

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

Oct 13 2009

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

Mr. Brian D. Klink
EHS&Q Manager
Hydrodec North America, LLC.
2021 Steinway Blvd, SE
Canton, OH 44707

Dear Mr. Klink:

The Office of Resource Conservation and Recovery (ORCR) of the U.S. Environmental Protection Agency (EPA) approves Hydrodec North America, LLC (Hydrodec), under authority of §6(e)(1) of the Toxic Substances Control Act (TSCA) and 40 CFR 761.60(e), to demonstrate its polychlorinated biphenyl (PCB) alternate non-thermal disposal technology using Catalytic Hydrogenation (CH). (See Enclosure.)

The enclosed Approval authorizes Hydrodec to demonstrate the removal and disposal of PCBs from oils using its CH unit. The CH unit is described in documents submitted to ORCR entitled "PCB 60(e) Approval Permit Application" (submitted May 8, 2009) for a TSCA PCB disposal operating approval. During the Demonstration Test, Hydrodec may only process PCB-contaminated oils which are stored at their Canton, Ohio facility (the Site). This approval is effective from the date of this letter to November 30, 2009.

Please note that EPA representatives will be on site during the Demonstration Test to observe procedures and to verify the results of the test runs. Hydrodec should be prepared to perform at least three complete test runs for the scheduled Demonstration Test.

Please also note that Quality Assurance (QA) samples spiked with PCBs or Aroclors will be submitted by EPA representatives to the laboratory designated by Hydrodec to conduct chemical analyses of samples collected at the Demonstration Test. Hydrodec shall determine the PCB concentration of each sample using analytical instrumentation in its designated laboratory(s).

After the Demonstration Test, Hydrodec will collect and assemble all test results into a Demonstration Test Report which shall be submitted to the Permits Branch, ORCR, for evaluation. When the evaluation is complete and if the data are determined to be acceptable, ORCR will consider imposing final conditions in a nationwide approval addressing the types of PCB-containing material which can be treated, as well as the limits on PCB concentrations. The conditions in the final, nationwide approval shall be based on operating conditions observed

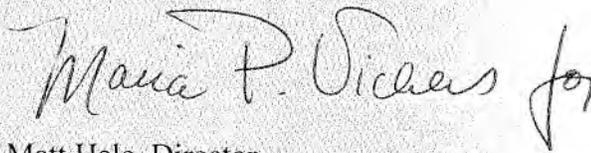
during the Demonstration Phase. Operating conditions will include, but will not be limited to reaction temperature, feed rate, and feed PCB concentration (see Appendix III).

The nationwide approval will contain financial assurance requirements similar to the requirements at 40 CFR part 264 (Subpart G and H), applicable to the CH unit and to the operating area. Hydrodec shall file documentation of compliance with these requirements with ORCR prior to initiation of any commercial disposal operations.

Finally, Hydrodec may claim any information submitted to be confidential business information (CBI) in accordance with EPA regulations at 40 CFR Part 2.203(b). Such information shall be clearly marked "Confidential" and Hydrodec shall also submit a sanitized version of the information at the time the claim of confidentiality is made. Failure to assert a claim of confidentiality shall constitute a waiver and any information submitted may be released without prior notice to Hydrodec.

Thank you in advance for your cooperation with EPA representatives at the demonstration site. If you have any questions regarding this matter, please contact Winston Lue at (703) 305-1617.

Sincerely,



Matt Hale, Director
Office of Resource Conservation and Recovery

Enclosure

cc: Steve Johnson
USEPA, Region 5

Tammy McConnell
Ohio Environmental Protection Agency

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA)

Approval to Demonstrate the Disposal of Polychlorinated Biphenyls (PCBs)

COMPANY

Hydrodec North America, LLC.
2021 Steinway Blvd, SE
Canton, OH 44707

APPROVAL TYPE

Demonstration Test

SITE OF DEMONSTRATION

Hydrodec North America, LLC
Canton, OH

EFFECTIVE DATE

Date of the transmittal letter to November 30, 2009.

