South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
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Subject: Rule 441 – Research Operations Permit
A/N 623921 – Crumb Rubber/Asphalt Oil Blending System, Oil Heater, Condensers, Filters, ESPs, and Carbon Adsorption Unit

Dear Mr. Gardner,

Thank you for your original application submittal for the purpose of receiving a Permit to Construct for the Carbon Adsorption Unit. South Coast AQMD staff have determined that a Permit to Construct cannot be issued at this time, and have decided that this application will be utilized for the purpose of issuing a Rule 441 – Research Operations Permit for the subject equipment located at 10671 Jeffrey Road, Irvine, CA 92602. The purpose of the Rule 441 permit is to expand the state of the knowledge of the operation of the subject equipment, including criteria pollutant emissions, odor emissions, and toxic emissions. Rule 441 allows for equipment to operate for a limited period and provides for an exemption from South Coast AQMD Regulation IV rules, but excludes Rule 402 – Public Nuisance. All other South Coast AQMD rules apply to research permits.

The current proposal includes permit applications for a Crumb Rubber/Asphalt Oil Blending System, Oil Heater, two ESPs, and Carbon Adsorption Unit. The proposed parameters to be studied are VOC, toxics, and associated odor creating components. Rule 441 requires the purpose of the operation under the research permit to allow for "investigation, experiment, or research to advance the state of knowledge or the state of the art." Rule 441 requires that "The Air Pollution Control Officer shall not grant approval unless the operation is conducted in a manner to minimize emissions into the atmosphere to the maximum extent possible."

South Coast AQMD has determined that the subject equipment are sufficient to justify as a research operation. Therefore, the following are the equipment descriptions and conditions under which this Rule 441 Research Operations Permit is issued and approved:

EQUIPMENT DESCRIPTIONS

Crumb Rubber/Asphalt Blending System, consisting of:

1. Hopper, Receiving, Crumb Rubber, 7'-0" W. x 8'-0" L. x 15'-0" H., 10,000 Lbs. Capacity, with a 2-Hp Vane Feeder.
2. Hopper, Receiving, High Natural Rubber, 5'-0" W. x 8'-0" L. x 15'-0" H., 4,000 Lbs. Capacity, with a 2-Hp Vane Feeder.
3. Conveyor, Screw, 5-Hp.
4. Heat Exchanger, Asphalt Oil, with a 15-Hp Transfer Pump.
5. Tank, Extender Oil, 8'-0" Dia. x 7'-0" L., 2,000 Gals. Capacity, with a 2-Hp Transfer Pump.
6. Tank, Mixing, 4'-0" Dia. x 5'-0" H., 400 Gals. Capacity, with a 30-Hp Mixing Auger, and a Vapor Condenser with 4" thick Steel Wool.
7. Tank, Secondary Mixing and Storage, Two Compartments, 10'-0" Dia. x 45'-0" L., 30,000 Gals. Capacity, with two 10-Hp Horizontal Mixing Augers, Vapor Condenser with 4" thick Steel Wool, and a 20-Hp Transfer Pump.

Modification of the current 7,600,000 BTU/Hr Process Oil Heater by installation of a 7,000,000 BTU/HR CEI Enterprises, Model HDI-400, Natural Gas Fired Low NOx Burner, Power Flame, Model NP2-NG-840, with Flue Gas Recirculation, and a 10-Hp blower.

Air Pollution Control System, consisting of:

1. Electrostatic Precipitator, Trion Air Boss, Model T1300, Two Chambers, 0.9 Kw.
2. Exhaust System with a 1-Hp Blower, venting a Mixing Tank.

Air Pollution Control System, consisting of:

1. Electrostatic Precipitator, Trion Air Boss, Model T2600, Two Chambers, 1.925 Kw.
2. Exhaust System with a 2-Hp Blower, venting a Secondary Mixing and Storage Tank.

