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Part VI

**Environmental
Protection Agency**

**Standards of Performance for New
Stationary Sources: Asphalt Processing
and Asphalt Roofing Manufacture and
Priority List; Proposed Rules and Public
Hearing**

**ENVIRONMENTAL PROTECTION
AGENCY**
40 CFR Part 60
[AD-FRL-1505-7]
**Standards of Performance for New
Stationary Sources; Asphalt
Processing and Asphalt Roofing
Manufacture**
AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule and notice of public hearing.

SUMMARY: The proposed standards would limit atmospheric emissions of particulate matter from new, modified, and reconstructed asphalt blowing stills, asphalt saturators, asphalt storage tanks, and mineral handling and storage operations in the asphalt processing and roofing manufacturing industry. In addition, the proposed standards will limit the opacity of emissions from asphalt blowing stills, asphalt saturators, asphalt storage tanks, and mineral handlings and storage operations and fugitive emissions from asphalt saturator hooding. Two EPA reference methods are also being proposed along with the standards.

The standards implement Section 111 of the clean Air Act and are based on the Administrator's determination that asphalt processing and asphalt roofing manufacturing facilities contribute significantly to air pollution which may reasonably be anticipated to endanger public health or welfare. The intended effect is to require new, modified, and reconstructed affected facilities in asphalt roofing manufacturing plants, oil refineries, and asphalt processing plants to use the best demonstrated system of continuous emission reduction, considering costs, non-air quality health and environmental impacts, and energy impacts.

If requested, a public hearing will be held to provide interested persons an opportunity for oral presentation of data, views, or arguments concerning the proposed standards.

DATES: Comments. Comments must be received on or before January 19, 1981.

Public Hearing. A public hearing will be held, if requested. Persons wishing to request a public hearing must contact EPA by December 2, 1980. If a hearing is requested, an announcement of the date and place will appear in a separate Federal Register notice.

ADDRESSES: Comments. Comments should be submitted (in duplicate if possible) to: Central Docket Section (A-130), Attention: Docket No. OAQPS A-

79-39. U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460.

Public Hearing. Persons wishing to request a public hearing should notify Ms. Deanna B. Tilley, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone (919) 451-5477.

Background Information Document. The background information document (BID) for the proposed standards may be obtained from the U.S. EPA Library (MD-35), Research Triangle Park, North Carolina 27711, telephone (919) 541-2777. Please refer to "Asphalt Roofing Manufacturing Industry, Background Information for Proposed Standards," EPA-450/3-80-021a.

Docket. A docket, number OAQPS A-79-39, containing information used by EPA in development of the proposed standards, is available for public inspection between 8:00 a.m. and 4:00 p.m. Monday through Friday, at EPA's Central Docket Section (A-130), West Tower Lobby, Gallery 1, Waterside Mall, 401 M Street, S.W., Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT: Ms. Susan R. Wyatt, Emission Standards and Engineering Division (MD-13), Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone (919) 541-5477.

SUPPLEMENTARY INFORMATION:
Proposed Standards

The proposed standards would limit particulate emissions from the following new, modified, or reconstructed affected facilities in asphalt roofing manufacturing plants, oil refineries, and asphalt processing plants: Blowing stills; saturators, wet loopers, and coaters; asphalt storage tanks; and mineral handling and storage areas. The saturator, wet looper, and coater are considered to be one facility and are designated as the saturator.

Particulate emission limitations are proposed for blowing stills and saturators. Blowing still particulate emissions would be limited to 0.60 kg/Mg (1.28 lb/ton) of asphalt charged during conventional blowing and 0.67 kg/Mg (1.34 lb/ton) of asphalt charged during catalytic blowing. When No. 6 fuel oil is used to fire the afterburner, the particulate emissions from blowing stills would be limited to 0.64 kg/Mg (1.28 lb/ton) of asphalt charged for conventional blowing and 0.71 kg/Mg (1.42 lb/ton) of asphalt charged for catalytic blowing. Saturator particulate emissions would be limited to 0.04 kg/

Mg (0.08 lb/ton) of shingle and mineral-surfaced roll roofing produced or to 0.4 kg/Mg (0.8 lb/ton) of saturated felt and smooth-surfaced roll roofing produced, depending on the product.

An opacity standard is proposed for each affected facility as follows: 0 percent for blowing stills, 20 percent for saturators, 0 percent for asphalt storage tanks, and 1 percent for mineral handling and storage areas. A fugitive emission standard of no visible emissions 80 percent of the time is proposed for saturator capture systems.

Continuous monitoring of the operating temperature of the control devices used to meet the proposed standards would be required to ensure proper operation and maintenance.

The performance test methods for determining compliance with the proposed standards would be Reference Method 28 for particulate emissions, Reference Method 9 for opacity, and Reference Method 22 for fugitive emissions. Methods 22 and 26 are being proposed along with the proposed standards.

Summary of Environmental, Energy, and Economic Impacts

It is projected that the equivalent of three new medium-size asphalt processing and roofing plants will be constructed within 5 years from the proposal date of the standards. The proposed standards would reduce particulate emissions from asphalt processing and asphalt roofing plants by about 490 megagrams per year (540 tons per year) in the fifth year after the standards are proposed. This represents a reduction in particulate emissions of 65 percent from State Implementation Plan (SIP) levels.

The proposed standards would increase wastewater from a typical asphalt roofing plant by approximately 1.0 percent. There would be no change in the quality of the wastewater as a result of the proposed standards. The impact of the proposed standards on solid waste disposal would be negligible. There would be no impact on noise.

The proposed standards would increase the total energy consumption of a typical asphalt roofing plant by about 3.2 percent. This would increase the nationwide energy usage by the equivalent of approximately 600 cubic meters (3,800 barrels) of oil per year in the fifth year after the standards go into effect.

Capital costs for industry compliance with the proposed standards over the first 5 years would be \$0.30 million. Fifth-year annualized costs would be \$0.09 million. As a result of the proposed

standards, the product wholesale price could increase about 0.15 percent, or \$0.02/square (80 shingles), which could increase the price for a roof on a typical three-bedroom house by about \$3. If the price of shingles cannot be increased and the industry must absorb all of the costs of compliance with the proposed standards, the resulting drop in net profit after taxes would be about 0.4 percent. The costs of emission controls required by the proposed standards is not expected to have any impact on expansion or construction in the asphalt roofing manufacturing industry.

Rationale

Selection of Source for Control

The asphalt processing and asphalt roofing industry is a significant contributor to nationwide emissions of particulate matter. EPA's priority list, 44 FR 49222 of August 21, 1979, identifies source categories chosen for development of new source performance standards (NSPS). During development of the list, consideration was given to the quantity of emissions from each source category, the extent to which each pollutant endangers health and welfare, and the mobility and competitive nature of each source category. The asphalt roofing manufacturing industry is number 45 out of the 59 source categories chosen for NSPS.

The asphalt roofing industry encompasses not only asphalt roofing plants but certain production units at oil refineries and asphalt processing plants which were not included on the Priority List promulgated on August 21, 1979. At asphalt roofing plants, paper and fiberglass felts are saturated with asphalt and sold as saturated felt or saturated and coated with asphalt and surfaced with selected mineral aggregates to produce roll roofing or shingles. The asphalt used for saturants and coatings is prepared by blowing air through hot asphalt flux. Asphalt is blown at 17 oil refineries, at 2 asphalt processing plants, and at about 70 percent of the 118 asphalt roofing plants. An amendment which would add asphalt processing units at oil refineries and asphalt processing plants to the EPA priority list for development of standards of performance is being proposed today in a separate Federal Register notice.

The asphalt roofing industry supplies over 80 percent of the domestic demand for roofing materials. Although a 34 percent increase in asphalt roofing prices since 1974 has caused some acceleration in the search for

substitutes, asphalt roofing continues to dominate the market.

The construction of new houses and the renovation of existing structures are the primary determinants of the demand for asphalt roofing products. Declines in construction of new homes have generally been offset by increasing strength in the replacement roofing market; thus, there has been a stable demand for asphalt roofing products. For the past 10 years, the industry has grown 2.0 percent annually; projections for the next 5 years show an expected annual growth of 1.5 to 2.0 percent. Asphalt processing and asphalt roofing plants are located in urban areas where future growth is also expected to take place.

For these reasons, the asphalt processing and asphalt roofing industry has been selected for the development of new source performance standards.

Selection of Pollutants

The asphalt processing and roofing industry is a source of hydrocarbon particulate, polycyclic organic matter (POM), aldehyde, and sulfur dioxide (SO₂) emissions.

The emissions from the asphalt processing and roofing industry are aerosols containing particulate hydrocarbons. The particulate hydrocarbons comprise 75 percent of all pollutants emitted from an average asphalt roofing plant controlled to typical SIP levels. It is expected that by 1985, annual nationwide particulate emissions from this industry will increase by 770 Mg (850 tons) if emissions are controlled to the level of a typical SIP regulation. These emissions can be significantly reduced by available control technology that has been demonstrated.

Test data indicate that aldehyde and SO₂ emissions from asphalt processing and asphalt roofing manufacture are relatively low compared to particulate emissions. By 1985 the increase in emissions would be only 4.5 Mg/yr (5.0 tons/yr) for aldehyde and 13.5 Mg/yr (15.0 tons/yr) for SO₂. Therefore, SO₂ and aldehyde were not selected for regulation at this time.

By 1985 the annual nationwide increase in POM emissions from new, modified, or reconstructed asphalt processing and asphalt roofing manufacturing plants would be 4.6 Mg (5.1 tons). Control devices generally used to control particulate emissions from asphalt processing roofing manufacture are capable of reducing POM emissions by about 90 percent from uncontrolled levels. Since particulate control devices also control POM, a separate standard for this

pollutant is not being proposed at this time.

For the reasons stated in the preceding paragraphs, particulate is the only pollutant selected for regulation by standards of performance at this time. This decision does not preclude the future regulation of aldehyde or POM emissions from asphalt roofing and asphalt processing plants if the Administrator finds that either of these two pollutants endangers health or welfare.

Selection of Facilities To Be Considered for Regulation

The major sources of particulate emissions are asphalt blowing stills; saturators; asphalt storage tanks; and mineral handling and storage facilities, which consist of the unloading area, conveyor transfer points, and storage bins. All of these sources are found in asphalt roofing plants. The asphalt blowing stills and asphalt storage tanks may also be located at oil refineries and asphalt processing plants. The blowing stills and asphalt storage tanks at oil refineries and asphalt processing plants were also considered for regulation by standards of performance because the emissions, processes, and applicable controls are the same as those in asphalt roofing plants.

Typical baseline (SIP) emissions from each facility in a medium size plant are:

Blowing still: 43 kg/h (95 lb/h);
Saturator: 18 kg/h (40 lb/h);
Asphalt storage tanks: 1.8 kg/h (4.0 lb/h); and
Mineral handling and storage area: 1.0 kg/h (2.2 lb/h).

Coater-mixers and mineral surfacing, two relatively insignificant sources of particulate emissions, are located at asphalt roofing plants. Coater-mixers are usually enclosed, and no emissions escape to the atmosphere. Emissions from mineral surfacing are contained within the building. Therefore, these two emission sources were excluded from further consideration for regulation by standards of performance.

Particulate emission control technology exists in the asphalt processing and asphalt roofing industry for all significant sources of particulate emissions. The minerals, the transfer and storage equipment, and the control technology used in the asphalt roofing industry for mineral handling and storage operations are the same as those used in the nonmetallic minerals industries. Therefore, it is appropriate to transfer the control technology from these industries to the asphalt roofing manufacturing industry. Blowing stills, saturators, asphalt storage tanks, and mineral handling and storage areas

were selected as facilities to consider for regulation because they are significant sources of particulate emissions for which control technology is available.

Selection of Basis of Proposed Standards

Tests at four asphalt roofing plants have demonstrated that particulate emissions from saturators and asphalt storage tanks may be effectively controlled to essentially the same emission level by any one of three pollution control devices: Afterburner (A/B), high velocity air filter (HVAF), or electrostatic precipitator (ESP). These three devices are commonly used to meet State Implementation Plans; however, the SIP Limits do not necessarily require that the devices achieve the best level of control. To achieve the best level of control, each of the control devices must be operated at the proper temperature. Afterburner effectiveness generally increases with increasing combustion temperature. Exhaust gases entering the HVAF and ESP must be cooled to condense the hydrocarbons and allow their capture.

A survey of asphalt roofing manufacturers and State, regional, and local agencies was conducted to find well-controlled asphalt roofing plants. As a result of this survey, 27 asphalt roofing plants were visited to select the best plants for emissions testing. During the plant visits, opacity readings were taken at control device outlets, the control devices were visually inspected, engineering drawings were examined, and emission reports, when available, were studied. The information collected during the plant inspections was evaluated, and the best-controlled plants were selected for emissions testing.

Tests indicated that an afterburner controlling emissions from a saturator and operating at a temperature above 649°C (1200°F) could achieve about a 93 percent emission reduction. Tests also indicated that an ESP or HVAF could achieve about a 93 percent particulate emission reduction if the saturator exhaust gases are cooled below 60°C (140°F).

An afterburner was the only device tested for control of emissions from blowing stills. The effectiveness of an afterburner in controlling emissions varies with the temperature in the combustion zone. Test data show that an afterburner operating over a temperature range of 760°C to 870°C (1400°F to 1660°F) reduced emissions from the blowing still by 95 percent. The exact relationship between degree of control and operating temperature

varies with the concentration of combustible gases in the inlet gas and the size of the control equipment.

