

23 July 2013

Mrs. Stephanie Benson  
Environmental Manager  
Toray Plastics (America), Inc.  
50 Belver Avenue  
North Kingstown, RI 02852

Dear Mrs. Benson:

The Department of Environmental Management, Office of Air Resources has reviewed and approved your application for installation of fuel burning equipment and associated air pollution control equipment at your facility located to be located at 50 Belver Avenue, North Kingstown, RI.

Enclosed is a minor source permit issued pursuant to our review of your application (Approval Nos. 2218-2221).

If there are any questions concerning this permit, please contact me at (401)-222-2808, extension 7110 or at [ruth.gold@dem.ri.gov](mailto:ruth.gold@dem.ri.gov).

Sincerely,

Ruth A. Gold  
Principal Air Quality Specialist  
Office of Air Resources

cc: North Kingstown Building Official  
Kelly A. Cowan, P.E., Woodard & Curran

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS  
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR RESOURCES

MINOR SOURCE PERMIT

*TORAY PLASTICS (AMERICA), INC.*

APPROVAL NOs. 2218-2221

Pursuant to the provisions of Air Pollution Control Regulation No. 9, this minor source permit is issued to:

*Toray Plastics (America), Inc.*

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**For the following:**

*Installation of a 5MW Kawasaki lean-burn engine, Model No. KG-12V60Hz (Approval No. 2218) and a 7.5 MW Kawasaki lean-burn engine, Model No. KG-18V60Hz (Approval No. 2219).*

*The engines shall fire natural gas only. Each engine is equipped with an air pollution control system consisting of a Steuler Selective Catalytic Reduction (SCR) system and an oxidation catalyst (Approval Nos. 2220 & 2221).*

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**Located at:** *50 Belver Avenue, North Kingstown*

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**This permit shall be effective from the date of its issuance and shall remain in effect until revoked by or surrendered to the Department. This permit does not relieve *Toray Plastics (America), Inc.* from compliance with applicable state and federal air pollution control rules and regulations. The design, construction and operation of this equipment shall be subject to the attached permit conditions and emission limitations.**

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**Douglas L. McVay, Chief  
Office of Air Resources**

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**Date of Issuance**

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS  
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR RESOURCES

**Permit Conditions and Emission Limitations**

Toray Plastics (America), Inc.

**Approval Nos. 2218-2221**

**A. Emission Limitations**

**1. 5 MW Unit**

a. Nitrogen Oxides (as Nitrogen Dioxide (NO<sub>2</sub>))

The emission rate of nitrogen oxides discharged to the atmosphere from the engine exhaust shall not exceed 0.45 pounds per megawatt-hour (lb/MWh) or 2.24 pounds per hour, whichever is more stringent.

b. Carbon Monoxide (CO)

The emission rate of carbon monoxide discharged to the atmosphere from the engine exhaust shall not exceed 1.81 pounds per megawatt-hour (lbs/MWh) or 9.05 pounds per hour, whichever is more stringent.

c. Total Nonmethane Hydrocarbons (NMHC)

The emission rate of total nonmethane hydrocarbons discharged to the atmosphere from the engine exhaust shall not exceed 0.45 pounds per megawatt-hour (lb/MWh) or 2.24 pounds per hour, whichever is more stringent.

d. Ammonia (NH<sub>3</sub>)

(1) The concentration of ammonia discharged to the atmosphere from the engine exhaust shall not exceed 5 ppmv, on a dry basis, corrected to 15 percent O<sub>2</sub> (one-hour average).

(2) The emission rate of ammonia discharged to the atmosphere from the engine exhaust shall not exceed 0.32 pounds per hour.

e. Visible emissions from the engine exhaust shall not exceed 10% opacity except for a period or periods aggregating no more than three minutes in any one hour.

## 2. 7.5 MW Unit

### a. Nitrogen Oxides (as Nitrogen Dioxide (NO<sub>2</sub>))

The emission rate of nitrogen oxides discharged to the atmosphere from the engine exhaust shall not exceed 0.45 pounds per megawatt-hour (lb/MWh) or 3.36 pounds per hour, whichever is more stringent.

