Natural Resources. There are no application fees associated with the operating permit program.

Circle 11 ● Application Administratively Complete

Upon receipt of your application, the Division must first determine if the application is administratively complete. If it is not, the Division will request additional information. The Division will notice an administratively complete application within 30 days of its receipt in a newspaper of general circulation in the area where the source will be located. If your source is a Title V subject source, the Division will also notify any affected states.

Unless the Division determines an application is not administratively complete, an application will automatically be considered administratively complete sixty (60) days after receipt of the application or sixty (60) days after the Division's last request for additional information regarding the application, whichever is later.

Circle 12 ● Application Technically Complete

When the application has been determined administratively complete, then the Division may commence its review of the technical merits of the application. If the application is found to be deficient from a technical standpoint, the Division may request additional information.

If the Division requires additional information to evaluate or take final action on the application, you are obligated to submit the necessary information within thirty (30) days of the Division's request or within the time allotted by the Division in writing.

If you fail to submit relevant facts or incorrect information in the application you are obligated to submit the correct information to the Division within five (5) working days upon becoming aware of such failure or incorrect submittal or within any other period specified in writing by the Division. In addition, you must provide additional information as necessary to address requirements that become applicable to your source after the date you file an administratively complete application but prior to the release of a draft operating permit.

Once the Division determines that the application is technically complete, it will notify you and begin the process of review and, in some cases, public notification.

Circle 13 ● Preliminary Division Determination and Public Comment Period

Within 30 days of determining the application technically complete, the Division will propose to issue or deny your source an operating permit. For Subchapter X major sources and Title V subject sources, the Division will also publish public notice of the proposed permit. Non-Subchapter X major sources requiring an operating permit based on hazardous air contaminant emissions (see Diamond 11) may be subject to public comment at the discretion of the Secretary (see Section 5-1007[b] of the "Regulations").

The public will be provided an opportunity to comment on the proposed action for a period of at least 30 days from the date of the notice. The notice will also allow the public an opportunity to request an informational meeting on the proposed decision. A request for an informational meeting must be received in writing at least 5 days before the close of the comment period. If a request for an informational meeting is received, the Division will issue a second public notice (in a local newspaper with general circulation in the area of the project) at least 30 days in advance of a scheduled informational meeting.

When public comments are solicited, the application, and other relevant documents such as the Division's review and proposed permit will be available for public inspection in the Division office and possibly also in the area where your source is located.

Circle 14 ● Public Informational Meeting

Any required public informational meeting will be held within the comment period in the area where your source is located.

Diamond 13 ● Is Source Title V Subject Source?

A Title V subject source means a source which is subject to Title V of the 1990 Clean Air Act Amendments and the regulations promulgated thereunder (see Title 40 CFR Part 70). A source is subject to Title V if it meets one or more of the following criteria:

1. Your source has allowable emissions of nitrogen oxides, sulfur dioxide, carbon monoxide, particulate matter of 100 tons per year or greater;

2. Your source has allowable emissions of volatile organic compounds (VOCs) of 50 tons per year or greater;

3. Your source is subject to a NSPS;

4. Your source is subject to a NESHAP;

5. Your source has allowable emissions of any one hazardous air pollutant regulated by the EPA of 10 tons per year or greater, or allowable emissions of a combination of hazardous air pollutants regulated by the EPA of 25 tons per year or greater. The EPA regulates 188 hazardous air pollutants. These 188 pollutants are listed in Appendix H of this Handbook.

Note: currently, EPA has deferred the need to obtain a Title V operating permit for non-major Title V subject sources which are applicable to a federal NSPS and NESHAPs.

Circle 15 ● EPA Review

After completing the public participation process for a Title V subject source, the Division will forward the operating permit application, proposed operating permit, and Division's technical analysis of the operating permit application to EPA for their review. Within 45 days after the receipt of the above information, EPA may object to the issuance of a final operating permit if EPA determines the issuance of the operating permit will not comply with the requirements of federal "Clean Air Act." Within 90 days of the receipt of an EPA objection, the Division must respond in writing to EPA, revise the operating permit if necessary, and either issue or deny the final operating permit in accordance with EPA's objection.

If EPA fails to object to a permit that violates the Clean Air Act, any person may petition EPA to object within 60 days following EPA's 45-day review period. Any such petition must be based only on objections to the permit that were raised with reasonable specificity during the public comment period provided the Agency (see Circle 13), unless the petitioner demonstrates that it was impracticable to raise such objections within the comment period or unless the grounds for such objection arose after the comment period. Judicial review of EPA's decision on a citizen's petition can occur in the Federal court of appeals.

Circle 16 ● Final Division Determination

If public participation is unnecessary, the Division will generally issue or deny a permit for your project within 30 days of the Division's having notified you that the application is technically complete. If there is public input and your source is not a Title V subject source, a determination is usually made within approximately 10 days of the close of the public comment period. The timing for a final operating permit decision on a Title V subject source will depend on whether or not EPA objects to the final issuance of a permit (see Circle 15).

The Division is required to take final action on each operating permit application within 18 months after receiving an administratively complete application. You may seek judicial review after 18 months to compel the Division to take action on the operating permit application.

Circle 17 ● Not Applicable to Subchapter X

If the Division determines your facility can opt-out (see Diamond 12 for more information), or that your facility is not subject to the requirements of Subchapter X of the "Regulations," you are free to proceed with your operations without any more review by the Division provided no changes are made. However, even if you don't need an operating permit, you must still meet any conditions of a construction permit that applies to your facility or if no permit exists, the general air quality standards and general provisions of the Air Pollution Control Regulations. Not needing a construction or operating permit does not allow you to pollute.

If you have avoided the operating permit requirements by applying and receiving an opt-out approval (see Diamond 12 for more information), you must track your actual emissions on a yearly basis. You are obligated to submit an operating permit application and receive an operating permit **before** actual emissions of all air contaminants combined equal or exceed 10 tons per year.

POST-OPERATING PERMIT PROCESS ISSUES

The first thing to do once you have received an operating permit is to read the final version to ensure that you understand your responsibilities. The permit may require that you conduct emission compliance testing (also known as "stack testing") during the term of the operating permit. Planning and coordination with the Division are essential to complete this requirement successfully. Consult the conditions of your permit and plan accordingly.

Operating permits generally contain reporting and operational conditions. Be familiar with them. Remember, compliance is your responsibility.

In addition to the conditions set forth in the permit, the Division has the general authority to require reports when necessary and to inspect your facility on a routine basis, with or without prior notice.

With limited exceptions, most permitted air pollution sources are required to register annually with the Division. The operating permit program also requires you to certify compliance at least on an annual basis. The permit may contain more stringent compliance certification requirements, such as quarterly submittal of such certifications.

Term of an Operating Permit

The term of an operating permit will be a fixed term and will not exceed 5 years.

Permit Expiration and Renewal

The expiration date of an operating permit will be identified within the conditions of the permit. Note that a renewal of the operating permit is necessary, and an application for renewal of the permit must be submitted **one year in advance of the expiration date of the permit**. Renewal applications are subject to the same permit processing requirements as an initial operating permit application.

If a timely and administratively complete application for an operating permit renewal is submitted to the Division, but the Division fails to issue or deny such renewal before the end of the term of the existing operating permit, all the terms and conditions of the existing operating permit will remain in effect until the Division issues or denys the operating permit renewal. However, an operating permit will automatically expire if , subsequent to the application being determined administratively complete, you fail to submit any additional information required by the Division or any information pertaining to changes to the subject source within thirty (30) days or any other period specified by the Division in writing.

Operating Permit Amendments

During the term of the operating permit, you may find it necessary to amend the operating permit for a variety of reasons. Administrative operating permit amendments and minor permit amendments may be made without EPA review (see 5-1008[b] of the "Regulations") and public participation (see Section 5-1007[a][7] of the "Regulations").

Administrative operating permit amendments are defined in Section 5-1002[a] of the "Regulations." Basically this form of amendment is used to correct clerical errors or update the name or ownership of the source.