Air Pollution Control System, consisting of:

1. Carbon Adsorber, ENVENT Corporation, Model EC-2000, with Two Canisters in series (Primary and Secondary), each 3'-9.5" Dia. x 7'-10" H. and each with 2,000 Pounds of Activated Carbon.
2. Exhaust System with a 10-Hp Blower, venting Two Electrostatic Precipitators.

GENERAL CONDITIONS

1. This permit shall expire within 90 days from the issuance date of this Permit, or 90 days after completion of installation/commencing operation of the equipment, whichever is later, unless an extension is approved in writing by the Executive

Officer. A written request for extension shall be filed with the South Coast AQMD Engineering Division prior to the permit's expiration date. The written request shall include reasons for extension request, status of construction, estimated completion date, and increments of progress.

2. This permit is granted pursuant to the provisions of Rule 441- Research Operations. The operator shall conduct research operations in a manner that will minimize emissions to the atmosphere to the maximum extent possible.
3. Within 90 days of completion of the research experiment, the operator shall submit to South Coast AQMD (Attn: Mr. Richard Hawrylew) a comprehensive report which, at a minimum details the history of the project (including the dates of the start of construction, construction completion, and start of operation), final equipment configuration, final emission source test results, and offer an assessment on the long-term viability of the project. The submittal shall include a copy of this permit. This report shall be submitted to South Coast AQMD, Chemical/Mechanical/Ports/Title V Team, 21865 Copley Drive, Diamond Bar, CA 91765.
4. Records shall be maintained to demonstrate compliance with the conditions on this permit. Records shall be kept in a format acceptable to the South Coast AQMD, shall be retained at the facility for a minimum of two years, and shall be made available to South Coast AQMD personnel upon request.

EQUIPMENT CONDITIONS

CRUMB RUBBER/ASPHALT OIL BLENDING SYSTEM

1. This equipment shall not be operated unless the mixing tank, and the secondary mixing and storage tank are vented to air pollution control equipment which is in full use and has a valid Permit to Construct by the Executive Officer. The air pollution control equipment shall include a condenser and steel wool for each tank, an ESP for the mixing tank and secondary mixing tank, and a common carbon adsorber serving both tank exhausts.
2. The total quantity of material processed by this equipment shall not exceed 6,900 tons in any calendar month.
3. The total quantity of asphaltic concrete produced at this facility shall not exceed 121,050 tons in any calendar month.
4. The maximum operating temperature of the material processed in this equipment shall not exceed 450 deg. F. The maximum material operating temperature occurs at the feed line of the asphalt oil into the mixing tank. The temperature is measured and read daily while the plant is in production with the use of a micro motion readout on the local control panel.
5. A temperature indicator shall be installed and maintained in the exhaust of reaction/holding tank, between the condenser and the steel wool filter, to indicate the temperature of the exhaust gases in degrees Fahrenheit.
6. The temperature of the exhaust gases as measured in Crumb Rubber System condition No. 5 shall not exceed 120 degrees Fahrenheit.

