Pollution Prevention Opportunities Checklist for Hot Mix Asphalt Plants

Information for the following checklist was compiled from the following source:

"Asphalt Project Mid-term Industry Report", March 2002
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The most common air pollutants from hot mix asphalt plants are particulate matter (PM10), sulfur dioxide (SO2), nitrogen oxides (NOx), volatile organic compounds (VOCs) and carbon monoxides (CO). The following Pollution Prevention opportunities are provided because of their affect on minimizing fuel use, emissions and/or odors from hot-mix asphalt plants.

Aggregates

- Do you use aggregate with relatively low water absorption levels? ___Yes, ___No, ___NA
- Have you gathered data on aggregate moisture content and fuel use? ___Yes, ___No, ___NA
- If the fuel use goes up for the same or less moisture, do you immediately investigate the reason? ___Yes, ___No, ___NA
- If yes, do you correct? ___Yes, ___No, ___NA
- Do you use dry RAP and aggregates? ___Yes, ___No, ___NA
- Do you use RAP that contains tar? ___Yes, ___No, ___NA
- Do you ever overheat RAP (to the point that it becomes brittle or you see smoke)? ___Yes, ___No, ___NA
- Do you expose RAP to the burner flame? ___Yes, ___No, ___NA
- Have you taken steps to minimize fumes in the slag aggregate? ___Yes, ___No, ___NA
- Are crumb rubber mixtures used? ___Yes, ___No, ___NA
- Have you taken steps to minimize fumes in the crumb rubber mixtures? ___Yes, ___No, ___NA
- Are plastic collars on glass containers crushed as aggregate? ___Yes, ___No, ___NA
- Have you minimized potential for fumes from plastic collars on glass containers crushed as aggregate? ___Yes, ___No, ___NA
- Do you use shingles? ___Yes, ___No, ___NA
- Have you taken steps to minimize fumes in the shingles? ___Yes, ___No, ___NA
- Is there construction or demolition waste? ___Yes, ___No, ___NA
- Have you taken steps to minimize fumes in other products from construction and demolition waste? ___Yes, ___No, ___NA

Anti-stripping Additives

- Do you use anti-stripping additives only when test results indicate the need for them? ___Yes, ___No, ___NA
- Do you determine the optimal percentage of anti-stripping additives based on percent weight of the asphalt, not the weight of the mixture? ___Yes, ___No, ___NA
- Do you uniformly blend the anti-stripping additive into the asphalt? ___Yes, ___No, ___NA
- Do you use low-odor formulations of anti-stripping additives? ___Yes, ___No, ___NA

Asphalt Binder

- Do you consider previous field experience with asphalt binder grade from this asphalt supplier and current project conditions (including weather and seasonal conditions, lift thickness, haul distance, and mix considerations) and adjust as necessary? ___Yes, ___No, ___NA
- Do you consider typical asphalt binder temperature based on PG binder grade? ___Yes, ___No, ___NA

Burner/ Burner Control System

- Do you use combustion analyzers to accurately set the burner for good combustion through a full range of operation? ___Yes, ___No, ___NA
- Have you contacted the burner manufacturer to find out the limits on CO and O2? ___Yes, ___No, ___NA
- Is your output at 100% burner close to faceplate rating? ___Yes, ___No, ___NA
- Do you check the operation of the mechanical components of the burner (drive motor, valves, linkages, nozzle, spinner, etc.)? ___Yes, ___No, ___NA
- Do you ever shut down the burner to make adjustments to check low fire performance? ___Yes, ___No, ___NA
- Do you reduce excess air at burners? ___Yes, ___No, ___NA
- Do you adjust the fuel and air combination in your burner to ensure complete and proper combustion of fuel? ___Yes, ___No, ___NA
- Do you tune up the burner (at least annually if no problems are noticed)? ___Yes, ___No, ___NA
- Do you have a burner control system? ___Yes, ___No, ___NA
- Will your controller maintain stable temperatures in the automatic mode? ___Yes, ___No, ___NA
- Do you dry run the controls on the burner to verify proper operation and wear? ___Yes, ___No, ___NA
- Does your burner control system coordinate important components? ___Yes, ___No, ___NA
- Does your burner control system ensure proper process temperatures for a quality mix? ___Yes, ___No, ___NA
- Does your burner control system ensure safe burner operations? ___Yes, ___No, ___NA

- Does your burner control system perform critical combustion operations? ___Yes, ___No, ___NA
- Does your burner control system protect other plant components from excessive heat or pressure? ___Yes, ___No, ___NA
- Does your burner control system provide proper fuel/air control for efficient combustion? ___Yes, ___No, ___NA

Burner fuel and combustion air combination is one of the most important parameters for efficient combustion.

