

TECHNICAL SUPPORT DOCUMENT

TECHNICAL INFORMATION PRESENTED IN REVIEW OF AN
APPLICATION FOR AN AUTHORITY TO CONSTRUCT

SUBMITTED BY

Tronox LLC

For

Tronox LLC

Part 70 Operating Permit Number: 00095
SIC 2819: Industrial Inorganic Chemical Manufacturing
NAICS Code 325188: Inorganic Chemical Manufacturing



Clark County Department of Air Quality
Permitting Division

January 2016

EXECUTIVE SUMMARY

Tronox LLC (Tronox) is located within the BMI industrial park near Henderson, Nevada. The legal description of the source location is: portions of T22S, R62E, Sections 12-13 in Las Vegas Valley, County of Clark, State of Nevada. Tronox is situated in the Las Vegas Valley Hydrographic Area 212. The Las Vegas Valley is currently designated as attainment for all pollutants. Tronox is not classified as a Categorical Stationary Source, as defined by AQR 12.2.2(j)(1). The source is categorized under SIC Code SIC 2819 Industrial Inorganic Chemical Manufacturing and NAICS code: 325188: Inorganic Chemical Manufacturing. Tronox is a major source for single HAP (Manganese) as well as Total HAP based on the Title V application submitted on May 6, 2014. The source is synthetic minor for PM₁₀, PM_{2.5}, NO_x, CO, SO_x and VOC as per the existing minor source permit. Tronox is a source of greenhouse gases (GHG).

Tronox operates chemical processes which produce inorganic chemicals. The three primary chemicals are Manganese Dioxide (MnO₂), elemental Boron and Boron Trichloride (BCl₃). Tronox also produces ABM (previously permitted as LMO) from the MnO₂. In addition, Tronox employs diesel-fired emergency engines, natural gas boilers, cooling towers, a gasoline tank, roads and stockpiles and a laboratory to support operations, some of which are deemed insignificant units or activities.

Tronox has requested an Authority to Construct for a replacement diesel-fired emergency generator (December 21, 2015).

Because of the extensive changes proposed by Tronox in the initial Part 70 application, a Part 70 Operating Permit has not yet been issued. As such, the PTE for the source has not yet been established. Air Quality believes that this proposed engine replacement will not change any regulatory applicability or classification determinations. Thus, this TSD and ATC will only address the project to replace an emergency generator. The PTE below is that of the proposed generator.

Annual Emissions of the Proposed Generator (TPY)

Emission Unit	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP (total)	GHG ¹
A08	0.02	0.02	0.82	0.08	0.01	0.03	0.01	79.31

¹GHG is expressed as CO_{2e} for information only.

The Clark County Department of Air Quality (Air Quality) has delegated authority to implement the requirements of the Part 70 Operating Permit (Part 70 OP) program.

Based on the information submitted by the applicant and a technical review performed by Air Quality staff, Air Quality proposes an AQR 12.4 Authority To Construct for Tronox.

TABLE OF CONTENTS

I.	ACRONYMS AND ABBREVIATIONS.....	4
II.	SOURCE INFORMATION	5
	A. General	5
	B. Description of Process.....	5
	C. Permitting History and Current Action.....	5
	D. Operating Scenario.....	6
III.	EMISSIONS INFORMATION	6
	A. Calculation of Potential to Emit And Emissions Change	6
	B. Emission Units	7
	C. Control Technology.....	7
	D. Performance Testing	7
	E. Emissions Monitoring	7
	F. Modeling.....	7
IV.	REGULATORY REVIEW.....	8
	A. Local Regulatory Requirements.....	8
	B. Federally Applicable Regulations.....	9
V.	COMPLIANCE	9
	A. Compliance Certification.....	9
	B. Compliance Plan Schedule	10
	C. Permit Shield.....	10
VI.	EMISSION REDUCTION CREDITS (OFFSETS).....	10

I. ACRONYMS AND ABBREVIATIONS

Table I-1: Acronyms and Abbreviations

Term	
Air Quality	Clark County Department of Air Quality
AQR	Clark County Air Quality Regulations
ATC	Authority to Construct
CAAA	Clean Air Act, as amended
CFC	Chlorofluorocarbon
CFR	United States Code of Federal Regulations
GHG	Green House Gases
CO	Carbon Monoxide
EPA	United States Environmental Protection Agency
EU	Emission Unit
HAP	Hazardous Air Pollutant
HCFC	Hydrochlorofluorocarbon
HP	Horse Power
kW	kilowatt
M/N	Model Number
NAICS	North American Industry Classification System
NO _x	Nitrogen Oxides
NRS	Nevada Revised Statutes
OP	Operating Permit
PM ₁₀	Particulate Matter less than 10 microns
PM _{2.5}	Particulate Matter less than 2.5 microns
ppm	Parts per Million
PTE	Potential to Emit
SIC	Standard Industrial Classification
SIP	State Implementation Plan
S/N	Serial Number
SO _x	Sulfur Oxides
TCS	Toxic Chemical Substance
Tronox	Tronox LLC
VOC	Volatile Organic Compound