The test data show that the emissions from asphalt storage tanks can be effectively controlled by venting the emissions through either a mist eliminator or a particulate control device on the saturator. It is general industry practice for asphalt storage tanks to be vented to the saturator control device when the saturator is operating and to a mist eliminator when the saturator is not operating. However, emissions from the asphalt storage tanks can also be continuously controlled by a mist eliminator or other control device.

Fabric filters are used to control the emissions from the minerals handling and storage operations at some plants in the asphalt roofing industry; however, they have not been tested. These filters have been shown to be effective (through observations of opacity) in reducing particulate emissions from minerals handling and storage operations in the non-metallic minerals industries. Since the minerals handled and the handling and storage operations for the minerals are the same for the two industries, fabric filters are selected as representative of the best technological system for continuous emission reduction from mineral handling and storage operations at asphalt roofing plants.

The proposed standards are based on the pollution control devices that were tested. Other pollution control devices are available that may achieve the level of control required by the proposed standards. Any control technique that achieves the emission limit outlined in the proposed standards could be used to comply with the standards.

Selection of Regulatory Alternatives

The impacts that varying amounts of emission control would have on the industry, the consumer, and the environment were considered during development of the emission standards. For saturators, each of the three control devices tested demonstrated essentially equal levels of control. For the other facilities, only one type of control device could be tested. Since only one level of control was demonstrated for each respective facility, regulatory alternatives that require control of different combinations of the facilities were defined so that varying impacts could be considered. No new source performance standard (NSPS) would be promulgated under Alternative 1. The facilities would be controlled by existing State regulations. Alternative 2 would require NSPS control for saturators and asphalt storage tanks; Alternative 3

would require NSPS control for saturators, asphalt storage tanks, and asphalt blowing stills; Alternative 4 would require NSPS control for saturators, asphalt storage tanks, and mineral handling and storage areas; and Alternative 5 would require NSPS control for all affected facilities.

The projected five-year industry growth after proposal of the standards is equal to three medium-size asphalt roofing plants with blowing stills. The environmental and energy impacts of one medium-size plant are one-third the values given below and are based on an HVAF and ESP controlling a saturator, an afterburner controlling a blowing still, a fabric filter controlling mineral handling and storage facilities, and a mist eliminator controlling asphalt storage tanks.

Environmental Impacts

Regulatory Alternative 1, the baseline condition, represents the typical SIP level of control. The actual emissions from individual plants may vary from the emissions allowed by the typical SIP due to differences in State regulations and control methodologies. However, it was judged reasonable to select the typical SIP level of control as the baseline condition for the purposes of comparing environmental impacts. The uncontrolled emissions in the fifth year would be about 2,800 Mg/yr (3,100 tons/yr). The fifth-year environmental impact, if no NSPS is established, would be an increase in nationwide particulate emissions of 770 Mg/yr (850 tons/yr). The fifth-year reduction in emissions beyond SIP control would be 230 Mg/yr (250 tons/yr) for Regulatory Alternative 2; 480 Mg/yr (530 tons/yr) for Alternative 3; 240 Mg/yr (260 tons/yr) for Alternative 4; and 490 Mg/yr (540 tons/yr) for Alternative 5. This would be a reduction of 30 percent for Alternative 2, 62 percent for Alternative 3, 31 percent for Alternative 4, and 64 percent for Alternative 5.

The water pollution impact resulting from adoption of any one of Regulatory Alternatives 2 through 5 would be minimal. Water sprays used to cool inlet fumes of a saturator control device would increase the amount of wastewater to be treated in the fifth year by 30 to 40 m³/yr (8,000 to 10,500 gal/yr).

Adoption of any of the Regulatory Alternatives 2 through 5 would result in only a small increase in solid waste. The only solid waste generated by the control devices used in the asphalt roofing industry is the saturated filter media from the HVAF.

Dispersion modeling was used to assess the air quality impact of

particulate emissions from asphalt processing and asphalt roofing manufacturing plants under worst-case meteorological conditions. The dispersion analysis used 1964 climatological data for Pittsburgh, Pennsylvania, and Oklahoma City, Oklahoma. Both data sets are reasonably consistent with meteorological conditions representing maximum impact for short stacks. The National Ambient Air Quality Standards (NAAQS) 24-hour maximum primary standard is 260 $\mu\text{g}/\text{m}^3$, and the 24-hour maximum secondary standard is 150 $\mu\text{g}/\text{m}^3$. The dispersion analysis for a medium-size asphalt processing and asphalt roofing plant indicated that the primary standard would not be exceeded by a plant controlled under any of the regulatory alternatives but that the secondary standard could be exceeded under Regulatory Alternatives 1, 2, and 4. Adoption of either Regulatory Alternative 3 or Regulatory Alternative 5 would result in a concentration of particulate emissions from an asphalt processing or asphalt roofing plant considerably below the NAAQS 24-hour maximum secondary standard.

Energy Impacts

The construction of three new medium-size asphalt roofing plants controlled by SIP's (Regulatory Alternative 1) would result in an energy usage of 19,100 m^3/yr (120,000 bbl/yr) of oil for all plant operations in the fifth year. The fifth-year increase in energy over Regulatory Alternative 1 would be 20 m^3/yr (140 bbl/yr) of oil for Regulatory Alternative 2; 590 m^3/yr (3,700 bbl/yr) of oil for Alternative 3; 30 m^3/yr (200 bbl/yr) of oil for Alternative 4; 600 m^3/yr (3,800 bbl/yr) of oil for Alternative 5. This is an increase from Regulatory Alternative 1 of 0.1 percent for Alternative 2, 3.1 percent for Alternative 3, 0.2 percent for Alternative 4, and 3.2 percent for Alternative 5.

Economic Impacts

The fifth-year capital and annualized costs for the controls typically being installed by asphalt roofing plants to comply with SIP's would be \$1,800,000 and \$600,000 respectively. The increase in the fifth-year capital and annualized costs and the increase in the product price if the asphalt roofing manufacturing industry passes through the compliance costs associated with the proposed standards are summarized in the following paragraphs for Regulatory Alternatives 2, 3, 4, and 5.

Regulatory Alternative 2 would result in an increased capital cost of \$215,000 and an increased annualized cost of

\$20,000. This increase in annualized costs could result in a 0.03 percent product price increase for asphalt shingles.

Regulatory Alternative 3 would increase capital costs by \$215,000, annualized costs by \$59,000, and the product price of asphalt shingles by 0.08 percent.

Regulatory Alternative 4 would increase capital costs by \$305,000, annualized costs by \$53,000, and the product price of asphalt shingles by 0.07 percent.

Regulatory Alternative 5 would increase capital costs by \$305,000, annualized costs by \$92,000, and the product price of asphalt shingles by 0.12 percent.

It is reasonable to expect that the industry could pass through these costs for any of the regulatory alternatives. However, if the industry must absorb all the costs for compliance with the proposed standards, the reduction in profit would be 0.4 percent.

A detailed analysis of the economic impact of the alternatives on the asphalt processing and asphalt roofing industry was developed for asphalt roofing plants, where the majority of the asphalt processing and asphalt roofing manufacture occurs. Oil refineries and asphalt processing plants contain only blowing stills and asphalt storage tanks. The regulatory alternatives would require the same controls for blowing stills and asphalt storage tanks at oil refineries, asphalt processing plants, and asphalt roofing plants. Therefore, the costs of meeting the alternatives would be no greater for oil refineries and asphalt processing plants than for asphalt roofing plants. For these reasons, product price increases for Alternatives 2 through 5 should be no greater for products produced at oil refineries than for those produced at asphalt roofing plants.

Historically, oil refineries have demonstrated the ability to pass through cost adjustments on the price of their products. If they have to absorb the costs of compliance with the proposed standards, the reduction in profit would be less than .01 percent. Therefore, there should be no adverse economic impact on oil refineries.

Regulatory Alternatives 2 through 5 are not expected to have an adverse impact on asphalt processing plants. No growth is anticipated in this industry. In fact, the number of asphalt processing plants has been declining in recent years. If new plants are constructed, they are expected to be able to pass through control costs.

Selection of the Alternative for the Standards

Regulatory Alternative 5 would result in the greatest reduction in emissions. Operation of the controls required to comply with Alternative 5 would increase the energy used in all plant operations by only 3.2 percent, and the adverse environmental impacts would be negligible. As discussed previously, the increased control costs would be the same for oil refineries, asphalt processing plants, and asphalt roofing plants. It is expected that all of the costs of compliance with the proposed standards would be passed through. If so, the wholesale product cost would increase by 0.12 percent. The cost to the consumer for a new roof on an average three-bedroom house would be increased by \$3. However, if all of the compliance costs were absorbed, the reduction in profit would be 0.4 percent. Because Regulatory Alternative 5 would result in the greatest emission reduction and because, in the Administrator's judgment, the environmental, energy, and economic impacts associated with this emission reduction are reasonable, the Administrator selected Alternative 5 as the basis for the proposed standards.

Consideration of Growth Projections Made by the Industry

Industry representatives commented at the meeting of the National Air Pollution Control Techniques Advisory Committee (December 12, 1979) that EPA had underestimated the growth rate in the industry. They later projected that growth in the industry during the 5 years after proposal of the standards would be: 5 new medium-size plants; 5 new medium-size plants to replace 5 small-size obsolete plants; 5 plants with reconstructed saturators to replace saturators destroyed by fire; and 20 plants each modified to increase production from the saturator by 20 percent. (1, 2) The environmental, energy, and economic impacts of the growth projected by the industry have been considered to determine how the industry's growth projections could affect the selection of a regulatory alternative.

The environmental impacts of the growth projected by industry are as follows. The uncontrolled emissions in the fifth year would increase by 7,000 Mg/yr (7,700 tons/yr). If no NSPS is established, the nationwide particulate emissions would increase in the fifth year by 3,200 Mg/yr (3,500 tons/yr). The fifth-year reduction in emissions beyond the SIP level of control would be 960 Mg/yr (1,600 tons/yr) for Regulatory Alternative 2; 2,000 Mg/yr (2,200 tons/

yr) for Alternative 3; 1,000 Mg/yr (1,100 tons/yr) for Alternative 4; and 2,040 Mg/yr (2,250 tons/yr) for Alternative 5. The percent emission reductions for each alternative would be the same as those projected for the EPA growth estimates.

The growth projections made by the industry would increase the amount of wastewater to be treated in the fifth year by 200 to 235 m³/yr (56,000 to 62,000 gal/yr). Water pollution impact would be minimal.

The energy impacts resulting from the growth projections made by industry for the SIP level of control (Regulatory Alternative 1) would result in an energy usage of 48,000 m³/yr (300,000 bbl/yr) of oil for all plant operations in the fifth year. The fifth year increase in energy over Regulatory Alternative 1 would be 78 m³/yr (490 bbl/yr) of oil for Regulatory Alternative 2; 1,500 m³/yr (9,400 bbl/yr) of oil for Alternative 3; 100 m³/yr (650 bbl/yr) of oil for Alternative 4; and 1,530 m³/yr (9,600 bbl/yr) of oil for Alternative 5. The percent increase in energy usage for each alternative would be the same as the percent increase using the EPA growth estimate.

Using the growth projections made by the industry, the fifth-year capital and annualized costs for the controls typically being installed by asphalt roofing plants to comply with SIP's would be \$4,500,000 and \$1,500,000, respectively. The fifth-year capital and annualized costs would further increase by \$1,070,000 and \$270,000, respectively, for Regulatory Alternative 2, by \$270,000; respectively, for Regulatory Alternative 2, by \$1,070,000 and \$370,000, respectively, for Regulatory Alternative 4, and by \$1,300,000 and \$450,000, respectively, for Regulatory Alternative 5.

The product price increase and/or the reduction in profit resulting from compliance with the proposed standards would be the same as previously reported for the EPA growth projection.

The growth projections made by the industry would not change the solid waste and noise impacts previously calculated by EPA.

Under either the industry or the EPA growth projections, Alternative 5 would result in the greatest reduction in emissions. The production cost increases and/or the percent reductions in profit associated with achieving the emission standards would be the same. Under either projection, the impacts of Alternative 5 on energy and the environment would be reasonable. For these reasons, the selection of Regulatory Alternative 5 as the basis for the proposed standard is not changed.

Selection of the Format of the Proposed Standards

Standards for asphalt roofing plants could be expressed either as concentration standards, which limit emissions per unit volume of exhaust gases discharged to the atmosphere, or as mass standards, which limit emissions per unit of production. In selecting a format for the proposed standards, the cost of compliance testing and the effect on reducing the mass emissions were considered.

In most cases, concentration standards are preferable to mass standards because the concentration format requires fewer calculations and measurements and is, therefore, less costly. Concentration standards, however, usually require correction factors to prevent dilution of exhaust gases as a means of meeting the standards. Excess air may be introduced into the exhaust flow either by poorly designed hooding or by leakage through doors and duct joints. Also, two of the control devices upon which the proposed standards are based may use additional air for cooling the gases before they enter the control device. The quantity of air used for cooling would vary according to ambient temperature, temperature of the asphalt in the saturator, and the location of the control device. Therefore, development of the correction factor necessary for the concentration standards would be difficult. For this reason, concentration is not a desirable format.

Mass standards expressed as allowable emissions per unit of production require measurement of the production rate as well as of the concentration of emissions in the control equipment exhaust systems. Since asphalt processing and asphalt roofing production figures are readily available and plant personnel would not have to monitor production continuously, this format would not increase the cost of compliance testing above the cost of other formats. Dilution air would have no effect on the emission results. For these reasons, mass per unit of production is selected as the format for expressing the standards of performance for asphalt processing and asphalt roofing plants. The proposed standards are expressed as kilograms of pollutant per megagram (kg/Mg) of product for the saturator and as kilograms of pollutant per megagram (kg/Mg) of asphalt charged for the blowing still.