A minor permit amendment (see Section 5-1002[i] of the "Regulations") is a more substantial revision of the operating permit which does not affect the overall processing of the operating permit application, such as triggering federal applicability, new source review, or additional requirements such as control technology reviews.

Amendments of the operating permit that do not qualify as administrative or minor are subject to the same requirements used to process an application for an initial operating permit.

Operational Flexibility

Besides alternative operating scenarios, operational flexibility is another option available to your source to make changes which do not require an operating permit amendment. The provisions of operational flexibility are restrictive and are contained in Section 5-1014 of the "Regulations."

Modifications Subject to New Source Review and the Construction Permit Process

Modifications to your source or changes to the operating permit may warrant the issuance of a construction permit prior to commencing such changes. See Section 5-101[66] of the "Regulations" for a definition of the changes that require new source review and a construction permit.

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Permitting-Related Documents

Air Pollution Primer. American Lung Association. 1969, 1971, 1974.

Air Quality Permits: A Handbook for Regulators and Industry, Volumes 1 and 2. The State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials (STAPPA/ALAPCO), Washington, D.C., 1991.

The following publications by the United States Environmental Protection Agency (U.S. EPA) are available from the U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, Va., 22161. Tel: (703) 487-4650.

A Workbook of Screening Techniques for Assessing Impacts of Toxic Air Pollutants, EPA-450/4-88-009. U.S. EPA, September 1988.

Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), EPA-450-4-897-007. U.S. EPA, Office of Air Quality Planning and Standards and Office of Research and Development, Research Triangle Park, N.C., May 1987.

Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, 5th Edition, AP-42 U.S. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, N.C., January 1995.

Compilation of Air Pollutant Emission Factors, Volume 2: Mobile Sources, 4th Edition, AP-42 U.S. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, N.C., September 1985.

Control of Open Fugitive Dust Sources, EPA-450/3-88-008. U.S. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, N.C., September 1988.

Criteria Pollutant Emission Factors for the 1985 NAPAP Emission Inventory, EPA-450/7-87-015. U.S. EPA, Research Triangle Park, N.C., May 1987.

GAP Filling PM10 Emission Factors For Selected Open Area Dust Sources, EPA-450/4-88-003. U.S. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, N.C., February 1988.

Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document For the Stack Height Regulations) (Revised), EPA-450/4-80-023R. U.S. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, N.C.,June 1985.

Handbook: Control Technologies for Hazardous Air Pollutant, EPA/625/6-86/014. U.S. EPA, Air and Energy Engineering Research Laboratory, Research Triangle Park, N.C., August 1988.

NEDS Source Classification Codes and Emission Factor Listing -- PM10, Second Editions. U.S. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, N.C., August 1988.

New Source Review Workshop Manual, Prevention of Significant Deterioration and Nonattainment Area Permitting (Draft). U.S. EPA, Air Quality Management Division, Research Triangle Park, N.C., October 1990.

On-Site Meteorological Program Guidance for Regulatory Modeling Application, EPA-450/4-87-013. U.S. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, N.C., June 1987.

Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, EPA 454/R-92-019. U.S. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, N.C., October 1992.

Toxic Air Pollutant Emission Factors -- A compilation for Selected Air Toxic Compounds and Sources, EPA-450/2-88-006a. U.S. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, N.C., October 1988.

User's Guide to Mobile 5 (Mobile Source Emission Factor Model), EPA-AA-TEB-89-01. U.S. EPA, Office of Air and Radiation and Office of Mobile Sources, Ann Arbor, Michigan.

In addition to the above publications, the U.S. EPA Office of Air Quality Planning and Standards also operates and

maintains a Technology Transfer Network (TTN) that promotes the rapid exchange of information pertaining to air pollution-related issues. The TTN service provides information in many areas including: emissions measurement (EMTIC), regulatory models (SCRAM), emission inventories and factors (CHIEF), training programs (APTI), and the latest information of the implementation of the 1990 Clean Air Act Amendments. The QAQPS TTN is open to all persons involved in air pollution control activities. To access the TTN on the world wide web visit www.epa.gov/ttn/

Federal Laws and Regulations

- 1970 Clean Air Act.
- 1977 Clean Air Act Amendments.
- 1990 Clean Air Act Amendments.
- Code of Federal Regulations, Title 40, Parts 50-99.

Vermont Statutes and Regulations

- Title 10, Chapter 23
- Vermont Air Pollution Control Regulations (including amendments through August 24, 1998).
- State Implementation Plan, November 1990.

Policies, Recommendations, and Guidelines

(This list highlights some of the more important policies and procedures utilized by the Division to perform its duties. This list is not meant to be all inclusive and may be updated from time to time. Consequently, contact the Division to find out the latest information concerning policies, procedures, etc.)

Northeastern States for Coordinated Air Use Management (NESCAUM)

- NESCAUM Stationary Source Committee Recommendation on Emission Limits for Gas Turbines, October 1988.
- NESCAUM Stationary Source Committee Recommendation for Permitting of Simple Cycle Gas Turbines, June 1990.
- NESCAUM BACT Guideline, June 1991.

State of Vermont, Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division

- Air Pollution Control Permitting Handbook, Revised March 1999.
- Permitting and Emission Testing Policy for Pathological Crematory Units (human & animal), January 25, 1988.
- Guidelines for Hospital Waste Incinerators (Draft), Revised August, 1988.
- Continuous Emission Monitoring Requirements, Version 4, Revised August 8, 1989.
- Source Emission Testing Guidelines, January 1999.
- Guidance on the Control of Hazardous Air Contaminants (Section 5-261), January 1996.
- Air Quality Impact Evaluation Guidelines (Revised 1/6/99).
- Air Division Policy and Procedures for Municipal Solid Waste/Sludge Composting Facilities, March 28, 1991.
- Policy for the Control of Landfill Gas from Existing Municipal Solid Waste Landfills (draft), March 25, 1991.

- Interpretation of Ambient Air Measurements of Hazardous Air Contaminants, February 21, 1991.
- Program Implementation Guidelines: Modification Policy, July 27, 1995.
- Program Implementation Guidelines: Public Participation, January 1996.
- Program Implementation Guidelines: Fee Schedule, July 1, 1998.
- Program Implementation Guidelines: Operating Permit Applicability for Sources of Hazardous Air Contaminants, July 26, 1995.
- Program Implementation Guidelines: Administration of Permit Applications, September 26, 1995.

APPENDIX A

Application Requirements Outline

The Division's "Application Requirements Outline" is frequently updated.

To ensure that you have the most recent version of this document, or if a loose-leaf copy of the "Outline" has not been inserted into this Handbook, please contact the Division (241-3840).

The Division maintains separate requirements for the construction permit applications and operating permit application requirements.

APPENDIX B

Determining The Designation Of A Modification for the Construction Permit Process

The process for determining the designation of a modification is divided into three steps. First, the designation of the existing stationary source is determined, second, the emission increases from the proposed modification are compared to the appropriate cutoff level for major review (i.e., significant levels or 50 tons per year), and third, the emission increases for the aggregated modifications are compared to the appropriate cutoff level for major review (e.g., significant levels or 50 tons/year). A source is considered a major stationary source if it has allowable emissions which exceed 50 tons/year (tpy) for any air contaminant (except for the air pollutant, lead, which is 5 tpy). Existing allowable emissions are based on levels allowed under an existing permit or "Air Pollution Control Regulations." Typically, allowable emissions are based on continuous operation of the air pollution source at its maximum capacity, unless there is an enforceable restriction that limits its operation.

If the source is designated major, then the modification or aggregated modifications (if applicable) must be compared to the "significant" increase levels specified under Section 5-101(76) of the "Regulations." If the source is minor -- that is, allowable emissions do not equal or exceed 50 tpy (5 tpy for lead) -- major source review of a modification is triggered only if the modification itself or the aggregated modifications (if applicable) have an allowable emission increase which exceeds 50 tpy (5 tpy for lead).

