STATE OF NEVADA
Department of Conservation & Natural Resources
DIVISION OF ENVIRONMENTAL PROTECTION
NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
protecting the future for generations
Brian Sandoval, Governor
Leo M. Drozdoff, P.E., Director
Colleen Cripps, Ph.D., Administrator

FACT SHEET

(pursuant to NAC 445A.236)

Applicant: Tronox LLC
P.O. Box 55
Henderson, NV 89009

Permit Number: NEV2001516

Facility Locations: Tronox evaporation ponds: WC-West, WC-East, MN-1 & MN-2
560 W. Lake Mead Parkway
Henderson, Nevada 89015

Discharge Outfalls:
Outfall 001: WC-West holding pond
Latitude: 36° 03' 02.26" N Longitude: 115° 00' 06.42" W
Outfall 002: WC-East holding pond
Latitude: 36° 03' 02.52" N Longitude: 115° 00' 12.21" W
Outfall 003: MN-1 holding pond
Latitude: 36° 02' 46.91" N Longitude: 114° 59' 58.67" W
Outfall 004: MN-2 holding pond
Latitude: 36° 02' 54.74" N Longitude: 115° 00' 01.99" W
Outfall 005: discharge for on-site dust control uses
Latitude: 36° 02' N Longitude: 115° 00' W

General: The Permittee, Tronox LLC (Tronox) operates an inorganic chemical processing facility located in the Black Mountain Industrial (BMI) Complex in Henderson, Nevada. Tronox currently manufactures manganese dioxide (component of alkaline batteries), boron trichloride (chemical used in the pharmaceutical, electronics and ceramics industries), and elemental boron (used in the automotive industry). Historically, Tronox (as Kerr-McGee) additionally manufactured a number of chlorate and perchlorate-based compounds including ammonium perchlorate. Perchlorate production ceased at this facility in July 1998 and the perchlorate production equipment was decommissioned and dismantled by March 2002. The Chemical manufacturing portion of the former Kerr-McGee Chemical LLC was sold and renamed as Tronox LLC in late 2005. Neighboring facilities within BMI include Olin Chlor-Alkali Products (formerly Pioneer Americas LLC), Titanium Metals Corp. (TIMET), Lhoist (formerly Chemical Lime), and Saguaro Power Co.

Over the course of many decades of operation, the soil and/or groundwater under portions of the BMI complex had become contaminated with a variety of raw materials, chemical byproducts and chemical products due to the manufacturing activities of the various BMI complex operators. The Nevada Division of Environmental Protection (NDEP), Bureau of Corrective Actions (BCA) has required Tronox to remediate perchlorate and chromium from beneath the Tronox plant site. Pursuant to an environmental agreement between Tronox and NDEP, Tronox transferred all of its right, title and interest with respect to remedial operations to the Nevada Environmental Response Trust (Trust). Transfer of the activities, and the two discharge permits associated with those activities (NEV2001515 and NV0023060), to the Trust occurred on February 14, 2011. With the transfer, two of the on-site

ponds previously controlled by Tronox, GW-11 and AP-5, came under control of the Trust and are administered separately under Permit NEV2001515. The remaining ponds, WC-West, WC-East, and MN-1, are administered by Tronox under Permit NEV2001516. Under this permit, no direct discharge of water is allowed from any pond to groundwater or surface waters of the State; treated water discharge to groundwater via dust control will be allowed.

Each of the three currently operating ponds, WC-West, WC-East, and MN-1, are double-lined and are equipped with a leak detection sump between the primary and secondary linersIn February 2011, the WC-East Pond leak detection system detected the presence of water in the leak detection sump. In the 2nd quarter of 2011, the WC-West Pond leak detection system also detected the presence of water in its leak detection sump. Tronox is currently lowering the water levels in both ponds to facilitate liner repairs. In order to have adequate water storage, Tronox is proposing to construct an additional evaporation pond, MN-2. MN-2 will accept all the flow from MN-1 and enough flow from WC-West to accomplish the necessary liner repairs. Tronox is also proposing to construct a concrete-lined (with secondary synthetic liner) solids drying bed on the western end of MN-2. Currently wastewater held in the WC-East Pond is processed through an on-site wastewater treatment plant. The clean, solids-free effluent (distillate) from this wastewater treatment plant is normally recycled within the factory as make-up water for the process or boilers.

Tronox has applied for a major modification to Groundwater Discharge Permit NEV2001516 to allow for continued operation of evaporation ponds WC-West, WC-East, and MN-1; to allow construction and operation of MN-2 and the MN-2 residual solids drying pad; and also to allow for some of the recycle distillate to be used as dust control on site.

The general parameters for the holding ponds are summarized below in Table 1.