### b. Carbon Monoxide (CO)

The emission rate of carbon monoxide discharged to the atmosphere from the engine exhaust shall not exceed 1.81 pounds per megawatt-hour (lb/MWh) or 13.58 pounds per hour, whichever is more stringent.

### c. Total Nonmethane Hydrocarbons (NMHC)

The emission rate of total nonmethane hydrocarbons discharged to the atmosphere from the engine exhaust shall not exceed 0.45 pounds per megawatt-hour (lb/MWh) or 3.36 pounds per hour, whichever is more stringent.

### d. Ammonia (NH<sub>3</sub>)

(1) The concentration of ammonia discharged to the atmosphere from the engine exhaust shall not exceed 5 ppmv, on a dry basis, corrected to 15 percent O<sub>2</sub> (one-hour average).

(2) The emission rate of ammonia discharged to the atmosphere from the engine exhaust shall not exceed 0.48 pounds per hour.

### e. Visible emissions from the engine exhaust shall not exceed 10% opacity except for a period or periods aggregating no more than three minutes in any one hour.

## B. Operating Requirements

1. Natural gas shall be the only fuel fired in the engines.
2. The maximum firing rate for the 5 MW engine shall not exceed 39,733 ft<sup>3</sup>/hr of natural gas.
3. The maximum firing rate for the 7.5 MW engine shall not exceed 59,599 ft<sup>3</sup>/hr of natural gas.
4. Each SCR system and oxidation catalyst shall be operated and maintained in accordance with the manufacturer's recommendations.

5. There shall be no bypassing of the air pollution control system during start-up, operation or shutdown. Urea will not be injected during start-up or shutdown unless the catalyst bed is at, or above, the manufacture's specified minimum operating temperature of 540°F.

**C. Monitoring Requirements**

1. Each engine shall be equipped with a non-resettable elapsed time meter to indicate, in cumulative hours, the elapsed engine operating time for the unit.
2. Each generator shall be equipped with a kilowatt-hour meter to indicate, in cumulative kilowatt-hours, the power generated by the engine-generator set.
3. Natural gas flow to each engine shall be continuously measured and recorded.
4. A continuous monitoring system (CMS) shall be installed, operated and maintained to measure the concentration, in parts per million (ppm) of NO<sub>x</sub> and CO at the outlet of each SCR system and oxidation catalyst. The concentrations shall be monitored continuously and the date, time and measurement shall be recorded.
5. The owner/operator shall continuously measure the temperature across the catalyst bed (inlet and outlet) of each air pollution control system.
6. The owner/operator shall continuously measure the pressure drop across the catalyst bed of each air pollution control system.
7. The owner/operator shall monitor the ammonia emissions for each engine according to the following schedule:
  - a. For the first 18,000 hours of catalyst life, the ammonia concentration (ppm) and mass emission rate (lb/hr) after the SCR system shall be measured during the initial and each subsequent performance test required by Condition D.1 using Conditional Test Method 27 (CTM-027) or another method approved by the USEPA and the Director.
  - b. After 18,000 hours of catalyst life, the ammonia concentration (ppm) shall be measured every 750 operating hours until the SCR catalyst is replaced. CTM-027 is not required for this periodic monitoring. The test method used for this periodic monitoring shall be approved by the Office of Air Resources prior to the performance of this monitoring.

This testing schedule may be revised by the Office of Air Resources if it determines, based on the ammonia emissions testing, that the above schedule is not sufficient to monitor compliance with Condition A.1.d and A.2.d of this permit.

#### **D. Stack Testing**

1. Within 180 days of start-up, initial performance testing shall be conducted for each engine. Performance testing shall be conducted in accordance with 40 CFR 60.4244 for nitrogen oxides, carbon monoxide, and nonmethane hydrocarbons. Performance testing for ammonia shall be using Conditional Test Method 27 (CTM-027) or another method approved by the USEPA and the Director.