The process discussed above can be subdivided into three calculations and two comparison steps:

(1) Calculate the existing allowable emissions for the source. If allowable emissions exceed 50 tpy (exception - 5 tpy for lead) the source is major, otherwise it is minor.

(2) Calculate the allowable emissions from the proposed modification. If source is major and the allowable emissions for the proposed modification exceed the significant levels, the modification is major. If the source is minor and the allowable emissions increase for the proposed modification is 50 tpy or greater, the modification is major. If the allowable emissions increase does not satisfy either previously described situation, the modification is minor.

(3) If the modification is minor, and prior modifications have been added since 1979 and have not been reviewed as major modifications, then cumulative increase in emissions from minor modifications is determined using the following method:

Cumulative increase of minor modifications = A + B - C + D

where;

A: Allowable emissions from new equipment
B: Allowable emissions from existing equipment that is affected by the new modification
C: Actual emissions from equipment included in Step B which either was installed prior to July 1, 1979 or was previously reviewed under 5-502
D: Allowable emissions from all modifications since July 1, 1979 which have never been reviewed under 5-502

Data from two previous years representative of actual emissions rates are used to determine existing levels, not the past permitted levels. The cumulative increase calculation is performed on a pollutant-by-pollutant basis.

(4) If source is major and the allowable emissions for the aggregated modifications exceed the significant levels, the modification is major. If the source is minor and the allowable emissions increase for the aggregated modifications is 50 tpy or greater, the modification is major. If the allowable emissions increase does not satisfy either previously

described situation, the modification is minor.

Example:

ACME, Inc. is an existing stationary source that operates two emission units that generate air contaminants: Emission Unit A and Emission Unit B. Emission Unit A began operation in 1960, and therefore pre-exists the adoption of Vermont's air pollution control permitting program in 1979. In 1983, ACME, Inc. was granted approval by the Air Pollution Control Division to install and operate a new process. Emission Unit B. The addition of Emission Unit B was considered a minor modification and therefore not reviewed under Section 5-502 of the "Regulations." Emission Units A and B generate emissions of PM, PM10, SO_2, NO_x, CO, and VOC. Allowable emissions of these air contaminants are currently specified in ACME's 1983 permit. There are no permit limits that restrict the operation of Emission Unit A or Emission Unit B, so annual emissions are based on maximum capacity and continuous operation. Allowable emissions are summarized below.

Existing Permit Allowable Emissions, tpy

Emission Unit	PM	PM10	SO_2	NO_x	CO	VOC
A	25	25	50	40	100	20
B	10	10	10	20	5	5
Total Facility	35	35	60	60	105	25

ACME, Inc. is a major emitter of SO_2, NO_x, and CO since emissions of these pollutants exceed 50 tpy each.

Presently, ACME, Inc. proposes to install and operate a third emission unit, Emission Unit C. This unit will also produce emissions of PM, PM10, SO_2, NO_x, CO, and VOC. In addition to installing and operating Emission Unit C, ACME wants to maintain its present allowable levels for emission units A and B under the existing permit. Summarized below are the allowable emissions proposed by ACME for future operation.

Proposed Future Allowable Emissions, tpy

		PM	PM10	SO_2	NO_x	CO	VOC
Emission Unit A		25	25	50	40	100	20
Emission Unit B		10	10	10	30	5	5
Emission Unit C		10	2	10	20	20	5
Proposed Total	45	37	70	80	125	30	

As an existing major stationary source, ACME must compare the "significant" levels to the increase in emissions generated by the proposed modification. Additionally, Section 5-502(1)(b) of the "Regulations" specifies that modifications constructed since July 1, 1979, must be aggregated to any new modification to determine major modification applicability, if the prior modifications were never reviewed under Section 5-502 of the "Regulations." Since Emission Unit B was approved in 1983 as a minor modification and, consequently was not reviewed under Section 5-502, its emissions must be added to those of Emission Unit C to determine the aggregated emissions increase. Existing actual emissions are summarized in the table below. These emissions are based on average operation of Emission Units A and B within the last two consecutive years.

Existing Annual Average Emissions, tpy

Emission Unit	PM	PM10	SO_2	NO_x	CO	VOC
A	20	20	45	35	95	15
B	5	5	5	15	2	2

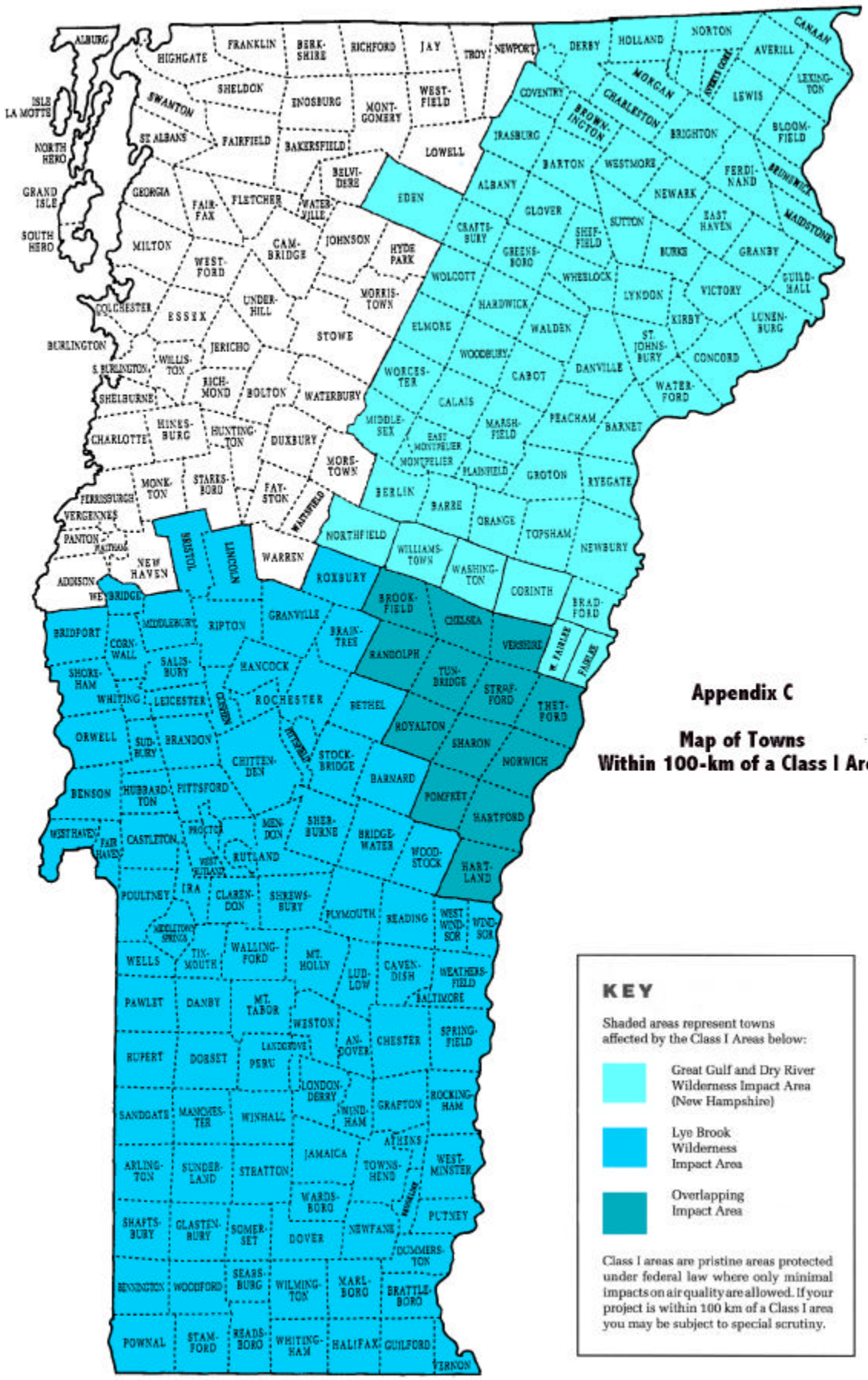
Summarized below is the aggregated emissions increase and the corresponding significant level.

