

CONSTRUCTION PERMIT AMENDMENT

PERMIT NUMBER: CP08-010

**ORIGINAL PREVENTION OF SIGNIFICANT DETERIORATION (PSD)
PERMIT TO CONSTRUCT AN
AIR CONTAMINANT SOURCE
ISSUED ON SEPTEMBER 29, 2006 (CP05-0058) AND
AMENDED ON SEPTEMBER 18, 2007 (CP07-0041) TO:**

Cargill Lactic Acid
650 Industrial Road
Blair, Nebraska 68008-2649

FOR THE SPECIFIC MODIFICATION OF:

A Lactic Acid Production Facility

TO BE LOCATED AT:

650 Industrial Road
Blair, Nebraska 68008

IS HEREBY AMENDED AS FOLLOWS:

- Allow the construction of a third evaporator (process unit) and dumpster.
- Require emissions control of the third evaporator using a regenerative thermal oxidizer.

Pursuant to Chapter 14 of the Nebraska Air Quality Regulations, the public has been notified by prominent advertisement of this proposed construction permit amendment and the thirty (30) day period allowed for comments has elapsed. This construction permit supersedes the construction permit amendment CP07-0041 issued September 18, 2007, to NatureWorks LLC and approves the construction of a new evaporator.

The revisions to Condition XIII.(A) of permit CP05-0058 and Conditions XIII.(I)(1), (2), and (3) of permit CP07-0041 do not trigger any additional requirements under Nebraska Title 129. No other terms or conditions of the original construction permit CP07-0041 are being revised or otherwise amended by this document. All other provisions of the original issued permit are still in effect, and in concert with this construction permit amendment, constitute the effective construction permit. This construction permit amendment shall be attached to the original construction permit and maintained with it henceforth.

This construction permit supersedes the construction permit amendment (CP07-0041) issued on September 18, 2007, in its entirety.

This permit may contain abbreviations and symbols of units of measure, which are defined in 40 CFR Part 60.3. Other abbreviations may include, but are not limited to, the following: Best Available Control Technology (BACT), Hazardous Air Pollutant (HAP), Prevention of Significant Deterioration (PSD), Regenerative Thermal Oxidizer (RTO), Volatile Organic Compounds (VOC).

This permit is issued with the following conditions under the authority of Title 129 - Nebraska Air Quality Regulations as amended February 16, 2008:

Specific Conditions

Conditions XIII.(A) now reads:

- (A) The source is permitted to construct a lactic acid production facility consisting of the following emission points: {Title 129, Chapter 19}

Emission Point (EP)	Equipment Description (Quantity)
EPs 35-10 and 35-11	Nutrient Dump Tank Dust Collectors (2)
EPs 35-12a and 35-13a	Lime Silo Receiver Dust Collectors (2)
EPs 35-12b and 35-13b	Lime Silo Bin Vent Dust Collectors (2)
EP 35-43	Filter Aid Weigh Hopper Dust Collector
EP 35-44	Filter Aid Dissolving Tank Scrubber
EP 35-45	Filter Aid Silo Dust Collector
EP 35-91	Fermentation Cooling Tower
EP 35-93	Process Cooling Tower
EP 35-94	Regenerative Thermal Oxidizer (RTO) – Controls emissions from the following Finishing Process Equipment: Vacuum Pumps (11), Fermenters (8), Process Tanks (4), and Process Units (3)
-----	Paved Road Fugitives
-----	Dumpster

Condition XIII.(H) has been removed. {Removal of condition carried over from permit CP07-0041}

Conditions XIII.(I)(1), (2), and (3) now read:

- (I) The following conditions apply to: LACTIC ACID FINISHING PROCESS AND FERMENTATION OPERATIONS:
 - (1) VOC and HAP emissions from the eleven (11) finishing process vacuum pumps, the four (4) finishing process tanks, and the three (3) finishing process units, collectively referred to as the finishing process equipment, and from the eight (8) fermenters, shall be controlled by one (1) 9 MMBtu/hr natural gas-fired regenerative thermal oxidizer (RTO). {Title 129, Chapter 19 and Chapter 27}
 - (2) BACT for VOCs for the finishing process equipment and fermenters shall be an RTO with a minimum VOC control efficiency of 98 percent and a VOC outlet

emission rate not to exceed 5.62 lb/hr (3-hour or test method average). The source shall comply with these limits, except as provided in Condition XIII.(I)(3). {Title 129, Chapter 19}

- (3) During the first 12 months following initial startup (here-in referred to as the demonstration period), the RTO shall have a minimum control efficiency of 95% and an outlet emission rate not to exceed 14.05 lb/hr (3-hour or test method average) instead of a minimum control efficiency of 98% and an outlet emission rate not to exceed 5.62 lb/hr as listed in Condition XIII.(I)(2).

