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Regulatory and Inspection Manual for Nonmetallic Mineral Processing Plants

Regulatory and Inspection Manual for Nonmetallic Mineral Processing Plant

by

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SECTION 1

INTRODUCTION

New Source Performance Standards (NSPS), are promulgated under 40 CFR Part 60. The general provisions for all NSPS were promulgated in the Federal Register on December 16, 1975 (40 FR 58416) as Subpart A. Specific standards applicable to nonmetallic mineral processing plants were initially proposed on August 31, 1983 (48 FR 39566). The NSPS for nonmetallic mineral processing plants was promulgated as Subpart OOO on August 1, 1985 (50 FR 31337) and revised on February 14, 1989 (54 FR 6680).

The NSPS for nonmetallic mineral processing plants provides 1) rules for applicability of the standards and designation of affected facilities, 2) standards for particulate matter emitted from affected facilities, 3) monitoring, reporting, and recordkeeping requirements, and 4) test methods and procedures for determining compliance with the emissions standards. The regulatory standards limit particulate matter emissions from crushers, grinding mills (including air separators, classifiers, and conveyors), screens, bucket elevators, bagging operations, storage bins, enclosed truck and railcar loading operations, and transfer points on belt conveyors. Unit operations not included are drilling, blasting, loading at the mine, hauling, drying, stockpiling, conveying (other than at transfer points), and windblown dust from stockpiles, roads and plant yards.

Subpart OOO designates affected facilities as individual pieces of operating equipment (i.e., screens, storage bins, crushers, etc.) manufactured, modified or reconstructed after August 31, 1983.

Recordkeeping requirements of the NSPS general provisions as well as those of Subpart OOO require data to be recorded and notifications issued for individual operating units.

The regulatory standards limit both fugitive emissions and stack emissions from affected facilities. Stack emissions are limited to 0.05 g/dscm (0.02 gr/dscf) and an opacity of 7 percent, unless a wet scrubbing device is employed to control emissions. Fugitive emissions are limited to an opacity of 10 percent, except crushers without capture systems are limited to an opacity of 15 percent.

1.1 Scope and Content

Section 1 describes the content of the manual, its intended use, and gives an overview of the nonmetallic mineral processing industry including the types of minerals processed and the general equipment types employed.

Section 2 describes the specific equipment types covered by the standard. Coverage includes theory of operation, what quantities and types of particulate matter emissions are expected, and control options most frequently employed in nonmetallic mineral processing plants. Photographs and/or schematic drawings are reproduced to facilitate a better understanding of the mechanics behind the operation of these equipment types and control of their emissions.

Section 3 details the requirements of the regulations including the general provisions of Subpart A applicable to the nonmetallic mineral processing plants, as well as the specific requirements of Subpart OOO. Individual sections or paragraphs of the regulations are cited followed by a clarification. The clarification explains the intent and application of the preceding citation. Section 3 attempts to clarify the multitude of questions regarding interpretation of the regulations that have emerged since the standards were first proposed.

Section 4 describes the steps necessary to conduct a Level II compliance inspection of a facility subject to the NSPS standards. This section discusses file review, plant entry procedures and preinspection interviews, safety and inspection equipment, report writing and tracking of affected facilities, and detailed inspection techniques for determining compliance with the standards. Photographs and illustrations are used to acquaint the reader with typical compliance situations that may be encountered. In addition, checklists are included to aid the inspector in compliance determinations and tracking of affected facilities.

The appendices include the Subpart OOO final rule (51 FR 31337) and revision (54 FR 6680) incorporated into one document (Appendix A), Sections of Subpart A that directly affect the requirements contained in Subpart OOO (Appendix B), EPA Reference Method 9 - Determining the Opacity of Emissions from Stationary Sources (Appendix C), EPA Reference Method 22 for determining fugitive emissions from material sources (Appendix D), sample compliance determination and tracking forms (Appendix E), a typical inspection report for nonmetallic mineral processing plants (Appendix F), a list of State agencies with delegated authority for the nonmetallic mineral processing NSPS (Appendix G), and a complilation of EPA policy memoranda concerning 40 CFR 60, Subpart OOO (Appendix H).

1.2 Intended use of the Manual

The intended audience of this manual is not only EPA, State and local compliance inspectors but the nonmetallic mineral processing industry as well as other involved parties. The manual attempts to attain several objectives: 1) present the latest guidance for applying the regulations and standards to the affected industries, 2) present field tested techniques for determining compliance of affected facilities, and 3) answer some of the most frequently asked questions concerning the nonmetallic mineral processing NSPS.

The manual is written in such a way as to offer guidance on applying the regulations in the field and for reporting and tracking compliance of affected facilities. No degree of prescriptiveness, however, can be effective in all situations. In the last analysis, correct use of these guidelines and procedures must be coupled with a thorough knowledge of site-specific conditions to ensure correct application of the regulations.

1.3 Industry Overview

1.3.1 General

There are many nonmetallic minerals that are individually produced in a wide range of quantities. For the purpose of the nonmetallic mineral processing NSPS, the EPA studied 18 minerals based upon Bureau of Mines classifications, which are the highest mined production segment of the industry involving crushing and grinding operations, excluding coal, phosphate rock, and asbestos. The 18 nonmetallic minerals affected by the NSPS are:

- Crushed and Broken Stone
- Sand and Gravel
- Clay
- Rock Salt
- Gypsum
- Sodium Compounds
- Pumice
- Gilsonite
- Talc and Pyrophyllite
- Boron
- Barite
- Fluorspar
- Feldspar
- Diatomite
- Perlite
- Vermiculite
- Mica
- Kyanite

Geographically, the industry is highly dispersed, with all States reporting production of at least one of these 18 nonmetallic minerals. The industry is also extremely diverse in terms of production capacities per facility (from 5 to several thousand tons per hour) and end product uses.

Crushed stone and gravel are by far the largest segments of the industry. From 1985 to 1986 figures, there were approximately 4323 processing plants in the sand and gravel industry and approximately 3557 quarries worked in the crushed stone industry. Each of the other industries had less than 100 processing plants, except for the clay industry which had approximately 120 plants.

Table 1-1 lists the major uses of each individual mineral. Generally, the uses of nonmetallic minerals can be classified as either aggregate for the construction industry; minerals for the chemical and fertilizer industries; or clay, ceramic, refractory, and miscellaneous minerals. Minerals generally used for construction are crushed and broken stone, sand and gravel, gypsum, gilsonite, perlite, pumice, vermiculite, and

TABLE 1-1. MAJOR USES OF THE NONMETALLIC MINERALS

Mineral	Major uses
Crushed and broken stone	Construction, lime manufacturing, erosion control
Sand and gravel	Construction
Clay	Bricks, cement, refractory, paper
Rock salt	Highway use, chlorine
Gypsum	Wallboard, plaster, cement, agriculture
Sodium compounds	Glass, chemicals, paper
Pumice	Road construction, concrete
Gilsonite	Asphalt paving
Talc	Ceramics, paint, toilet preparations
Boron	Glass, soaps, fertilizer
Barite	Drilling mud, chemicals
Fluorspar	Hydrofluoric acid, iron and steel, glass
Feldspar	Glass, ceramics
Diatomite	Filtration, filters
Perlite	Insulation, filter aid, plaster aggregate
Vermiculite	Concrete
Mica	Paint, joint cement, roofing
Kyanite	Refractories, ceramics

mica. Minerals generally used in the chemical and fertilizer industries are barite, fluorspar, boron, rock salt, and sodium compounds. Clay, feldspar, kyanite, talc, and diatomite can be generally classified as clay, ceramic, refractory, and miscellaneous minerals.

1.3.2 General Process Description

General industry processing involves extracting from the ground; loading, unloading, and dumping, conveying, crushing, screening, milling, and classifying. Some minerals processing also includes washing, drying, calcining, or flotation operations. The operations performed depend on the ore type and the desired product.

The mining techniques used for the extraction of nonmetallic minerals vary with the particular mineral, the nature of the deposit, and the location of the deposit. Mining is carried out both underground and in open pits. Some minerals require blasting while others can be removed by excavator, loader, bulldozer, dragline, or dredging operations alone.

The nonmetallic minerals are normally delivered to the processing plant by truck and are dumped into a hoppered feeder, usually a vibrating grizzly type, or onto screens, as illustrated in Figure 1-1. These screens separate or scalp the larger boulders from the finer rocks that do not require primary crushing, thus minimizing the load to the primary crusher. Jaw or gyratory crushers are usually used for initial reduction, although impact crushers are gaining favor for crushing low-abrasion rock, such as limestones and talc where high reduction ratios are desired. The crusher product, normally 7.5 to 30 centimeters (3 to 12 inches) in size, and the grizzly throughs (undersize material) are discharged onto a belt conveyor and normally transported to either secondary screens and a crusher, or to a surge pile or silo for temporary storage.

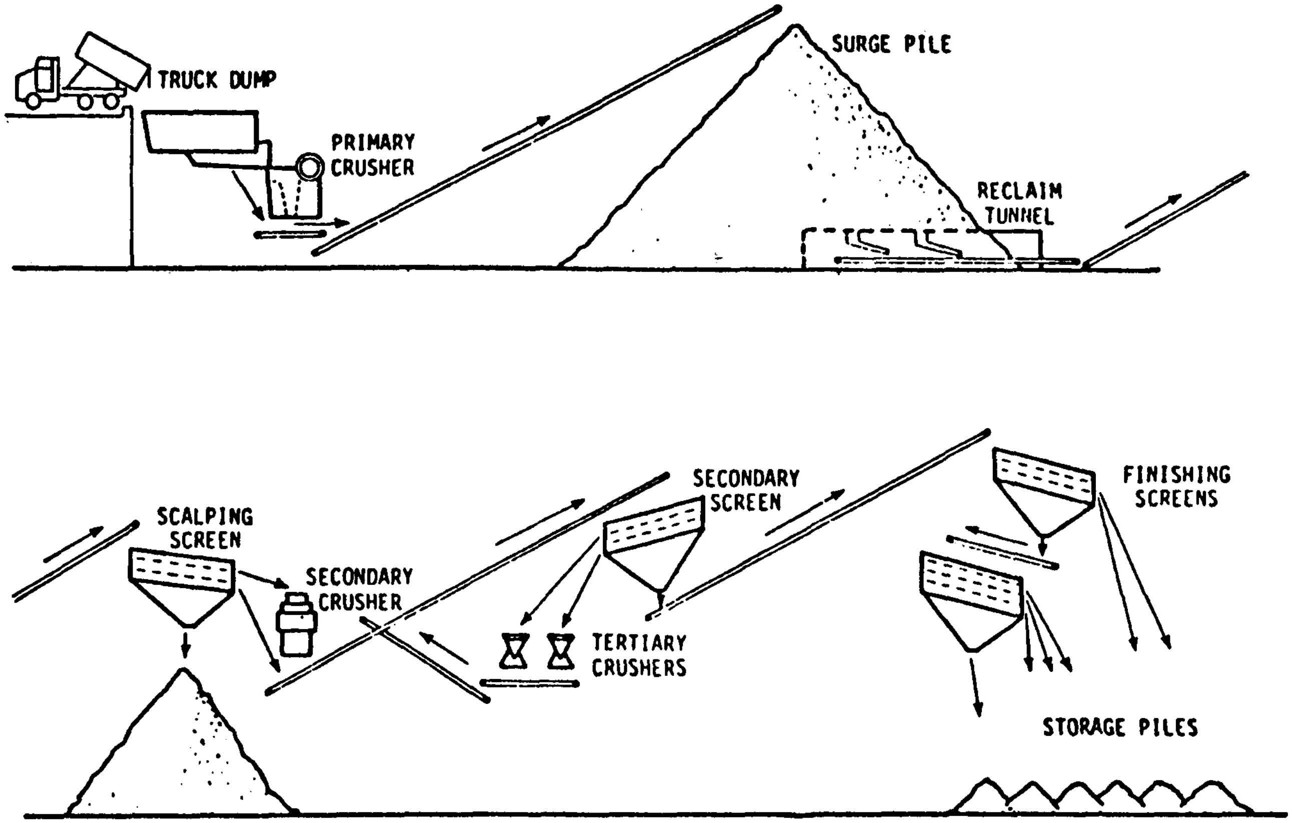


Figure 1-1. Flowsheet of a typical aggregate crushing plant.

The secondary screens separate the process flow into generally two fractions (oversize and throughs) prior to the secondary crusher. The oversize is discharged to the secondary crusher for further reduction. The undersize, which require no further reduction at this stage, normally by-pass the secondary crusher. A third fraction, the throughs, is separated when processing some minerals. Throughs contain unwanted fines that are usually removed from the crushing process flow and processed as fine aggregate. For secondary crushing, gyratory or cone crushers are most commonly used, although impact crushers are used at some installations.

The product from the secondary crushing stage, usually 5.0 centimeters or less in size, is normally transported to a secondary screen for further sizing. Sized material from this screen is either discharged directly to a tertiary crushing stage or conveyed to classifying screens or to a fine-ore bin, which supplies the milling stage. Cone crushers or hammermills are normally used for tertiary crushing. Rod mills, ball mills, and hammermills are normally used in the milling stage. The product from the tertiary crusher or the mill is usually conveyed to a type of classifier such as a dry vibrating screen system, a wash screen, an air separator, or a wet rake or spiral system (if wet grinding was employed), which also dewaters the material. The oversize is returned to the tertiary crusher or mill for further size reduction. At this point, some mineral end products of the desired grade are conveyed directly to finished product bins, or are stockpiled in open areas by conveyors or trucks. Other minerals such as talc or barite may require air classification to obtain the required mesh size, and treatment by flotation to obtain the necessary chemical purity and color.

Most nonmetallic minerals require additional processing depending on the rock type and consumer requirements. In certain cases, especially in the crushed stone and sand and gravel industry, washing may be required to meet particular end product specifications or demands such as for concrete aggregate. Some minerals, especially certain lightweight aggregates, are washed and dried, sintered, or treated prior to primary crushing. Others are dried following secondary crushing or milling. Sand and gravel, crushed and broken stone, and most lightweight aggregates normally are not milled and are screened and shipped to the consumer after secondary or tertiary crushing. Figures 1-1 and 1-2 show simplified diagrams of the typical process steps required for some nonmetallic mineral processing facilities.

In general, the factors that affect emissions from most mineral processing operations include: the type of ore processed, the type of equipment and operating practices employed, the moisture content of the ore, the amount of ore processed, and a variety of geographical and seasonal factors. These factors, discussed in more detailed below, apply to both fugitive and stack emission sources associated with processing plant operations.

The type of ore processed is important. Soft rocks can produce a higher percentage of fine-grained material than do hard rocks because of their greater friability and lower resistance to fracture. Thus, it is concluded that the processing of soft rocks results in a greater potential for uncontrolled emissions than the processing of hard rock. Minerals arranged in order of increasing hardness are: talc, clay, gypsum, barite, limestone and dolomite, perlite, feldspar, and quartz. Thus, talc could be expected to exhibit the highest uncontrolled emissions and quartz the least.

The type of equipment and operating practices employed also affect emissions. In general, emissions from process equipment such as crushers, screens, grinders, and conveyors depend on the size distribution of the material, the moisture content, and the velocity that is mechanically imparted to the material.

The inherent moisture content or wetness of the ore processed can have a substantial effect on emissions. This is especially evident during mining, initial material handling, and initial plant process operation such as primary crushing. Surface wetness causes fine particles to agglomerate or adhere to the faces of larger stones with a resultant dust suppression effect. However, as new fine particles are created by crushing and attrition, and as the moisture content is reduced by evaporation, this

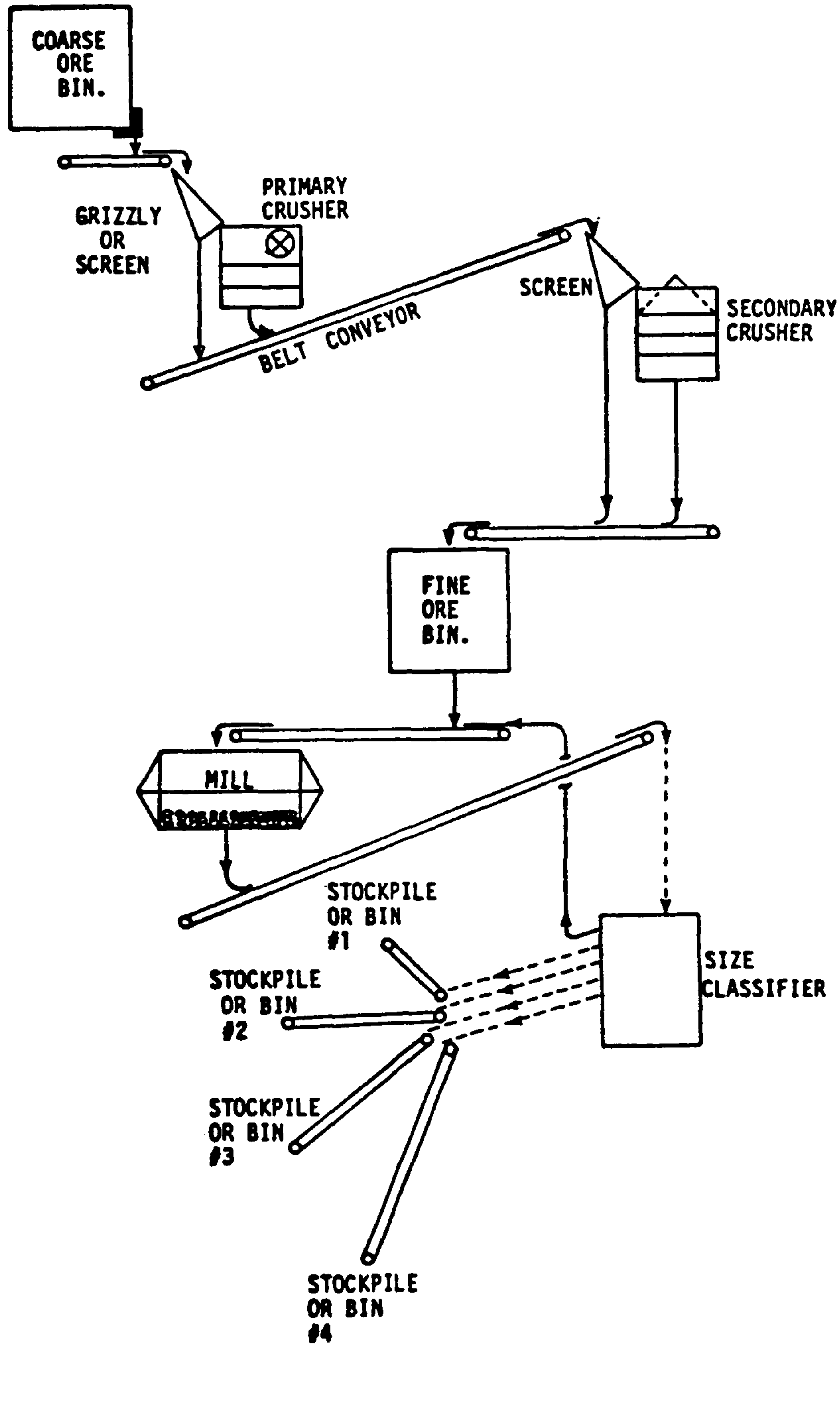


Figure 1-2. General schematic for nonmetallic minerals processing.

suppressive effect diminishes and may even disappear. Depending on the geographical and seasonal factors, the primary variables affecting uncontrolled particulate matter emissions are wind parameters and moisture content of the material. Wind parameters will vary with geographical location and season and it can certainly be expected that the level of emissions from sources that are not enclosed (principally fugitive dust sources) will be greater during periods of high winds than periods of low winds. The moisture content of the material will also vary with geographical location and season. It can, therefore, be expected that the level of uncontrolled emissions from fugitive emission sources will be greater in arid regions of the country than in temperate ones and greater during the summer months due to a higher evaporation rate. The effect of equipment type on uncontrolled emissions from all sources will be more fully discussed in Section 2.

SECTION 2

PROCESS EQUIPMENT EMISSIONS AND PARTICULATE MATTER CONTROLS

Affected facilities under 40 CFR Part 60, Subpart OOO include only the following process equipment types: crushers, grinding mills, screening operations, bucket elevators, belt conveyors, bagging operations, storage bins, and enclosed truck or railcar loading stations. This section discusses the most common of these equipment types encountered in the industry, their principles of operation, and the emission controls most frequently employed. Because of the diversity of processes and process equipment used in the nonmetallic mineral processing industry, the inspector requires a fundamental knowledge of the emission sources likely encountered in the field. Many times an operating plant may appear to be a confusing array of equipment, sometimes spread over a large area, other times compacted into confined spaces or enclosed within buildings. The inspector may be required to recognize subtle differences in equipment and processes to verify that affected facilities are onsite and are operated within permitted conditions.

When conducting a compliance inspection of a nonmetallic mineral processing plant, it is usually best to start at the beginning of the process operations and end the inspection at the finished product loading station(s). This is especially true of the initial plant visit when the inspector is becoming acquainted with the particular processes and equipment types employed at the facility. A beginning-to-end approach allows the inspector to understand the logic of plant processes as well as trace the flow of materials. For this reason, the types of process equipment defined as affected facilities under Subpart OOO are presented in this section in the process order most frequently found in the industry.

2.1 Crushers

Subpart OOO affected facilities begin with the first crushing or grinding operation at the plant. Plants that do not employ crushing or grinding are, by definition, not considered nonmetallic mineral processing plants and are thus not subject to the nonmetallic mineral processing NSPS.

After blasting, ripping, or breaking is completed in the quarry, the initial size reduction of the raw material is usually accomplished in the primary crusher. Generally, crushing is size reduction in the coarse range and grinding in the fine range. Crushing is usually accomplished in machines having crushing or ore contact surfaces which are mechanically held apart. In grinders, the grinding surfaces will rub on one another if material is not present.

The mechanical stress applied to rock fragments during crushing may be accomplished by either compression or impaction. In impaction, the breaking force is applied very rapidly, while in compression, the rock is slowly squeezed and forced to fracture. All types of crushers are both compression and impaction to varying degrees, and in all cases there is some reduction due to rubbing of stone on stone or on metal surfaces. Generally, compression-type crushers produce less fines and impart less kinetic energy to particles than do impaction crushers. Table 2-1 ranks crushers according to their predominant crushing mechanism (from top to bottom, compression to impaction).

Because the size reduction achievable by one machine is limited, reduction in stages is frequently required. The various stages include primary, secondary, and perhaps tertiary crushing. Basically, the crushers used in the nonmetallic minerals industry are: jaw, gyratory, roll, and impact crushers.

TABLE 2-1. RELATIVE CRUSHING MECHANISMS

Compression	Double roll crusher Jaw crusher Gyratory crusher Single roll crusher Rod mill (low speed) Ball mill Rod mill (high speed) Hammermill (low speed) Impact breaker
Impaction	Hammermill (high speed)

2.1.1 Jaw Crushers

Jaw crushers consist of a vertical fixed jaw and a moving inclined jaw that is operated by a single toggle or a pair of toggles. Rock is crushed by compression as a result of the opening and closing action of the moveable jaw against the fixed jaw. Their principal application in the industry is for primary crushing.

The most commonly used jaw crusher is the Blake or double-toggle type. As illustrated in Figure 2-1, an eccentric shaft drives a Pitman arm that raises and lowers a pair of toggle plates to open and close the moving jaw which is suspended from a fixed shaft. In a single-toggle jaw crusher, the moving jaw is itself suspended from an eccentric shaft and the lower part of the jaw supported by a rolling toggle plate (Figure 2-2). Rotation of the eccentric shaft produces a circular motion at the upper end of the jaw and an elliptical motion at the lower end. Other types, such as the Dodge and overhead eccentric are used on a limited scale.

A jaw crusher can be categorized by its feed opening dimensions and may range from approximately 15x30 centimeters to 213x168 centimeters (6x12 inches to 84x66 inches). The size reduction obtainable may range from 3:1 to 10:1 depending on the nature of the rock. Capacities are quite variable depending on the unit and its discharge setting.

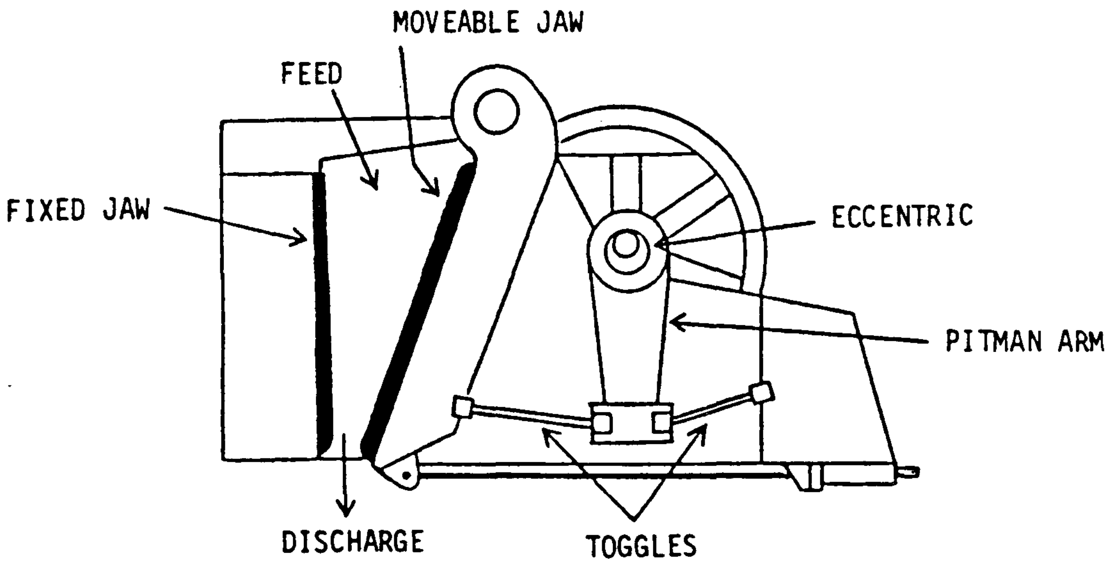


Figure 2-1. Double-toggle jaw crusher.

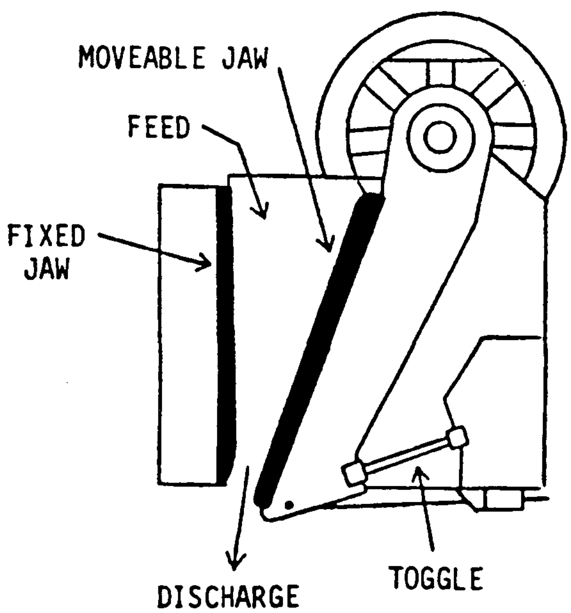


Figure 2-2. Single-toggle jaw crusher.

2.1.2 Gyratory Crushers

Simply, a gyratory crusher may be considered to be a jaw crusher with circular jaws between which the material flows and is crushed. However, a gyratory crusher has a much greater capacity than a jaw crusher with an equivalent feed opening.

There are basically three types of gyratory crushers, the pivoted spindle, fixed spindle, and cone. The fixed and pivoted spindle gyratories are used for primary and secondary crushing, and cone crushers for secondary and tertiary crushing. The larger gyratories are grouped according to feed opening and the smaller units by cone diameters.

The pivoted spindle gyratory (Figure 2-3) has the crushing head mounted on a shaft that is suspended from above and free to pivot. The bottom of the shaft is seated in an eccentric sleeve which revolves, thus causing the crusher head to gyrate in a circular path within a stationary concave circular chamber. The crushing action is similar to that of a jaw crusher in that the crusher element reciprocates to and from a fixed crushing plate. Because some part of the crusher head is working at all times, the discharge from the gyratory is continuous rather than intermittent as in a jaw crusher. The crusher setting is determined by the wide-side opening at the discharge end and is adjusted by raising or lowering the crusher head.

Unlike the pivoted spindle gyratory, the fixed spindle gyratory has its crushing head mounted on an eccentric sleeve fitted over a fixed shaft. This produces a uniform crushing stroke from the top to the bottom of the crushing chamber.

For fine crushing, the gyratory is equipped with flatter heads and converted to a cone crusher (Figure 2-4). Commonly, in the lower section a parallel zone exists. This results in a larger discharge-to-feed area ratio which makes it extremely suitable for fine crushing at high capacity. Also, unlike regular gyratories, the cone crusher sizes at the closed side setting and not the open side (wide-side) setting. This assures that the material discharge will have been crushed at least once at the closed

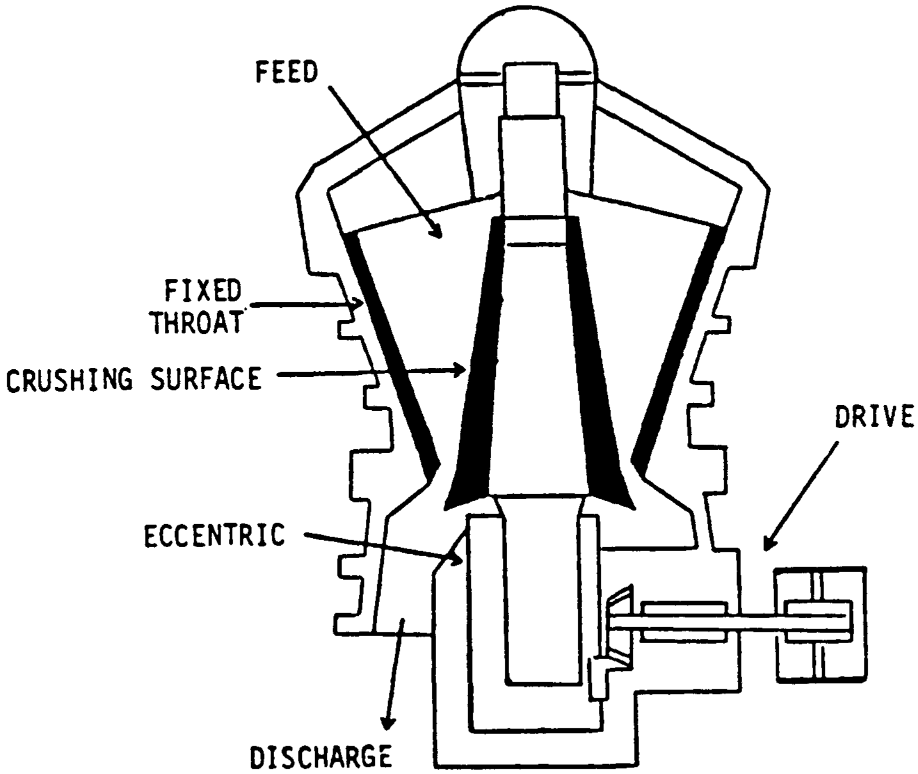


Figure 2-3. The pivoted spindle gyratory.

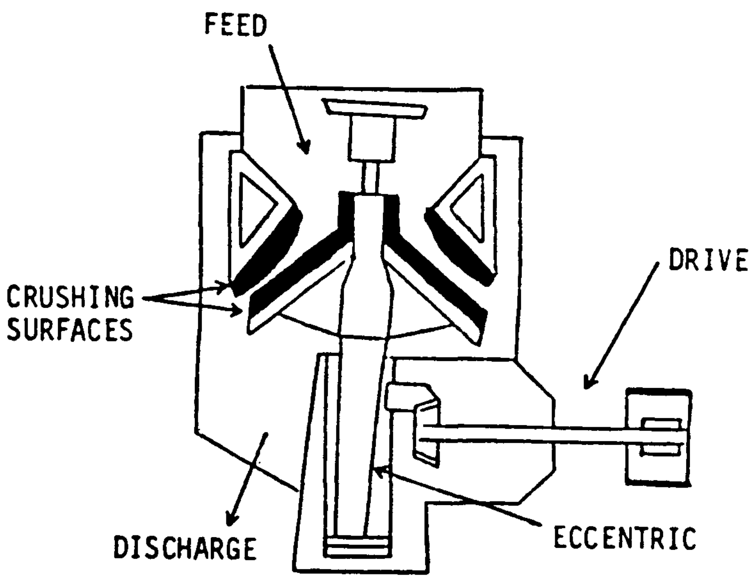


Figure 2-4. Cone crusher.

side setting. Cone crushers yield an elongated product and a high percentage of fines due to interparticle crushing. They are the most commonly used crusher in the industry for secondary and tertiary reduction.

2.1.3 Roll Crushers

These machines are used primarily at intermediate or final reduction stages and are often used at portable plants. There are essentially two types, the single-roll and the double-roll. As illustrated in Figure 2-5, the double-roll crusher consists of two heavy parallel rolls which are turned toward each other at the same speed. Roll speeds range from 50 to 300 rpm. Usually, one roll is fixed and the other set by springs. Typically, roll diameters range from 61 to 198 centimeters (24 to 78 inches) and have narrow face widths, about half the roll diameter. Rock particles are caught between the rolls and crushed almost totally by compression. Reduction ratios are limited and range from 3 to 4 to 1. These units produce few fines and no oversize. They are used especially for reducing hard stone to a final product ranging from 1/4 inch to 20 mesh.

The working elements of a single-roll crusher include a toothed or knobbed roll and a curved crushing plate that may be corrugated or smooth. The crushing plate is generally hinged at the top and its setting is held by a spring at the bottom. A toothed-roll crusher is depicted in Figure 2-6. The feed caught between the roll and crushing plate is broken by a combination of compression, impact, and shear. These units may accept feed sizes up to 51 centimeters (20 inches) and have capacities up to 454 megagrams per hour (500 tons/h). In contrast with the double-roll, the single-roll crusher is principally used for reducing soft materials such as limestones.

2.1.4 Impact Crushers

Impact crushers, including hammermills and impactors, use the force of fast rotating massive impellers or hammers to strike and shatter free falling rock particles. These units have extremely high reduction ratios and produce a cubical product

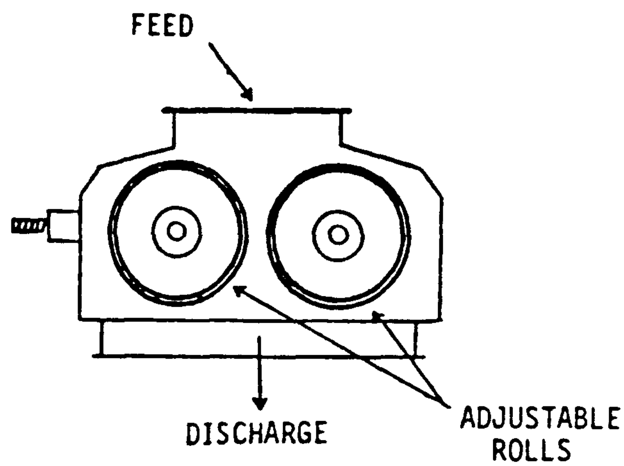


Figure 2-5. Double-roll crusher.

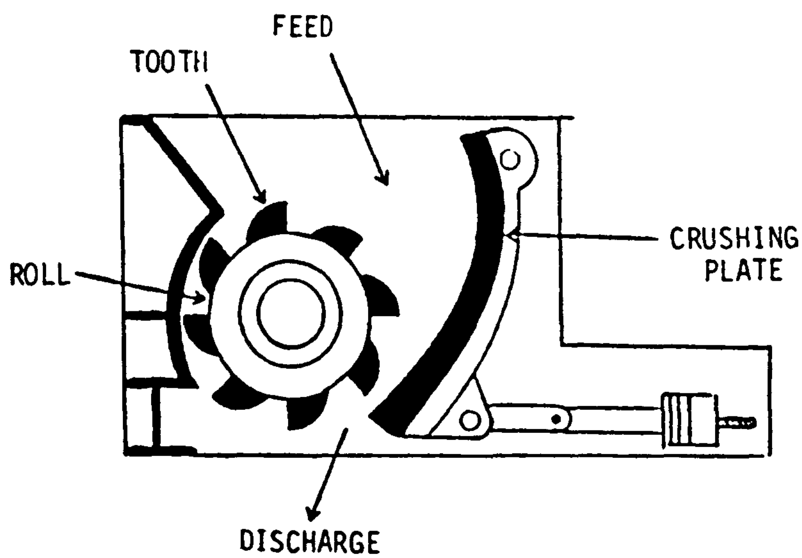


Figure 2-6. Single-roll crusher.

spread over a wide range of particle sizes with a large proportion of fines, thus making their application in industry segments such as cement manufacturing and agstone production extremely cost effective by reducing the need for subsequent grinding machines.

A hammermill consists of a high speed horizontal rotor with several rotor discs to which sets of swing hammers are attached (Figure 2-7). As rock particles are fed into the crushing chamber, they are impacted and shattered by the hammers which attain tangential speeds as high as 76 meters (250 feet) per second. The shattered rock then collides with a steel breaker plate and is fragmented even further. A cylindrical grating or screen positioned at the discharge opening restrains oversize material until it is reduced to a size small enough to pass between the grate bars. Rotor speeds range from 250 to 1800 rpm and capacities to over 907 megagrams per hour (1,000 tons/h). Product size is controlled by the rotor speed, the spacing between the grate bars, and by hammer length.

An impact breaker (Figure 2-8) is similar to a hammermill except that it has no grate or screen to act as a restraining member. Feed is broken by impact alone. Adjustable breaker bars are used instead of plates to reflect material back into the path of the impellers. Primary-reduction units are available that can reduce quarry run material at over 907 megagrams per hour (1,000 tons/h) capacity to approximately 2.5 centimeters (1 inch). These units are not appropriate for hard abrasive materials, but are ideal for soft rocks like limestone.

2.1.5 Sources of Emissions

The generation of particulate emissions is inherent in the crushing process. Emissions are most apparent at crusher feed and discharge points. Emissions are influenced predominantly by the type of rock processed, the moisture content of the rock, and the type of crusher used.

The most important element influencing emissions from crushing equipment is the type of rock and the moisture content of the mineral being crushed. The crushing

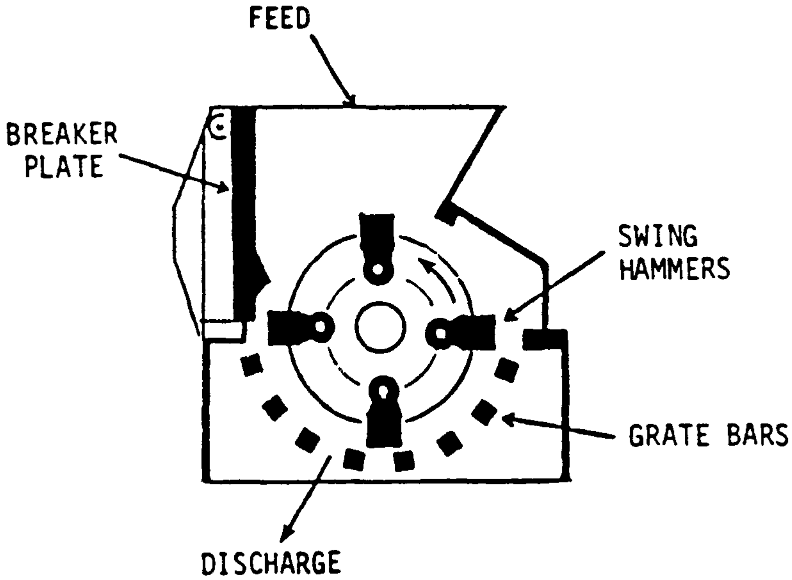


Figure 2-7. Hammermill.

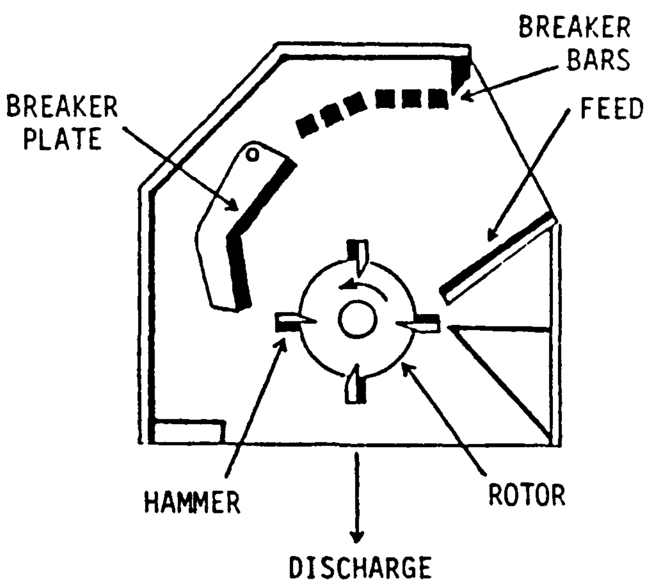


Figure 2-8. Impact crusher.

mechanism employed has a substantial affect on the size reduction that a machine can achieve; the particle size distribution of the product, especially the proportion of fines produced; and the amount of mechanically induced energy that is imparted to fines.

Crushing units using impaction rather than compression produce a larger proportion of fines as noted above. In addition to generating more fines, impaction crushers also impart higher velocity to the particles as a result of the fan-like action produced by the fast rotating hammers. Because of this and the high proportion of fines produced, impaction crushers generate larger quantities of uncontrolled particulate emissions per ton of material processed than any other crusher type.

The level of uncontrolled emissions from jaw, gyratory, cone and roll crushers closely parallels the reduction stage to which they are applied. Emissions increase progressively from primary to secondary to tertiary crushing. Factors other than the type of crushing mechanism (compression, impaction) also affect emissions. In all likelihood, primary jaw crushers produce greater emissions than comparable gyratory crushers because of the bellows effect of the jaw and because gyratory crushers are usually choke fed to minimize the open spaces from which dust may be emitted. For subsequent reduction stages, cone crushers produce more fines as a result of attrition and consequently generate more dust.

2.2 Grinding Mills

Grinding is a further step in the reduction of material to particle sizes smaller than those attainable by crushers. Because the material to be treated has already been reduced to small sizes, and the force to be applied to each particle is comparatively small, the machines used in grinding are of a different type, and may operate on a different principle from those used in more coarse crushing. The Subpart OOO definition of a "grinding mill" does not distinguish between wet and dry crushing and also includes the air conveying system, air separator, or air classifier associated with the grinding operation where it is employed.

As with crushers, the most important element influencing emissions from grinding mills is the reduction mechanism employed, compression, or impaction. Grinding mills generally use impaction rather than compression. Reduction by impaction will produce a larger proportion of fines. Particulate emissions are generated from grinding mills at the grinder's inlet and outlet. Gravity type grinding mills accept feed from a conveyor and discharge product into a screen or classifier or onto a conveyor. These transfer points are the source of particulate emissions. The outlet has the highest emissions potential because of the finer material. Air-swept mills include an air conveying system and an air separator, a classifier, or both. The air separator and classifier are generally cyclone collectors. In some systems, the air just conveys the material to a separator for deposit into a storage bin with the conveying air escaping via the cyclone vent. In other grinding systems, the air is continuously recirculated. Maintaining this circulating air system under suction keeps the mill dustless in operation, and any surplus air drawn into the system due to the suction created by the fan is released through a vent. In both cases the vent gases will contain a certain amount of particulate matter.

Many types of grinding mills are manufactured for use by various industries. The principal types of mills used are: 1) hammer, 2) roller, 3) rod, 4) pebble and ball, and 5) fluid energy. Each of these types of mills is discussed separately below.

2.2.1 Hammermills

A hammermill consists of a high speed horizontal rotor with several rotor discs to which sets of swing hammers are attached. As rock particles are fed into the grinding chamber, they are impacted and shattered by the hammers, which attain peripheral speeds greater than 76 meters (250 feet) per second. The shattered rock then collides with a steel breaker plate and is fragmented even further. A cylindrical grate or screen positioned at the discharge opening restrains oversize material until it is reduced to a size small enough to pass between the grate bars. Product size is controlled by the rotor speed, the spacing between the grate bars, and by hammer length. These mills are used for nonabrasive materials and can accomplish a size reduction of up to 12:1.

2.2.2 Roller Mill

The roller mill, also known as a Raymond Roller Mill, with its integral whizzer separator can produce ground material ranging from 20 mesh to 325 mesh or finer. The material is ground by rollers that travel along the inside of a horizontal stationary ring. The rollers swing outward by centrifugal force, and trap the material between them and the ring. The material is swept out of the mill by a stream of air to a whizzer separator, located directly on top of the mill. Here the oversize is separated and dropped back for further grinding while the desired fines pass up through the whizzer blades into the duct leading to the air separator (cyclone).

2.2.3 Rod Mill

The rod mill is generally considered as a granular grinding unit, principally for handling a maximum feed size of 2 to 4 centimeters (1 to 2 inches), and grinding to a maximum of 65 mesh. It is normally used in a closed circuit with a sizing device, such as classifiers or screens, and for wet or dry grinding. It will grind with the minimum of the finer sizes, such as 100 or 200 mesh, and will handle relatively higher moisture material without packing.

The mill in its general form consists of a horizontal, slow-speed, rotating, cylindrical drum. The grinding media consists of a charge of steel rods, slightly shorter than the mill's inside length and from 5 to 13 centimeters (2 to 5 inches) in diameter. The rods roll freely inside the drum during its rotation to provide the grinding action desired.

2.2.4 Pebble and Ball Mills

The simplest form of a ball mill is cylindrical, horizontal, slow-speed rotating drum containing a mass of balls as grinding media. When other types of grinding media such as a flint or various ceramic pebbles are used, it is known as a pebble mill. The ball mill uses steel, flint, porcelain, or cast iron balls.

