

## STATEMENT OF BASIS

*for the issuance of Air Permit # 1103-AR-7*

**1. PERMITTING AUTHORITY:**

Arkansas Department of Environmental Quality  
8001 National Drive  
Post Office Box 8913  
Little Rock, Arkansas 72219-8913

**2. APPLICANT:**

Lycus Ltd.  
181 Cooper Drive  
El Dorado, Arkansas 71730

**3. PERMIT WRITER:**

Paula Parker

**4. PROCESS DESCRIPTION AND SIC CODE:**

SIC Description: specialty chemical, industrial inorganic  
SIC Code: 2819

**5. SUBMITTALS:** 10/29/01; 4/1/02; 10/23/02; 10/27/02; 11/4/02; 12/4/02

**6. REVIEWER'S NOTES:**

Lycus Ltd. (Lycus), formerly Garrison Industries, Inc., a specialty chemical production facility at 181 Cooper Drive in El Dorado, has modified their permit in order to accommodate an anthranilamide process (SN-01C) at the facility. The new process itself will contribute a 0.5 tons/yr increase in ammonia emissions. All three reaction processes share a combined limit of 1,000,000 lb/yr and the 01A reaction process is the worst-case scenario for emissions. The facility also has removed the TMPAC, HMDS, and Pyrochek L.M. from production. Plantwide SO<sub>2</sub> has increased by 0.4 tons/yr and VOC emissions have decreased by 17.1 tons/yr.

**7. COMPLIANCE STATUS:** The following summarizes the current compliance status of the facility including active/pending enforcement actions and recent compliance activities and issues

The facility is currently under no enforcement activity. However, during the modification

process, it was determined that the two boilers, SN-02 and SN-03, were subject to NSPS Dc requirements. A memo was addressed to Enforcement regarding this issue and action is pending.

**8. A. Applicability**

Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, et cetera) Y/N   N  

Has this facility underwent PSD review in the past (Y/N)   N  

Is this facility categorized as a major source for PSD? (Y/N)   N  

\$ 100 tpy and on the list of 28 (100 tpy)? (Y/N)   N  

\$ 250 tpy all other (Y/N)   N  

**B. PSD Netting**

Was netting performed to avoid PSD review in this permit? (Y/N)   N  

**C. Source and Pollutant Specific Regulatory Applicability**

Source	Pollutant	Regulation [NSPS, NESHAP (Part 61 & Part 63), or PSD <u>only</u> ]
02,03	Recordkeeping Only	NSPS Subpart Dc

**9. EMISSION CHANGES:**

The following table summarizes plantwide emission changes associated with this permitting action.

Plantwide Permitted Emissions (ton/yr)			
Pollutant	Air Permit 1103-AR-6	Air Permit 1103-AR-7	Change
PM/PM <sub>10</sub>	1.5	1.8	+0.3*
SO <sub>2</sub>	0.3	0.7	+0.4
VOC	34.0	16.9	-17.1

<b>Plantwide Permitted Emissions (ton/yr)</b>			
<b>Pollutant</b>	<b>Air Permit 1103-AR-6</b>	<b>Air Permit 1103-AR-7</b>	<b>Change</b>
CO	3.6	3.6	0
NO <sub>x</sub>	14.4	14.2	-0.2*
NH <sub>3</sub>	0.4	0.5	+0.1
Ethylene Dichloride	-	8.32	+8.32
HCl	0.20	0.44	+0.16
Methyl Chloride	-	3.29	+3.29
Xylene	-	5.25	+5.25
Total Haps	-	17.30	+17.30

\* Changes due to previous rounding and mathematical errors.  
 NOTE: HAPS other than HCl were not quantified in the previous permit.

**10. Criteria Pollutants**

All criteria pollutants are below 100 tpy and therefore, modeling is not required.

**11. Non-Criteria Pollutants**

**1st Tier Screening (PAER)**

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The PAER was deemed by the Department to be the product, in lb/hr, of 0.11 and the Threshold Limit Value (mg/m<sup>3</sup>), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

<b>Pollutant</b>	<b>TLV (mg/m<sup>3</sup>)</b>	<b>PAER (lb/hr) = 0.11*TLV</b>	<b>Proposed lb/hr</b>	<b>Pass?</b>
HCl	7.5	0.825	0.10	Y
MeCl	103.25	11.36	0.75	Y

<b>Pollutant</b>	<b>TLV (mg/m<sup>3</sup>)</b>	<b>PAER (lb/hr) = 0.11*TLV</b>	<b>Proposed lb/hr</b>	<b>Pass?</b>
Ethylene Dichloride	40.47	4.46	1.90	Y
NH <sub>3</sub>	17	1.87	0.50	Y
Xylene	434.0	47.74	1.2	Y

