

ADEQ MINOR SOURCE AIR PERMIT

Permit #: 1103-AR-7

IS ISSUED TO:

Lycus Ltd.
181 Cooper Drive
El Dorado, AR 71730
Union County
AFIN: 70-00059

THIS PERMIT IS Lycus Ltd.'s AUTHORITY TO CONSTRUCT, MODIFY, OPERATE, AND/OR MAINTAIN THE EQUIPMENT AND/OR FACILITY IN THE MANNER AS SET FORTH IN THE DEPARTMENT'S MINOR SOURCE AIR PERMIT AND THE APPLICATION. THIS PERMIT IS ISSUED PURSUANT TO THE PROVISIONS OF THE ARKANSAS WATER AND AIR POLLUTION CONTROL ACT (ARK. CODE ANN. SEC. 8-4-101 ET SEQ.) AND THE REGULATIONS PROMULGATED THEREUNDER, AND IS SUBJECT TO ALL LIMITS AND CONDITIONS CONTAINED HEREIN.

Signed:

Keith A. Michaels

Date

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Section I: FACILITY INFORMATION

PERMITTEE: Lycus Ltd.

AFIN: 70-00059

PERMIT NUMBER: 1103-AR-7

FACILITY ADDRESS: 181 Cooper Drive
El Dorado, AR 71730

COUNTY: Union

CONTACT POSITION: Len Brotherton

TELEPHONE NUMBER: (870) 881-5000

REVIEWING ENGINEER: Paula Parker

UTM North-South (Y) Zone 16 3673.3

UTM East-West (X): Zone 16 389.0




Section II: INTRODUCTION

Summary

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. The facility also has removed the TMPAC, HMDS, and Pyrochek L.M. from production. Plantwide SO₂ has increased by 0.4 tons/yr and VOC emissions have decreased by 17.1 tons/yr.

Process Description

Lycus produces three chemicals and various derivatives of those chemicals. Each process is briefly discussed in the following paragraphs.

UV Absorber/Substituted Benzophenone Process: This process consists of producing substituted benzophenones (i.e., 2,2,4,4 tetrahydroxy benzophenone) by reacting substituted benzene rings (i.e., resorcinol, resorcylic acid, etc.) in a non polar solvent (i.e., xylene, ethylene dichloride) in the presence of a Lewis acid (i.e., aluminum chloride). This process produces compounds used as UV protectants or initiators in cosmetic formulations, toiletries, coatings, & plastics. The emissions are controlled by caustic scrubbers and four carbon bed adsorbers. The  on beds are in parallel and are used alternately.

Anthranilamide Process: Anthranilimide is produced using ammonia or substituted amine, isatoic anhydride, and ethylene dichloride/xylene. All exhaust from the process passes through a condenser and two packed tower scrubbers in series to remove any residual solvents or ammonia.

O-Anisoyl Chloride Process: The first step in the production of o-Anisoyl Chloride is to charge glass reactor with ethylene dichloride, Pyridine, of o-Anisic Acid. The reactor is purged with nitrogen and Thionyl Chloride is then added to the thin slurry until the reaction is complete. The gas generated during the reaction is vented through five caustic scrubbers that completely remove the SO₂ and hydrogen chloride gases. The batch is then transferred to another reactor to distill the ethylene dichloride from the o-Anisoyl Chloride. After all the ethylene dichloride is distilled, the o-Anisoyl Chloride is then put into plastic drums. The o-Anisoyl Chloride is then used as a raw material in another product.

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Regulations

The following table is a summary of the facility's total emissions.

Table 1 - Total Allowable Emissions

Total Allowable Emissions		
Pollutant	Emissions Rates	
	lb/hr	Tpy
PM	0.4	1.8
PM ₁₀	0.4	1.8
SO ₂	0.3	0.7
VOC	4.3	17.9
CO	0.8	3.6
NO _x	3.2	14.2
NH ₃	0.1	0.5
Ethylene Dichloride	1.90	8.32
HCl	0.10	0.44
Methyl Chloride	0.75	3.29
Xylene	1.20	5.25
Total Haps	3.80	17.30

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Section III: PERMIT HISTORY

Permit No. 1103-A, issued to Garrison Industries, Inc. on October 16, 1990 was the initial minor source air permit for the facility. This permitting action approved the construction and operation of a urea-formaldehyde conditioning facility located in El Dorado, Arkansas.