The diameter of balls or pebbles as the initial charge in a mill is determined by the size of the feed material and the desired fineness of the product. Usually the larger diameter ranges are used for preliminary grinding and the smaller for final grinding. Ball mills reduce the size of the feed mostly by impaction. These grinders normally have a speed of 10 to 40 revolutions per minute. If the shell rotates too fast, centrifugal force keeps the balls against the shell and minimal grinding occurs.

2.2.5 Fluid Energy Mills

When the desired material size is in the range of 1 to 20 microns, an ultrafine grinder such as the fluid energy mill is required. A typical fluid energy mill is shown in Figure 2-9. In this type of mill, the particles are suspended and conveyed by a high velocity gas stream in a circular or elliptical path. Size reduction is caused by impaction and rubbing against mill walls, and by interparticle attrition. Classification of the particles takes place at the upper bend of the loop. Internal classification occurs because the smaller particles are carried through the outlet by the gas stream while the larger particles are thrown against the outer wall by centrifugal force. Product size can be varied by changing the gas velocity through the grinder.

Fluid energy mills can normally reduce up to 0.91 megagrams/h (1 ton/h) of solids from 0.149 mm (100 mesh) to particles averaging 1.2 to 10 microns in diameter. Typical gas requirements are 0.45 and 1.8 kg (1 to 4 pounds) of steam or 2.7 to 4.1

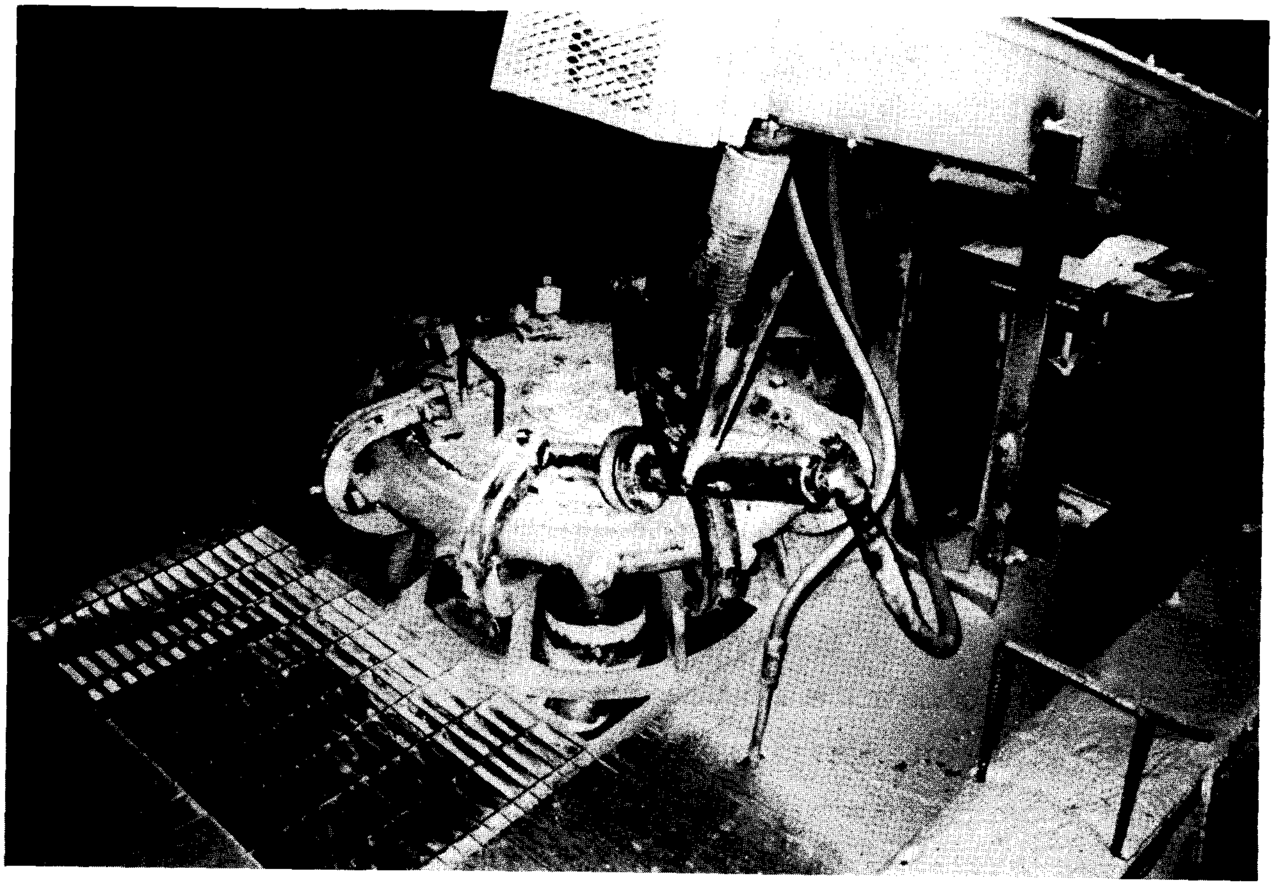


Figure 2-9. Fluid energy mill.

kg (6 to 9 pounds) of air admitted at approximately 6.8 atm (100 psig) per 0.45 kg (1 pound) of product. The grinding chambers are typically about 2.5 to 20 cm (1 to 8 inches) in diameter.

2.2.6 Separating and Classifying

Mechanical air separators of the centrifugal type cover a distinct field and find wide acceptance for the classification of dry materials in a relatively fine state of subdivision. In commercial practice the separator may be said to begin where the impact of vibrating screens leave off, extending from 40 to 60 mesh down.

Briefly stated, the selective action of the centrifugal separator is the result of an ascending air current generated within the machine by means of a fan, such current tends to lift the finer particles against the combined effect of centrifugal force and gravity. In operation, the feed opening allows the material to drop on the lower or distributing plate where it is spread and thrown off by centrifugal force, the larger and heavier particles being projected against an inner casing, while the small and lighter particles are picked up by the ascending air current created by the fan. These fines are carried over into an outer cone and deposited. Concurrently, the rejected coarse material drops into the inner cone, passes out through a spout and is recycled back to the grinding mill.

The air, after dropping the major portion of its burden, is either recirculated back to the grinding mill or vented. In the case of the recirculated air, a small amount of extraneous air is entrained in the feed and frequently builds up pressure in the separator, in which case the excess air may be vented off. Both vent gases are a source of particulate matter.

2.3 Emission Controls for Crushers and Grinding Mills

Generally, particulate matter emission control for crushers and grinding mills involve one of two techniques: 1) wet dust suppression, and/or 2) dust collection by a capture and conveying system to a control device. Wet dust suppression consists of introducing water or amended water into the material flow, causing the fine particulate matter to be confined and remain with the material flow rather than becoming airborne. Dust collection involves hooding and enclosing dust-producing emission points and exhausting emissions to a collection device.

2.3.1 Wet Dust Suppression

Wet dust suppression of dry crushing usually involves water sprays both above and below the crusher throat. The objective of the water sprays is not to fog the emission source with a fine mist to capture PM emissions, but rather to prevent emissions by keeping the material moist during the crushing process. Enough moisture must be added to progressively wet the ore surfaces as reduction proceeds. The water spray nozzles above the crusher throat may be positioned close to the receiving end of the throat or positioned some distance above the throat to assist in dust suppression from truck or feeder dumping of the ore. Figure 2-10 shows a spray nozzle arrangement above the throat of a primary jaw crusher. Note that the wide spray pattern assists in reducing truck dump emissions as well as emissions from the crusher throat. In determining compliance with the Subpart OOO emission standards for crushers, however, emissions from truck dumping of material directly or indirectly into a crusher, grinding mill, screening operation or feed hopper is exempt from the standards and must be separated from emissions originating directly from the affected facility.

In addition to water sprays above the crusher throat, spray nozzles are normally required below the throat where new dry surfaces and dust are generated by the fracture of the ore. Figure 2-11 shows a typical arrangement for the control of emissions at the crusher discharge.

When plain or untreated water is used, because of its unusually high surface tension, the addition of 5 to 8 percent moisture (by weight), or greater, may be required to adequately suppress dust. In some installations, this may not be optimum because the excess moisture may cause downstream screen blinding or result in the coating of mineral surfaces yielding a marginal or nonspecification product.

Figure 2-10. Spray nozzle arrangement above primary crusher throat.

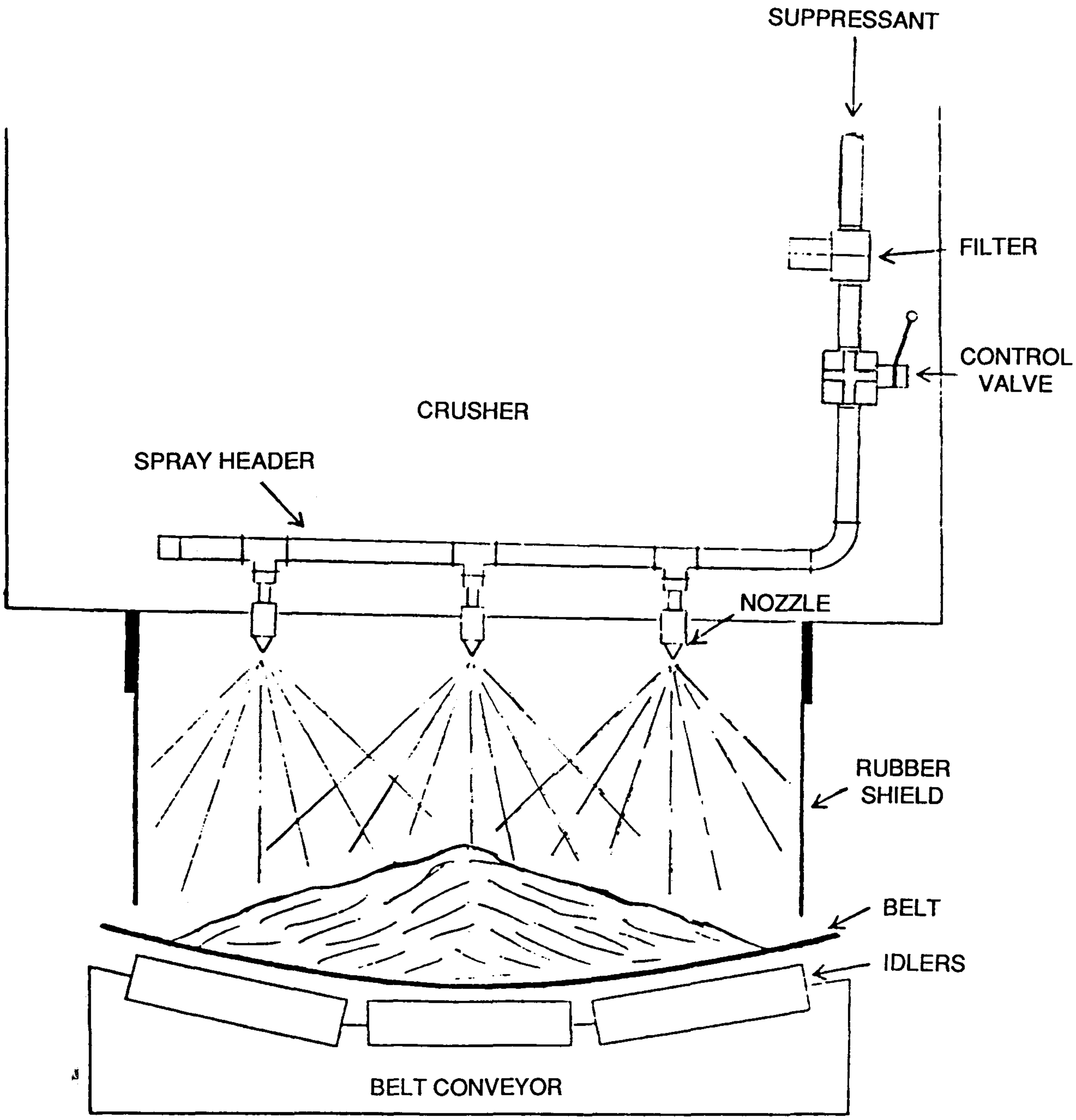


Figure 2-11. Dust suppression application at crusher discharge.

To counteract this effect, small quantities of wetting agents or surfactants may be added to the water to reduce its surface tension and improve it wetting efficiency.

2.3.2 *Dust Collection Systems*

Hooding and air volume requirements for the control of crusher and grinder emissions are quite variable depending upon the size and shape of the emission source, the hood's position relative to the points of emission, and the velocity, nature, and quantity of the released particles. The only established criterion is that a minimum indraft velocity of 61 meters per minute (200 fpm) be maintained through all open hood areas. To achieve this, capture velocities in excess of 150 meters per minute (500 fpm) may be necessary to overcome induced air motion, resulting from the material feed and discharge velocities and the mechanically induced velocity (fan action) of a particular equipment type. To achieve effective emission control, ventilation should be applied at both the upper portion, or feed end, of the equipment and at the discharge point. An exception to this would be at primary jaw or gyratory crushers because of the necessity to have ready access to get at and dislodge large rocks that may get stuck in the crusher feed opening. Where access to a device is required for maintenance, removable hood sections may be used.

In general, the upper portion of the crusher or grinder should be enclosed as completely as possible. The exhaust rate varies considerably depending on crusher type. For impact crushers or grinders, exhaust volumes may range from 110 to 230 m^3/min (4,000 to 8,000 cfm). For compression type crushers, an exhaust rate of 46 m^3/min per meter (500 cfm per foot) of discharge opening should be sufficient. The width of the discharge opening will approximate the width of the receiving conveyor. For either impact crushers or compression type crushers, pick-up should be applied downstream of the crusher for a distance of at least 3.5 times the width of the receiving conveyor. A typical hood configuration used to control particulate emissions from a cone crusher is depicted in Figure 2-12.

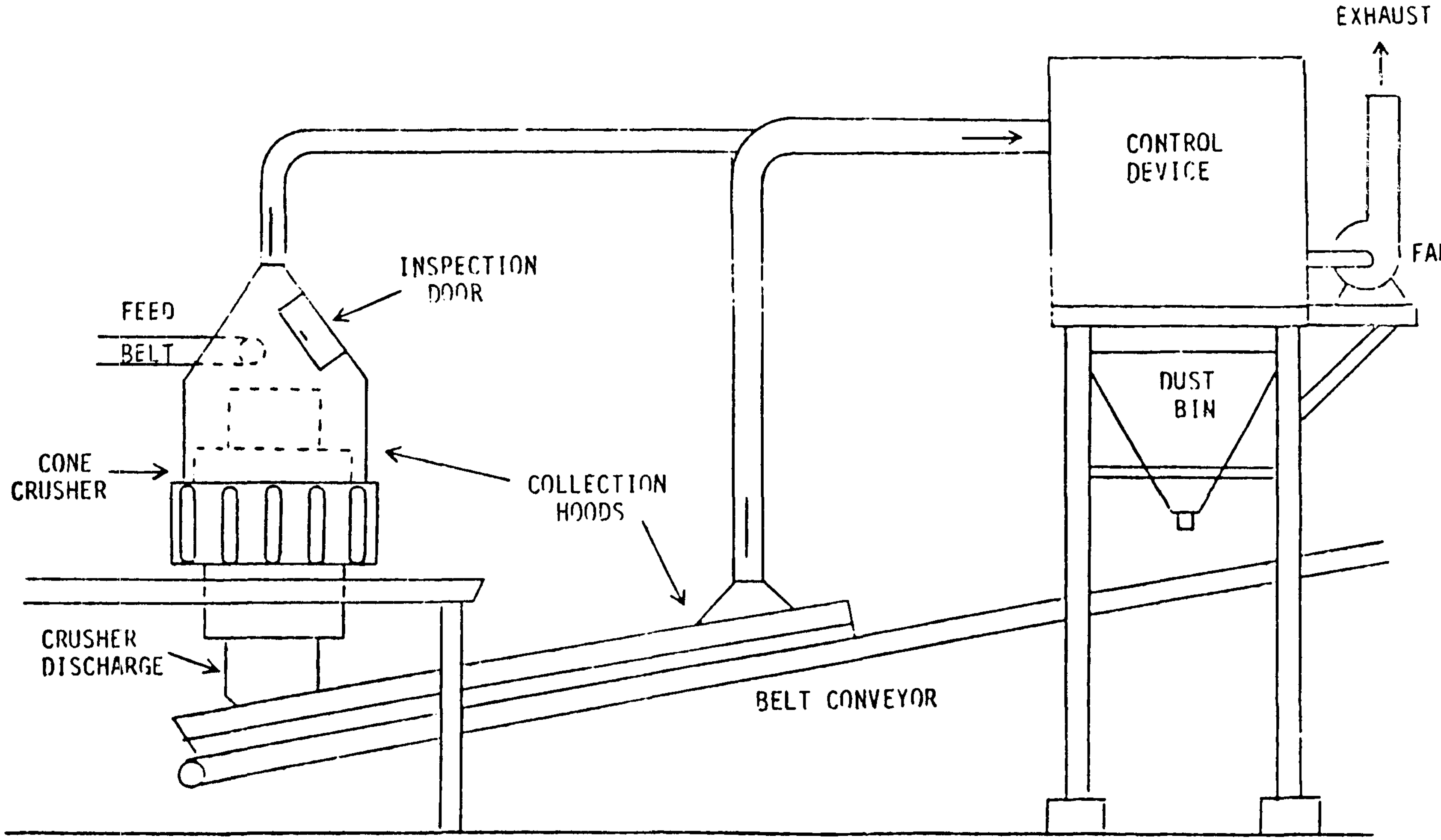


Figure 2-12. Hood configuration used to control a cone crusher.

Grinding or milling circuits which employ air conveying systems operate at slightly negative pressure to prevent the escape of air containing the ground rock. Because the system is not airtight, some air is drawn into the system and must be vented. This vent stream can be controlled by discharging it through a control device.

2.4 Screening Operations

Screening is the process by which a mixture of stones is separated according to size. In screening, material is dropped onto a mesh surface with openings of desired size and separated into two fractions, undersize which passes through the screen opening and oversize which is retained on the screen surface. When material is passed over and through multiple screening surfaces, it is separated into fractions of known particle size distribution. Screening surfaces may be constructed of metal bars, perforated or slotted metal plates, woven wire cloth, or polyurethane materials.

The capacity or size of a screen is primarily determined by the open area of the screening surface and the physical characteristics of the feed. It is usually expressed in tons of material per hour per square foot of screen area. Although screening may be performed wet or dry, dry screening is the more common in crushing circuits. Screening equipment commonly used in the nonmetallic minerals industry includes grizzlies, shaking screens, vibrating screens, and revolving screens.

2.4.1 Grizzlies

Grizzlies consist of a set of uniformly spaced bars, rods, or rails. The bars may be horizontal or inclined and are usually wider in cross section at the top than the bottom. This prevents the clogging or wedging of stone particles between bars. The spacing between the bars ranges from 5 to 20 centimeters (2 to 8 inches). Bars are usually constructed of manganese steel or other highly abrasion-resistant material.

Grizzlies are primarily used to prevent oversize material from entering the crusher, thus reducing the load. Grizzlies may be stationary (Figure 2-13), cantilevered (fixed at one end with the discharge end free to vibrate), or mechanically

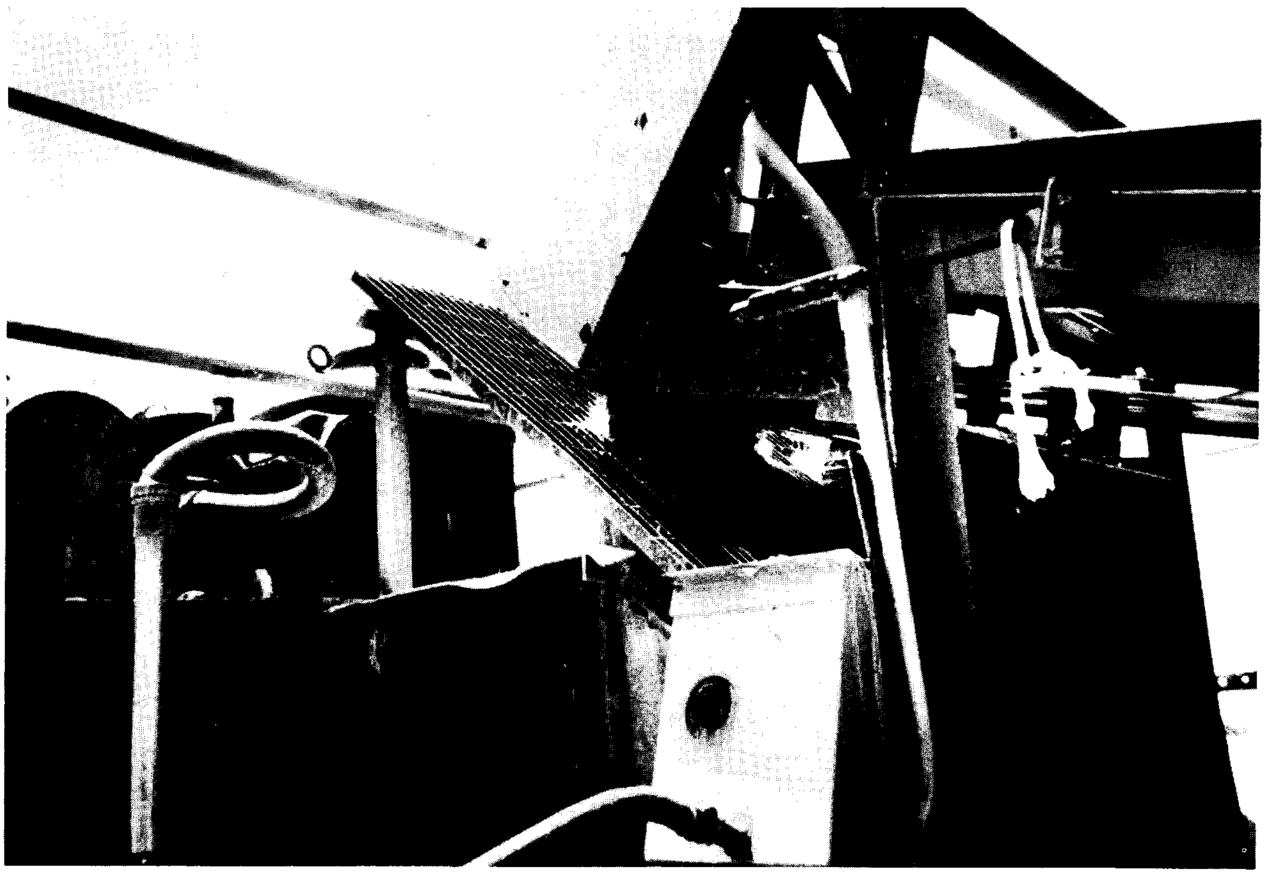


Figure 2-13. Stationary grizzly.

vibrated. Vibrated grizzlies are simple bar grizzlies mounted on eccentrics. The entire assembly is moved forward and backward at approximately 100 strokes a minute, resulting in better flow through and across the grizzly surface.

2.4.2 Shaking Screens

The shaking screen consists of a rectangular frame with perforated plate or wire cloth screening surfaces, usually suspended by rods or cables and inclined at an angle of 14 degrees. The screens are mechanically shaken parallel to the plane of material flow at speeds ranging from 60 to 800 strokes per minute and at amplitudes ranging from 2 to 23 centimeters (3/4 to 9 inches). Generally, they are used for screening coarse material, 1.3 centimeters (1/2-inch) or larger.

2.4.3 Vibrating Screens

Where large capacity and high efficiency are desired, the vibrating screen has practically replaced all other screen types. It is by far the most commonly used screen type in the nonmetallic minerals industry. A vibrating screen (Figure 2-14) essentially consists of a inclined flat or slightly convex screening surface which is rapidly vibrated in a plane normal or nearly normal to the screen surface. The screening motion is of small amplitude but high frequency, normally in excess of 3,000 cycles per minute. The vibrations may be generated either mechanically by means of an eccentric shaft, unbalanced fly wheel, cam and tappet assembly, or electrically by means of an electromagnet.

Mechanically-vibrated units are operated at approximately 1,200 to 1,800 rpm and at amplitudes of approximately 0.3 to 1.3 centimeters (1/8 to 1/2 inch). Electrically vibrated screens are available in standard sizes from 30 to 180 centimeters (12 inches to 6 feet) wide and 0.76 to 6.1 meters (2-1/2 to 20 feet) long. A complete screening unit may have one or more decks.

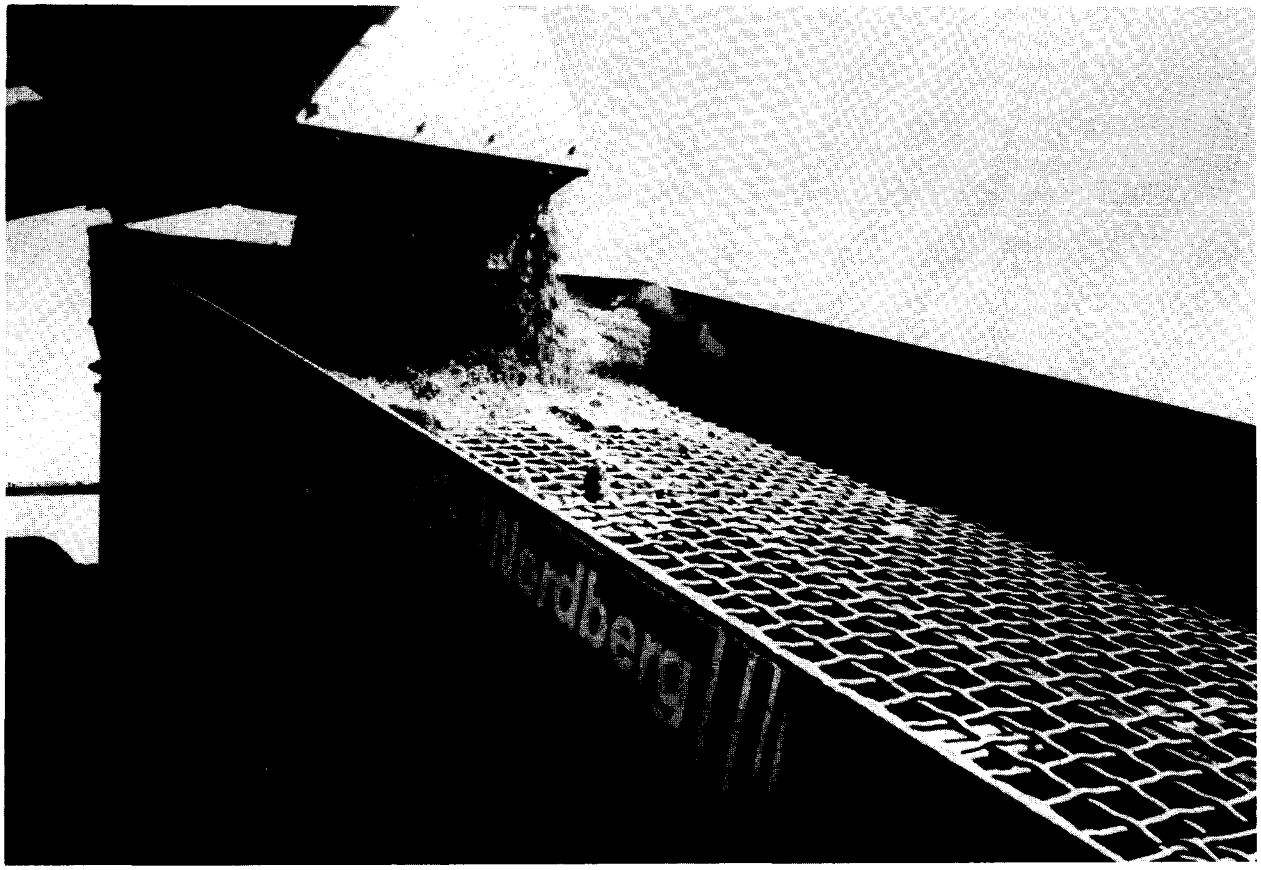


Figure 2-14. Vibrating screen.

2.4.4 *Revolving Screens*

This screen type consists of an inclined cylindrical frame around which is wrapped a screening surface of wire cloth or perforated plate. Feed material is delivered at the upper end and, as the screen is rotated, undersized material passes through the screen openings while the oversized is discharged at the lower end. Revolving screens are available up to 1.2 meters (4 feet) in diameter and usually run at 15 to 200 rpm.

2.4.5 *Emission Controls for Screening Operations*

Dust is emitted from screening operations as a result of the agitation of dry material. The level of uncontrolled emissions depends on the quantity of fine particles contained in the material, the moisture content of the material and the type of screening equipment. Generally, dry screening of fines produces higher emissions than the screening of coarse materials. Also, screens agitated at large amplitudes and high frequency emit more dust than those operated at small amplitudes and low frequencies.

As with crushers and grinding mills, particulate matter emission control may be accomplished by either wet dust suppression when the addition of moisture is not deleterious to the process, or by dust collection and conveyance to a control device. A full coverage hood, as depicted in Figure 2-15, is generally used to control emissions generated at actual screening surfaces. Required exhaust volumes vary with the surface area of the screen and the amount of open area around the periphery of the enclosure. A well-designed enclosure should have a space of no more than 5 to 10 centimeters (2 to 4 inches) around the periphery of the screen. A minimum exhaust rate of 15 m^3/min per square meter (50 cfm per square foot) of screen area is commonly used with no increase for multiple decks.

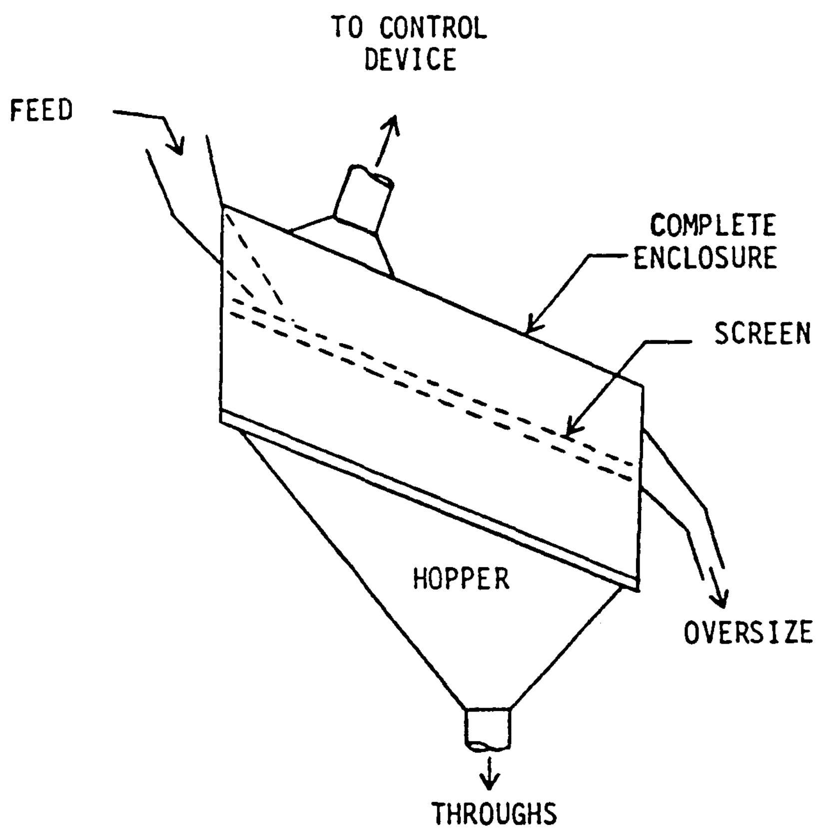


Figure 2-15. Hood configuration for vibrating screen.

As was previously discussed in Section 2.4, screening may be performed either wet or dry. When the object of wet screening is to remove unwanted material from the product (e.g., silt, clay, grit, etc.) and not to separate product by size, the operation is termed washing. Washers are not affected facilities under Subpart OOO (see the definition of screening operation in Section 3.2).

It should be noted, however, that some washers such as deck-type screens with spray bars can be modified for dry screening by removing the sprays. If a washer is modified and used for dry screening, and the washer was manufactured after August 31, 1983, the modified washer constitutes a screening operation as defined in §60.671 and therefore becomes an affected facility under Subpart OOO.

2.5 Storage Bins

Storage bins for raw materials, intermediates, and final products may be charged and unloaded by gravity, mechanically or by pneumatic conveying and loading systems. Charging and unloading may also occur continuously or intermittently. Particulate matter emissions may occur during charging as the air head space in the bin is displaced by product. This air head space is either discharged to the atmosphere without controls through vents, or is collected and conveyed to a control device.

2.5.1 Emission Controls for Storage Bins

The amount of uncontrolled particulate matter emissions generated during storage bin charging is dependent on the material size, charging rate, moisture content and the charging mechanism employed. Top loading of a storage bin involving free-falling material is expected to generate the greatest emissions.

The most frequently employed control devices used on storage bins are fabric dust collectors (baghouse) or air pollution control cyclones. The baghouse may be positioned atop the storage bin (Figure 2-16) or may be positioned some distance away. If a cyclone is employed, however, it is positioned above the bin charging port.

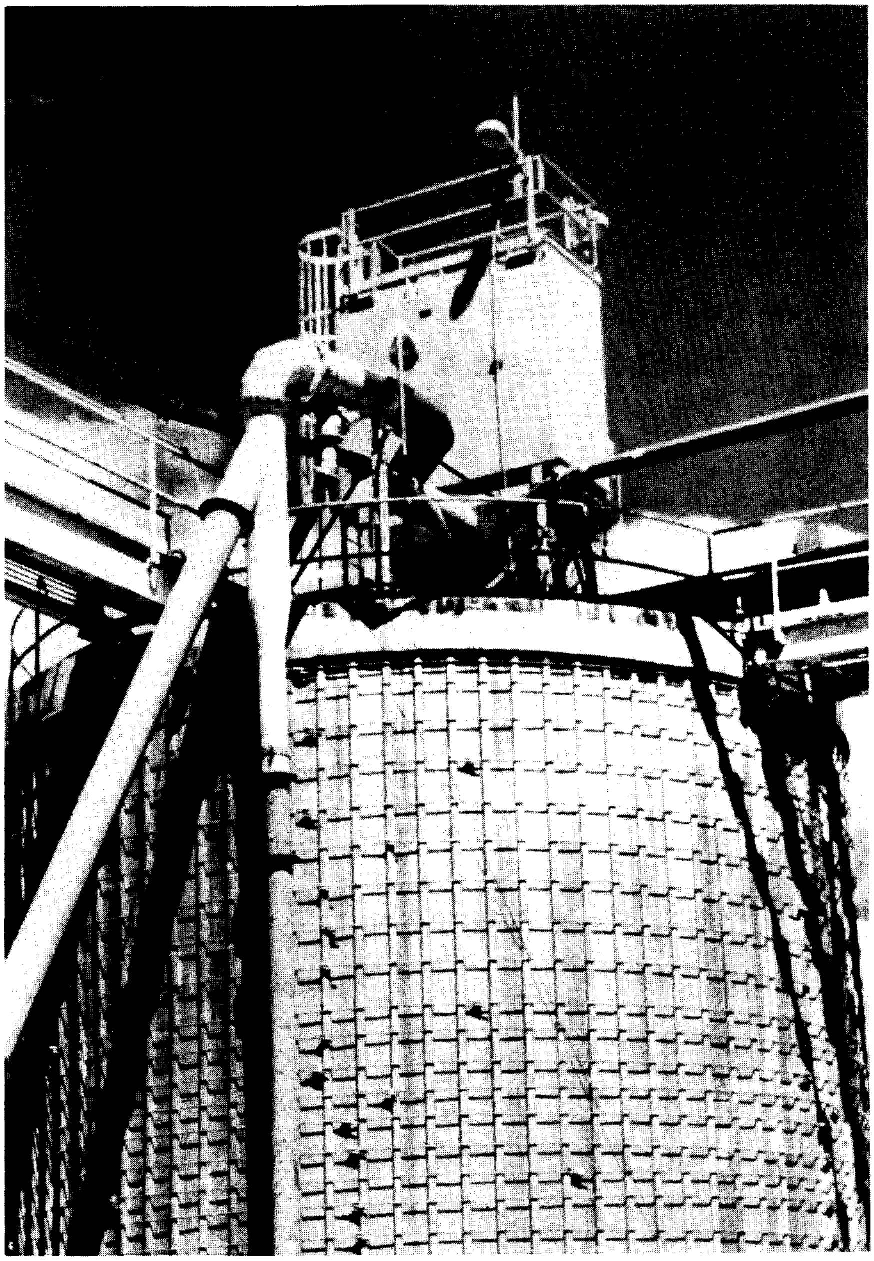


Figure 2-16. Baghouse atop a storage bin.

Cyclones with low circumference-to-height ratios are designed as air separators and are not efficient in reducing fine particulate matter emissions. Figure 2-17 shows two cyclones, each serving a storage bin and acting as air separators during charging. Also note that between the cyclones are two baghouses which control emissions from the exits of each cyclone and also serve as controls on bin venting.

2.6 Bucket Elevators

Bucket elevators are used where substantial elevation is required within a limited space. They consist of a head and foot assembly which supports and drives an endless single or double strand chain or belt to which buckets are attached. Figure 2-18 depicts the three types most commonly used: the high-speed centrifugal-discharge, the slow speed positive or perfect-discharge, and the continuous-bucket elevator.

The centrifugal-discharge elevator has a single strand of chain or belt to which the spaced buckets are attached. As the buckets round the tail pulley, which is housed within a suitable curved boot, the buckets scoop up their load and elevate it to the point of discharge. The buckets are so spaced so that at discharge, the material is thrown out by the centrifugal action of the bucket rounding the head pulley. The positive-discharge type also uses spaced buckets but differs from the centrifugal type in that it has a double-strand chain and a different discharge mechanism. An additional sprocket, set below the head pulley, effectively bends the strands back under the pulley, which causes the bucket to be totally inverted resulting in a positive discharge.

The continuous-bucket elevator uses closely spaced buckets attached to a single or double strand belt or chain. Material is loaded directly into the buckets during ascent and is discharged gently as a result of using the back of the precluding bucket as a discharge chute.

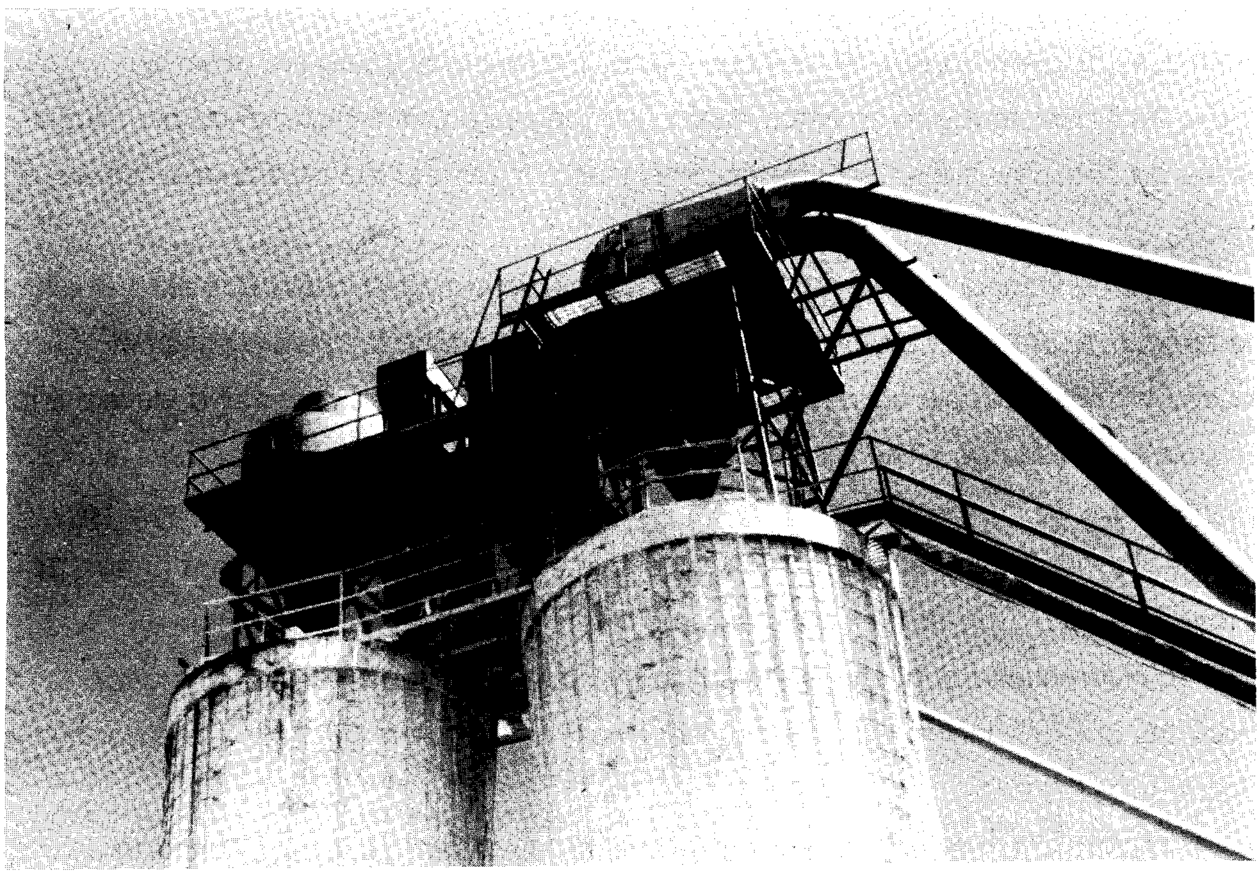
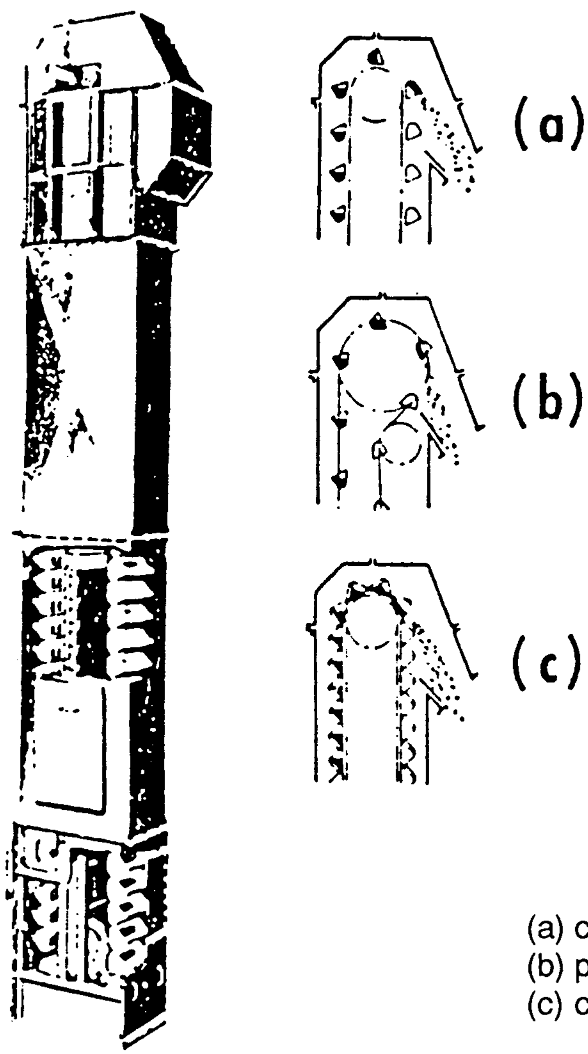


Figure 2-17. Cyclones and baghouses serving storage bins.



LEGEND

(a) centrifugal discharge
(b) positive discharge
(c) continuous discharge

Figure 2-18. Bucket elevator types.

2.6.1 *Emission Controls for Bucket Elevators*

Particulate matter emissions generated by bucket elevators are dependent on the particle size distribution of the material, freefall distance, moisture content, and the speed of the elevator belt or chain. Emission control is applied at the top of the elevator at the point of bucket discharge using a dust capture and conveying system to a control device, usually a baghouse. The angle of the capture system duct penetration into the elevator enclosure is important to avoid duct pluggage. The penetration angle should be above or below perpendicular to the elevator. The fan draft of the capture system should be enough to capture the fines within the enclosure, but not high enough to capture product.

2.7 Belt Conveyors

Belt conveyors are the most widely used means of transporting, elevating, and handling materials in the nonmetallic minerals industry. As illustrated in Figure 2-19, belt conveyors consist of an endless belt that is carried on a series of idlers usually arranged so that the belt forms a trough. The belt is stretched between a drive or head pulley and a tail pulley. Although belts may be constructed of other material, reinforced rubber is the most commonly used. Belt widths may range from 36 to 152 centimeters (14 to 60 inches) with 76 to 91 centimeter (24 to 36 inch) belts the most common. Normal operating speeds may range from 60 to 120 meters per minute (200 to 400 feet/minute). Depending on the belt speed, belt width and rock density, load capacities may be in excess of 1360 megagrams (1,500 tons) per hour.

Subpart OOO only regulates particulate matter emissions from transfer points to and from affected facility belt conveyors (except transfer points to stockpiles).

2.7.1 *Emission Controls for Belt Conveyor Transfer Points*

Particulate matter emissions from belt conveyor transfer points are dependent on the particle size distribution of the material conveyed, moisture content, belt speed, wind speed, and free-fall distance. Emission control is usually applied by hooding,

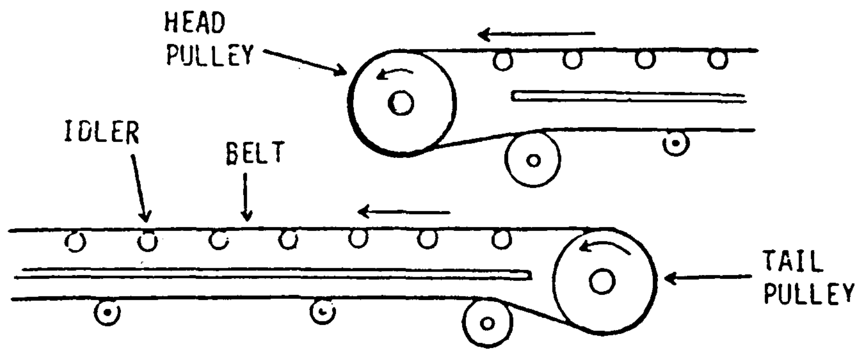


Figure 2-19. Conveyor belts and transfer point.

capturing, and conveying to a control device or by wet suppression. Fugitive emissions are possible, however, from the return portion of the belt (bottom) if the load material is not completely discharged and adheres to the belt surface. Belt cleaning is usually accomplished immediately below the head pulley by scrapers, brushes or vibrators.