AUTHORITY

This Approval to perform a Demonstration Test for PCB disposal is issued pursuant to Section 6(e)(1) of the Toxic Substances Control Act of 1976, Public Law No. 94-469, and the Federal PCB Regulations, 40 CFR Part 761.60(e), (48 Federal Register 13185, March 30, 1983).

CONDITIONS OF APPROVAL

1. Advance Notification: A thirty-day advance notification of the demonstration phase of the Demonstration Test shall be provided to the EPA Regional Administrator and state and local officials where the Hydrodec North America, LLC. (Hydrodec) Catalytic Hydrogenation (CH) unit will be used. This notice shall identify the exact site, date, and entity (Hydrodec) using the process along with an estimate of the length of stay at the site. A copy of the notice shall also be submitted to the Director of the Office of Resource Conservation & Recovery (ORCR) at EPA Headquarters.
2. Feedstock Restrictions: The Hydrodec CH unit shall be used to treat PCB-contaminated oils only. The quantity of PCBs to be processed will be limited to that needed to complete the

Demonstration Test. The PCB Demonstration Test shall consist of two phases: the shakedown phase (or startup phase) and the demonstration phase

Shakedown Phase. The shakedown phase of the Demonstration Test will be composed of the mechanical shakedown and running of oils through the equipment. During the shakedown phase, Hydrodec shall only treat oils containing less than 50 parts per million (ppm) PCBs. The mechanical shakedown will involve testing the equipment to ensure the mechanical, electrical, reactor, and instrument reliability of the CH unit. During this task, Hydrodec may check equipment by turning motors, calibrate instrumentation, where necessary, and perform any necessary training for its operator(s). Sampling and analysis to designate oils less than 50 ppm PCBs shall be conducted according to Hydrodec's "PCB 60(e) Approval Permit Application" (submitted May 8, 2009).

Demonstration Phase. The demonstration phase of the Demonstration Test shall consist of using the CH unit to treat the feedstock—that is, PCB-contaminated oils at the maximum PCB concentration Hydrodec expects to treat while operating under the nationwide PCB Disposal Approval for which this demonstration is being conducted. Based on the maximum expected PCB concentrations stated in Hydrodec's demonstration approval application, Hydrodec shall not treat feed stock exceeding 2,000 ppm PCBs. Three successful trial test runs of the CH unit shall be completed during the demonstration phase of the Demonstration Test.

Prior to any treatment, Hydrodec shall characterize the feedstock for PCBs, including Aroclor type and concentration (EPA Method 8082 or ASTM Method D4059). PCBs as Aroclors shall be sampled and analyzed by gas chromatography in accordance with the procedures described in Hydrodec's "PCB 60(e) Approval Permit Application."

Authorized EPA representatives will witness the demonstration phase of the Demonstration Test and obtain appropriate samples for verification of the effectiveness of the process. Hydrodec shall sample and analyze the PCB-contaminated oils, the treated oils, condensate, and other wastes, as directed by the EPA representatives. Hydrodec will be responsible for collecting and analyzing the samples to verify that the CH unit complies with the regulatory requirements and provisions in this approval. Hydrodec may also conduct any additional analyses, as necessary, to characterize the feedstock and facilitate more efficient operation of the CH unit.

Hydrodec is authorized to blend oil containing greater than 50 ppm PCBs with non-PCB oil in order to achieve an appropriate PCB concentration for the Demonstration Test. However, Hydrodec shall not blend oil that contains greater than 900,000 ppm PCBs and shall not blend more than 10,000 gallons total in the feed tank for the Demonstration Test. Hydrodec shall not treat oil greater than 2,000 ppm PCBs in its CH unit.

3. EPA Laboratory Audit: EPA will provide samples of PCBs in test matrices in order to determine the adequacy and accuracy of the analytical methods employed by Hydrodec or its agent. EPA will inform Hydrodec of the approximate range of PCB concentrations and the identity of the test matrix for any samples provided. Hydrodec or its agent shall determine the PCB concentration of the test material during the Demonstration Test and provide EPA representatives with chromatograms for all samples and associated standards, calculations, and

records regarding each analysis. EPA personnel may observe all or any portion of the analytical procedures.