Permit No. 1103-AR-1, issued to Garrison Industries, Inc. on March 1, 1991 was a modification to the initial permit. A new process involving the production of hexamethyl disilazane (HMDS) was added at the facility upon final approval of the permit.

Permit No. 1103-AR-2, issued to Garrison Industries, Inc. on February 20, 1992 was a modification involving the addition of a new process at the facility. Upon issuance of the permit, the facility was authorized to produce two products, namely HMDS and Pyro-Chek L.M.

Permit No. 1103-AR-3 was issued to Garrison Industries, Inc. on December 14, 1992. This modification involved the replacement of ethylene dichloride currently used at the facility with methylene dichloride.

Permit No. 1103-AR-4 was issued to Garrison Industries, Inc. on October 7, 1993. This modification involved the production of two new chemicals at the facility. The new chemicals produced at the facility were 2,2', 4, 4'- tetrahydroxybenzophenone (H-10), and trimethyl-phenyl-ammonium chloride (TMPAC). The existing HMDS and Pyrochek L.M. processes remained in operation and were included in the permit.

Permit No. 1103-AR-5 was issued to Garrison Industries, Inc. on September 6, 1994. This modification included revisions in the specific conditions and the allowable emission rates which did not result in an increase in emissions at the facility.

Permit No. 1103-AR-6 was issued to Garrison Industries, Inc. on May 7, 1999. This modification involved the addition of a new process to produce o-Anisoyl Chloride. The new batch process used existing control equipment to limit emissions.

Permit No. 1103-AR-6, issued on August 30, 2000, was a permit amendment involving a transfer of ownership from Garrison Industries, Inc. to Garrison Operating, LLC.

Permit No. 1103-AR-6, issued on January 4, 2001, was a permit amendment involving a transfer of ownership from Garrison Operating, LLC to Lycus, Ltd.

Section IV: EMISSION UNIT INFORMATION

Specific Conditions

1. The permittee will not exceed the emission rates set forth in the following table. [§19.501 et seq. of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control]

Table 2 - Criteria Pollutants

SN	Description	Pollutant	lb/hr	tpy
01A	Substituted Benzophenone Process	SO ₂	0.1	0.5
01B	o-Anisoyl Chloride Process	VOC	4.1	16.9
01C	Anthranilamide Process			
02	Natural Gas Fired Boiler No. 1 (11.7 MMBtu/hr)	PM ₁₀	0.2	0.9
		SO ₂	0.1	0.1
		VOC	0.1	0.5
		CO	0.4	1.8
		NO _x	1.6	7.1
03	Natural Gas Fired Boiler No. 2 (11.7 MMBtu/hr)	PM ₁₀	0.2	0.9
		SO ₂	0.1	0.1
		VOC	0.1	0.5
		CO	0.4	1.8
		NO _x	1.6	7.1

2. The permittee will not exceed the emission rates set forth in the following table. [§18.801 of the Arkansas Air Pollution Control Code, effective February 15, 1999 (Regulation 18) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

Table 3 - Non-Criteria Pollutants

SN	Description	Pollutant	lb/hr	tpy
01A	Substituted Benzophenone Process	Ethylene Dichloride	1.90	8.32
		HCl	0.10	0.44
01B	o-Anisoyl Chloride Process	Methyl Chloride	0.75	3.29
01C	Anthranilamide Process	Xylene	1.20	5.25
		NH ₃	0.1	0.5
02	Natural Gas Fired Boiler No. 1 (11.7 MMBtu/hr)	PM	0.2	0.9
03	Natural Gas Fired Boiler No. 2 (11.7 MMBtu/hr)	PM	0.2	0.9

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3. Visible emissions will not exceed the limits specified in the following table of this permit as measured by EPA Reference Method 9. [A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

Table 4 - Visible Emissions

SN	Limit	Regulatory Citation
02,03	5%	18.501 & A.C.A

4. The permittee will not cause or permit the emission of air contaminants, including odors or water vapor and including an air contaminant whose emission is not otherwise prohibited by Regulation #18, if the emission of the air contaminant constitutes air pollution within the meaning of A.C.A. §8-4-303. [§18.801 of Regulation 18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-31]
5. The permittee will not conduct operations in such a manner as to unnecessarily cause air contaminants and other pollutants to become airborne. [§18.801 of Regulation 18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