At belt-to-belt conveyor transfer points, hoods should be designed to enclose both the head pulley of the upper belt and the tail pulley of the lower belt as completely as possible. With careful design, the open area should be reduced to approximately 0.15 square meters per meter (0.5 square feet per foot) of belt width. Factors affecting the air volume to be exhausted include the conveyor belt speed and the free-fall distance to which the material is subjected. Recommended exhaust rates are 33 m^3 per min per meter (350 cfm per foot) of belt width for belt speeds less than 61 meters/min (200 fpm) and 150 m^3/min (500 cfm) for belt speeds exceeding 61 meters/min (200 fpm). For a belt-to-belt transfer with less than a 0.91 meter (three foot) fall, the enclosure illustrated in Figure 2-20 is commonly used.

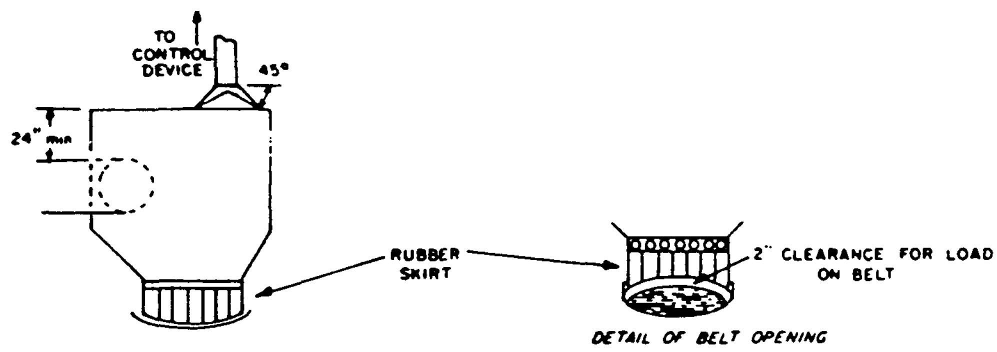


Figure 2-20. Hood configuration for conveyor transfer, less than 0.91 meter (3-foot) fall.

For belt-to-belt transfers with a free-fall distance greater than 0.91 meters (three feet) and for chute-to-belt transfers, an arrangement similar to that depicted in Figure 2-21 is commonly used. The exhaust connection should be made as far downstream as possible to maximize dust fallout and thus minimize needless dust entrainment. For material containing a high percentage of fines, additional exhaust air may be required at the tail pulley of the receiving belt. Recommended air volumes are 20 m^3/min (700 cfm) for belts 0.91 meters (three feet) wide and less, and 28 m^3/min (1,000 cfm) for belts wider than 0.91 meters (three feet).

Belt or chute-to-bin transfer points differ from the usual transfer operation in that there is no open area downstream of the transfer point. Thus, emissions are emitted only at the loading point. As illustrated in Figure 2-22, the exhaust connection is normally located at some point remote from the loading point and exhausted at a minimum rate of 61 m^3/min per square meter (200 cfm per square foot) of open area.

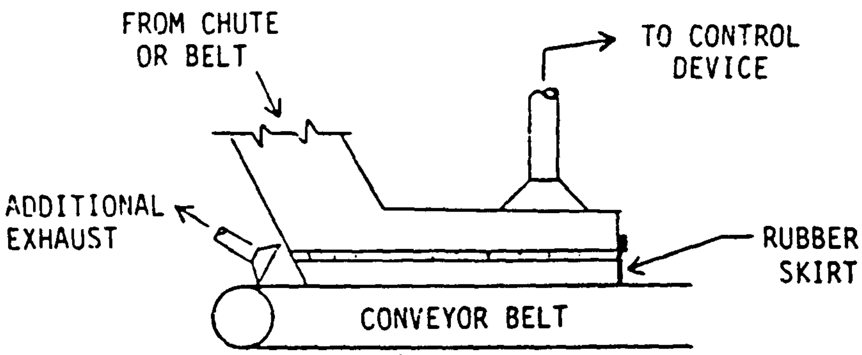


Figure 2-21. Hood configuration for a chute-to-belt or conveyor transfer, greater than 0.91 meter (3-foot) fall.

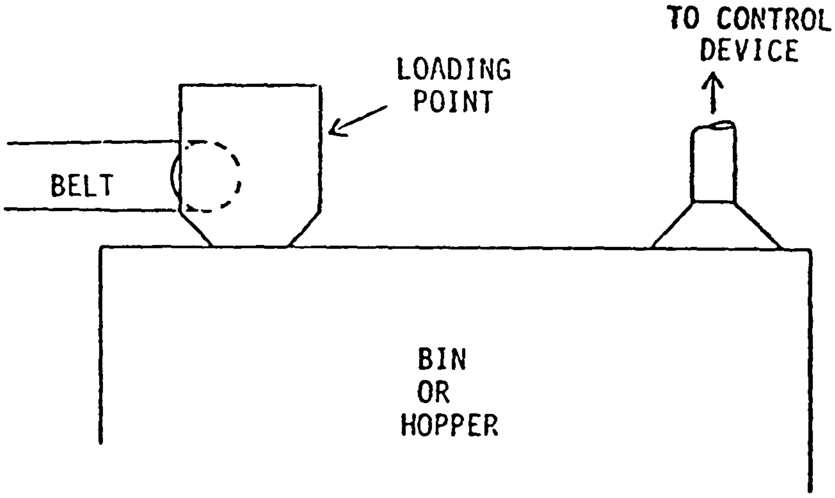


Figure 2-22. Exhaust configuration at bin or hopper.

2.8 Bagging Operations

In the nonmetallic minerals industry the valve type paper bag, either sewn or pasted together, is widely used for shipping fine materials. The valve bag is "factory closed," that is, the top and bottom are closed either by sewing or by pasting, and a single small opening is left on one corner. Materials are discharged into the bag through the valve. The valve closes automatically due to the internal pressure of the contents of the bag as soon as it is filled.

The valve type bag is filled by means of a packing machine designed specifically for this purpose. The material enters the bag through a nozzle inserted in the valve opening, and the valve closes automatically when the filling is completed.

Bagging operations are a source of particulate emissions. Dust is emitted during the final stages of filing when dust laden air is forced out of the bag. The fugitive emissions due to bagging operations are generally localized in the area of the bagging machine.

2.8.1 Emission Controls for Bagging Operations

Bagging operations are controlled by local exhaust systems and vented to a baghouse for product recovery. Hood face velocities on the order of 150 meters (500 feet) per minute should be used. An automatic bag filling operation and vent system is shown in Figure 2-23.

It should be noted that if the baghouse serving the NSPS bagging operation also serves other process equipment, whether or not they are Subpart OOO affected facilities, the baghouse emissions will be subject to the Subpart OOO particulate emission standards unless already covered by other NSPS standards (e.g., Subpart I). For certain conditions, the Subpart OOO particulate standard may be prorated with another applicable particulate standard (Section 4.8.2).

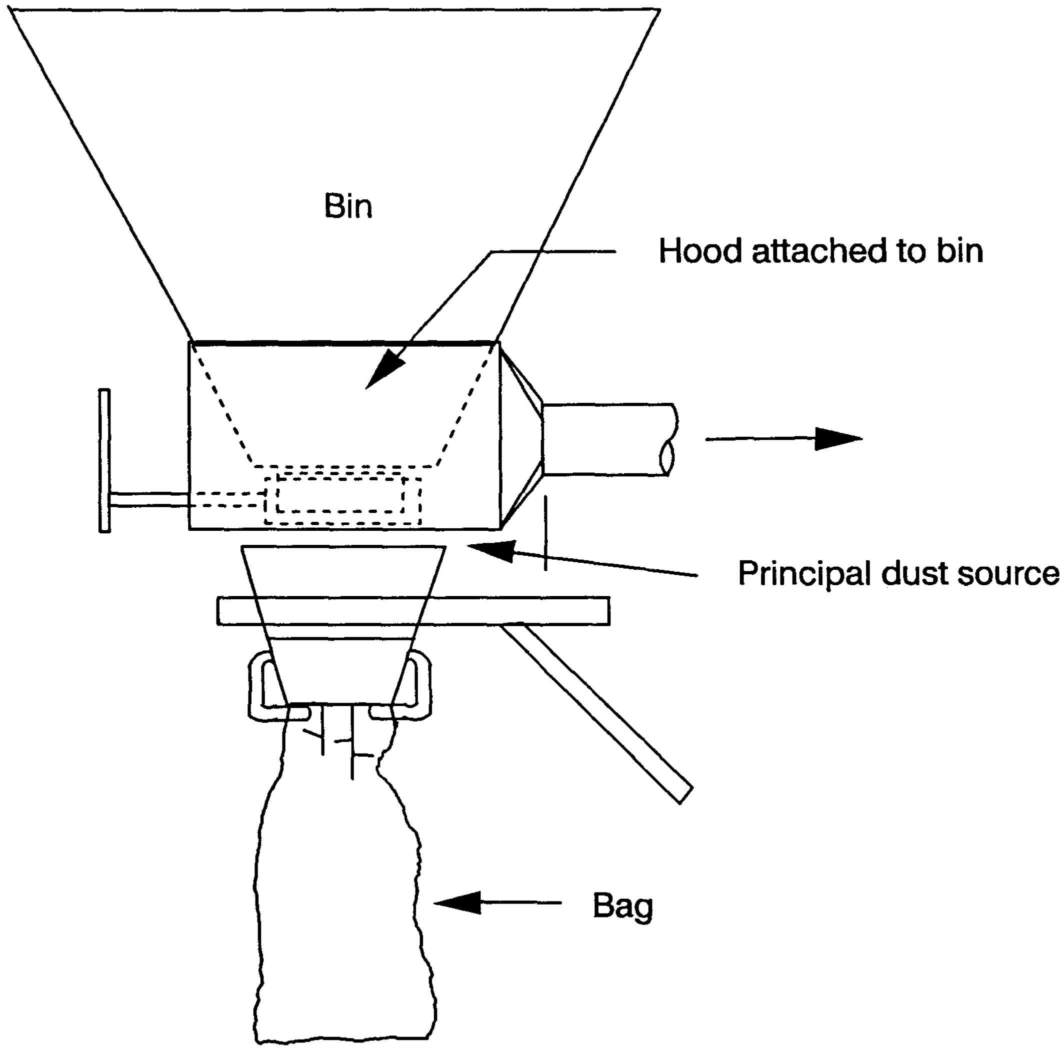


Figure 2-23. Bag filling vent system.

2.9 Enclosed Truck or Railcar Loading Operations

Product materials that are not bagged for shipment may be either bulk loaded into trucks or railroad cars. The usual method of loading is gravity feeding through plastic or fabric sleeves. Bulk loading of fine material is a source of particulate emissions because, as in the bagging operation, dust laden air is forced out of the truck or railroad car during the loading operation.

Subpart OOO defines an enclosed truck or railcar loading station as "that portion of a nonmetallic mineral processing plant where nonmetallic minerals are loaded by an enclosed conveying system into enclosed trucks or railcars." This means that the conveying system must be enclosed as well as the truck or railcar. An enclosed conveying system includes the enclosed apparatus that directly discharges into the truck or railcar. To determine the termination of the enclosed conveying system, the system should be traced from the transfer point at the truck or railcar countercurrent to material flow to the first transfer point. Any particulate matter emissions between these two transfer points are emissions from the enclosed conveying system.

Finally, the definition of enclosed truck or railcar loading station stipulates that the truck or railcar be enclosed. Enclosure may be here defined as a hood or cover, integral or attached to the truck or railcar, through which penetrations are afforded for loading and displacement of air.

2.9.1 Emission Controls for Enclosed Truck or Railcar Loading Stations

Particulate emissions from enclosed truck and railcar loading of coarse material can be minimized by eliminating any breaks in the enclosed conveying system. Shrouds, telescoping feed tubes, and windbreaks can further reduce the fugitive emissions from this intermittent source. Particulate emissions from loading of fine material into either trucks or railroad cars can be controlled by an exhaust system vented to a baghouse. The material is fed through one of the vehicle's openings and the exhaust connection is normally at another opening. The system should be designed with a minimum amount of open area around the periphery of the feed chute and the exhaust duct. Figure 2-24 shows both an enclosed truck and railcar loading station. In this example, product material is directly loaded by gravity from storage bins through enclosed feed tubes. Note that both the truck and railcar are also separately enclosed systems.

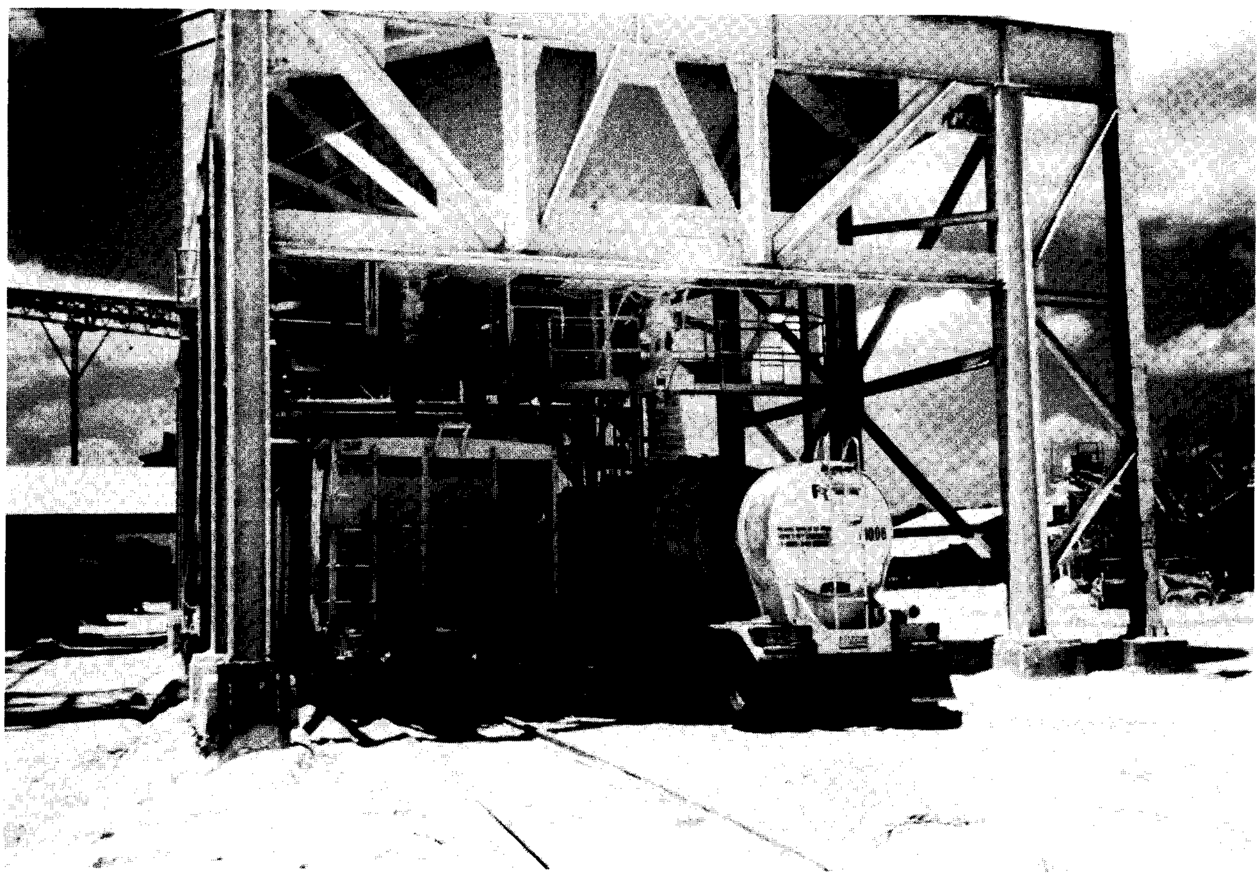


Figure 2-24. Combination enclosed truck and railcar loading station.

SECTION 3

REGULATORY REQUIREMENTS AND THEIR APPLICATION

Regulatory requirements for the nonmetallic mineral processing NSPS are contained in 40 CFR Part 60, Subpart OOO as well as in the general provisions of 40 CFR Part 60, Subpart A. This section details these requirements and provides an explanation of the definitions, rules, and standards contained in Subpart OOO and those requirements in Subpart A that directly affect the nonmetallic mineral processing NSPS. In addition, this section provides guidance on the application of the NSPS requirements.

To facilitate a better understanding of the regulations and their application, the specific requirements of Subpart OOO are presented in their entirety. Each section of the subpart is arranged in numerical order and is divided into individual subsections or paragraphs. Each subsection or paragraph is presented as it appears in the Federal Register followed by a more detailed explanation of its content as well as notes on its application. Where applicable, the provisions of Subpart A which directly affect each subsection or paragraph are included. Finally, cross-sectional references are provided to better explain each subsection or paragraph in the overall context of the regulations.

Although this section should be read in its entirety, it may also be used as a reference when questions arise during actual application of the regulations.

3.1 Applicability and Designation of Affected Facility - §60.670

3.1.1 General Applicability and Affected Facilities - §60.670 (a)

> (a) Except as provided in paragraphs, (b) *[subject to Subpart F or I]*, (c) *[plants exempted by capacity]* and (d) *[replacement of equipment of equal or smaller size]* of this section, the provisions of this subpart are applicable to the following affected facilities in fixed or portable nonmetallic mineral processing plants; each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station.

Explanation/Application:

Paragraphs (b), (c), and (d) will be more fully explained separately in this section. Also, each type of affected facility (i.e., crusher, grinding mill, belt conveyor, etc.) will be covered individually in Section 3.2. The key term is "affected facility." In determining the appropriate designation of "affected facility" for this NSPS, EPA found that a narrow designation was most appropriate to minimize emissions by application of best demonstrated control technology. Under this narrow designation, affected facilities are individual pieces of operating equipment, not entire plants.

See also:

- Appendix B, §60.2 "Affected Facility"
- Section 3.1.2, 3.1.3, and 3.1.4
- Section 3.2, §60.671 "Crusher," "Grinding Mill," "Belt Conveyor,""Screening Operation," "Bucket Elevator," "Bagging Operation," "Storage Bin," "Enclosed Truck or Railcar Loading Station," and "Nonmetallic Mineral Processing Plants"

3.1.2 Facilities Subject to Other NSPS - §60.670 (b)

(b) An affected facility that is subject to the provisions of Subpart F or I or that follows in the plant process any facility subject to the provisions of Subpart F or I of this part is not subject to the provisions of this subpart.

Explanation/Application:

Subpart F is the NSPS for portland cement plants while Subpart I is the NSPS for asphalt concrete plants. At these types of facilities, the nonmetallic mineral processing NSPS will apply to affected facilities that precede equipment covered by Subparts F or I. For example, onsite crushing operations at asphalt concrete plants will be subject to the nonmetallic mineral processing NSPS. Once the crushed stone is entered as a raw material into the asphalt concrete process, however, equipment for handling it is covered under Subpart I.

See also:

- Appendix H, memorandum from John B. Rasnic to Bernard E. Turlinski, November 8, 1990.

3.1.3 Facilities Exempted by Plant Type/Capacity - §60.670 (c)

(c) Facilities at the following plants are not subject to the provisions of this subpart:

(1) Fixed sand and gravel plants and crushed stone plants with capacities, as defined in §60.671, of 23 megagrams per hour (25 tons per hour) or less

(2) Portable sand and gravel plants and crushed stone plants with capacities, as defined in §60.671, of 136 megagrams per hour (150 tons per hour) or less

(3) Common clay plants and pumice plants with capacities, as defined in §60.671, of 9 megagrams per hour (10 tons per hour) or less.

Explanation/Application:

Economic and environmental impacts analysis conducted by EPA indicated that at these types of facilities operating at these capacities, emissions reductions might be unreasonably costly for the environmental benefits received.

In order to accurately identify these plant types, the definitions of "fixed plant," "portable plant," "capacity," and "initial crusher" must be accurately applied.

See also:

° Section 3.2, §60.671 "Fixed Plant," "Portable Plant," "Capacity," and "Initial Crusher"

3.1.4 Exemption by Replacement with Facilities of Equal or Smaller Size - §60.670 (d)

(d)(1) When an existing facility is replaced by a piece of equipment of equal or smaller size, as defined in §60.671, having the same function as the existing facility, the new facility is exempt from the provisions of §§60.672, 60.674 and 60.675 except as provided in paragraph (d)(3) of this section.

(2) An owner or operator seeking to comply with this paragraph shall comply with the reporting requirements of §60.676 (a) and (b).

(3) An owner or operator replacing all existing facilities in a production line with new facilities does not qualify for the exemption described in paragraph (d)(1) of this section and must comply with the provisions of §§60.672, 60.674, and 60.675.

Explanation/Application:

The key point in paragraph (d)(1) is the term "size." For crushers, grinding mills, bucket elevators, bagging operations, and enclosed truck or railcar loading stations, size is defined as the rated capacity in tons per hour. Rated capacity is the manufacturer's highest rated capacity. To ensure that the replacement equipment is indeed of equal or smaller size, the manufacturer's highest rated capacities of both the existing equipment and the replacement equipment should be based on the same operating criteria. For example, the size (rated capacity) of an existing crusher may be based on the crusher efficiency index number (CEIN) method involving variables such as the test material work index, feed size, product size, open circuit capacities for each closed side setting, and maximum horsepower. Regardless of rating methodology, identical or like criteria and methods should be used to rate the capacity of replacement equipment.

It should be noted that if this exemption is applicable, the owner or operator is only exempt from §§60.672, 60.674, and 60.675; all other requirements of the Subpart are applicable.

Paragraph (d)(3) stipulates that if an entire production line is replaced with equipment of equal or smaller size, the exemptions from the particulate matter standards (§60.672), wet scrubber monitoring requirements (§60.674), and performance test (§60.675) do not apply. This also means that if the equipment is replaced one or more pieces at a time, the entire production line retains the exemptions until the last piece of equipment is replaced.

§60.671 defines "production line" as all affected facilities which are directly connected together by a conveying system. Although the definition of "conveying system" is not limited to feeders, belt conveyors, bucket elevators and pneumatic systems, movable equipment (i.e., trucks, frontend loaders, etc.) are not to be included in the definition of "conveying system" as it applies to the definition of "production line" because movable equipment do not directly connect the affected facilities.

<u>See also</u>:

- Section 3.2, §60.671 "Size" and "Production Line"

3.1.5 Designation of Affected Facility by Date of Construction, Reconstruction, or Modification - §60.670 (e)

(e) An affected facility under paragraph (a) of this section that commences construction, reconstruction, or modification after August 31, 1983 is subject to the requirements of this part.

<u>Explanation/Application</u>:

As defined in §60.2 of Subpart A, "commenced" means that an owner or operator has undertaken a continuous program of construction (or reconstruction) or modification or has entered into a contractural obligation to undertake and complete such a program.

§60.2 also defines "construction" as fabrication, erection, or installation of an affected facility. Because of the narrow designation of affected facility under Subpart OOO, construction means the date of fabrication or manufacture of the affected facility. For example, a crusher manufactured before August 31, 1983 but erected or installed after this date would not be designated an affected facility under Subpart OOO.

Finally, §60.2 defines "modification" as any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant (to which a standard applies) from that facility or results in the emission of a pollutant not previously emitted. EPA does not, however, anticipate that the modification provisions will be triggered except on rare occassions. Most modifications to existing facilities will fall within the provisions of §60.14(e) of Subpart A which, by themselves, are not considered modifications. These provisions include: 1) routine maintenance, repair and replacement within the IRS annual asset guideline repair allowance (presently 6.5 percent), 2) An increase in production rate without a capital expenditure on a facility, 3) an increase in the hours of operation, 4) use of alternative raw materials if the facility was designed to accommodate them before the date of the NSPS proposal (August 31, 1983), 5) the addition or use of an air pollution control device, and 6) relocation or change in ownership. Not meeting the provisions of §60.14(e) (2), an increase in production rate involving a capital expenditure, is probably the most likely way a modification would cause an existing facility to become subject to the NSPS requirements (see the definition of "capital expenditure" in Appendix B, §60.2).

For a detailed explanation of reconstruction, see Section 3.4.

<u>See also</u>:

- Appendix B, §60.2 "Commenced," "Construction," "Modification," and §60.14
- Sections 3.7.1, 3.7.2

3.2 Definitions - §60.671

Definitions contained in §60.671 are presented here in alphabetical order as they appear in the regulations.

Bagging Operation

"Bagging operation" means the mechanical process by which bags are filled with nonmetallic minerals.

Explanation/Application:

By definition, only operations which mechanically fill "bags" are designated as affected facilities. This does not include similar operations that fill boxes, drums, or other containers.

Belt Conveyor

"Belt conveyor" means a conveying device that transports material from one location to another by means of an endless belt that is carried on a series of idlers and routed around a pulley at each end.

Explanation/Application:

Although belt conveyors are listed in §60.670 (a) as affected facilities, only transfer points to and from belt conveyors manufactured after August 31, 1983 are subject to the requirements of Subpart OOO (except transfer points to stockpiles).

Bucket Elevator

"Bucket elevator" means a conveying device of nonmetallic minerals consisting of a head and foot assembly which supports and drives an endless single or double strand chain or belt to which buckets are attached.

Explanation/Application: None

Building

"Building" means any frame structure with a roof.

Explanation/Application:

There is no requirement that the building be enclosed on any side except the top (roof). The roof may be any solid structure with the sole purpose of weatherizing whatever is covered by the roof. The key point is that the roof must be constructed solely as a weather barrier. For example, a truck loading station beneath a silo supported by framing members does not constitute a building because the silo was not constructed solely as a weather barrier for the loading station.

Capacity

"Capacity" means the cumulative rated capacity of all initial crushers that are part of the plant.

Explanation/Application:

Capacity is defined here as plant capacity. Therefore, plant capacity is the cumulative total manufacturer's rated capacity of all the initial crushers that are onsite whether or not the crushers are in service. See Section 3.1, §60.670(d) for a more detailed clarification of "rated capacity." Also, see the definition of "initial crusher" in this section.

Capture System

"Capture system" means the equipment (including enclosures, hoods, ducts, fans, dampers, etc.) used to capture and transport particulate matter generated by one or more process operations to a control device.

Explanation/Application:

None

Control Device

"Control device" means the air pollution control equipment used to reduce particulate matter emissions released to the atmosphere from one or more process operations at a nonmetallic mineral processing unit.

Explanation/Application:

Control devices include, but are not limited to the following: baghouses, wet scrubbers, cyclones, multiple cyclones, and wet dust suppression systems.

Conveying System

"Conveying system" means a device for transporting materials from one piece of equipment or location to another location within a plant. Conveying systems include, but are not limited, to the following: feeders, belt conveyors, bucket elevators, pneumatic systems, screw conveyors, etc.

Explanation/Application:

Conveying system is here defined as it relates to the definition of "production line." In this context, movable equipment (i.e., trucks frontend loaders, etc.) is not considered part of a conveying system. See the definition of "production line" in this section. Also see Section 3.1, §60.670(d) (3).

Crusher

"Crusher" means a machine used to crush any nonmetallic minerals, and includes, but is not limited to, the following types: jaw, gyratory, cone, roll, rod mill, hammermill, and impactor.

Explanation/Application: See Section 2.1

Enclosed Truck or Railcar Loading Station

"Enclosed truck or railcar loading station" means that portion of a nonmetallic mineral processing plant where nonmetallic minerals are loaded by an enclosed conveying system into enclosed trucks or railcars.

Explanation/Application:

Subpart OOO defines an enclosed truck or railcar loading station as "that portion of a nonmetallic mineral processing plant where nonmetallic minerals are loaded by an enclosed conveying system into enclosed trucks or railcars." This means that the conveying system must be enclosed as well as the truck or railcar. An enclosed conveying system includes the enclosed apparatus that directly discharges into the truck or railcar. To determine the termination of the enclosed conveying system, the system should be traced from the transfer point at the truck or railcar countercurrent to material flow to the first transfer point. Any particulate matter emissions between these two transfer points are emissions from the enclosed conveying system.

Finally, the definition of enclosed truck or railcar loading station stipulates that the truck or railcar be enclosed. Enclosure may be here defined as a hood or cover, integral or attached to the truck or railcar, through which penetrations are afforded for loading of material and displacement of air.

Fixed Plant

> "Fixed plant" means any nonmetallic mineral processing plant at which the processing equipment specified in §60.670(a) is attached by a cable, chain, turnbuckle, bolt or other means (except electrical connections) to any anchor, slab, or structure including bedrock.

Explanation/Application:

The definition of a fixed plant relates to the exemptions granted fixed sand and gravel plants and crushed stone plants with capacities of 23 megagrams per hour (25 tons per hour) or less, and fixed or portable common clay plants and pumice plants with capacities of 9 megagrams per hour (10 tons per hour) or less. The exception for electrical connections in the definition includes both power connections and grounding connections.

Fugitive Emission

> "Fugitive emission" means particulate matter that is not collected by a capture system and is released to the atmosphere at the point of generation.

Explanation/Application:

Fugitive emissions are those particulate matter emissions not released through a stack or vent (powered). For the purposes of this definition, a release to the atmosphere at the point of generation includes release to the atmosphere within a building as well as a release to the outside atmosphere at the point at which the particulate matter is first produced.

Grinding Mill

> "Grinding mill" means a machine used for the wet or dry fine crushing of any nonmetallic mineral. Grinding mills include, but are not limited to, the following types: hammer, roller, rod, pebble and ball, and fluid energy. The grinding mill includes the air conveying system, air separator, or air classifier, where such systems are used.

Explanation/Application:

As defined, Subpart OOO does not distinguish between wet and dry grinding. Therefore, wet grinding operations are not exempt from the particulate matter standards, wet scrubber monitoring requirements, or the performance test requirements of the regulations. In determining compliance with the standards, all emission points in the total grinding system, including the air conveying system, air separator and/or air classifier, are subject to all the NSPS requirements.

Initial Crusher

"Initial crusher" means any crusher into which nonmetallic minerals can be fed without prior crushing in the plant.

Explanation/Application:

An initial crusher is the first piece of crushing equipment employed after quarry reduction (i.e., blasting, cracking, or breaking) is achieved. The location of the initial crusher(s) may be in the quarry or at the plant. Also, note that this definition is not conditional as to whether or not a crusher is operating at any given time..." into which nonmetallic minerals can be fed..." Therefore, if a crusher is onsite, whether or not operating, its rated capacity must be included in the cumulative total of all initial crushers for the purpose of establishing plant capacity. See the definitions of "capacity" and "crusher" in this section. Also see section 3.1, §60.670(c).

Nonmetallic Mineral

"Nonmetallic mineral" means any of the following minerals or any mixture of which the majority is any of the following minerals.

(a) Crushed and broken stone, including limestone, dolomite, granite, traprock, sandstone, quartz, quartzite, marl, marble, slate, shale, oil shale, and shell.

(b) Sand and gravel

(c) Clay including kaolin, fireclay, bentonite, fuller's earth, ball clay, and common clay

(d) Rock salt

(e) Gypsum

(f) Sodium compounds, including sodium carbonate, sodium chloride, and sodium sulfate

(g) Pumice

(h) Gilsonite

(i) Talc and pyrophyllite

(j) Boron, including borax, kernite, and colemanite

(k) Barite

(l) Fluorospar

(m) Feldspar

(n) Diatomite

(o) Perlite

(p) Vermiculite

(q) Mica

(r) Kyanite, including andalusite, sillimanite, topaz, and dumortierite.

Explanation/Application:

A nonmetallic mineral, by definition, includes any one or any mixture of the listed minerals which comprises over half of the raw material processed.

Nonmetallic Mineral Processing Plant

"Nonmetallic mineral processing plant" means any combination of equipment that is used to crush or grind any nonmetallic mineral wherever located, including lime plants, power plants, steel mills, asphalt concrete plants, portland cement plants, or any other facility processing nonmetallic minerals except as provided in §60.670(b) and (c).

Explanation/Application:

To be designated as a nonmetallic mineral processing plant, a facility must employ crushing or grinding processes. Without crushing or grinding processes, the entire plant is exempt from the NSPS requirements. If, for example, the crusher is located at the quarry and the quarry is located on the same property as the processing plant, then the crushing operation would be included and all affected facilities would be subject to the NSPS requirements.

Portable Plant

"Portable plant" means any nonmetallic mineral processing plant that is mounted on any chassis or skids and may be moved by the application of a lifting or pulling force. In addition, there shall be no cable, chain, turnbuckle, bolt or other means (except electrical connections) by which any piece of equipment is attached or clamped to any anchor, slab, or structure, including bedrock that must be removed prior to the application of a lifting or pulling force for the purpose of transporting the unit.

Explanation/Application:

Although the definition of a portable plant is self-explanatory, the performance tests required of affected facilities is somewhat different than for fixed plants. Performance tests for portable plants are required only at the first site and not at subsequent sites to which the plant is moved with two exceptions. First, if a new affected facility is added, a new performance test is required. The second exception is that if a portable plant is moved across State lines, the new State may require a performance test.

Production Line

"Production line" means all affected facilities (crushers, grinding mills, screening operations, bucket elevators, belt conveyors, bagging operations, storage bins, and enclosed truck and railcar loading stations) which are directly connected or are connected together by a conveying system.

Explanation/Application:

Production line is defined here as it relates to a replacement of an existing facility with one of equal or smaller size. §60.670(d) (3) provides no exemption from the particulate matter standards, wet scrubber monitoring provisions, or performance tests if the owner operator replaces all existing facilities in a production line with new affected facilities. The definition of production line requires that the affected facilities be directly connected or connected by a conveying system. Although the definition of conveying system is not limited to explicit pieces of equipment, movable equipment (i.e., trucks, frontend loaders, etc.) is not included as part of a conveying system. Replacement of all facilities in the production line simultaneously or the replacement of the last facility in the production line will cause all the affected facilities in the production line to be subject to all the requirements of Subpart OOO.

Screening Operation

"Screening operation" means a device for separating material according to size by passing undersize material through one or more mesh surfaces (screens) in series, and retaining oversize material on the mesh surfaces (screens).

Explanation/Application:

Screens include grizzlies, rotating screens and deck-type screens. Care should be taken not to confuse a screen with a washer. Washers are designed principally to remove fines from sized aggregate. As with screens, washers may employ a separating surface that rotates or a deck-type surface. Wash water may be sprayed onto the aggregate or slurried with the aggregate across the separating surface. The key distinction is that washers are designed to remove unwanted or unnecessary material from the product (e.g., grit, fines, clay, etc.) whereas screens are designed to separate product by size. Washers are not affected facilities under Subpart OOO (Section 2.4).

Size

"Size" means the rated capacity in tons per hour of a crusher, grinding mill, bucket elevator, bagging operation, or enclosed truck or railcar loading station; the total surface area of the top screen of a screening operation; the width of a conveyor belt; and the rated capacity in tons of a storage bin.

Explanation/Application:

Size is defined here in relation to the exemptions for replacement of existing facilities with new facilities of equal or smaller size. Rated capacities are manufacturer's rated capacities for crushers, grinding mills, bucket elevators, bagging operations, and enclosed truck or railcar loading stations. For screening operations, size is determined by the total surface area of the top screen because screen type and mesh may be changed in most designs. For transfer points on belt conveyors, size is determined by belt width, while storage bins are sized by rated storage capacity in tons.

For purposes of applying the equal or smaller size exemption, rated capacity for crushers, grinding mills, bucket elevators, bagging operations, enclosed truck or railcar loading stations, and storage bins should be based on equal or like rating criteria. See Section 3.1, §60.670(d) (1).

Stack Emission

"Stack emission" means the particulate matter that is released to the atmosphere from a capture system.

Explanation/Application:

As defined, stack emissions requires the application of a capture system. The definition of a capture system, in turn, requires the application of a control device.

Storage Bin

"Storage bin" means a facility for storage (including surge bins) of nonmetallic minerals prior to further processing or loading.

Explanation/Application: None

Transfer Point

"Transfer point" means a point in a conveying operation where the nonmetallic mineral is transferred to or from a belt conveyor except where the nonmetallic mineral is being transferred to a stockpile.

Explanation/Application:

By definition, only transfer points to or from belt conveyors are so defined. Such transfer points (except those to a stockpile) on belt conveyors manufactured after August 31, 1983 are subject to the NSPS requirements.

Truck Dumping

"Truck dumping" means the unloading of nonmetallic minerals from movable vehicles designed to transport nonmetallic minerals from one location to another. Movable vehicles include but are not limited to: trucks, frontend loaders, skip hoists, and railcars.

Explanation/Application:

Truck dumping is here defined in relation to §60.672(d) which exempts emissions from truck dumping of nonmetallic minerals into any screening operation, feed hopper, crusher, or stock pile.

Vent

"Vent" means an opening through which there is mechanically induced air flow for the purpose of exhausting from a building air carrying particulate matter emissions from one or more affected facilities.

Explanation/Application:

Vent is here defined in relation to §60.672(e) (2) which limits vent emissions to 0.05 g/dscm (0.02 gr/dscf) and 7 percent opacity where vents are used to exhaust buildings containing one or more affected facilities. Note that this definition requires that air flow through the vent be mechanically induced. Unpowered vent emissions are therefore deemed fugitive emissions.

3.3 Standard for Particulate Matter - §60.672

3.3.1 Stack Emissions Standard - §60.672(a)

> (a) On and after the date on which the performance test required to be conducted by §60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any transfer point on belt conveyors or from any other affected facility any stack emissions which: 1) Contain particulate matter in excess of 0.05 g/dscm, or 2) Exhibit greater than 7 percent opacity, unless the stack emissions are discharged from an affected facility using a wet scrubbing control device. Facilities using a wet scrubber must comply with the reporting provisions of §60.676(c), (d), and (e).

Explanation/Application:

§60.8 (a) of Subpart A requires performance tests to be conducted within 60 days after achieving the maximum production rate at which the facility will be operated, but no later than 180 days after initial startup of such facility. The maximum production rate at which the affected facility will be operated is the maximum achievable capacity based on representative performance of the affected facility. Because an affected facility has been designated for this NSPS as an individual piece of operating equipment, the maximum production rate is the maximum process rate at which the individual piece of equipment is expected to operate considering the maximum plant capacity. This may or may not be equivalent to the manufacturer's rated capacity.

§60.2 of Subpart A defines startup as the "setting in operation of an affected facility for any purpose." Startup, therefore, is the first time the affected facility is operated for any reason. This includes such operations as short process runs of raw material for a determination of product quality or specification as well as full production runs.

The stack particulate matter standard is in the form of a concentration (0.05 g/dscm). Unless a wet scrubbing control device is used, an opacity limit of 7 percent is also applicable. In lieu of an opacity standard for wet scrubber control devices, surrogate indicators of compliance were chosen involving monitoring of the scrubber pressure drop and scrubbing liquid flow rate (Sections 3.5 and 3.7).

Finally, it should be noted that the regulations specify that the emissions standards take effect on and after the date on which the performance test(s) is completed. §60.11 (d) of Subpart A, however, does require that the owner or operator maintain and operate, at all times, any affected facility and associated control equipment "in a manner consistent with good air pollution control practice for minimizing emissions." In addition, any applicable State or local emission standards remain in force.

<u>See also</u>:

- Appendix B, §§60.8 and 60.11 (d)
- Sections 3.5 and 3.7

3.3.2 Fugitive Emissions Standards - §60.672 (b) & (c)

> (b) On and after the sixtieth day after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any transfer point on belt conveyors or from any other affected facility any fugitive emissions which exhibit greater than 10 percent opacity, except as provided in paragraphs (c), (d), and (e) of this section.
>
> (c) On and after the sixtieth day after achieving the maximum production rate at which the affected facility will be operated, but no later than 180 days after initial startup, no owner or operator shall cause to be discharged into the atmosphere from any crusher, at which a capture system is not used, fugitive emissions which exhibit greater than 15 percent opacity.

<u>Explanation/Application</u>:

All of the provisions of paragraphs 1, 2, and 4 contained in the "Explanation/Application" of Section 3.3.1 apply to fugitive emissions as well as stack emissions.

In some situations it may be difficult to distinguish the equipment performing the initial reduction at the plant as a crusher or a grinding mill. Jaw crushers, gyratory crushers, and cone crushers are used for coarse reduction only. Roll crushers, hammermills and impactors may be used as either crushers or grinding mills in that they may be designed and operated for coarse or fine reduction. Some quarry material may be sufficiently small in size that grinding mills may be employed for initial size reduction in the plant. If a hammermill, impactor, or roll mill are installed as initial reduction equipment, a determination may be necessary as to whether the equipment is designated as a crusher or grinding mill for the purposes of applying the 15 percent opacity standard for crushers without capture systems. As a guide, grinding mills generally reduce the feed material to a 40 mesh or less.

See also:

- Section 2.1 and 2.2

3.3.3 Exemption for Truck Dumping - §60.672 (d)

(d) Truck dumping of nonmetallic minerals into any screening operation, feed hopper, or crusher is exempt from the requirements of this section.

Explanation/Application:

Care must be taken during opacity compliance determinations to separate emissions from the affected facility from those of any truck dumping operation. If the emissions cannot be separated during a Method 9 compliance test, do not interrupt recording opacity observations, but note which observations occurred during the truck dumping. When determining average opacity, observations during these events cannot be used in any 24-observation (6-minute) set.

See also:

Appendix C, Section 2.4 and 2.5

3.3.4 Affected Facilities Enclosed in Buildings - §60.672(e)

(e) If any transfer point on a conveyor belt or any other affected facility is enclosed in a building, then each enclosed affected facility must comply with the emission limits in paragraphs (a), (b), and (c) of this section, or the building enclosing the affected facility or facilities must comply with the following emission limits:

(1) No owner or operator shall cause to be discharged into the atmosphere from any building enclosing any transfer point on a conveyor belt or any other affected facility any visible fugitive emissions except emissions from a vent as defined in §60.671.

(2) No owner or operator shall cause to be discharged into the atmosphere from any vent of any building enclosing any transfer point on a conveyor belt or any other affected facility emissions which exceed the stack emissions limits in paragraph (a) of this section.

Explanation/Application:

Affected facilities enclosed in buildings must comply with either §60.672(a), (b), or (c), or exhibit no visible emissions from the building as determined by EPA Method 22. If visible emissions from the building are so detected, EPA Method 9 should be employed inside the building to determine the opacity of the emissions from the affected facility or facilities.

See also:

- Sections 3.6.4 and 4.7.1

3.4 Reconstruction - §60.673

3.4.1 Fixed Capital Cost Exemptions - §60.673 (a)

(a) The cost of replacement of ore-contact surfaces on processing equipment shall not be considered in calculating either the "fixed capital cost of the new components" or the "fixed capital cost that would be required to construct a comparable new facility" under §60.15. Ore-contact surfaces are crushing surfaces, screen meshes, bars, and plates, conveyor belts, and elevator buckets.

Explanation/Application:

As set forth in §60.15 of Subpart A, reconstruction of an existing facility (e.g., screen, bucket elevator, crusher, etc.) means the replacement of components to such an extent that the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost to construct a comparable new facility, and it is technologically and economically feasible to meet the applicable standards. "Fixed capital cost" is also defined as "the capital needed to provide all the depreciable components."

Under the provisions of Subpart OOO, ore-contact surfaces of both the existing facility and a comparable new facility are not included in calculating the fixed capital costs. The ore-contact surfaces cited in §60.673 (a) are the only ore-contact surfaces to be exempted from calculating the fixed capital costs.

Some confusion may result when replacing components as to whether the replacements are covered under the routine maintenance, repair, and replacement provisions of §60.14 (e) (modifications) or under the provisions of §60.15 (reconstruction). If the replacement components are ore-contact surfaces as defined in §60.673 (a), unlimited monies may be expended for their replacement without triggering either the modification or reconstruction provisions. If the replacement components are not ore-contact surfaces, are considered routine replacements, and the cost of the replacements do not exceed the IRS annual asset guideline repair allowance, the modification provisions do not apply. If the replacements are not considered routine and do not include ore-contact surfaces, the reconstruction provisions will apply, but only depreciable components would be included in calculating fixed capital costs.

<u>See also</u>:

- ° Appendix B, §60.2 "Capital expenditure," §§60.14 and 60.15
- ° Section 3.15.

3.4.2 Continuous Programs of Component Replacement - §60.673 (b)

(b) Under §60.15, the "fixed capital cost of the new components" includes the fixed capital cost of all depreciable components (except components specified in paragraph (a) of this section) which are or will be replaced pursuant to all continuous programs of component replacement commenced within any 2-year period following August 31, 1983.

<u>Explanation/Application</u>:

A 2-year period begins each time the owner or operator commences a reconstruction. "Commenced" is defined in the general provisions (§60.2) as meaning that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake or complete, within a reasonable time, a continuous program of construction or modification.

There is not a single 2-year period that begins on any specified date. Rather, EPA will aggregate any continuous programs of component replacement that <u>begin</u> within any 2-year period in determining whether "the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility..." [§60.15(b)(1)] (the "50 percent test.") For example, suppose that an owner or operator of an existing facility begins program A of component replacement in month 1, program B in month 40, program C in month 60, and program D in month 80, and that programs B and C, considered together, meet the 50 percent test in §60.15(b)(1). Since programs B and C commenced within a 2-year period (20 months apart), the 50 percent test would be satisfied (regardless of programs A and D, and regardless of when programs B and C are finished).

The affected facility for the purpose of determining the 50 percent reconstructed threshold is the individual piece of equipment (e.g., crusher, grinding mill, etc.) as defined in §60.670 and §60.671, not the entire plant. However, replacement of an existing affected facility with a new facility of equal or smaller size as described in §60.670(d) is exempt from compliance with emission limits, but is subject to the reporting and recordkeeping requirements in §60.676.