If the source does not expect to meet the VOC emission limits under normal operating conditions as stated in Condition XIII.(I)(2) after the 12-month demonstration period has elapsed, an RTO Performance Report shall be submitted to the Department no less than 90 days prior to the end of the 12-month demonstration period. This report shall include a performance assessment of the RTO, including data for parameters monitored during testing and a proposed revised emission limit, provided that the proposed revised emission limit shall not exceed 14.05 lb/hr. Parameters to be monitored shall include, but not be limited to, temperature, destruction efficiency, fuel usage, collateral emissions, production capacity and the maximum VOC control efficiency that was achieved during the demonstration period under steady state conditions. The report should also include any other information as necessary to justify why the emission limit in Condition XIII.(I)(2) cannot be achieved. Upon submittal of the RTO Performance Report, the source shall operate the RTO in compliance with the proposed revised emission limit until such time as the Department rejects the limit, or accepts the limit and issues an alternative BACT limit by means of a subsequent PSD permit.

Condition XIII.(M)(6) has been removed. {Removal of condition carried over from permit CP07-0041}

The undersigned issues this document on behalf of the Director in accordance with Title 129 – Nebraska Air Quality Regulations.

7/28/08

{Original Signed}

Date

Jay D. Ringenberg
Deputy Director of Programs

FACT SHEET

Cargill Lactic Acid
650 Industrial Road
Blair, Nebraska 68008

July 28, 2008

DESCRIPTION OF THE FACILITY OR ACTIVITY:

Cargill Inc. (Cargill) recently acquired the lactic acid production facility from NatureWorks LLC. (NatureWorks). NatureWorks was originally a Cargill "joint-venture", which allowed NatureWorks to be permitted as an individual facility separate from Cargill. Later NatureWorks became a wholly owned subsidiary of Cargill when Cargill took sole ownership of NatureWorks. Recently Teijin invested in NatureWorks and NatureWorks once again became a Cargill "joint-venture". At the time of Teijin's investment Cargill decided to separate the lactic acid production facility from NatureWorks and take sole ownership of it and have it become Cargill Lactic Acid (Facility ID# 91164), a separate facility from Cargill Inc. and NatureWorks for permitting purposes. Cargill Lactic Acid (CLA) will be handled as a "joint-venture" concerning PSD determinations based on the Stewart Griner memo from July 15, 1999.

CLA was originally issued a construction permit under the NatureWorks, Facility ID# 69585, on May 8, 2001 to construct the lactic acid production facility. The permit issued May 8, 2001 was superseded by the construction permit issued (to NatureWorks) November 6, 2002. CLA was issued a construction permit (CP05-0058) (under the NatureWorks Facility ID# 69585) on September 29, 2006 for which the facility was permitted to install a regenerative thermal oxidizer (RTO) to satisfy the Best Available Control Technology (BACT) requirement. CP05-0058 superseded the construction permit issued November 6, 2002 and contained requirements for the entire lactic acid facility. A construction permit amendment (CP07-0041) (under the NatureWorks Facility ID# 69585) was issued on September 18, 2007 allowing the 4 MMBtu/hr RTO permitted in 2006 to be resized to a 9 MMBtu/hr RTO and control the volatile organic compound (VOC) emissions from the finishing process and the fermenters when direct reduction of VOC emissions directly from the fermenters could not be engineered within a reasonable time frame.

CLA submitted a construction permit application, (application number 08-010) which the Department received January 23, 2008 for the construction of one new evaporator (Dist3) and one new dumpster to the lactic acid production facility. This permitting action approves the construction of the new evaporator, which is required to be controlled by the existing RTO, and new dumpster. Condition XIII.(A) of the construction permit (CP05-0058) issued September 29, 2006, is being superseded at this time in order to include the new units. The construction permit amendment (CP07-0041), issued on September 18, 2007 is also being superseded in its entirety. Once this permitting action is completed only two construction permits will be active for the lactic acid facility, CP05-0058 and CP08-010. Prior to placing this proposed permit on public notice, the Department received a permit application from CLA (tracking #08-031) to add new fermentation equipment and proposes to re-route the fermentation exhaust stream to the atmosphere instead of the RTO. Since this proposed permit (CP08-010) deals with the "finishing" portion of the process that is routed to the RTO and CLA is not proposing to change this requirement in the later application, the Department sees no reason to hold up this project until the evaluation is complete for application 08-031.