Table 1: Holding Pond Parameters

Parameters & Units		WC-West	WC-East	MN-1	MN-2
Capacity [1]	gals	12,515,200	19,658,500	3,500,000	3,750,000
Surface Area	ft^2	67,600	88,580	53,000	79,715
Primary Liner		60 mil HDPE	60 mil HDPE	60 mil HDPE	60 mil HDPE
Secondary Liner		40 mil HDPE	40 mil HDPE	4"-6" compacted clay	40 mil HDPE
Operational Influent Flow	MGD (gpm)	0.012 (8.66)	0.085 (58.7)	0.001 (0.76)	0.01 (7.0)
Contents		scrubber & distillation blowdown and neutralized process waters	product thickener overflow, boiler & cooling tower blowdown waters	cathode wash solution and non-hazardous Mn-containing process water	cathode wash solution and non-hazardous Mn-containing process water

HDPE: High density polyethylene (or equivalent, approved by the Division)
MGD: Million gallons per day (estimated long-term average flow)
gpm: gallons per minute (estimated long-term average flow)

Monitoring Data: The facility's operational estimated long-term average discharge rate is 0.012 MGD for WC-West, 0.085 MGD for WC-East and 0.001 MGD for MN-1. During the previous 5-year permit cycle the influent flow rate permit limits were monitor and report. The influent flow rate information is intended for pond design and operational purposes. The ponds are double-lined with leak detection and collection systems, and there is no discharge to the environment. Two of the ponds, WC-West and WC-East, experienced liner problems and leaks. Those liners are currently in the process of being repaired.

In order to make the repairs those ponds must have water levels lowered, thus requiring another treatment pond to be constructed and operated (MN-2). The proposed treatment capacity for MN-2 is 0.01 MGD.

Table 2. Pond MN-1 Monitoring Data from January 2007 through April 2012

Parameter		Permit Limit	Average	Maximum	Minimum	# of Exceedances
Influent Flow	30-Day Avg (MGD)	***M&R***	.0014	.008	0.00	0
Leak detects	Bi-monthly (gpd)	***M&R***	0.0	0.0	0.0	0
Water level	Bi-monthly (feet)	***M&R***	8.34	9.08	7.75	0
Storage vol	Bi-monthly (MG)	***M&R***	1.898	2.306	1.729	0
Water balance	Monthly (K gallons)	***M&R***	249	606	3.7	0
Discharge rate	30-Day Avg (MGD)	***M&R***	0.0	0.0	0.0	0

Table 3. Pond WC-West Monitoring Data from January 2007 through April 2012

Parameter		Permit Limit	Average	Maximum	Minimum	# of Exceedances
Influent Flow	30-Day Avg (MGD)	***M&R***	.00119	.023	.0014	0
Leak detects	Bi-monthly (gpd)	***M&R***	122	2,038	0.0	0
Water level	Bi-monthly (feet)	***M&R***	18.77	20.25	15.17	0
Storage vol	Bi-monthly (MG)	***M&R***	8.234	9.392	6.239	0
Water balance	Monthly (K gallons)	***M&R***	202	995	-914	0
Discharge rate	30-Day Avg (MGD)	***M&R***	0.0	0.0	0.0	0

Table 4. Pond WC-East Monitoring Data from January 2007 through April 2012

Parameter		Permit Limit	Average	Maximum	Minimum	# of Exceedances
Influent Flow	30-Day Avg (MGD)	***M&R***	.128	.211	.014	0
Leak detects	Bi-monthly (gpd)	***M&R***	12,223	229,096	0.0	0
Water level	Bi-monthly (feet)	***M&R***	15.23	25.50	5.75	0
Storage vol	Bi-monthly (MG)	***M&R***	7.288	15.300	1.746	0
Water balance	Monthly (K gallons)	***M&R***	-91.07	1683	-1163	0
Discharge rate	30-Day Avg (MGD)	***M&R***	0.0	0.0	0.0	0

Receiving Water Characteristics: The engineered evaporation ponds and drying bed, when constructed, operated and maintained properly, prevent discharge to groundwater of the State, the potential receiving water body. Ponds WC-West and WC-East are double-lined and have leak detection sumps between the primary and secondary liners to detect any potential leakage in the primary (surface) HDPE liners. Pond MN-1 has a primary liner of 60-mil HDPE, with 4"-6" compacted clay as a

secondary liner. The proposed MN-2 Pond will be double-lined with 60-mil and 40-mil HDPE (or Division-approved equivalent), with leak detection sumps between the primary and secondary liners. The drying bed associated with the proposed MN-2 will be constructed of 12-inch thick concrete with a secondary 60-mil HDPE liner. The drying bed is sloped and bermed to transport all fluids to MN-2. Residual solids left on the drying bed are returned to the head of the plant for processing, or are removed to an approved off-site landfill.

Site Groundwater: The water table is approximately 32 feet below ground surface. The groundwater flow direction is from south to north, towards the Las Vegas Wash approximately 3 miles away.

Well Head and Drinking Water Supply Protection: The facility is not within a Drinking Water Protection Area (DWPA) around any public water supply well. The facility is not within an established Wellhead Protection Area (WHPA).

Corrective Actions Sites: The permitted facility is within the Nevada Division of Environmental Protection Bureau of Corrective Actions BMI Complex Area of Concern. The operations are not expected to have any adverse effects on any other ongoing remediation.