See also:

- Appendix B, §60.2 "Commenced," "Construction," and "Modification"
- Section 3.1.4.

3.5 Monitoring of Operations (Wet Scrubbers) - §60.674

The owner or operator of any affected facility subject to the provisions of this subpart which uses a wet scrubber to control emissions shall install, calibrate, maintain and operate the following monitoring devices:

(a) A device for the continuous measurement of the pressure loss of the gas stream through the scrubber. The monitoring device must be certified by the manufacturer to be accurate within ± 250 pascals ± 1 inch water gauge pressure and must be calibrated on an annual basis in accordance with manufacturer's instructions.

(b) A device for the continuous measurement of the scrubbing liquid flow rate to the wet scrubber. The monitoring device must be certified by the manufacturer to be accurate within ± 5 percent of design scrubbing liquid flow rate and must be calibrated on an annual basis in accordance with manufacturer's instructions.

Explanation/Application:

The principle of operation of a wet scrubbing device involves contacting dust particles with liquid droplets in some way and then having the wetted and unwetted particles impinge upon a collecting surface where they can be separated and removed. The major types of wet scrubbers are wet cyclones, mechanical, spray, self-induced spray, and venturi scrubbers.

The standards do not include opacity requirements for wet scrubbers. In order to verify proper operation and maintenance of wet scrubbers, the standards require the installation, calibration, and recording of the pressure drop across the scrubber including any type of mist eliminator; and installation, calibration, and recording of the flow rate of the scrubbing liquid. These surrogate indicators of scrubber performance can be used to isolate typical performance problems (i.e., throat wear or pluggage, decreased liquid-to-gas ratio, decreased pressure drop, etc.). See Section 3.7 for recordkeeping and notification requirements.

"Monitoring device" is defined in §60.2 of Subpart A as "the total equipment, required under the monitoring of operations sections in applicable subparts, used to measure and record (if applicable) process parameters." "Continuous" measurement of the data is required under §60.674 and recording of the data is required under §60.676.

See also:

- Appendix B, §60.2 "Monitoring device," §§60.7(d) and 60.13(b)
- Sections 3.5, 3.6.6, and 3.7.3

3.6 Test Methods and Procedures - §60.675

3.6.1 General Requirements for Performance Tests - §60.675(a)

(a) In conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in Appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b). Acceptable alternative methods and procedures are given in paragraph (e) of this section.

Explanation/Application:

§60.8 of Subpart A provides the general performance test requirements for this and all other NSPS. These requirements include notification requirements, initial performance test requirements, test methods and exceptions, requirements for operating conditions during testing, and sampling facility requirements. §60.8 of Subpart A also specifies the number of test runs (3), and that compliance is based on the average of the three test runs unless otherwise specified in the applicable Subpart.

Appendix A of 40 CFR Part 60 contains the reference methods for determining compliance with all NSPS. Methods applicable to the nonmetallic mineral processing NSPS include Methods 1 through 5, 9, 17, and 22.

§60.8(b) provides authority for the Administrator (or his representative) to specify or approve 1) equivalent methods, 2) alternative methods, 3) minor changes in the methodology of the reference methods, 4) waivers of performance test requirements, or 5) reduced sampling times or sampling volumes. Approved alternative procedures for this NSPS are provided in paragraph (e) of this section. Alternative methods and procedures beyond those given in paragraph (e) may be specified by the Administrator or submitted by the source and approved by the Administrator as he deems adequate to determine that the source is in compliance.

See also:

- Section 3.7.3

3.6.2 Test Methods and Procedures for Stack Emissions - §60.675(b)

(b) The owner or operator shall determine compliance with the particulate matter standards in §60.272(a) as follows: 1) Method 5 or Method 17 shall be used to determine the particulate matter concentration. The sample volume shall be at least 1.70 dscm (60 dscf). For Method 5, if the gas stream being sampled is at ambient temperature, the sampling probe and filter may be operated without heaters. If the gas stream is above ambient temperature, the sampling probe and filter may be operated at a temperature high enough, but no higher than 121° C (250° F), to prevent water condensation on the filter, and 2) Method 9 and the procedures in §60.11 shall be used to determine opacity.

Explanation/Application:

As explained in the preface of 40 CFR 60, Appendix A, a "Test Methods and Procedures" section is included within the respective subpart for each NSPS. The purpose of §60.675(b) is to 1) identify the applicable test method(s), and 2) identify any special instructions or conditions to be followed such as sampling rates, volumes, or temperatures. Paragraph (b)(1) above provides these special instructions and conditions for this NSPS.

Paragraph (b)(2) above specifies Method 9 for determining compliance with the opacity standards of this subpart. §60.11(b) of Subpart A requires that initial compliance be determined using a minimum total time of observation for each affected facility of 3 hours (30-6 minute averages) unless an alternate method is approved by the Administrator, or the Administrator waives the associated performance test.

§60.11(e)(1) of Subpart A requires that an opacity compliance determination be made concurrently with the performance test (stack test) unless: 1) no performance test is required, or 2) visibility or other conditions prevent concurrent observations. Under such conditions, see §60.11(e)(1) for scheduling or rescheduling instructions for initial opacity determinations. §60.11 also provides other compliance and maintenance standards for performance tests and compliance determinations.

See also:

- Appendix B, §§60.8 and 60.11
- Appendix C, Sections 2.1 through 2.5
- Sections 3.3, 3.6.1, and 3.7.3

3.6.3 Test Methods and Procedures for Fugitive Emissions - §60.675(c)

(c) In determining compliance with the particulate matter standards in §60.672(b) and (c), the owner or operator shall use Method 9 and the procedures in §60.11, with the following additions:

1. The minimum distance between the observer and the emission source shall be 4.57 meters (15 ft).
2. The observer shall, when possible, select a position that minimizes interference from other fugitive emission sources (e.g., road dust). The required observer position relative to the sun (Method 9, Section 2.1) must be followed.
3. For affected facilities using wet dust suppression for particulate matter control, a visible mist is sometimes generated by the spray. The water mist must not be confused with particulate matter emissions and is not to be considered a visible emission. When a water mist of this nature is present, the observation of emissions is to be made at a point in the plume where the mist is no longer visible.

Explanation/Application:

Paragraph (c)(1) emphasizes a minimum distance of 15 feet from the emission source so that opacity observations are not attempted while the observer is in the plume.

Paragraph (c)(2) emphasizes selecting a position to minimize interferences from other sources while maintaining the required observer-to-sun angle sector of 140°.

Finally, paragraph (c)(3) emphasizes that water mists from wet suppression system must not be confused with source emissions. In some situations, a wet suppression system may be activated intermittently. In such cases, two options are possible. First, choose a point in the plume beyond which the water mist disappears. Second, choose the point in the plume of greatest opacity when the wet dust suppression system is not being operated and begin the Method 9 observations. When the wet dust suppression system is operated, continue to record opacity at this point but note all such observations on the data sheet. During data reduction, eliminate any such observations from any 24-observation (6-minute) set.

See also:

- Appendix B, §§60.8 and 60.11
- Appendix C, Sections 2.1 through 2.5
- Sections 3.3.2, 3.6.1, and 3.6.2

3.6.4 Determining the Presence of Fugitive Emissions From Buildings - §60.675(d)

(d) In determining compliance with §60.672(e), the owner or operator shall use Method 22 to determine fugitive emissions. The performance test shall be conducted while all affected facilities inside the building are operating. The performance test for each building shall be at least 75 minutes in duration, with each side of the building and the roof being observed for at least 15 minutes.

Explanation/Application:

The 75 minute duration (15 minutes per side and the roof) using Method 22 is applicable for the initial performance test.

See also:

- Appendix D, Sections 1 through 6
- Section 3.3.4

3.6.5 Approved Alternatives to the Test Procedures for Fugitive Emissions - §60.675(e)

(e) The owner or operator may use the following as alternatives to the reference methods and procedures specified in this section:

(1) For the method and procedure of paragraph (c) of this section, if emissions from two or more facilities continuously interfere so that the opacity of fugitive emissions from an individual affected facility cannot be read, either of the following procedures may be used:

(i) Use for the combined emission stream the highest fugitive opacity standard applicable to any of the individual affected facilities contributing to the emissions stream.

(ii) Separate the emissions so that the opacity of emissions from each affected facility can be read.

Explanation/Application:

The "highest fugitive opacity standard" cited in paragraph (e)(1)(i) must be Federally enforceable. In addition, any Method 9 opacity observations must use the point of highest opacity whether from a single or combined plume.

Separation of emissions, as cited in paragraph (e)(1)(ii), may be accomplished by construction of a physical barrier or by shutting down the interfering facility if the maximum achievable production rate (capacity) of the affected facility being tested is not altered or the shutting down of the interfering facility does not cause operational problems.

See also:

- Appendix C, Sections 2.1 through 2.5
- Sections 3.6.1, 3.6.3, and 4.7.2

3.6.6 Wet Scrubber Monitoring Compliance - §60.675(f)

(f) To comply with §60.676(d), the owner or operator shall record the measurements as required in §60.676(c) using the monitoring devices in §60.674(a) and (b) during each particulate matter run and shall determine the averages.

Explanation/Application:

To comply with the semi-annual wet scrubber monitoring notification requirements of the standards (Section 3.7.3), the owner or operator shall record daily any changes in scrubber pressure drop and scrubbing liquid flow rate. Pressure drop and liquid flow rate is to be monitored using the equipment described in Section 3.5. These measurements are to also be recorded during each run of the performance test [§60.676(c)] and included in the report required by §60.676(f).

See also:

- Sections 3.5, 3.7.3, 3.7.4, and 3.7.5

3.7 Reporting and Recordkeeping - §60.676

3.7.1 Reporting Requirements for Equal or Smaller Size Replacements - §60.676(a)

(a) Each owner or operator seeking to comply with §60.670(d) shall submit to the Administrator the following information about the existing facility being replaced and the replacement piece of equipment.

(1) For a crusher, grinding mill, bucket elevator, bagging operation, or enclosed truck or railcar loading station:

(i) The rated capacity in tons per hour of the existing facility being replaced and (ii) The rated capacity in tons per hour of the replacement equipment.

(2) For a screening operation:

(i) The total surface area of the top screen of the existing screening operation being replaced and (ii) The total surface area of the top screen of the replacement screening operation.

(3) For a conveyor belt:

(i) The width of the existing belt being replaced and (ii) The width of the replacement conveyor belt.

(4) For a storage bin:

(i) The rated capacity in tons of the existing storage bin being replaced and (ii) The rated capacity in tons of replacement storage bins.

Explanation/Application:

The information above, plus the information required under paragraph (b) of §60.676, is to be forwarded to the Administrator when requesting the exemption for replacement of existing facilities with facilities of equal or smaller size. The information is to be postmarked 60 days or as soon as practicable before the change is commenced [§60.7(a)(4)].

See also:

- Appendix B, §60.7(a)(4)
- Sections 3.1.4 and 3.7.2

3.7.2 Special Reporting Requirements for Equal or Smaller Size Replacements - §60.676(b)

(b) Each owner or operator seeking to comply with §60.670(d) shall submit the following data to the Director of the Emission Standards, (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, 27711.

(1) The information described in §60.676(a).

(2) A description of the control device used to reduce particulate matter emissions from the existing facility and a list of all other pieces of equipment controlled by the same control device; and

(3) The estimated age of the existing facility.

Explanation/Application:

In addition to the reporting requirements in Section 3.7.1, special reporting is required to the Office of Air Quality Planning and Standards, Emission Standards Division in Research Triangle Park, North Carolina. This information is to be used for the purpose of reviewing the standard. As with the time requirements described in Section 3.7.1, these data are to be postmarked 60 days or as soon as practicable before the change is commenced.

See also:

- Appendix B, §60.7(a)(4)
- Sections 3.1.4 and 3.7.1

3.7.3 Wet Scrubber Requirements - §60.676(c)(d) & (e)

(c) During the initial performance test of a wet scrubber, and daily thereafter, the owner or operator shall record the measurements of both the change in pressure of the gas stream across the scrubber and the scrubbing liquid flow rate.

(d) After the initial performance test of a wet scrubber, the owner or operator shall submit semiannual reports to the Administrator of occurrences when the measurements of the scrubber pressure loss (or gain) and liquid flow rate differ by more than ± 30 percent from the averaged determined during the most recent performance test.

(e) The reports required under paragraph (d) shall be postmarked within 30 days following the end of the second and fourth calendar quarters.

Explanation/Application:

Changes in pressure drop of the gas stream across the scrubber and the scrubbing liquid flow rate are to be measured according to the procedures described in Section 3.5. The section above requires that all "occurrences" of pressure drop and liquid flow rate that differ by more than ± 30 percent from the average during the most recent performance test be submitted to the Administrator. Because the requirements described in Section 3.5 call for "continuous" measurements of the scrubber pressure drop and liquid flow rate, and because paragraph (d) of this section requires reporting of all occurrences of the specified changes in operating parameters, it would follow that some type of continuous recording equipment is required to identify these occurrences on a continuous basis. Because such occurrences may be instantaneous or represent prolonged events, noncontinuous recording of the data is not appropriate given the reporting requirements of this Subpart.

Finally, it should be recognized that the intent of the measurement and reporting requirements of this section is to substitute these parameters as surrogate indicators of opacity. Therefore, to avoid unnecessary reporting of occurrences due to instrument noise or other nonrepresentative factors, only occurrences of 6 minutes or greater (minimum observation time for EPA Method 9) need be reported.

See also:

- Appendix B, §60.13(b)
- Sections 3.5 and 3.6.6

3.7.4 Performance Test Reporting Requirements - §60.676(f)

(f) The owner or operator of any affected facility shall submit written reports of the results of all performance tests conducted to demonstrate compliance with the standards set forth in §60.672, including reports of opacity observations made using Method 9 to demonstrate compliance with §60.672 (b) and (c) and reports of observations using Method 22 to demonstrate compliance with §60.672(e).

Explanation/Application:

The written reports referred to in this paragraph are due within the same time requirements found in Subpart A, §60.8(a) (i.e., within 60 days after achieving the maximum production rate at which the facility will be operated, but no later than 180 days after initial startup).

See also:

° Appendix B, §§60.8 and 60.11

3.7.5 Requirements Under Delegated Enforcement Authority - §60.676(g)

(g) The requirements of this paragraph remain in force until and unless the Agency, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such States. In that event, affected sources within the State will be relieved of the obligation to comply with paragraphs (a), (c), (d), (e), and (f) of this section, provided that they comply with requirements established by the State. Compliance with paragraph (b) of this section will still be required.

Explanation/Application:

Enforcement authority can be delegated to a State, provided the reporting and recordkeeping requirements of the State are at least as stringent as the reporting and recordkeeping requirements of this Subpart. Once enforcement authority is approved by EPA, the owner or operator is relieved of the following reporting and recordkeeping requirements.

1. Equal or smaller size replacement data (Section 3.7.1)
2. Wet scrubber requirements (Section 3.7.3)
3. Performance test requirements (Section 3.7.4).

Even under delegated authority to the State, however, the special reporting requirements for replacements of equal or smaller size (Section 3.7.2) remain in force.

See also:

° Section 3.7

SECTION 4

COMPLIANCE DETERMINATION
(LEVEL II INSPECTION)

The purpose of this section is to provide the inspector with a logical and sequential methodology for determining the compliance status of affected facilities subject to 40 CFR 60, Subpart OOO. This methodology is consistent with a Level II compliance inspection as outlined in the Air Compliance Manual, EPA-340/1-85-020, September 1985, but cannot be employed as a substitute for the initial performance test requirements described in Subparts A and OOO. A Level II inspection incorporates the following activities:

- "Walkthrough" evaluation of emission sources and/or devices
- Visible emission observations
- Data collection from and evaluation of process and control device instrumentation
- Checks (from outside) of internal conditions of control devices (if shut down)
- Routine check of continuous emission monitor (CEM) data
- Check of source-maintained records
- Annual determination of continued operation and process throughput of sources that do not operate control equipment.

General procedures for a Level II inspection include the following sequential steps:

1. Pre-inspection preparation
2. Pre-entry observations
3. Entry
4. Opening conference with source personnel
5. Source records verification
6. Field inspection procedures
7. Post-inspection conference
8. Reporting and tracking.

The remainder of this section will cover each of these Level II inspection procedures as they specifically apply to the nonmetallic mineral processing NSPS.

4.1 Pre-Inspection Preparation

Pre-inspection preparation is always necessary to ensure effective use of the inspector's time and the facility's time, and to ensure that the inspection is properly focused on collecting relevant data and information. This preparation involves:

- Review of facility background
- Development of an inspection plan
- Notifications
- Equipment preparation.

4.1.1 Review of Plant Background

A review of the available background information on the plant to be inspected is essential to the overall success of the inspection. The review should enable the inspector to become familiar with the plant's process and emission characteristics; conduct the inspection in a timely manner; minimize inconvenience to the plant by not requesting unnecessary data such as that previously provided to the EPA or another agency; conduct an efficient, but thorough inspection; clarify technical and legal issues before entry; and prepare a useful inspection report. The following types of information should be reviewed.

<u>Basic Plant Information</u>

- Names, titles, and phone numbers of plant representatives
- Maps showing plant location and geographic relationship to residences, etc. potentially impacted by emissions
- Process and production information
- Flowsheets identifying affected facilities, control devices, monitors, and other points of interest
- Safety equipment requirements.

Pollution Control Equipment and Other Relevant Equipment Data

- Description and design data for control devices and relevant process equipment
- Sources and characterization of emissions
- Previous inspection checklists (and reports)
- Baseline performance data and control equipment.

Regulations, Requirements, and Limitations

- Most recent permits (construction and/or operating) for affected facilities subject to the NSPS
- Location and description of all affected facilities subject to the NSPS standard for particulate matter and the locations of affected facility emission points (also included in final report)
- Location and description of all affected facilities subject to the NSPS recordkeeping/reporting requirements only
- Special exemptions and waivers, if any (e.g., affected facilities previously waived from initial compliance testing and any waiver conditions)
- Acceptable plant operating conditions (e.g., maximum permitted throughput or process weight rates, etc.)
- Total top screen surface areas of all affected facility screens and belt widths of all affected facility conveyor belts (for onsite verification)
- Average scrubber pressure drop and scrubbing liquid flow rate from most recent compliance test (if applicable)
- Schedules for replacement of existing facilities with new facilities of equal or smaller size (if any)
- Other applicable emission limits or opacity limits of affected facilities more restrictive than NSPS limits (i.e., PSD, State regulations, etc.).

Facility Compliance and Enforcement History

- Previous inspection reports
- Complaint history and reports
- Past conditions of noncompliance
- Previous enforcement actions
- Pending enforcement actions, compliance schedules and/or variances
- Continuous monitoring system reports
- Startup, shutdown and malfunction reports.

4.1.2 Development of an Inspection Plan

Based on the review of the plant background information, the inspector should develop an inspection plan addressing the following items.

- Inspection objectives
- Tasks sequence
- Procedures
- Resources
- Schedule

Although the main objective of the inspection is to determine source compliance with the NSPS provisions, the plant operating schedule or the sheer number of sources may not be conducive to covering the entire plant in one inspection. Portions of the plant or particular production lines may need to be covered separately or during different inspections. This may be due to intermittent production or scheduling of maximum operating conditions for different production lines. If necessary, the inspector should divide the affected facilities to be inspected into manageable groups.

Once the inspector has determined which affected facilities and what plant records are to be inspected, each individual task necessary to meet the inspection objectives should be identified and procedures reviewed for accomplishing each task.

All inspection tasks should also be arranged in a logical and chronological sequence that takes into account the inspection objectives as well as possible constraints that are anticipated at the plant. The task sequence, however, should include the flexibility for change if onsite conditions are not as expected or if plant operations change during the inspection.

Finally, the resources required to complete the inspection should be reviewed. Resources include personnel, inspection equipment, and safety equipment required at the site.

Appendix E provides sample inspection forms that may be used to construct the task sequence list for an inspection plan.

4.1.3 Notification of Plant and Responsible Agency

EPA Regional Offices and State and local agencies vary in their exact policies concerning giving a plant advance notification of an inspection. In a recent EPA policy memo entitled Final Guidance on Use of Unannounced Inspections, however, the Stationary Source Compliance Division recommends that all Regional inspection programs incorporate unannounced inspections as part of their overall inspection approach. The advantages of the unannounced inspection are: 1) the opportunity to observe the source under normal operating conditions, because the source does not have time to prepare for the inspection, 2) detection of visible emissions and O&M-type problems and violations, 3) creation of an increased level of attention by a source to its compliance status, and 4) projection of a serious attitude toward surveillance by the Agency.

The potential negative aspects of performing unannounced inspections are 1) the source may not be operating or key plant personnel may not be available, and 2) there could be an adverse impact on Agency source relations. However, it has been demonstrated by the Regional Offices who already use the unannounced inspections that, in the majority of cases, these drawbacks can be overcome.

When using the unannounced inspection, an alternative to arriving at the source totally unannounced is to contact the source shortly before the scheduled inspection time. This is left to the discretion of the Regional Office and/or the inspector and must be done so as not to alter the representativeness of the source operation. The amount of advanced notice given should be noted in the inspection report.

Announced inspections are performed by EPA and its authorized representatives when some specific purpose is served by providing such notice. Situations where announced inspections are appropriate are:

- When specific information is being sought which must be prepared by the source, or where the source must make significant accommodations for the inspector to gather the information
- When the assistance of specific plant personnel is necessary for the successful performance of the inspections, i.e., the information they provide cannot be obtained from other on-duty plant personnel or by a follow-up information request
- When inspecting government facilities or sources operating under government contract where entry is restricted due to classified operations.

When the inspection is announced in advance, a lead time of five working days is generally appropriate. Notification may be by telephone or letter and it may or may not include the exact date and time of the inspection. Instances where written notification (instead of oral) is appropriate are:

- When requested by the State/local agency or by the source
- When extensive or specific records are being sought
- When the inspection is to be performed solely by an EPA or State/local contractor
- When inspecting government facilities with classified operations or otherwise restricted entry
- Special-purpose inspections, e.g., to establish conditions for a source-specific SIP revision.

The plant representative notified should have the authority to release data and samples and to arrange for access to specific processes. In addition, when notifying a plant of an inspection, information should be requested in regard to onsite safety regulations. This will avoid problems concerning safety equipment at the time of the inspection.

State and/or local agencies should be given a minimum of five working days advance notice of unannounced or announced inspections to be conducted within their jurisdiction. In the case of an announced inspection, this notification should precede that given to the source.

Notification can be written or oral, in any case, a record should be kept. The notification and record thereof should include the following items:

- Name and location of subject facility
- Date and approximate time of the activity
- Regional Office contact (phone number, etc.)
- Reason for the inspection
- Name of the State contact
- Date and time of notification.

State/EPA Memorandums of Agreements should be consulted for further information on notification procedures.

4.1.4 Equipment Preparation

Part of the pre-inspection preparation involves obtaining and preparing inspection and safety equipment. A general list of inspection and safety equipment for a Level II compliance inspection of nonmetallic mineral processing facilities is included in Table 4-1. All safety equipment should meet Mine Safety and Health Administration (MSHA) requirements.

All equipment should be checked before use. The inspector is responsible for seeing that all equipment necessary to conduct an inspection is brought to the inspection site.

Safety equipment required for a facility is based on the plant's response to the inspection announcement or on the safety requirements for that facility previously recorded in the agency files. Safety requirements must be met, not only for safety reasons, but to ensure that the inspector is not denied entry to the plant.

TABLE 4-1. RECOMMENDED INSPECTION AND SAFETY EQUIPMENT

Inspection equipment	Safety equipment
Tape measure	Respirator with appropriate cartridge(s)
Flashlight	Hardhat
Stopwatch	Safety glasses or goggles
Duct tape	Gloves
Sample bottles	Coveralls
	Safety shoes
	Ear protection
	NIOSH/OSHA Pocket Guide to Chemical Hazards

Before or after equipment preparation, the inspector must also consider what written materials, forms, documents, etc. he/she will require during the inspection. These should also be gathered and organized before the inspection. These materials may include any or all from the following list:

- Maps
- Flowcharts
- Plant layout
- Applicable regulations
- Inspection checklists
- Field notebook
- Reference materials
- Visible emission observation forms (Method 9 and 22 as applicable)
- Inspection plan or agenda
- Agency credentials
- Baseline data
- Information requested by facility.

4.2 Pre-Entry Observations

Two types of observations, conducted prior to plant entry, have been shown to be valuable in determination of facility compliance. These are the observation of the plant surroundings and the visible emission observations.

4.2.1 Plant Surroundings Observation

Observations of areas surrounding the plant before entry may reveal a variety of signs of operational practices and pollutant emissions which can aid in the pre-entry evaluation. These include:

- Obvious vegetation damage near the plant
- Deposits on cars parked close by
- Conditions around product and waste piles
- Heavy dusting of standing trees or buildings
- Proximity of sources to potential receptors.

4.2.2 Visible Emissions Observations

In addition to observing the plant surroundings prior to entry, the inspector may also perform visible emission observations at that time. Visible emission observations can be performed on both stack and fugitive sources using both Method 9 and 22 as long as the provisions of the references methods and the provisions of §§60.11 and 60.675(c) are met.

Although it is likely that not all emission points will be visible from a location outside the plant property lines, elevated emission points (e.g., stacks, elevated buildings, silos, bucket elevators, conveyor belt transfer points, etc.) may be easily read. Extreme care should be taken, however, to ensure that the emission point is correctly identified at the time of observation. Verification of the emission points that were observed should be sought during the onsite inspection. Visible emission observation procedures are detailed in Section 4.7.

4.3 Plant Entry

This section details the accepted procedures under the Clean Air Act (CAA or the Act) for entry to a facility to conduct onsite inspections. As such, these procedures are applicable to EPA inspectors and may or may not be applicable or compatible with State or local procedures. This section does not provide procedures for obtaining an inspection warrant in the case of refusal of entry which are covered in detail in other publications.

4.3.1 Authority

The Clean Air Act authorizes plant entry for the purposes of inspection. In specific, Section 114 of the Act states:

> ".....the Administrator or his authorized representative, upon presentation of his credentials shall have a right of entry to, upon or through any premises of such person or in which any records required to be maintained..... are located, and may at reasonable times have access to and copy any records, inspect any monitoring equipment or methods....., and sample any emissions which such person is required to sample....."

4.3.2 Arrival

Arrival at the facility must be during normal working hours. Entry through the main gate is recommended unless the inspector has been previously instructed otherwise. As soon as the inspector arrives on the premises, he should locate a responsible plant official usually the plant owner, manager, or chief environmental engineer. In the case of an announced inspection, this person would most probably be the official to whom notification was made. The inspector should note the name and title of this plant representative.

4.3.3 Credentials

Upon meeting the appropriate plant official, the inspector should introduce himself or herself as an EPA inspector and present the official with the proper EPA credentials and state the reason for requesting entry. The credentials provide the plant official with the assurance that the inspector is a lawful representative of the Agency. Each office of the EPA issues its own credentials; most include the inspector's photograph, signature, his physical description (age, height, weight, color of hair and eyes), and the authority for the inspection. Credentials must be presented whether or not identification is requested. After facility officials have examined the credentials, they may telephone the appropriate EPA Office for verification of the inspector's identification. Credentials should never leave the sight of the inspector.

4.3.4 Consent

Consent to inspect the premises must be given by the owner, operator, or his representative at the time of the inspection. As long as the inspector is allowed to enter, entry is considered voluntary and consensual, unless the inspector is expressly told to leave the premises. Express consent is not necessary; absence of an express denial constitutes consent.

If there is difficulty in gaining consent to enter, inspectors should tactfully probe the reasons and work with officials to overcome the obstacles. Care should be taken, however, to avoid threats of any kind, inflammatory discussions, or deepening of misunderstandings. Whenever the situation is beyond the authority or ability of the inspector, he or she should contact their supervisor for guidance.

If the inspector is asked to leave the premises after the inspection has begun, the inspector should 1) tactfully discuss the reason for denial, 2) avoid any situation that might be construed as threatening or inflammatory, 3) withdraw from the premises and contact his or her supervisor, 4) note the facility name, address, and the name and title of the plant official(s) approached and the authority of the person issuing the denial, and 5) note the date, time, and reason for the denial as well as facility appearance and any reasonable suspicion why entry was denied. These procedures also apply if the inspector is denied entry to certain parts of the facility. After withdrawal from the premises, the inspector should always contact the appropriate Agency office for further instructions including a determination of whether a warrant should be obtained to inspect the facility.

4.3.5 Uncredentialed Persons Accompanying an Inspector

The consent of the owner or agent in charge must be obtained for the entry of persons accompanying an inspector to a site if they do not have specific authorization. If consent is not given voluntarily, these persons may not enter the premises. If consent is given, these persons may not view confidential business information unless officially authorized for access.

4.3.6 Waivers, Releases, and Sign-In Logs

When the facility provides a blank sign-in sheet, log, or visitor register, it is acceptable for inspectors to sign it. Under no circumstances should EPA employees sign any type of "waiver" or "visitor release" that would relieve the facility of responsibility for injury or which would limit the rights of the Agency to use data obtained from the facility.

If such a waiver or release is presented, the inspector should politely explain he/she cannot sign and request a blank sign-in sheet. If an inspector is refused entry because they do not sign such release, they should leave and immediately report all pertinent facts to the appropriate supervisory and/or legal staff. All events surrounding the refused entry should be fully documented. Problems should be discussed cordially and professionally.

4.3.7 Nondisclosure Statements

Inspectors have, in the past, occasionally been asked to sign nondisclosure statements or agreements. These agreements vary slightly in content from one to another, but generally require that confidential information, disclosed to an inspector during the course of an inspection, be handled thereafter in a specified manner. An inspector should not sign such agreements since Federal Regulations (40 CFR Part 2, as amended) on the confidentiality of business information already protect the business from disclosure of confidential information.

4.4 Opening Conference

Once legal entry has been established, the inspector should proceed with a vital part of every inspection, the opening conference. The purpose of the opening conference is to inform the facility official(s) of the purpose of the inspection, the authorities under which it will be conducted, and the procedures to be followed. The opening conference also offers the inspector the opportunity to strengthen Agency -

industry relations through a positive attitude and provide relevant information and other assistance. The effective execution of the opening conference on the inspector's part often facilitates the remainder of the inspection.

During the opening conference, the inspector is responsible for covering the following items:

- Inspection Objectives - An outline of inspection objectives will inform facility officials of the purpose and scope of the inspection and may help avoid misunderstandings.

- Inspection Agenda - Discussion of the sequence and content of the inspection including operations and control equipment to be inspected and their current operating status. This will help eliminate wasted time by allowing officials time to make any preparations necessary. The types of measurements to be made and the samples to be collected (if any) should also be addressed.

- Facility Information Verification - The inspector should verify or collect the following information:

  - Correct name and address of facility
  - Correct names of plant management and officials
  - Principal product(s) and production rates
  - Affected facilities and emission points.

- List of Records - A list of records (NSPS or permit requirements) to be inspected will allow officials to gather and make them available to the inspector.

- Accompaniment - It is imperative that a facility official accompany the inspector during the inspection, not only to describe the plant and its principal operating characteristics, but also to identify confidential data and for safety and liability considerations.

- Safety Requirements - The inspector should determine what facility safety regulations including safety equipment requirements will be involved in the inspection, and should be prepared to meet these requirements. The inspector should also inquire about emergency warning signals and procedures.

- Meeting Schedules - A schedule of meetings with key personnel (if necessary) will allow them to allocate a clear time to spend with the inspector.

- Closing Conference - A post-inspection meeting should be scheduled with the appropriate officials to provide a final opportunity to gather information, answer questions, and make confidentiality declarations.

- New Requirements - The inspector should discuss any new rules and regulations that might affect the facility and answer questions pertaining to them. If the inspector is aware of proposed rules that might affect the facility, he or she may wish to encourage facility officials to obtain a copy.

- Duplicate Samples and/or Simultaneous Measurements - Facility officials should be informed of their right to receive a duplicate of any physical sample collected for laboratory analysis or to conduct simultaneous measurements such as visible emission observations.

- Confidentiality Claims - Company officials should be advised of their right to request confidential treatment of trade secret information.

- Photographs - If necessary, the inspector should request permission to take photographs during the inspection.

4.5 Inspection Documentation

The air compliance inspection is generally conducted to achieve one or more of three main objectives.

1. To provide data and other information for making a compliance determination.

2. To provide evidentiary support for some type of enforcement action.

3. To gather the data required for other agency functions.

Taking physical samples, reviewing records, and documenting facility operations are the methods used by the inspector to develop the documentary support required to accomplish these objectives. The documentation from the inspection establishes the actual conditions existing at the time of the inspection so that the evidence of these conditions may be objectively examined at a later time in the course of an enforcement proceeding or other compliance related activity.

Documentation is a general term referring to all print and mechanical media produced, copied, or taken by an inspector to provide evidence of facilities status. Types of documentation include the field notebook, field notes and checklists, visible emission observation forms, drawings, flowsheets, maps, lab analyses of samples, chain of custody records, statements, copies of records, printed matter, and photographs. Any documentation gathered or produced during the inspection may eventually become part of an enforcement proceeding. It is the inspector's responsibility to recognize this possibility and ensure that all documentation can pass later legal scrutiny.

4.5.1 Inspector's Field Notebook and Field Notes

The core of all documentation relating to an inspection is the inspector's field notebook or field notes, which provide accurate and inclusive documentation of all field activities. Even where certain data or other documentation is not actually included in the notebook or notes, reference should be made in the notebook or notes to the additional data or documentation such that it is completely identified and it is clear how it fits into the inspection scheme.

The field notebook and/or notes form the basis for both the inspection report and the evidence package and should contain only facts and pertinent observations. Language should be objective, factual, and free of personal feelings or terminology that might prove inappropriate.

Because the inspector may eventually be called upon to testify in an enforcement proceeding, or his/her field data may be entered into evidence, it is imperative that he/she keep detailed records of inspections, investigations, samples collected, and related inspection functions. The types of information that should be entered into the field notebook or notes include:

- Observations - All conditions, practices, and other observations relevant to the inspection objectives or that will contribute to valid evidence should be recorded.

- Procedures - Inspectors should list or reference all procedures followed during the inspection such as those for entry, sampling, records inspection, and document preparation. Such information could help avoid damage to case proceedings on procedural grounds.

- Unusual Conditions and Problems - Unusual conditions and problems should be recorded and described in detail.

- Documents and Photographs - All documents taken or prepared by the inspector should be noted and related to specific inspection activities. (For example, photographs taken should be listed, described, and related to the subject photographed.)

- General Information - Names and titles of facility personnel and the activities they perform should be listed along with other general information. Pertinent statements made by these people should be recorded. Information about a facility's recordkeeping procedures may be useful in later inspections.

4.5.2 Visible Emission Observation Form

Because visible emission (VE) observations are such a frequently used enforcement tool, a separate form has been developed for recording data from the VE observation using EPA Method 9 (Figure 4-1). This form has been designed to include all the supporting documentation necessary, in most cases, for VE observation data to be accepted as evidence of a violation. Thus, it is recommended that the inspector use this form for recording opacity observations; an appropriate reference should be made to the form in the field notebook or notes. In addition, a separate form is used to record the presence and duration of fugitive emissions from buildings enclosing NSPS affected facilities. This is the EPA Method 22 Field Data Sheet for Outdoor Locations (Figure 4-2).

VISIBLE EMISSION OBSERVATION FORM

No.

COMPANY NAME		
STREET ADDRESS		
CITY	STATE	ZIP
PHONE (KEY CONTACT)	SOURCE ID NUMBER	

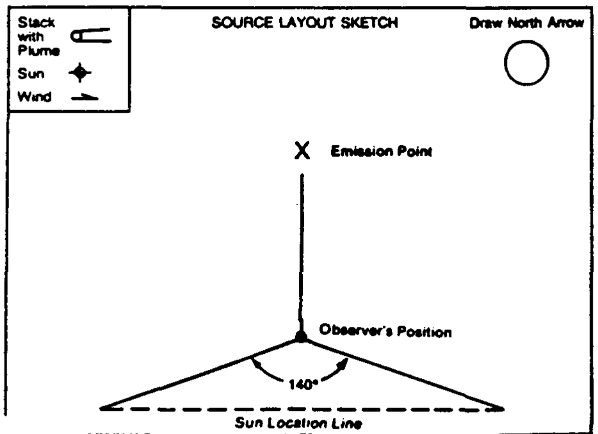
PROCESS EQUIPMENT	OPERATING MODE
CONTROL EQUIPMENT	OPERATING MODE

DESCRIBE EMISSION POINT	
HEIGHT ABOVE GROUND LEVEL	HEIGHT RELATIVE TO OBSERVER Start End
DISTANCE FROM OBSERVER Start End	DIRECTION FROM OBSERVER Start End

DESCRIBE EMISSIONS Start	End
EMISSION COLOR Start End	IF WATER DROPLET PLUME Attached ☐ Detached ☐
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED Start	End

DESCRIBE PLUME BACKGROUND Start	End	
BACKGROUND COLOR Start End	SKY CONDITIONS Start End	
WIND SPEED Start End	WIND DIRECTION Start End	
AMBIENT TEMP Start End	WET BULB TEMP	RH, percent

SOURCE LAYOUT SKETCH



ADDITIONAL INFORMATION

OBSERVATION DATE	START TIME	END TIME

MIN \ SEC	0	15	30	45	COMMENTS
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

OBSERVER'S NAME (PRINT)	
OBSERVER'S SIGNATURE	DATE
ORGANIZATION	
CERTIFIED BY	DATE

CONTINUED ON VEO FORM NUMBER					

Figure 4-1. EPA Method 9 Visible Emission Observation Form.

FUGITIVE OR SMOKE EMISSION INSPECTION
OUTDOOR LOCATION

Company ____________	Observer ____________
Location ____________	Affiliation ____________
Company representative ____________	Date ____________
Sky Conditions ____________	Wind direction ____________
Precipitation ____________	Wind speed ____________
Industry ____________	Process unit ____________

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.

OBSERVATIONS

	Clock time	Observation period duration, min:sec	Accumulated emission time, min:sec
Begin Observation	______		
		______	______
	______		
		______	______
	______		
		______	______
	______		
		______	______
	______		
		______	______
	______		
		______	______
	______		
		______	______
	______		
		______	______
	______		
		______	______
End observation	______		

Figure 4-2. EPA Method 22 Field Data Sheet for Outdoor Location.

4.5.3 Drawings and Maps

Schematic drawings, flowsheets, maps, charts, and other graphic records can be useful as supporting documentation. They can provide graphic clarification of emission source location relative to the overall facility, relative height and size of objects, and other information which, in combination with samples, photographs, and other documentation, can produce an accurate, complete, evidence package.

Drawings and maps should be simple and free of extraneous details. Basic measurements and compass points should be included, if necessary, to provide a scale for interpretation.

4.5.4 Copies of Records

A facility's records and files may be stored in a variety of information retrieval systems, including written or printed materials, computer or electronic systems, or visual systems such as microfilm and microfiche.

When copies of records are necessary for an inspection report, storage and retrieval methods must be taken into consideration:

- Written or printed records can generally be photocopied onsite. Portable photocopy machines may be available to inspectors through the Regional Office. When necessary, inspectors are authorized to pay a facility a "reasonable" price for the use of facility copying equipment. All copies made for or by the inspector should be initialed and dated for identification purposes.

- Computer or electronic records may require the generation of "hard" copies for inspection purposes. Arrangements should be made during the opening conference, if possible, for these copies. (Photographs of computer screens may possibly provide adequate copies of records if other means are impossible.)

- Visual systems (microfilm, microfiche) usually have photocopying capacity built into the viewing machine, which can be used to generate copies. (Photographs of the viewing screen may provide adequate copies of records if other means are impossible.)

Immediate and adequate identification of records reviewed is essential to ensure the ability to identify records throughout the Agency custody process and to ensure their admissibility in court. When inspectors are called to testify in court, they must be able to positively identify each particular document and state its source and the reason for its collection. Initial, date, number, and record the facility's name on each record, and reference these items in the field notebook or notes.

- Initialing/Dating - The inspector should develop a unique system for initialing and dating records and copies of records so that he/she can easily verify their validity. This can be done by initialing each document in a similar position, or by another method, at the time of collection. Both the original and copy should be initialed. All record identification notations should be made on the back of the document.

- Numbering - Each document or set of documents substantiating a suspected violation or violations should be assigned an identifying number unique to that document. The number should be recorded on each document and in the field notebook.

- Logging - Documents obtained during the inspection should be entered in the field notebook or notes according to some logical system. The system should include the following information:

  - Identifying number
  - Date
  - The reason for copying the material
  - The source of the record
  - The manner of collection.

4.5.5 Printed Matter

Brochures, literature, labels, and other printed matter may provide important information regarding a facility's condition and operations. These materials may be collected as documentation if, in the inspector's judgment, they are relevant. All printed matter should be identified with the date, inspector's initials, and related sample numbers. Reference to these materials should be made in the field notebook or notes.

4.5.6 Photographs

The documentary value of photographs ranks high as admissible evidence; clear photos of relevant subjects, taken in proper light and at proper lens settings, provide an objective record of conditions at the time of inspection. The use of photographic documentation, however, often elicits a negative reaction from plant officials, thus, it is recommended that photographic documentation be used only sparingly and only when necessary to document an inspection finding.

When a situation arises that dictates the use of photographs, the inspector should obtain the company's permission to take photographs. This is most conveniently accomplished during the opening conference. The inspector may offer to provide the official with duplicates of all photographs taken. As with other business data collected, during and/or at the conclusion of the inspection, the inspector should ascertain whether any of the photographs taken contain proprietary information and if the company wishes to designate any as confidential. Photographs taken employing a Polaroid-type instant camera allow an immediate confidentiality review and the opportunity for the inspector to readily provide the company with duplicate shots. Photographs may always be taken form areas of public access (e.g., outside the fence, from the road, from a parking lot, etc.).

A photographic log should be maintained in the inspector's field notes for all photographs taken during an inspection, and the entries are to be made at the time the photograph is taken. These entries are to be numerically identified so that after the film is developed the prints can be serially numbered corresponding to the log book descriptions and, if necessary, pertinent information can be easily transferred to the back of the photograph.

Polaroid-type instant photos should be immediately identified on the back after shooting with the corresponding photo ID number; photographs that require developing and printing should be numbered as soon as possible. One recommendation which will ensure that all prints and negatives can be positively identified is that prints and negatives be left uncut and the photographic log be photographed at the beginning and end of each roll of film. Photographs of a confidential nature must be developed by an authorized contractor.

4.6 Verification of Facility Records

40 CFR 60, Subpart A and Subpart OOO require that the source maintain a permanent file of required notifications, reports, measurements, and records for review by the Administrator or authorized representative. Pursuant to §60.7(d) of Subpart A, this permanent file is to be retained by the source for at least two years. Integral to the compliance inspection, these notifications and records must be verified by the inspector.

A complete records check should be accomplished before the inspector leaves the plant. However, §60.7(d) does not specify that the owner or operator must locate this permanent file at the facility to be inspected. If required records are located elsewhere (main or central corporate office), provisions should be made for the records to be made available during the inspection. This is best accomplished during the inspection notification to the facility. If the inspection is unannounced, the inspector should make definite arrangements with the source during the opening conference to have the records made available on specified dates.

The following is a list of records required to be kept by the owner or operator of the source under the provisions of the nonmetallic mineral processing NSPS. Each item on the list is accompanied by its regulatory citation.

<u>Written Notifications to the Administrator</u>

1. The date of construction or reconstruction of any affected facility - §60.7(a)(1).

2. The date of anticipated startup of any affected facility - §60.7(a)(2).

3. The date of actual startup of any affected facility - §60.7(a)(3).

4. Any physical or operational change to an existing facility which may increase the emissions rate of any air pollutant to which a standard applies, unless that change is specifically exempted under an applicable subpart or in §60.14(e).

   §60.14(e) exemptions:

   ° Routine maintenance, repair and replacement within the IRS annual asset guideline repair allowance

   ° An increase in production rate of an existing facility without a capital expense on that facility

   ° An increase in the hours of operation

   ° Use of an alternative fuel or raw material if the existing facility was designed to accommodate same before August 31, 1983

   ° The addition or use of any air pollution control device or system except when such a device or system is removed or replaced by a system which is less environmentally beneficial

   ° Relocation or change in ownership of an existing facility.

5. The date that initial performance test opacity observations are anticipated - §60.7(a)(6).

6. Rescheduled dates for initial performance test opacity observations if visibility or other conditions prevent opacity observations from being performed concurrently with the initial performance test - §60.11(e)(1).

7. Proposed "reconstructions" of existing facilities - §60.15(d) (See §60.15(d) for information required in the notification).

8. 30 day advance notification of any performance test of an affected facility - §60.8(d).

9. Proposed replacements of existing facilities with facilities of equal or smaller size - §60.676(a) (See §60.676(a) for information required in the notification).

Written Reports to the Administrator

1. Initial performance test results of all affected facilities - §60.8(a).

2. Initial performance test opacity results of all affected facilities - §60.11(e)(2).

3. The results of all performance tests of affected facilities to demonstrate compliance including opacity observation results (Method 9) and/or Method 22 observation results - §60.676(f).

4. Semiannual reports of occurrences when scrubber pressure drop and liquid flow rate differ from the average of the last performance test by ±30 percent - §60.676(d).

Records On File

1. Startup, shutdown, and malfunction occurrences and their durations for all affected facilities; malfunctions of air pollution control equipment serving affected facilities; and any periods during which continuous monitoring systems or monitoring devices (i.e., scrubber pressure drop and liquid flow rate measurement devices) are inoperative - §60.7(b).

2. All measurements of monitoring devices, calibration checks, and all adjustments and maintenance performed on these devices - §60.7(d).

   To include:

   - Daily continuous measurements of scrubber pressure drop and liquid flow rate - §60.676(c)

   - Scrubber monitoring device annual calibration checks - §60.674.