The lactic acid produced by CLA is utilized by NatureWorks to produce lactide polymers (standard industrial classification (SIC) code 2821). The polymers are sold in the form of pellets that can be used

to manufacture a wide variety of polymer products. The facility is located adjacent to Cargill's wet corn milling operation and ethanol facility at 650 Industrial Rd in Blair, Nebraska.

TYPE AND QUANTITY OF AIR CONTAMINANT EMISSIONS ANTICIPATED:

Emissions from the lactic acid facility consist primarily of particulate matter (PM), particulate matter less than or equal to 10 micrometers (PM₁₀), VOCs, and hazardous air pollutants (HAPs) – primarily acetaldehyde. PM₁₀ emissions result from material handling, truck traffic, and cooling tower loses (for these sources, all PM is assumed to be PM₁₀). VOC and HAP emissions result from liquid handling and storage, fermentation, and lactic acid processing operations. Increase in emissions resulting from the modification being permitted in this construction permit will consist of VOC and HAPs.

Currently the emissions from Dist1 and Dist2 (existing evaporators at CLA) come from the vapor of the Dist1 and Dist2 process after a series of steam ejectors and the emissions are routed to the RTO. This modification involves the installation of a new evaporator (Dist3) to accommodate the evaporation currently done by the existing evaporators (Dist1 and Dist2) in the lactic acid finishing process. Dist2 will remain operational at the lactic acid facility after the installation of Dist3.

The proposed evaporator (Dist3) can handle the evaporation application better than the existing Dist1 and Dist2. The resulting impurities from Dist3 will be transported to a dumpster and will cool to a solid phase and then be landfilled with no need for mulch additive. Prior to this modification the impurities produced by Dist1 and Dist2 were in liquid form and had to be mixed with mulch in a trailer prior to disposal at the landfill.

The potential emissions emitted from the modification were calculated using test data from the existing Dist1 and Dist2 evaporator, scaled up for the differences in the Dist3 operation, plus a compliance margin. There is a small amount of fugitive VOC emissions anticipated from the dumpster because of the higher temperatures Dist3 removes the impurities. The fugitive VOC emissions are estimated based on pilot testing of this process by the facility.

The following table illustrates the potential increase in emissions from the proposed evaporator installation at Cargill's lactic acid production facility.

Increase in Potential Emissions	
Regulated Pollutant	Increase (tons/year)
Volatile Organic Compounds (VOC)	0.24
Total Hazardous Air Pollutants (HAPs):	0.03

The following table illustrates the potential emissions from Cargill's lactic acid production facility after issuance of this proposed construction permit.

Potential Facility-wide Emissions from after the Proposed Construction

Regulated Pollutant	Potential Emissions from the Lactic Acid Production Facility (tons/year)
Particulate Matter (PM)	14.62
PM smaller than or equal to 10 microns (PM ₁₀)	14.62
Oxides of Nitrogen (NO _x)	1.93
Sulfur Dioxide (SO ₂)	5.71
Carbon Monoxide (CO)	20.03
Volatile Organic Compounds (VOC)	24.77
Total Hazardous Air Pollutants (HAPs):	4.03

APPLICABLE REQUIREMENTS AND VARIANCES OR ALTERNATIVES TO REQUIRED STANDARDS:

Chapter 4 – Ambient Air Quality Standards: Modeling is not required for this modification because VOC and HAPs are the only emissions that increase from the proposed construction. The Department does not model VOCs or HAPs.

Chapter 17 – Construction Permit Requirements: A construction permit has been requested by Cargill in accordance with Section 014.02. The source-wide (e.g. the entire Cargill – Blair complex) potential emissions after this permitting action are such that the source is in the \$3,000 permit fee category, in accordance with Section 003.01.

Chapter 18 – New Source Performance Standards (NSPS), and 40 CFR Part 60: No additional NSPS requirements become applicable to the facility as a result of this permitting action.

Chapter 19 – Prevention of Significant Deterioration (PSD):

The Cargill – Blair complex currently consists of Cargill’s wet corn milling operation/ethanol facility and a source group under the SIC code 28 that consists of several joint ventures and other businesses at the complex (NatureWroks LLC, Cargill Polyols LLC and PGLA-1 Company). The SIC code 28 source group is considered a single source, while the wet corn milling operation and ethanol facility comprise a separate source, as discussed in a July 15, 1999 memo to file – 65024-9P, for purposes of PSD. The SIC code 28 source group is currently a major PSD source because their combined current potential and actual VOC emissions are greater than 100 tpy (sources with 2-digit SIC code 28 are considered “chemical process plants”, which is one of the 28 listed source categories with 100 tpy PSD thresholds).