An opacity format for visible stack emissions for all facilities is proposed to aid enforcement and operating personnel in determining that emission control devices are properly maintained

and operated. A visible emissions format is selected as the basis of the standard for the saturator capture system to ensure that a well-designed and well-operated capture system is used.

Selection of Numerical Emission Limits

Four saturators were tested for particulate emissions. Two of the saturators were controlled by a high velocity air filter (HVAF), one by electrostatic precipitators (ESP), and one by afterburners (A/B).

The saturator at plant A was controlled by two ESP modules operating in parallel. The average of three test runs conducted at or below a filtration temperature of 52° C (126° F) on this unit showed an emission rate of 0.019 kg/Mg (0.038 lb/ton). The fourth test run, shown in the BID, was conducted at a filtration temperature above the 52° C (126° F) temperature specified in Method 26 and, therefore, was not used in determining the average emission rate.

Two afterburners operating in parallel controlled the emissions from the saturator and asphalt storage tanks at plant B. A performance test consisting of three runs was completed on each of the afterburners. One afterburner was operating at 538° C (1000° F) and the other at 649° C (1200° F). The emissions from the afterburner operating at 538° C (1000° F) averaged 0.035 kg/Mg (0.07 lb/ton). The emissions from the afterburner operating at 649° C (1200° F) averaged 0.015 kg/Mg (0.03 lb/ton). The combined emissions from the two afterburners at plant B averaged 0.045 kg/Mg (0.09 lb/ton) during the performance test. If both afterburners had been operated at the higher temperature, 649° C (1200° F), the control efficiencies would have been approximately equal, and the average of the emissions from both afterburners would have been approximately 0.025 kg/Mg (0.05 lb/ton).

At plant C the emissions from the saturator and asphalt storage tanks are controlled by an HVAF. A performance test consisting of three test runs was conducted at this plant; the emissions averaged 0.026 kg/Mg (0.052 lb/ton).

An HVAF controlled the emissions from the saturator at plant D. The emission rate determined by the performance test consisting of three test runs averaged 0.035 kg/Mg (0.07 lb/ton).

The HVAF, ESP, and afterburner (operated at the higher temperature) all control mass emission rates to between 0.015 and 0.035 kg/Mg (0.03 and 0.07 lb/ton). Each of these control devices could meet a standard set at 0.04 kg/Mg (0.08 lb/ton). Therefore, the emission limit for the saturator and asphalt storage tanks

vented to the saturator control devices has been set at 0.04 kg/Mg (0.08 lb/ton), a level which can be achieved by the HVAE, ESP, or afterburner. This emission limit is based on data collected during production of 106.6-kg (235-lb) shingles. The proposed standard for a saturator producing shingles or mineral surfaced roll roofing requires that the performance tests be conducted while the saturator line is producing a 106.6-kg (235-lb) shingle in order to be consistent with the procedure used during the emissions tests.

A second emission limit for saturators in mass per unit of production is necessary because some asphalt roofing plants produce only saturated felt and roll roofing which are lighter than the shingles that were being produced during the emissions testing program. The uncontrolled mass of particulate emissions per unit time is the same from a saturator producing shingles as from a saturator producing saturated felt if the felt feed rate and asphalt temperature are the same. For saturators operating at the same felt feed rates, the weight of asphalt shingle produced is about 10 times greater than the weight of saturated felt produced. The particulate emissions rate for a saturator producing 106.6-kg (235-lb) shingles was divided by the production rate of a roofing line producing a 6.8-kg (15-lb) saturated felt to derive the proposed emission limit of 0.4 kg/Mg (0.8 lb/ton) for saturators producing a 6.8-kg (15-lb) saturated felt and smooth-surfaced roll roofing.

There was only one blowing still considered to be well controlled and suitable for emissions testing. Two performance tests, each consisting of three runs, were conducted at the afterburner controlling emissions from the blowing still at Plant E. The emission rate for the three saturant blows averaged 0.24 kg/Mg (0.48 lb/ton) of asphalt charged to the still. The emission rate for the three coating blows averaged 0.44 kg/Mg (0.88 lb/ton) with a high individual reading of 0.55 kg/Mg (1.1 lb/ton) of asphalt charged to the still. To allow for possible variations since only one blowing still was tested, the Administrator determined that the emission limit for blowing stills would be set above the highest individual reading observed during the two performance tests. Therefore, the emission limit for the blowing still has been set at 0.60 kg/Mg (1.2 lb/ton) of asphalt charged during conventional blowing, a level which can be achieved by an afterburner during either a coating or a saturant blow. The emission limit provides a 35 percent margin above the average of the individual test runs.

Industry representatives commented that three conditions may influence emissions and the achievability of the proposed emission standards for blowing stills and questioned whether the test results at Plant E are representative of the entire industry. (1) These conditions are:

1. The use of ferric chloride as a catalyst in the blowing stills,
2. The use of asphalt flux from different crudes, and
3. The use of No. 2 or No. 6 fuel oil in the afterburner. EPA has considered each of these conditions as discussed in the following paragraphs.

Industry representatives stated that by 1985 the use of a catalyst in the air blowing of asphalt may be widespread. They questioned whether the proposed emission limit, which is based on conventional blowing, would be achievable if catalytic blowing is used. A catalyst is added during air blowing to increase reaction rates and to achieve the desired properties of the coating asphalt. There are no data to quantify the emissions from catalytic blowing of asphalt or from an afterburner controlling the emissions from catalytic blowing. No well-controlled catalytic blowing stills that are suitable for testing are known to exist. However, available information on the operating characteristics of blowing stills and afterburners can be used to assess the achievability of the proposed emission limit when catalytic blowing is used.

In catalytic blowing, a ferric chloride catalyst is added to the still in amounts ranging from 0.2 to 0.5 percent by weight of asphalt charged to the still. (2) For ferric chloride to be emitted from the still, it would have to be contained in the liquid asphalt droplets that may be entrained in the gases leaving the still. Liquid drops in the fume that result from condensation of vaporized hydrocarbon material would not contain any ferric chloride. All blowing stills include knock-out boxes or cyclones to remove some of the liquid drops from the fume before incineration. The liquid captured by the knock-out box generally has a viscosity similar to a fuel oil. This indicates that the majority of particulate emissions result from the condensation of light compounds in the asphalt flux and not from entrained liquid droplets. If large amounts of entrained asphalt flux were present, the material captured would have a higher viscosity. Therefore, if tests were done, EPA expects that very little, if any, ferric chloride would be measured in the emissions from the afterburner. Since test data are not available and since afterburners, the control device on which the standard is based, would not

control ferric chloride, the Administrator has decided to allow an increment in the standard for catalytic blowing.

In the unlikely event that all of the uncontrolled emissions during the emissions test at Plant E resulted from entrainment of liquid asphalt droplets and if these asphalt droplets contained 0.5 percent (the maximum amount used by industry) by weight of ferric chloride, the ferric chloride emissions would be 0.07 kg/Mg (0.14 lb/ton) of asphalt.

It is possible that ferric chloride will be converted to ferric oxide in the afterburner. If this happens, the mass of emissions would not change because the molecular weights of these compounds are equal. If the proposed emission limit for blowing stills were increased by 0.07 kg/Mg (0.14 lb/ton), the allowable emissions from a blowing still of a medium-size plant would increase from 25.4 to 26.8 Mg/yr (28 to 29.5 tons/yr). The amount by which controlled emissions would be reduced below the baseline level would be 97.5 Mg/yr (107.5 tons/yr) instead of 99 Mg/yr (109 tons/yr). These changes in the benefits of the proposed standard would be relatively small. After considering these factors, the Administrator concluded that an increment for catalytic blowing based on worst-case conditions and the emission test data from Plant E would be reasonable. The uncontrolled emissions at another plant could be higher than those at Plant E. However, after considering the small probability of finding ferric chloride in the emissions at a plant using catalytic blowing, the Administrator concluded that basing the increment on the emissions at Plant E is sufficient to ensure the achievability of the proposed emission limit. Therefore, the proposed emission limit for catalytic blowing is 0.67 kg/Mg (1.34 lb/ton) of asphalt charged to the still.

Industry representatives also expressed concern that catalytic blowing would change the characteristics of the particulate emissions and, therefore, affect the achievability of the proposed emission limit. (1, 2) EPA has considered the impacts of these possible changes in the emission characteristics on the achievability of the proposed emission standard as discussed in the following paragraphs.

Information gathered from the industry indicates that during catalytic blowing, the total mass of volatile organic emissions per unit of asphalt production and the flow rate of the blowing air will be the same as during blowing without a catalyst. (4) The blowing time may be reduced by as much as two-thirds. (4) Therefore, in the worst case, the mass per unit time and

the concentration of combustible particulate in the fume may be approximately three times higher than those measured when no catalyst is used. Even though the particulate emissions per unit time could triple, the total mass of particulate emissions per unit of production would remain the same. Therefore, the afterburner efficiency required to meet the proposed emission limit, which is in mass of emissions per unit of production, would be the same as that required if no catalyst were used. A well-designed afterburner could easily achieve the proposed emission limit under the worst-case conditions for catalytic blowing.

The fuel and the capital costs for the afterburner controlling catalytic blowing would differ from the costs reported for the model plants. The fuel costs reported for the model plant include enough fuel to raise the temperature of the fume to 760°C (1400°F) without taking any credit for the heating value of the particulate in the fume. For the plant tested, the fume provided approximately one-third of the total energy consumed. This method of estimating fuel costs was used to assure that the model plant fuel costs would represent worst-case conditions where the concentration of particulate in the fume is very small. Since the concentration of particulate in the fume from catalytic blowing could be as much as three times higher than the concentration in a fume from conventional blowing, the heating value of the catalytic blowing fume alone should be sufficient to maintain the afterburner at 760°C (1400°F). Therefore, if the combustible particulate in the fume triples, the fuel cost for the afterburner on a catalytic blowing still would be considerably less than the fuel cost for the afterburner at the model plant.

The capacity of an afterburner controlling catalytic blowing will have to be larger than the capacity of an afterburner controlling non-catalytic blowing. In the worst case, catalytic blowing reduces the blowing time by two-thirds and triples the rate of emissions. In this case, and assuming an uncontrolled emission rate equal to that at Plant E, the required afterburner capacity might be triple the capacity of the afterburner required for the losses from the still at Plant E or double the capacity of the model plant afterburner. (The model plant afterburner was 1.5 times the size needed for conditions at Plant E.) Doubling the afterburner capacity would be necessary to handle the mass of material just to meet the baseline condition (Regulatory

Alternative 1) which is based on typical SIP's. The SIP's limit the mass rate of emissions to a specified level, e.g., 46 lbs/h for a medium-size plant. Doubling the capacity of the model plant afterburner at a medium-size plant would increase the capital cost of the afterburner from \$121,000 to \$172,000.(3) The capital charges resulting from the increased investment would increase baseline production costs from \$13.480 to \$13.484 per square of roofing shingle. The production cost for achieving the proposed emission limit (Regulatory Alternative 5) would increase from \$13.500 to \$13.504 per square of roofing shingle. These costs are reasonable and would not alter the selection of Regulatory Alternative 5 as the basis for the proposed standards. The incremental costs in achieving the proposed emission limit over baseline emission levels would not be increased.

Since the proposed emission limit has been adjusted to allow for emissions of an inorganic catalyst and since the adjusted limit can be achieved at a reasonable cost, the Administrator has determined that no additional adjustment in the proposed emission limit is needed for catalytic blowing.

Industry representatives stated that blowing asphalt fluxes from different crude oils may result in different emission rates. They questioned the achievability of the proposed emission limit when asphalt fluxes different from those used in the emissions testing program are blown. EPA has considered the impact of blowing asphalt fluxes from various crude oils on the achievability of the proposed emission limit as discussed in the following paragraphs.

Data from industry show that losses of material (measured at the outlet of the still) from blowing asphalt fluxes from different crude oils range from 1.0 to 3.9 percent of the asphalt charged to the still.(4) The flux used during the emissions test at Plant E was labeled a 2.0 percent volatility crude. The uncontrolled emissions during the test were measured at the outlet of the cyclone and equaled 1.3 percent of the asphalt charged to the still. In the worst case, without a cyclone, when uncontrolled emissions are 3.9 percent of the asphalt charged, an afterburner capable of destroying 98.5 percent of the particulate emissions would be required to achieve the proposed emission limit. The worst case (losses of 3.9-percent of asphalt flux) is not likely to occur. For a medium-size plant, a 3.9 percent loss of asphalt from the still would cost about \$480,000 per year at current asphalt prices. Therefore, there is a strong

incentive to use low-cost cyclones or knock-out boxes to recover the material that is lost from the still. Even if these devices were only 25 percent efficient, the afterburner efficiency required to achieve the emission limit would be reduced to 98 percent. Studies on afterburners show that a well-designed afterburner can achieve efficiencies in excess of 98.5 percent.(5) In fact, efficiencies approaching 100 percent can be achieved.(5) If the emission rates are tripled, the concentration of combustible particulates in the fume will also triple, making it easier to achieve higher afterburner efficiencies than those achieved during the test at Plant E.