It should be remembered that §60.7(d) of Subpart A requires the owner or operator of the affected facility to maintain these notifications, reports, records, and measurements for at least two years. Therefore, the inspector should be familiar with the chronological history of the affected facilities to determine whether the records of the owner or operator are current and acceptable. Accurate agency files and tracking of affected facilities, their dates of construction, and dates of performance tests are vital for a complete and accurate check of source records.

4.7 Means of Determining Compliance with the Standard for Particulate Matter

The standard for particulate matter for the nonmetallic mineral processing NSPS is found in §60.672 and includes a mass emission limit of 0.5 g/dscm (0.02 gr/dscf) for point sources (i.e., stacks and powered vents) and a point source opacity limit of 7 percent, as well as an opacity limit of 10 percent for all fugitive emission sources except 15 percent for crushers without capture systems (see definition of "capture system" in Section 3.2). It should be noted that wet suppression is not considered a capture system. In addition, §60.672(e) limits emissions from affected facilities enclosed in buildings to 10 or 15 percent opacity as applicable, or limits the building to no visible emissions.

Determining compliance of each affected facility and/or emission point may therefore involve visible emission observations using EPA Method 9 or Method 22 as applicable (Sections 3.6.3 and 3.6.4). In the case of wet scrubbers, a compliance determination with the monitoring provisions of §60.674 necessarily involves checking scrubber pressure drop and liquid flow rate data from the continuous monitoring devices.

Although the only way to determine the compliance status of stacks or powered vents with the mass emission limit is a stack test, surrogate indicators of compliance may be used by the inspector to make logical decisions based on engineering principals as to the likelihood of compliance. Use of surrogate indicators of compliance is not appropriate for the initial performance test or any other compliance determination requiring a stack test, but can be used as an indicator of compliance during inspections. Such surrogate indicators of compliance may include significant variations in process variables or pollution control equipment variables that are outside of the range recorded during the most recent compliance test or outside of the range of good engineering practice (e.g., broken or inoperable baghouse cleaning systems; bypassed or isolated sections of capture systems; increased process rates of nonaffected sources co-vented to APC equipment serving NSPS affected facilities, etc.). If these surrogate indicators of compliance strongly suggest that the source is not in compliance with the mass emission limit, a stack test should be required under the same or similar operating conditions unless it is determined that the operating conditions constituted a startup, shutdown or malfunction event.

4.7.1 Determining Compliance with Opacity During the Inspection

While §60.11(b) of Subpart A requires a minimum time of observation using EPA Method 9 of 3 hours (thirty 6-minute averages) to determine compliance with the NSPS opacity limits for the initial performance test, the inspector is not required to duplicate these visible emission observation requirements during a compliance inspection. In the case of affected facilities enclosed in buildings, §60.675(d) of Subpart OOO similarly requires a minimum observation time using EPA Method 22 of 75 minutes (15 minutes per side and top) during the initial performance test. As with EPA Method 9, the inspector is not required to duplicate this requirement during a compliance inspection.

The following are acceptable guidelines that may be used for performing EPA Method 9 or Method 22 observations during a compliance inspection:

- Continuous operating/emitting sources - Minimum observation time using EPA Method 9 should be 18 minutes (three 6-minute observation sets). When using EPA Method 22 for buildings, minimum observation time should be 20 minutes (5 minutes per side and top).

- Intermittent operating/emitting sources - Intermittent sources should be observed for at least two or three cycles of operation. Observations should end at the end of the process cycle and noted on the visible emission observation form. Observations should be continued when the next cycle begins. A least two 6-minute observation sets should be recorded.

- Affected facilities inside buildings - If affected facilities are enclosed in buildings and the inspector has determined through EPA Method 22 that fugitive emissions are emitted from the building, the following are acceptable minor changes to the reference method pursuant to §60.8(b) for applying EPA Method 9 inside the building:

1. Assume a position <u>at least</u> 4.57 meters (15 ft) from the source of emissions.

2. Without available and proper sunlight, use portable directional lights positioned within the 140° sector to the observer's back.

3. If background color is sufficiently similar to emission color, artificial backgrounds are permissible to promote color and luminescence contrast.

° Unaccessible affected facilities inside buildings - If affected facilities alone, or existing and affected facilities are enclosed in buildings and the inspector, after a positive EPA Method 22 reading, cannot gain building access to perform EPA Method 9 observations, Method 9 observations may be performed on the entire building. Because the inspector cannot confirm individual facility opacities from inside the building, the most restrictive opacity limit is applicable for the entire building (see Appendix H, memorandum from John S. Seitz to Winston A. Smith, not dated).

° Wet processes - If, in the opinion of the inspector, the process material moisture content is sufficiently high to prevent the airborne suspension of particulate matter, or if the process material is wetted to the same extent, or immersed in water, visible emission observations are not necessary and the affected facility can be considered in compliance with the standard.

It should be noted that EPA policy is to allow no measurement error allowance for conducting EPA Method 9. Thus, EPA policy prohibits dropping from consideration marginal opacity exceedances solely because of possible reader measurement error (see Appendix H, memorandum from John S. Seitz to Roger O. Pfaff, March 3, 1989).

The preferred approach for accounting for measurement error is to follow the procedures for conducting Method 9 observations described in the "Quality Assurance Handbook for Air Pollution Measurement Systems" (EPA-600/4-77-027b, 1977) and to conduct followup investigation whenever opacity exceedances are observed. The Method 9 guidance materials suggest various ways to augment the visible emission observation if opacity values are in excess of the standard.

For example, in marginal violation situation, additional sets of readings over longer time periods or even on different days may be appropriate for ensuring that the opacity exceedances documented truly reflect noncompliance. Finally, enforcement officials must exercise their technical judgement carefully in the final determination of an enforceable violation, which may be based on additional factors such as the plant operating history and extent and duration of excessive emissions.

4.7.2 Determining Compliance with Opacity During the Initial Performance Test

The observation duration requirements for determining compliance with the performance test opacity standards of §60.672 are found in §60.11(b) of Subpart A (i.e., 3 hours of observations per affected facility or emission point). This requirement can only be changed pursuant to §60.8(b) which allows the Administrator to 1) specify or approve, in specific cases, the use of a reference method with minor changes in methodology, 2) approve the use of an alternative method the results of which he has determined to be adequate for indicating compliance, 3) approve the use of an equivalent method, 4) waive the requirement for a performance test because the owner or operator has demonstrated to the Administrator's satisfaction that the affected facility is in compliance with the standard, or 5) approve shorter sampling times and smaller sample volumes when necessitated by process variables or other factors.

Any and all requests for changes in the performance test requirements pursuant to §60.8(b) must be submitted to the appropriate EPA Regional Office. Requests include those from the owner or operator of an affected facility and from States, whether or not the State has received from EPA delegated authority for 40 CFR 60, Subparts A or OOO or both.

4.8 Field Inspection Procedures for Affected Facilities

The field inspection procedures herein include those tasks to be performed in determining the compliance status of affected facilities with the NSPS standard for particulate matter (§60.672) and, if applicable, the provisions for monitoring of wet scrubber operations (§60.674).

As was discussed in Section 2, it is usually best to start the inspection at the beginning of the facility process operations and end the inspection at the finished product loading station(s). If, however, from pre-entry observations the inspector has discovered possible violations at specific plant areas (e.g., excessive stack opacity or fugitive emissions) it is usually best to begin the field inspection at these areas to document any violations in a timely manner.

To aid the inspector in keeping track of the number and type of affected facilities at the source and the opacity and mass emission limits applicable to each affected facility, a master list containing this information should be carried into the field. Appendix E contains a sample form that can be used for this purpose. In addition to affected facilities, existing facilities should be included as potentially affected facilities in the master list. With this information, the inspector can verify that existing facilities have not been replaced with new facilities that have not yet been permitted under the NSPS provisions or modified in such a way as to increase emissions.

In addition to the master list of potentially affected and affected facilities, Appendix E includes a Field Inspection Sheet that may be used to document compliance data for individual affected facilities. The Field Inspection Sheet includes the specific items to be inspected and serves as compliance documentation for individual affected facilities and emission points.

Finally, Appendix E contains an example Initial Performance Test Field Sheet for affected facilities. Similar to the Field Inspection Sheet, this form includes space to illustrate the applicable affected facility or transfer point. The Initial Performance Test Field Sheet may subsequently be used as a file reference document to be reviewed as necessary before future inspections.

The following inspection techniques are specific to individual affected facilities (e.g., crushers, bagging operations, enclosed truck or railcar loading stations, etc.) and individual APC systems (e.g., wet scrubbers, baghouses, wet suppression, etc.).

4.8.1 Crushers

Fugitive emissions from crushers are most apparent at crusher feed and discharge points. Care must be taken to separate fugitive emission opacity from water mists generated by wet suppression systems. The inspector should position himself/herself at least 4.57 meters (15 ft) from the emission source and in accordance with the provisions of EPA Method 9. Both the crusher inlet and discharge outlet should be observed. Previously, there has been some confusion as to whether emissions at the crusher discharge onto a belt conveyor should be considered crusher emissions or belt conveyor transfer point emissions. For the purposes of determining compliance with the provisions of Subpart OOO, these emissions should be considered as crusher emissions. Therefore, if a crusher is an affected facility and the crusher is not served by a capture system, emissions at both the inlet and discharge of the crusher are limited to 15 percent opacity. Crusher discharge emissions onto a belt conveyor that is also an affected facility are not considered belt conveyor transfer point emissions which are limited to 10 percent opacity. Figure 4-3 shows excessive fugitive emissions from the discharge of a primary jaw crusher.

The inspector must exercise caution when observing crusher emissions, especially at the crusher feed inlet, due to the possibility of ore fragments being violently ejected from the crusher. Figures 4-4 and 4-5 show the inlets of two secondary cone crushers with and without skirting, respectively. Note the waterspray supply hose around the diameter of the crusher casing in Figure 4-4. The inspector should also maintain a safe distance from any mobile equipment hauling ore to or from the crusher.

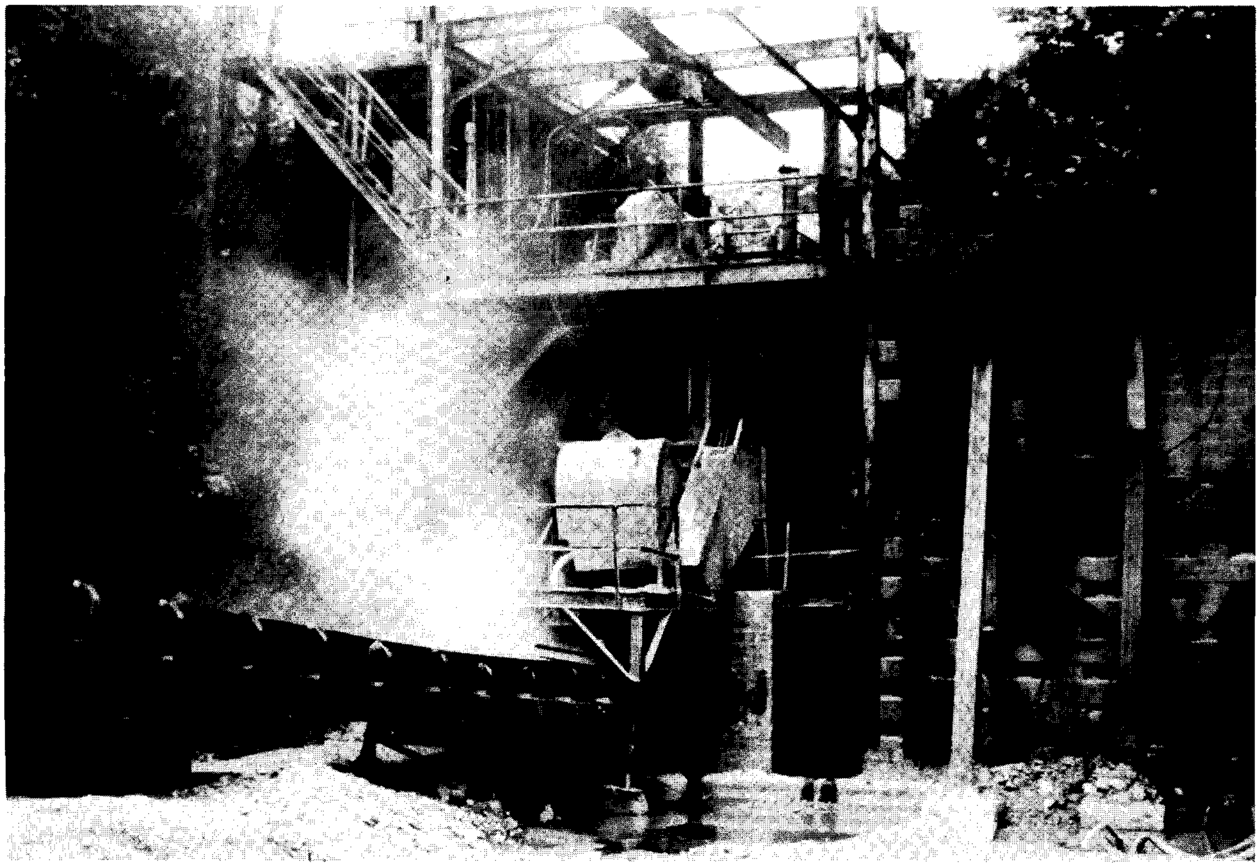


Figure 4-3. Fugitive emissions from a jaw crusher.

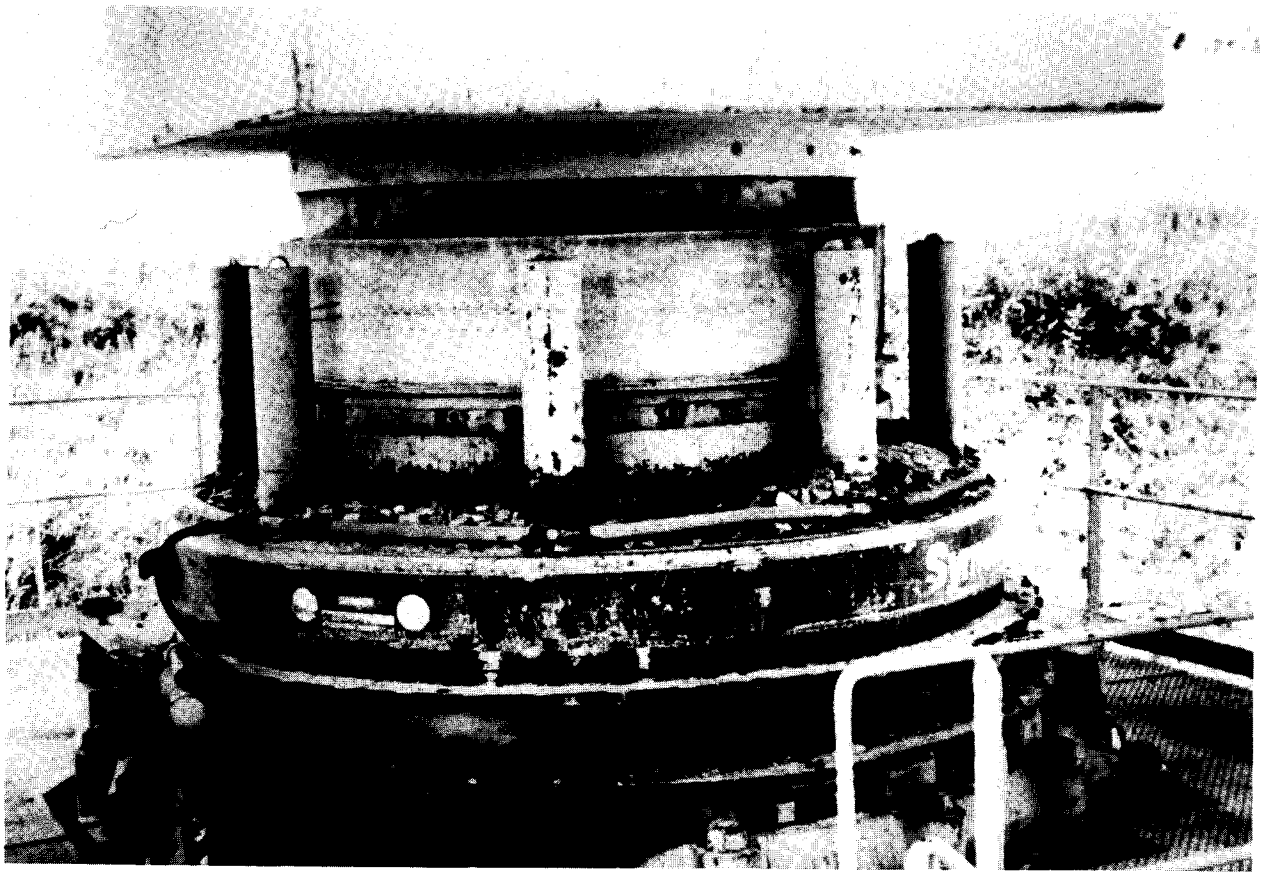


Figure 4-4. Feed inlet of cone crusher with feed skirts.

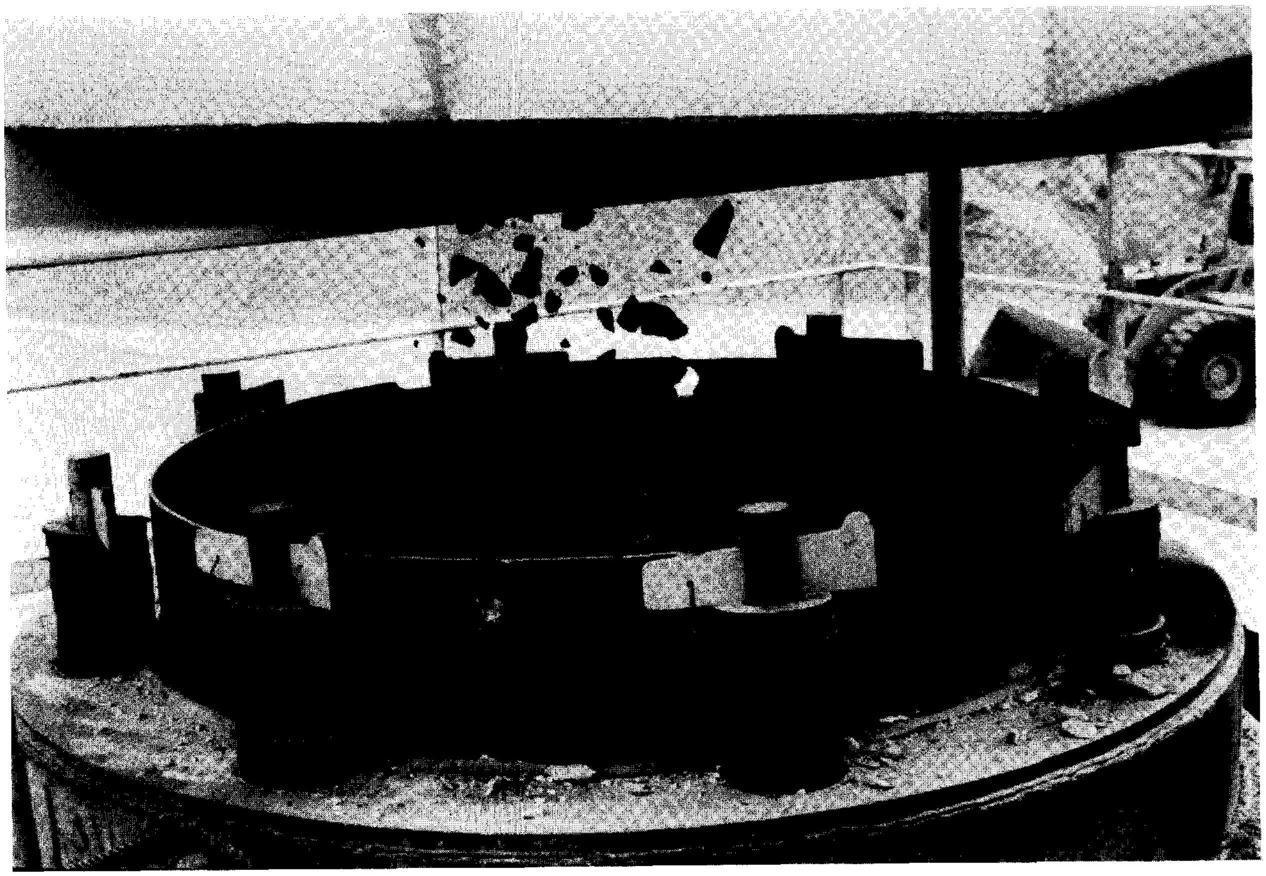


Figure 4-5. Open feed inlet of cone crusher.

In distinguishing whether a crusher (or any other equipment) is portable or fixed as it applies to the exemption provisions of §60.670(c), the equipment must be mounted on a movable chassis or skid and must not be attached to any anchor slab, or structure by any means other than electric cabling. Figure 4-6 shows a portable primary crusher mounted on a wheeled chassis.

4.8.2 Grinding Mills

As with crushers, fugitive emissions are generated at the grinder's inlet and outlet with the majority of emissions at the outlet after reduction of raw material (i.e., more fines). Because the definition of grinding mill found in §60.671 includes the air conveying system, air separator, or air classifier, the inspector should also inspect the entire length of these systems for any fugitive emissions as well as the emission points for mill sweep air. Both closed-loop and open-circuit systems are common. In the closed-loop system, dryer flue gases may be added to the mill sweep air and an equivalent amount of air bled from the system to discharge moisture. In an open-circuit system, the dryer gases and/or mill sweep air are not recirculated. Typically, these types of systems use roller or ball type mills.

Normally, when an affected facility is vented to the same APC equipment and stack as nonaffected facilities, the emission point is subject to the NSPS standard. In such cases, performance tests of the affected facility are conducted while the nonaffected facilities are not operating. When dryer flue gases are vented to the sweep air of an affected facility grinding mill, however, the dryer usually cannot be shut down during a performance test. Dryer heat is normally required to prevent the material being reduced from clogging the grinding mill. For these types of situations it is acceptable to prorate emissions between the dryer and the grinding mill using the following equation:

Figure 4-6. Portable jaw crusher.

$$E_p = \left[0.5\ x\ \frac{(Q_{STD})_{OOO}}{(Q_{STD})_T}\right] + \left[\rho\ x\ \frac{(Q_{STD})_D}{(Q_{STD})_T}\right]$$

where E_p = Prorated emission standard, g/dscm
0.05 = Subpart OOO emission standard, g/dscm
$(Q_{STD})_{OOO}$ = Volumetric flow rate from Subpart OOO source(s), dscfm
$(Q_{STD})_T$ = $(Q_{STD})_{OOO}$ + $(Q_{STD})_D$ = total volumetric flow rate, dscfm
$(Q_{STD})_D$ = volumetric flow rate from dryer, dscfm
ρ = Dryer emission standard, g/dscm.

This prorating process requires measurement of both the volumetric flow rate from the dryer and from the Subpart OOO source (mill). In addition, the test protocol must include dryer firing rates that are commensurate with representative operating conditions.

4.8.3 Screening Operations

Affected facility screens may be controlled for fugitive emissions by wet suppression systems or with hooded capture systems. Figure 4-7 shows a vibrating deck-type screen releasing excessive fugitive emissions (uncontrolled). Opacity observations should be made at the point of maximum opacity in the plume.

Hooded screens should be checked for signs of ill-fitting seals or gaps in hood integrity. Figure 4-8 illustrates a hooded screen with a capture system off-take at the top of the screen. Note that the cleanout of the evacuation system pipe at the top of the off-take is open allowing fugitive dust to escape.

If the screen is not operating during the inspection, the inspector should observe the immediate area of the screen for signs of excess emissions during operation. Dust buildup is not presumptive evidence of noncompliance since the time for the dust accumulation is likely to be unknown. However, excessive dust buildup may indicate that the nonoperating affected facility should be reinspected when operating. Figure 4-9 shows a considerable dust buildup on the capture system hood and the walls of the enclosing building around a nonoperating screen.

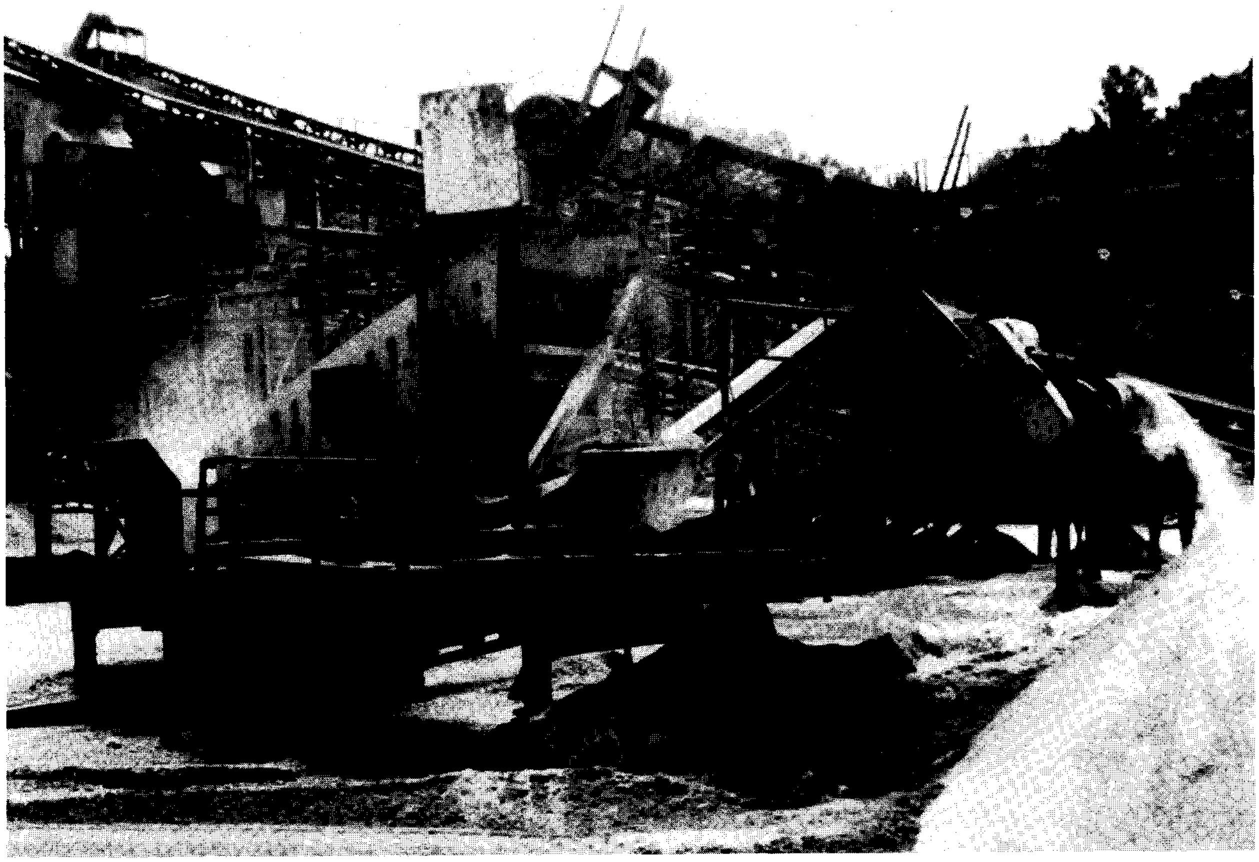


Figure 4-7. Deck-type screen with fugitive emissions.

Figure 4-8. Screen hood showing open cleanout emitting fugitive dust.

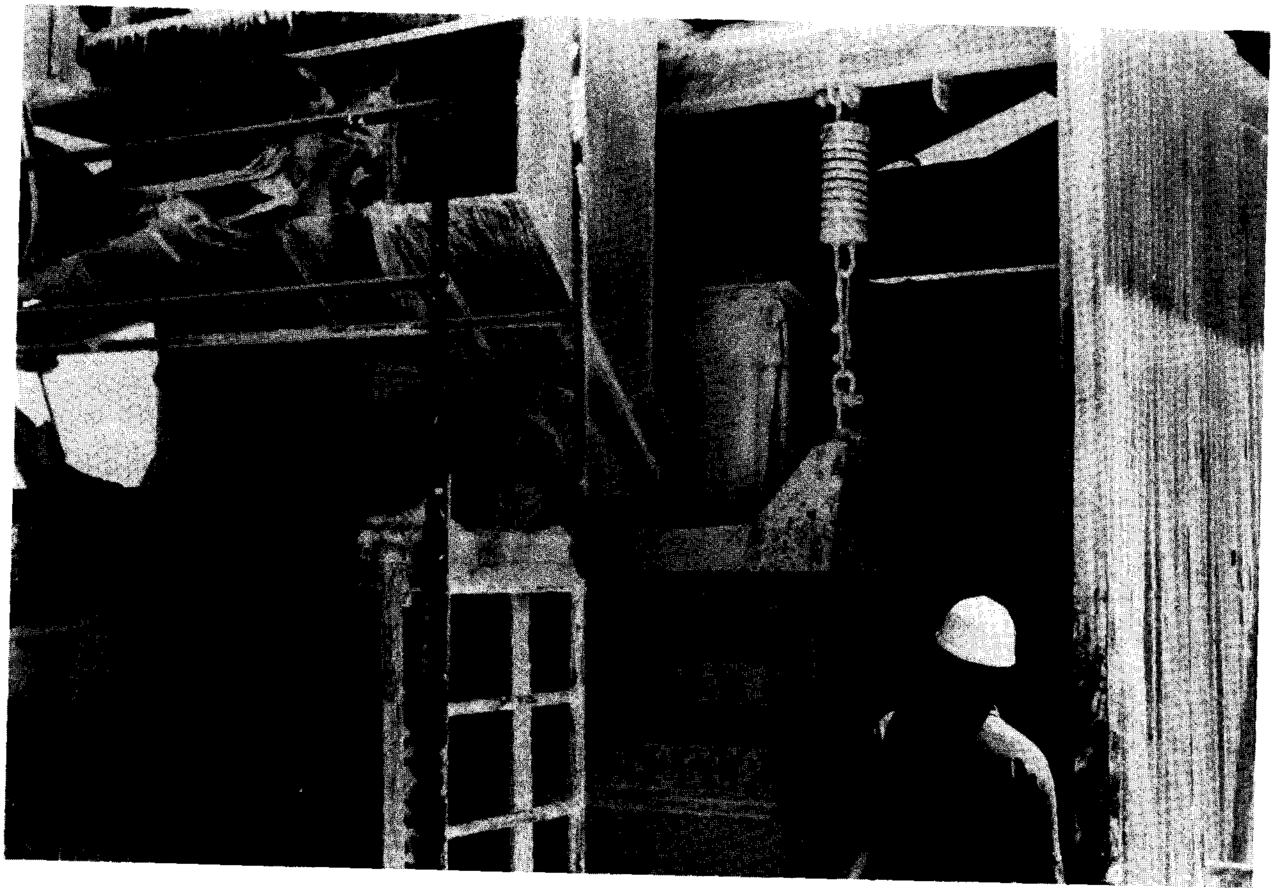


Figure 4-9. Enclosed screen hood showing external fugitive dust buildup.

4.8.4 *Storage Bins*

Venting of storage bins during loading or unloading constitutes the emission potential for these affected facilities. Vents may be controlled or uncontrolled. Typical APC equipment involves cyclones, baghouses or wet suppression.

The inspector should observe the vent discharge points during at least one cycle (loading or unloading). In addition, the inspector should observe the area around the vent. Accumulations of dust indicate releases of particulate matter. Absence of opacity does not necessarily equate with no particulate emissions. Large diameter particles which do not readily scatter light can be emitted in significant mass without appreciable opacity. Because these large and heavier particles will fallout quickly, heavy deposits close to the point of emissions may be readily apparent.

4.8.5 *Bucket Elevators*

Bucket elevators are normally controlled by a capture system at the top of the elevator at the point of bucket discharge. Fugitive dust is pneumatically conveyed to an APC system, usually a baghouse. The inspector should observe the entire length of the elevator enclosure. If emissions are present, they are usually emitted at the capture system atop the elevator as in Figure 4-10, or at the access door(s) to the elevator interior which may be opened to allow for infiltration of makeup air.

4.8.6 *Belt Conveyors*

Subpart OOO applies only to transfer points to and from affected facility belt conveyors except transfer points to storage piles. Although wet suppression is the most frequently used method for emission control, hooding, capture, and conveying to a control device are also used. Figure 4-11 shows a belt-to-belt transfer point without controls. If the moisture content of the material being transferred is sufficient to prevent the material from becoming airborne, visible emission observation can be waived for determining compliance during the inspection. Belt conveyor transfer points after process drying are more likely to result in airborne emissions and are normally controlled with hooded capture systems as illustrated in Figure 4-12.

Figure 4-10. Bucket elevator with fugitive emissions.

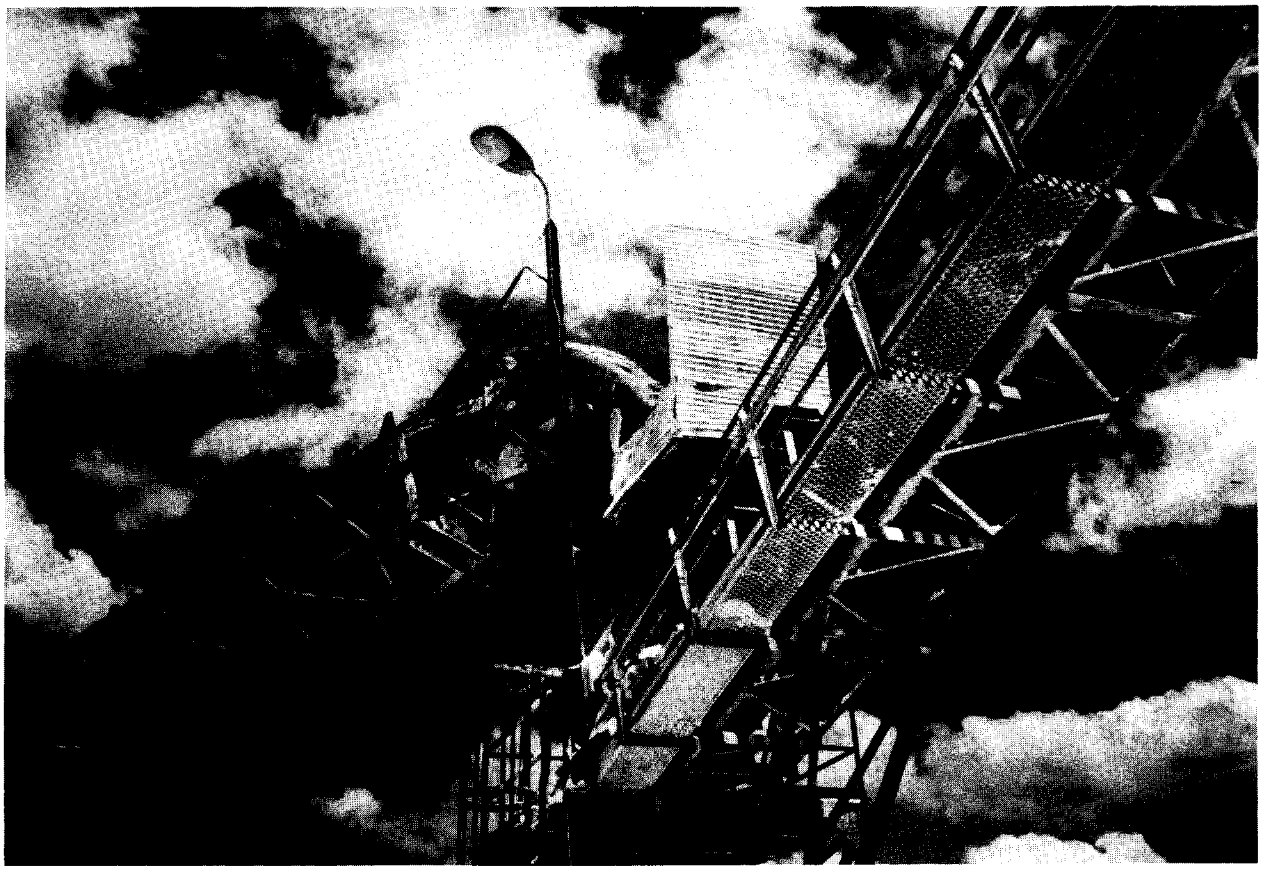


Figure 4-11. Uncontrolled belt-to-belt transfer point.

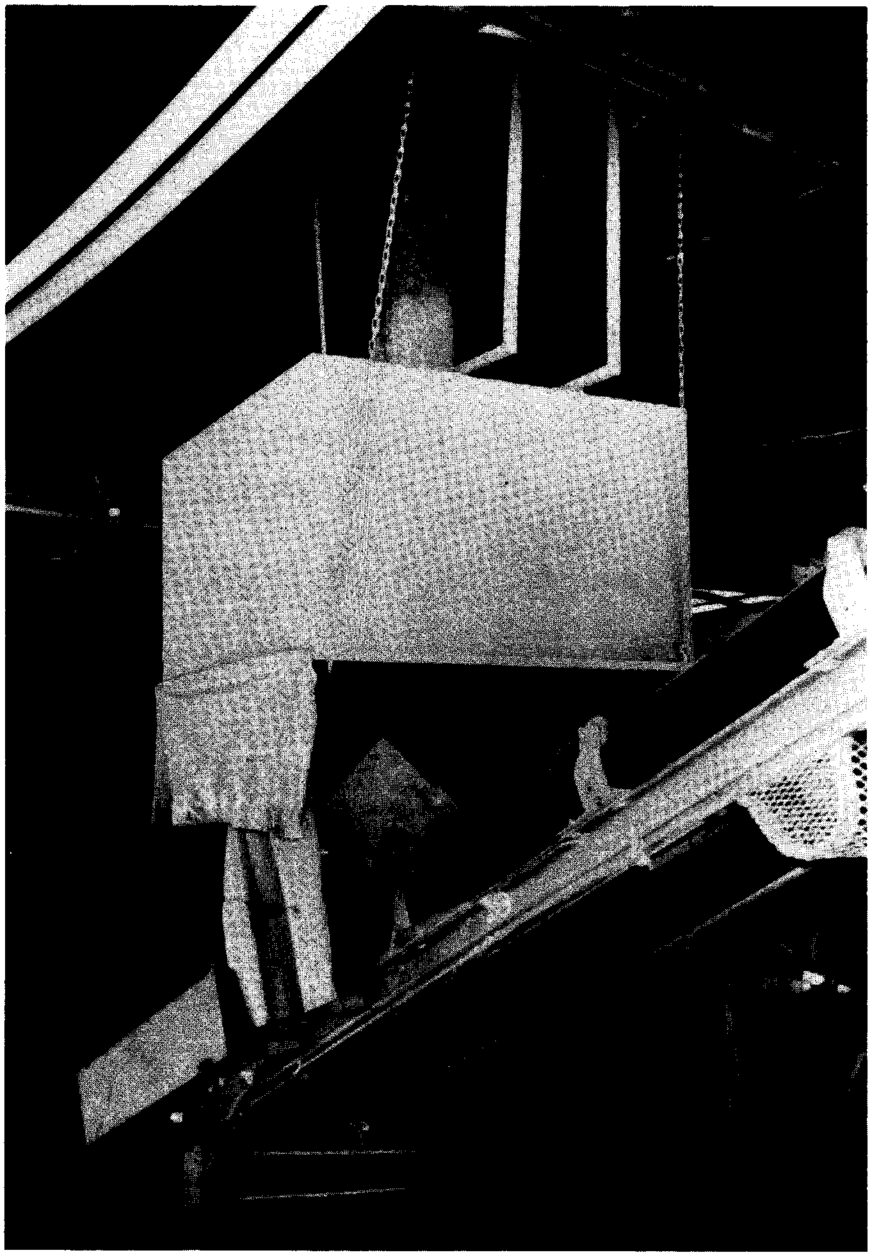


Figure 4-12. Belt-to-belt transfer point with capture hood.

As with other affected facilities, nonoperating belt conveyors should be examined at transfer points for evidence of excessive emissions (heavy dusting). Visible emission observations should be scheduled during operation of the affected facility.

4.8.7 Bagging Operations

Fugitive emissions from bagging operations are generally localized in the area of the bagging machine(s). Bagging operations are almost always enclosed in buildings to protect these operations from the weather. In such cases, the inspector may perform EPA Method 22 observations of the building. If Method 22 observations are positive for visible emissions, the inspector should perform EPA Method 9 observations of the affected facilities inside of the building. If powered vents are employed, Method 9 observations of the vent(s) should be made.

4.8.8 Enclosed Truck or Railcar Loading Operations

As with storage bins, truck and railcar loading is an intermittent operation. Visible emission observations should be made during at least one cycle of operation.

The inspector should completely understand the definition of an enclosed truck or railcar loading station, which requires that both the conveying system as well as the truck or railcar be enclosed. Figure 4-13 is an example of a nonenclosed truck loading station. This type of facility is not covered by the nonmetallic mineral processing NSPS. Figure 4-14, however, illustrates one type of enclosed station subject to the NSPS. Note the enclosed feed tube and the three air vents on the dome of the enclosed railcar. Also note the fugitive emissions from the loading operation approaching 100 percent opacity immediately above the transfer point.

Figure 4-15 illustrates another type of enclosed truck loading station showing some visible emissions as the air is displaced from the truck. In this case, loadout emissions are not controlled because the evacuation system is not connected to the off-take port at the base of the flexible feed tube (small black square at the top of the feed tube).

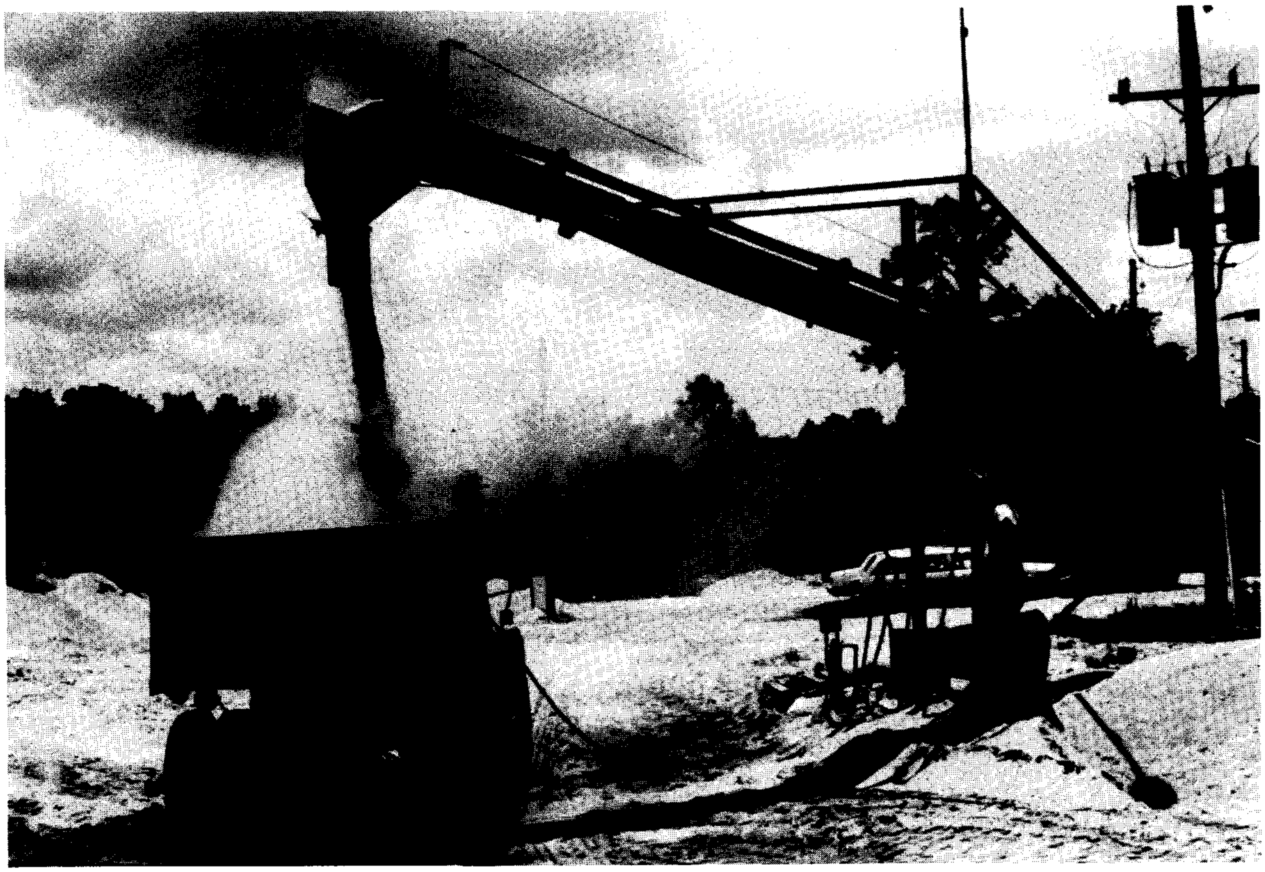


Figure 4-13. Nonenclosed truck loading station.