CLA has requested that this permit be issued as a PSD permit acknowledging that the increase in potential emissions from this project are well below the 40 tons of VOC significant thresholds for the PSD program. The facility is planning future projects and feels this project may be considered part of a future project and aggregated together, these projects could exceed the VOC significant threshold. The facility will apply top-level BACT, a regenerative thermal oxidizer, to reduce the uncontrolled VOC emissions from the new evaporator (Dist3) therefore a complete BACT analyses was not completed. The Chapter 19 discussion from the fact sheet that accompanied the permit amendment issued September 18, 2007 (CP07-0041) is still applicable concerning the BACT decision for the lactic acid finishing process and fermentation operations.

CLA conducted additional analyses on growth, soil and vegetation, and visibility impacts of this project and concluded the no significant adverse impact would occur as a result of the operation of CLA. The Department did not require pre-application ambient air monitoring for the facility because of the low increase in emissions (0.24 tons of VOCs). The Department did not require air dispersion modeling for this project because of issues discussed in the Chapter 4 discussion.

Chapter 20 – Particulate Matter Emissions:

Title 129, Chapter 20, Section 001 - Process Weight Rate

Each permitted emission rate limitation ensures that the process weight rate limitations will not be exceeded. The following formula was used to determine compliance for CLA's RTO because the process rate is less than 60,000 lb/hr, $E=4.10 p^{(0.67)}$ where E = rate of emission in lb/hr, and p = process weight rate in tons/hour. The facility's allowable PM emissions from this emission point are 37.77 lb/hr. Since the processing emissions routed to the RTO are only 0.76 lb/hr, the facility is expected to be in compliance with the process weight rate limitation.

Title 129, Chapter 20, Section 002 -Particulate Emissions from Combustion Sources

This facility is expected to be in compliance with this regulation because the only fuel combusted in the RTO is natural gas. This fuel is considered "clean fuel" with regard to particulate emissions.

Title 129, Chapter 20, Section 004 - Opacity

The RTO is subject to the opacity standard (20% opacity limit) specified in Title 129, Chapter 20, Section 004. It is very unlikely the RTO would exceed this standard due to the use of natural gas as fuel. This fuel is considered "clean fuel" with regard to particulate emissions.

Chapter 24 – Sulfur Compound Emissions: The exclusive use of natural gas in the RTO will ensure compliance with Section 001.

Chapter 27 – Hazardous Air Pollutants: Chapter 27 does not apply to this construction project because of the potential HAPs from the project are less than 2.5 tons of individual tons and 10.0 ton of combined HAPs.

Chapter 28 – Hazardous Air Pollutant Emission Standards (MACT): The source will not become subject to any additional MACT/NESHAP standards as a result of this project. The source is subject to 40 CFR 63 Subpart FFFF and Cargill Lactic Acid is required to comply with the applicable requirements of Subpart FFFF.

Permit conditions specific to the proposed permit amendment are discussed as follows:

All revised conditions are presented and discussed below. Added items are bold and underlined, while removed items have a strikethrough.

Condition XIII.(A)

- (A) The source is permitted to construct a lactic acid production facility consisting of the following emission points: {Title 129, Chapter 19}

Emission Point (EP)	Equipment Description (Quantity)
EPs 35-10 and 35-11	Nutrient Dump Tank Dust Collectors (2)
EPs 35-12a and 35-13a	Lime Silo Receiver Dust Collectors (2)
EPs 35-12b and 35-13b	Lime Silo Bin Vent Dust Collectors (2)
EP 35-43	Filter Aid Weigh Hopper Dust Collector
EP 35-44	Filter Aid Dissolving Tank Scrubber
EP 35-45	Filter Aid Silo Dust Collector
EPs 35-20, 21, 22, 23, 24, 25, 26, and 27	Fermenters (8)
EP 35-91	Fermentation Cooling Tower
EP 35-93	Process Cooling Tower
EP 35-94	Regenerative Thermal Oxidizer (RTO) – Controls emissions from the following Finishing Process Equipment: Vacuum Pumps (11), Fermenters (8) , Process Tanks (4), and Process Units (2) (3)
-----	Paved Road Fugitives
-----	Dumpster

Condition XIII.(A) has been revised to include the fermenters (EP 35-20 through 27) and a third process unit (Dist3) to be routed to the RTO (EP 35-94) and allow construction of a dumpster. All other requirements in this condition established in previous permitting actions remain in effect. Moving the 8 fermenters to the RTO (EP 35-94) was actually required in permit CP07-0041 but was not corrected in this Condition XIII.(A) table at that time.

