



2023

**Walter H. Hungarter III, P.E.
Vice President
RT Environmental Services, Inc.**

April 12, 2023



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13



- **Applicable for MOST Asphalt Plants Throughout the State**
- **Separate Requirements for Philadelphia and Allegheny Counties**
- **Establishes Best Available Technology (BAT) Requirements**



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

Best Available Technology (BAT) Examples to Control Emissions



- i. The drop heights from front-end loaders being used to stockpile, transfer, and load aggregate shall be kept as short as possible to minimize dust emissions.
- ii. Stockpiles shall be kept as compact as possible to limit exposure to the wind. Material shall be stockpiled in such a manner that it may be adequately wetted as necessary to control fugitive emissions.
- iii. All in-plant roads shall be maintained to prevent particulate matter from becoming airborne in accordance with 25 Pa. Code §§ 123.1 and 123.2.
- iv. All unpaved in-plant roads shall be watered once per day during warm weather, at the start of each shift, if no precipitation has fallen within the previous twenty-four (24) hours, and as needed thereafter on a preventative basis such that visible fugitive emissions are controlled in accordance with 25 Pa. Code §§ 123.1 and 123.2. Other methods of dust control may be used when weather conditions make the watering of unpaved roads hazardous.
- v. In accordance with 25 Pa. Code § 123.1(c), the owner or operator shall promptly remove earth or other material from paved roads onto which earth or other material has been transported by trucking or earth moving equipment, or other means.



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

Best Available Technology (BAT)

Examples to Control Emissions

- vi. A set vehicle pattern shall be established and maintained for vehicles entering and exiting the plant.
- vii. The owner or operator shall post a sign limiting speeds to less than 15 mph on all in-plant roads.
- viii. The owner or operator shall post and enforce a requirement stating "All vehicles entering or exiting the plant property shall be properly tarpaulin covered." Vehicles with a gross vehicle weight rating of less than 10,000 pounds shall be exempt from this condition.
- xi. Only HMA plants controlled by an appropriately designed fabric collector (i.e., baghouses capable of complying with all applicable requirements) may apply for this General Permit. A fabric collector ("baghouse") shall be accepted by the Department as "appropriately designed" only if the Department determines it to be based upon the information provided by the owner or operator and on any other information available to the Department.
- xii. No fugitive air contaminant emissions shall be generated as a result of removing collected dust from the baghouse or as a result of subsequently handling the collected dust on-site following its removal from the collector.
- xiii. The owner or operator shall keep sufficient quantity of spare baghouse bags, at a minimum of 10% of the total number of bags, on hand for immediate replacement.



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13

- If you can't meet the conditions of GP-13, can operate under an Individual Permit Approval.
- Most Hot Mix Plants Have Operated Under GP-13 for many years.
- 5-Year Permit Timeframe, Renewal 180 Days Prior to Expiration



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13

- **Key Items to Keep in Mind Related to Operation Under the Permit**

- Maintain and operate plant in accordance with “manufacturer’s specifications”, do not cause air pollution, be consistent with good operating and maintenance practices, no malodors outside of property line.



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13

- **Key Items to Keep in Mind Related to Operation Under the Permit**
 - WDLF (if used) has specific testing and reporting requirements
 - Performance Testing and Tuning Requirements
 - Reporting Requirements



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT

AIR PERMIT GP-13 PERFORMANCE TESTING/TUNING

- a. Emissions testing using EPA reference methods shall be conducted one time while the source is burning the worst case fuel to verify compliance with filterable particulate, NO_x, CO and VOCs. An existing HMA plant as described in Condition 14.b. may use an earlier stack test result approved by the Department for demonstration of compliance with this requirement, if it has been tested for the worst case fuel. The new and other plants as described in Condition 14.c. shall be tested for total PM₁₀ and PM_{2.5}.

• Performance Testing 5-Year Intervals

- b. Except for the first year, the owner or operator shall conduct a burner tuning procedure in accordance with the manufacturer's specifications to minimize NO_x and CO emissions each year thereafter. The owner or operator shall conduct each annual tune-up not later than June 15 of each year or within four (4) weeks after each start-up of the HMA plant. An existing HMA plant as described in Condition 14.b. of this General Permit may use an earlier stack test result approved by the Department for demonstration of compliance with this requirement, if it has been already tested for the worst case fuel. In such case, conducting a burner tuning procedure in accordance with the manufacturer's specifications will be adequate. The owner or operator shall comply with the following requirements:

• Tuning Annually After First year



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT

AIR PERMIT GP-13 PERFORMANCE TESTING

xi. The testing shall be performed while the source is operating at a maximum routine operating conditions rate and while producing a typical mix formulation.

