

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number:

06 2016 - 011

Project Number: 2014-01-053

Installation Number: 510-0468

Parent Co.:

Lange-Stegmann Co.

Parent Co. Address: 1 Angelica Street, St. Louis, MO 63147

Installation Name:

Lange-Stegmann Co.

Installation Address:

1 Angelica Street, St. Louis, MO 63147

Location Information:

St. Louis City County, Land grant #01342

Application for Authority to Construct was made for:

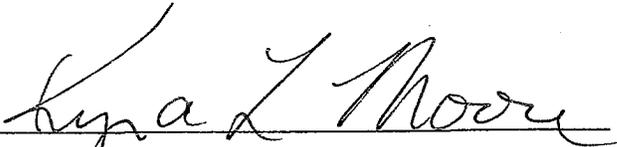
Modification of construction permit 042007-018 to re-evaluate permitted equipment. This review was conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

JUN 20 2016

EFFECTIVE DATE



DIRECTOR OR DESIGNEE

DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Lange-Stegmann Co.
St. Louis City County, Land grant #01342

1. **Superseding Condition**
The conditions of this permit supersede all special conditions found in the previously issued construction permits #98-12-080, 00-11-047, and 042007-018, and any amendments, corrections, or permit matters¹ associated with those permits.
2. **PM₁₀ Emission Limitations**
 - A. Lange-Stegmann Co. shall emit less than 17.05 tons of PM₁₀ in any consecutive 12-month period from the emission sources listed in Table 3.
 - B. Attachment A or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Condition 2.A.
3. **Operational Limitations-Warehouse**
 - A. Lange-Stegmann Co. shall keep all warehouse doors closed at all times except during personnel or equipment entrance or egress.
 - B. Lange-Stegmann shall operate and maintain the ventilation system of the warehouse such that negative pressure is maintained at all warehouse openings and all internal air passes through the EP-19A or EP-19B baghouses.
 - C. The permittee shall demonstrate negative pressure once a quarter as required. This demonstration may be done by using streamers or puff tests on building openings or an alternative method. The results shall be documented. When documentation indicates that negative pressure has been maintained for four consecutive quarters, this demonstration

¹ Permit Matter documents were issued by St. Louis City Air Program and are similar to permit amendments, however they are not titled as such.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

requirement shall sunset and additional demonstrations are no longer required.

4. Control Device Requirement-Baghouses

A. Lange-Stegmann Co. shall control emissions from the equipment contained in this permit as specified in Table 3.

B. If Lange-Stegmann Co. operates CD7 and CD7A as currently designed, the compliance records shall use the overall control efficiencies in the 'current design' column of the table below. Alternatively, Lange-Stegmann Co. has the option to permanently modify the design so that CD-7 and CD-7A are operated with a damper system such that when product is transferred to EP10S2, the pickup point located at EP-10 is closed off. When product is transferred to truck/railcar loading activities at EP-10, the pickup point at EP10S2 shall be closed off. After these modifications are complete, the compliance records shall use the overall control efficiencies in the 'modified design' column of the table below. If Lange-Stegmann Co. performs these alternative modifications, notification shall be submitted to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 30 days after the completion of the modifications.

Table 1: Overall Control Efficiencies for CD7 and CD7A

Emission points	Current design	Modified design
EP-10 series	49.75%	79.6%
EP-10S2 spout to BC-222	89.5%	98.5%

C. Lange-Stegmann Co. shall install a baghouse pickup point from baghouse 19A on the enclosed drop point of belt conveyor BC-219a to belt conveyor BC-219b.

D. The baghouses shall be operated and maintained in accordance with the manufacturer's specifications. The baghouses shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that Department of Natural Resources' employees may easily observe them.

E. Replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance). Baghouses CD-19A, 19B, and 20 shall use the same type of bags as documented in the construction permit application.