Thereafter, emissions testing for each engine shall be conducted every 8760 hours of operation or every 3 years, whichever is first, to determine compliance with the nitrogen oxides, carbon monoxide, ammonia and nonmethane hydrocarbon emission limitation. Each emission test for nitrogen oxides, carbon monoxide and nonmethane hydrocarbons shall be conducted in accordance with the procedures specified in 40 CFR 60.4244. Each emission test for ammonia shall be conducted using Conditional Test Method 27 (CTM-027) or another method approved by the USEPA and the Director

2. An emissions testing protocol shall be submitted to the Office of Air Resources and the USEPA at least 60 days prior to the performance of any emissions test. The owner/operator shall provide the Office of Air Resources and the USEPA at least 60 days prior notice of any emissions test.
3. All test procedures used for stack testing shall be approved by the Office of Air Resources and the USEPA prior to the performance of any stack test.
4. The owner/operator shall install any and all test ports or platforms necessary to conduct the required stack testing, provide safe access to any platforms and provide the necessary utilities for sampling and testing equipment.
5. All testing shall be conducted under operating conditions deemed acceptable and representative for the purpose of assessing compliance with the applicable emission limitations.
6. All emissions testing must be observed by the Office of Resources or its authorized representatives to be considered acceptable, unless the Office of Air Resources provides authorization to the owner/operator to conduct the testing without an observer present.
7. A final report of the results of the initial and subsequent performance tests shall be submitted to the Office of Air Resources and the USEPA no later than 60 days following completion of the testing.

#### **E. Recordkeeping and Reporting**

1. The owner/operator shall, on a monthly basis, no later than 15 days after the first of each month, determine and record the hours of operation for each engine for the previous month. The owner/operator shall keep records of this determination

and provide such records to the Office of Air Resources or its authorized representative and EPA upon request.

2. The owner/operator shall, on a monthly basis, no later than 15 days after the first of each month, determine and record the fuel use for each engine for the previous month. The owner/operator shall keep records of this determination and provide such records to the Office of Air Resources or its authorized representative and EPA upon request.
3. The owner/operator shall, on a monthly basis, no later than 15 days after the first of each month, determine and record the kilowatt-hours generated for each engine for the previous month. The owner/operator shall keep records of this determination and provide such records to the Office of Air Resources or its authorized representative and EPA upon request.
4. The owner/operator shall maintain the following records in an operating log at least once per day:
  - a. The pressure drop and temperature across the catalyst bed (inlet and outlet) of each air pollution control system.
  - b. The concentration, in parts per million (ppm) as measured by the CMS for nitrogen oxides and carbon monoxide.
5. The owner/operator shall maintain records of all ammonia testing conducted pursuant to Condition C.7.b of this permit.
6. The owner/operator shall develop a maintenance plan for the engines and air pollution control systems and shall maintain records of all maintenance conducted.
7. The owner/operator shall maintain all records that demonstrate that the engines meet the emission standards of 40 CFR 60 Subpart JJJJ.
8. The owner/operator shall submit an initial notification to EPA, as required by 40 CFR 60.7(a)(1), and shall retain records of this notification onsite. The initial notification shall include:
  - a. Name and address of the owner or operator;
  - b. The address of the affected source;
  - c. Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;
  - d. Emission control equipment; and
  - e. Fuel used.

9. The owner/operator shall notify the Office of Air Resources in writing of the date of actual initial start-up of each engine set no later than fifteen days after such date.
10. The owner/operator shall notify the Office of Air Resources of any anticipated noncompliance with the terms of this permit or any other applicable air pollution control rules and regulations.
11. The owner/operator shall notify the Office of Air Resources in writing of the date whenever the catalyst is replaced for the SCR system.
12. The owner/operator shall notify the Office of Air Resources in writing of the date whenever the catalyst is replaced for the oxidation catalyst system.
13. The owner/operator shall notify the Office of Air Resources in writing of any planned physical or operational change to any equipment that would:
  - a. Change the representation of the facility in the application.
  - b. Alter the applicability of any state or federal air pollution rules or regulations.
  - c. Result in the violation of any terms or conditions of this permit.
  - d. Qualify as a modification under APC Regulation No. 9.

Such notification shall include:

- Information describing the nature of the change.
- Information describing the effect of the change on the emission of any air contaminant.
- The scheduled completion date of the planned change.

Any such change shall be consistent with the appropriate regulation and have the prior approval of the Director.

14. Deviations from permit conditions, including those attributable to upset conditions as defined in this permit, shall be reported, in writing, within five (5) business days of the deviation, to the Office of Air Resources. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.
15. The owner/operator shall maintain properly signed, contemporaneous operating logs or other relevant evidence to document actions during startup/shutdown periods.