- **Timing is Key Factor in Order to Get Production and Worst-Case Fuel Usage to Align with Stack Testing**



ASPHALT PLANT

AIR PERMIT GP-13 PERFORMANCE TUNING

- iii. Monitoring records stating the following information shall be kept on site for a minimum of five years and shall be made available to the Department upon request.
- 1.) The date of the tuning procedure;
 - 2.) The name of the servicing company and technician;
 - 3.) The production rate (tons/hr) or load before and after tuning;
 - 4.) The CO and NO_x concentrations (ppmvd) before and after tuning; and
 - 5.) The percent O₂ before and after tuning.



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13

Example Monitoring, Recordkeeping and Reporting Items

16. Monitoring, Recordkeeping and Reporting

- a. The owner or operator shall maintain records including the following:
 - i. Monthly and 12-month rolling total for asphalt production;
 - ii. Daily records shall be made available to the Department upon request;
 - iii. 12-month rolling total for gallons of No. 2 fuel oil, No. 4 fuel oil, WDLF, biodiesel, alternative fuels used;
 - iv. Hours operated while firing each liquid fuel;
 - v. 12-month rolling total for each pollutant listed;
 - vi. Daily baghouse pressure drop reading;
 - vii. Daily stack, fugitive and malodor surveys;
 - viii. Any corrective actions taken to bring facility back into compliance with stack, fugitive, and malodor requirements of this permit; and
 - ix. Records of tune-up and annual portable monitor testing done in accordance with Condition 15.b. of the General Permit.
- b. All logs and required records shall be maintained on site for a minimum of five (5) years and shall be made available to the Department upon request.



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13 REPORTING

- **What Parameters Get Recorded?**
 - Every Plant Can be Different
 - Some Manual Records
 - Some Electronic Records
 - Or Both.

- **How is Fuel Use Recorded?**
 - All Fuel Used
 - Plant and Hot Oil Heater Separate



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13 REPORTING

- **Keep the Records**
 - Hours of Operation
 - Fuel Usage
 - Pressure Drop in the Baghouse
 - Emission Estimates for the Month
 - Inspections (Opacity Monitoring)
 - Maintenance Records

- **Have Records Available for DEP Inspector**



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13

Reducing Emissions

- Fuel Usage - Natural Gas Vs. Diesel and WDLF
 - NOX Factors Drum Plant (AP-42)
 - 0.026 Tons NOX per Ton Asphalt Natural Gas
 - 0.055 Tons NOX per Ton Asphalt Diesel/WDLF
 - NOX Factors Batch Plant (AP-42)
 - 0.026 Tons NOX per Ton Asphalt Natural Gas
 - 0.055 Tons NOX per Ton Asphalt Diesel/WDLF



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13

Reducing Emissions

- Burner Type – Low NOX and Low NOX with flue gas recirculation
- Natural Gas Hot Oil Heater Vs. Electrically Heated Hot Oil
- Variable frequency drives (VFDs) for motors, pumps, and fans can substantially **decrease electricity consumption**, according to NAPA



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13

Reducing Emissions

- The three aspects of the mix that can most effect emissions are warm (WMA) versus hot mix asphalt, virgin aggregate moisture content, and RAP. According to NAPA, WMA technologies have been demonstrated to reduce burner fuel consumption by 1,100 Btu/°F/ton, and WMA alone can account for a reduction in asphalt mix temperatures by at least 30 degrees F. Design mix temperatures can be reduced from 300 degrees F down to 260-270 degrees F, reducing fuel consumption by as much as 20%, **Less fuel means significant lower stack emissions** of CO₂, NO_x and VOC.



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13

Reducing Emissions

- Proper storage and care of virgin aggregates and RAP. For example, the June 2022 study by NAPA reported that for every 1% reduction in aggregate moisture, the average energy intensity for asphalt mix production was lessened by 27,100 BTU/ton.
- Reduced Moisture, Less Heating



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13

Reducing Emissions

- Material Management
 - Slope and Grade Storage Piles to Enhance Runoff
 - Under Drain
 - Covered Structures



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13

Reducing Emissions

- Maintaining the dryer and exhaust system avoids wasting fuel
- Tuning the burner (keep high efficiency year after year)
- Worn dryer flights and damaged or missing drum seals. Leakage air, whether it gets in through missing seals or worn holes, absorbs heat and takes it away from its intended use and makes it necessary to burn more fuel.



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13

Reducing Emissions

- Steam/Water Injection to Lower NOX Formation
- NOX Reduction Through Selective Catalytic Reduction (SCR) Post Combustion
 - Other Potential Emission Issues
- Depending on Technologies Used, May Need to Do Stack Testing to Document Reductions and Establish Emissions Factors for Permitting Purposes



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

ASPHALT PLANT AIR PERMIT GP-13

Reducing Emissions

- Renewable Energy Use
- Energy Star Rated Equipment
- Funding Could Be Available for Reductions over 20%
 - More information available from PAPA



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ

OPEN DISCUSSION AND QUESTIONS



RT Environmental Services, Inc.

rtenv.com

Philadelphia • Pittsburgh • Bridgeport, NJ