- F. Lange-Stegmann Co. shall monitor and record the operating pressure drop across the baghouses at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
 - G. Lange-Stegmann Co. shall maintain a copy of the baghouses' operations and maintenance manual or equivalent on site.
 - H. Lange-Stegmann Co. shall maintain an operating and maintenance log for the baghouses which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
5. Control Device Requirement-Enclosure
- A. The enclosed drop points identified in Table 3 shall be completely enclosed. The enclosure shall be constructed and maintained such that no visible emissions are allowed to occur from these sources except through baghouse pickup points.
 - B. Lange-Stegmann Co. shall conduct a detailed visual inspection of the enclosures listed in Table 3 once every six months to ensure compliance with Special Condition 5.A. A record shall be maintained acknowledging that the enclosures have been inspected.
6. Operational Requirements-Haul Roads
- A. The silt loading shall not exceed 0.50 grams/meter² on any of the paved haul roads at the installation.
 - B. Lange-Stegmann Co. shall develop, maintain, and implement a Fugitive Dust Control Plan (FDCP) that will control emissions from haul roads to comply with Special Condition 6.A. The FDCP shall at a minimum include control and/or cleaning methods and establish a documentation procedure for the control and/or cleaning methods.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- C. Compliance with the silt loading limitation in Special Condition 6.A. shall be demonstrated by conducting a series (as defined in Appendix C of AP-42) of silt loading performance tests. The silt loading tests shall be representative (as defined in Appendix C of AP-42) and conducted in accordance with ASTM-c-136 method. Testing cannot be done immediately after cleaning. If there is a regular cleaning schedule, testing shall be done at the midpoint of the cleaning cycle (i.e. if cleaning is scheduled every 8 hours, then testing must be done at the midpoint of 4 hours). A summary of the testing method is found in Appendix C of AP-42. Testing shall be conducted according to the following schedule:
 - A. Initial testing shall be conducted within 60 days of issuance of this permit. Should the testing yield no exceedance of the limit during this period then,
 - B. Testing shall be conducted one a quarter for four consecutive quarters. Should the testing yield no exceedance of the limit during this period then,
 - C. Testing shall be conducted once annually.
 - D. If at any time an exceedance is shown, testing shall be conducted within 30 days and progress in a manner according to the above schedule.

- D. As an alternative to current operations, Lange-Stegmann Co. has the option to pave all haul roads. If all haul roads are paved, the initial testing specified in 6.C.1. shall be extended to within 120 days of issuance of this permit. The other requirements of 6.C. are unchanged. If Lange-Stegmann Co. paves all haul roads, notification shall be submitted to the Air Pollution Control Program’s Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 30 days after the completion of the paving.

- E. Lange-Stegmann, Co. shall use the following emission factors to quantify PM₁₀ emissions from the haul roads:

Table 2: Haul road emission factors in lb PM10/ton of product

Haul Road	Current operations: Paved/unpaved portions	Alternative operations: All portions paved
HR1	0.0063	0.0011
HR2	0.0064	0.00065
HR2a	0.011	0.0013
HR2b	0.0094	0.0013

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

HR3a	0.0068	0.0012
HR3b	0.0047	0.0012

- F. Two copies (one hardcopy, one electronic) of the full test report and results shall be submitted to the Compliance/Enforcement Section within 60 days of completion of the initial testing. At a minimum, the report shall include sample road segment locations, recent weather conditions, HEPA vacuum bag model number, cleaning method and schedule, sampling date/time, tons of material received and shipped on the sampling day compared to the permitted capacity, legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required EPA Method for at least one sample run. Subsequent test results shall be kept on site.
 - G. For each week of operation, the installation shall conduct a survey of the plant property and haul roads to determine if visible fugitive emissions are being generated and if these emissions are leaving the plant property. Documentation of all corrective actions and daily surveys shall be maintained.
7. Record Keeping and Reporting Requirements
- A. Lange-Stegmann Co. shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.
 - B. Lange-Stegmann Co. shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.
8. Evaluation of Potential Emissions
- The installation shall submit potential to emit calculations for the entire installation, including all fugitive and point sources as part of the Intermediate operating permit renewal application. This submission is due to the Air Pollution Control Program Permit Section within 30 days of the date this construction permit is issued.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (6) REVIEW

Project Number: 2014-01-053
Installation ID Number: 510-0468
Permit Number:

Lange-Stegmann Co.
1 Angelica Street
St. Louis, MO 63147

Complete: January 31, 2014

Parent Co.:
Lange-Stegmann Co.
1 Angelica Street
St. Louis, MO 63147
St. Louis City

REVIEW SUMMARY

- Lange-Stegmann Co. (LSCO) has applied for authority to modify construction permit 042007-018 to re-evaluate the permitted equipment and emissions.
- HAP emissions are not expected from the proposed equipment.
- None of the New Source Performance Standards (NSPS) apply to the installation.
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- Baghouses and conveyor drop point enclosures are being used to control the particulate emissions from the equipment in this permit.
- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM are greater than the threshold value of 25 tons/year. However, no modeling is required because there is no modeling standard for PM.
- This installation is located in St. Louis City, a nonattainment area for the 8-hour ozone standard and the PM_{2.5} standard and an attainment area for all other criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2.
- Emission testing is not required for the equipment.
- The installation currently has an Intermediate Operating Permit, OP2011-039, which expires August 11, 2016. An Intermediate Operating Permit renewal application,

including plant wide potential to emit calculations, is due within 30 days from the issuance date of this permit.