4. Process Restrictions: The Hydrodec CH unit shall operate as described in their "PCB 60(e) Approval Permit Application." The conditions under which the Hydrodec CH unit shall operate include, but are not limited to, the following (also see Appendix III):

- a. Temperature shall not exceed 330°C (based on continuous, instantaneous readings) in any part of the CH unit. Monitoring shall be constant and the system shall have mechanisms to stop and cool the system should this temperature be reached.

This process restriction may be modified based on conditions observed during the demonstration phase at the discretion of the EPA field representatives.

5. Monitoring: Samples of the PCB-contaminated feed oils, the treated oils, and any condensate that is not fed back into the CH unit shall be collected during the three test runs of the demonstration phase and analyzed for PCBs. Samples of the PCB-contaminated feed oils and treated oils shall be also be analyzed for dioxins and furans. Hydrodec may analyze samples on-site to facilitate the optimization of the operating conditions; however, in such case, all samples shall be split and sent to an off-site, accredited laboratory to be analyzed for purposes of reporting to EPA in the Demonstration Test Report.

Quality assurance (QA) spiked PCBs or Aroclor 1260 samples may be submitted by EPA representatives to the laboratory designated by Hydrodec to conduct chemical analyses of the samples collected during the demonstration phase of the Demonstration Test or to other entities selected by Hydrodec to conduct chemical analyses of samples. Hydrodec shall determine the PCB concentration of each QA sample using analytical instrumentation in its designated laboratory and report this data to EPA in its final report.

6. Process Waste Characterization: Liquid and non-liquid waste generated from the CH unit shall be analyzed for PCBs. All processed non-liquid waste exhibiting a PCB concentration greater than 2 ppm PCBs and liquid waste exhibiting a PCB concentration greater than 0.5 parts per billion (ppb) shall be disposed of as if it contained the original PCB level of the feedstock. Liquid waste shall be below 0.5 ppb for unrestricted use or discharge. Sampling of the non-liquid and liquid wastes shall be performed at the termination of the trial run or when the non-liquid or liquid media is replaced or replenished, whichever occurs first. Non-liquid wastes may include spent activated carbon, rags, and debris. Liquid wastes include any condensates and wastewater. Hydrodec shall provide splits of representative samples of the PCB-contaminated feedstock, wastewater, and treated oil for analysis by EPA from all trial test runs during the demonstration phase of the Demonstration Test. Extraction of PCBs for the purposes of analysis shall be conducted using the manual Soxhlet extraction method (EPA method 3540C).

7. Successful Trial Runs: A minimum of three successful trial test runs shall be completed before ORCR will consider the Demonstration Test successful. A successful trial run is defined as one in which operations were continuous and without significant interruption and one in which sampling was representative and which adequately demonstrates all that non-liquid

wastes, such as solid waste streams or oils resulting from the treatment of the PCB-contaminated oils have less than 2 ppm PCBs, while all liquid waste streams resulting from the treatment of the PCB-contaminated oils have less than 0.5 ppb. PCB analysis showing Aroclor patterns shall be reported as total PCBs; otherwise, the results will be reported for individual PCB congener peaks.

8. Secondary Containment Restrictions: A secondary containment system shall be installed to ensure inadvertent releases of liquids containing PCBs and PCB-related waste to the environment do not occur. All liquids accumulating in the secondary containment area(s) shall be sampled and analyzed for PCBs. In the event that PCBs at greater than or equal to 0.5 ppb are found in the liquids, the liquids shall be managed in accordance with 40 CFR Part 761.