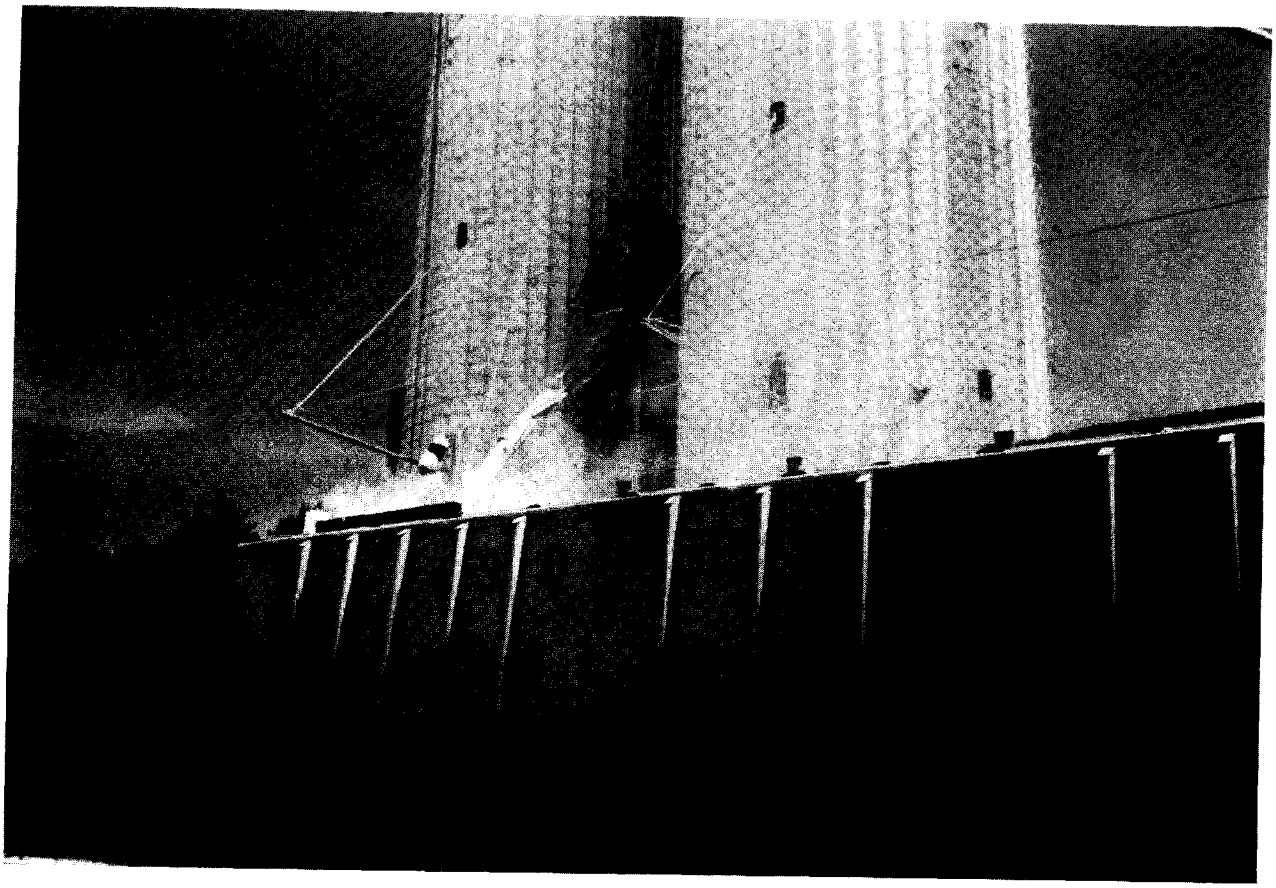


Figure 4-14. Enclosed railcar loading station with fugitive emissions.

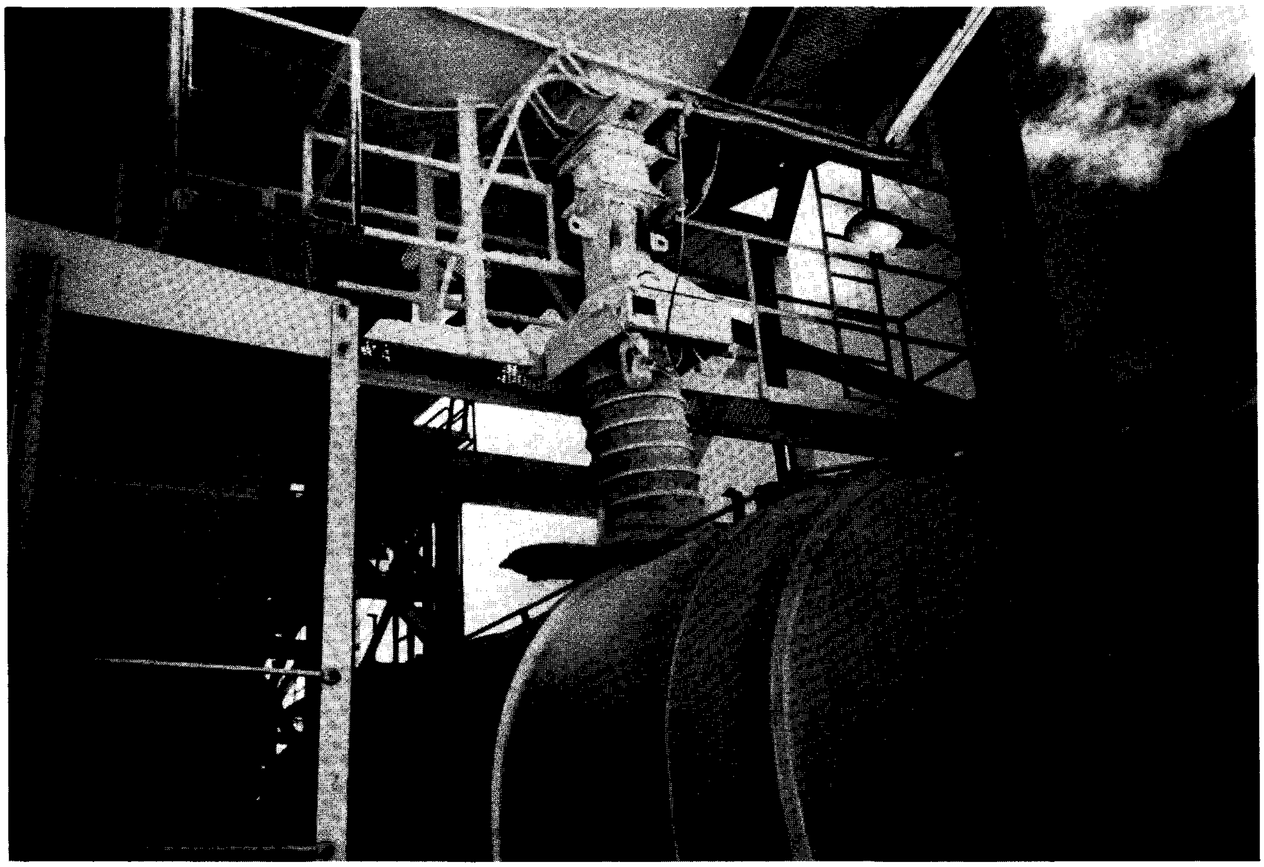


Figure 4-15. Enclosed truck loading station with flexible feed tube.

4.9 Field Inspection Procedures for Air Pollution Control Equipment

The following are Level II inspection procedures for APC systems typically found at nonmetallic mineral processing facilities.

4.9.1 Operating Pulse Jet Baghouses

Inspection Steps

- Method 9 observation of fabric filter discharge
- Method 9 observation of fugitive emissions from solids handling operation (if reentrainment is occurring)
- Method 9 observation of fugitive emissions from process equipment
- Counterflow checks of audible air infiltration into fan, baghouse (solids discharge valve, access doors, shell), and ductwork; check physical condition and location of hoods
- Check static pressure drop across baghouse using onsite gauge; compare with baseline data
- Compare compressed air pressures at reservoir with baseline values; check for audible leaks of compressed air at fittings; check operation of diaphragm valves, record number of valves that do not appear to be working properly
- Check inlet gas temperatures using onsite gauge
- Observe and describe corrosion of fabric filter shell and hoppers
- Evaluate bag failure records, gas inlet temperature records, pressure drop data, and other maintenance information.

Evaluation

- Visible emissions greater than the standard (7 percent opacity) indicate poor performance; inspection should include: evaluation of bag problems, including but not limited to abrasion, chemical attack, high temperature damage, and improper cleaning; if conditions appear to be severe, a Level III inspection (primary clean side checks) is recommended

- Fugitive emissions from all process sources should be carefully documented; reasons for poor capture should be investigated, and include air infiltration, poor hood condition or location, fan belt slippage (listen for squeal), fabric blinding, and poor cleaning effectiveness

- Static pressure drop data and cleaning system performance checks (compressed air pressures, conditions of diaphragm valves, and frequency of cleaning) are very important

- Check of the entire system for air infiltration is very important, because it can lead to severe problems.

Safety Considerations

- Level II inspection involves some climbing and close contact with the pulse jet baghouse; check the integrity of all supports and ladders; climb ladders properly; avoid contact with hot ducts and roofs; avoid downward point gas discharge

- Because the inspector must enter the facility to conduct a Level II inspection, all facility and agency safety precautions apply.

4.9.2 Operating Shaker and Reverse Air Baghouses

Inspection Steps

- Method 9 observation of fabric filter stack or individual compartment discharge points

- Method 9 observation of fugitive emissions from solids handling operation (if reentrainment is occurring)

- Method 9 observation of fugitive emissions from process equipment

- Counterflow checks of audible air infiltration into fan, baghouse (solids discharge valve, access doors, shell), and ductwork; check physical condition and location of hoods

- Check static pressure drop across collector using onsite gauges

- Check static pressure drop across each compartment during cleaning; values should be zero for shaker collectors

- Confirm that reverse air fan or shaker motor is operating
- Check inlet gas temperatures using onsite gauges
- Observe and describe corrosion of fabric filter shell and hoppers
- Evaluate bag failure records, gas inlet temperature records, pressure drop data, and other records.

Evaluation

- Visible emissions >5 percent indicate poor performance; inspections should include: evaluation of bag problems, including abrasion, chemical attack, high temperature damage, and excessive cleaning intensities; if conditions appear severe, a Level III inspection is recommended
- Fugitive emissions from all process sources should be carefully documented
- Static pressure drop data and cleaning system performance checks (compartment static pressure drops during cleaning, operation of reverse air fan) are very useful for determining if the problem is due to the unit
- Counterflow inspection of the entire system for air infiltration is very important because it can gradually lead to severe bag damage, and reduced capture effectiveness at the process.

Safety Considerations

- Level II inspection involves some climbing and close contact with the unit; check the integrity of all supports and ladders; climb ladders properly; avoid contact with hot ducts and roofs; avoid poorly ventilated areas under hoppers and between compartments
- All plant and agency safety procedures for onsite inspections apply.

4.9.3 Nonoperating Pulse Jet Baghouses

Inspection Steps

- Confirm that unit is out-of-service and will not be brought on line during period of inspection

- Request plant personnel to open one or more access hatches on the clean side of unit; evaluate quantity and pattern of clean side deposits

- Check orientation of blow tubes (and extension nipples, if present)

- Check for obvious poorly seated bags and gaps in tube sheet welds

- Request that plant personnel open side access hatches if available

- Check for bag abrasion against side flanges, internal walkways, and other bags; check for bowed and bent bag/cage assemblies

- Check the condition of any deflector plates on the gas inlet

- Check for obvious erosion of ductwork leading to baghouse

- Check operation of bag cleaning equipment.

Evaluation

- Presence of clean side deposits (enough to make a footprint) indicates poor performance; inspection should include an evaluation of bag failure problems due to abrasion, excessive cleaning intensities, improper blow tube alignment, chemical attack, and high temperature damage; potential for leakage around top of bag and tube sheet should also be checked

- Potential for bag-to-bag abrasion at bottom and for damage of the fabric against side flanges and internal walkways can be seen from side access hatches

- Deflector serves to protect the bags from abrasive materials

- Erosion of these plates could contribute to premature failures; eroded ductwork could lead to reduced pollutant capture at the generation source and operating temperatures below the acid dewpoint for combustion sources.

Safety Considerations

- Hatches located on hoppers should never be opened during an inspection because there is often dangerous accumulations of hot, free flowing solids behind the door

- Inspector should never stick his or her head into the clean air plenum because this poorly ventilated area may contain asphyxiants and/or toxic gases

- All hatches must be opened carefully to prevent hand injuries.

Special Notes

- Presence of clean side deposits or other abnormal conditions cannot be used alone as a basis for a Notice of Violation (NOV)

- Baghouses should be opened only with consent of plant management personnel.

4.9.4 Nonoperating Shaker and Reverse Air Baghouses

Inspection Steps

- Confirm that unit or individual compartment is out-of-service and will not be brought on line during period of inspection

- Request that plant personnel open access hatch of compartments isolated; use the hatch just above the elevation of the tube sheet; evaluate quantity and pattern of clean side deposits

- Observe bag tension throughout the portion of the compartment that is visible from access hatch; check tension of bags that can be reached without entering compartment

- Check for leaks around thimble connections or snap ring connections

- Check for obvious bag abrasion on internal flanges

- Check for obvious tube sheet weld failures

- Note any holes or tears in bags visible from access hatch.

Evaluation

- Presence of clean side deposits (enough to make a footprint) indicates poor performance; inspection should include an evaluation of bag failure problems due to abrasion, excessive cleaning intensities, chemical attack, and high temperature attack

- Bag tension is critical; in both reverse air and shaker collectors bags must not sag at bottom; the reverse air bags are kept under 40 to 120 pounds tension; shaker bags are normally hung with no measurable tension

- Spatial pattern of clean side deposits can be used to indicate dust emission problems; however, once deposits exceed several inches in depth, diagnostic signs are essentially buried

- Gaps in tube sheet welds are usually visible because the high velocity gas stream passing through gap moves the dust deposits away from that portion of tube sheet.

Safety Considerations

- Hatches located on hoppers should never be opened during inspection because there is often dangerous accumulations of hot, free flowing solids behind door

- Side access hatches for each compartment should also be opened carefully because hot clean side deposits ranging from several inches to several feet in depth may be behind door

- Under no circumstances should inspector enter the compartment

- Even compartments properly isolated may have high concentrations of toxic gases, toxic particulate, and asphyxiants; the gas temperature inside can be quite hot due to radiation and conduction from adjacent compartments still operating

- Respirators should be worn whenever observing conditions through an open hatch.

Special Notes

- Presence of clean side deposits or other abnormal conditions cannot be used alone as a basis for a NOV

- Unit should be opened only with consent of plant management.

4.9.5 Spray Tower Scrubbers

Inspection Steps

- Method 9 observation of stack for a period of not less than 6 minutes; calculate average opacity and describe cycles in the average opacity

- Method 9 observation of all bypass stacks and vents and any fugitive emissions from process equipment

- Presence of rainout close to the stack or mud lips at the discharge point

- Presence of fan vibration

- Liquor flow rate and pressure drop indicated by onsite monitors (compare wih average of last compliance test)

- Pump discharge pressure and motor current indicated by onsite gauges

- Audible pump cavitation

- Nozzle header pressure indicated by onsite gauge

- Physical condition of shell and ductwork

- Recirculation pond layout and pump intake position

- Physical condition of nozzles observed through access hatch

- Note means used to dispose of purged liquor.

Evaluation

- A shift in the average opacity may be due to a decrease in the particle size distribution of the inlet gas stream; a co-current inspection of the process operation is often advisable

- Anything that affects the nozzles will reduce performance; liquor turbidity is related to the vulnerability to nozzle pluggage and erosion

- Shell and ductwork corrosion is often caused by operation at pH levels that are lower than desirable; measure the liquor pH using in-plant instruments, if available

- Performance of a spray tower scrubber is dependent on the liquor flow rate; any problems that potentially reduce the flow rate should be fully examined.

Safety Considerations

- Check all ladders and platforms before use; safe climbing and walking practices are important, especially in cold weather
- Avoid poorly ventilated areas
- Avoid hot duct and pipes
- Terminate inspection if a severely vibrating fan is noted in the vicinity of the scrubber
- Under no circumstances should inspector attempt to look inside an operating wet scrubber
- Visible emission observations should be made only in secure areas.

Special Notes

- Observations and data do not provide conclusive evidence of noncompliance with mass emission standards (requires stack test); these can be used only as surrogate indicators of compliance.

4.9.6 Mechanically Aided Scrubbers

Inspection Steps

- Method 9 observation of the stack for a period of not less than 6 minutes; calculate average opacity
- Method 9 observation of all bypass stacks and vents and any fugitive emissions from process equipment
- Presence of rainout close to the stack or mud lips at the discharge point
- Presence of fan vibration
- Pump discharge pressure and motor current indicated by onsite gauges
- Audible pump cavitation

- Nozzle header pressure indicated by onsite gauge
- Physical condition of shell and ductwork
- Recirculation pond layout and pump intake position
- Note means used to dispose of purged liquor
- Static pressure increase across scrubber and liquor flow rate monitored by onsite gauges (compare with average of last compliance test).

Evaluation

- Shift in the average opacity may be due to a decrease in the particle size distribution of the inlet gas stream; a co-current inspection of the process operation is often advisable
- Liquor turbidity is related to the vulnerability of the fan blades to erosion damage
- Shell and ductwork corrosion is often caused by operation at pH levels which are lower than desirable; measure liquor pH using in-plant instruments, if available
- Performance of a mechanically aided scrubber is dependent on liquor flow rate; any problems which potentially reduce the flow rate should be fully examined; indirect indications of liquor flow rate include pump discharge pressure, nozzle header pressure, pump motor currents, and audible pump cavitation.

Safety Considerations

- Check all ladders and platforms before use; safe climbing and walking practices are important at all times
- Avoid poorly ventilated areas
- Avoid hot ducts and pipes
- Terminate inspection if the fan is vibrating severely
- Under no circumstances should inspector attempt to look inside an operating wet scrubber

- Visible emission observations should be made only in secure areas.

Special Notes

- Inspection data and observations do not provide conclusive evidence of violation of mass emission standards (requires stack test); these can be used only as surrogate indicators of compliance.

4.9.7 Gas-Atomized Scrubbers

Inspection Steps

- Method 9 observation of stack for a period of not less than 6 minutes; calculate average opacity
- Method 9 observation of all bypass stacks and vents and any fugitive emissions from process equipment
- Presence of rainout close to the stack or mud lips at the discharge
- Presence of fan vibration
- Static pressure drop across the scrubber and liquor flow rate indicated by onsite gauges (compare with average of last compliance test)
- Pump discharge pressure and motor current indicated by onsite gauges
- Audible pump cavitation
- Nozzle header pressure indicated by onsite gauge
- Physical condition of shell and ductwork
- Recirculation pond layout and pump intake position
- Physical condition of nozzles observed through access hatch
- Means used to dispose of purged liquor should be noted.

Evaluation

- Shift in the average opacity may be due to a decrease in particle size distribution of the inlet gas stream; a co-current inspection of the process operation is often advisable

- Anything which affects the nozzles will reduce performance; liquor turbidity is related to the vulnerability to nozzle pluggage and erosion

- Shell and ductwork corrosion is often caused by operation at pH levels which are lower than desirable; measure liquor pH using in-plant instruments, if available

- Performance of a gas-atomized scrubber is partially dependent on the liquor flow rate; any problems which potentially reduce the flow rate should be fully examined

- Overall performance of a gas-atomized wet scrubber is related to the static pressure drop except in cases where there is a particle size shift, a change in the liquor surface tension, or gas-liquor maldistribution problems.

Safety Considerations

- Check all ladders and platforms before use; safe climbing and walking practices are important at all times

- Avoid poorly ventilated areas

- Avoid hot ducts and pipes

- Terminate inspection if a severely vibrating fan is noted in the general vicinity of the scrubber

- Under no circumstances should inspector attempt to look inside an operating wet scrubber

- Visible emission observations should be made only in secure areas.

Special Notes

- Inspection data and observations do not provide conclusive evidence of violation of mass emission standards (requires stack test); these can be used only as surrogate indicators of compliance

4.9.8 Large Diameter Cyclones

Inspection Steps

- Method 9 observation of stack for a sufficient period to fully characterize conditions during normal process cycles

- Method 9 observation of any fugitive emissions from process equipment, and material handling operations
- Presence of accumulated dust in the vicinity of the stack
- Presence of obvious holes and dents in cyclone shell
- Air infiltration sites on cyclone shell, cyclone hopper, solids discharge valve, and inlet ductwork
- Obvious corrosion of cyclone
- Static pressure drop across the cyclone as indicated by onsite gauge.

Evaluation

- If the visible emissions have increased more than 5 percent since the baseline period or if the visible emissions are within 5 percent of the regulatory limit, a more detailed inspection is recommended
- Accumulated solids near the stack generally imply high mass emissions composed of large particles which do not scatter light effectively
- Fugitive emissions from the process area can be at least partially due to air infiltration into ductwork or collector; check process area and ductwork
- Holes and dents in shell can disrupt the gas vortex, causing some particulate reentrainment and emissions
- Static pressure provides an indication of the flow rate; removal efficiency generally increases with the static pressure.

Safety Considerations

- Positions selected for the Method 9 observations should be secure from moving vehicles such as cars, trains, and moving machinery
- Footing must be secure; stockpiles are not acceptable
- All climbing and walking safety procedures are very important; some horizontal structures may not be able to withstand the load of accumulated solids and several people
- Avoid contact with hot surfaces

- Some fugitive leaks from the cyclone body and the cyclone discharge vents may contain high velocity materials which could cause eye injuries; avoid potential areas of exposure.

Special Notes

- Inspection data and observations do not provide conclusive evidence of violation of mass emission standards (requires stack test); these can be used only as surrogate indicators of compliance.

4.9.9 Multiple Cyclone Collectors

Inspection Steps

- Method 9 observation of stack for a sufficient period to fully characterize conditions during normal process cycles

- Method 9 observation of any fugitive emissions from process equipment, and material handling operations

- Air infiltration sites on collector shell, hopper, solids discharge valve, and inlet ductwork

- Static pressure drop across collector as indicated by onsite gauge

- Inlet gas temperature as indicated by onsite gauge.

Evaluation

- If the visible emissions have increased more than 5 percent since the baseline period or if the visible emissions are within 5 percent of the regulatory limit, a more detailed inspection is recommended

- Fugitive emissions from the process area can be at least partially due to air infiltration into ductwork or collector; check process area and ductwork

- Static pressure provides an indication of the flow rate and the resistance to gas flow; static pressure should be checked against baseline static pressure drops for similar process operating rates; if the present value is higher, then pluggage is possible; if it is lower, erosion of outlet tubes and gasket problems are likely.

Safety Considerations

- Positions selected for the Method 9 observations should be secure from moving vehicles such as cars, trains, and moving machinery

- Footing must be secure; stockpiles are not acceptable

- All climbing and walking safety procedures are very important; some horizontal structures may not be able to withstand the load of accumulated solids and several people

- Avoid contact with hot surfaces

- Many multicyclone collectors are located in hot areas; avoid heat stress by limiting the time spent in the area (moderate heat conditions) or by not entering the area (high heat areas)

Special Notes

- Inspection data and observations do not provide conclusive evidence of violation of mass emission standards (requires stack test); these can be used only as surrogate indicators of compliance.

4.9.10 Wet Suppression Systems

Inspection Steps

- Check the condition of spray nozzles and spray patterns

- Check nozzle header pressure with baseline data or last compliance test

- Check timing cycle and actuators for intermittent operation

- Check for use of wetting agents/surfactants

- Are wetting agents/surfactants used at manufacturer's specifications or at similar rates of last compliance test

- Location of sprays versus file information

- Check to see if antifreeze is used in winter (if required).

Evaluation

- Spray towers and nozzles should be located for maximum dust suppression. Spray nozzles should emit an adequate spray pattern. Water added to crusher inlets should be adequate to wet reduced ore size

- Surfactants and wetting agents should be used at or near manufacturer's specifications or at rates similar to the last compliance test

- Manually operated system actuators allow for nonoperation due to human error

- High water turbidity may cause increased nozzle pluggage if water is recycled.

Safety Considerations

- Level II inspections involve some climbing and proximity to heavy equipment, puleys, drive belts and moving vehicles; avoid close proximity to equipment inlets and outlets where reduction fragments may be ejected; do not touch operating or nonoperating nozzles.

4.10 Post-Inspection Conference

The closing conference with facility officials enables the inspector to "wrap up" the inspection including answering any questions the company may have, filling in any gaps in the data collected, and identifying information considered confidential. Thus, the following elements generally constitute the closing conference.

- Review of Inspection Data - At this point, the inspector can identify and fill in any gaps in the information collected and ensure that there is general agreement on the technical facts.

- Inspection Follow-up Discussion - The inspector should be willing to answer inspection related questions from facility officials, but should only state matters of fact. Under no circumstances should the inspector make judgments or conclusions concerning the facility's compliance status, legal effects, or enforcement consequences.

- Declaration of Confidential Business Information - Plant officials authorized to make business confidentiality claims should be given the opportunity to make a claim of confidentiality by noting such claim on documentary material provided to EPA. The inspector should note all information claimed confidential and handle materials accordingly, even if a written declaration is not made at this time.

- Preparation of Receipts - The inspector should provide receipts for any samples or records taken to a responsible plant individual.

Since EPA and State inspectors are often the only direct contact between the regulatory agency and the regulated industry, the inspector should always be aware of opportunities to improve industry-agency relations. The closing conference provides an ideal opportunity to offer various kinds of assistance to facility officials. At this point, the inspector has first-hand knowledge of questions, problems, and possible solutions to problems. The inspector should consider:

- Answering all questions within his ability and authority.

- Referral of questions and problems to other Agency personnel when necessary.

- Discussion of problems and tactful suggestion of possible solutions and assistance.

- Tactful probing of problem areas uncovered during the inspection.

- Offering or suggesting available resources such as technical publications, special services available to industry, etc.

It is very important that the inspector follow up all referrals and offers to help. A letter, phone call, or repeat visit will indicate to facility officials a genuine interest on the part of the agency and aid the agency's industry relations.

4.11 Report Preparation and Tracking

During the inspection, the inspector collects and substantiates inspection data which may later be used as evidence in an enforcement proceeding. When he/she returns to the office it is his/her responsibility to see that this data is organized and arranged so that other agency personnel may make maximum use of it. Thus, the file update and inspection report preparation are an important part of the inspection process. These should both be done as soon as possible after the inspection to ensure that all events of the inspection are still fresh in the inspector's memory. He/she must be able to confirm during a later enforcement proceeding that the information contained in the inspection report is true.

4.11.1 Computer Data Base Updates

Both the EPA and State agencies use several types of "files" for facility information storage, which include computer data bases. State agencies may use different variations of an Emissions Inventory System (EIS) while EPA uses data from the Aerometric Information Retrieval System (AIRS). States with delegation and enforcement authority for the nonmetallic mineral processing NSPS should enter the results of compliance inspections of affected facilities into the AIRS Facility Subsystem as well as into their respective computer data bases.

The inspector should check to see if any required information is missing or has changed since the last update and then work within the office system to use the data he/she has collected to update the appropriate data base.

4.11.2 Agency File Updates

The agency files usually contain the hard copies of all information, correspondence, reports, etc. relevant to a particular facility. Examples of such items are listed below:

- General Facility Information
- Correspondence to Facility
- Correspondence from Facility
- Permit Applications
- Permits
- Facility Layout
- Flowcharts
- Raw Data from Inspections
- Inspection Reports

- Source Test Reports
- Excess Emission Reports
- Case Emission Reports
- Agency Notes, etc. on Compliance Actions.

The inspector's data should be used to update the general facility information including plant contact, correct address, changes in production rates, new flowcharts, layouts, etc. and of course, the inspector's raw data and inspection report will be added to the file.

4.11.3 Report Preparation

The inspector's inspection report serves two very important purposes in agency operations: 1) it provides other agency personnel with easy access to the inspection information because it has been organized into a comprehensive, usable document; and 2) it constitutes a major part of the evidence package on the inspection which will be available for subsequent enforcement proceedings and/or other types of compliance-related follow-up activities.

Although specific information contained in the inspection report will vary depending on the requirements of the agency, the basic format includes a narrative report and documentary support. A typical report format is outlined below.

General Inspection Information

- Inspection objectives
- Facility selection scheme
- Inspection facts (date, time, location, plant official, etc.)

Summary of Findings

- Factual compliance findings (include problem areas)
- Compliance status with applicable regulations
- Administrative problems (as with entry, withdrawal of consent, etc.)
- Recommended future action (if appropriate)

Facility Information

- Process information
- Raw materials, production rates
- Control equipment
- Applicable regulations
- Enforcement history

Inspection Procedures and Detail of Findings

- Refer to standard procedures used
- Describe nonroutine procedures used
- Reference inspection data attached
- Note and reference any statements taken
- Reference photographs, if relevant
- Reference any drawings, charts, etc. made
- Reference visible emission observation forms
- List records reviewed and address inadequacies

Sampling

- Refer to methods used
- Reference analytical results attached

Attachments

- List of all documentary support attached

Documentary support is all evidence referred to in the inspection report. It will include:

- Inspector's field notes, forms, checklists
- Drawings, charts, etc
- Photographs
- Analysis results of samples collected
- Statements taken
- Visible emission observation forms.

Appendix F contains a typical inspection report for a nonmetallic mineral processing facility. The inspection and the final inspection report should document whether the inspection objectives were attained, the compliance status of the affected facilities, and the need for any follow-on activities required as a result of the inspection.

APPENDIX A

40 CFR 60, SUBPART 000 WITH FEBRUARY 14, 1989 REVISION

Subpart OOO—Standards of Performance for Nonmetallic Mineral Processing Plants

[Subpart OOO added by 50 FR 31337, August 1, 1985]

§60.670 Applicability and designation of affected facility.

(a) Except as provided in paragraphs (b), (c) and (d) of this section, the provisions of this subpart are applicable to the following affected facilities in fixed or portable nonmetallic mineral processing plants: each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station.

(b) An affected facility that is subject to the provisions of Subpart F or I or that follows in the plant process any facility subject to the provisions of Subparts F or I of this part is not subject to the provisions of this subpart.

(c) Facilities at the following plants are not subject to the provisions of this subpart:

(1) Fixed sand and gravel plants and crushed stone plants with capacities, as defined in §60.671, of 23 megagrams per hour (25 tons per hour) or less;

(2) Portable sand and gravel plants and crushed stone plants with capacities, as defined in §60.671, of 136 megagrams per hour (150 tons per hour) or less; and

(3) Common clay plants and pumice plants with capacities, as defined in §60.671, of 9 megagrams per hour (10 tons per hour) or less.

(d)(1) When an existing facility is replaced by a piece of equipment of equal or smaller size, as defined in §60.671, having the same function as the existing facility, the new facility is exempt from the provisions of §§60.672, 60.674, and 60.675 except as provided for in paragraph (d)(3) of this section.

(2) An owner or operator seeking to comply with this paragraph shall comply with the reporting requirements of §60.676(a) and (b).

(3) An owner or operator replacing all existing facilities in a production line with new facilities does not qualify for the exemption described in paragraph (d)(1) of this section and must comply with the provisions of §§60.672, 60.674 and 60.675.

(e) An affected facility under paragraph (a) of this section that commences construction, reconstruction, or modification after August 31, 1983 is subject to the requirements of this part.

§60.671 Definitions.

All terms used in this subpart, but not specifically defined in this section, shall have the meaning given them in the Act and in Subpart A of this part.

"Bagging operation" means the mechanical process by which bags are filled with nonmetallic minerals.

"Belt conveyor" means a conveying device that transports material from one location to another by means of an endless belt that is carried on a series of idlers and routed around a pulley at each end.

"Bucket elevator" means a conveying device of nonmetallic minerals consisting of a head and foot assembly which supports and drives an endless single or double strand chain or belt to which buckets are attached.

"Building" means any frame structure with a roof.

"Capacity" means the cumulative rated capacity of all initial crushers that are part of the plant.

"Capture system" means the equipment (including enclosures, hoods, ducts, fans, dampers, etc.) used to capture and transport particulate matter generated by one or more process operations to a control device.

"Control device" means the air pollution control equipment used to reduce particulate matter emissions released to the atmosphere from one or more process operations at a nonmetallic mineral processing plant.

"Conveying system" means a device for transporting materials from one piece of equipment or location to another location within a plant. Conveying systems include but are not limited to the following: Feeders, belt conveyors, bucket elevators and pneumatic systems.

"Crusher" means a machine used to crush any nonmetallic minerals, and includes, but is not limited to, the following types: jaw, gyratory, cone, roll, rod mill, hammermill, and impactor.

"Enclosed truck or railcar loading station" means that portion of a nonmetallic mineral processing plant were nonmetallic minerals are loaded by an enclosed conveying system into enclosed trucks or railcars.

"Fixed plant" means any nonmetallic mineral processing plant at which the processing equipment specified in §60.670(a) is attached by a cable, chain, turnbucket, bolt or other means (except electrical connections) to any anchor, slab, or structure including bedrock.

"Fugitive emission"means particulate matter that is not collected by a capture system and is released to the atmosphere at the point of generation.

"Grinding mill" means a machine used for the wet or dry fine crushing of any nonmetallic mineral. Grinding mills include, but are not limited to, the following types: hammer, roller, rod, pebble and ball, and fluid energy. The grinding mill includes the air conveying system, air separator, or air classifier, where such systems are used.

"Initial crusher" means any crusher into which nonmetallic minerals can be fed without prior crushing in the plant.

"Nonmetallic mineral" means any of the following minerals or any mixture of which the majority is any of the following minerals:

(a) Crushed and Broken Stone, including Limestone, Dolomite, Granite, Traprock, Sandstone, Quartz, Quartzite, Marl, Marble, Slate, Shale, Oil Shale, and Shell.

(b) Sand and Gravel.

(c) Clay including Kaolin, Fireclay, Bentonite, Fuller's Earth, Ball Clay, and Common Clay.

(d) Rock Salt.

(e) Gypsum.

(f) Sodium Compounds, including Sodium Carbonate, Sodium Chloride, and Sodium Sulfate.

(g) Pumice.

(h) Gilsonite.

(i) Talc and Pyrophyllite.

(j) Boron, including Borax, Kernite, and Colemanite.

(k) Barite.

(l) Fluorospar.

(m) Feldspar.

(n) Diatomite.

(o) Perlite.

(p) Vermiculite.

(q) Mica.

(r) Kyanite, including Andalusite, Sillimanite, Topaz, and Dumortierite.

"Nonmetallic mineral processing plant" means any combination of equipment that is used to crush or grind any nonmetallic mineral wherever located, including lime plants, power plants, steel mills, asphalt concrete plants, portland cement plants, or any other facility processing nonmetallic minerals except as provided in § 60.670 (b) and (c).

"Portable plant" means any nonmetallic mineral processing plant that is mounted on any chassis or skids and may be moved by the application of a lifting or pulling force. In addition, there shall be no cable, chain, turnbuckle, bolt or other means (except electrical connections) by which any piece of equipment is attached or clamped to any anchor, slab, or structure, including bedrock that must be removed prior to the application of a lifting or pulling force for the purpose of transporting the unit.

"Production line" means all affected facilities (crushers, grinding mills, screening operations, bucket elevators, belt conveyors, bagging operations, storage bins, and enclosed truck and railcar loading stations) which are directly connected or are connected together by a conveying system.

"Screening operation" means a device for separating material according to size by passing undersize material through one or more mesh surfaces (screens) in series, and retaining oversize material on the mesh surfaces (screens).

"Size" means the rated capacity in tons per hour of a crusher, grinding mill, bucket elevator, bagging operation, or enclosed truck or railcar loading station; the total surface area of the top screen of a screening operation; the width of a conveyor belt; and the rated capacity in tons of a storage bin.

"Stack emission" means the particulate matter that is released to the atmosphere from a capture system.

"Storage bin" means a facility for storage (including surge bins) or nonmetallic minerals prior to further processing or loading.

"Transfer point" means a point in a conveying operation where the nonmetallic mineral is transferred to or from a belt conveyor except where the nonmetallic mineral is being transferred to a stockpile.

"Truck dumping" means the unloading of nonmetallic minerals from movable vehicles designed to transport nonmetallic minerals from one location to another. Movable vehicles include but are not limited to: trucks, front end loaders, skip hoists, and railcars.

"Vent" means an opening through which there is mechanically induced air flow for the purpose of exhausting from a building air carrying particulate matter emissions from one or more affected facilities.

§ 60.672 Standard for particulate matter.

(a) On and after the date on which the performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any transfer point on belt conveyors or from any other affected facility any stack emissions which:

(1) Contain particulate matter in excess of 0.05 g/dscm; or

(2) Exhibit greater than 7 percent opacity, unless the stack emissions are discharged from an affected facility using a wet scrubbing control device. Facilities using a wet scrubber must comply with the reporting provisions of § 60.676 (c), (d), and (e).

(b) On and after the sixtieth day after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any transfer point on belt conveyors or from any other affected facility any fugitive emissions which exhibit greater than 10 percent opacity, except as provided in paragraphs (c), (d) and (e) of this section.

(c) On and after the sixtieth day after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup, no owner or operator shall cause to be discharged into the atmosphere from any crusher, at which a capture system is not used, fugitive emissions which exhibit greater than 15 percent opacity.

(d) Truck dumping of nonmetallic minerals into any screening operation, feed hopper, or crusher is exempt from the requirements of this section.

(e) If any transfer point on a conveyor belt or any other affected facility is enclosed in a building, then each enclosed affected facility must comply with the emission limits in paragraphs (a), (b) and (c) of this section, or the building enclosing the affected facility or facilities must comply with the following emission limits:

(1) No owner or operator shall cause to be discharged into the atmosphere from any building enclosing any transfer point on a conveyor belt or any other affected facility any visible fugitive emissions except emissions from a vent as defined in § 60.671.

(2) No owner or operator shall cause to be discharged into the atmosphere from any vent of any building enclosing any transfer point on a conveyor belt or any other affected facility emissions which exceed the stack emissions limits in paragraph (a) of this section.

§ 60.673 Reconstruction.

(a) The cost of replacement of ore-contact surfaces on processing equipment shall not be considered in calculating either the "fixed capital cost of the new components" or the "fixed capital cost that would be required to construct a comparable new facility" under § 60.15. Ore-contact surfaces are crushing surfaces; screen meshes, bars, and plates; conveyor belts; and elevator buckets.

(b) Under § 60.15, the "fixed capital cost of the new components" includes the fixed capital cost of all depreciable components (except components specified in paragraph (a) of this section) which are or will be replaced pursuant tc all continuous programs of component replacement commenced within any 2-year period following August 31, 1983.

§ 60.674 Monitoring of operations.

The owner or operator of any affected facility subject to the provisions of this subpart which uses a wet scrubber to control emissions shall install, calibrate, maintain and operate the following monitoring devices:

(a) A device for the continuous measurement of the pressure loss of the gas stream through the scrubber. The monitoring device must be certified by the manufacturer to be accurate within ±250 pascals ±1 inch water gauge pressure and must be calibrated on an annual basis in accordance with manufacturer's instructions.

(b) A device for the continuous measurement of the scrubbing liquid flow rate to the wet scrubber. The monitoring device must be certified by the manufacturer to be accurate within ±5 percent of design scrubbing liquid flow rate and must be calibrated on an annual basis in accordance with manufacturer's instructions.

§ 60.675 Test methods and procedures.

[60.675 revised by 54 FR 6662, February 14, 1989]

(a) In conducting the performance tests required in § 60.8, the owner or operator shall use as reference methods and procedures the test methods in Appendix A of this part or other methods and procedures as specified in this section, except as provided in § 60.8(b). Acceptable alternative methods and procedures are given in paragraph (e) of this section.

(b) The owner or operator shall determine compliance with the particulate matter standards in § 60.272(a) as follows:

(1) Method 5 or Method 17 shall be used to determine the particulate matter concentration. The sample volume shall be at least 1.70 dscm (60 dscf). For Method 5, if the gas stream being sampled is at ambient temperature, the sampling probe and filter may be operated without heaters. If the gas stream is above ambient temperature, the sampling probe and filter may be operated at a temperature high enough, but no higher than 121 °C (250 °F), to prevent water condensation on the filter.

(2) Method 9 and the procedures in § 60.11 shall be used to determine opacity.

(c) In determining compliance with the particulate matter standards in § 60.672 (b) and (c), the owner or operator shall use Method 9 and the procedures in § 60.11, with the following additions:

(1) The minimum distance between the observer and the emission source shall be 4.57 meters (15 feet).

(2) The observer shall, when possible, select a position that minimizes interference from other fugitive emission sources (e.g., road dust). The required observer position relative to the sun (Method 9, Section 2.1) must be followed.

(3) For affected facilities using wet dust suppression for particulate matter control, a visible mist is sometimes generated by the spray. The water mist must not be confused with particulate matter emissions and is not to be considered a visible emission. When a water mist of this nature is present, the observation of emissions is to be made at a point in the plume where the mist is no longer visible.

(d) In determining compliance with § 60.672(e), the owner or operator shall use Method 22 to determine fugitive emissions. The performance test shall be conducted while all affected facilities inside the building are operating. The performance test for each building shall be at least 75 minutes in duration, with each side of the building and the roof being observed for at least 15 minutes.

(e) The owner or operator may use the following as alternatives to the reference methods and procedures specified in this section:

(1) For the method and procedure of paragraph (c) of this section, if emissions from two or more facilities continuously interfere so that the opacity of fugitive emissions from an individual affected facility cannot be read, either of the following procedures may be used:

(i) Use for the combined emission stream the highest fugitive opacity standard applicable to any of the individual affected facilities contributing to the emissions stream.

(ii) Separate the emissions so that the opacity of emissions from each affected facility can be read.

(f) To comply with § 60.676(d), the owner or operator shall record the measurements as required § 60.676(c) using the monitoring devices in § 60.674 (a) and (b) during each particulate matter run and shall determine the averages.

§60.676 Reporting and recordkeeping.

(a) Each owner or operator seeking to comply with §60.670(d) shall submit to the Administrator the following information about the existing facility being replaced and the replacement piece of equipment.

(1) For a crusher, grinding mill, bucket elevator, bagging operation, or enclosed truck or railcar loading station:

(i) The rated capacity in tons per hour of the existing facility being replaced and

(ii) The rated capacity in tons per hour of the replacement equipment.

(2) For a screening operation:

(i) The total surface area of the top screen of the existing screening operation being replaced and

(ii) The total surface area of the top screen of the replacement screening operation.

(3) For a conveyor belt:

(i) The width of the existing belt being replaced and

(ii) The width of the replacement conveyor belt.

(4) For a storage bin:

(i) The rated capacity in tons of the existing storage bin being replaced and

(ii) The rated capacity in tons of replacement storage bins.

(b) Each owner or operator seeking to comply with §60.670(d) shall submit the following data to the Director of the Emission Standards and Engineering Division, (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

(1) The information described in §60.676(a).

(2) A description of the control device used to reduce particulate matter emissions from the existing facility and a list of all other pieces of equipment controlled by the same device; and

(3) The estimated age of the existing facility.

(c) During the initial performance test of a wet scrubber, and daily thereafter, the owner or operator shall record the measurements of both the change in pressure of the gas stream across the scrubber and the scrubbing liquid flow rate.

(d) After the initial performance test of a wet scrubber, the owner or operator shall submit semiannual reports to the Administrator of occurrences when the measurements of the scrubber pressure loss (or gain) and liquid flow rate differ by more than ±30 percent from the average determined during the most recent performance test.

[60.676(d) amended by 54 FR 6662, February 14, 1989]

(e) The reports required under paragraph (d) shall be postmarked within 30 days following end of the second and fourth calendar quarters.

(f) The owner or operator of any affected facility shall submit written reports of the results of all performance tests conducted to demonstrate compliance with the standards set forth in §60.672, including reports of opacity observations made using Method 9 to demonstrate compliance with §60.672 (b) and (c) and reports of observations using Method 22 to demonstrate compliance with §60.672(e).

(g) The requirements of this paragraph remain in force until and unless the Agency, in delegating enforcement authority to a State under Section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such States. In that event, affected sources within the State will be relieved of the obligation to comply with paragraphs (a), (c), (d), (e), and (f) of this subsection, provided that they comply with requirements established by the State. Compliance with paragraph (b) of this section will still be required.

[Approved by the Office of Management and Budget under control number 2060-0050]

APPENDIX B

40 CFR 60, SUBPART A
GENERAL PROVISIONS (ABBREVIATED)

Subpart A—General Provisions

§ 60.1 Applicability.

Except as provided in Subparts B and C, the provisions of this part apply to the owner or operator of any stationary source which contains an affected facility, the construction or modification of which is commenced after the date of publication in this part of any standard (or, if earlier, the date of publication of any proposed standard) applicable to that facility.

§ 60.2 Definitions.

[60.2 amended by 54 FR 6662, February 14, 1989]

The terms used in this part are defined in the Act or in this section as follows:

"Act" means the Clean Air Act (42 U.S.C. 1857 et seq., as amended by Pub. L. 91-604, 84 Stat. 1676).

"Administrator" means the Administrator of the Environmental Protection Agency or his authorized representative.

"Affected facility" means, with reference to a stationary source, any apparatus to which a standard is applicable.

"Alternative method" means any method of sampling and analyzing for an air pollutant which is not a reference or equivalent method but which has been demonstrated to the Administrator's satisfaction to, in specific cases, produce results adequate for his determination of compliance.

"Capital expenditure" means an expenditure for a physical or operational change to an existing facility which exceeds the product of the applicable "annual asset guideline repair allowance percentage" specified in the latest edition of Internal Revenue Service (IRS) Publication 534 and the existing facility's basis, as defined by section 1012 of the Internal Revenue Code. However, the total expenditure for a physical or operational change to an existing facility must not be reduced by any "excluded additions" as defined in IRS Publication 534, as would be done for tax purposes.

"Commenced" means; with respect to the definition of "new source" in section 111(a)(2) of the Act, that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.

"Construction" means fabrication, erection, or installation of an affected facility.

"Continuous monitoring system" means the total equipment, required under the emission monitoring sections in applicable subparts, used to sample and condition (if applicable), to analyze, and to provide a permanent record of emissions or process parameters.

"Equivalent method" means any method of sampling and analyzing for an air pollutant which has been demonstrated to the Administrator's satisfaction to have a consistent and quantitatively known relationship to the reference method, under specified conditions.

"Existing facility" means, with reference to a stationary source, any apparatus of the type for which a standard is promulgated in this part, and the construction or modification of which was commenced before the date of proposal of that standard; or any apparatus which could be altered in such a way as to be of that type.

"Isokinetic sampling" means sampling in which the linear velocity of the gas entering the sampling nozzle is equal to that of the undisturbed gas stream at the sample point.

"Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.

"Modification" means any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) into the atmosphere not previously emitted.

"Monitoring device" means the total equipment, required under the monitoring of operations sections in applicable subparts, used to measure and record (if applicable) process parameters.

"Nitrogen oxides" means all oxides of nitrogen except nitrous oxide, as measured by test methods set forth in this part.