Fuel Use

- Do you use fuels recommended by the manufacturer? ___Yes, ____No, ____NA
- Do you receive fuel analysis with fuel received? ____Yes, ___No, ___NA
- Do you review fuel analyses received for specifications and constituent parameters? ____Yes, ____, No, ____NA
- Do you keep a record of fuel use over time? ___Yes, ___No, ___NA
- Do you share tracked fuel use information with co-workers and the burner manufacturer? ___Yes, ___No, ___NA
- Do you assure complete combustion? ___Yes, ___No, ___NA
- Do you use analyzers to detect unburned fuel? ___Yes, ___No, ___NA

Operation/Maintenance

- Do you ask technicians to explain exactly what adjustments are being made and why? ___Yes, ___No, ___NA
- Do you ensure proper lift thickness of four times the maximum nominal aggregate size? ___Yes, ___No, ___NA
- Do you increase the mat lift thickness before calling for a higher plant temperature? ___Yes, ___No, ___NA
- Do you maintain engineering controls (e.g. recovery systems) on paving equipment? ___Yes, ___No, ___NA
- Do you mark linkage settings before a tune up? ___Yes, ___No, ___NA
- Do you verify motor rotations? ___Yes, ___No, ___NA
- Do you verify proper valve operations? ___Yes, ___No, ___NA
- Do you check all thermocouples, including cables and wells, for proper placement, proper calibration, and wear? ___Yes, ___No, ___NA
- Do you regularly calibrate the thermocouples and other sensors to ensure key plant temperatures are accurate? ___Yes, ___No, ___NA
- Do you check and maintain all automatic and manual fuel valves to ensure proper operations? ___Yes, ___No, ___NA
- Do you use diesel fuel and kerosene as release agents? (No is the right answer.)
- Do you construct a test strip and monitor both densities and temperatures in accordance with an approved quality control plan? ___Yes, ___No, ___NA
- Do you inspect the components of the fuel train (pressure regulator, fuel strainers and traps, fuel preheats, piping, valves, gauges, thermometers, etc.)? ___Yes, ___No, ___NA

- Do you keep all mechanical and electrical safety interlocks in the system and check periodically for operation? ___Yes, ___No, ___NA
- Do you keep your exhaust fans running efficiently? ___Yes, ___No, ___NA
- Do you look for flame stability problems? ___Yes, ___No, ___NA
- Do you mark linkage settings before a tune up? ___Yes, ___No, ___NA
- Do you operate and maintain your burner controls in accordance with the manufactures specifications and instructions? ___Yes, ___No, ___NA
- Do you operate with electrical jumpers on the control? (No is right answer)
- Do you pave during the day (as opposed to at night)? ___Yes, ___No, ___NA
- Do you try to pave when ambient weather conditions are conducive to low emissions (high wind velocity, low relative humidity, low dew point)? ___Yes, ___No, ___NA
- Do you periodically check or have the air/fuel ratio checked for efficient combustion? ___Yes, ___No, ___NA
- Do you seal silo tops and load-out areas to reduce fugitive emissions? ___Yes, ___No, ___NA
- If your facility has a scrubber, do you monitor operating parameters such as water flow, water pressure, or pressure drop to ensure the scrubber is operating as desired (monitoring operating parameters helps to detect problems more quickly than just watching the scrubber plume)? ___Yes, ___No, ___NA
- Do you measure and record the pressure drop in the baghouse and look for changes over time (measured changes may indicate a problem before the stack does visually; e.g. bags are not being cleaned, bag leaks or by-passing, other problems that may lead to baghouse failure)? ___Yes, ___No, ___NA
- Do you perform a visual inspection of the air system for obvious combustion problems? ___Yes, ___No, ___NA
- Do you use counter-flow mixing equipment technology to reduce emissions? ___Yes, ___No, ___NA
- Is the flighting in the dryer configured to optimize retention time and drying efficiency and minimize exposure of RAP and asphalt to the hot air stream? ___Yes, ___No, ___NA

Plant/Mix Temperatures

- Did you contact your asphalt supplier for help to determine the plant mixing temperature? ___Yes, ___No, ___NA
- Did you use the laboratory mixing temperature as the plant mixing temperature? (No is the right answer) ___Yes, ___No, ___NA
- Do you adjust this temperature as necessary during normal production? ___Yes, ___No, ___NA
- Do you select a plant mix temperature starting point based on asphalt mix being produced (including binder), weather, temperature, lift thickness, and haul distance? ___Yes, ___No, ___NA
- Do you use available software or graphs to estimate the heat loss during mix transport and letdown, taking into consideration haul distance, ambient temperature, wind conditions, and mat thickness? ___Yes, ___No, ___NA
- Is the starting point close to the middle of the range of temperatures for the PG binder grade being used? ___Yes, ___No, ___NA

- Is your low fire stable without overheating the baghouse? ___Yes, ___No, ___NA
- Do you contact the asphalt supplier, describe the mix type, and request the plant mixing temperature recommendations?
- Do you determine the lay down temperature at which a specification density can be achieved?
- Do you compare mix temperatures with plant temperatures and look for changes with time? ___Yes, ___No, ___NA
- Do you control the temperature of the asphalt binder and the anti-stripping additive at the lowest temperature that produces satisfactory results? ___Yes, ___No, ___NA

Stack

- Do you have the stack gases tested to see if they are within limits?
- If the stack gases are out of limits, do you contact the burner manufacturer to make the necessary adjustments?
- When the stack is tested, do you compare the plant's thermocouple reading to the tester's thermocouple?

Storage

- If you are in an area of high annual rainfall, do you cover stockpiles?
- Do you use paved stockpile areas graded to enhance drainage?
- Do you use stockpiling techniques (place material in a small area and stacking as high as possible without risking contamination) to allow materials to shed rain?
- Do you employ procedures to use the driest portion of the stockpiles? ___Yes, ___No, ___NA
- Does your asphalt storage tank capture fugitive emissions?
- Are your fuel storage tanks covered and contained in a non-permeable containment area? ____Yes, ____No, _____NA

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Contact Pinellas County's Pollution Prevention and Resource Recovery (P2R2) Program at 464-4761 for Waste Reduction Assistance