The cost of achieving the proposed emission limit might increase above the costs reported for the model plants if the uncontrolled emissions are greater than those tested at Plant E. In the worst case (assuming no cyclone) the uncontrolled emissions would be triple those tested at Plant E. The fuel costs reported for the model plant would not increase because the model plant costs include enough fuel to maintain the afterburner at 760°C (1,400°F) without assuming any credit for the heating value of the fume. Any increase in the temperature required for a higher efficiency could come from the heating value of the fume, which would be sufficient to raise the combustion temperature from 760° to 930°C (1,400° to 1,700°F) without increasing the fuel consumption. Studies show that such an increase in temperature alone may be sufficient to achieve a 98.5 percent efficiency in a well-designated afterburner.(5)

The capital costs would increase above the costs reported for the model plant because a larger afterburner would be required to achieve a higher capacity and because a longer residence time may be needed to achieve the required efficiency. For the new capacity, the afterburner size may be triple the size needed for the test condition at Plant E or double the size of the model plant afterburner. (The model plant afterburner is 1.5 times the size needed for Plant E.) The afterburner cost for a medium-size model plant would increase from \$121,000 to \$172,000 if the size of the afterburner is doubled.

The higher afterburner capacity would be necessary to meet the baseline condition (typical SIP's) because the SIP's limit the mass rate of emissions. The increase in capital charges for the larger afterburner would increase the production costs associated with achieving the baseline emission levels (Regulatory Alternative 1) from \$13.480 to \$13.484 per square of roofing shingle. The production costs associated with

achieving the proposed emissions standard would increase the \$13,500 to \$13,504 per square of roofing shingle. A further increase in capital cost may result if it is necessary to increase the afterburner efficiency. For example, if emissions per unit of asphalt charged are tripled, the afterburner efficiency would need to increase to meet either the SIP level of control or the proposed standard. Since the SIP emission limits are lower than the proposed standard, the increased efficiency required to meet the SIP level of control might be achievable without increasing the size of the afterburner (e.g., by temperature adjustment). However, the increased efficiency needed to meet the proposed standard might require increasing the residence time in the afterburner. Therefore, to assure a worst-case cost analysis, the capital cost for a larger afterburner to achieve the increased residence time is charged to the incremental cost of achieving the proposed emission limit over the baseline. The model plant afterburner is designed for a residence time of 0.5 second. Control efficiencies generally increase with residence time up to 1.0 second.⁽⁷⁾ In the worst case, the fume residence time in the model plant afterburner might need to be doubled to provide a 98.5 percent control efficiency. This would raise the capital cost from \$172,000 to \$244,000.⁽⁸⁾ The increase in capital charges, resulting from the higher investment cost for compliance with the proposed emission limit, would increase production costs in a medium-size plant from \$13,504 to \$13,510 per square of roofing shingle. These costs for compliance could result in a product price increase of 0.19 percent or, if all costs are absorbed, a reduction in profit of 0.6 percent. These economic impacts would not reduce growth in the industry and are judged by the Administrator to be reasonable.

Catalytic blowing of a high-loss flux, the "extreme" worst-case situation could require an afterburner with 6 times the capacity of the medium-size model plant or 3 times the capacity of an afterburner for a high-loss flux. It is not likely that new plants will be designed that would allow the high losses because of the value of the material that could be recovered. Even if this "extreme" worst case existed, the afterburner fuel cost would decrease and the afterburner capital costs would increase. The increase in capital costs for an afterburner controlling emissions from a medium-size model plant would be \$176,000. Because the need for this increase is uncertain and because it was analyzed only for an "extreme" worst-

case condition, the increase in cost has been charged to the cost of achieving the standard. This increase in capital charges for the larger afterburner would increase the production costs associated with achieving the proposed standard (Regulatory Alternative 5) from \$13.50 to \$13.513 per square of roofing shingle. These costs for compliance could result in a product price increase of 0.24 percent, or, if all costs are absorbed, a reduction in profit of 0.8 percent. These economic impacts would not reduce growth in the industry and are judged by the Administrator to be reasonable.

Because well-designed control equipment could achieve the proposed emission limit without adverse economic impacts, the Administrator has determined that the proposed emission limit would apply to blowing stills processing asphalt fluxes from any crude oil.

Industry representatives have stated that the use of No. 6 and No. 2 fuel oil in an afterburner will affect controlled emissions because of the ash content of fuel oil and have questioned the achievability of the proposed standard when fuel oil is used. The afterburner controlling the emissions from the blowing still during the tests at Plant E was fired with natural gas.

The American Petroleum Institute (API) specifications for No. 6 fuel oil show that the ash content ranges from 0.01 to 0.05 percent.⁽⁹⁾ The fuel consumption rate of the model plant afterburner (a conservative estimate because the heating value of fume was not considered in the calculation) was used to calculate the increased particulate resulting from the ash content of No. 6 fuel oil. The increased particulate would range from 0.0007 to 0.036 kg/Mg (0.0014 to 0.072 lb/ton) of asphalt charged to the still.⁽³⁾ The worst-case conditions occur when No. 6 fuel oil with a 0.5 percent ash content is fired in the afterburner at the model plant fuel consumption rate. The Administrator has decided to add an increment to the proposed blowing still emission limits to allow for the worst-case conditions. Therefore, the proposed blowing still emission limits when No. 6 fuel oil is used are 0.64 kg/Mg (1.28 lb/ton) for conventional blowing and 0.71 kg/Mg (1.42 lb/ton) for catalytic blowing.

The API specifications show that No. 2 fuel oil has an ash content of <0.01 percent.⁽⁸⁾ Based on the fuel consumption rate of the model plant afterburner, the contribution of ash from No. 2 fuel oil will be <0.0006 kg/Mg (<0.0012 lb/ton) of asphalt charged to the still.⁽³⁾ This increase in particulate is negligible; therefore, no increment is

added to the proposed blowing still emission limits when No. 2 fuel oil is fired in the afterburner.

Selection of Visible Emission Limits

An opacity standard is proposed for all the affected facilities to help ensure proper operation and maintenance of control systems on a day-to-day basis. EPA Reference Method 9 was used to take opacity readings for saturators and blowing stills at plants A, B, C, D, and E during particulate emission tests. Opacity readings for storage tanks were taken only at plant F. The 6-minute average opacity readings of the emissions from the saturators ranged from 0 to 16 percent. All the opacity readings for the emissions from the blowing still were 0 percent. All of the 6-minute average opacity readings for the emissions from the asphalt storage tanks were 0 percent.

In a study of the non-metallic minerals industry, EPA Reference Method 9 was used to take opacity readings at the outlet of fabric filters controlling emissions from handling and storage of materials (sand, talc, mineral stabilizer, and granules) similar to those used in the asphalt roofing industry. The opacity emission data from the "Draft Background Information Document for Non-Metallic Mineral Processing Plants" were used to establish the proposed opacity emission limit for mineral handling and storage facilities in the asphalt roofing industry. Ninety-two percent of the 6-minute averages showed zero percent opacity. The remaining 6-minute averages were greater than zero but less than or equal to 1 percent opacity.

The proposed opacity standards are set at or above the upper limit of the opacity data collected during the emissions testing program. The proposed standards are 0 percent opacity for blowing stills, 20 percent opacity for saturators, 0 percent opacity for asphalt storage tanks, and 1 percent opacity for minerals handling and storage.

A fugitive emission standard is proposed to ensure good capture of fugitive emissions from the saturator. During the emission testing program, several canopy hoods and one total enclosure hood were observed. Only the total enclosure hood achieved good capture of fugitive emissions. Total enclosure hoods can be used for new, modified, or reconstructed facilities. Therefore, total enclosure hoods were selected to represent the best technological system for continuous capture of fugitive emissions from saturators.

Only the total enclosure hood at plant B was available for testing at the time the emissions testing program was conducted. Observations of visible emissions at this plant form the basis of the proposed emission standard. During the emission testing program at plant B, the consecutive periods of observations taken while the saturator was operating under representative conditions (when the line speed was ≥ 80 percent of usual daily line speed) totaled 5.5 hours. Fugitive emissions were visible for not more than 16.7 percent of the time during any period of consecutive observations totaling 60 minutes, 12 percent of the time during any period of consecutive observations totaling 120 minutes, and 8 percent of the time during the full 5.5 hours of observations.

A period of consecutive observations, taken during representative operating conditions, totaling 60 minutes was chosen as a sufficient period of time to assess the performance of the capture system. During the test the highest average reading for such a 60-minute period was 16.7 percent. The proposed emission limit allows visible emissions from saturators for 20 percent of any period of consecutive observations, during representative operating condition, totaling 60 minutes.

Modification/Reconstruction Considerations

The proposed standards of performance would apply to saturators, blowing stills, asphalt storage tanks, and mineral handling and storage facilities. Any physical or operational change that increases the emissions to the atmosphere in kilograms per hour from any one of these facilities could be considered a modification according to Section 60.14 of Title 40 of the Code of Federal Regulations (CFR) and if so would subject that facility to the standards of performance. There are several physical and operational changes that may increase emissions to the atmosphere but are exempt from the modification provision. One such exemption is for a production rate increase that is accomplished without a capital expenditure. Asphalt roofing production lines are designed to operate at maximum line speeds (e.g., 600 feet per minute). Initial startup and operation of the production line is at a lower speed than the design capacity. Typically, the line speed is gradually increased, sometimes over a period of years, to approach the designed line speed. Because the line was originally designed for a maximum attainable line speed, there is no capital expenditure, as defined in Section 60.14 Title 40 CFR, associated with any increases in line

speed up to the designed capacity. These production rate increases are not considered to be modifications.

Other physical and operational changes which are exempted from the modification provision are maintenance, repair, and replacement determined to be routine; an increase in the hours of operation; and the addition or use of an air pollution control device that is environmentally beneficial. The use of alternative fuel or raw material, such as a different asphalt flux, is not a modification if the facility was designed to accommodate that alternative use. Physical and operational changes which do not increase the emission rate to the atmosphere would not be considered as modifications and therefore would not be covered by the standards.

"Reconstruction" means the replacement of components of an existing facility to such an extent that 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 that it is technologically and economically feasible to meet the applicable standard set forth in Part 60. Reconstruction as defined in § 60.15(b) of title 40 CFR Part 60 would apply to each affected facility individually. For example, if a saturator is changed to the extent that it is considered reconstructed and is, therefore, required to conform to the proposed standards, this would not cause the other facilities of an asphalt roofing plant to be subject to the provisions of the proposed standards.

It is technologically feasible and economically reasonable to install the same particulate control devices on modified or reconstructed facilities as would be installed on newly constructed facilities. Therefore, no special exemptions for modified and reconstructed facilities are included in the proposed standards of performance.

Selection of Performance Test Methods

Reference Method 5, "Determination of Particulate Emissions from Stationary Sources," was examined to determine its applicability to the asphalt processing and asphalt roofing industry. It was decided that this method was not suitable for determining particulate emissions from asphalt processing and asphalt roofing plants. Therefore, a program was initiated to develop a test method for particulate emissions from sources in these plants. The test method developed was Reference Method 26, "Determination of Particulate Emissions from the Asphalt Processing and Asphalt Roofing Industry." Emission

measurements were conducted at seven asphalt roofing plants using this method.

In summary, problems associated with the use of Method 5 for asphalt processing and asphalt roofing plants were: (1) The filtration temperature was too high; (2) there was no precollector filter to reduce oil droplet loading; (3) the cleanup reagent did not effectively dissolve baked-on oil and asphalt; (4) sample loss occurred during analytical procedures; and (5) there was inadequate recovery of samples from condensed water collected in the cyclone collection flask. The following paragraphs explain how Method 26 alleviates the problems associated with Method 5.

At the collection temperature specified in Method 5, 121°C (250°F), a portion of the liquid particulate from asphalt processing and asphalt roofing plants vaporizes and passes through the particulate sampling device as a gas. The change of filtration temperature to 52°C (126°F) in Method 26 reduces this problem and provides a consistent basis for evaluating different control systems and the emissions from different plants. The data used in setting the emission limits proposed for saturators were collected at or below the 52°C (126°F) filtration temperature.

In Method 26 a precollector filter is used to reduce the oil droplet loading on the primary filter, which prevents oil from seeping through the glass fiber filter mat during periods of high droplet concentrations.

The cleanup reagent specified in Method 26 is 1,1,1-trichloroethane (TCE). The acetone used in Method 5 does not remove all baked-on oil and tar from the sampling apparatus. TCE is effective in dissolving the baked-on oil and asphalt.

The analytical procedure developed for Method 26 minimizes sample loss through evaporation. Experimental results showed that the weight loss from the evaporation process was minimal.

Collection and analytical procedures for condensed water were developed for Method 26. When Method 5 was used, condensation occurred in the filtration section of the sample train when the moisture content of the stack gases was above 10 percent. These conditions occurred during blowing still tests but not during saturator tests.

Method 26 is an effective test procedure for sampling emissions from asphalt processing and asphalt roofing plants and is being proposed with the proposed standards as the performance test method for particulate emissions from asphalt processing and asphalt roofing plants.

Reference Method 26, "Determination of Particulate Emissions from the

Asphalt Processing and Asphalt Roofing Industry," specifies: (1) Measurement system design criteria; (2) measurement system performance specifications and performance test procedures; and (3) procedures for emission sampling. Two hours per run is proposed as the sampling time for emission testing because this is sufficient time to collect a representative sample from asphalt processing and asphalt roofing plants. Each performance test would consist of three runs. Method 26 is sufficiently similar to Method 5 that test personnel experienced with Method 5 should have no difficulty obtaining reliable data.

Reference Method 22, "Visual Determination of Fugitive Emissions From Material Processing Sources," is being proposed as a performance test method to determine compliance with standards of performance limiting fugitive emissions from asphalt saturator capture systems. Reference Method 22 was developed because fugitive emissions from saturator capture systems may occur within asphalt roofing plant buildings where lighting and background conditions needed for opacity readings are not attainable.