**2nd Tier Screening (PAIL)**

ISCST3 air dispersion modeling was performed on the estimated hourly emissions from the following sources, in order to predict ambient concentrations beyond the property boundary. The Presumptively Acceptable Impact Level (PAIL) for each compound was deemed by the Department to be one one-hundredth of the Threshold Limit Value, as listed by the ACGIH

<b>Pollutant</b>	<b>(PAIL, µg/m<sup>3</sup>) = 1/100 of Threshold Limit Value</b>	<b>Modeled Concentration (µg/m<sup>3</sup>)</b>	<b>Pass?</b>
HCl	75.0	2.93	Y
MeCl	1032.5	21.94	Y
Ethylene Dichloride	404.7	55.57	Y
NH <sub>3</sub>	170.0	14.63	Y
Xylene	4340.0	35.10	Y

Second Tier modeling was performed since the assumptions that PAER is based upon, do not fit the scenario at this facility, namely the assumption concerning the plant boundaries. A base concentration of 29.25ug/m<sup>3</sup> was measured for every 1 lb/hr emitted.

**12. CALCULATIONS:**

<b>SN</b>	<b>Emission Source (AP-42, Testing, etc)</b>	<b>Emission Factor and units (lbs/ton, lbs/hr, etc)</b>	<b>Control Equipment Type (if any)</b>	<b>Control Equipment Efficiency</b>	<b>Comments (Emission factor controlled/uncontrolled, etc)</b>
01A,B,C	Reaction Kinetics, Testing	Assumed a safety factor of 4.2.  Worst-case reaction is A.	five (series) caustic scrubber train and 4 carbon beds	Assumed 99.9% scrubber efficiency for halogenated compounds.  Carbon beds 99.9% efficient.	Controlled by scrubber system and carbon beds Emissions based upon 1 MM lb/yr.
02,03	AP-42	11.7 MMBTU/hr	None	N/A	

List of Tanks

Contents	Pressure	Volume
NaOH	100 psig (jacketed)	9500 gallons
Xylene	100 psig (jacketed)	9500 gallons
EDC	100 psig (jacketed)/15 psig	9500/7500 gallons
Sulfuric Acid	250 psig	10,000 gallons
Aqueous Ammonia	250 psig	10,000 gallons
Methanol	100 psig	20,000 gallons

The methanol tank is not subject to NSPS Subpart Kb as per exception 60.11b(d)(2).

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**13. TESTING REQUIREMENTS:**

This permit requires stack testing of the following sources.

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
NONE				

**14. MONITORING OR CEMS**

The following are parameters that must be monitored with CEMs or other monitoring equipment (temperature, pressure differential, etc), frequency of recording and whether records are needed to be included in any annual, semiannual or other reports.

SN	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency*	Report (Y/N)**
None				

\* Indicate frequency of recording required for the parameter (Continuously, hourly, daily, etc.)

\*\* Indicates whether the parameter needs to be included in reports.

**15. RECORD KEEPING REQUIREMENTS**

The following are items (such as throughput, fuel usage, VOC content of coating, etc) that must be tracked and recorded, frequency of recording and whether records are needed to be included in any annual, semiannual or other reports.

SN	Recorded Item	Limit (as established in permit)	Frequency *	Report (Y/N)**
01(ABC)	Pounds of Product (H-10, anthranilamide, or o-Anisoyl Chloride)	1,000,000 per year	Monthly	N
01(ABC)	time, date, temperature of carbon bed regeneration	Max of 7 days between regeneration of main beds Max of 4 days between regenerations of vent beds	As occurs	N
01(ABC)	Caustic Concentration	13%	3 hours	N

\* Indicate frequency of recording required for the item (Continuously, hourly, daily, etc.)  
 \*\* Indicates whether the item needs to be included in reports

**16. OPACITY**

SN	Opacity %	Justification (NSPS limit, Dept. Guidance, etc)	Compliance Mechanism (daily observation, weekly, control equipment operation, etc)
02 and 03	5	18.501 & A.C.A	Inspector's Observation

**17. DELETED CONDITIONS:**

The following Specific Conditions were included in the previous permit, but deleted for the current permitting action.

Former SC	Justification for removal
NONE	

**18. VOIDED, SUPERSEDED OR SUBSUMED PERMITS**

List all active permits for this facility which are voided/superseded/subsumed by issuance of this permit.

Permit #
1103-AR-6

**19. CONCURRENCE BY:**

The following supervisor concurs with the permitting decision:

\_\_\_\_\_  
 Lyndon Poole, P.E.

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