"One-hour period" means any 60-minute period commencing on the hour.

"Opacity" means the degree to which emissions reduce the transmission of light and obscure the view of an object in the background.

"Owner or operator" means any person who owns, leases, operates, controls, or supervises an affected facility or a stationary source of which an affected facility is a part.

"Particulate matter" means any finely divided solid or liquid material, other than uncombined water, as measured by the reference methods specified under each applicable subpart, or an equivalent or alternative method.

"Proportional sampling" means sampling at a rate that produces a constant ration of sampling rate to stack gas flow rate.

"Reference method" means any method of sampling and analyzing for an air pollutant as specified in the applicable subpart.

"Run" means the net period of time during which an emission sample is collected. Unless otherwise specified, a run may be either intermittent or continuous within the limits of good engineering practice.

"Shutdown" means the cessation of operation of an affected facility for any purpose.

"Six-minute period" means any one of the 10 equal parts of a one-hour period.

"Standard" means a standard of performance proposed or promulgated under this part.

"Standard conditions" means a temperature of 293 K (68°F) and a pressure of 101.3 kilopascals (29.92 in Hg).

"Startup" means the setting in operation of an affected facility for any purpose.

"Volatile Organic Compound" means any organic compound which participates in atmospheric photochemical reactions; or which is measured by a reference method, an equivalent method, an alternative method, or which is determined by procedures specified under any subpart.

§ 60.3 Units and abbreviations.

Used in this part are abbreviations and symbols of units of measure. These are defined as follows:

(a) System International (SI) units of measure:

A—ampere
g—gram
Hz—hertz
J—joule
K—degree Kelvin
kg—kilogram
m—meter
m^3—cubic meter
mg—milligram—10^{-3} gram
mm—millimeter—10^{-3} meter
Mg—megagram—10^{6} gram
mol—mole
N—newton
ng—nanogram—10^{-9} gram
nm—nanometer—10^{-9} meter
Pa—pascal
s—second
V—volt
W—watt
Ω—ohm
μg—microgram—10^{-6} gram

(b) Other units of measure:

Btu—British thermal unit
°C—degree Celsius (centigrade)
cal—calorie
cfm—cubic feet per minute
cu ft—cubic feet
dcf—dry cubic feet
dcm—dry cubic meter
dscf—dry cubic feet at standard conditions
dscm—dry cubic meter at standard conditions
eq—equivalent
°F—degree Fahrenheit
ft—feet
gal—gallon
gr—grain
g-eq—gram equivalent
hr—hour
in—inch
k—1,000
l—liter
lpm—liter per minute
lb—pound
meq—milliequivalent
min—minute
ml—milliliter
mol. wt.—molecular weight
ppb—parts per billion
ppm—parts per million
psia—pounds per square inch absolute
psig—pounds per square inch gage
°R—degree Rankine
scf—cubic feet at standard conditions
scfh—cubic feet per hour at standard conditions
scm—cubic meter at standard conditions
sec—second
sq ft—square feet
std—at standard conditions

(c) Chemical nomenclature:

CdS—cadmium sulfide
CO—carbon monoxide
CO_2—carbon dioxide
HCl—hydrochloric acid
Hg—mercury
H_2O—water
H_2S—hydrogen sulfide
H_2SO_4—sulfuric acid
N_2—nitrogen
NO—nitric oxide
NO_2—nitrogen dioxide
NO_x—nitrogen oxides
O_2—oxygen
SO_2—sulfur dioxide
SO_3—sulfur trioxide
SO_x—sulfur oxides

(d) Miscellaneous:

A.S.T.M.—American Society for Testing and Materials

§ 60.5 Determination of construction or modification.

(a) When requested to do so by an owner or operator, the Administrator will make a determination of whether action taken or intended to be taken by such owner or operator constitutes construction (including reconstruction) or modification or the commencement thereof within the meaning of this part.

(b) The Administrator will respond to any request for a determination under paragraph (a) of this section within 30 days of receipt of such request.

§ 60.6 Review of plans.

(a) When requested to do so by an owner or operator, the Administrator will review plans for construction or modification for the purpose of providing technical advice to the owner or operator.

(b)(1) A separate request shall be submitted for each construction or modification project.

(2) Each request shall identify the location of such project, and be accompanied by technical information describing the proposed nature, size, design, and method of operation of each affected facility involved in such project, including information on any equipment to be used for measurement or control of emissions.

(c) Neither a request for plans review nor advice furnished by the Administrator in response to such request shall (1) relieve an owner or operator of legal responsibility for compliance with any provision of this part or of any applicable State or local requirement, or (2) prevent the Administrator from implementing or enforcing any provision of this part or taking any other action authorized by the Act.

§ 60.7 Notification and record keeping.

(a) Any owner or operator subject to the provisions of this part shall furnish the Administrator written notification as follows:

(1) A notification of the date construction (or reconstruction as defined under § 60.15) of an affected facility is commenced postmarked no later than 30 days after such date. This requirement shall not apply in the case of mass-produced facilities which are purchased in completed form.

(2) A notification of the anticipated date of initial startup of an affected facility postmarked not more than 60 days nor less than 30 days prior to such date.

(3) A notification of the actual date of initial startup of an affected facility postmarked within 15 days after such date.

(4) A notification of any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard applies, unless that change is specifically exempted under an applicable subpart or in § 60.14(e). This notice shall be postmarked 60 days or as soon as practicable before the change is commenced and shall include information describing the precise nature of the change, present and proposed emission control systems, productive capacity of the facility before and after the change, and the expected completion date of the change. The Administrator may request additional relevant information subsequent to this notice.

(5) A notification of the date upon which demonstration of the continuous monitoring system performance commences in accordance with § 60.13(c). Notification shall be postmarked not less than 30 days prior to such date.

(6) A notification of the anticipated date for conducting the opacity observations required by §60.11(e)(1) of this part. The notification shall also include, if appropriate, a request for the Administrator to provide a visible emissions reader during a performance test. The notification shall be postmarked not less than 30 days prior to such date.

[60.7(a)(6) added by 50 FR 53113, December 27, 1985]

(7) A notification that continuous opacity monitoring system data results will be used to determine compliance with the applicable opacity standard during a performance test required by § 60.8 in lieu of Method 9 observation data as allowed by § 60.11(e)(5) of this part. This notification shall be postmarked not less than 30 days prior to the date of the performance test.

[60.7(a)(7) added by 52 FR 9781, March 26, 1987]

(b) Any owner or operator subject to the provisions of this part shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.

(c) Each owner or operator required to install a continuous monitoring system shall submit a written report of excess emissions (as defined in applicable subparts) to the Administrator for every calendar quarter. All quarterly reports shall be postmarked by the 30th day following the end of each calendar quarter and shall include the following information:

(1) The magnitude of excess emissions computed in accordance with § 60.13(h), any conversion factor(s) used, and the date and time of commencement and completion of each time period of excess emissions.

(2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.

(3) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.

(4) When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be stated in the report.

(d) Any owner or operator subject to the provisions of this part shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this part recorded in a permanent form suitable for inspection. The file shall be retained for at least two years following the date of such measurements, maintenance, reports, and records.

(e) If notification substantially similar to that in paragraph (a) of this section is required by any other State or local agency, sending the Administrator a copy of that notification will satisfy the requirements of paragraph (a) of this section.

(f) Individual subparts of this part may include specific provisions which clarify or make inapplicable the provisions set forth in this section.

[60.7(f) added by 48 FR 48335, October 18, 1983]

§ 60.8 Performance tests.

(a) Within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of such facility and at such other times as may be required by the Administrator under section 114 of the Act, the owner or operator of such facility shall conduct performance test(s) and furnish the Administrator a written report of the results of such performance test(s).

(b) Performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in each applicable subpart unless the Administrator (1) specifies or approves, in specific cases, the use of a reference method with minor changes in methodology, (2) approves the use of an equivalent method, (3) approves the use of an alternative method the results of which he has determined to be adequate for indicating whether a specific source is in compliance, (4) waives the requirement for performance tests because the owner or operator of a source has demonstrated by other means to the Administrator's satisfaction that the affected facility is in compliance with the standard. Nothing in this paragraph shall be construed to abrogate the Administrator's authority to require testing under section 114 of the Act, or (5) approves shorter sampling times and smaller sample volumes when necessitated by process variables or other factors.

[60.8(b) amended by 54 FR 6662, February 14, 1989]

(c) Performance tests shall be conducted under such conditions as the Administrator shall specify to the plant operator based on representative performance of the affected facility. The owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard.

(d) The owner or operator of an affected facility shall provide the Administrator at least 30 days prior notice of any performance test, except as specified under other subparts, to afford the Administrator the opportunity to have an observer present.

(e) The owner or operator of an affected facility shall provide, or cause to be provided, performance testing facilities as follows:

(1) Sampling ports adequate for test methods applicable to such facility. This includes (i) constructing the air pollution control system such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and procedures and (ii) providing a stack or duct free of cyclonic flow during performance tests, as demonstrated by applicable test methods and procedures.

[60.8(e)(1) revised by 54 FR 6662, February 14, 1989]

(2) Safe sampling platform(s).

(3) Safe access to sampling platform(s).

(4) Utilities for sampling and testing equipment.

(f) Unless otherwise specified in the applicable subpart, each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the owner or operator's control, compliance may, upon the Administrator's approval, be determined using the arithmetic mean of the results of the two other runs.

§ 60.9 Availability of information.

The availability to the public of information provided to, or otherwise obtained by, the Administrator under this Part shall be governed by Part 2 of this chapter. (Information submitted voluntarily to the Administrator for the purposes of §§ 60.5 and 60.6 is governed by § 2.201 through § 2.213 of this chapter and not by § 2.301 of this chapter.)

§ 60.10 State authority.

The provisions of this part shall not be construed in any manner to preclude any State or political subdivision thereof from:

(a) Adopting and enforcing any emission standard or limitation applicable to an affected facility, provided that such emission standard or limitation is not less stringent than the standard applicable to such facility.

(b) Requiring the owner or operator of an affected facility to obtain permits, licenses, or approvals prior to initiating construction, modification, or operation of such facility.

§ 60.11 Compliance with standards and maintenance requirements.

(a) Compliance with standards in this part, other than opacity standards, shall be determined only by performance tests established by § 60.8, unless otherwise specified in the applicable standard.

(b) Compliance with opacity standards in this part shall be determined by conducting observations in accordance with Reference Method 9 in Appendix A of this part, any alternative method that is approved by the Administrator, or as provided in paragraph (e)(5) of this section. For purposes of determining initial compliance, the minimum total time of observations shall be 3 hours (30 6-minute averages) for the performance test or other set of observations (meaning those fugitive-type emission sources subject only to an opacity standard.

[60.11(b) revised by 50 FR 53113, December 27, 1985; amended by 52 FR 9781, March 26, 1987]

(c) The opacity standards set forth in this part shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided in the applicable standard.

(d) At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

[60.11(e)(1) and (2) revised, new (3) — (5) added and former (3) and (4) redesignated as (6) and (7) by 50 FR 53113, December 27, 1985]

(e)(1) For the purpose of demonstrating initial compliance, opacity observations shall be conducted concurrently with the initial performance test required in §60.8 unless one of the following conditions apply. If no performance test under §60.8 is required, then opacity observations shall be conducted within 60 days after achieving the maximum production rate at which the affected facility will be operated but no later than 180 days after initial startup of the facility. If visibility or other conditions prevent the opacity observations from being conducted concurrently with the initial performance test required under §60.8, the source owner or operator shall reschedule the opacity observations as soon after the initial performance test as possible, but not later than 30 days thereafter, and shall advise the Administrator of the rescheduled date. In these cases, the 30-day prior notification to the Administrator required in §60.7(a)(6) shall be waived. The rescheduled opacity observations shall be conducted (to the extent possible) under the same operating conditions that existed during the initial performance test conducted under §60.8. The visible emissions observer shall determine whether visibility or other conditions prevent the opacity observations from being made concurrently with the initial performance test in accordance with procedures contained in Reference Method 9 of Appendix B of this part. Opacity readings of portions of plumes which contain condensed, uncombined water vapor shall not be used for purposes of determining compliance with opacity standards. The owner or operator of an affected facility shall make available, upon request by the Administrator, such records as may be necessary to determine the conditions under which the visual observations were made and shall provide evidence indicating proof of current visible observer emission certification. Except as provided in paragraph (e)(5) of this section, the results of continuous monitoring by transmissometer which indicate that the opacity at the time visual observations were made was not in excess of the standard are probative but not conclusive evidence of the actual opacity of an emission, provided that the source shall meet the burden of proving that the instrument used meets (at the time of the alleged violation) Performance Specification 1 in Appendix B of this part, has been properly maintained and (at the time of the alleged violation) that the resulting data have not been altered in any way.

[60.11(e)(1) amended by 52 FR 9781, March 26, 1987]

(2) Except as provided in paragraph (3)(e) of this section, the owner or operator of an affected facility to which an opacity standard in this part applies shall conduct opacity observations in accordance with paragraph (b) of this section, shall record the opacity of emissions, and shall report to the Administrator the opacity results along with the results of the initial performance test required under §60.8. The inability of an owner or operator to secure a visible emissions observer shall not be considered a reason for not conducting the opacity observations concurrent with the initial performance test.

(3) The owner or operator of an affected facility to which an opacity standard in this part applies may request the Administrator to determine and to record the opacity of emissions from the affected facility during the initial performance test and at such times as may be required. The owner or operator of the affected facility shall report the opacity results. Any request to the Administrator to determine and to record the opacity of emissions from an affected facility shall be included in the notification required in §60.7(a)(6). If for some reason, the Administrator cannot determine and record the opacity of emissions from the affected facility during the performance test, then the provisions of paragraph (e)(1) of this section shall apply.

(4) An owner or operator of an affected facility using a continuous opacity monitor [transmissometer] shall record the monitoring data produced during the initial performance test required by §60.8 and shall furnish the Administrator a written report of the monitoring results along with Method 9 and §60.8 performance test results.

[60.11(e)(4) corrected by 51 FR 1790, January 15, 1986]

(5) An owner or operator of an affected facility subject to an opacity standard may submit, for compliance purposes, continuous opacity monitoring system (COMS) data results produced during any performance test required under §60.8 in lieu of Method 9 observation data. If an owner or operator elects to submit COMS data for compliance with the opacity standard, he shall notify the Administrator of that decision, in writing, at least 30 days before any performance test required under §60.8 is conducted. Once the owner or operator of an affected facility has notified the Administrator to that effect, the COMS data results will be used to determine opacity compliance during subsequent tests required under §60.8 until the owner or operator notifies the Administrator, in writing, to the contrary. For the pur-

pose of determining compliance with the opacity standard during a performance test required under §60.8 using COMS data, the minimum total time of COMS data collection shall be averages of all 6-minute continuous periods within the duration of the mass emission performance test. Results of the COMS opacity determinations shall be submitted along with the results of the performance test required under §60.8. The owner or operator of an affected facility using a COMS for compliance purposes is responsible for demonstrating that the COMS meets the requirements specified in §60.13(c) of this part, that the COMS has been properly maintained and operated, and that the resulting data have not been altered in any way. If COMS data results are submitted for compliance with the opacity standard for a period of time during which Method 9 data indicates noncompliance, the Method 9 data will be used to determine opacity compliance.

[New 60.11(e)(5) added by 52 FR 9781, March 26, 1987]

(6) Upon receipt from an owner or operator of the written reports of the results of the performance tests required by §60.8, the opacity observation results and observer certification required by §60.11(e)(1), and the COMS results, if applicable, the Administrator will make a finding concerning compliance with opacity and other applicable standards. If COMS data results are used to comply with an opacity standard, only those results are required to be submitted along with the performance test results required by §60.8. If the Administrator finds that an affected facility is in compliance with all applicable standards for which performance tests are conducted in accordance with §60.8 of this part but during the time such performance tests are being conducted fails to meet any applicable opacity standard, he shall notify the owner or operator and advise him that he may petition the Administrator within 10 days of receipt of notification to make appropriate adjustment to the opacity standard for the affected facility.

[Former 60.11(e)(5) amended and redesignated as (6) by 52 FR 9781, March 26, 1987]

(7) The Administrator will grant such a petition upon a demonstration by the owner or operator that the affected facility and associated air pollution control equipment was operated and maintained in a manner to minimize the opacity of emissions during the performance tests; that the performance tests were performed under the conditions established by the Administrator; and that the affected facility and associated air pollution control equipment were incapable of being adjusted or operated to meet the applicable opacity standard.

[Former 60.11(e)(6) and (7) redesignated as (7) and (8) by 52 FR 9781, March 26, 1987]

(8) The Administrator will establish an opacity standard for the affected facility meeting the above requirements at a level at which the source will be able, as indicated by the performance and opacity tests, to meet the opacity standard at all times during which the source is meeting the mass or concentration emission standard. The Administrator will promulgate the new opacity standard in the FEDERAL REGISTER.

(f) Special provisions set forth under an applicable subpart of this part shall supersede any conflicting provisions of this section.

[60.11(f) added by 48 FR 48335, October 18, 1983]

§ 60.12 Circumvention.

No owner or operator subject to the provisions of this part shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere.

§ 60.13 Monitoring requirements.

(a) For the purposes of this section, all continuous monitoring systems required under applicable subparts shall be subject to the provisions of this section upon promulgation of performance specifications for continuous monitoring systems under Appendix B to this part and, if the continuous monitoring system is used to demonstrate compliance with emission limits on a continuous basis, Appendix F to this part, unless otherwise specified in an applicable subpart or by the Administrator. Appendix F is applicable December 4, 1987.

[60.13(a) amended by 48 FR 32986, July 20, 1983; revised by 52 FR 21007, June 4, 1987]

(b) All continuous monitoring systems and monitoring devices shall be installed and operational prior to conducting performance tests under § 60.8. Verification of operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation, operation, and calibration of the device.

[60.13(b) revised by 48 FR 23610, May 25, 1983]

(c) If the owner or operator of an affected facility elects to submit continous opacity monitoring system (COMS) data for compliance with the opacity standard as provided under § 60.11(e)(5), he shall conduct a performance evaluation of the COMS as specified in Performance Specification 1, Appendix B, of this part before the performance test required under § 60.8 is conducted. Otherwise, the owner or operator of an affected facility shall conduct a performance evaluation of the COMS or continuous emission monitoring system (CEMS) during any performance test required under § 60.8 or within 30 days thereafter in accordance with the applicable performance specification in Appendix B of this part, The owner or operator of an affected facility shall conduct COMS or CEMS performance evaluations at such other times as may be required by the Administrator under section 114 of the Act.

(1) The owner or operator of an affected facility using a COMS to determine opacity compliance during any performance test required under §60.8 and as described in §60.11(e)(5) shall furnish the Administrator two or, upon request, more copies of a written report of the results of the COMS performance evaluation described in paragraph (c) of this section at least 10 days before the performance test required under §60.8 is conducted.

(2) Except as provided in paragraph (c)(1) of this section, the owner or operator of an affected facility shall furnish the Administrator within 60 days of completion two or, upon request, more copies of a written report of the results of the performance evaluation.

[60.13(c) revised by 52 FR 9781, March 26, 1987]

(d)(1) Owners and operators of all continuous emission monitoring systems installed in accordance with the provisions of this part shall check the zero (or low-level value between 0 and 20 percent of span value) and span (50 to 100 percent of span value) calibration drifts at least once daily in accordance with a written procedure. The zero and span shall, as a minimum, be adjusted whenever the 24-hour zero drift or 24-hour span drift exceeds two times the limits of the applicable performance specifications in Appendix B. The system must allow the amount of excess zero and span drift measured at the 24-hour interval checks to be recorded and quantified, whenever specified. For continuous monitoring systems measuring opacity of emissions, the optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero and span drift adjustments except that for systems using automatic zero adjustments. The optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds 4 percent opacity.

(2) Unless otherwise approved by the Administrator, the following procedures shall be followed for continuous monitoring systems measuring opacity of emissions. Minimum procedures shall include a method for producing a simulated zero opacity condition and an upscale (span) opacity condition using a certified neutral density filter or other related technique to produce a known obscuration of the light beam. Such procedures shall provide a system check of the analyzer internal optical surfaces and all electronic circuitry including the lamp and photodetector assembly.

[60.13(d) revised by 48 FR 23610, May 25, 1983]

[60.13(e) revised by 48 FR 32986, July 20, 1983]

(e) Except for system breakdowns repairs, calibration checks, and zero and span adjustments required under paragraph (d) of this section, all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation requirements as follows:

(1) All continuous monitoring systems referenced by paragraph (c) of this section for measuring opacity of emissions shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period.

(2) All continuous monitoring systems referenced by paragraph (c) of this section for measuring emissions, except opacity, shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

(f) All continuous monitoring systems or monitoring devices shall be installed such that representative measurements of emissions or process parameters from the affected facility are obtained. Additional procedures for location of continuous monitoring systems contained in the applicable Performance Specifications of Appendix B of this part shall be used.

[60.13(g) and (h) revised by 48 FR 13326, March 30, 1983]

(g) When the effluents from a single affected facility or two or more affected facilities subject to the same emission standards are combined before being released to the atmosphere, the owner or operator may install applicable continuous monitoring systems on each effluent or on the combined effluent. When the affected facilities are not subject to the same emission standards, separate continuous monitoring systems shall be installed on each effluent. When the effluent from one affected facility is released to the atomosphere through more than one point, the owner or operator shall install an applicable continuous monitoring system on each separate effluent unless the installation of fewer systems is approved by the Administrator. When more than one continuous monitoring system is used to measure the emissions from one affected facility (e.g., multiple breechings, multiple outlets), the owner or operator shall report the results as required from each continous monitoring system.

(h) Owners or operators of all continuous monitoring systems for measurement of opacity shall reduce all data to 6-minute averages and for continuous monitoring systems other than opacity to 1-hour averages for time periods as defined in § 60.2. Six-minute opacity averages shall be calculated from 36 or more data points equally spaced over each 6-minute period. For continuous monitoring systems other than opacity, 1-hour averages shall be computed from four or more data points equally spaced over each 1-hour period. Data recorder during periods of continuous monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this paragraph. An arithmetic or integrated average of all data may be used. The data may be recorded in reduced or nonreduced form (e.g., ppm pollutant and percent O_2 or ng/J of pollutant). All excess emissions shall be converted into units of the standard using the applicable conversion procedures specified in subparts. After conversion into units of the standard, the data may be rounded to the same number of significant digits as used in the applicable subparts to specify the emission limit (e.g., rounded to the nearest 1 percent opacity).

(i) After receipt and consideration of written application, the Administrator may approve alternatives to any monitoring procedures or requirements of this part including, but not limited to the following:

(1) Alternative monitoring requirements when installation of a continuous monitoring system or monitoring device specified by this part would not provide accurate measurements due to liquid water or other interferences caused by substances with the effluent gases.

(2) Alternative monitoring requirements when the affected facility is infrequently operated.

(3) Alternative monitoring requirements to accommodate continuous monitoring systems that require additional measurements to correct for stack moisture conditions.

(4) Alternative locations for installing continuous monitoring systems or monitoring devices when the owner or operator can demonstrate that installation at alternate locations will enable accurate and representative measurements.

(5) Alternative methods of converting pollutant concentration measurements to units of the standards.

(6) Alternative procedures for performing daily checks of zero and span drift that do not involve use of span gases or test cells.

(7) Alternatives to the A.S.T.M. test methods or sampling procedures specified by any subpart.

(8) Alternative continuous monitoring systems that do not meet the design or performance requirements in Performance Specification 1, Appendix B, but adequately demonstrate a definite and consistent relationship between its measurements and the measurements of opacity by a system complying with the requirements in Performance Specification 1. The Administrator may require that such demonstration be performed for each affected facility.

(9) Alternative monitoring requirements when the effluent from a single affected facility or the combined effluent from two or more affected facilities are released to the atmosphere through more than one point.

[60.13(j) added by 52 FR 17555, May 11, 1987]

(j) An alternative to the relative accuracy test specified in Performance Specification 2 of Appendix B may be requested as follows:

(1) An alternative to the reference method tests for determining relative accuracy is available for sources with emission rates demonstrated to be less than 50 percent of the applicable standard. A source owner or operator may petition the Administrator to waive the relative accuracy test in section 7 of Performance Specification 2 and substitute the procedures in section 10 if the results of a performance test conducted according to the requirements in § 60.8 of this subpart or other tests performed following the criteria in § 60.8 demonstrate that the emission rate of the pollutant of interest in the units of the applicable standard is less than 50 percent of the applicable standard. For sources subject to standards expressed as control efficiency levels, a source owner or operator may petition the Administrator to waive the relative accurancy test and substitute the procedures in section 10 of Performance Specification 2 if the control device exhaust emission rate is less than 50 percent of the level needed to meet the control efficiency requirement. The alternative procedures do not apply if the continuous emission monitoring system is used to determine compliance continuously with the applicable standard. The petition to waive the relative accurancy test shall include a detailed description of the procedures to be applied. Included shall be location and procedure for conducting the alternative, the concentration or response levels of the alternative RA materials, and the other equipment checks included in the alternative procedure. The Administrator will review the petition for completeness and applicability. The determination to grant a waiver will depend on the intended use of the CEMS data (e.g., data collection purposes other than NSPS) and may require specifications more stringent than in Performance Specification 2 (e.g., the applicable emission limit is more stringent than NSPS).

(2) The waiver of a CEMS relative accuracy test will be reviewed and may be rescinded at such time following successful completion of the alternative RA procedure that the CEMS data indicate the source emissions approaching the level of the applicable standard. The criterion for reviewing the waiver is the collection of CEMS data showing that emissions have exceeded 70 percent of the applicable standard for seven, consecutive, averaging periods as specified by the applicable regulation(s). For sources subject to standards expressed as control efficiency levels, the criterion for reviewing the waiver is the collection of CEMS data showing that exhaust emissons have exceeded 70 percent of the level needed to meet the control efficiency requirement for seven, consecutive, averaging periods as specified by the applicable regulation(s) [e.g., § 60.45(g) (2) and (3), § 60.73(e), and § 60.84(e)]. It is the responsibility of the source operator to maintain records and determine the level of emissions relative to the criterion on the waiver of relative accuracy testing. If this criterion is exceeded, the owner or operator must notify the Administrator within 10 days of such occurrence and include a description of the nature and cause of the increasing emissions. The Administrator will review the notification and may rescind the waiver and require the owner or operator to conduct a relative accuracy test of the CEMS as specified in section 7 of Performance Specification 2.

§ 60.14 Modification.

(a) Except as provided under paragraphs (e) and (f) of this section, any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere.

(b) Emission rate shall be expressed as kg/hr of any pollutant discharged into the atmosphere for which a standard is applicable. The Administrator shall use the following to determine emission rate:

(1) Emission factors as specified in the latest issue of "Compilation of Air Pollutant Emission Factors," EPA Publication No. AP-42, or other emission factors determined by the Administrator to be superior to AP-42 emission factors, in cases where utilization of emission factors demonstrate that the emission level resulting from the physical or operational change will either clearly increase or clearly not increase.

(2) Material balances, continuous monitor data, or manual emission tests in cases where utilization of emission factors as referenced in paragraph (b)(1) of this section does not demonstrate to the Administrator's satisfaction whether the emission level resulting from the physical or operational change will either clearly increase or

clearly not increase, or where an owner or operator demonstrates to the Administrator's satisfaction that there are reasonable grounds to dispute the result obtained by the Administrator utilizing emission factors as referenced in paragraph (b)(1) of this section. When the emission rate is based on results from manual emission tests or continuous monitoring systems, the procedures specified in Appendix C of this part shall be used to determine whether an increase in emission rate has occurred. Tests shall be conducted under such conditions as the Administrator shall specify to the owner or operator based on representative performance of the facility. At least three valid test runs must be conducted before and at least three after the physical or operational change. All operating parameters which may affect emissions must be held constant to the maximum feasible degree for all test runs.

(c) The addition of an affected facility to a stationary source as an expansion to that source or as a replacement for an existing facility shall not by itself bring within the applicability of this part any other facility within that source.

(d) [Reserved]

(e) The following shall not, by themselves, be considered modifications under this part:

(1) Maintenance, repair, and replacement which the Administrator determines to be routine for a source category, subject to the provisions of paragraph (c) of this section and § 60.15.

(2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility.

(3) An increase in the hours of operation.

(4) Use of an alternative fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, as provided by § 60.1, the existing facility was designed to accommodate that alternative use. A facility shall be considered to be designed to accommodate an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications as amended prior to the change. Conversion to coal required for energy considerations, as specified in section 111(a)(8) of the Act, shall not be considered a modification.

(5) The addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or is replaced by a system which the Administrator determines to be less environmentally beneficial.

(6) The relocation or change in ownership of an existing facility.

(f) Special provisions set forth under an applicable subpart of this part shall supersede any conflicting provisions of this section.

(g) Within 180 days of the completion of any physical or operational change subject to the control measures specified in paragraph (a) of this section, compliance with all applicable standards must be achieved.

§ 60.15 Reconstruction.

(a) An existing facility, upon reconstruction, becomes an affected facility, irrespective of any change in emission rate.

(b) "Reconstruction" means the replacement of components of an existing facility to such an extent that:

(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and

(2) It is technologically and economically feasible to meet the applicable standards set forth in this part.

(c) "Fixed capital cost" means the capital needed to provide all the depreciable components.

(d) If an owner or operator of an existing facility proposes to replace components, and the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, he shall notify the Administrator of the proposed replacements. The notice must be postmarked 60 days (or as soon as practicable) before construction of the replacements is commenced and must include the following information:

(1) Name and address of the owner or operator.

(2) The location of the existing facility.

(3) A brief description of the existing facility and the components which are to be replaced.

(4) A description of the existing air pollution control equipment and the proposed air pollution control equipment.

(5) An estimate of the fixed capital cost of the replacements and of constructing a comparable entirely new facility.

(6) The estimated life of the existing facility after the replacements.

(7) A discussion of any economic or technical limitations the facility may have in complying with the applicable standards of performance after the proposed replacements.

(e) The Administrator will determine, within 30 days of the receipt of the notice required by paragraph (d) of this section and any additional information he may reasonably require, whether the proposed replacement constitutes reconstruction.

(f) The Administrator's determination under paragraph (e) shall be based on:

(1) The fixed capital cost of the replacements in comparison to the fixed capital cost that would be required to construct a comparable entirely new facility;

(2) The estimated life of the facility after the replacements compared to the life of a comparable entirely new facility;

(3) The extent to which the components being replaced cause or contribute to the emissions from the facility; and

(4) Any economic or technical limitations on compliance with applicable standards of performance which are inherent in the proposed replacements.

(g) Individual subparts of this part may include specific provisions which refine and delimit the concept of reconstruction set forth in this section.

APPENDIX C

EPA METHOD 9 - VISUAL DETERMINATION OF EMISSIONS FROM STATIONARY SOURCES

METHOD 9—VISUAL DETERMINATION OF THE OPACITY OF EMISSIONS FROM STATIONARY SOURCES

Many stationary sources discharge visible emissions into the atmosphere; these emissions are usually in the shape of a plume. This method involves the determination of plume opacity by qualified observers. The method includes procedures for the training and certification of observers, and procedures to be used in the field for determination of plume opacity. The appearance of a plume as viewed by an observer depends upon a number of variables, some of which may be controllable and some of which may not be controllable in the field. Variables which can be controlled to an extent to which they no longer exert a significant influence upon plume appearance include: Angle of the observer with respect to the plume; angle of the observer with respect to the sun; point of observation of attached and detached steam plume; and angle of the observer with respect to a plume emitted from a rectangular stack with a large length to width ratio. The method includes specific criteria applicable to these variables.

Other variables which may not be controllable in the field are luminescence and color contrast between the plume and the background against which the plume is viewed. These variables exert an influence upon the appearance of a plume as viewed by an observer, and can affect the ability of the observer to accurately assign opacity values to the observed plume. Studies of the theory of plume opacity and field studies have demonstrated that a plume is most visible and presents the greatest apparent opacity when viewed against a contrasting background. It follows from this, and is confirmed by field trials, that the opacity of a plume, viewed under conditions where a contrasting background is present can be assigned with the greatest degree of accuracy. However, the potential for a positive error is also the greatest when a plume is viewed under such contrasting conditions. Under conditions presenting a less contrasting background, the apparent opacity of a plume is less and approaches zero as the color and luminescence contrast decrease toward zero. As a result, significant negative bias and negative errors can be made when a plume is viewed under less contrasting conditions. A negative bias decreases rather than increases the possibility that a plant operator will be cited for a violation of opacity standards due to observer error.

Studies have been undertaken to determine the magnitude of positive errors which can be made by qualified observers while reading plumes under contrasting conditions and using the procedures set forth in this method. The results of these studies (field trials) which involve a total of 769 sets of 25 readings each are as follows:

(1) For black plumes (133 sets at a smoke generator), 100 percent of the sets were read with a positive error [1] of less than 7.5 percent opacity; 99 percent were read with a positive error of less than 5 percent opacity.

(2) For white plumes (170 sets at a smoke generator, 168 sets at a coal-fired power plant, 298 sets at a sulfuric acid plant), 99 percent of the sets were read with a positive error of less than 7.5 percent opacity; 95 percent were read with a positive error of less than 5 percent opacity.

The positive observational error associated with an average of twenty-five readings is therefore established. The accuracy of the method must be taken into account when determining possible violations of applicable opacity standards.

1. *Principle and Applicability*

1.1 Principle. The opacity of emissions from stationary sources is determined visually by a qualified observer.

1.2 Applicability. This method is applicable for the determination of the opacity of emissions from stationary sources pursuant to § 60.11(b) and for qualifying observers for visually determining opacity of emissions.

2. *Procedures*

The observer qualified in accordance with paragraph 3 of this method shall use the following procedures for visually determining the opacity of emissions:

2.1 Position. The qualified observer shall stand at a distance sufficient to provide a clear view of the emissions with the sun oriented in the 140° sector to his back. Consistent with maintaining the above requirement, the observer shall, as much as possible, make his observations from a position such that his line of vision is approximately perpendicular to the plume direction, and when observing opacity of emissions from rectangular outlets (e.g., roof monitors, open baghouses, noncircular stacks), approximately perpendicular to the longer axis of the outlet. The observer's line of sight should not include more than one plume at a time when multiple stacks are involved, and in any case the observer should make his observations with his line of sight perpendicular to the longer axis of such a set of multiple stacks (e.g., stub stacks on baghouses).

2.2 Field Records. The observer shall record the name of the plant, emission location, type facility, observer's name and affiliation, a sketch of the observer's position relative to the source, and the date on a field data sheet (Figure 9-1). The time, estimated distance to the emission location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), and plume background are recorded on a field data sheet at the time opacity readings are initiated and completed.

2.3 Observations. Opacity observations shall be made at the point of greatest opacity in that portion of the plume where condensed water vapor is not present. The observer shall not look continuously at the plume, but instead shall observe the plume momentarily at 15-second intervals.

2.3.1 Attached Steam Plumes. When condensed water vapor is present within the plume as it emerges from the emission outlet, opacity observations shall be made beyond the point in the plume at which condensed water vapor is no longer visible. The observer shall record the approximate distance from the emission outlet to the point in the plume at which the observations are made.

2.3.2 Detached Steam Plume. When water vapor in the plume condenses and becomes visible at a distinct distance from the emission outlet, the opacity of emissions should be evaluated at the emission outlet prior to the condensation of water vapor and the formation of the steam plume.

2.4 Recording Observations. Opacity observations shall be recorded to the nearest 5 percent at 15-second intervals on an observational record sheet. (See Figure 9-2 for an example.) A minimum of 24 observations shall be recorded. Each momentary observation recorded shall be deemed to represent the average opacity of emissions for a 15-second period.

2.5 Data Reduction. Opacity shall be determined as an average of 24 consecutive observations recorded at 15-second intervals. Divide the observations recorded on the record sheet into sets of 24 consecutive observations. A set is composed of any 24 consecutive observations. Sets need not be consecutive in time and in no case shall two sets overlap. For each set of 24 observations, calculate the average by summing the opacity of the 24 observations and dividing this sum by 24. If an applicable standard specifies an averaging time requiring more than 24 observations, calculate the average for all observations made during the specified time period. Record the average opacity on a record sheet. (See Figure 9-1 for an example.)

3. *Qualifications and Testing*

3.1 Certification Requirements. To receive certification as a qualified observer, a candidate must be tested and demonstrate the ability to assign opacity readings in 5 percent increments to 25 different black

[1] For a set, positive error = average opacity determined by observers' 25 observations—average opacity determined from transmissometer's 25 recordings.

plumes and 25 different white plumes, with an error not to exceed 15 percent opacity on any one reading and an average error not to exceed 7.5 percent opacity in each category. Candidates shall be tested according to the procedures described in paragraph 3.2. Smoke generators used pursuant to paragraph 3.2 shall be equipped with a smoke meter which meets the requirements of paragraph 3.3.

The certification shall be valid for a period of 6 months, at which time the qualification procedure must be repeated by any observer in order to retain certification.

3.2 Certification Procedure. The certification test consists of showing the candidate a complete run of 50 plumes—25 black plumes and 25 white plumes—generated by a smoke generator. Plumes within each set of 25 black and 25 white runs shall be presented in random order. The candidate assigns an opacity value to each plume and records his observation on a suitable form. At the completion of each run of 50 readings, the score of the candidate is determined. If a candidate fails to qualify, the complete run of 50 readings must be repeated in any retest. The smoke test may be administered as part of a smoke school or training program, and may be preceded by training or familiarization runs of the smoke generator during which candidates are shown black and white plumes of known opacity.

3.3 Smoke Generator Specifications. Any smoke generator used for the purposes of paragraph 3.2 shall be equipped with a smoke meter installed to measure opacity across the diameter of the smoke generator stack. The smoke meter output shall display instack opacity based upon a pathlength equal to the stack exit diameter, on a full 0 to 100 percent chart recorder scale. The smoke meter optical design and performance shall meet the specifications shown in Table 9-1. The smoke meter shall be calibrated as prescribed in paragraph 3.3.1 prior to the conduct of each smoke reading test. At the completion of each test, the zero and span drift shall be checked and if the drift exceeds ±1 percent opacity, the condition shall be corrected prior to conducting any subsequent test runs. The smoke meter shall be demonstrated, at the time of installation, to meet the specifications listed in Table 9-1. This demonstration shall be repeated following any subsequent repair or replacement of the photocell or associated electronic circuitry including the chart recorder or output meter, or every 6 months, whichever occurs first.

TABLE 9-1—SMOKE METER DESIGN AND PERFORMANCE SPECIFICATIONS

Parameter	Specification
a. Light source	Incandescent lamp operated at nominal rated voltage.
b. Spectral response of photocell.	Photopic (daylight spectral response of the human eye—reference 4.3).
c. Angle of view	15° maximum total angle.
d. Angle of projection	15° maximum total angle.
e. Calibration error	±3% opacity, maximum.
f. Zero and span drift	±1% opacity, 30 minutes
g. Response time	5 seconds.

3.3.1 Calibration. The smoke meter is calibrated after allowing a minimum of 30 minutes warmup by alternately producing simulated opacity of 0 percent and 100 percent. When stable response at 0 percent or 100 percent is noted, the smoke meter is adjusted to produce an output of 0 percent or 100 percent, as appropriate. This calibration shall be repeated until stable 0 percent and 100 percent readings are produced without adjustment. Simulated 0 percent and 100 percent opacity values may be produced by alternately switching the power to the light source on and off while the smoke generator is not producing smoke.

3.3.2 Smoke Meter Evaluation. The smoke meter design and performance are to be evaluated as follows:

3.3.2.1 Light Source. Verify from manufacturer's data and from voltage measurements made at the lamp, as installed, that the lamp is operated within ±5 percent of the nominal rated voltage.

3.3.2.2 Spectral Response of Photocell. Verify from manufacturer's data that the photocell has a photopic response; i.e., the spectral sensitivity of the cell shall closely approximate the standard spectral-luminosity curve for photopic vision which is referenced in (b) of Table 9-1.

FIGURE 9-1
RECORD OF VISUAL DETERMINATION OF OPACITY

PAGE___of___

COMPANY__________
LOCATION__________
TEST NUMBER__________
DATE__________
TYPE FACILITY__________
CONTROL DEVICE__________

HOURS OF OBSERVATION__________
OBSERVER__________
OBSERVER CERTIFICATION DATE__________
OBSERVER AFFILIATION__________
POINT OF EMISSIONS__________
HEIGHT OF DISCHARGE POINT__________

	Initial			Final
CLOCK TIME				
OBSERVER LOCATION Distance to Discharge				
Direction from Discharge				
Height of Observation Point				
BACKGROUND DESCRIPTION				
WEATHER CONDITIONS Wind Direction				
Wind Speed				
Ambient Temperature				
SKY CONDITIONS (clear, overcast, % clouds, etc.)				
PLUME DESCRIPTION Color				
Distance Visible				
OTHER INFORMATION				

SUMMARY OF AVERAGE OPACITY

Set Number	Time	Opacity	
	Start--End	Sum	Average

Readings ranged from ____ to ____ % opacity

The source was/was not in compliance with ____ at the time evaluation was made.

FIGURE 9-2—OBSERVATION RECORD

Page —— of ——

Company ....
Location ....
Test Number ....
Date ....

Observer ....
Type facility ....
Point of emissions ....

Hr.	Min.	Seconds				Steam plume (check if applicable)		Comments
		0	15	30	45	Attached	Detached	
	0							
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							
	29							

FIGURE 9-2—OBSERVATION RECORD—(CONTINUED)

Page —— of ——

Company ....
Location ....
Test Number ....
Date ....

Observer ....
Type facility ....
Point of emissions ....

Hr.	Min.	Seconds				Steam plume (check if applicable)		Comments
		0	15	30	45	Attached	Detached	
	30							
	31							
	32							
	33							
	34							
	35							
	36							
	37							
	38							
	39							
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	58							
	59							

3.3.2.3 Angle of View. Check construction geometry to ensure that the total angle of view of the smoke plume, as seen by the photocell, does not exceed 15°. The total angle of view may be calculated from: $\theta = 2 \tan^{-1} d/2L$, where θ=total angle of view; d=the sum of the photocell diameter+the diameter of the limiting aperture; and

L=the distance from the photocell to the limiting aperture. The limiting aperture is the point in the path between the photocell and the smoke plume where the angle of view is most restricted. In smoke generator smoke meters this is normally an orifice plate.

3.3.2.4 Angle of Projection. Check construction geometry to ensure that the total angle of projection of the lamp on the smoke plume does not exceed 15°. The total angle of projection may be calculated from: $\theta=2\tan^{-1}d/2L$, where θ= total angle of projection; d= the sum of the length of the lamp filament + the diameter of the limiting aperture; and L= the distance from the lamp to the limiting aperture.

3.3.2.5 Calibration Error. Using neutral-density filters of known opacity, check the error between the actual response and the theoretical linear response of the smoke meter. This check is accomplished by first calibrating the smoke meter according to 3.3.1 and then inserting a series of three neutral-density filters of nominal opacity of 20, 50, and 75 percent in the smoke meter pathlength. Filters calibrated within ±2 percent shall be used. Care should be taken when inserting the filters to prevent stray light from affecting the meter. Make a total of five nonconsecutive readings for each filter. The maximum error on any one reading shall be 3 percent opacity.

3.3.2.6 Zero and Span Drift. Determine the zero and span drift by calibrating and operating the smoke generator in a normal manner over a 1-hour period. The drift is measured by checking the zero and span at the end of this period.

3.3.2.7 Response Time. Determine the response time by producing the series of five simulated 0 percent and 100 percent opacity values and observing the time required to reach stable response. Opacity values of 0 percent and 100 percent may be simulated by alternately switching the power to the light source off and on while the smoke generator is not operating.

4. *References.*

4.1 Air Pollution Control District Rules and Regulations, Los Angeles County Air Pollution Control District, Regulation IV, Prohibitions, Rule 50.

4.2 Weisburd, Melvin I., Field Operations and Enforcement Manual for Air, U.S. Environmental Protection Agency, Research Triangle Park, NC. APTD-1100, August 1972, pp. 4.1–4.36.

4.3 Condon, E.U., and Odishaw, H., Handbook of Physics, McGraw-Hill Co., New York, NY. 1958, Table 3.1, p. 6–52.

APPENDIX D

EPA METHOD 22 - VISUAL DETERMINATION OF FUGITIVE EMISSIONS FROM MATERIAL SOURCES AND SMOKE EMISSIONS FROM FLARES

METHOD 22—VISUAL DETERMINATION OF FUGITIVE EMISSIONS FROM MATERIAL SOURCES AND SMOKE EMISSIONS FROM FLARES

1. *Introduction*

This method involves the visual determination of fugitive emissions, i.e., emissions not emitted directly from a process stack or duct. Fugitive emissions include emissions that (1) escape capture by process equipment exhaust hoods; (2) are emitted during material transfer; (3) are emitted from buildings housing material processing or handling equipment; and (4) are emitted directly from process equipment. This method is used also to determine visible smoke emissions from flares used for combustion of waste process materials.

This method determines the amount of time that any visible emissions occur during the observation period, i.e., the accumulated emission time. This method does not require that the opacity of emissions be determined. Since this procedure requires only the determination of whether a visible emission occurs and does not require the determination of opacity levels, observer certification according to the procedures of Method 9 are not required. However, it is necessary that the observer is educated on the general procedures for determining the presence of visible emissions. As a minimum, the observer must be trained and knowledgeable regarding the effects on the visibility of emissions caused by background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor). This training is to be obtained from written materials found in References 7.1 and 7.2 or from the lecture portion of the Method 9 certification course.

2. *Applicability and Principle*

2.1 Applicability. This method applies to the determination of the frequency of fugitive emissions from stationary sources (located indoors or outdoors) when specified as the test method for determining compliance with new source performance standards.

This method also is applicable for the determination of the frequency of visible smoke emissions from flares.

2.2 Principle. Fugitive emissions produced during material processing, handling, and transfer operations or smoke emissions from flares are visually determined by an observer without the aid of instruments.