9. Recordkeeping and Operations Log: Hydrodec shall collect and maintain for a period of 5 years from the start date of the Demonstration Test, the following information:

- A. The quantity of PCB-contaminated oils treated in the CH unit.
- B. The CH system's temperatures, monitored continuously and recorded every 5 minutes.
- C. A copy of the chromatograms and related analytical data from the tests required by Condition 2 of this Approval.
- D. The total weight in kilograms of any solid residues generated by the treatment of PCBs during the Demonstration Test, and the total weight in kilograms of any solid residues disposed of.
- E. The date(s), time and duration of the demonstration phase of the Demonstration Test.
- F. The names, addresses, and telephone numbers of each operator and supervisor of the CH unit.
- G. The date, time, name of the EPA field representatives, and a brief description of each process or sampling change approved by the EPA field representatives.

The recordkeeping and operations log shall be compiled within 60 days following completion of the demonstration phase of the Demonstration Test. The log shall be kept at one central location and it shall be available for inspection by authorized representatives of EPA, upon request. Hydrodec, or its authorized agents shall also maintain the records required by 40 CFR 761.180. If Hydrodec or its agents terminate business, these records or copies shall be submitted to the Director of ORCR.

10. Process Failure: If the quality control testing as described in Hydrodec's "PCB 60(e) Approval Permit Application" reveals that the PCB concentrations in the treated oils are greater than 2 ppm PCBs, the EPA field representative may order cessation of all disposal activities until adequate written explanation is provided and corrective measures are implemented. A written

report detailing the problem and solution shall be filed with the Director of ORCR within five business days of EPA's order to cease disposal activities.

11. PCB Releases: In the event Hydrodec knows, believes, or has reason to believe, that a release of PCBs from the CH unit to the environment has or may have occurred, the facility operator shall inform the Director of ORCR and the EPA Regional Administrator immediately.

A written report describing the incident shall be submitted by the close of business on the next regular business day to the Director of ORCR and the EPA Regional Administrator. No PCBs may be processed in the facility until the release problem has been corrected to the satisfaction of the Director of ORCR.

12. PCB Spills: Any spill of PCBs shall be promptly controlled and cleaned up as provided in Hydrodec's spill prevention, control, and response plan described in Appendix B of Hydrodec's "60(e) Approval Permit Application." In addition, a written report describing the spill, storage, processing or disposal operations involved at the time of the spill and all clean-up actions taken shall be submitted to the Director of ORCR and the EPA Regional Administrator within five business days of the spill.

13. Facility Security and Safety: Hydrodec shall take all necessary precautionary measures to ensure that operation of the CH unit is conducted in compliance with all applicable safety and health standards, as required by federal, state, or local laws, regulations and ordinances. The site shall be appropriately secured (e.g., fence, alarm system, etc.) to ensure that only those individuals participating in the demonstration phase of the Demonstration Test and authorized visitors are allowed in the area.

Any accident or personal injury occurring as a result of storage or processing of PCBs or operating the CH unit shall be reported to the Director of ORCR by the next business day. A written report describing the accident shall be submitted to the Director of ORCR within five business days of the accident.

14. Reporting Requirements: Any notification to the Director of ORCR required by Conditions 10, 11, 12, or 13 shall be done by telephone to the Director of ORCR within the time frames specified. In addition, Hydrodec shall submit a written report to: Director, Office of Resource Conservation and Recovery, Mail Code: 5301P, 1200 Pennsylvania Ave., NW, Washington, DC 20460, within the specified time frames.

15. PCB Off-Site Transport: PCB waste may not be transported off-site, except for proper storage or disposal in accordance with 40 CFR 761, subpart D. All PCBs not used in the Demonstration Test (e.g., spiking solutions) shall, upon completion of all testing, be disposed of in accordance with 40 CFR part 761, subpart D. PCB-contaminated equipment on the CH unit shall be decontaminated before it may be transported off-site, in accordance with the U.S. Department of Transportation (DOT) requirements of 49 CFR Part 172.

16. Severability: The conditions of this Approval are severable, and if any provisions of this approval or any application of any provision is held invalid, the remainder of this approval shall not be affected thereby.