OIL HEATER

1. This equipment shall comply with all applicable requirements of Rule 1146.
2. The operator shall install and maintain a non-resettable totalizing fuel meter to accurately indicate, in cubic feet, the total quantity of natural gas consumed by this equipment.
3. The total quantity of natural gas burned in this equipment shall not exceed 2,100,000 cubic feet in any calendar month.
4. Oxides of Nitrogen (NOx) discharged from the heater burner shall not exceed 9 parts per million by volume (ppmv) expressed as NO2 on a dry basis corrected to 3% oxygen, averaged over 30 consecutive minutes.
5. The operator of this equipment shall conduct source tests to demonstrate compliance with Oil Heater Condition No. 4 and the requirements of Rule 1146 under the following conditions:
    A. If the standard protocol for Rule 1146 is not used, then a source test protocol shall be submitted to the South Coast AQMD (addressed to the South Coast AQMD, Attn: Richard H. Hawrylew, Engineering and Permitting, 21865 Copley Dr., Diamond Bar, CA 91765) before the equipment begins operation unless otherwise approved in writing by the South Coast AQMD.
    B. The test protocol shall be approved in writing by the South Coast AQMD before the test commences. The test protocol shall include the completed South Coast AQMD forms ST-1 and ST-2 specifying the proposed operating conditions of the equipment during the test, the identity of the testing laboratory, a statement from the testing laboratory certifying it meets the criteria in South Coast AQMD Rule 304(k) and a description of the sampling and analytical procedures to be used.
    C. The source tests shall be conducted within 30 days after completion of installation/commencing operation of the equipment or receipt of the South Coast AQMD source test protocol approval, whichever is later, unless otherwise approved in writing by the South Coast AQMD.
    D. The tests shall measure NOx, CO, oxygen content, moisture content, temperature and the exhaust flow rate at the outlet of this equipment, at the maximum heat input at which the unit normally operates. The report shall present the emission data in pounds per hour and parts per million on a dry basis corrected to 3% oxygen.
    E. NOx and CO emission determination shall be averaged over a period of at least 15 and no more than 60 consecutive minutes, and at least 15 minutes after unit start-up.
    F. If the combustion device operated with variable heat input that falls below 50% of the rated heat input capacity during normal operation, additional testing for NOx and CO emissions shall be made using a heat input of less than 35% of the rated heat input capacity.
6. A written notice of the source tests shall be submitted to the South Coast AQMD at least 7 days prior to the source testing date so that an observer from the South Coast

AQMD may be present.

7. Two complete copies of the source test reports shall be submitted to the South Coast AQMD (to the same address as stated above) within 30 days after the source testing date unless otherwise approved in writing by the South Coast AQMD. The source test reports shall include, but may not limited to, all testing data required in the permit conditions and all items listed in the South Coast AQMD Source Test Checklist Forms ST-1 and ST-2.
8. A testing laboratory certified by the California Air Resources Board in the required test methods for criteria pollutants to be measured, and in compliance with South Coast AQMD Rule 304 (no conflict of interest) shall conduct the test.
9. Sampling facilities shall comply with the South Coast AQMD guidelines for construction of sampling and testing facilities, pursuant to Rule 217.

<u>ESP – venting Mixing Tank</u>

1. This equipment shall be in full use whenever the mixing tank is in operation.
2. This equipment shall not be operated unless it is vented to air pollution control equipment which is in full use and has a valid Permit to Construct by the Executive Officer.
3. The operator shall clean and maintain this equipment in accordance to the manufacturer's specifications.

<u>ESP – venting Secondary Mixing and Storage Tank</u>

1. This equipment shall be in full use whenever the secondary mixing and storage tank is in operation.
2. This equipment shall not be operated unless it is vented to air pollution control equipment which is in full use and has a valid Permit to Construct by the Executive Officer.
3. The operator shall clean and maintain this equipment in accordance to the manufacturer's specifications.

<u>CARBON ADSORBER – venting two ESPs</u>

1. An identification tag(s) or nameplate(s) shall be displayed on the equipment to show the amount of carbon in each carbon bed. The tag(s) or plate(s) shall be issued by the manufacturer and shall be adhered to the equipment in a permanent and conspicuous position.
2. This equipment shall be in full use whenever the mixing tank and/or secondary mixing and storage tank are in operation.
3. The operator shall use fresh carbon with an initial Carbon Tetrachloride Activity Number of not less than 60% as measured by ASTM Method D3467, or a Butane Activity Number of not less than 23.5% as measured by ASTM Method D5742.
4. When the Total Organic Compound (TOC) concentration measured at the outlet of the primary carbon adsorber demonstrates less than 90 percent control efficiency the operator shall replace no less than 2,000 pounds of activated carbon as follows:

A. Primary canister replaced with either fresh activated carbon or activated carbon from the secondary canister.
B. Secondary canister replaced with fresh activated carbon.