SN-01A, 01B, and 01C Conditions

6. All reaction processes shall be of a batch nature only. [Pursuant to §19.705 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]
7. The permittee shall perform only one process reaction, 01A, 01B, or 01C, at a time. Process reactions may not be concurrent. [Pursuant to §19.705 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]
8. The permittee will not process more than 1,000,000 pounds of product at the facility per consecutive 12-month period. This limit applies collectively to the Substituted Benzophenone process, o-Anisoyl Chloride process, and Anthranilamide process. [§19.705 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]
9. The permittee will maintain monthly records which demonstrate compliance with Specific Condition #8. The permittee will update the records by the fifteenth day of the month following the month to which the records pertain. The permittee will keep the records onsite, and make the records available to Department personnel upon request. [§19.705 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]
10. The permittee shall regenerate each of the two main carbon beds every four days and each of the two vent carbon beds every seven days. The permittee shall record and maintain such data: time, date, total time of regeneration, and regeneration temperature. These records shall be kept on site and made available to Department personnel upon request. §19.303, §19.705 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

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11. The permittee shall maintain a caustic concentration of 13% in the primary scrubber. [§19.303 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]
12. The permittee shall conduct sampling of the caustic concentration every four hours of scrubber operation. The permittee shall maintain records of time and date of the sampling data and primary scrubber purging of caustic. These records shall be kept on site and made available to Department personnel upon request. [§19.705 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

SN-02 and SN-03

13. The permittee shall use only pipeline quality natural gas to fuel SN-02 and SN-03. [§19.705 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

NSPS Requirements

14. The permittee shall record natural gas usage for SN-02 and SN-03 on a monthly basis. The permittee shall update the records by the fifteenth day of the month following the month to which the records pertain. The permittee will keep the records onsite, and make the records available to Department personnel upon request. [§19.304 of Regulation 19, 40 CFR 60 Subpart Dc, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

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Section V: INSIGNIFICANT ACTIVITIES

The Department deems the following types of activities or emissions as insignificant on the basis of size, emission rate, production rate, or activity in accordance with Group A of the Insignificant Activities list found in Regulation 18 and 19 Appendix A. Insignificant activity emission determinations rely upon the information submitted by the permittee in an application dated October 29, 2001.

Table 5 - Insignificant Activities

Description	Category
NONE	

Section VI: GENERAL CONDITIONS

1. Any terms or conditions included in this permit that specify and reference Arkansas Pollution Control & Ecology Commission Regulation 18 or the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 *et seq.*) as the sole origin of and authority for the terms or conditions are not required under the Clean Air Act or any of its applicable requirements, and are not federally enforceable under the Clean Air Act. Arkansas Pollution Control & Ecology Commission Regulation 18 was adopted pursuant to the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 *et seq.*). Any terms or conditions included in this permit that specify and reference Arkansas Pollution Control & Ecology Commission Regulation 18 or the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 *et seq.*) as the origin of and authority for the terms or conditions are enforceable under this Arkansas statute.
2. This permit does not relieve the owner or operator of the equipment and/or the facility from compliance with all applicable provisions of the Arkansas Water and Air Pollution Control Act and the regulations promulgated under the Act. [A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
3. The permittee will notify the Department in writing within thirty (30) days after commencement of construction, completion of construction, first operation of equipment and/or facility, and first attainment of the equipment and/or facility target production rate. [§19.704 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation 19) and/or A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
4. Construction or modification must commence within eighteen (18) months from the date of permit issuance. [§19.410(B) of Regulation 19 and/or §18.309(B) of the Arkansas Air Pollution Control Code (Regulation 18) and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
5. The permittee must keep records for five years to enable the Department to determine compliance with the terms of this permit--such as hours of operation, throughput, upset conditions, and continuous monitoring data. The Department may use the records, at the discretion of the Department, to determine compliance with the conditions of the permit. [§19.705 of Regulation 19 and/or §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
6. A responsible official must certify any reports required by any condition contained in this permit and submit any reports to the Department at the address below. [§19.705 of Regulation 19 and/or §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]

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Arkansas Department of Environmental
Quality Division
ATTN: Compliance Inspector Supervisor
Post Office Box 8913
Little Rock, AR 72219