Reference Method 9, "Visual Determination of the Opacity of Emissions from Stationary Sources," is selected as a test method to determine compliance with standards of performance limiting particulate emissions from asphalt processing and asphalt roofing plants. Reference Method 9 is used to read opacity of emissions from exhaust stacks of control devices which are outside the plant. Opacity readings can be used to indicate whether a control device is being properly operated and maintained.

Selection of Monitoring Requirements

Monitoring requirements can provide a convenient means for enforcement personnel to ensure that emission control systems are properly operated and maintained. For blowing stills and saturators, the most straightforward means of ensuring proper operation and maintenance of the control device would be to monitor particulate emissions. However, no continuous particulate monitors are available for this industry. Resolution of the sampling problems and development of performance standards for continuous particulate monitors would entail a major development program. For these reasons, continuous monitoring of particulate emissions from the asphalt processing and asphalt roofing industry is not required by the proposed standards.

Opacity can be used as an indication of poor operation of the control device.

If the opacity from the control device exceeds the proposed limit, it is an indication that a control device is not operating properly and may not be meeting the particulate emission limit. However, the absence of opacity does not always indicate that the emission limit is being met.

The only instrument for continuous measurement of opacity is the transmissometer which is not ideally suited to the measurement of opacity in the effluent gas streams at asphalt processing and asphalt roofing plants. The particulate emissions from these plants are liquid hydrocarbon mixtures that are converted to gases by the temperatures that are present in the effluent gas streams. The gaseous emissions would not be detected by the transmissometer, but will recondense and be visible in the atmosphere. For these reasons, continuous monitoring of opacity is not required.

The proposed standards would require continuous recording of the operating temperature which is critical to the effectiveness of the control devices upon which the proposed standards are based. This requirement would apply to the temperature in the combustion zone of an afterburner and to the inlet temperature for a high velocity air filter (HVAF) or an electrostatic precipitator (ESP). If the average temperature over any 6-hour period of operation was below that measured during the performance test for afterburners or above that measured for HVAF's or ESP's, by definition excess emissions would have occurred. The plant owner or operator would have to report the occurrence of excess emissions in a quarterly report. A 6-hour averaging time for temperature was selected because this corresponds to the period of time required for a performance test. Other parameters to be monitored may be specified by the Administrator if the temperature of a control device used to meet the standards is not critical to the performance of the device.

Comments were received from the industry contending that if a performance test on a saturator control device (HVAF or ESP) were run during cold weather, the operating temperature measured may be lower than if the performance test were run in warm weather. The temperature value that is measured during a performance test in which the numerical emission limit is met would be the temperature value used to determine excess emissions that must be reported. If the performance test were run in cold weather, the extra cooling by the ambient air might cause

the established temperature to be lower than is actually necessary to meet the proposed emission limit. Further, this temperature value might be impossible to maintain in warm weather. Therefore, a temperature value established in a cold weather performance test may actually be lower than the temperature at which the inlet gases should be maintained to meet the emission limit. The temperature attainable during warm weather may indicate excess emissions when in fact the emission levels are not in excess of the numerical emission limit. For this reason, the proposed standards allow plant owners and operators the option of repeating the performance test to establish a new value for the temperature which indicates the occurrence of excess emissions.

Records of temperature measurements would have to be retained for at least 2 years following the date of the measurements by owners and operators subject to this subpart. This requirement is included under § 60.7(d) of the General Provisions of 40 CFR part 60.

Impacts of Reporting Requirements

The proposed standards would require asphalt processing and asphalt roofing plants to submit reports to the Administrator so that he can ensure compliance with the regulation. The proposed standards would require four types of reports. First, there are notification reports required under the General Provisions that would enable the Agency to keep abreast of facilities subject to the standards of performance. Second, there are reports of performance test results. Third, there are performance evaluations of the temperature monitoring and recording system. Fourth, there are quarterly reports of excess emissions which would permit the Agency to determine whether the emission control system installed to comply with the standards is being properly operated and maintained.

Section 60.7(b) of Part 60 Subpart A of the Code of Federal Regulations (CFR) requires an owner or operator of a plant to maintain records of all startups, shutdowns, or malfunctions of an affected facility. Section 60.7(c) requires submittal of quarterly reports of excess emissions and identification of any periods of excess emissions from any affected facility when startups, shutdowns, and malfunctions occurred. A primary purpose of maintaining records of startups, shutdowns, and malfunctions at a plant is for later use in the quarterly reports identifying the occurrence and duration of excess emissions.

Clarification of what constitutes startup, shutdown, and malfunction as opposed to normal operation in asphalt roofing and asphalt processing plants is necessary to avoid unnecessary and burdensome recordkeeping.

Air blowing of asphalt is usually a batch operation. Saturant and coating asphalts are produced by blowing air through hot asphalt flux in a blowing still. A minimum of four batches will be blown each operating day at a typical asphalt roofing plant. The beginning and ending of a batch is considered to be normal operation and excess emissions are not expected to occur during these times. Therefore, it is not necessary to record the beginning and ending of each batch as startup and shutdown.

The production of saturated felt, roll roofing and shingles is a continuous process. Saturated felt is produced by applying hot saturant asphalt to a felt made of paper. Coating asphalt is then applied to the saturated felt to produce roll roofing. Roll roofing is further processed by adding talc to one side of the felt and mineral aggregate to the other side to produce asphalt shingles. The typical asphalt roofing production line operates 16 hours per day, 5 to 6 days per week, and 50 weeks per year. Breaks in the felt may cause temporary halts in production several times during each operating day. However, the emission control equipment would operate continuously with no increase of emissions to the atmosphere. Since temporary halts in the production line to repair breaks in the felt are considered to be normal operation and would not by themselves result in excess emissions, they do not need to be recorded as startup, shutdown, or malfunction.

The resources needed by the industry to maintain records, to collect data, and to prepare the reports through the first 5 years would be about 3,200 man-hours. These figures are based on the assumption that the proposed standards would cover three new, modified, or reconstructed asphalt roofing manufacturing plants, with blowing stills, through the first 5 years.

Using the growth projections made by industry representatives, the resources needed by the industry to maintain records, to collect data, and to prepare the reports through the first 5 years would be about 30,000 man-hours.

Public Hearing

A public hearing will be held to discuss the proposed standards in accordance with Section 307(d)(5) of the Clean Air Act. Persons wishing to make oral presentations should contact EPA at the address given in the Addresses

section of this preamble. Oral presentations will be limited to 15 minutes each. Any member of the public may file a written statement before, during, or within 30 days after the hearing. Written statements should be addressed to the Central Docket Section address given in the Addresses section of this preamble.

A verbatim transcript of the hearing and written statements will be available for public inspection and copying during normal working hours at EPA's Central Docket Section in Washington, D.C. (see Addresses section of this preamble).

Docket

The docket is an organized and complete file of all the information submitted to or otherwise considered in the development of this proposed rulemaking. The principal purposes of the docket are (1) to allow interested parties to readily identify and locate documents so that they can intelligently and effectively participate in the rulemaking process, and (2) to serve as the record in case of judicial review.

Miscellaneous

As prescribed by Section 111, establishment of standards of performance for affected facilities in asphalt roofing plants, asphalt blowing stills and asphalt storage tanks in oil refineries and asphalt processing plants was preceded by the Administrator's determination (40 CFR 60.16, 44 FR 49222, dated August 21, 1979) that these sources contribute significantly to air pollution which may reasonably be anticipated to endanger public health or welfare. In accordance with Section 117 of the Act, publication of this proposal was preceded by consultation with appropriate advisory committees, independent experts, and Federal departments and agencies. The Administrator will welcome comments on all aspects of the proposed regulation, including economic and technological issues, and on the proposed test methods.

Comments are specifically invited on the effects of different crude oils and the catalytic blowing of asphalt on particulate emissions. Any comments submitted to the Administrator on the effects of different crude oils and catalytic blowing of asphalt on particulate emissions should contain emission test data pertinent to an evaluation of the magnitude and severity of its impact and suggested alternative courses of action that would avoid this impact.

It should be noted that standards of performance for new sources

established under Section 111 of the Clean Air Act reflect:

* * * application of the best technological system of continuous emission reduction which (taking into consideration the cost of achieving such emission reduction, and nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated (Section 111(a)(1)).

Although there may be emission control technology available that can reduce emissions below those levels required to comply with standards of performance, this technology might not be selected as the basis of standards of performance due to costs associated with its use. Accordingly, standards of performance should not be viewed as the ultimate in achievable emission control. In fact, the Act requires (or has the potential for requiring) the imposition of a more stringent emission standard in several situations.

For example, applicable costs do not necessarily play as prominent a role in determining the "lowest achievable emission rate" for new or modified sources located in nonattainment areas, i.e., those areas where statutorily-mandated health and welfare standards are being violated. In this respect, Section 173 of the Act requires that new or modified sources constructed in an area which exceeds the National Ambient Air Quality Standard (NAAQS) must reduce emissions to the level which reflects the "lowest achievable emission rate" (LAER), as defined in Section 171(3). The statute defines LAER as that rate of emissions based on the following, whichever is more stringent:

1. The most stringent emission limitation which is contained in the implementation plan of any State for such class or category of source, unless the owner or operator of the proposed source demonstrates that such limitations are not achievable, or

2. The most stringent emission limitation which is achieved in practice by such class or category of source.

In no event can the emission rate exceed any applicable new source performance standard (Section 171(3)).

A similar situation may arise under the prevention of significant deterioration of air quality provisions of the Act (Part C). These provisions require that certain sources (referred to in Section 169(1)) employ "best available control technology" (BACT) as defined in Section 169(3) for all pollutants regulated under the Act. Best available control technology must be determined on a case-by-case basis, taking energy, environmental, and economic impacts and other costs into account. In no event may the application of BACT result in emissions of any

pollutants which will exceed the emissions allowed by any applicable standard established pursuant to Section 111 (or 112) of the Act.

In all events, State Implementation Plans (SIP's) approved or promulgated under Section 110 of the Act must provide for the attainment and maintenance of NAAQS designed to protect public health and welfare. For this purpose, SIP's must in some cases require greater emission reduction than those required by standards of performance for new sources.

States are free under Section 116 of the Act to establish even more stringent emission limits than those established under Section 111 or those necessary to attain or maintain the NAAQS under Section 110. Accordingly new sources may in some cases be subject to limitations more stringent than standards of performance under Section 111. Prospective owners and operators of new sources should be aware of this possibility in planning for such facilities.

This regulation will be reviewed four years from the date of promulgation as required by the Clean Air Act. This review will include an assessment of such factors as the need for integration with other programs, the existence of alternative methods, enforceability, improvements in emission control technology, and reporting requirements. The reporting requirements in this regulation will be reviewed as required under EPA's sunset policy for reporting requirements in regulations.

Section 317 of the Clean Air Act requires the Administrator to prepare an economic impact assessment for any new source standard of performance under Section 111(b) of the Act. An economic impact assessment was prepared for the proposed regulations and for other regulatory alternatives. All aspects of the assessment were considered in the formulation of the proposed standards to insure that the proposed standards would represent the best system of emission reduction considering costs. The economic impact assessment is included in the background information document.

Dated: November 10, 1980.

Douglas M. Costle,
Administrator.

References

1. R. C. Cooper, MRI, to D. Byrne, EPA/SDB, July 31, 1980. Minutes of meeting with ARMA representatives. A-79-39. II-E-017.
2. E. P. Shea, MRI, to J. W. Ricketts, V. P. Tamko Products, Inc. July 28, 1980. Telecon to discuss the growth projections made by industry. A-79-39. II-E-013.
3. E. P. Shea, MRI, to A-79-39 docket. August 20, 1980. Memo discussing the

contribution of catalysts and the use of different asphalt fluxes in blowing stills to the economic and environmental impacts. A-79-39. II-E-048.

4. E. P. Shea, MRI, to K. Rosinski, Owens-Corning Fiberglass, Corp. August 6, 1980. Telecon to discuss the use of different asphalt fluxes and catalysts in the blowing still. A-79-39. II-E-014.

5. Afterburner System Study. U.S. Environmental Protection Agency, Research Triangle Park, N.C. EPA-R2-72-062. p. 16, 17, 18, 18a and 19. A-79-39. II-1-025. August 1972.

6. R. C. Cooper, MRI, to D. Pym, HIRT Combustion. August 4, 1980. Telecon to discuss the design of afterburners as applied to blowing stills. A-79-39. II-E-015.

7. J. A. Danielson (Ed.). Air Pollution Engineering Manual. Prepared by the U.S. Environmental Protection Agency. Publication No. AP-40. p. 176. May 1973.

8. R. H. Perry and C. H. Chilton. Chemical Engineers' Handbook. 5th Ed. New York, McGraw-Hill, 1969. p. 9-10.

It is proposed that 40 CFR Part 60 be amended as follows:

1. By adding Subpart UU as follows:

Subpart UU—Standards of Performance for Asphalt Processing and Asphalt Roofing Manufacture

Sec.

60.470 Applicability and designation of affected facilities.

60.471 Definitions.

60.472 Standards for particulate matter.

60.473 Monitoring of operations.

60.474 Test methods and procedures.

Authority: Sec. 111, 301(a), Clean Air Act, as amended, (42 U.S.C. 7411, 7601(a)), and additional authority as noted below.

Subpart UU—Standards of Performance for Asphalt Processing and Asphalt Roofing Manufacture

§ 60.470 Applicability and designation of affected facilities.