Aggregated Increases vs. Significant, tpy

	PM	PM10	SO_2	NO_x	CO	VOC	
Proposed Allowable Emissions Increase (Emission Unit C)	10	2	10	20	20	5	(Minor Modification)
Allowable Emissions for Existing Equipment	0	0	0	0	0	0	

Affected by New Modification							
Actual Emissions for Equipment Affected by the New Modification Installed Prior to 1979 or Reviewed Under Section 5-502	0	0	0	0	0	0	
Allowable Emissions for Equipment Installed Since 1979 and has not been Reviewed Under Section 5-502	10	10	10	30	5	5	
Aggregated Emissions Increase	20	12	20	50	25	10	(Cumulative Increase = Major)
Significant Levels [Section 5-101(102)]	25	15	40	40	50	40	

The facility's aggregated emission increase is "significant" for NO_x. Consequently, the addition of Emission Unit C to ACME must undergo review as a major modification under Section 5-502 of the "Regulations."



Appendix C

Map of Towns Within 100-km of a Class I Area

KEY

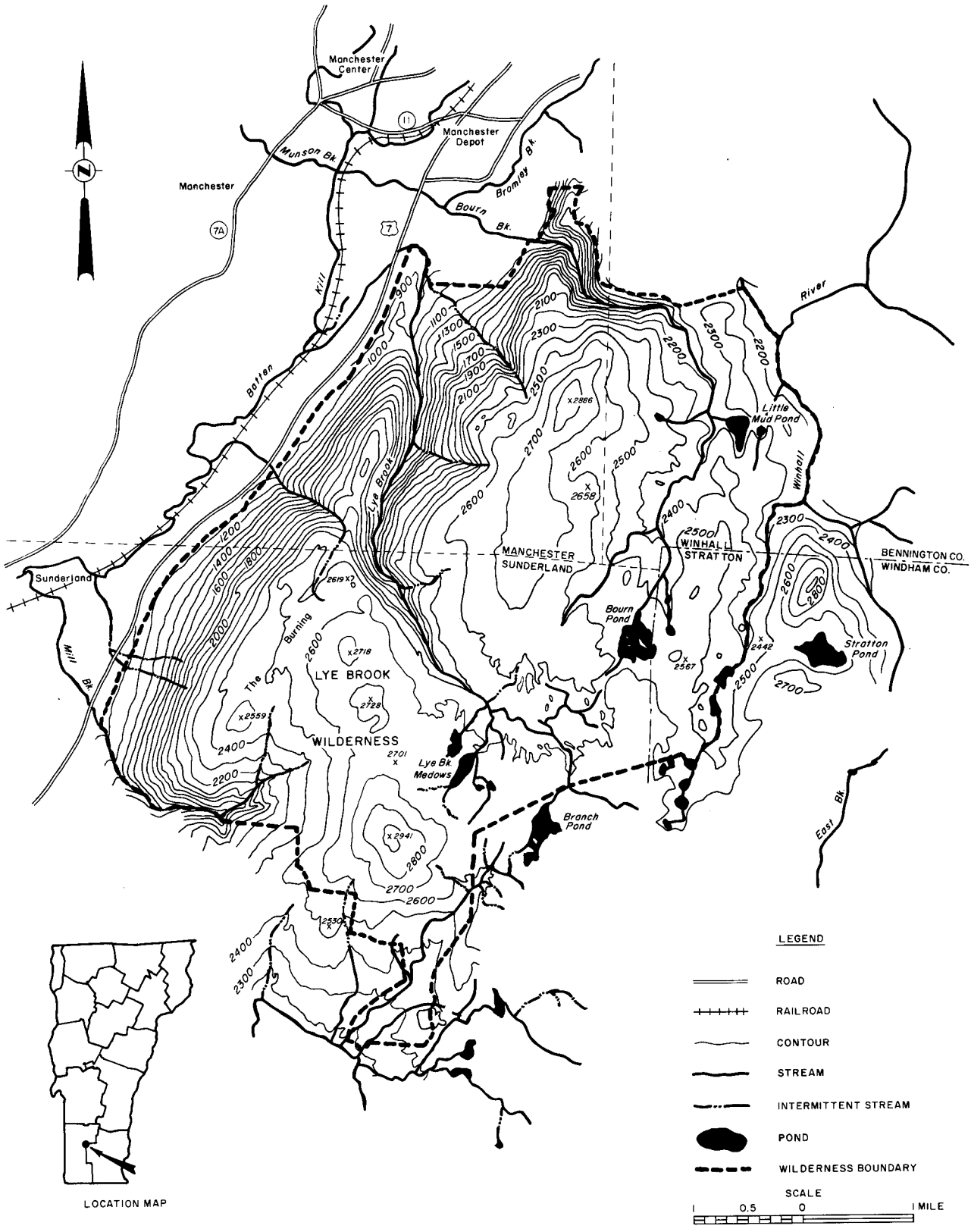
Shaded areas represent towns affected by the Class I Areas below:

- Great Gulf and Dry River Wilderness Impact Area (New Hampshire)
- Lye Brook Wilderness Impact Area
- Overlapping Impact Area

Class I areas are pristine areas protected under federal law where only minimal impacts on air quality are allowed. If your project is within 100 km of a Class I area you may be subject to special scrutiny.