II. SOURCE INFORMATION

A. General

Permittee	Tronox LLC
Address (Mailing/Billing):	560 West Lake Mead Parkway, Henderson, Nevada 89015
Source Name:	Tronox LLC
Source Address:	560 West Lake Mead Parkway, Henderson, Nevada 89015
Responsible Official:	Fredrick Stater, Plant Manager
Contact:	Michael Skromyda, Staff Environmental Engineer
Telephone Number:	(702) 651-2228
FAX Number:	(702) 651-2310
Hydrographic Area:	212
Township, Range, Section	T22S, R62E, Sections 12-13
Source SIC:	2819: Industrial Inorganic Chemical Manufacturing
Source NAICS:	325188: Inorganic Chemical Manufacturing

B. Description of Process

Tronox is located in the BMI industrial park near Henderson, Nevada. Tronox manufactures inorganic chemicals. Tronox is a major Part 70 source for HAP (Mn) and Total HAP, Synthetic minor for PM₁₀, PM_{2.5}, NO_x, SO_x and VOC. Tronox is a source of greenhouse gases (GHG).

Tronox is an inorganic chemical manufacturing facility that produces three primary chemicals:

- > MnO₂ – used in alkaline batteries,
- > Elemental boron – a component in automotive safety igniters, and
- > BCl₃ – used in the pharmaceutical and semiconductor industries, and the manufacture of high-strength boron fibers for the sporting equipment and aircraft industries.

In support of these processes, Tronox has four diesel-fired emergency generators. One of them (EU: A01) is being replaced.

C. Permitting History and Current Action

Permitting History

Emergency Engines

- These units (EUs: A01-A04) were first permitted with an ATC on December 18, 1996. Prior to that, they were not permitted because they were less than 500 hp, as was the practice.
- The engine emission factors were revised to AP-42 in February 27, 2004. They are currently permitted for 120 hours/year testing and maintenance, as was the practice, in the ATC/OP Modification 13 from June 1, 2010. There is an hourly operating limit due to modeling results.

Current Action

Tronox has applied December 18, 2015 for an ATC to replace EU: A01 with a newer, larger emergency generator. To accommodate the proposed emergency generator, Air Quality is

proposing an ATC under AQR 12.4 while the Part 70 OP is being drafted. The proposed emergency generator shall be identified as EU: A08.

D. Operating Scenario

The unit will be limited to 100 hours per year for testing, maintenance and certain nonemergency operations following the restrictions for existing emergency compression ignition engines at major sources of HAP. The PTE shall be calculated on a total of 500 hours per year total operation. Use during an emergency is not limited. Tronox did not request any alternate scenarios. Based on modeling done by Air Quality using the PTE of the source from the January 8, 2016 supplement to the Part 70 OP application, and adjusted for the replacement of A01 with this proposed generator, a daily operational limit is not required for this engine.

III. EMISSIONS INFORMATION

A. Calculation of Potential to Emit And Emissions Change

Emission calculations for the proposed emergency generator are based on manufacturer’s guarantee except for SO_x which is based on 15 ppm sulfur in the diesel fuel and HAP which is based on AP-42 emission factors.

Table III-A-1: Summary of Potential Annual Emissions (TPY) For A08

Emission Unit	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP (total)	GHG ¹
A08	0.02	0.02	0.82	0.08	0.01	0.03	0.01	79.31

¹GHG is expressed as CO₂e for information only.

Table III-A-2: Summary of Potential Hourly Emissions (lbs/hr) For A08

Emission Unit	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP (total)
A08	0.09	0.09	3.26	0.32	0.01	0.12	0.01

Table III-A-3: Comparison of Potential Emissions between A01 and A08, at 500 hr/yr (TPY)¹

Emission Unit	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP (total)
A01	0.05	0.05	0.71	0.15	0.01	0.06	0.01
A08	0.02	0.02	0.82	0.08	0.01	0.03	0.01
Change	-0.03	-0.03	0.11	-0.07	0.00	0.03	0.00

¹In the current MOD 13 permit, the engines are permitted for 120 hours per year for testing and maintenance, as was the practice when MOD 13 was applied for. In order to compare EU A01 to A08 for the current action, the PTE of both engines was calculated using 500 hours per year testing, maintenance and emergency use, as is current practice.

