

STATE OF MISSISSIPPI SOLID WASTE MANAGEMENT PERMIT

TO OPERATE A SOLID WASTE MANAGEMENT FACILITY IN
ACCORDANCE WITH THE REGULATIONS GOVERNING
SOLID WASTE MANAGEMENT

THIS CERTIFIES THAT

Tronox LLC

has been granted permission to operate a solid waste management facility

located at

Section 30, Township 15 South, Range 18 West

under the name of

Tronox LLC, Hamilton Facility Industrial Landfill

This permit is issued in accordance with the provisions of the Mississippi Code Annotated, and the regulations and guidelines adopted and promulgated thereunder

MISSISSIPPI ENVIRONMENTAL QUALITY PERMIT BOARD



AUTHORIZED SIGNATURE

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Issued: December 21, 2011
Expires: November 30, 2021

Permit No. SW0480040466

CONDITIONS

A. EFFECT OF PERMIT

The permittee shall operate the solid waste management facility in accordance with the Mississippi Nonhazardous Waste Management Regulations (state regulations), applicable federal regulations, and conditions of this permit.

B. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for noncompliance with the terms and conditions of the permit. The filing of a request for a permit modification, revocation and reissuance, or termination or the notification of planned changes or anticipated noncompliance on the part of the permittee does not stay the applicability or enforceability of any permit condition.

C. SEVERABILITY

The provisions of the permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

D. DUTIES AND REQUIREMENTS

1. **Duty to Comply.** The permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the solid waste law and regulations promulgated thereunder and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application.
2. **Duty to Reapply.** If the permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the permittee must submit a complete application for a new permit at least 180 days before this permit expires.
3. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize, prevent, or correct any adverse impact on human health or the environment resulting from noncompliance with this permit.
4. **Proper Operation and Maintenance.** The permittee shall at all times properly operate and maintain all equipment and systems which are installed or used by the permittee to achieve compliance with the conditions of this permit and application as submitted and approved by the

Department of Environmental Quality (Department).

5. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any relevant information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit.
6. **Inspection and Entry.** The permittee shall allow an authorized representative of the Department upon the presentation of credentials and other documents as may be required by law to:
 - a. Enter on the permittee's premises where a regulated activity is located or conducted, or where records must be kept under the conditions of this permit;
 - b. Have access to and copy at reasonable times any records that must be kept under the conditions of this permit;
 - c. Inspect at reasonable times any facilities, equipment, practices, or operations regulated or required under this permit;
 - d. Sample or monitor at reasonable times for the purposes of assuring permit compliance.
7. **Transfer of Permits.** This permit is not transferable to any person except after notice to and approval of the Mississippi Environmental Quality Permit Board. The Permit Board may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary.
8. **Signature Requirements.** An application for the re-issuance, modification or transfer of this solid waste management permit and all permits required by this permit or other information requested by the Permit Board shall be signed as follows:
 - a. For a corporation: a president, vice-president, secretary, or treasurer of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation;
 - b. For a partnership or sole proprietorship: a general partner of the proprietor, respectively;
 - c. For a municipality, county, state, federal, or other public agency: either a principal executive officer or ranking elected official:

- d. The signature of a Duly Authorized Representative (DAR) shall be a valid signature under the state regulations, in lieu of the signatures described previously provided the following conditions are met:
 1. The DAR is an employee of the entity holding the solid waste management permit.
 2. The DAR is identified to the Department by the ranking officer of the corporation, partnership, proprietorship, municipality, county, state, federal or other public agency.
 3. The DAR is responsible for the overall management of the solid waste facility.
9. **Property Rights.** It is the responsibility of the permittee to possess or acquire a sufficient interest in or right to the use of the property including access route. The issuance of this permit does not convey any property rights or interest in either real or personal property; nor does it authorize any injury to private property, invasion of personal rights, or impairment of previous contract rights; nor any infringement of Federal, State or local laws or regulations.