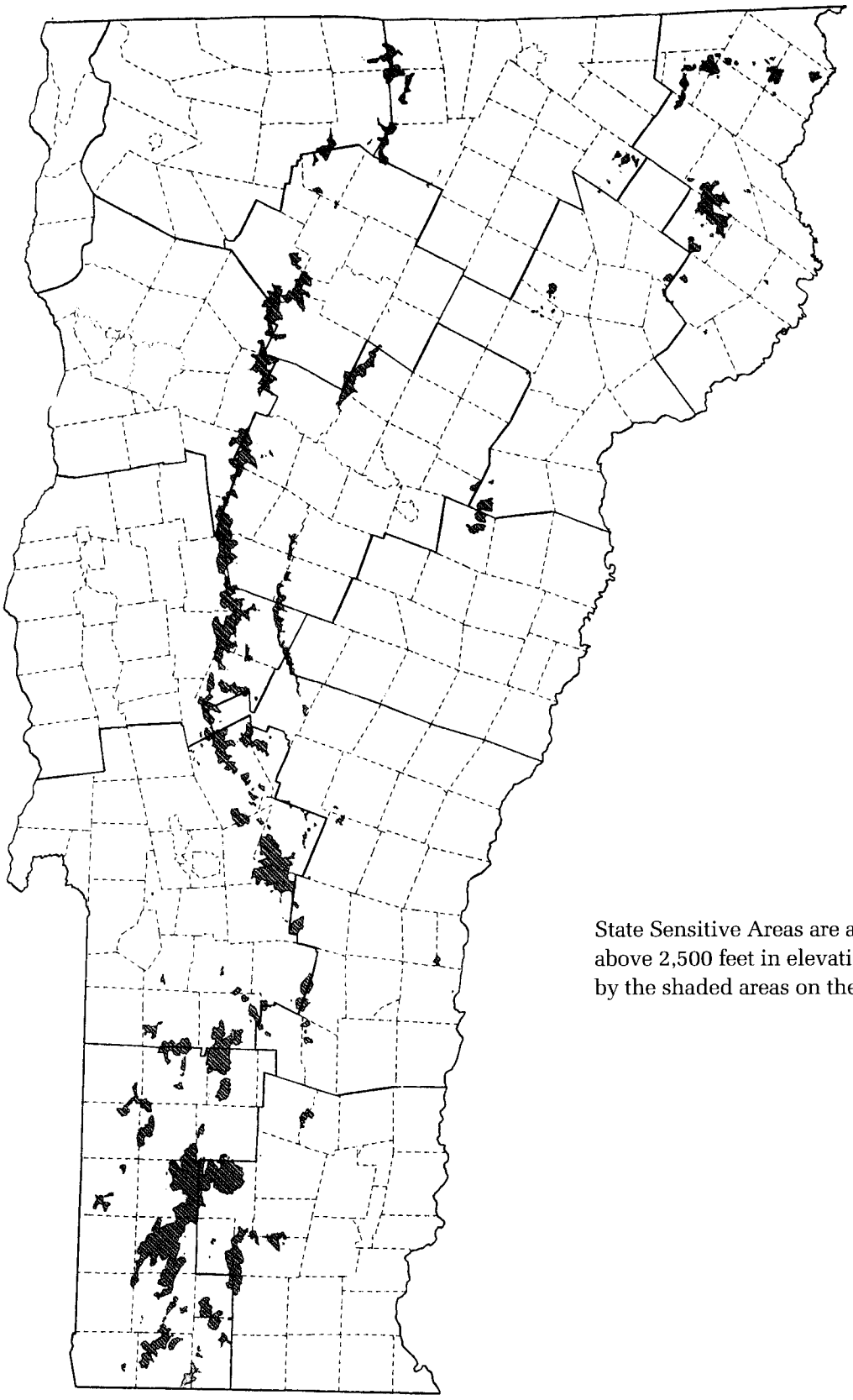
APPENDIX D

Map of Lye Brook Wilderness Area



APPENDIX E

Map of State Sensitive Areas



State Sensitive Areas are any areas above 2,500 feet in elevation, as shown by the shaded areas on the map.

APPENDIX F

List of Federal NSPS/NESHAPs - This is a complete listing of NSPS and NESHAPs as of March 9, 1999. New requirements are incorporated periodically, please consult 40 *CFR* Parts 60, 61, and 63 for a more current listing or visit the U.S. EPA's web site (www.epa.gov) for more information.

NEW SOURCE PERFORMANCE STANDARDS: 40 C.F.R. Part 60

SUBPART	STANDARDS OF PERFORMANCE FOR:
A	General Provisions
B	Adoption and Submittal of State Plans for Designated Facilities
C	Emissions Guidelines and Compliance Times
Cb	Emissions Guidelines and Compliance Schedules for Municipal Waste Combustors
Cc	Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills
Cd	Emissions Guidelines and Compliance Times for Sulfuric Acid Production Units
D	Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction is Commenced After August 17, 1971
Da	Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978
Db	Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units
Dc	Standards of Performance for Small Industrial Commercial-Institutional Steam Generating Units
E	Standards of Performance for Incinerators
Ea	Standards of Performance for Municipal Waste Combustors for which Construction is Commenced after December 20, 1989 and on or before September 20, 1994
Eb	Standards of Performance for Municipal Waste Combustors for Which Construction is Commenced After September 20, 1994
F	Standards of Performance for Portland Cement Plants
G	Standards of Performance for Nitric Acid Plants
H	Standards of Performance for Sulfuric Acid Plants
I	Standards of Performance for Hot Mix Asphalt Facilities
J	Standards of Performance for Petroleum Refineries
K	Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978
Ka	Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984
Kb	Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984
L	Standards of Performance for Secondary Lead Smelters
M	Standards of Performance for Secondary Brass and Bronze Production Plants
N	Standards of Performance for Primary Emissions from Basic Oxygen Process Furnaces for Which Construction Commenced After June 11, 1973
Na	Standards of Performance for Secondary Emissions From Basic Oxygen Process Steelmaking Facilities for Which Construction Commenced After January 20, 1983
O	Standards of Performance for Sewage Treatment Plants
P	Standards of Performance for Primary Copper Smelters
Q	Standards of Performance for Primary Zinc Smelters
R	Standards of Performance for Primary Lead Smelters
S	Standards of Performance for Primary Aluminum Reduction Plants

T	Standards of Performance for the Phosphate Fertilizer Industry: Wet-Process Phosphoric Acid Plants
U	Standards of Performance for the Phosphate Fertilizer Industry: Superphosphoric Acid Plants
V	Standards of Performance for the Phosphate Fertilizer Industry: Diammonium Phosphate Plants
W	Standards of Performance for the Phosphate Fertilizer Industry: Triple Superphosphate Plants
X	Standards of Performance for the Phosphate Fertilizer Industry: Granular Triple Superphosphate Storage Facilities
Y	Standards of Performance for Coal Preparation Plants
Z	Standards of Performance for Ferroalloy Production Facilities
AA	Standards of Performance for Steel Plants: Electric Arc Furnaces Constructed After October 21, 1974, and On or Before August 17, 1983
Aaa	Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 7, 1983
BB	Standards of Performance for Kraft Pulp Mills
CC	Standards of Performance for Glass Manufacturing Plants
DD	Standards of Performance for Grain Elevators
EE	Standards of Performance for Surface Coating of Metal Furniture
FF	[Reserved]
GG	Standards of Performance for Stationary Gas Turbines
HH	Standards of Performance for Lime Manufacturing Plants
II	[Reserved]
JJ	[Reserved]
KK	Standards of Performance for Lead-Acid Battery Manufacturing Plants
LL	Standards of Performance for Metallic Processing Plants
MM	Standards of Performance for Automobile and Light Duty Truck Surface Coating Operations
NN	Standards of Performance for Phosphate Rock Plants
OO	[Reserved]
PP	Standards of Performance for Ammonium Sulfate
QQ	Standards of Performance for the Graphic Arts Industry: Publication Rotogravure Printing
RR	Standards of Performance for Pressure Sensitive Tape and Label Surface Coating Operations
SS	Standards of Performance for Industrial Surface Coating: Large Appliances
TT	Standards of Performance for Metal Coil Surface Coating
UU	Standards of Performance for Asphalt Processing and Asphalt Roofing Manufacture
VV	Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry
WW	Standards of Performance for the Beverage Can Surface Coating Industry
XX	Standards of Performance for Bulk Gasoline Terminals
YY	[Reserved]
ZZ	[Reserved]
AAA	Standards of Performance for New Residential Wood Heaters
BBB	Standards of Performance for the Rubber Tire Manufacturing Industry
CCC	[Reserved]
DDD	Standards of Performance for Volatile Organic Compound (VOC) Emissions from the Polymer Manufacturing Industry
EEE	[Reserved]
FFF	Standards of Performance for Flexible Vinyl and Urethane Coating and Printing

GGG	Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries
HHH	Standards of Performance for Synthetic Fiber Production Facilities
III	Standards of Performance for Volatile Organic Compound (VOC) Emissions From the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Processes
JJJ	Standards of Performance for Petroleum Dry Cleaners
KKK	Standards of Performance for Equipment Leaks of VOC From Onshore Natural Gas Processing Plants
LLL	Standards of Performance for Onshore Natural Gas Processing: SO2 Emissions
MMM	[Reserved]
NNN	Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemicals Manufacturing Industry (SOCMI) Distillation Operations
OOO	Standards of Performance for Nonmetallic Mineral Processing Plants
PPP	Standards of Performance for Wood Fiberglass Insulation Manufacturing Plants
QQQ	Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems
RRR	Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes
SSS	Standards of Performance for Magnetic Tape Coating Facilities
TTT	Standards of Performance for Industrial Surface Coating: Surface Coating of Plastic Parts for Business Machines
UUU	Standards of Performance for Calciners and Dryers in Mineral Industries
VVV	Standards of Performance for Polymeric Coating of Supporting Substrate Facilities
WWW	Standards of Performance for Municipal Solid Waste Landfills