B. Emission Units

Table III-B-1: Summary of Proposed Emission Unit

EU	Description	Model No.	Serial No.
Emergency Generator			
A08	Cummins Power Generation, 150 kW	DGFA-5742405	J050847497
	Cummins Diesel Engine, DOM 10/18/2005, 277 hp	6CTA8.3-G2	46543551

C. Control Technology

The proposed emergency generator is of newer design and has improved emissions. The change in emissions compared to the unit it replaces, as shown in Table III-A-3, is very small and does not trigger a controls analysis. The unit is equipped with a turbocharger and aftercooler. Standard requirements for emergency engines at major sources of HAP will be included.

D. Performance Testing

Source testing has not been identified for EU A08.

E. Emissions Monitoring

1. Standard requirements for visible emissions will be included in the ATC. The current permit requires weekly monitoring of the emissions from the emergency generators and all other emission units. Tronox has indicated that the emergency generators are exercised weekly. The weekly frequency will be retained to be consistent with the other three engines.
2. The source shall install a nonresettable hour meter on the emergency generator (EU: A08) and shall monitor and record the hours of operation to comply with the operational limits. *[40 CFR 63.6625.f]*
3. The engine at this source is subject to 40 CFR 63 Subpart ZZZZ and so must meet the fuel requirements referenced therein from 40 CFR Subpart I, §80.510(b) for nonroad diesel fuel. The source must purchase diesel fuel that meets the per-gallon standard of 15 ppm maximum sulfur content, a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent. As all refiners and importers of nonroad diesel fuel are also subject to these federal standards pursuant to 40 CFR §80.510, it is reasonable to assume the operators of the engines do not have the opportunity to acquire fuel that violates these standards. Therefore, the Permittee is not being required by the operating permit to monitor or keep records of the sulfur content, cetane index, or aromatic content of the diesel fuel used in this engine.

F. Modeling

Air Quality modeled the source using AERMOD to track the increment consumption. Stack data submitted by the applicant were supplemented with information available for similar emission units. Five years (1999 to 2003) of meteorological data from the McCarran Station and Desert Rock Station were used in the model. United States Geological Survey (USGS) National Elevation Dataset (NED) terrain data was used to calculate elevations. Table III-F-1 presents the results of the modeling.

Table III-F-1: PSD Increment Consumption

Pollutant	Averaging Period	PSD Increment Consumption by the Source ($\mu\text{g}/\text{m}^3$)	Location of Maximum Impact	
			UTM X (m)	UTM Y (m)
SO ₂	3-hour	0.50 ¹	679910	3990692
SO ₂	24-hour	0.25 ¹	679987	3990707
SO ₂	Annual	0.10	680331	3990568
NO _x	Annual	5.37	680315	3990664

¹Second High Concentration

Table III-F-1 shows the location of the maximum impact and the potential PSD increment consumed by the source at that location. The impacts are below the PSD increment limits.

IV. REGULATORY REVIEW

A. Local Regulatory Requirements

Air Quality has determined that the following public law, statutes and associated regulations are applicable:

1. Clean Air Act, as amended (CAAA), Authority: 42 U.S.C. § 7401, et seq.;
2. Title 40 of the Code of Federal Regulations (CFR);
3. Nevada Revised Statutes (NRS), Chapter 445B;
4. Portions of the AQR that are included in the State Implementation Plan (SIP) for Clark County, Nevada. SIP requirements are federally enforceable. All requirements from Authority to Construct permits and Section 16 Operating Permits issued by Air Quality are federally enforceable because these permits were issued pursuant to SIP-included sections of the AQR; and
5. Portions of the AQR that are not included in the SIP. These locally applicable requirements are locally enforceable only.

The Nevada Revised Statutes (NRS) and the Clean Air Act Amendments (CAAA) are public laws that establish the general authority for the Regulations mentioned.

The Air Quality Part 70 (Title V) Program received Final Approval on November 30, 2001 with publication of that approval appearing in the Federal Register December 5, 2001 Vol. 66, No. 234. AQR Section 19 - Part 70 Operating Permits [Amended 07/01/04] details the Clark County Part 70 Operating Permit Program. On September 20, 2010, Clark County submitted a revision to the operating permit program (AQR 12.5) pursuant to 40 CFR Part 70.4(i)(2). EPA has not acted on that request yet. These regulations may be accessed on the Internet at: http://www.clarkcountynv.gov/depts/AirQuality/Pages/Rules_CurrentRulesandRegulations.aspx

Local regulations contain sections that are federally enforceable and sections that are locally enforceable only. Locally enforceable only rules have not been approved by EPA for inclusion into the State Implementation Plan (SIP). Requirements and conditions that appear in the Part 70 OP which are related only to non-SIP rules are notated as locally enforceable only.