E. SITE SPECIFIC CONDITIONS

1. Site Preparation and Construction Requirements
 - a. Construction or reconstruction of the components of the landfill shall be conducted by qualified and experienced personnel. At least 14 days prior to initiating construction of any cell or construction phase therein, the Department shall be provided an approximate site preparation, construction schedule and construction grade drawings on the affected area. The Department shall be notified at least one week prior to liner construction activities of the subject cell or planned construction phase of the landfill.
 - b. Construction or reconstruction of the landfill and any individual cell or construction phase therein shall be conducted in accordance with the following, unless an alternate method is approved by the Department:
 1. In preparation of the areas for liner construction, the in situ subbase shall be inspected for cracks, large stones, other

protrusions, and for solid material which would not be suitable buffer material. Areas where unsuitable soil materials or groundwater seeps exist shall be excavated and the soils replaced with soil buffer materials having a permeability equal to or less than 1×10^{-6} cm/sec. The surface shall be compact, smooth, uniform, and free of desiccation cracks.

2. Prior to placement of the recompacted soil liner system, the surface of the prepared subbase shall be scarified for proper bonding with the liner. The liner shall be placed in 6 inch lifts, evenly compacted to the density and moisture content required. Placement of the liner on the side slopes and interior cell slopes shall be in lifts along the slope, not in horizontal lifts. Between lifts, the surface shall be scarified for proper bonding.
3. In construction and/or preparation of the buffer subbase and the recompacted soil liner system, the surface shall not be allowed to dry out and crack before placement of the next layer. If desiccation cracks do form, the surface shall be rewetted, rehomogenized, and recompacted to the depth of the cracks before placement of the succeeding layer.
4. The perimeter storm water management system and the surficial run-off collection system throughout the facility including the perimeter and interior diversion dikes, access road storm water swales, storm water collection swales, side slope diversion swales, down chutes, and the run-off collection basin shall be constructed as per approved plans and in such manner so as to inhibit erosion and other damage.
5. The landfill and each individual cell therein shall be constructed to direct uncontaminated surface water around and away from the active disposal cell by diversion of such uncontaminated waters to the perimeter diversion berms and to natural low point of the landfill.
6. After completion of a constructed cell or phase therein, a construction quality assurance report (CQA) shall be submitted to the Department for approval. The report should contain a certification from an independent registered professional engineer in the state of Mississippi that the area has been constructed according to the approved design plan, and all applicable state regulations.

The report shall also include field logs, results of testing, subgrade survey, top of liner survey, and construction testing methods.

2. Operating Conditions

- a. The permittee is authorized to dispose of sand, titanium dioxide and water generated and recovered from the Titanium Dioxide manufacturing process conducted at the Tronox LLC, Hamilton Facility, as described in the plan of operation. No other solid wastes, including construction or demolition debris, other process wastes, or any other plant wastes may be deposited in the landfill, unless approved by the Department prior to deposition.
- b. Disposal shall be restricted to the approved permitted area, consisting of approximately 5.7 acres located in Section 30, Township 15 South, Range 18 West and shall be within approved elevations.
- c. Activities involving the construction, operation, closure, and post-closure of the facility shall be conducted in accordance with the state regulations and approved plans, as submitted to the Department.
- d. A modification of this permit must be approved by the Permit Board or the Board's designee prior to a vertical or horizontal expansion of the facility or a significant change in the method of waste management or the conditions of this permit.
- e. Security must be maintained at the facility site to prohibit unauthorized access and disposal. Access to the site shall be secured or locked when the site is closed and when no attendant is on site.
- f. All weather access and transport roads shall be constructed and maintained at the site to maintain operations during inclement weather conditions.
- g. Appropriate actions shall be taken to inhibit the used sand from becoming windblown off the site. In addition, appropriate dust control measures shall be conducted as necessary to contain and/or suppress fugitive dust emissions from the landfill, from the access and transport roads and the landfill and from other facility components.