(a) The provisions of this subpart are applicable to the following affected facilities: Saturators; mineral handling and storage facilities; asphalt storage tanks; and blowing stills used for asphalt processing and asphalt roofing manufacture.

(b) The provisions of this subpart apply to any affected facility identified in paragraph (a) of this section, the construction or modification of which is begun after _____ (date of publication in the Federal Register).

§ 60.471 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and in Subpart A of this part.

"Afterburner (A/B)" means an exhaust gas incinerator used to control emissions of particulate matter.

"Asphalt processing" means the storage and blowing of asphalt at

asphalt roofing plants, oil refineries, and asphalt processing plants for use in the manufacture of asphalt roofing products.

"Asphalt roofing manufacture" means production of asphalt roofing (shingles, roll roofing, siding, or saturated felt).

"Asphalt storage tank" means any tank used to store hot asphalt for asphalt roofing manufacture or asphalt processing. Storage tanks may be located at asphalt roofing plants, oil refineries, and asphalt processing plants.

"Blowing still" means the equipment in which air is blown through hot asphalt flux to produce different grades of asphalt for the manufacture of asphalt roofing.

"Catalyst" means a substance which, when added to asphalt flux in a blowing still, alters the penetrating-softening point relationship and increases the rate of oxidation of the flux.

"Coating blow" means the process in which air is blown through hot asphalt flux to produce coating asphalt. The coating blow starts when the air is turned on and stops when the air is turned off.

"Electrostatic precipitator (ESP)" means an air pollution control device in which solid or liquid particulates in a gas stream are charged as they pass through an electric field and precipitated on a collection surface.

"High velocity air filter (HVAF)" means an air pollution control filtration device for the removal of sticky, oily, or liquid aerosol particulate matter from exhaust gas streams.

"Mineral handling and storage facility" means the areas in asphalt roofing plants in which minerals are unloaded from a carrier, the conveyor transfer points between the carrier and the storage silos, and the storage silos.

"Saturant blow" means the process in which air is blown through hot asphalt flux to produce saturant asphalt. The saturant blow starts when the air is turned on and stops when the air is turned off.

"Saturator" means the equipment in which asphalt is applied to felt to make asphalt roofing products. The term saturator includes the saturator, wet looper and coater.

§ 60.472 Standards for particulate matter.

(a) On or 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 saturator:

(1) Particulate matter in excess of:

(A) 0.04 kilograms of particulate per megagram of asphalt shingle or mineral-surfaced roll roofing produced, or

(B) 0.4 kilograms per megagram of saturated felt or smooth-surfaced roll roofing produced;

(2) Exhaust gases with opacity greater than 20 percent; and

(3) Any visible emissions from a saturator capture system for more than 20 percent of any period of consecutive valid observations totaling 60 minutes.

(b) On or 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 blowing still:

(1) Particulate matter in excess of 0.67 kilograms of particulate per megagram of asphalt charged to the still when a catalyst is added to the still; and

(2) Particulate matter in excess of 0.71 kilograms of particulate per megagram of asphalt charged to the still when a catalyst is added to the still and when No. 6 fuel oil is fired in the afterburner; and

(3) Particulate matter in excess of 0.60 kilograms of particulate per megagram of asphalt charged to the still during blowing without a catalyst; and

(4) Particulate matter in excess of 0.64 kilograms of particulate per megagram of asphalt charged to the still during blowing without a catalyst and when No. 6 fuel oil is fired in the afterburner; and

(5) Exhaust gases with an opacity greater than 0 percent.

(c) On or 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 asphalt storage tank exhaust gases with opacity greater than 0 percent. If, however, the emissions from any asphalt storage tank(s) are ducted to a control device for a saturator, the combined emissions shall meet the emission limit contained in paragraph (a) of this section during the time the saturator control device is operating. At any other time the asphalt storage tank(s) must meet the 0 percent opacity limit.

(d) On or 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 mineral handling and storage facility emissions with opacity greater than 1 percent.

§ 60.473 Monitoring of operations.

(a) The owner or operator subject to the provisions of this subpart, and using either an electrostatic precipitator or a high velocity air filter to meet the emission limit in § 60.472(a)(1) and/or (b)(1) shall continuously monitor and record the temperature of the gas at the inlet of the control device. The temperature monitoring instrument shall have an accuracy of $\pm 5^{\circ}\text{C}$ over its range.

(b) The owner or operator subject to the provisions of this subpart and using an afterburner to meet the emission limit in § 60.472(a)(1) and/or (b)(1) shall continuously monitor and record the temperature in the combustion zone of the afterburner. The monitoring instrument shall have an accuracy of $\pm 10^{\circ}\text{C}$ over its range.

(c) An owner or operator subject to the provisions of this subpart and using a control device not mentioned in paragraphs (a) and (b) of this section shall provide to the Administrator information describing the operation of the control device and the process parameter(s) which would indicate proper operation and maintenance of the device. The Administrator may require continuous monitoring and will determine the process parameters to be monitored.

(d) For the purpose of reports required under § 60.7(c), periods of excess emissions that shall be reported are defined as any 6-hour period during which the average temperature measured in accordance with paragraph

(a) of this section is above the temperature measured in accordance with § 60.474 (h) or (i) at a time when the emission limits in § 61.472 (a) or (b) were met, or the average temperature measured in accordance with paragraph (b) of this section falls below the temperature measured in accordance with § 60.474 (h) or (i) at a time when the emission limits in § 61.472 (a) or (b) were met. Each excess emission report shall include the value identified for the temperature specified under § 60.474 (h) or (i) and the monitored temperature value.

(Sec. 114, Clean Air Act as amended (42 U.S.C. 7414))

§ 60.474 Test methods and procedures.

(a) Reference methods in Appendix A of this part, except as provided in § 60.8(b), shall be used to determine compliance with the standards prescribed in § 60.472 as follows:

(1) Method 26 for the concentration of particulate matter;

(2) Method 1 for sample and velocity traverses;

(3) Method 2 for velocity and volumetric flow rate;

(4) Method 3 for gas analysis; and

(5) The Administrator will determine compliance with the standards prescribed in § 60.472(a)(3) by using Method 22. During the test run, readings are to be recorded every 15 seconds for a period of consecutive observations during representative conditions (in accordance with § 60.8(c) of the General Provisions) totaling 60 minutes. A performance test shall consist of one run.

(b) For Method 26 the sampling time for each run on a saturator shall be at least 120 minutes, and the sampling volume shall be at least 3 dscm. Method 26 shall be used to measure the emissions from the saturator while the asphalt roofing plant is making 108.0-kg (235-lb) asphalt shingle if the final product is shingle or mineral-surfaced roll roofing or while the asphalt roofing plant is making 6.8-kg (15-lb) saturated felt if the final product is saturated felt or smooth-surfaced roll roofing. Method 26 shall be used to measure emissions from the blowing still for at least 90 minutes or for the duration of the coating blow whichever is greater. If the blowing still is not used to blow coating asphalt, Method 26 shall be used to measure emissions from the blowing still for at least 90 minutes or for the duration of the saturant blow, whichever is greater.

(c) The particulate emission rate, E, shall be computed as follows:

$$E = Q_{sd} \times C_p$$

(1) E is the particulate emission rate (kg/h);

(2) Q_{sd} is the average volumetric flow rate (dscm/h) as determined by Method 2; and

(3) C_p is the average concentration (kg/dscm) of particulate matter as determined by Method 26.

(d) The asphalt roofing production rate, P (Mg/h), shall be determined by dividing the weight in megagrams (Mg) of roofing produced on the shingle or saturated felt process lines during the performance test by the number of hours required to conduct the performance test. The roofing production shall be obtained by direct measurement.

(e) The production rate of asphalt from the blowing still, P_s (Mg/h), shall be determined by dividing the weight of asphalt charged to the still by the time required for the performance test during a coating asphalt blow. The weight of asphalt charged to the still shall be determined at the starting temperature of the coating blow. The weight of asphalt shall be converted from the volume measurement as follows:

$M = Vd/c$
 M = weight of asphalt in megagram
 V = volume of asphalt in cubic meters
 d = density of asphalt in kilograms per cubic meter
 c = conversion factor 1.000 kilograms per megagram

The density of asphalt at any measured temperature is calculated by using the following equation:

$$d = 1056.1 - 0.6176 \times C$$

The method of measurement shall have an accuracy of ± 10 percent.

(f) The saturator emission rate shall be computed as follows:

$$R = E/P$$

(g) The blowing still emission rate shall be computed as follows:

$$R_s = E/P_s$$

where:

- (1) R is the saturator emission rate (kg/Mg);
- (2) R_s is the blowing still emission rate (kg/Mg);
- (3) E is the particulate emission rate (kg/hr) from paragraph (c) of this section;
- (4) P is the asphalt roofing production rate (Mg/h); and
- (5) P_s is the asphalt charging rate (Mg/h).

(h) Temperature shall be measured and continuously recorded with the monitor required under § 60.473 (a) or (b) during the measurement of particulate by Method 26.

(i) If at a later date the owner or operator believes the emission limits in § 60.472 (a) and (b) are being met even though the temperature measured in accordance with § 60.473 paragraphs (a) or (b) is exceeding that measured during the performance test, he may submit a written request to the Administrator to repeat the performance test and procedure outlined in paragraph (h) of this section.

(Sec. 114, Clean Air Act as amended (42 U.S.C. 7414))

2. By adding Method 26 and Method 22 to Appendix A as follows:

Appendix A—Reference Methods

* * * * *

Method 26—Determination of Particulate Emissions From the Asphalt Processing and Asphalt Roofing Industry

1. *Applicability and Principle.*

1.1 *Applicability.* This method applies to the determination of particulate emissions from asphalt roofing industry process saturators, blowing stills, and other sources as specified in the regulations.

1.2 *Principle.* Particulate matter is withdrawn isokinetically from the source and collected on a glass fiber filter maintained at a temperature no greater than 52° C (126° F). The particulate mass, which includes any material that condenses at or above the filtration temperature, is determined gravimetrically after removal of uncombined water.

2. *Apparatus.*

2.1 *Sampling Train.* The sampling train configuration is the same as shown in Figure 5-1 of Method 5, except a precollector cyclone is added between the probe and the heated filter and is located in the heated section of the train. The sampling train consists of the following components:

2.1.1 *Probe Nozzle, Pitot Tube, Differential Pressure Gauge, Filter Holder, Condenser, Metering System, Barometer, and Gas Density Determination Equipment.* Same as Method 5, Sections 2.1.1, 2.1.3 to 2.1.5, and 2.1.7 to 2.1.10, respectively.

2.1.2 *Probe Liner.* Same as in Reference Method 5, Section 2.1.2, with the note that at high stack gas temperatures [greater than 250° C (480° F)], water-cooled probes may be required to control the probe exit temperature to no greater than about 52° C (126° F).

2.1.3 *Precollector Cyclone.* Borosilicate glass following the construction details shown in APTD-0581.

Note.—The tester shall use the cyclone when the stack gas moisture is greater than 10 percent or when the stack gas oil concentration is high enough to cause oil to seep through the glass mat filter. The tester need not use the precollector cyclone or glass wool under other, less severe test conditions.

2.1.4 *Filter Heating System.* Any heating (or cooling) system capable of maintaining a sample gas temperature at the exit end of the filter holder during sampling of no greater than 52° C (126° F). Install a temperature gauge capable of measuring temperature to within 3° C (5.4° F) at the exit end of the filter holder so that the sample gas temperature can be regulated and monitored during sampling. The tester may use systems other than the one shown in APTD-0581.

2.2 *Sample Recovery.* The equipment required for sample recovery is as follows:

2.2.1 *Probe-Liner and Probe-Nozzle Brushes, Graduated Cylinder and/or Balance, Plastic Storage Containers, and Funnel and Rubber Policeman.* Same as Method 5, Sections 2.2.1, 2.2.5, 2.2.6, and 2.2.7, respectively.

2.2.2 *Wash Bottles.* Glass.

2.2.3 *Sample Storage Containers.* Chemically resistant, borosilicate glass bottles, with rubber-backed Teflon screw cap liners or caps that are constructed so as to be leak-free and resistant to chemical attack by 1,1,1-trichloroethane (TCE), 500-ml or 1000-ml. (Narrow mouth glass bottles have been found to be less prone to leakage.)

2.2.4 *Petri Dishes.* Glass, unless otherwise specified by the Administrator.

2.2.5 *Funnel.* Glass.

2.3 *Analysis.* For analysis, the following equipment is needed:

2.3.1 *Glass Weighing Dishes, Desiccator, Analytical Balance, Balance, Hygrometer, and Temperature Gauge.* Same as Method 5, Sections 2.3.1 to 2.3.4, 2.3.6, and 2.3.7, respectively.

2.3.2 *Beakers.* Glass, 250-ml and 500-ml

2.3.3 *Separatory Funnel.* 100-ml or greater.

3. *Reagents.*

3.1 *Sampling.* The reagents used in sampling are as follows:

3.1.1 *Filters, Silica Gel, and Crushed Ice.* Same as Method 5, Sections 3.1.1, 3.1.2, and 3.1.4, respectively.

3.1.2 *Precollector Glass Wool.* No. 7220, Pyrex brand or equivalent.

3.1.3 *Stopcock Grease.* TCE-insoluble, heat-stable grease (if available). This is not necessary if screw-on connectors with Teflon sleeves, or similar, are used.