B. Federally Applicable Regulations

40 CFR 60 – New Source Performance Standards

Because Tronox is proposing a reclassification from minor source to major source, a new evaluation of applicable NSPS is required. Potentially applicable subparts are included with discussion.

40 CFR 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Discussion: This rule applies to stationary diesel engines which commenced construction after July 11, 2005 and were manufactured after April 1, 2006. None of the engines (EUs: A01-A04) at Tronox were constructed after July 11, 2005 so Subpart IIII did not apply to them. The proposed engine was manufactured October 18, 2005, so Subpart IIII does not apply to the proposed engine either.

40 CFR 61 and 63 – National Emission Standards for Hazardous Air Pollutants

40 CFR 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engine (RICE)

Discussion: This rule applies to existing stationary RICE constructed before June 12, 2006 at sources of HAP. Tronox had four existing emergency engines that fell into this classification, so Subpart ZZZZ applied. Previously, the area source requirements applied, now the major source requirements will apply to the permitted emergency engines. Although the application stated that this was a new ZZZZ engine, the date of construction of the unit (October 18, 2005) rather than the date the unit will be installed at this source, indicates that this is an existing ZZZZ engine and Air Quality included requirements in the permit reflecting this determination.

40 CFR 64 – COMPLIANCE ASSURANCE MONITORING

40 CFR 64.2 – Applicability

Discussion: The CAM Rule is not applicable to this emergency generator. The uncontrolled PTE is below the CAM thresholds, and no add-on control device is employed.

V. COMPLIANCE

A. Compliance Certification

1. The schedule for the submittal of reports to the Air Quality shall be as follows:

Table V-A-1: Reporting Schedule

Required Report	Applicable Period	Due Date ¹
Annual Emission Inventory Report	Calendar Year	March 31 each year
Notification of Malfunctions, Startup, Shutdowns, or Deviations with Excess Emissions	As Required	Within 24 hours of the Permittee learning of the event
Report of Malfunctions, Startup, Shutdowns, or Deviations with Excess Emissions	As Required	Within 72 hours of the notification
Deviation Report without Excess Emissions	As Required	Along with semiannual reports
Performance Testing	As Required	Within 60 days from the end of the test

¹If the due date falls on a Saturday, Sunday or a Federal or Nevada holiday, then the submittal are due on the next regularly scheduled business day.

2. A statement of methods used for determining compliance, including a description of monitoring, record keeping, and reporting requirements and test methods.

B. Compliance Plan Schedule

No compliance plan has been requested by the source.

C. Permit Shield

A permit shield was not requested by the source.

VI. EMISSION REDUCTION CREDITS (OFFSETS)

The source is not subject to federal offset requirements because the Las Vegas Valley (hydrographic area 212) is in attainment for all applicable pollutants.

Attachments

EU#	A08	Horsepower:	277		Emission Factor (lb/hp-hr)	Control Efficiency	Potential Emissions			
Make:	Cummins	Hours/Day:	24.0					lb/hr	ton/yr	
Model:		Hours/Year	500		PM10	3.31E-04	0.00%	0.09160	0.09	0.02
S/N:					NOx	1.18E-02	0.00%	3.26105	3.26	0.82
					CO	1.15E-03	0.00%	0.31756	0.32	0.08
Manufacturer Guarantees					SOx	1.21E-05	0.00%	0.00336	0.01	0.01
PM10	0.15	g/hp-hr			VOC	4.19E-04	0.00%	0.11603	0.12	0.03
NOx	5.34	g/hp-hr			HAP	4.52E-05	0.00%	0.01251	0.01	0.01
CO	0.52	g/hp-hr								
SOx		g/hp-hr								
VOC	0.19	g/hp-hr								
Engine Type:	Diesel				Diesel Fuel Sulfur Content is 15 ppm (0.0015%)					

Emission Unit	Description	Tier 1 Emission Factor (kg/MMBtu) ¹			CO ₂ e Emissions ^{2, 3}
		CO ₂	CH ₄	N ₂ O	(tpy)
A08	Emergency standby generator, 277 HP	73.96	0.003	0.0006	79.31

¹ Tier 1 emission factors acquired from Tables C-1 and C-2 of 40 CFR Part 98 Subpart C:

² Per AP-42 Appendix A (*Miscellaneous Data & Conversion Factors*): 7,000 Btu/hp-hr

³ Global Warming Potentials (GWP) obtained from Table A-1 of 40 CFR Part 98 Subpart A:

CH₄ GWP = 25
 N₂O GWP = 298