17. Other Approvals or Permits: No operation may commence until Hydrodec has obtained all necessary approvals or permits from Federal, State, and local agencies. Hydrodec is responsible for obtaining such approvals or permits where appropriate.

18. Compliance Responsibility: Hydrodec shall be responsible for any authorized Hydrodec operation and assumes full responsibility for any failure to comply with applicable federal, state and local laws, regulations and ordinances, including the conditions of this Approval. Violation of any applicable Federal regulations will be subject to enforcement action, which may include termination of this approval. This approval may be rescinded at any time for failure to comply with the terms and conditions herein, or for any other reasons which EPA deems necessary to protect human health and the environment.

19. EPA Inspection: EPA reserves the right for its employees or agents to inspect and test Hydrodec personnel, procedures, and equipment, and to terminate Hydrodec PCB disposal activities at any time.

20. Deviation from the Demonstration Test Plan: Any deviations from the conditions of this Approval or the terms expressed in the Demonstration Test Plan, dated May 2, 2009 from Hydrodec, must receive prior authorization from the EPA field representative. Oral authorizations of deviation requests shall be followed within 10 working days by submission from Hydrodec of a written modification to the Demonstration Test Plan. In this context, "Demonstration Test Plan" shall be defined as all data and materials which have been received by the Director of ORCR from Hydrodec regarding Hydrodec's CH unit.

21. Additional Demonstration Approval Conditions: EPA reserves the right to impose additional conditions when it has reason to believe that the continued operation of the CH unit presents an unreasonable risk of injury to health or the environment, or for any other reason it deems valid. Cause includes imminent hazard, new information, and failure to meet any and all conditions of this approval.

22. Demonstration Test Report: After the demonstration, Hydrodec shall collect and assemble all test results and other appropriate information into a process Demonstration Test Report and submit the report to the Director of ORCR for evaluation. When the evaluation is complete, and if the data are determined to be acceptable, the Director of ORCR will consider issuing to Hydrodec, a nationwide PCB disposal approval to treat oil containing PCBs.

Approval to conduct a disposal demonstration of PCBs is hereby granted to Hydrodec of Canton, Ohio, subject to the findings, conditions and limitations expressed herein, and consistent with the materials and data included in the approval application and Demonstration Test Plan filed by Hydrodec. This Approval is only valid for operations at the Hydrodec facility in Canton, Ohio.

10/13/2009
Date

Maia P. Vickers for
Matt Hale, Director
Office of Resource Conservation and Recovery

APPENDIX I

BACKGROUND

Hydrodec North America, LLC (Hydrodec) provides services to customers using its proprietary Catalytic Hydrogenation (CH) treatment. The CH process refines used oils and organic chemicals. The Canton facility uses four identical reactor trains. The final products (from the destruction of organic contaminants) include ethane, methane, carbon dioxide, hydrogen, water, biphenyl polymers and hydrogen chloride.

The Canton, Ohio facility services used oil and can, by CH, recycle used oils. The site uses a feed tank able to hold 10,000 gallons of oils contaminated with PCBs with concentrations of up to 2,000 ppm PCBs.

Hydrodec has one facility located in Canton, Ohio and a second facility planned for Laurel, Mississippi. Hydrodec anticipates building CH facilities in more than one EPA Region. Several other CH sites in the United States are in the planning stages for future construction.

FINDINGS

1. The Hydrodec CH system consists of hydrogenation treatment of the reactor effluent and the reactor gases. The Hydrodec unit removes PCBs from contaminated oils. Components of the CH system include the following:

- a. Feedstock oil tank
- b. Reactor feed heater
- c. CH reactor;
- d. Gas/liquid separator
- e. Oil water separator
- d. Catalytic oxidizer.

Process Description:

Hydrogenation:

The PCB-contaminated transformer oil is collected in feedstock tanks which feed an oil surge tank. From the feed oil surge tank, the oil is introduced to the CH process. The oil is pre-heated by passing it counter-current to a hot hydrogenation reactor effluent stream and through a heat exchanger. Fresh and recycled hydrogen, together with a scavenger, are then introduced. The combined flow is then heated to the reaction temperature before entering the CH reactor which is comprised of a single packed bed of a conventional hydro-treating catalyst.