16. All records required in this permit shall be maintained for a minimum of five years after the date of each record and shall be made available to representatives of the Office of Air Resources or its authorized representative and EPA upon request.

**F. Other Permit Conditions**

1. The owner/operator shall raise the stack for Cogen 1 (Approval No. 1671) to 70 feet above grade. Until the stack is raised, Cogen 1 shall not fire fuel oil when the 5 MW engine or the 7.5 MW engine are in operation. An operating log shall be maintained indicated the date, time, and fuel fired during this period.
2. The owner/operator shall notify the Office of Air Resources, in writing, of the date the modifications to the stack of Cogen 1 are completed, no later than 15 days after such date.
3. The emission limitations of Conditions A.1 and A.2 shall not apply during engine startup/shutdown conditions. Engine startup shall be defined as the first ten minutes of firing following the initiation of firing. Engine shutdown shall be defined as the cessation of operation for any purpose.
4. The owner/operator is subject to the requirements of 40 CFR 60, Subpart A (General Provisions) and Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines). Compliance with all applicable provisions therein is required.
5. To the extent consistent with the requirements of this permit and applicable federal and state laws, the equipment shall be designed, constructed and operated in accordance with the representation of the equipment in the permit application.
6. Employees of the Office of Air Resources and its authorized representatives shall be allowed to enter the facility at all times for the purpose of inspecting any air pollution source, investigating any condition it believes may be causing air pollution or examining any records required to be maintained by the Office of Air Resources.
7. At all times, including periods of startup, shutdown and malfunction, the owner/operator shall, to the extent practicable, maintain and operate the facility in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Office of Air Resources which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures and inspection of the source.
8. The emission and dispersion characteristics of all emission sources at the facility shall be consistent with the parameters used in the air quality modeling to

demonstrate that the emissions from the facility do not cause or contribute to air pollution in violation of any national ambient air quality standard. The Office of Air Resources, in its sole discretion, may reopen this minor source permit if it determines that the emission and dispersion characteristics have changed significantly and that emission limitations must be revised and/or added to this permit to ensure compliance with national ambient air quality standards.

9. The owner/operator shall, within 60 days following completion of the initial performance testing, submit to the Office of Air Resources calculations to support a target ppm NO<sub>x</sub> and CO measurement from the CMS that assures compliance with the emission limitations in conditions A.1.a, A.1.b, A.2.a and A.2.b.

## **G. Malfunctions**

1. The owner/operator may seek to establish that a malfunction of any air pollution control system that would result in noncompliance with any of the terms of this permit or any other applicable air pollution control rules and regulations was due to unavoidable increases in emissions attributable to the malfunction. To do so, the owner/operator must demonstrate to the Office of Air Resources that:
  - a. The malfunction was not attributable to improperly designed equipment, lack of preventative maintenance, careless or improper operation or operator error;
  - b. The malfunction is not part of a recurring pattern indicative of inadequate design, operation or maintenance;
  - c. Repairs were performed in an expeditious fashion. Off-shift labor and overtime should be utilized, to the extent practicable, to ensure that such repairs were completed as expeditiously as practicable.
  - d. All possible steps were taken to minimize emissions during the period of time that repairs were performed.
  - e. Emissions during the period of time that the repairs were performed will not:
    - (1) Cause and increase in the ground level ambient concentration at or beyond the property line in excess of that allowed by Air Pollution Control Regulation No. 22 and any Calculated Acceptable Ambient Levels; and
    - (2) Cause or contribute to air pollution in violation of any applicable state or national ambient air quality standard.
  - f. The reasons that it would be impossible or impractical to cease the source operation during said period.

- g. The owner/operator's actions in response to the excess emissions were documented by properly signed, contemporaneous operating logs or other relevant evidence.

This demonstration must be provided to the Office of Air Resources within two working days of the time when the malfunction occurred and contain a description of the malfunction, any steps taken to minimize emissions and corrective actions taken.

The owner/operator shall have the burden of proof in seeking to establish that noncompliance was due to unavoidable increases in emissions attributable to the malfunction.