Proposed Discharge Limitations, Sampling and Monitoring Requirements: Specific sampling requirements are listed below in Table I, including frequency and location of sampling. Leak detection monitoring shall be conducted at each of the four evaporation ponds (Outfalls 001-004). Sampling shall be conducted at Outfall 005 prior to discharge for dust control.

Table 5. Holding Pond & Dust Control Limitations, Sampling and Monitoring Requirements

Parameters & Units		30-Day Average Discharge Limitations	Sampling Locations	Monitoring Frequency	Monitoring Type
Influent Flow [1]	MGD	M&R	MN-1, MN-2, WC-West, WC-East	Daily	Meter/ calculation
Leak detection	gpd	M&R		Bi-Monthly	Meter/ level indicator
Water level	feet	M&R		Bi-Monthly	Meter/ calculation
Storage volume	MG	M&R		Bi-Monthly	Calculation
Water balance	KG	M&R		Monthly	Calculation
Discharge rate	MGD	M&R		Monthly	Meter/ calculation

Table 6. Dust Control Limitations, Sampling and Monitoring Requirements

Parameters & Units		Discharge Limitations	Sampling Locations	Monitoring Frequency	Monitoring Type
Discharge rate [2]	MGD	M&R	005	Daily	Meter/ calculation
pH min	S.U.	6.5	005	Quarterly	Meter/ Lab
pH max	S.U.	9.0	005	Quarterly	Meter/ Lab
TDS	mg/l	M&R	005	Quarterly	Discrete

Definitions and Footnote Explanations are provided in Table 7.

Table 7. Table Definitions and Footnote Explanations

Term/ Footnote	Definitions/ Explanations
MGD	Million gallons per day
KG	Thousand gallons

M&R	Monitor and Report
Footnote 1	Monitor daily and report quarterly the 30-day average flow rate.
Footnote 2	Monitor daily and report quarterly the maximum daily discharge rate of distillate used for dust control.

Rationale for Permit Requirements: The Division has established the monitoring requirements in Tables 5 and 6 to ensure that the potential receiving water body, groundwater of the State, is not degraded as a result of the permitted activities.

Flow: M&R. The influent flow rate information is intended for pond design and operational purposes. The ponds are double-lined with leak detection and collection systems, and there is no discharge to the environment. The influent flow rate limit remains the same in this permit modification -Monitor and Report. Flow is monitored and reported to ensure that the evaporation ponds and drying bed are operated to prevent discharge. Dust control usage is monitored and reported to ensure that groundwater of the State is protected.

Leak Detection System Rates: M&R. The Division requires that on a twice/month basis, the Permittee will remove, sample, and record the volume of any liquid collected from each of the pond liner sumps to check for leakage in the primary liners of each pond.

Water Levels & Storage Volumes: M&R. The water level in each pond is measured and storage volumes are calculated twice/month to determine freeboard. The water levels and storage volumes are reported quarterly.

Water Balance: M&R. A monthly water balance serves as a check on any unaccounted losses (e.g., leakage) from the ponds. The water balance information is reported quarterly.

Pond Discharge Rates: M&R. Monitor the discharge from each pond as it occurs, and report quarterly.

Dust Control Discharge Rate: M&R. Monitor and calculate the daily volume of water dispensed for dust control as it occurs, and report quarterly.

Schedule of Compliance: The Permittee shall implement and comply with the provisions of the schedule of compliance after approval by the Administrator, including in said implementation and compliance, any additions or modifications which the Administrator may make in approving the schedule of compliance:

- The Permittee shall achieve compliance with the effluent limitations upon issuance of the permit.

- By **MM DD, 2012** the Permittee shall submit two copies of a revised and updated Operations and Maintenance (O&M) Manual, in accordance with appropriate sections of guidance Document WTS-2, *Minimum Information Required for an Operation and Maintenance Manual for a Wastewater Treatment Plant*. The revised O&M manual shall include sections on the leak detection systems, pond liner inspections, calculating storage volumes and monthly water balances, sludge management, and narrative descriptions and flow diagrams of all input/output streams for each of the ponds. Before implementing changes to an approved Plan, the Permittee shall submit proposed changes to the Division for review and approval.

Proposed Determination: The Division has made the tentative determination to issue the proposed permit for a period of five (5) years.

Procedures for Public Comment: The Notice of the Division's intent to issue a groundwater discharge permit authorizing the Permittee to discharge to the ponds for a five-year period, subject to the conditions contained within the permit, is being sent to the **Las Vegas Review-Journal** for publication. The Notice is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of thirty (30) days following the date of publication of the public notice in the newspaper. The comment period can be extended at the discretion of the Administrator. The deadline date and time by which all comments are to be submitted (via postmarked mail or time-stamped faxes, e-mails, or hand-delivered items) to the Division is **October 28, 2012 by 5:00 P.M.**

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected interstate agency, the Regional Administrator or any interested agency, person or group of persons. The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings must be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

Prepared by: Jeryl R. Gardner, P.E.
Date: September 2012

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