- Approval of this permit is recommended with special conditions.

INSTALLATION AND PROJECT DESCRIPTION

LSCO operates a bulk warehousing installation located at 1 Angelica Street in St. Louis, Missouri. The installation warehouses bulk fertilizers and other bulk materials, utilizing unloading, storage, and loading systems. The installation consists of conveyors, loading towers, storage domes, open storage piles, a warehouse, and 2 liquid fertilizer storage tanks, each with a 3 million gallon capacity. Commodities are received and shipped using barges, railroads, and trucks. Commodities include dry and liquid fertilizer, road salt, mixed grains, and clay aggregate.

LSCO has contiguous property, and a business relationship with the Stabilized Nitrogen Center (SNC) currently owned and operated by Koch Agronomic Services, LLC (KAS), located at 39 Bremen Avenue. The SNC was constructed under the authority of Construction Permit #042007-018, which was issued to Lange-Stegmann, who owned the property at the time. Both installations have requested to be considered separate installations for regulatory purposes. The definition of installation requires three criteria to be met: all source operations must belong to the same SIC code, source operations must be contiguous, and finally source operations must be common control. KAS and LSCO do not have the same SIC code (2873 and 4991, respectively); nor are they under common control. They are contiguous, and their operations do interact on a daily basis. Because of this interaction, the concept of support facility was considered in the determination of one installation. Although the two installations interact on a daily basis, they have the capability to operate successfully independently of each other. Therefore they are considered separate installations. Construction permit #042007-018 is superseded by this construction permit. The KAS construction permit that is issued concurrent with this project will also supersede Construction Permit #042007-018.

The original 2007 construction permit was issued to LSCO and authorized the addition of:

1. Modified EP-9 and EP-10 systems and new unloading and loading equipment
2. New bulk urea fertilizer warehouse
3. New urea-based fertilizer granulation facility (the SNC) to produce a stabilized nitrogen based urea.

The equipment and processes for item three are contained in the KAS construction permit (PAMS # 2013-11-011). Table 3 contains all the equipment covered by this permit. References to new or existing are referring to the installation as it existed in 2007. There is no additional equipment, with installation dates after 2007, that is being permitted in this project. This construction permit will address the following issues for the LSCO facility only:

1. Revise the equipment and processes. Revisions will include accounting for units

that were permitted or installed in 2007, which are currently owned by LSCO, but not specifically listed in that permit.

2. Account for the modified and new unloading and loading equipment, and the warehouse using revised emission factors and control efficiencies.

Modified unloading equipment:

Prior to the 2007 construction permit, LSCO operated the equipment identified as EP-9 and EP-10 under a 250 ton/hr restriction established by a previous construction permit. The 2007 construction permit increased the production capacity of these units to 500 tons/hr.

LSCO receives commodities via barge. The dry material is unloaded into a hopper using a material handler with a clam shell bucket. The hopper feeds the material conveyor system identified as EP-9. This system consists of three conveyors. Barge Conveyor #1 receives product from the hopper and conveys the material through an enclosed drop point onto Barge Conveyor #2. Barge Conveyor #2 carries the product to another enclosed drop point onto Barge Conveyor #3. Barge Conveyor #3 transfers the product to the top of the Multiproduct Loading/Transfer Tower.

The tower is identified as EP-10. At EP-10 product is either discharged to railcar or truck (direct transfer) or to the first conveyor of the EP-10S2 system, BC-222. At the time of permit issuance, design changes are needed in order for the baghouse system to draw on one operation at a time (direct transfer or BC-222). Special Condition 4B allows for operation under the current design conditions as well as allowing for modifications for the system to draw on one operation at a time.

New Unloading equipment:

Conveyor belt system EP-10S2 was installed under the 2007 construction permit. This conveyor transfers product to the warehouse. The EP-10S2 system consists of two belt conveyors: BC-222 carries product from the tower to another belt, BC-228, which enters the warehouse.