3.2 *Sample Recovery.* Reagent grade 1,1,1-trichloroethane (TCE), ≤ 0.001 percent residue, and stored in glass bottles is required. Run TCE blanks prior to field use and use only TCE with low blank values (≤ 0.001 percent). The tester shall in no case subtract a blank value of greater than 0.001 percent of the weight of TCE used from the sample weight.

3.3 *Analysis.* Two reagents are required for the analysis:

3.3.1 *TCE.* Same as 3.2.

3.3.2 *Desiccant.* Same as Method 5, Section 3.3.2.

4. *Procedure.*

4.1 *Sampling Train Operation.* The complexity of this method is such that, in order to obtain reliable results, testers should be trained and experienced with Method 5 test procedures.

4.1.1 *Pretest Preparation.* Maintain and calibrate all the components according to the procedure described in APTD-0576, unless otherwise specified herein.

Prepare probe liners and sampling nozzles as needed for use. Thoroughly clean each component with soap and water, followed by a minimum of three TCE rinses. Use the probe and nozzle brushes during at least one of the TCE rinses (refer to Section 4.2 for rinsing techniques). Cap or seal the open ends of the probe liners and nozzles to prevent contamination during shipping.

Prepare silica gel portions and glass filters as specified in Method 5, Section 4.1.1.

Prepare cyclone precollector systems for use as follows: Desiccate or oven-dry plugs of glass wool as needed and weigh these to a constant weight (use techniques similar to those described above for glass fiber filters). Place each tared glass wool plug in a labeled petri dish. Next, thoroughly clean equal numbers of glass cyclones and 125-ml Erlenmeyer flasks, using soap and water, followed by several TCE rinses. Pair each cyclone with a flask and identify (mark or label) each piece of glassware. Determine the tare weight of each glass cyclone to the nearest 0.1 mg. Seal the open ends of each flask and cyclone to prevent contamination during transport.

4.1.2 *Preliminary Determinations.* Select the sampling site, probe nozzle, and probe length as specified in Method 5, Section 4.1.2.

Select a total sampling time greater than or equal to the minimum total sampling time specified in the test procedures section of the applicable regulation. Follow the guidelines outlined in Method 5, Section 4.1.2, for sampling time per point and total sample volume collected.

4.1.3 *Preparation of Collection Train.* Prepare the collection train as specified in Method 5, Section 4.1.3 with the addition of the following.

If a precollector cyclone is to be used with a tared glass wool plug (see note in Section 2.1.2), prepare this by placing the glass wool plug into the inlet section of the cyclone near the top. Loosely pack the glass wool so as to

avoid high pressure drops in the sampling train. See Figure 26-1. Connect the cyclone to the corresponding 125-ml Erlenmeyer flask.

Set up the sampling train as shown in Figure 5-1 of Method 5 with the addition of the precollector cyclone, if used, between the probe and filter holder. Use no stopcock grease on ground glass joints unless the grease is insoluble in TCE.

4.1.4 Leak Check Procedures. Follow the procedures given in Method 5, Sections 4.1.4.1 (Pretest Leak Check), 4.1.4.2 (Leak Check During Sample Run), and 4.1.4.3 (Post-Test Leak Check).

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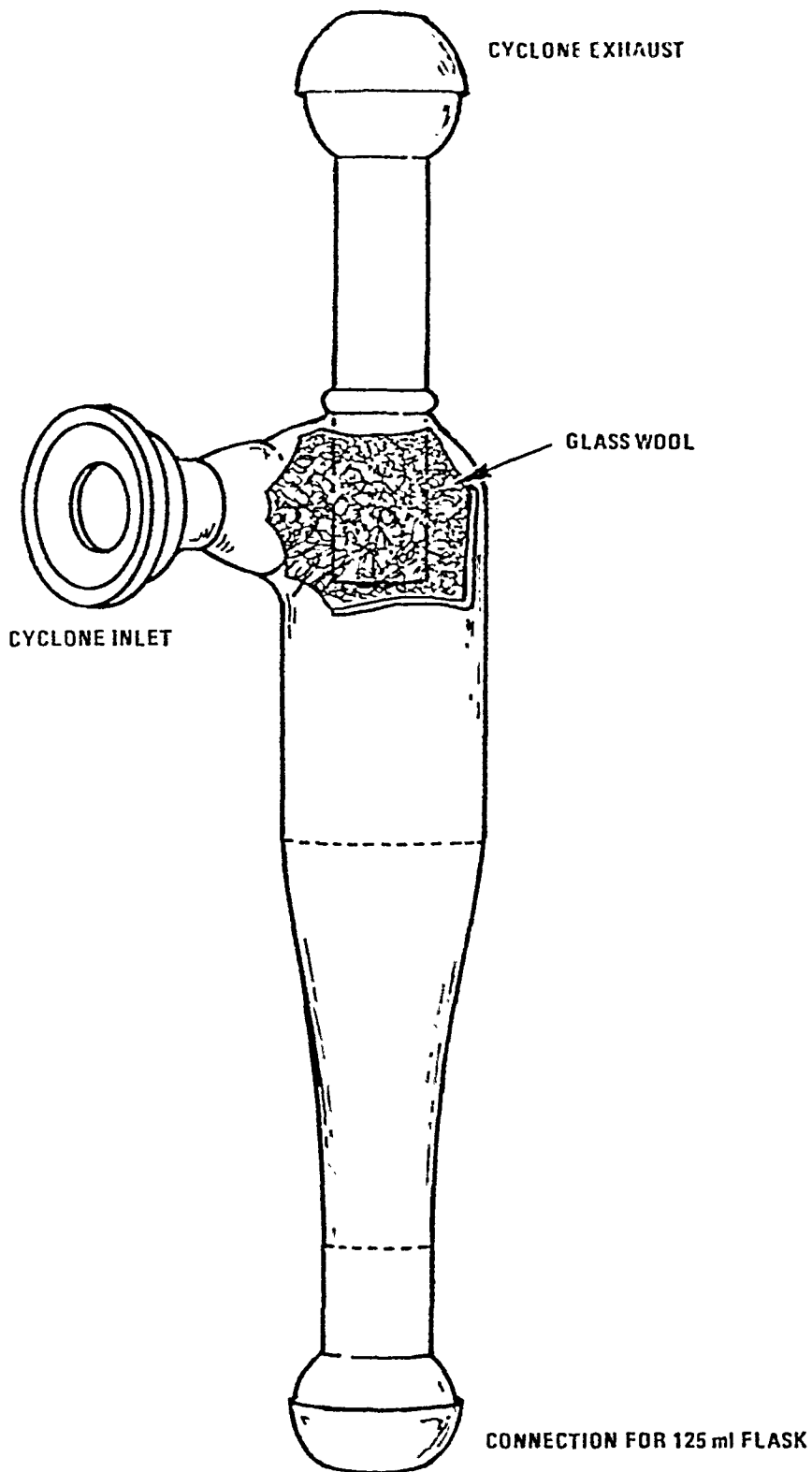


Figure 26-1. Precollector cyclone with glass wool plug.

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4.1.5 Particulate Train Operation.

Operate the sampling train as described in Method 5, Section 4.1.5, except maintain the gas temperature exiting the filter at no greater than 52°C (126°F).

4.1.6 Calculation of Percent Isokinetic.

Same as in Method 5, Section 4.1.6.

4.2 Sample Recovery. Begin proper cleanup procedure as soon as the probe is removed from the stack at the end of the sampling period. Allow the probe to cool. When the probe can be safely handled, wipe off all external particulate matter near the tip of the probe nozzle and place a cap over it to prevent losing or gaining particulate matter. Do not cap off the probe tip tightly while the sampling train is cooling as this would create a vacuum in the filter holder, thus drawing water from the impingers into the filter holder.

Before moving the sampling train to the cleanup site, remove the probe from the sampling train, wipe off the stopcock grease, and cap the open outlet of the probe. Be careful not to lose any condensate that might be present. Wipe off the stopcock grease from the filter inlet where the probe was fastened and cap it. Remove the umbilical cord from the last impinger and cap the impinger. If a flexible line is used between the first impinger or condenser and the filter holder, disconnect the line at the filter holder and let any condensed water or liquid drain into the impingers or condenser. After wiping off the stopcock grease, cap off the filter holder outlet and impinger inlet. The tester may use either ground-glass stoppers, plastic caps, or serum caps to close these openings.

Transfer the probe and filter-impinger assembly to a cleanup area which is clean and protected from the wind so that the chances of contaminating or losing the sample will be minimized.

Inspect the train prior to and during disassembly and note any abnormal conditions. Treat the samples as follows:

4.2.1. Container No. 1 (Filter). Carefully remove the filter from the filter holder and place it in its identified petri dish container.

Use a pair of tweezers and/or clean disposable surgical gloves to handle the filter. If it is necessary to fold the filter, do so such that the film of oil is inside the fold. Carefully transfer to the petri dish any particulate matter and/or filter fibers which adhere to the filter holder gasket, by using a dry nylon bristle brush and/or a sharp-edged blade. Seal the container.

4.2.2. Container No. 2 (Cyclone). Remove the Erlenmeyer flask from the cyclone. Using glass or other nonreactive caps, seal the ends of the cyclone and store for shipment to the laboratory. Do not remove the glass wool plug from the cyclone.

4.2.3. Container No. 3 (Probe to Filter Holder). Taking care to see that material on the outside of the probe or other exterior surfaces does not get into the sample, quantitatively recover particulate matter or any condensate from the probe nozzle, probe fitting, probe liner, cyclone collector flask, and front half of the filter holder by washing these components with TCE and placing the wash in a glass container. Carefully measure the total amount of TCE used in the rinses. Perform the TCE rinses as follows:

Carefully remove the probe nozzle and rinse the inside surface with TCE from a wash bottle. Brush with a nylon bristle brush and rinse until the TCE rinse shows no visible particles or discoloration, after which, make a final rinse of the inside surface.

Brush and rinse the inside parts of the Swagelok fitting with TCE in a similar way until no visible particles remain.

Rinse the probe liner with TCE. While squirting TCE into the upper end of the probe, tilt and rotate the probe so that all inside surfaces will be wetted. Let the TCE drain from the lower end into the sample container. The tester may use a glass funnel to aid in transferring the liquid washes to the container. Follow the TCE rinse with a probe brush. Hold the probe in an inclined position, squirt TCE into the upper end as the probe brush is being pushed with a twisting action through the probe, hold the sample container underneath the lower end of the probe, and catch any TCE and particulate matter which is brushed from the probe. Run the brush through the probe three times or more until no visible particulate matter is carried out or until no discoloration is observed in the TCE. With stainless steel or other metal probes, run the brush through in the above prescribed manner at least six times, since metal probes have small crevices in which particulate matter can be entrapped. Rinse the brush with TCE and quantitatively collect these washings in the sample container. After the brushing, make a final TCE rinse of the probe as described above.

It is recommended that two people clean the probe to minimize sample losses. Between sampling runs, keep brushes clean and protected from contamination.

Brush and rinse the inside of the cyclone collection flask and the front half of the filter holder. Brush and rinse each surface three times or more, if necessary, to remove visible particulate. Make a final rinse of the brush and filter holder. After all TCE washings and particulate matter have been collected in the sample container, tighten the lid on the sample container so that TCE will not leak out when it is shipped to the laboratory. Mark the height of the fluid level to determine later whether or not leakage occurred during transport. Label the container to clearly identify its contents. Whenever possible, containers should be shipped in such a way that they remain upright at all times.

4.2.4. Container No. 4 (Silica Gel). Note the color of the indicating silica gel to determine if it has been completely spent and make a notation of its condition. Transfer the silica gel from the fourth impinger to its original container and seal. The tester may use as aids a funnel to pour the silica gel without spilling and a rubber policeman to remove the silica gel from the impinger. It is not necessary to remove the small amount of dust particles that may adhere to the impinger wall and are difficult to remove. Since the gain in weight is to be used for moisture calculations, do not use any water or other liquids to transfer the silica gel. If a balance is available in the field, follow the procedure for Container No. 4 in Section 4.3.4.

4.2.5. Impinger Water. Treat the impingers as follows: Make a notation of any color or film in the liquid catch. Measure the liquid

volume in the first three impingers to within ± 1 ml by using a graduated cylinder or weigh the liquid to within ± 0.5 g by using a balance. Record the volume or weight of liquid present, then discard the liquid. (This volume or weight information is required to calculate the moisture content of the effluent gas.)

4.2.6. Blank. Save a portion of the TCE used for cleanup as a blank. Take 200 ml of this TCE directly from the wash bottle being used and place it in a glass sample container labeled "TCE blank."

4.3. Analysis. Record the data required on a sheet such as the one shown in Figure 20-2. Handle each sample container as follows:

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Plant: _____
 Date: _____
 Run No.: _____
 Filter No.: _____
 Amount liquid lost during transport: _____
 TCE blank volume, ml: _____
 TCE wash volume, ml: _____
 TCE blank concentration, mg/mg (equation 4): _____
 TCE wash blank, mg (equation 5): _____

CONTAINER NUMBER	WEIGHT OF PARTICULATE COLLECTED, mg		
	FINAL WEIGHT	TARE WEIGHT	WEIGHT GAIN
1			
2			
3			
Total	 	 	
	Less TCE blank		
	Weight of particulate matter		

	VOLUME OF LIQUID WATER COLLECTED	
	IMPINGER VOLUME, ml	SILICA GEL WEIGHT, g
FINAL		
INITIAL		
LIQUID COLLECTED		
TOTAL VOLUME COLLECTED		g * ml

*CONVERT WEIGHT OF WATER TO VOLUME BY DIVIDING TOTAL WEIGHT INCREASE BY DENSITY OF WATER (1g/ml).

$$\frac{\text{INCREASE, g}}{1\text{g/ml}} = \text{VOLUME WATER, ml}$$

Figure 26-2. Analytical data.