5. Spent carbon removed from the system shall be stored in closed containers prior to disposal or regeneration. If disposed, disposal shall be in accordance with applicable hazardous materials rules and regulations.
6. TOC concentrations shall be measured at the inlet and outlet of the primary and secondary carbon adsorbers, in parts per million by volume, using a flame ionization detector (FID), or a photoionization detector (PID) or South Coast AQMD approved organic vapor analyzer calibrated in parts per million by volume (ppmv) as hexane, (if other calibrating agent was used, it shall be correlated to and expressed as hexane). The analyzer shall meet EPA Method 21 requirements. Measurements shall be made and recorded under the following schedule, upon initial operation of the equipment, under normal operating conditions:
   1. Once a day for the first week, and
   2. Once a week for the duration of the permit.
7. The operator of this equipment shall conduct source tests under the following conditions:
   A. A source test protocol shall be submitted to the South Coast AQMD (addressed to the South Coast AQMD, Attn: Richard H. Hawrylew, Engineering and Permitting, 21865 Copley Dr., Diamond Bar, CA 91765) before the equipment begins operation unless otherwise approved in writing by the South Coast AQMD.
   B. The test protocol shall be approved in writing by the South Coast AQMD before the test commences. The test protocol shall include the completed South Coast AQMD forms ST-1 and ST-2 specifying the proposed operating conditions of the equipment during the test, the identity of the testing laboratory, a statement from the testing laboratory certifying it meets the criteria in South Coast AQMD Rule 304(k) and a description of the sampling and analytical procedures to be used.
   C. The source tests shall be conducted within 30 days after completion of installation/commencing operation of the equipment or receipt of the South Coast AQMD source test protocol approval, whichever is later, unless otherwise approved in writing by the South Coast AQMD.
   D. The source tests shall consist of, but may not be limited to, testing of the inlet and outlet of the carbon adsorber when the crumb rubber/asphalt blending system is operating under normal conditions for:
      (1) Volatile Organic Compounds (VOC) in lb/hr and ppmv
      (2) VOC collection efficiency (Smoke Tests and Capture Velocities)
      (3) Total reduced sulfur compounds in lb/hr and ppmv
      (4) Speciated Toxic Organic Compounds in lb/hr and ppmv
      (5) Polycyclic Aromatic Hydrocarbons in lb/hr and ppmv
      (6) Multiple metals in lb/hr
      (7) Oxygen content
      (8) Moisture content
      (9) Flow rate

(10) Temperature

8. A written notice of the source tests shall be submitted to the South Coast AQMD at least 7 days prior to the source testing date so that an observer from the South Coast AQMD may be present.
9. Two complete copies of the source test reports shall be submitted to the South Coast AQMD (to the same address as stated above) within 30 days after the source testing date unless otherwise approved in writing by the South Coast AQMD. The source test reports shall include, but may not limited to, all testing data required in the permit conditions and all items listed in the South Coast AQMD Source Test Checklist Forms ST-1 and ST-2.
10. A testing laboratory certified by the California Air Resources Board in the required test methods for criteria pollutants to be measured, and in compliance with South Coast AQMD Rule 304 (no conflict of interest) shall conduct the test.
11. Sampling facilities shall comply with the South Coast AQMD guidelines for construction of sampling and testing facilities, pursuant to Rule 217. If required for sampling and flow measurements, temporary ducting shall be installed.
12. South Coast AQMD staff will be provided access, and ability to test the emissions from this equipment. Access and testing shall be allowed within 7 days of intent of access and/or test.

THIS SOUTH COAST AQMD RULE 441 PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

If you have any further questions, please feel free to contact me.

Sincerely,

Merrill Hickman

Merrill Hickman
Senior AQ Engineering Manager
Engineering and Permitting
South Coast AQMD

cc: Scott Taylor, Taylor Environmental Services
Jason Aspell, South Coast AQMD
Amir Dejbakhsh, South Coast AQMD