NESHAPS CONTAINED IN 40 C.F.R. PART 61

SUBPART	NATIONAL EMISSION STANDARD FOR:
A	General Provisions
B	Radon-222 Emissions from Underground Uranium Mines
C	Beryllium
D	Beryllium Rocket Motor Firing
E	Mercury
F	Vinyl Chloride
G	[Reserved]
H	Radionuclide Emissions from Department of Energy Facilities
I	Radionuclide Emissions from Facilities Licensed by the Nuclear Regulatory commission and Federal Facilities Not Covered by Subpart H
J	Equipment Leaks of Benzene
K	Radionuclide Emissions from Elemental Phosphorus Plants
L	Coke By-Product Recovery Plants
M	Asbestos
N	Inorganic Arsenic Emissions from Glass Manufacturing Plants
O	Inoganic Arsenic Emissions from Primary Copper Smelters
P	Inorganic Arsenic Emissions from Arsenic Trioxide and Metallic Arsenic Production Facilities
Q	Radon from Department of Energy Facilities
R	Radon from Phosphogypsum Stacks

S	[Reserved]
T	Radon from Disposal of Uranium Mill Tailings
V	Equipment Leaks
W	Radon-222 Emissions from Licensed Uranium Mill Tailings
X	Reserved
Y	Benzene Emissions from Benzene Storage Vessels
Z-AA	[Reserved]
BB	Benzene Emissions from Benzene Transfer Operations
CC-EE	[Reserved]
FF	Benzene Waste Operations

NESHAPS CONTAINED IN 40 C.F.R. PART 63

SUBPART	NATIONAL EMISSION STANDARD FOR:
A	General Provisions
B	Requirements for Control Technology Determinations for Major Sources in Accordance With Clean Air Act Sections, Sections 112(g) and 112(j)
C	List of Hazardous Air Pollutants, Petition Process, Lesser Quantity Designations, Source Category List
D	Regulations Governing Compliance Extensions for Early Reductions of Hazardous Air Pollutants
E	Approval of State Programs and Delegation of Federal Authorities
F	National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry
G	National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater
H	National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks
I	National Emission Standards for Organic Hazardous Air Pollutants for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks
J-K	[Reserved]
L	National Emission Standards for Coke Oven Batteries
M	National Perchloroethylene Air Emission Standards for Dry Cleaning Facilities
N	National Emission Standards for Chromium Emissions From Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks
O	Ethylene Oxide Emission Standards for Sterilization Facilities
P	[Reserved]
Q	National Emission Standards for Hazardous Air Pollutants From Industrial Process Cooling Towers
R	National Emission Standards for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations)
S	[Reserved]
T	National Emission Standards for Halogenated Solvent Cleaning
U	National Emission Standards for Hazardous Air Pollutant Emissions: Group I Polymers and Resins
V	[Reserved]
W	National Emission Standards for Hazardous Air Pollutants for Epoxy Resins Production and Non-Nylon Polyamides Production
X	National Emission Standards for Hazardous Air Pollutants From Secondary Lead Smelting
Y	National Emission Standards for Marine Tank Vessel Loading Operations
Z-BB	[Reserved]

CC	National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries
DD	National Emission Standards for Hazardous Air Pollutants From Off-Site Waste and Recovery Operations
EE	National Emission Standards for Magnetic Tape Manufacturing Operations
FF	[Reserved]
GG	National Emission Standards for Aerospace Manufacturing and Rework Facilities
HH	[Reserved]
II	National Emission Standards for Shipbuilding and Ship Repair (Surface Coating)
JJ	National Emission Standards for Wood Furniture Manufacturing Operations
KK	National Emission Standards for the Printing and Publishing Industry
LL-NN	[Reserved]
OO	National Emission Standards for Tanks--Level 1
PP	National Emission Standards for Containers
QQ	National Emission Standards for Surface Impoundments
RR	National Emission Standards for Individual Drain Systems
SS-UU	[Reserved]
VV	National Emission Standards for Oil-Water Separators and Organic-Water Separators
WW-III	[Reserved]
JJJ	National Emission Standards for Hazardous Air Pollutant Emissions: Group IV Polymers and Resins

APPENDIX G

Selected List of New NESHAPs To Be Included in 40 C.F.R. PART 63

Regulations for the following source categories are among those scheduled to be promulgated by **November 15, 1997** (see *Federal Register* 2/12/98 for complete list):

Pharmaceuticals production
Pulp & paper combustion
Publicly Owned Treatment Works
Reinforced plastic composite production
Wood treatment

Regulations for the following source categories are among those scheduled to be promulgated by **November 15, 2000**:

Asphalt concrete manufacturing
Asphalt processing
Asphalt roofing manufacturing
Auto and light duty truck (surface coating)
Bakers yeast manufacturing
Boat manufacturing
Clay products manufacturing
Engine test facilities
Industrial boilers
Institutional/commercial boilers
Metal coil (surface coating)
Metal furniture (surface coating)
Municipal landfills
Paint stripper users
Plastic parts & products
Plywood/particle board manufacturing
Process heaters
Semiconductor manufacturing
Sewage sludge incineration
Site remediation
Stationary internal combustion engines
Stationary turbines
Miscellaneous metal parts & products

APPENDIX H

List of EPA 188 Hazardous Air Pollutants

Chemical name	CAS No.
Acetaldehyde	75070
Acetamide	60355
Acetonitrile	75058
Acetophenone	98862
2-Acetylaminofluorine	53963
Acrolein	107028
Acrylamide	79061
Acrylic acid	79107
Acrylonitrile	107131
Allyl chloride	107051
4-Aminobiphenyl	92671
Aniline	62533
o-Anisidine	90040
Benzene	71432
Benzidine	92875
Benzotrichloride	98077
Benzyl chloride	100447
Biphenyl	92524
Bis(2-ethylhexyl)phthalate (DEHP)	117817
Bis(chloromethyl)ether	542881
Bromoform	75252
1,3-Butadiene	106990
Carbon disulfide	75150
Carbon tetrachloride	56235
Carbonyl sulfide	463581
Catechol	120809
Chloroacetic acid	79118
2-Chloroacetophenone	532274
Chlorobenzene	108907
Chloroform	67663
Chloromethyl methyl ether	107302
Chloroprene	126998
Cresols (isomers and mixture)	1319773
o-Cresol	95487
m-Cresol	108394
p-Cresol	106445
Cumene	98828
2,4-D (2,4-Dichlorophenoxyacetic acid, including salts and esters)	94757
DDE (1,1-Dichloro-2,2-bis(p-chlorophenyl)ethylene)	72559
Diazomethane	334883
Dibenzofuran	132649
1,2-Dibromo-3-chloropropane	96128
Dibutylphthalate	84742
1,4-Dichlorobenzene	106467
3,3'-Dichlorobenzidine	91941

Chemical name	CAS No.
Dichloroethyl ether (Bis(2-chloroethyl)ether)	111444
1,3-Dichloropropene	542756
Diethanolamine	111422
N,N-Dimethylaniline	121697
Diethyl sulfate	64675
3,3'-Dimethoxybenzidine	119904
4-Dimethylaminoazobenzene	60117
3,3'-Dimethylbenzidine	119937
Dimethylcarbamoyl chloride	79447
N,N-Dimethylformamide	68122
1,1-Dimethylhydrazine	57147
Dimethyl phthalate	131113
Dimethyl sulfate	77781
4,6-Dinitro-o-cresol, and salts	534521
2,4-Dinitrophenol	51285
2,4-Dinitrotoluene	121142
1,4-Dioxane (1,4-Diethyleneoxide)	123911
1,2-Diphenylhydrazine	122667
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	106898
1,2-Epoxybutane	106887
Ethyl acrylate	140885
Ethylbenzene	100414
Ethyl carbamate (Urethane)	51796
Ethyl chloride (Chloroethane)	75003
Ethylene dibromide (Dibromoethane)	106934
Ethylene dichloride (1,2-Dichloroethane)	107062
Ethylene glycol	107211
Ethylene oxide	75218
Ethylenethiourea	96457
Ethylidene dichloride (1,1-Dichloroethane)	75343
Formaldehyde	50000
Glycol ethers	0
Hexachlorobenzene	118741
Hexachloro-1,3-butadiene	87683
Hexachloroethane	67721
Hexamethylene-1,6-diisocyanate	822060
Hexamethylphosphoramide	680319
Hexane	110543
Hydrazine	302012
Hydroquinone	123319
Isophorone	78591
Maleic anhydride	108316
Methanol	67561
Methyl bromide (Bromomethane)	74839
Methyl chloride (Chloromethane)	74873
Methyl chloroform (1,1,1-Trichloroethane)	71556
Methyl ethyl ketone (2-Butanone)	78933
Methylhydrazine	60344