- h. No removal of solid waste from the landfill shall be conducted without the approval of the Department.
- i. The Department may affect changes in the operating conditions of the landfill, including requiring an intermediate cover, modifying leachate management conditions and implementing other control measures as necessary to prevent or correct conditions at the landfill which cause, contribute to or allow environmental, public health, or public nuisance problems.
- j. Surface water which has contacted the waste, surface leachate flowing from filled areas of the landfill, and sub-surface leachate shall be collected and managed as leachate. Surface leachate and contaminated surface and/or groundwater shall not be allowed to flow offsite of the landfill, but shall be pumped to Pond 9 to be treated with other facility process waters, which is then transferred to Pond 7 for additional treatment prior to being discharged at the dedicated outfall in accordance with the applicable National Pollutant Discharge Elimination System (NPDES) permit requirements.
- k. Leachate sampling shall be conducted in accordance with Item E.3.a and Item E.3.b of this permit. If sample results indicate concentrations greater than the MDEQ Tier 1 Target Remediation Goal for Titanium Dioxide, then the Department may require modification of the existing leachate management process.
- l. All transport piping, pumps, and other structures used to transport leachate from the landfill to Pond 9 or within the landfill shall be properly maintained to ensure compliance with applicable permit conditions and in such manner so as to prevent leakage or spills. Any such leakage shall be repaired immediately.
- m. The storm water management system and the surficial run-off collection system throughout the facility including the perimeter berms, access road storm water swales, storm water collection swales, slide slope diversion swales, down chutes, and the run-off collection basin shall be properly maintained. Erosion, sloughing, or other damage which may affect the integrity of the system shall be promptly repaired.
- n. The perimeter berms shall be constructed and maintained to control, at a minimum, the uncontaminated water volume from the facility resulting from a 24 hour, 25 year event storm. Periodic maintenance shall be conducted as necessary.

- o. The leachate collection systems shall be cleaned, maintained and pumped as necessary to properly manage leachate collection. The depth of leachate over the liner, excluding the trenches and sumps, shall not exceed 30 cm. Measurements of leachate head shall be made at least weekly or more often as necessary to maintain compliance. Should any measurement indicate a head of 30 cm or greater on the liner, the permittee shall take immediate action to correct such conditions. Records shall be kept of routine measurements, quantities pumped, cleaning, maintenance, any analysis and method of disposal or reuse.
- p. The facility shall be constructed, operated and monitored in such manner so as to ensure that the Mississippi Groundwater Quality Standards are not exceeded by any activity of this facility.
- q. The landfill shall be constructed, operated and monitored in such a manner so as to prevent a discharge of pollutants into waters of the state, including wetlands, that violates any requirements of the Clean Water Act or the Mississippi Air and Water Pollution Control Act, including, but not limited to, the NPDES requirements.
- r. Operation of the landfill shall be conducted in accordance with all applicable laws, regulations and permit conditions of the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service.
- s. If deemed necessary by the Department, the permittee shall estimate the cost of closure and post-closure care of the facility and shall provide the Department with proof of financial responsibility issued in the amount of the approved estimate. In such case, the permittee shall incorporate the following items into the annual report described in part E.2.t:
 - 1. An audit of the financial assurance document and the end-of-year value of the financial assurance mechanism.
 - 2. A modified financial assurance document, if necessary.
- t. An annual report shall be submitted to the Department each year no later than February 28 to include data regarding the preceding calendar year. The report shall include items listed below:
 - 1. The amount of waste deposited in the landfill during the calendar year;
 - 2. A drawing depicting the top elevation of the landfill at the

end of the report year;

3. An estimated remaining capacity, in terms of volume or tons of waste; and
4. Records on the quantity of leachate pumped and the method of disposal.

3. Monitoring Requirements

- a. Within 90 days of issuance of this permit, the permittee shall conduct leachate sampling for the following parameters:

Titanium Dioxide
Total Suspended Solids

Field measurements shall include:

pH
specific conductance
temperature
turbidity

The leachate sample shall be collected from either the leachate piping prior to discharge to Pond 9 or the leachate collection sump. If sufficient quantities of leachate are unavailable from either location at the time of leachate sampling, the permittee shall indicate “no leachate present” on the sampling report referenced in Item E.3.c

- b. Leachate sampling shall be conducted at the landfill every 90 days for the first year, then annually thereafter unless otherwise directed by the Department, according to the following schedule:

<u>Monitoring Period – Year 1</u>	<u>Report Due</u>
January – March	May
April – June	August
July - September	November
October – December	February (of following year)