During the reaction, nitrogen or sulfur in the mineral oil dielectric fluid (MODEF) is converted to ammonia and hydrogen sulfide. In addition to extraction of heteroatoms and hydrodechlorination of PCB compounds, some saturated light hydrocarbon vapors and liquids

below the boiling range of the MODEF may also be formed from the hydrogenation of the MODEF itself. These hydrocarbons are subsequently separated out within the CH system.

Reactor Effluent:

The product oil (reactor bottoms) leaving the reactor is first cooled in a heat exchanger against the incoming feed oil. The oil is then passed through a gas/liquid separator. The product oil is then washed with de-mineralized water and sent to an oil/water separator. From the oil/water separator, the product oil (which is the refined oil to less than 2 ppm PCBs) is sent to the product tank. Wastes from the separators (e.g., light oil, waters and salts) are sent to a waste tank.

Reactor Gas:

The reactor gases (containing excess hydrogen) are water quenched and sent to a gas/liquid separator, then to a vapor knock-out unit. The gas is then recycled to a compressor and to the reactor feed. To prevent buildup of non-condensable gases, some of the recycled gases are bled to an intermittent gas purge, then sent to a catalytic oxidizer.

2. The CH system is designated as an alternate PCB disposal method or more specifically, an alternate PCB thermal disposal process.
3. The CH system must demonstrate that it meets or exceeds the operating performance criteria for incineration of PCBs at 40 CFR 761.70. Incinerators meeting these criteria have been shown not to present an unreasonable risk to human health or the environment. The currently accepted performance level for an EPA approved TSCA incinerator is 99.9999% destruction and removal efficiency (DRE) for PCBs.
4. Many of the CH unit operating parameters are manually controlled. In addition, a shutdown sequence may be initiated manually by the operator.
5. Due to the design aspects, operating parameters, and safety measures, EPA finds that a demonstration of Hydrodec's CH system is similar to a demonstration of a TSCA PCB incinerator and that the demonstration activity itself does not pose an unreasonable risk of injury to health or the environment.

APPENDIX II

TO THE HYDRODEC NORTH AMERICA, LLC., PROCESS APPROVAL TO DISPOSE OF
POLYCHLORINATED BIPHENYLS

SAMPLE THIRTY DAY NOTIFICATION FORM FOR CONDITION NO. 1

Company Name, Address, Phone Number, and Contact Person:

Person, Organizational Affiliation/Title, and Phone Number for:

EPA Regional Contact:

State Contact:

Local (Town/City/County) Contact:

Nature of the Disposal Activity:

Kind of PCB Disposal Process:

Kinds of Material Containing PCBs:

Numbers and Sizes of Pieces of Equipment Containing PCBs:

Quantity of Solids and/or Volume of Liquid(s) Containing PCBs:

Concentration(s) of PCBs in the Material Treated:

Location

Street Address or Other Identifier for All Facilities:

Telephone Contact and Address for Facility Manager:

Time of Processing

Date(s):

Time(s):

APPENDIX III

OPERATING CONDITIONS

The values and ranges of these operating conditions will be determined during the Demonstration Test and will then be used in final disposal approval. Operating conditions may be added to or deleted from the list below by the EPA representative for the demonstration and in the final disposal approval.

Reactor Train:

- Flow Rate 500-800 kg/hr
- Temperature – Range 280-330 deg C
- System Pressure 3400-3500 kPa
- Recycle gas flow 17.5-30 kg/hr
- Scavenger flow 60-100 kg/hr
- Quench/Wastewater 60-100 kg/hr
- PCB concentration – Maximum
- Aroclors – Aroclor with the maximum chlorine level

Stage 2

- Caustic strength 3-5%
- Caustic wash flow rate 60-100 kg.hr
- System pressure 2600-3100 kPa

APPENDIX IV