Chemical name	CAS No.
Methyl iodide (Iodomethane)	74884
Methyl isobutyl ketone (Hexone)	108101
Methyl isocyanate	624839
Methyl methacrylate	80626
Methyl tert-butyl ether	1634044
4,4'-Methylenebis(2-chloroaniline)	101144
Methylene chloride (Dichloromethane)	75092
4,4'-Methylenediphenyl diisocyanate (MDI)	101688
4,4'-Methylenedianiline	101779
Naphthalene	91203
Nitrobenzene	98953
4-Nitrobiphenyl	92933
4-Nitrophenol	100027
2-Nitropropane	79469
N-Nitroso-N-methylurea	684935
N-Nitrosodimethylamine	62759
N-Nitrosomorpholine	59892
Phenol	108952
p-Phenylenediamine	106503
Phosgene	75445
Phthalic anhydride	85449
Polychlorinated biphenyls (Aroclors)	1336363
Polycyclic Organic Matter[b]	0
1,3-Propane sultone	1120714
beta-Propiolactone	57578
Propionaldehyde	123386
Propoxur (Baygon)	114261
Propylene dichloride (1,2-Dichloropropane)	78875
Propylene oxide	75569
1,2-Propylenimine (2-Methyl aziridine)	75558
Quinone	106514
Styrene	100425
Styrene oxide	96093
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746016
1,1,2,2-Tetrachloroethane	79345
Tetrachloroethylene (Perchloroethylene)	127184
Toluene	108883
2,4-Toluenediamine	95807
Toluene-2,4-diisocyanate	584849
o-Toluidine	95534
1,2,4-Trichlorobenzene	120821
1,1,2-Trichloroethane	79005
Trichloroethylene	79016
2,4,5-Trichlorophenol	95954
2,4,6-Trichlorophenol	88062
Triethylamine	121448
Trifluralin	1582098
2,2,4-Trimethylpentane	540841

Chemical name	CAS No.
Vinyl acetate	108054
Vinyl bromide	593602
Vinyl chloride	75014
Vinylidene chloride (1,1-Dichloroethylene)	75354
Xylenes (isomers and mixture)	1330207
o-Xylene	95476
m-Xylene	108383
p-Xylene	106423

[a]Includes mono- and di-ethers of ethylene glycol, diethylene glycols and triethylene glycol; R-(OCH_2CH_2)RR-OR where:

n = 1, 2, or 3,

R = alkyl or aryl groups

R' = R, H, or groups which, when removed, yield glycol ethers with the structure: R-(OCH_2CH_2)$_n$ - OH. Polymers are excluded from the glycol category.

[b]Includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100°C.

APPENDIX I

Summary of Section 183 Requirements

Section 183 of *the Clean Air Act:* Federal Ozone Measures
183(a): Control Technique Guidelines (CTGs) for VOC sources. This section required EPA to issue CTGs for 11 categories of stationary sources with VOC emissions. CTGs have been proposed for the following source categories: industrial wastewater, offset lithographic printing, plastic parts coating, batch processes, Synthetic Organic Chemical Manufacturing Industry (SOCMI) Dist. & Reactors, Volatile Organic Liquid Storage and Wood Furniture Coating. **The final versions of these proposed CTGs are currently on hold.** The schedule for the issuance of CTGs for shipbuilding (coating) is under regulatory negotiation. The CTG for aerospace coatings was expected out by 7/31/95.

183(b): Existing and New CTGs: This section required the EPA to issue CTGs to reduce the emissions of VOCs from aerospace coatings and solvents and from the paints, coatings and solvents used in shipbuilding operations and ship repair.

183(c): Alternative Control Techniques (ACTs): This section required the EPA to issue ACTs for all categories of sources which have the potential to emit 25 tons per year or more of VOCs or NO_x. ACTs have been issued for industrial cleaning solvent operations, bakeries, carbon regeneration, gas turbines, cement manufacturing, glass manufacturing, IC engines, industrial boilers, nitric/adipic acid, pesticide application, process heaters and utility boilers.

183(e): Control of Emissions from Certain Sources. The EPA was mandated by this Section to conduct a study to compile a list of source categories of the **consumer and commercial products** which contribute at least 80% of the VOC emissions in areas which violate the National Ambient Air Quality Standard (NAAQS) for ozone. While Vermont currently does not violate the NAAQS for ozone, the state is a member of the Ozone Transport Region. Vermont's membership in the Ozone Transport Region causes requirements applicable to non-attainment areas to be applicable in Vermont. The list was scheduled to be promulgated by 11/15/93 but has not been published as of yet. It was expected to be published by 9/30/95.

A consumer or commercial product is any product in which the use, consumption, storage, disposal, destruction or decomposition releases VOCs. The source categories of these products on the list were to be divided into four groups. Every two years after publishing the list one group on the list is to be regulated until all four groups are regulated. Such regulations may only be imposed with respect to manufacturers, processors, wholesale distributors, or importers of consumer or commercial products for sale or distribution in interstate commerce in the US. The regulations shall require best available control technology (BACT). This section also states that in lieu of such regulations, EPA may issue CTGs.

APPENDIX J

Sample Format for Compliance Plan

CITATION OF APPLICABLE REQUIREMENT OR APPLICABLE ENHANCED MONITORING AND COMPLIANCE CERTIFICATION REQUIREMENTS OF THE FEDERAL CLEAN AIR ACT	SUMMARY OF REQUIREMENT AND DESCRIPTION OF ANY REFERENCE TEST METHOD FOR DETERMINING COMPLIANCE	DESCRIPTION OF COMPLIANCE STATUS AND EMISSIONS IN UNITS THAT CORRESPOND WITH ANY EMISSION LIMITS, IF APPLICABLE	SCHEDULE OF COMPLIANCE[1]	STATEMENT OF METHODS USED FOR DETERMINING COMPLIANCE (including a description of recordkeeping and reporting requirements, compliance monitoring devices and test methods)	SCHEDULE FOR SUBMISSION OF COMPLIANCE CERTIFICATIONS DURING THE OPERATING PERMIT TERM

[1] Schedule of Compliance must contain one of the following:

(1) For applicable requirements with which the subject source is in compliance, a statement that the subject source will continue to comply with such requirements;

(2) For applicable requirements that will become effective during the operating permit term, a statement that the subject source will meet such requirements on a timely basis. A statement that the subject source will meet in a timely manner applicable requirements that become effective during the operating permit term shall satisfy this provision, unless a more detailed schedule is expressly required by the applicable requirement; and

(3) For applicable requirements for which the subject source is not in compliance at the time of application for an operating permit, a narrative description of how the owner/operator will achieve compliance with such requirements. A schedule of compliance shall include a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with any applicable requirements for which the subject source will be in noncompliance at the time of application for an operating permit. Such compliance schedule shall be at least as stringent as that contained in any judicial consent decree or administrative order to which the subject source is subject. A schedule of compliance shall include a schedule for submission of certified progress reports no less frequently than every six (6) months for an owner/operator required to have a schedule of compliance to remedy a violation.

APPENDIX K

The Use of Significant Figures When Calculating Emissions

Significant figures allow us to properly quantify measurements that are not exact numbers. A "significant figure" is a number that we believe to be correct within some specified or implied limit of error. To count the amount of significant figures in a number, begin with the first number moving left to right that is not a zero. Count this number and all numbers after this as significant, including zeros. For example, the number 0.00520 has 3 significant figures, the number 5.20 has 3 significant figures, and the number 5.20×10^5 has 3 significant figures. It is important to understand the limits of data being used to calculate emissions in order to realistically quantify the emissions. The following are helpful when using significant figures in computing:

Addition & Subtraction

In addition and subtraction, the answer should be as significant as the number with the last significant figure of the greatest magnitude. For example,

```
   308.7812
     0.00034
+   10.31
   ----------
   319.09
```

Multiplication & Division

In multiplication and division, the answer has the same amount of significant figures as the number with the fewest significant figures. For example,

$$\frac{5.2 \times 0.3452}{0.00325} = 5.5 \times 10^2$$

Please note: Normally emission data should not be reported with greater than two or three significant figures.