7. The permittee will test any equipment scheduled for testing, unless stated in the Specific Conditions of this permit or by any federally regulated requirements, within the following time frames: (1) newly constructed or modified equipment within sixty (60) days of achieving the maximum production rate, but no later than 180 days after initial start-up of the permitted source or (2) existing equipment already operating according to the time frames set forth by the Department. The permittee must notify the Department of the scheduled date of compliance testing at least fifteen (15) days in advance of such test. The permittee must submit compliance test results to the Department within thirty (30) days after the completion of testing. [§19.702 of Regulation 19 and/or §18.1002 of Regulation 18 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
8. The permittee will provide: [§19.702 of Regulation 19 and/or §18.1002 of Regulation 18 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
 - a. Sampling ports adequate for applicable test methods
 - b. Safe sampling platforms
 - c. Safe access to sampling platforms
 - d. Utilities for sampling and testing equipment
9. The permittee will operate equipment, control apparatus and emission monitoring equipment within their design limitations. The permittee will maintain in good condition at all times equipment, control apparatus and emission monitoring equipment. [§19.303 of Regulation 19 and/or §18.1104 of Regulation 18 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
10. Pursuant to, if the permittee exceeds an emission limit established by this permit, the permittee will be deemed in violation of said permit and will be subject to enforcement action. The Department may forego enforcement action for emissions exceeding any limits established by this permit provided the following requirements are met: [§19.601 of Regulation 19 and/or §18.1101 of Regulation 18 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
 - a. The permittee demonstrates to the satisfaction of the Department that the emissions resulted from an equipment malfunction or upset and are not the result of negligence or improper maintenance, and the permittee took all reasonable measures to immediately minimize or eliminate the excess emissions.
 - b. The reports the occurrence or upset or breakdown of equipment (by telephone, facsimile, or overnight delivery) to the Department by the end of the next business day after the occurrence or the discovery of the occurrence.

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- c. The permittee must submit to the Department, within five business days after the occurrence or the discovery of the occurrence, a full, written report of such occurrence, including a statement of all known causes and of the scheduling and nature of the actions to be taken to minimize or eliminate future occurrences, including, but not limited to, action to reduce the frequency of occurrence of such conditions, to minimize the amount by which said limits are exceeded, and to reduce the length of time for which said limits are exceeded. If the information is included in the initial report, it need not be submitted again.
11. The permittee shall allow representatives of the Department upon the presentation of credentials: [A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
 - a. To enter upon the permittee's premises, or other premises under the control of the permittee, where an air pollutant source is located or in which any records are required to be kept under the terms and conditions of this permit
 - b. To have access to and copy any records required to be kept under the terms and conditions of this permit, or the Act
 - c. To inspect any monitoring equipment or monitoring method required in this permit
 - d. To sample any emission of pollutants
 - e. To perform an operation and maintenance inspection of the permitted source
12. The Department issued this permit in reliance upon the statements and presentations made in the permit application. The Department has no responsibility for the adequacy or proper functioning of the equipment or control apparatus. [A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
13. The Department may revoke or modify this permit when, in the judgment of the Department, such revocation or modification is necessary to comply with the applicable provisions of the Arkansas Water and Air Pollution Control Act and the regulations promulgated the Arkansas Water and Air Pollution Control Act. [§19.410(A) of Regulation 19 and/or §18.309(A) of Regulation 18 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
14. This permit may be transferred. An applicant for a transfer must submit a written request for transfer of the permit on a form provided by the Department and submit the disclosure statement required by Arkansas Code Annotated §8-1-106 at least thirty (30) days in advance of the proposed transfer date. The permit will be automatically transferred to the new permittee unless the Department denies the request to transfer within thirty (30) days of the receipt of the disclosure statement. The Department may deny a transfer on the basis of the information revealed in the disclosure statement or other investigation or, deliberate falsification or omission of relevant information. [§19.407(B) of Regulation 19 and/or §18.307(B) of Regulation 18 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
15. Pursuant to, this permit shall be available for inspection on the premises where the control apparatus is located. [A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]

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16. This permit authorizes only those pollutant emitting activities addressed herein. [A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]
17. This permit supersedes and voids all previously issued air permits for this facility. [Regulation 18 and 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

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APPENDIX A
NSPS Subpart Dc