3. *Definitions*

3.1 Emission Frequency. Percentage of time that emissions are visible during the observation period.

3.2 Emission Time. Accumulated amount of time that emissions are visible during the observation period.

3.3 Fugitive Emissions. Pollutant generated by an affected facility which is not collected by a capture system and is released to the atmosphere.

3.4 Smoke Emissions. Pollutant generated by combustion in a flare and occurring immediately downstream of the flame. Smoke occurring within the flame, but not downstream of the flame, is not considered a smoke emission.

3.5 Observation Period. Accumulated time period during which observations are conducted, not to be less than the period specified in the applicable regulation.

4. *Equipment*

4.1 Stopwatches. Accumulative type with unit divisions of at least 0.5 seconds; two required.

4.2 Light Meter. Light meter capable of measuring illuminance in the 50- to 200-lux range; required for indoor observations only.

5. *Procedure*

5.1 Position. Survey the affected facility or building or structure housing the process to be observed and determine the locations of potential emissions. If the affected facility is located inside a building, determine an observation location that is consistent with the requirements of the applicable regulation (i.e., outside observation of emissions escaping the building/structure or inside observation of emissions directly emitted from the affected facility process unit). Then select a position that enables a clear view of the potential emission point(s) of the affected facility or of the building or structure housing the affected facility, as appropriate for the applicable subpart. A position at least 15 feet, but not more than 0.25 miles, from the emission source is recommended. For outdoor locations, select a position where the sun is not directly in the observer's eyes.

5.2 Field Records.

5.2.1 Outdoor Location. Record the following information on the field data sheet (Figure 22-1): company name, industry, process unit, observer's name, observer's affiliation, and date. Record also the estimated wind speed, wind direction, and sky condition. Sketch the process unit being observed and note the observer location relative to the source and the sun. Indicate the potential and actual emission points on the sketch.

5.2.2 Indoor Location. Record the following information on the field data sheet (Figure 22-2): company name, industry, process unit, observer's name, observer's affiliation, and date. Record as appropriate the type, location, and intensity of lighting on the data sheet. Sketch the process unit being observed and note observer location relative to the source. Indicate the potential and actual fugitive emission points on the sketch.

5.3 Indoor Lighting Requirements. For indoor locations, use a light meter to measure the level of illumination at a location as close to the emission source(s) as is feasible. An illumination of greater than 100 lux (10 foot candles) is considered necessary for proper application of this method.

5.4 Observations. Record the clock time when observations begin. Use one stopwatch to monitor the duration of the observation period; start this stopwatch when the observation period begins. If the observation period is divided into two or more segments by process shutdowns or observer rest breaks, stop the stopwatch when a break begins and restart it without resetting when the break ends. Stop the stopwatch at the end of the observation period. The accumulated time indicated by this stopwatch is the duration of the observation period. When the observation period is completed, record the clock time.

During the observation period, continously watch the emission source. Upon observing an emission (condensed water vapor is not considered an emission), start the second accumulative stopwatch; stop the watch when the emission stops. Continue this procedure for the entire observation period. The accumulated elapsed time on this stopwatch is the total time emissions were visible during the observation period, i.e., the emission time.

5.4.1 Observation Period. Choose an observation period of sufficient length to meet the requirements for determining compliance with the emission regulation in the applicable subpart. When the length of the observation period is specifically stated in the applicable subpart, it may not be necessary to observe the source for this entire period if the emission time required to indicate noncompliance (based on the specified observation period) is observed in a shorter time period. In other words, if the regulation prohibits emissions for more than 6 minutes in any hour, then observations may (optional) be stopped after an emission time of 6 minutes is exceeded. Similarly, when the regulation is expressed as an emission frequency and the regulation prohibits emissions for greater than 10 percent of the time in any hour, then observations may (optional) be terminated after 6 minutes of emissions are observed since 6 minutes is 10 percent of an hour. In any case, the observation period shall not be less than 6 minutes in duration. In some cases, the process operation may be intermittent or cyclic. In such cases, it may be convenient for the observation period to coincide with the length of the process cycle.

5.4.2 Observer Rest Breaks. Do not observe emissions continuously for a period of more than 15 to 20 minutes without taking a rest break. For sources requiring observation periods of greater than 20 minutes, the observer shall take a break of not less than 5 minutes and not more than 10 minutes after every 15 to 20 minutes of observation. If continuous observations are desired for extended time periods, two observers can alternate between making observations and taking breaks.

5.4.3 Visual Interference. Occasionally, fugitive emissions from sources other than the affected facility (e.g., road dust) may prevent a clear view of the affected facility. This may particularly be a problem during periods of high wind. If the view of the potential emission points is obscured to such a degree that the observer questions the validity of continuing observations, then the observations are terminated, and the observer clearly notes this fact on the data form.

5.5 Recording Observations. Record the accumulated time of the observation period on the data sheet as the observation period duration. Record the accumulated time emissions were observed on the data sheet as the emission time. Record the clock time the observation period began and ended, as well as the clock time any observer breaks began and ended.

6. *Calculations*

If the applicable subpart requires that the emission rate be expressed as an emission frequency (in percent), determine this value as follows: Divide the accumulated emission time (in seconds) by the duration of the observation period (in seconds) or by any minimum observation period required in the applicable subpart, if the acutal observation period is less than the required period and multiply this quotient by 100.

7. *References.*

7.1 Missan, Robert and Arnold Stein. Guidelines for Evaluation of Visible Emissions Certification, Field Procedures, Legal Aspects, and Background Material. EPA Publication No. EPA-340/1-75-007. April 1975

7.2 Wohlschlegel, P. and D. E. Wagoner. Guideline for Development of a Quality Assurance Program: Volume IX—Visual Determination of Opacity Emissions From Stationary Sources. EPA Publication No. EPA-650/4-74-005-i. November 1975.

APPENDIX E

SAMPLE INSPECTION FORMS

Nonmetallic Mineral Processing Plants
- Plant Information -

Plant ID/permit number: ______________________________

Plant name and address: ______________________________

____

____

____

Name of plant contact: ______________________________

Phone: (   ) ______________ ext. ______

Plant mailing address
(if different from plant address): ______________________________

____

____

____

Owner/operator name and address
(if different from plant name/address): ______________________________

____

____

____

____

Owner/operator phone: (   ) ______________ ext. ______

Nonmetalic minerals processed:

____________	____________	____________
____________	____________	____________
____________	____________	____________

Plant portability: ☐ portable ☐ nonportable

Cummulative rated capacity of all initial crushers: ____________ tons/year

Plant exempt by plant type/capacity: ☐ yes ☐ no

Plant emission source type:
(particulate matter)

☐ A1 (≥ 100 t/yr actual) ☐ A2 (≥ 100 t/yr potential) ☐ B (<100 t/yr actual & potential)

U.S. EPA plant ID number/s (as applicable):

- National Emissions Data System (NEDS) ______________________
- Aerometric Information Retrieval System (AIRS) ______________________

Attach a detailed flow diagram of the plant showing the locations of all potentially affected and affected facilities under 40 CFR Part 60, Subpart OOO.

Plant ID: ____________________________

Facilities list for crushers, grinding mills, bucket elevators, screening operations, conveyor belts, bagging operations, storage bins, transfer points, and enclosed truck/rail loading stations.

Master List of Potentially Affected and Affected Facilites

Source type (crusher, bucket elevator, etc.)	Description/location or ID number (for transfer points, identify both transfer ends - i.e., from and to)	Rated capacity *	Date of manufacture (for transfer points, give dates for each transfer end)	Subject to 40 CFR 60 Subparts F or I (Yes/No)	40 CFR 60 Subpart OOO affected facility (Yes/No)	Subject to reporting requirements <u>only</u> (Yes/No) **	Emissions vented to stack or powered vent (Yes/No)	Control device type (if applicable)	Applicable opacity standard (% opacity)	Applicable mass standard (g/dscm)

* - <u>tons per hour</u> for crushers, grinding mills, bucket elevators, bagging operations, and enclosed truck/rail loading stations.
- <u>square meters</u> of top screen surface area for screening operations.
- <u>tons</u> for storage bins.
- <u>meters</u> of belt width for conveyor belts.

** - "Yes" response indicates exemption for replacement of existing facility with facility of equal or smaller size.

Initial Performance Test Field Sheet

Date: ____________

Affected facility: ____________

Source ID number: ____________

Description/location: ____________

____

____

Source enclosed: ☐ yes ☐ no

Source controlled: ☐ yes ☐ no

If yes, type of control device: ________

____

Scrubber ΔP ________ inches W.G.

Scrubber liquid flow rate ________ GPM

Sketch of Affected Facility or Transfer Point:

Comments: ____________

____

____

VE method employed: ☐ Method 9 ☐ Method 22

Compliance status: ☐ compliance ☐ noncompliance ☐ not determined (explain in comments)

Attach appropriate VE Observation Form Signature: ____________

Initial Performance Test Field Sheet

Date: ____________

Affected facility: ____________

Source ID number: ____________

Description/location: ____________

____

____

Source enclosed: ☐ yes ☐ no

Source controlled: ☐ yes ☐ no

If yes, type of control device: ________

____

Scrubber ΔP ________ inches W.G.

Scrubber liquid flow rate ________ GPM

Sketch of Affected Facility or Transfer Point:

Comments: ____________

____

____

VE method employed: ☐ Method 9 ☐ Method 22

Compliance status: ☐ compliance ☐ noncompliance ☐ not determined (explain in comments)

Attach appropriate VE Observation Form Signature: ____________

Field Inspection Sheet

Affected facility: ________________ Date of inspection: ______________________

Source ID number: _______________ **Comments:** ________________________________

Description/location: ______________

Source enclosed: ☐ yes ☐ no

Source controlled: ☐ yes ☐ no

If yes, type of control device: _______

Scrubber ΔP _______ inches W.G.
Scrubber liquid flow rate ________ GPM
Baghouse ΔP ________ inches W.G.
Bag cleaning: ☐ operative ☐ inoperative

VE method employed: ☐ Method 9 ☐ Method 22 *Attach appropriate VE Observation Form*

Compliance status: ☐ compliance ☐ noncompliance ☐ not determined (explain in comments)

Inspector's signature: ________________________________

Field Inspection Sheet

Affected facility: ________________ Date of inspection: ______________________

Source ID number: _______________ **Comments:** ________________________________

Description/location: ______________

Source enclosed: ☐ yes ☐ no

Source controlled: ☐ yes ☐ no

If yes, type of control device: _______

Scrubber ΔP _______ inches W.G.
Scrubber liquid flow rate ________ GPM
Baghouse ΔP ________ inches W.G.
Bag cleaning: ☐ operative ☐ inoperative

VE method employed: ☐ Method 9 ☐ Method 22 *Attach appropriate VE Observation Form*

Compliance status: ☐ compliance ☐ noncompliance ☐ not determined (explain in comments)

Inspector's signature: ________________________________

APPENDIX F

SAMPLE INSPECTION REPORT

LEVEL II COMPLIANCE INSPECTION OF
BREAKSTONE LIMESTONE COMPANY
ANYWHERE, USA

Inspection Date: January 5, 1990
Inspector: Joe Brown
Inspection Report Date: January 10, 1990

INSPECTION PROCEDURES AND CONCLUSIONS

Procedures

On January 5, 1990, an inspection was conducted at Breakstone Limestone Co. for the purpose of determining compliance of the plant's affected facilities under 40 CFR 60, Subpart OOO. The inspection was unannounced and one of several inspections of nonmetallic mineral processing facilities in the State.

Entry into the plant was gained without difficulty at 9:00 a.m. Mr. John Smith, Environmental Manager, acted as the official plant representative and also served as plant escort for the inspection.

Company records concerning the NSPS affected facilities at this site were inspected. The following written notifications to the EPA Administrator for each affected facility were checked and found to meet all regulatory requirements:

- Date of construction
- Dates of anticipated and actual startup
- Date of anticipated initial performance test opacity observations
- Thirty day advance notice of all compliance tests

Notification for 1) proposed replacements of existing facilities with facilities of equal or smaller size, 2) proposed reconstructions of existing facilities, and 3) notifications of modification of existing facilities pursuant to the provisions of §60.14(e) were not applicable to any existing facility at the plant at the time of inspection.

The following written reports to the EPA Administrator for each affected facility were checked and found to meet all regulatory requirements:

- All performance test results and results of all performance test opacity observations

The following records on file at the plant were checked and found to meet all regulatory requirements:

° Startup, shutdown and malfunction reports

Because no affected facility at this plant is served by a wet scrubber, the reporting and recordkeeping requirements for wet scrubbers pursuant to Subparts A and OOO are not applicable.

Because no emission problems were observed outside of the plant boundary during pre-entry observations, the field inspection began at 10:00 a.m. at the primary crusher and proceeded through the process flow to the two bagging machines. During the inspection the plant was operating at a rate of 275 tons/h, which is below the operating rate recorded for the last compliance test. All existing facilities on the master list were still operating on site. No modifications to existing facilities were observed and no new equipment was apparent.

<u>NSPS Sources</u>

Both transfer points from belt conveyor No. 13 were observed. Material conveyed was of sufficient moisture to prevent visible emissions. Therefore, these transfer points were in compliance with the NSPS opacity limit.

The Ty-Rock screen No. 20 was observed using EPA Method 9 for 18 minutes, the highest average 6-minute observation period opacity was 0 percent. The No. 20 screen was in compliance with the NSPS opacity limit.

The building enclosing the No. 25 Raymond mill was observed for 20 minutes employing EPA Method 22 with no visible emissions observed. The cyclone air separator serving the No. 25 Raymond mill was observing using EPA Method 9 for 18 minutes. The highest average 6-minute observation period opacity was 0 percent. No fallout near the discharge of the cyclone was evident. The stack of the baghouse serving the No. 25 Raymond mill was likewise observed using EPA Method 9 for 18 minutes with a highest average 6-minute observation period opacity of 0 percent. The pulse-jet baghouse was inspected externally; all diaphragm valves were operating and air reservoir pressure was comparable to that of the last compliance test. No evidence of breaches in shell integrity were observed. Pressure drop across the baghouse was recorded at 4.0 in. W.G. indicating proper operation.

Product storage bin No. 46 was observed during three unloading cycles. The stack of the storage bin baghouse was observed for a total of 40 minutes with two sets of consecutive 6 minute observations recorded during the two unloading cycles. The highest average 6-minute observation period opacity was 25 percent. During the two unloading cycles, stack emissions were characterized by cyclic puffs indicating the possibility of a hole(s) in bags. Pressure drop was recorded across the baghouse at 2.5 in. W.G. which is low for this type of pulse-jet baghouse and 2 in. W.G. below the average pressure drop recorded during the last compliance test. Air reservoir pressure was normal and all diaphragm valves appeared to be operable. No breaches in shell integrity were observed.

Conclusions

The following conclusions are drawn from the inspection:

- Transfer points on the No. 13 belt conveyor were in compliance with the NSPS opacity standard
- The No. 20 Ty-Rock screen was in compliance with the NSPS opacity standard
- Emissions from the No. 25 Raymond mill building, cyclone air separator, and baghouse were in compliance with the NSPS opacity standard
- Emissions from the baghouse serving the No. 46 storage bin were not in compliance with the NSPS opacity standard
- All existing facilities on the master list were on site and showed no indications of modifications that would increase particulate matter emissions
- No new equipment that would be subject to the NSPS were observed on the plant property
- All notifications, reports, and records required by the NSPS were available at the plant upon request and met all NSPS requirements.

Nonmetallic Mineral Processing Plants
- Plant Information -

Plant ID/permit number: A Ø29 - 17334

Plant name and address: Breakstone Limestone Co.
Route 4, Box 25
Anywhere, USA 00011

Name of plant contact: Mr. John Smith

Phone: (222) 555-1073 ext. 41

Plant mailing address
(if different from plant address): ____________

Owner/operator name and address
(if different from plant name/address): Mr. Jack Williams
Same Address

Owner/operator phone: ( ) same ext. 10

Nonmetalic minerals processed:
Limestone

Plant portability: ☐ portable ☒ nonportable

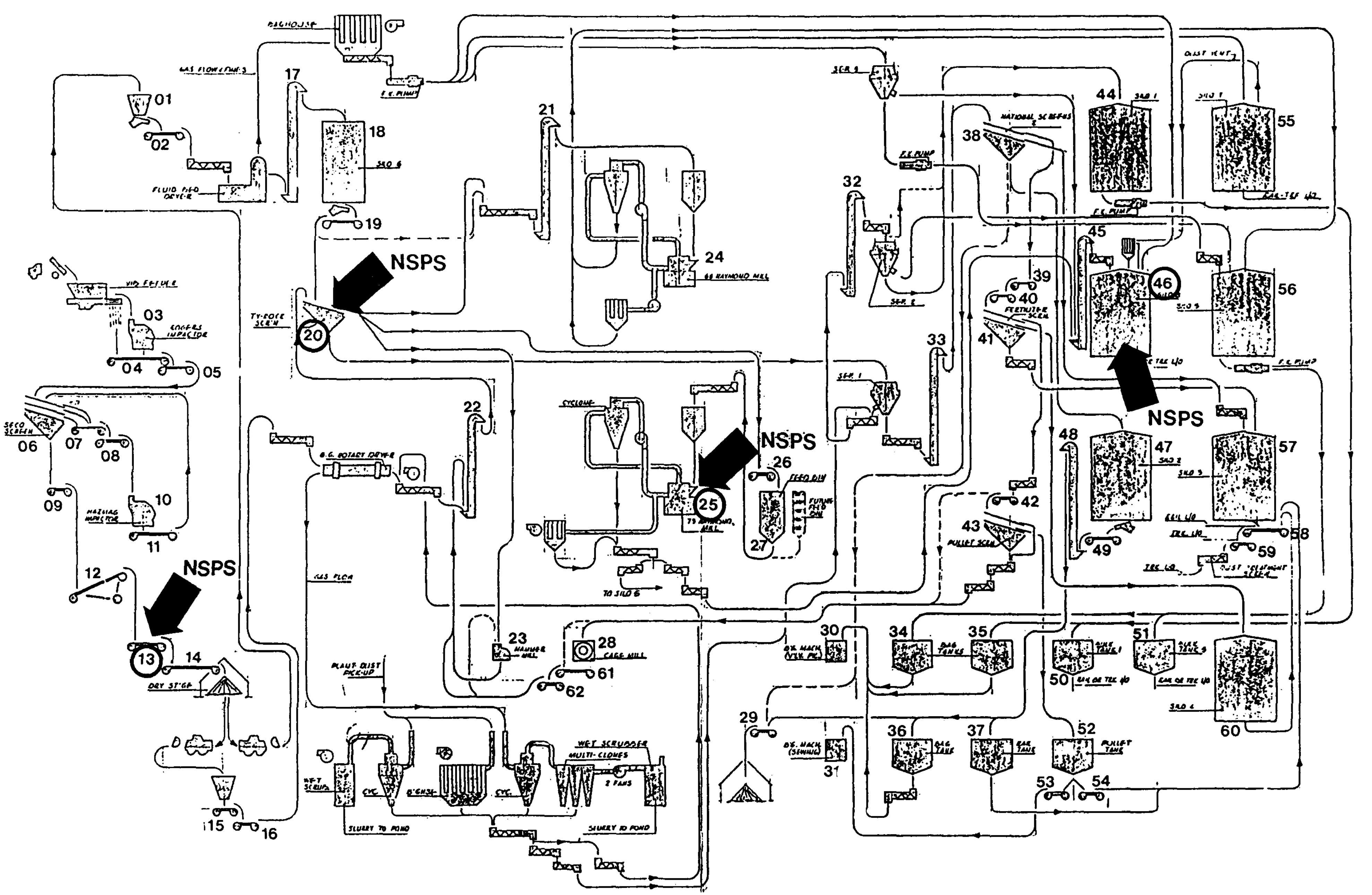
Cummulative rated capacity of all initial crushers: 2.19×10^6 tons/year

Plant exempt by plant type/capacity: ☐ yes ☒ no

Plant emission source type: ☒ A1 (≥ 100 t/yr actual) ☐ A2 (≥ 100 t/yr potential) ☐ B (<100 t/yr actual & potential)
(particulate matter)

U.S. EPA plant ID number/s (as applicable):
- National Emissions Data System (NEDS) # - - -
- Aerometric Information Retrieval System (AIRS) # - - -

Attach a detailed flow diagram of the plant showing the locations of all potentially affected and affected facilities under 40 CFR Part 60, Subpart OOO.



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BAGHOUSE
FLUID BED DRYER
CYCLONE
RAYMOND MILL
FEED BIN
CAGE MILL
HAMMER MILL
WET SCRUBBER
MULTI-CLONES
2 FANS
SLURRY TO POND
TO SILO 6
GAS FLOW
F.K. PUMP
NATIONAL SCREENS
PELLET SCRN
BAG TANKS
BAG TANK
PELLET TANK
DRY ST'GE

Plant ID: AØ29-17334

Facilities list for crushers, grinding mills, bucket elevators, screening operations, conveyor belts, bagging operations, storage bins, transfer points, and enclosed truck/rail loading stations.

Master List of Potentially Affected and Affected Facilites

Source type (crusher, bucket elevator, etc.)	Description/location or ID number (for transfer points, identify both transfer ends - i.e., from and to)	Rated capacity *	Date of manufacture (for transfer points, give dates for each transfer end)	Subject to 40 CFR 60 Subparts F or I (Yes/No)	40 CFR 60 Subpart OOO affected facility (Yes/No)	Subject to reporting requirements only ** (Yes/No)	Emissions vented to stack or powered vent (Yes/No)	Control device type (if applicable)	Applicable opacity standard (% opacity)	Applicable mass standard (g/dscm)
			AFFECTED		FACILITIES					
Belt Conveyor	No. 13	0.91	1985	NO	YES	NO	NO	NONE	10	NONE
Screen	No. 20	10.5	1985	NO	YES	NO	NO	NONE	10	NONE
Roller Mill	No. 25	100	1988	NO	YES	NO	YES	Cyclone Air separator And baghouse	7	0.05 g/dscm
Storage Bin	No. 46	750	1987	NO	YES	NO	YES	Baghouse	7	0.05 g/dscm
	POTENTIALLY	AFFECTED	FACILITIES		IF	MODIFIED OR		RECONSTRUCTED		
Crusher	No. 01	120	1972	NO	NO	NO	NO	Wet Suppression	40 (state reg.)	NONE
↓										
Belt Conveyor	No. 62	0.76	1970	NO	NO	NO	NO	NONE	40 (state reg.)	NONE

* - tons per hour for crushers, grinding mills, bucket elevators, bagging operations, and enclosed truck/rail loading stations.
- square meters of top screen surface area for screening operations.
- tons for storage bins.
- meters of belt width for conveyor belts.

** - "Yes" response indicates exemption for replacement of existing facility with facility of equal or smaller size.

Field Inspection Sheet

Affected facility: Belt Conveyor   Date of inspection: 1/5/90

Source ID number: No. 13

Description/location: Transfer point ONTO belt conveyor No. 13

Source enclosed: ☐ yes ☒ no

Source controlled: ☐ yes ☒ no

If yes, type of control device: ________

Scrubber ΔP ________ inches W.G.
Scrubber liquid flow rate ________ GPM
Baghouse ΔP ________ inches W.G.
Bag cleaning: ☐ operative ☐ inoperative

Comments: Material moisture sufficient to prevent fugitive emissions at transfer point

VE method employed: ☒ Method 9 ☐ Method 22 *Attach appropriate VE Observation Form*

Compliance status: ☒ compliance ☐ noncompliance ☐ not determined (explain in comments)

Inspector's signature: Joe Brown

Field Inspection Sheet

Affected facility: Belt Conveyor   Date of inspection: 1/5/90

Source ID number: No. 13

Description/location: Transfer point OFF OF belt conveyor No. 13

Source enclosed: ☐ yes ☒ no

Source controlled: ☐ yes ☒ no

If yes, type of control device: ________

Scrubber ΔP ________ inches W.G.
Scrubber liquid flow rate ________ GPM
Baghouse ΔP ________ inches W.G.
Bag cleaning: ☐ operative ☐ inoperative

Comments: Material moisture sufficient to prevent Fugitive emissions at transfer point

VE method employed: ☒ Method 9 ☐ Method 22 *Attach appropriate VE Observation Form*

Compliance status: ☒ compliance ☐ noncompliance ☐ not determined (explain in comments)

Inspector's signature: Joe Brown

Field Inspection Sheet

Affected facility: Screen　　Date of inspection: 1/5/90

Source ID number: No. 20　　**Comments:** No visible emissions

Description/location: Ty-Rock Screen from Storage Bin No. 18 and conveyor No. 19

Source enclosed: ☐ yes ☒ no

Source controlled: ☐ yes ☒ no

If yes, type of control device: ________

Scrubber ΔP ______ inches W.G.
Scrubber liquid flow rate ________ GPM
Baghouse ΔP ________ inches W.G.
Bag cleaning: ☐ operative ☐ inoperative

VE method employed: ☒ Method 9 ☐ Method 22 *Attach appropriate VE Observation Form*

Compliance status: ☒ compliance ☐ noncompliance ☐ not determined (explain in comments)

Inspector's signature: Joe Brown

Field Inspection Sheet

Affected facility: Roller Mill　　Date of inspection: 1/5/90

Source ID number: No. 25　　**Comments:**
No VEs from mill building (Method 22)
0% opacity from cyclone (Method 9)
0% opacity from baghouse stack (Method 9)

Description/location: Raymond Mill with cyclone air separator and baghouse

Source enclosed: ☒ yes ☐ no

Source controlled: ☒ yes ☐ no

If yes, type of control device: Baghouse

Scrubber ΔP ______ inches W.G.
Scrubber liquid flow rate ________ GPM
Baghouse ΔP 4.0 inches W.G.
Bag cleaning: ☒ operative ☐ inoperative

VE method employed: ☒ Method 9 ☒ Method 22 *Attach appropriate VE Observation Form*

Compliance status: ☒ compliance ☐ noncompliance ☐ not determined (explain in comments)

Inspector's signature: Joe Brown

Field Inspection Sheet

Affected facility: Storage Bin

Date of inspection: 1/5/90

Source ID number: No. 46

Description/location: Product storage

Source enclosed: ☐ yes ☒ no

Source controlled: ☒ yes ☐ no

If yes, type of control device: Baghouse

Scrubber ΔP ______ inches W.G.
Scrubber liquid flow rate ______ GPM
Baghouse ΔP 2.5 inches W.G.
Bag cleaning: ☒ operative ☐ inoperative

Comments: Highest average 6-minute set of observations using Method 9 was 25% opacity. Baghouse exhibited cyclic puffing indicating possible holes in bag(s).

VE method employed: ☒ Method 9 ☐ Method 22 *Attach appropriate VE Observation Form*

Compliance status: ☐ compliance ☒ noncompliance ☐ not determined (explain in comments)

Inspector's signature: Joe Brown

Field Inspection Sheet

Affected facility: ______

Date of inspection: ______

Source ID number: ______

Description/location: ______

Source enclosed: ☐ yes ☐ no

Source controlled: ☐ yes ☐ no

If yes, type of control device: ______

Scrubber ΔP ______ inches W.G.
Scrubber liquid flow rate ______ GPM
Baghouse ΔP ______ inches W.G.
Bag cleaning: ☐ operative ☐ inoperative

Comments: ______

VE method employed: ☐ Method 9 ☐ Method 22 *Attach appropriate VE Observation Form*

Compliance status: ☐ compliance ☐ noncompliance ☐ not determined (explain in comments)

Inspector's signature: ______

APPENDIX G

STATE AGENCIES TO WHICH AUTHORITY HAS BEEN DELEGATED FOR 40 CFR 60, SUBPART OOO

EPA Region	State	Address
I	Maine	Bureau of Air Quality Control Department of Environmental Protection State House Station 17 Augusta, Maine 04333 (207) 289-2437
	Connecticut	Connecticut Department of Environmental Protection Bureau of Air Management 165 Capital Avenue, Room 144 Hartford, Connecticut 06106 (203) 566-4030
	Rhode Island	Rhode Island Division of Air and Hazardous Materials 291 Promenade Street Providence, Rhode Island 02908-5767 (401) 277-2808
II	New York	New York Department of Environmental Conservation Division of Air Resources 50 Wolf Road Albany, New York 12223-3250 (518) 457-7230
	Puerto Rico	Puerto Rico Environmental Quality Board Del Parque Street #204 Corner Pumarada Street Santurce, Puerto Rico 00910 (809) 725-5140 or (809) 722-0077

EPA Region	State	Address
III	Pennsylvania	Bureau of Air Quality Control/Department of Environmental Control 101 South 2nd Avenue, Box 2357 Harrisburg, Pennsylvania 17105-2357 (717) 787-9702
		Bureau of Air Pollution Control Allegheny County Health Department 301 39th Street Pittsburgh, Pennsylvania 15201 (412) 578-8111
		Air Management Services Philadelphia Department of Public Health 500 South Broad Street Philadelphia, Pennsylvania 19146 (215) 875-5623
	Virginia	Department of Air Pollution Control Box 10089 Richmond, Virginia (804) 786-2378

EPA Region	State	Address
IV	Alabama	Alabama Department of Environmental Management 1751 Congressman William L. Dickinson Drive Montgomery, Alabama 36130 (205) 271-7861
	Florida	Florida State Agency Department of Environmental Regulation Twin Towers Office Building 2600 Blair Stone Road Tallahassee, Florida 32301 (904) 488-1344
	Georgia	Environmental Protection Division Department of Natural Resources Floyd Towers East 205 Butler Street, SE Atlanta, Georgia 30334 (404) 656-4713
	Mississippi	Mississippi Department of Environmental Quality Bureau of Pollution Control 2380 Highway 80 West Jackson, Mississippi 39204 (601) 961-5171
	North Carolina	Division of Environmental Management Post Office Box 27687 Raleigh, North Carolina 27611-7687 (919) 733-3340
	South Carolina	South Carolina Department of Health and Environmental Control Bureau of Air Quality Control 2600 Bull Street Columbia, South Carolina 29201 (803) 734-4750

EPA Region	State	Address
V	Indiana	Indiana Department of Environmental Management 105 South Meridian Street Post Office Box 6015 Indianapolis, Indiana 46206 (317) 232-8162 Indianapolis Air Pollution Control Division 2700 South Belmont Avenue Indianapolis, Indiana 46221 (817) 633-5496
	Illinois	Illinois Environmental Protection Agency Division of Air Pollution Control 2200 Churchill Road Post Ofice Box 19276 Springfield, Illinois 62794-9276 (217) 782-7326
	Michigan	Air Quality Division Michigan Department of Natural Resources Post Office Box 30028 Lansing, Michigan 48909 (517) 373-7023
	Minnesota	Minnesota Pollution Control Agency 520 Lafayette Road St. Paul, Minnesota 55155 (612) 296-7301
	Ohio	Ohio Environmental Protection Agency 1800 Water Mark Drive Columbus, Ohio 43266-0149 (614) 644-2270
	Wisconsin	Wisconsin Department of Natural Resources Bureau of Air Management Post Office Box 7921 Madison, Wisconsin 53707 (608) 266-7718

EPA Region	State	Address
VI	Arkansas	Arkansas Department of Pollution Control 8001 National Drive Little Rock, Arkansas 72209 (501) 562-7444
	Louisiana	Department of Environmental Quality Office of Air Quality and Nuclear Energy 625 N. Fourth Street Baton Rouge, Louisiana 70804 (504) 342-1201
	New Mexico	Environmental Improvement Division Air Quality Bureau 1190 St. Francis Drive Santa Fe, New Mexico 87503 (505) 827-0070 Albuquerque Environmental Health and Energy Department Post Office Box 1293 Albuquerque, New Mexico 87103 (505) 768-2600
	Oklahoma	Air Quality Service 1000 Northeast 10th Street Post Office Box 53551 Oklahoma City, Oklahoma 73142 (405) 271-5220
	Texas	Texas Air Control Board 6330 Highway 290 East Austin, Texas 78723 (512) 340-5653

EPA Region	State	Address
VII	Iowa	Iowa Department of Natural Resources Henry A. Wallace Building Des Moines, Iowa 50319 (515) 281-5145
	Kansas	Bureau of Air and Waste Management Forbes Field, Building 740 Topeka, Kansas 66620 (913) 296-1500
	Nebraska	Department of Environmental Control 301 Centennial Mall South Post Office Box 98922 Lincoln, Nebraska 68509 (402) 471-2189

EPA Region	State	Address
VIII	Colorado	Colorado Department of Health Air Pollution Control Division 4210 E. 11th Street Denver, Colorado 80220 (303) 331-8500
	Montana	Montana State Department of Health and Environmental Sciences Air Quality Bureau Cogswell Building Helena, Montana 59620 (406) 444-3454
	North Dakota	North Dakota State Department of Health 1200 Missouri Avenue Bismarck, North Dakota 58502-5520 (701) 224-2348
	South Dakota	Department of Water and Natural Resources Division of Air Quality and Solid Waste Joe Foss Building Pierre, South Dakota 57501 (605) 773-3153
	Utah	Utah Department of Health Division of Environment Bureau of Air Quality 150288 North 1460 West Post Office Box 16690 Salt Lake City, Utah 94116 (801) 533-6108
	Wyoming	Air Quality Division Department of Environmental Quality 122 West 25th Street Cheyenne, Wyoming 82002 (307) 777-7391

EPA Region	State	Address
IX	Nevada	Division of Environmental Protection 201 South Fall Street Carson City, Nevada 89710 (702) 885-5065
	Hawaii	Hawaii Department of Health Clean Air Branch 500 Ala Moana Boulevard Honolulu, Hawaii 96813 (808) 543-8200
	Arizona	Office of Air Quality Department of Environmental Quality 2005 North Central Avenue Phoenix, Arizona 85004 (602) 257-2308
	California	Bay Area Air Quality Management District 939 Ellis Street San Francisco, California 94109 (415) 771-6000 Fresno County Air Pollution Control District 1221 Fulton Mall Fresno, California 73721 (209) 445-3239 Kern County Air Pollution Control District 2700 M Street, Suite 275 Bakersfield, California 93301 (805) 861-3682 Lake County Air Quality Management District 883 Lakeport Boulevard Lakeport, California 95453 (707) 263-7000 Mendocino County Air Pollution Control District Courthouse Square Ukiah, California 95482 (707) 463-4354

EPA Region	State	Address
IX	California (cont.)	Monterey Bay Unified Air Pollution Control District 1164 Monroe Street, Suite 10 Salinas, California 93906 (408) 443-1135 North Coast Unified Air Quality Management District 5630 South Broadway Eureka, California 95501 (707) 443-3093 Sacramento Metropolitan Air Quality Management District A Division of Sacramento County Environmental Management Department 8475 Jackson Road, Suite 215 Sacramento, California 95826 (916) 386-6650 San Diego County Air Pollution Control District 9150 Chesapeake Drive San Diego, California 92123-1095 (619) 694-3307 San Joaquin County Air Pollution Control District 1601 East Hazelton Avenue Post Office Box 2009 Stockton, California 95201 (209) 468-3470 Santa Barbara County Air Pollution Control District 5540 Ekwill Street, Suite B Santa Barbara, California 93111 (805) 681-5325 Siskiyou County Air Pollution Control District 525 South Foothill Drive Yreka, California 96097 (916) 842-3906 South Coast Air Quality Management 9150 Flair Drive El Monte, California 91731 (818) 572-6200 Ventura County Air Pollution Control District 800 South Victoria Avenue Ventura California 93009 (805) 654-2806

EPA Region	State	Address
IX	Guam and American Samoa	No information available

APPENDIX H

COMPILATION OF EPA POLICY MEMORANDA CONCERNING 40 CFR 60, SUBPART OOO

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 8 1990

OFFICE OF
AIR AND RADIATION

MEMORANDUM

SUBJECT: Applicability of NSPS Subpart F to Kilns and Clinker Coolers Using a Common Exhaust Stack

FROM: John B. Rasnic, Acting Director
Stationary Source Compliance Division (EN-341)
Office of Air Quality Planning and Standards

TO: Bernard E. Turlinski, Chief
Air Enforcement Branch
Region III

I have received your memorandum of May 1, 1990, requesting a determination of applicability of Subpart F (Portland Cement Plants) to a single exhaust stack used by the kiln and clinker cooler at a portland cement plant in Virginia. I have also received your more recent draft letter, addressing the same issue, to the State of Virginia. I apologize for the delay in our response to your earlier memorandum.

Your request is for a procedure to determine compliance with New Source Performance Standards (NSPS) from two NSPS facilities with different opacity standards, which have a combined exhaust stream. The facts in your memoranda state that the exhaust stream from the affected facility with the 10% opacity standard (the clinker cooler) is introduced into the preheater of the affected facility with the 20% opacity standard (the kiln). The combined emissions are then routed to the control device and then released into the atmosphere.

Section 60.63 of the Subpart requires each owner or operator to install, calibrate, maintain, and operate (in accordance with § 60.13) a Continuous Opacity Monitoring System (COMS) to measure opacity from any kiln or clinker cooler subject to the Subpart. Section 60.13(g) of the General Provisions requires two or more affected facilities which are not subject to the same emission standard to install an applicable continuous monitoring system on each separate effluent, unless the installation of fewer systems is approved by the Administrator.

Therefore, as indicated in your draft letter to the State, a COMS would need to be installed on the ductwork leading from the clinker cooler to the preheater. That COMS must show compliance with the 10% standard. Another COMS installed on the kiln exhaust would show compliance with the 20% opacity standard, as your draft letter stated.

If, however, due to the configuration of the ductwork or for some other reason approved by the Administrator, installation of separate COMS is impossible, the owner or operator may install an applicable COMS on the stack to monitor the combined effluent. If this is done, our concern is that no circumvention of an applicable opacity standard be permitted as a result of this configuration. Section 60.12 (Circumvention) of the General Provisions explicitly prohibits "...the use of gaseous diluents to achieve compliance with an opacity standard...." To ensure that the provisions of § 60.12 are complied with, and that compliance with the standard for clinker coolers is achieved (10% opacity), this common stack must meet the more stringent opacity requirement of 10%. Whether the clinker cooler emissions are ducted directly to the same stack as the kiln, or to the preheater, the 10% standard still applies.

Furthermore, § 60.13(i)(1-9) allows the Administrator to consider approval of alternatives to any monitoring procedures or requirements upon receipt of a written application from the source. This application may cite factors which interfere with the accuracy of the monitoring system, may attempt to demonstrate that the COMS can be installed at an alternate location and still provide accurate and representative measurements, or make an argument for other alternative procedures, methods, or specifications. Any such alternatives approved by the Administrator for the COMS on the clinker cooler must adequately demonstrate compliance with the 10% standard for clinker coolers.

Turning to a further point you made in your more recent submittal, you believe that the effluent from the clinker cooler, after entering the preheater, undergoes a physical and chemical change, and therefore becomes part of the kiln effluent. You feel that, because of this transformation, effluent from the clinker cooler becomes subject to the 20% opacity limit of the kiln, and not the 10% opacity limit of the cooler. As the above discussion indicates, we do not agree with that interpretation, given, in part, the need to ensure compliance with the clinker cooler standard. Please note that the source may apply to EPA for an alternative opacity limit under the provisions of § 60.11(e). However, as noted above, the source should first explore alternative monitoring methods which will enable direct monitoring of the effluent from the clinker cooler prior to its introduction into the preheater.

To ensure consistency, this response has been reviewed by the Emission Standards Division and the Office of Enforcement. My staff has also been in touch with your staff to discuss this request. I am also enclosing a copy of a 1989 letter from Region IV which illustrates application of the COMS requirements in situations similar to this one. Please contact Ken Malmberg of my staff (FTS 382-2870) if you have any questions about this memorandum.

Attachment

cc: Roger Pfaff, Region IV
Ed Buckner, Region VII
Shirley Tabler, ISB, ESD (MD-13)
Ron Meyers, ISB, ESD (MD-13)
Justina Fugh, AED
John Rudd, AED
Peter Fontaine, AED
Howard Wright, SSCD

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 3 1989

OFFICE OF
AIR AND RADIATION

MEMORANDUM

SUBJECT: Guidance for Utilization of Method 9 Data in Enforcement Activities

FROM: John S. Seitz, Director
Stationary Source Compliance Division
Office of Air Quality Planning and Standards

TO: Roger O. Pfaff, Chief
Air Compliance Branch
Air, Pesticides and Toxics Management Division

In a July 28 letter to Region IV, North Carolina's Division of Environmental Management requested resolution of an apparent contradiction between the preamble for Method 9 that states "the accuracy of the method must be taken into account when determining possible violations of applicable opacity standards" and EPA's stated policy of not allowing or accreting an error allowance when documenting opacity violations. This request was forwarded to SSCD attached to an October 27, 1988 Region IV memorandum that provided three alternative options to EPA's present policy on error allowance. In further discussions between our staffs, we were informed that this request stems from an enforcement action where a nonmetallic mineral processing plant, during its performance test, exceeded the opacity standard established by the NSPS Subpart ØØØ. Further investigation of the elevated levels of opacity identified problems with the plant's sprayer system, which required corrective action.

A number of different issues are raised by this case and need to be addressed one by one. First, the NSPS standards are carefully developed from a comprehensive program of research, source testing study, and analysis. Establishing the opacity standard for Subpart ØØØ sources was typical of this process. OAQPS conducted a comprehensive study at nonmetallic mineral processing plants to determine the range of opacity readings during maximum operation using BDT. The opacity levels at the tested plants were very low and the resulting Subpart ØØØ opacity standard adequately takes into account the observed variation in opacity readings. Thus, even a marginal exceedance of the standard is a strong indication of a control equipment, operation, or maintenance problem which may require an enforcement remedy. It should be noted that opacity standards are separately enforceable requirements and any exceedance of the standard can be the sole basis for an enforcement action.

In the specific case of the North Carolina plant, according to the information provided to SSCD, it appears the process worked as intended. The performance test for the Subpart ØØØ source uncovered an opacity violation which, on further investigation, showed equipment failure which required correction, and an appropriate enforcement penalty. Measurement error was not a relevant issue in this case.

The rationale for EPA's basic policy of no automatic error allowance is underscored by the North Carolina case. The policy does not attempt to define exactly how to account for measurement error, but states that adding measurement error to the standard is not an appropriate method for accounting for error. Further, arbitrarily eliminating from enforcement consideration all marginal exceedances relaxes the standard without justification. This brings into question the original intent of the standard, which is to require installation of properly designed, well operated control equipment. Clearly, this should not happen, since it undermines the standard and weakens our enforcement program.

As for the three alternative policy options proposed in your memorandum, they can not guarantee the elimination of measurement error. Adopting any of them amounts to relaxing current opacity standards. Measurement error cannot be addressed by a blanket policy statement, but instead the opacity observers must conduct their duties in a systematic and reasonable way.

The preferred approach for accounting for measurement error is to follow the procedures for conducting Method 9 observations described in the "Quality Assurance Handbook for Air Pollution Measurement Systems" (EPA-6ØØ/4-77-Ø27b, 1977) and to conduct followup investigation whenever opacity exceedances are observed. The Method 9 guidance materials suggest various ways to augment the visible emission observation if opacity values are in excess of the standard.

For example, in marginal violation situation, additional sets of readings over longer time periods or even on different days may be appropriate for ensuring that the opacity exceedances documented truly reflect noncompliance rather than measurement error. Finally, enforcement officials must exercise their technical judgement carefully in the final determination of an enforceable violation, which may be based on additional factors such as the plant operating history and extent and duration of excessive emissions.

In summary, there is no conflict between EPA's policy of no direct error allowance and the requirement to account for error in Method 9 observations. EPA's policy prohibits dropping from consideration marginal opacity exceedances soley because there may be error. However, EPA does support use of QA procedures and followup investigation as legitimate methods for accounting for measurement error. If additional clarification of our policy is needed, please contact Ken Malmberg at 382-287Ø.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
AIR AND RADIATION

MEMORANDUM

SUBJECT: Subpart 000 Determination

FROM: John S. Seitz, Director
Stationary Source Compliance Division
Office of Air Quality Planning and Standards

TO: Winston A. Smith, Director
Air, Pesticides and Toxics Management Division
Region IV

This is in response to your October 24, 1988 memorandum on enforcing 40 C.F.R. 60.672(e) of the NSPS for nonmetallic minerals. I will address each of the issues you raised under the action portion of your memorandum, and as Ken Malmberg of my staff has clarified with Paul Reinnerman.

Safety of our inspectors is of paramount importance when inspecting sources. If an inspector feels he is compromising his safety by entering a building like you describe, then he must not enter it. This is a guiding premise of our entire field inspection program.

Your more substantive concern is with enforcing 60.672(e), because "some buildings at Subpart 000 facilities preclude entry because of safety problems." Apparently there is such a facility in Kentucky. All NSPS standards are designed to require compliance with applicable standards at startup. Facilities which are subject to NSPS requirements must be built so they are testable, or compliance with the standard cannot be determined. Section 60.8 explicitly requires provision of safe access to sampling platforms, for example.

Your memorandum states that, since some VE is being discharged from the building, entry to the building must occur to determine which affected facility is emitting the VE. That is true, but to determine compliance with the standard, the owner or operator must provide EPA with a means of gathering the relevant data. The building itself, though providing an indication of a VE violation, cannot thereby preclude followup to determine the source of those emissions.

The owner or operator in this case may have to install a vent on each affected facility for this purpose. As discussed in the Background Information Document for this Subpart (EPA-450/3-83-001b, April, 1985), the owner or operator has several options for determining compliance from affected facilities. Separation of emissions by construction of separate vents for each affected facility is one of these options and should be considered as a means for assessing compliance.

If entry to the building cannot occur, then opacity violations from outside the building will suffice for issuing an NOV. If the building encloses more than one effected facility, our assumption will be that all such facilities are in violation. It is up to the source to prove otherwise.

For specific means of reading the opacity of emissions while inside the building, the alternatives discussed by Jack Farmer in an April 27, 1988 memorandum to Winston Smith on this subject seem sufficient.

Thank you for the opportunity to respond to your questions. I am sorry for the lateness of this response. Please call Ken Malmberg of my staff if you have any questions.