APPENDIX L

Additional Information Relating to Quantifying Emissions

Estimating the quantity of air contaminant emissions produced by a project is necessary in order to properly assess its impact on human health and the environment. It is important that emissions estimates represent the operation of the proposed project. Care should be taken in estimating emissions in order to avoid over predicting or underpredicting emissions rates. Severely over-predicting emissions may result in unnecessary reviews which may result in additional costs and time in the application process. Under-predicting emission rates may result in compliance problems during post-construction compliance emission testing.

Several methods of estimating emissions are available and are ranked below in order of preference to the Air Pollution Control Division (APCD).

1. Representative Emission Test Results
2. Manufacturer's Emission Data For Representative Equipment
3. Mass Balance
4. Emission Factor
5. Other Engineering Calculations

Emission estimates may have to be determined both for short-term (1-hr to 24-hr) and long-term (monthly to annually) periods. Usually, emission estimates are determined for each averaging period corresponding to the pollutants ambient air quality standards (AAQS) or test methodology. Short-term estimates should be accompanied by an averaging period that was used as the basis for developing the rate. For example, particulate matter emission results are typically based on a one hour emission test run and therefore are usually considered one hour average values. A second example is SO_2 which has three air quality standards; each in terms of a different averaging period; three hour, 24 hour, and annual average. An emission rate would be necessary for each of the three averaging periods. On the other hand, a worst case one hour maximum emission rate may be substituted for all three periods.

Significant figures should be considered when calculating emissions from a source. The Division prefers that emission rates be expressed to two significant figures. Please see Appendix K of this Handbook for more information regarding the use of significant figures.

1. **Representative Emission Test Results:** For most situations emission test data is not available for each specific piece of equipment at a facility. Consequently, emission data is usually obtained from emission testing performed on an identical piece of equipment at a representative source. Care must be taken in selection of a representative source, since process inputs or actual site conditions may vary considerably and consequently result in different emission rates. A margin of error may be added to the test data to account for this variability and also to ensure compliance in the actual operation. The Division prefers the use of data obtained during a compliance demonstration and observed by state or local air pollution control officials. A copy of the full test report, including the procedures used, summary of results, and operational data, should be submitted in support of any proposed emission rate.

2. **Manufacturer's Emission Data For Representative Equipment:** If compliance test data is not available, the Division will consider the use of other representative data as specified by the equipment manufacturer. The applicant is forewarned to utilize test data that is considered representative of the equipment. If possible, the applicant should request a guaranteed maximum emission rate for the equipment from the manufacturer in order to avoid potential compliance problems in the future. It may be in the applicant's interest to include these guaranteed emission rates in any purchase agreement with the equipment manufacturer.

3. **Mass Balance:** Certain process sources may lend themselves well to mass balance calculations if the chemicals used in the process are not altered prior to exhaust to the atmosphere. Some examples of where a mass balance approach may be appropriate include: emissions of volatile organic compounds and hazardous air contaminants from paints, stains, lacquers, inks, and cleaning solutions. To calculate the emissions of volatile organic compounds and hazardous air contaminants using the mass balance approach, it is necessary to know the maximum quantity of the product used and what the chemical constituents of that product are. The constituents of the product can be obtained from the

product's Material Safety Data Sheet (MSDS). Generally, mass balance relies on a conservative assumption that 100% of the process input is lost to the atmosphere.

Mass balance should not be employed when chemical reactions, such as combustion, occur in the process stream. These reactions often form new contaminants not specifically input into the process in the first place. Chemical mass balance would not be representative of the true emissions in these situations.

MASS BALANCE EXAMPLE

The Acme Company uses 1000 gallons per year of cleaning solution. According to the MSDS, the cleaning solution contains 87% by weight volatile organic compounds and has a density of 7.5 lbs/gallon. The Acme Company tracks how much solution is used daily for about a month and determines that the maximum daily usage is 20 gallons. Since Acme has only one 8-hour shift, the company estimates the maximum hourly use of the cleaning solution is 2.5 gallons (20 gallons ÷ 8 hours). Acme wants to estimate the emissions of VOCs from their cleaning operation. Since no chemical reaction occurs with the cleaning solution, Acme uses the mass balance method.

Hourly Emission:
2.5 gal/hr * 0.87 * 7.5 lbs/gal = 16.3 lbs/hr

Annual Emission:
1000 gal/yr * 0.87 * 7.5 lbs/gal * 1 ton/2000 lbs = 3.3 tons per year

4. **Emission factor:** If equipment specific data is not available or mass balance is not appropriate, the applicant may apply emission factors developed by the EPA and published in *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources.* U.S. EPA, Office of Air Quality Planning and Standards, RTP, NC. AP-42, 5th Edition. An emission factor is an average value of the quantity of a pollutant released to the atmosphere based on the activity associated with the release of that pollutant. It is usually expressed as the weight of the pollutant emitted divided by a unit weight of material input or material produced (e.g. pounds of particulate matter emitted per ton of wood burned or lbs of particulate matter emitted per batch). Emission factors may also be expressed as the weight of pollutant emitted divided by the duration (hours) of the activity that emits the pollutant.

   Using such factors permits the estimation of emissions from various sources of air pollution. In most cases, these factors are simply averages of all available data of acceptable quality, generally without consideration for the influence of various process parameters. Emission factors are very useful tools for estimating emissions of air contaminants. However, because such factors are averages obtained from data of wide range and varying degrees of accuracy, emissions calculated this way for a given project are likely to differ from that facility's actual emissions.

EMISSION FACTOR EXAMPLE

The Acme Company has space heating boilers that burn 100,000 gallons per year of distillate fuel oil with a maximum sulfur content of 0.5% by weight. The boilers have combined maximum rated heat input of 12.2 MMBtu/hr. The Acme Company wants to determine the particulate matter and SO_2 emission rates that result from operating the boilers. Acme does not have stack test results, so they decide to use AP-42 factors. The oil supplier has indicated that the No. 2 fuel oil has a heat content of 0.14 MMBtu/gallon.

PARTICULATE MATTER:

Hourly Emission:

$$\frac{12.2 \text{ MMBtu/hr}}{0.14 \text{ MMBtu/gal}} = 87 \text{ gal/hr}$$

AP-42 Emission Factor = 2 lbs/1000 gal

87 gal/hr * 2 lbs/1000 gal = 0.044 lbs/hr

Annual Emission:

100,000 gal/yr * 2 lbs/1000 gal * 1 ton/2000 lbs = 0.1 tons/year

SULFUR DIOXIDE:

Hourly Emission:

AP-42 Emission Factor = 142 *(S) lbs/1000 gal

where S = % sulfur content by weight

87 gal/hr * (142 * 0.5) lbs/1000 gal = 6 lbs/hr

Annual Emission:

100,000 gal/yr * (142 * 0.5) lbs/1000 gal * 1 ton/2000 lbs = 4 tons/year

For hazardous air contaminants, the EPA continues to compile comprehensive emission factors for a variety of sources. Some of these “toxic” emission factors are also available from computer databases developed by EPA, such as XATEF, or from other EPA publications such as "Locating and Estimating Documents" and a computer disk called FIRE. There is also a CD-ROM called Air CHIEF that contains all emission factors published by the EPA. It can be obtained by calling (202) 783-3238.

5. **Other Engineering Calculations:** Finally, other engineering calculations, such as theoretical estimates, may be used to predict emission rates. Contact the Division for more information on this matter.