Condition XIII.(H) was previously removed in permit CP07-0041 and is carried over into this permit since CP07-0041 is being superseded.

Condition XIII.(I)(1), (2), and (3)

(I) The following conditions apply to: LACTIC ACID FINISHING PROCESS AND FERMENTATION OPERATIONS:

- (1) VOC and HAP emissions from the eleven (11) finishing process vacuum pumps, the four (4) finishing process tanks, and the ~~two~~ **three** ~~(2)~~ **(3)** finishing process units, collectively referred to as the finishing process equipment, and from the eight (8) fermenters **fermenters**, shall be controlled by one (1) 9 MMBtu/hr natural gas-fired regenerative thermal oxidizer (RTO). {Title 129, Chapter 19 and Chapter 27}

This condition has been revised to include the new finishing process unit (Evaporator Dist 3), and correct a grammatical error in spelling fermenters.

- (2) BACT for VOCs for the finishing process equipment and fermenters **fermenters** shall be an RTO with a minimum VOC control efficiency of 98 percent and a VOC outlet emission rate not to exceed ~~5-6~~ **5.62** lb/hr (3-hour or test method average). The source shall comply with these limits, except as provided in Condition XIII.(I)(3). {Title 129, Chapter 19}

This condition has been revised to include the increase in the emissions which resulted from the installation of the new evaporator (Dist3) which will be routed through the RTO.

- (3) During the first 12 months following initial startup (here-in referred to as the demonstration period), the RTO shall have a minimum control efficiency of 95% and an outlet emission rate not to exceed ~~14.0~~ **14.05** lb/hr (3-hour or test method average) instead of a minimum control efficiency of 98% and an outlet emission rate not to exceed ~~5.6~~ **5.62** lb/hr as listed in Condition XIII.(I)(2).

If the source does not expect to meet the VOC emission limits under normal operating conditions as stated in Condition XIII.(I)(2) after the 12-month demonstration period has elapsed, an RTO Performance Report shall be submitted to the Department no less than 90 days prior to the end of the 12-month demonstration period. This report shall include a performance assessment of the RTO, including data for parameters monitored during testing and a proposed revised emission limit, provided that the proposed revised emission limit shall not exceed ~~14.0~~ **14.05** lb/hr. Parameters to be monitored shall include, but not be limited to, temperature, destruction efficiency, fuel usage, collateral emissions, production capacity and the maximum VOC control efficiency that was achieved during the demonstration period under steady state conditions. The report should also include any other information as necessary to justify why the emission limit in Condition XIII.(I)(2) cannot be achieved. Upon submittal of the RTO Performance Report, the source shall operate the RTO in compliance with the proposed revised emission limit until such time as the Department rejects the limit, or accepts the limit and issues an alternative BACT limit by means of a subsequent PSD permit.

This condition has been revised to include the increase in the emissions which resulted from the installation of the new evaporator (Dist3) which will be routed through the RTO. The initial startup of the RTO was December 27, 2007, and the facility is in the RTO demonstration period.

Condition XIII.(M)(6) was previously removed in permit CP07-0041 and is carried over into this permit since CP07-0041 is being superseded.

STATUTORY OR REGULATORY PROVISIONS ON WHICH PERMIT REQUIREMENTS ARE BASED:

Applicable regulations: Title 129 - Nebraska Air Quality Regulations as amended February 16, 2008.

PROCEDURES FOR FINAL DETERMINATION WITH RESPECT TO THE PROPOSED CONSTRUCTION PERMIT:

The public notice, as required under NAQR Chapter 14, shall be published on June 24, 2008, in the Enterprise Publishing Company newspaper in Blair. Persons or groups shall have 30 days from that issuance of public notice (July 23, 2008) to provide the NDEQ with any written comments concerning the proposed permit action and/or to request a public hearing, in accordance with NAQR Chapter 14. If a public hearing is granted by the Director, there will be a notice of that meeting published at least 30 days prior to the hearing. Persons having comments or requesting a public hearing may contact:

W. Clark Smith-Permitting Section Supervisor
Air Quality Division
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, Nebraska 68509-8922

If no public hearing is requested, the permit may be granted at the close of the 30-day comment period. If a public hearing is requested, the Director of the NDEQ may choose to extend the date on which the permit is to be granted until after that public hearing has been held. During the 30-day comment period, persons requiring further information should contact:

Scott Hajek-Program Specialist
Air Quality Division-Permitting Section
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, Nebraska 68509-8922

Telephone inquiries may be made at:

(402) 471-2189

TDD users please call 711 and ask the relay operator to call us at (402) 471-2186.