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4.3.1 Container No. 1 (Filter). Transfer the filter from the sample container to a tared glass weighing dish and desiccate for 24 hours in a desiccator containing anhydrous calcium sulfate. Rinse Container No. 1 with a measured amount of TCE and analyze this rinse with the contents of Container No. 3. Weigh the filter to a constant weight. For the purpose of Section 4.3, the term "constant weight" means a difference of no more than 10 percent or 2 mg (whichever is greater) between two consecutive weighings made 24 hours apart. Report the "final weight" to the nearest 0.1 mg as the average of these two values.

4.3.2 Container No. 2 (Cyclone). Clean the outside of the cyclone, remove the caps, and desiccate for 24 hours or until any condensed water has evaporated. Weigh the cyclone plus contents (glass wool plug and oil). Determine the weight of the oil by subtracting out the combined tare weight of the cyclone plus glass wool. Transfer the glass wool and cyclone catch into a tared weighing dish; use TCE to aid in the transfer process. Desiccate the cleaned cyclone for 24 hours and reweigh the cyclone. If the final weight of the clean cyclone is within 10 mg of its initial tare weight, report the calculated oil weight. However, if the weight difference is greater, extract the oil from the glass wool (use measured amount of TCE) and analyze this oil solution with Container No. 3. Be careful not to include any of the glass wool fibers.

4.3.3 Container No. 3 (Probe to Filter Holder). Before adding either the rinse from Container No. 1 or the TCE-oil mixture from the glass wool extraction to Container No. 3, note the level of liquid in the container and confirm on analysis sheet whether or not leakage occurred during transport. If noticeable leakage occurred, either void the sample or take steps, subject to the approval of the Administrator, to correct the final results.

Measure the liquid in this container either volumetrically to \pm ml or gravimetrically to ± 0.5 g. Check to see if there is any appreciable quantity of condensed water present in the TCE rinse (look for a boundary layer or phase separation). If the volume of condensed water appears larger than 5 ml, separate the oil-TCE fraction from the water fraction using a separatory funnel. Measure the volume of the water phase to the nearest ml; adjust the stack gas moisture content, if necessary (see Sections 6.4 and 6.5). Next, extract the water phase with several 25-ml portions of TCE until, by visual observation, the TCE does not remove any additional organic material. Evaporate the remaining water fraction to dryness at 93°C (200°F), desiccate for 24 hours, and weigh to the nearest 0.1 mg.

Treat the total TCE fraction (including TCE from filter container rinse, water phase extractions, and glass wool extraction, if applicable) as follows: Transfer the TCE and oil to a tared beaker and evaporate at ambient temperature and pressure. The evaporation of TCE from the solution may take several days. Do not desiccate the sample until the solution reaches an apparent constant volume or until the odor of TCE is not detected. When it appears that the TCE has evaporated, desiccate the sample and

weigh it at 24 hour intervals to obtain a "constant weight" (as defined for Container No. 1 above). The "total weight" for Container No. 3 is the sum of the evaporated particulate weight of the TCE-oil and water phase fractions. Report the results to the nearest 0.1 mg.

4.3.4 Container No. 4 (Silica Gel). This step may be conducted in the field. Weigh the spent silica gel (or silica gel plus impinger) to the nearest 0.5 using a balance.

4.3.5 "TCE Blank" Container. Measure TCE in this container either volumetrically or gravimetrically. Transfer the TCE to a tared 250-ml beaker and evaporate to dryness at ambient temperature and pressure. Desiccate for 24 hours and weigh to a constant weight. Report the results to the nearest 0.1 mg.

5. Calibration.

Calibrate the sampling train components according to the indicated sections of Method 5: Probe Nozzle (5.1), Pitot Tube Assembly (5.2), Metering System (5.3), Probe Heater (5.4), Temperature Gauges (5.5), Leak Check of Metering System (5.6), and Barometer (5.7).

6. Calculations.

6.1 Nomenclature. Same as in Reference Method 5, Section 6.1, with the following additions:

C_t = TCE blank residue concentration, mg/g.

M_t = Mass of residue of TCE after evaporation, mg.

V_{pc} = Volume of water collected in precollector, ml.

V_t = Volume of TCE blank, ml.

V_w = Volume of TCE used in wash, ml.

W_t = Weight of residue in TCE wash, mg.

P_t = Density of TCE, mg/ml (see label on bottle).

6.2 Dry Gas Meter Temperature and Orifice Pressure Drop. Using the data obtained in this test, calculate the average dry gas meter temperature and average orifice pressure drop (see Figure 5-2 of Method 5).

6.3 Dry Gas Volume. Using the data from this test, calculate $V_{m(t,d)}$ by using Equation 5-1 of Method 5. If necessary, adjust the volume for leakages.

6.4 Volume of Water Vapor.

$$V_{w(t,d)} = K_1 (V_{tc} + V_{pc}) \quad \text{Eq. 26-1}$$

Where:

$$K_1 = 0.00133 \text{ m}^3/\text{ml for metric units.}$$

$$= 0.04707 \text{ ft}^3/\text{ml for English units.}$$

6.5 Moisture Content.

$$B_{ws} = V_{w(t,d)} / (V_{m(t,d)} + V_{w(t,d)}) \quad \text{Eq. 26-2}$$

Note.—In saturated or water droplet-laden gas streams, two calculations of the moisture content of the stack gas shall be made, one from the impinger and precollector analysis (Equations 26-1 and 26-2) and a second from the assumption of saturated conditions. The lower of the two values of moisture content shall be considered correct. The procedure for determining the moisture content based upon assumption of saturated conditions is given in the note of Section 1.2 of Reference Method 4. For the purpose of this method, the average stack gas temperature from Figure 2 may be used to make this determination, provided that the accuracy of the in-stack temperature sensor is within $\pm 1^\circ\text{C}$ (2°F).

6.6 TCE Blank Concentration.

$$c_t = M_t / V_w P_t \quad \text{Eq. 26-3}$$

6.7 TCE Wash Blank.

$$W_t = (C_t)(V_w)(P_t) \quad \text{Eq. 26-4.}$$

6.8 Total Particulate Weight. Determine the total particulate catch from the sum of the weights obtained from Containers 1, 2, and 3 less the TCE blank.

6.9 Particulate Concentration.

$$C_a = K_2 M_n / V_{m(t,d)} \quad \text{Eq. 26-5}$$

Where:

$$K_2 = 0.001 \text{ g/mg.}$$

6.10 Isokinetic Variation and Acceptable Results. Method 5, Sections 6.11 and 6.12, respectively.

7. Bibliography.

The bibliography for Reference Method 26 is the same as for Method 5, Section 7.

Method 22—Visual Determination of Fugitive Emissions From Material Processing Sources

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; (4) are emitted directly from process equipment.

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 Reference Test Method 9 are not required. However, it is necessary that the observer is educated on the general procedures for determining the level of visible emissions. As a minimum the observer should be trained 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).

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.

2.2 Principle. Fugitive emissions produced during material processing, handling, and transfer operations are visibly 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 Emission. Pollutant generated by an affected facility which is not collected by a capture system and is released to the atmosphere.

3.4 Observation Period. Accumulated time period during which observations are conducted, not to be less than 6 minutes.

4. Equipment.

4.1 Stopwatches. Accumulative type, with a sweep second hand and unit divisions of at least 0.5 second; 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 unit 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 of at least 15 feet but not more than 0.25 mile from the emission source is recommended. For outdoor locations, the observer should be positioned so that 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 observer location relative to the source and the sun. Indicate the potential and actual fugitive emission points on the sketch.

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FUGITIVE 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 22-1

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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.

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FUGITIVE EMISSION INSPECTION INDOOR LOCATION			
Company _____	Observer _____	Location _____	Affiliation _____
Company representative _____	Date _____		
Industry _____	Process unit _____		
Light type (flourescent, incandescent, natural) _____			
Light location (overhead, behind observer, etc.) _____			
Illuminance (lux or footcandles) _____			
Sketch process unit; indicate observer position relative to source; incicate potential emission points and/or actual emission points:			
<div style="border: 1px solid black; width: 100%; height: 100%;"></div>			
OBSERVATIONS	Clock time	Observation period duration, min:sec	Accumulated emission time, min:sec
Begin observation	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
End observation	_____	_____	_____

Figure 22-2

BILLING CODE 6560-26-C

During the observation period, continuously 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 (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 actual observation period is less than the required period and multiply this quotient by 100.

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BILLING CODE 6580-26-M

40 CFR Part 60

[AD FRL-1505-7a]

Standards of Performance for new Stationary Sources; Priority List

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed amendment.

SUMMARY: Studies of the asphalt processing and roofing industry have revealed that asphalt is processed at oil refineries and asphalt processing plants as well as at asphalt roofing plants. These locations were not specifically included in the asphalt roofing source category included in the priority list for regulation of new sources under Section 111 of the Clean Air Act, promulgated on August 21, 1979. Therefore, the Administrator is proposing to amend the priority list to specifically include asphalt processing locations in the source category currently listed as asphalt roofing plants. The proposed amendment to the priority list is based on the Administrator's judgment that asphalt blowing stills and storage tanks at asphalt processing facilities and oil refineries contribute significantly to air pollution which may reasonably be anticipated to endanger public health or welfare.

DATES: *Comments.* Comments must be received on or before January 19, 1981.

Public Hearing. A public hearing will be held, if requested. Persons wishing to request a public hearing must contact EPA by December 8, 1981. If a hearing is requested, an announcement of the date and place will appear in a separate Federal Register notice.

ADDRESSES: *Comments.* Comments should be submitted (in duplicate if possible) to: Central Docket Section (A-130), Attention: Docket No. OAQPS A-79-39, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460

Public Hearing. Persons wishing to request a public hearing should notify Ms. Deanna B. Tilley, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North

Carolina 27711, telephone (919) 541-5477.

Background Information Document. Background Information on the emissions from the asphalt processing and roofing manufacturing industry may be obtained from the U.S. EPA Library (MD-35), Research Triangle Park, North Carolina 27711, telephone (919) 541-2777. Please refer to "Asphalt Roofing Manufacturing Industry, Background Information for Proposed Standards," EPA-450/3-80-021a.

Docket. A docket, number OAQPS A-79-39, containing information used by EPA in development of the standards of performance for the asphalt processing and roofing manufacturing industry, is available for public inspection between 8:00 a.m. and 4:00 p.m. Monday through Friday, at EPA's Central Docket Section (A-130), West Tower Lobby, Gallery 1, Waterside Mall, 401 M Street, SW., Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT: Ms. Susan R. Wyatt, Emission Standards and Engineering Division (MD-13), Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone (919) 541-5477.

SUPPLEMENTARY INFORMATION:

Proposal To Amend Priority List

The Clean Air Act of 1970 established a program under Section 111 to develop standards of performance for new stationary sources which the Administrator determines may contribute significantly to air pollution which may reasonably be anticipated to endanger public health or welfare. Section 111 of the Clean Air Act Amendments of 1977 requires that the Administrator publish, and from time to time revise, a list of categories of major stationary sources for which standards of performance for new sources are to be promulgated.

In developing priorities, Section 111 specifies that the Administrator consider (1) the quantity of emissions from each source category, (2) the extent to which each pollutant endangers public health or welfare, and (3) the mobility and competitive nature of each stationary source category.

The priority list, which identifies major source categories in order of priority for development of regulations, was proposed on August 31, 1978 and promulgated, after revisions, on August 21, 1979 (40 CFR 60.16, 44 FR 49222). Of the 59 source categories on the list, asphalt roofing plants are listed as number 45.

Source categories are intended to be broad enough in scope to include all processes associated with the particular

industry. In the asphalt roofing industry studies have revealed that initial steps in the preparation of asphalt for roofing manufacture may take place not only at roofing plants but also at locations which do not manufacture roofing products. These locations were not specifically listed with the asphalt roofing source category included in the priority list promulgated on August 21, 1979. Blowing stills, where air is forced through hot asphalt flux (crude oil residuum) as the initial step in asphalt processing, may be located at oil refineries and/or asphalt processing plants as well as at asphalt roofing plants. The coating and saturant asphalts which result from the blowing process are stored in tanks located at oil refineries and asphalt processing plants as well as at roofing plants. These two facilities at either an oil refinery or an asphalt processing plant would contribute more than 100 tons of particulate emissions per year and are, therefore, considered major sources.

The emissions, processes, and applicable controls for blowing stills and asphalt storage tanks at oil refineries and asphalt processing plants are the same as those at asphalt roofing plants. It is therefore reasonable to treat the asphalt processing and roofing manufacture industry as a single category of sources for the purposes of establishing standards of performance.

In the Administrator's judgment, asphalt processing operations which take place at oil refineries and asphalt processing plants contribute significantly to air pollution which may reasonably be anticipated to endanger public health or welfare.

Proposed standards of performance for Asphalt Processing and Roofing Manufacture appear elsewhere in this issue of the Federal Register.

(Sec. 111, 301(a), Clean Air Act as amended, (42 U.S.C. 7411, 7601(b)))

Dated: November 10, 1980.

Douglas M. Costle,
Administrator.

It is proposed to amend 40 CFR Part 60, subpart A, as follows:

§ 60.16 Priority list.

* * * * *

45. Asphalt Processing and Roofing
Manufacture

* * * * *

(Sec. 111, 301(a), Clean Air Act as amended
(42 U.S.C. 7411, 7601(a)))

[FR Doc. 80-35906 Filed 11-17-80; 8:45 am]

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