<u>Monitoring Period for subsequent years</u>	<u>Report Due</u>
January – December	February (of following year)

- c. Leachate sampling reports shall include:
1. The exact place, date, and time of sampling;
 2. The individual who performed the sampling;
 3. The analytical techniques or methods used;
 4. The results of such analyses, provided by the laboratory;
 5. Chain of custody forms.
- d. Groundwater monitoring shall be conducted at the landfill in accordance with the approved groundwater monitoring plan for the following parameters:

Ammonia	Total Phosphorus
Chloride	Sulfate
COD	pH
Fluoride	conductivity
Hardness	Titanium Dioxide
Nitrate/Nitrite	

Field measurements shall include:

pH
specific conductance
temperature
turbidity
static water level as measured from top of casing

- e. Groundwater monitoring shall be conducted semi-annually in accordance with the most recently approved groundwater sampling plan, unless otherwise directed by the Department and in accordance with the following schedule:

<u>Monitoring Period</u>	<u>Report Due</u>
January – June	August 31
July – December	March 1 (of the following year)

Samples may be taken at any time during the monitoring period;

however, all sampling events shall be at least four months apart.

- f. All groundwater samples shall be taken by qualified personnel as per EPA approved sampling procedures and chain of custody requirements.
- g. When requested by the Department, the permittee shall inform the Department of the next groundwater sampling schedule so that a representative of the Department may be present to collect a split sample or a duplicate sample.
- h. The following reports and records shall be retained in the operating record, and a copy shall be submitted to the Department according to the schedule above:
 - 1. The dates, exact location, and time of sampling;
 - 2. The individual who performed the sampling;
 - 3. Results of groundwater level measurements and a map indicating direction of flow;
 - 4. The date(s) laboratory analyses were performed;
 - 5. The individual(s) who performed the analyses;
 - 6. The analytical techniques or methods used;
 - 7. The results of such analyses, provided by the laboratory;
 - 8. A statistical comparison of analyses;
 - 9. A determination of statistically significant increase; and
 - 10. Chain of custody forms.
- i. The permittee shall not remove, abandon, or relocate any monitoring well prior to obtaining approval from the Department. If any monitoring well becomes damaged and/or inoperable, the permittee shall notify the Department as soon as feasible upon becoming aware of such conditions and shall provide a written report within seven (7) days. The written report shall detail what problem has occurred and corrective measures taken to prevent the recurrence. The location and design of any replacement or corrective monitoring well shall be approved by the Department prior to installation.

- j. Groundwater assessment monitoring and corrective action, if necessary, shall be conducted at the facility, in accordance with the state regulations and the plans approved by the Department.
- k. Upon the establishment of sufficient historical data or other suitable demonstration, the Department may consider a request for a variance or may require a variance to the monitoring points, monitoring occurrences, or monitoring parameters.

4. Closure/ Post Closure Requirements

- a. An updated closure/ post closure plan for the landfill shall be submitted to the Department for approval at least 120 days prior to initiation of final closure of the landfill. This plan shall include, at a minimum:
 - 1. A description of and the construction details of the final cover system and the surface water control structures;
 - 2. A construction quality assurance (CQA) plan for the final cover system components, drainage system features and any other appropriate closure components;
 - 3. A plan for interior, exterior and subsurface drainage and dewatering of the landfill as appropriate;
 - 4. A proposed schedule of closure activities; and
 - 5. A description of the post-closure monitoring plans and a proposed schedule of monitoring for the approved post-closure monitoring period having a minimum duration of 30 years, unless otherwise approved by the Department.
- b. An approved final cover system shall be placed on the completed areas of the landfill in accordance with the state regulations and the approved plans.
- c. Upon completion of final closure of the site, a surveyed drawing of the landfill shall be submitted to the Department depicting final contours and the boundaries of the landfill.
- d. The condition of the final cover system shall be inspected at least monthly by company personnel during the post-closure monitoring period of the facility. Erosion, cracks, ponding, leachate

outbreaks, and similar problems shall be promptly repaired.

- e. Any reduction in frequency or number of monitoring events, monitoring parameters, site inspections, or other components of the approved closure or post-closure plan must be submitted to the Department for approval prior to implementation.