New warehouse:

A new bulk urea warehouse was installed under the 2007 construction permit. The warehouse is completely enclosed, except for openings for incoming/outgoing conveyors and loading doors. The doors are kept closed except for ingress and egress of employees and vehicles. The warehouse stores both raw materials and finished products from the SNC, which is owned by KAS, as well as other commodities. SNC operations are covered in more detail in the KAS construction permit (project #2013-11-011). The new warehouse is under negative pressure. The warehouse has receiving operations, storage bins, and shipping operations. Finished product from KAS is stored in dedicated bins 9-15, raw material for KAS is stored in dedicated bins 7 and 8. All other bins are leased to other tenants for fertilizer storage. Details on these operations are in Table 3.

New Product Loading stations:

Product is loaded into trucks or railcars in three separate loading stations: EP-19A (trucks), EP-19B (trucks), and EP-20 (railcars). Each station is described in Table 3.

The two truck loading operations, EP-19B and EP-19A, are nearly identical. They are located in individual truck loading bays that are completely enclosed except for doors for truck entry and exit. The doors are typically kept open so that truck loading may occur quickly. Product travels through a chute and free falls into a truck bed. There is a baghouse pickup point near the chute. EP-19A has one chute. EP-19B has two for the main and alternate loading systems, but only operates one at a time.

Railcar loading occurs at the railcar loading tower. Product is transferred to the tower using the EP-20 conveyor system. The system consists of two belt conveyors, the first belt, BC-219a, receives product from the EP-19A, EP-19B, and alternate loading systems. This belt then transfers product to the second belt, BC-219b, using an enclosed drop point, which transports it to the top of the tower. The conveyor discharges material into a hopper located inside the tower. The hopper uses a diverter to transfer material to two different loading spouts. The spouts swing down to come into position over the railcars, with baghouse pickup lines connected to the spouts. Product travels through the telescoping spout into the railcar. The telescoping spout is extended into the railcar. The railcar loading station structure is open to the environment, railcars enter under the structure to receive product.

Table 3: Emission Points Covered by this Permit

EP #	Emission Point Description (Year Constructed/Modified)	MHDR (ton/hr)	Control Device
Barge Unloading consisting of the following (1986 initial construction/modified 2007):			
EP-9 series	Emission point #1: barge unloading into hopper to #1 Barge Conveyor	500	None
	Emission point #2: #1 Barge Conveyor to #2 Barge Conveyor		Enclosed drop point
	Emission point #3: #2 Barge Conveyor to #3 Barge Conveyor		Enclosed drop point
Railcar loading/Transfer tower consisting of the following (1986 initial construction/modified 2007):			
EP-10 series	Truck and railcar loading, there is one emission point for this process.	500	CD-7 baghouse pickup from enclosed drop point
Conveyor for urea fertilizer to warehouse, consisting of the following (2007):			
EP-10S2	Enclosed drop point from tower loading chute to belt conveyor BC-222, there is one emission point for this process.	500	CD-7 baghouse pickup from enclosed drop point
	Drop point from belt conveyor BC-222 to belt conveyor BC-228, there is one emission point for this process.		CD-19A baghouse pickup from enclosed drop point
Warehouse consisting of the following operations (2007):			
<i>Receiving Operations:</i>			
EP-19A	Material unloading drop point from warehouse belt conveyor BC-228 to storage bins, there is one emission point for this process.	500	CD-19A baghouse
EP-19B	Internal warehouse receiving from SNC. This point accounts for process operations from belt conveyor BC-215 through product transferring to the storage bins 9-15. There are two emission points with this process.	50	CD-19B baghouse
<i>Internal Warehouse Haul Roads</i>			
EP-19A	Internal warehouse haul roads for front end loader #1	520	CD-19A baghouse
EP-19B	Internal warehouse haul roads for front end loader #2	520	CD-19B baghouse
<i>Warehouse Loading Systems:</i>			
EP-19B	Internal warehouse loading operations to SNC. This point accounts for process operations from front end loader dropping product to hopper BN-211 through the product transferring to belt conveyor BC-209a. There are three emission points with this process.	200	CD-19B baghouse
EP-19A	Internal warehouse loading system to rail. This point accounts for process operations from front end loader dropping product on the floor grate X-205 through the product transferring to belt conveyor BC-219a. There are four emission points with this process. This is warehouse system 1 of 3 for rail loading.	360	CD-19A baghouse

EP #	Emission Point Description (Year Constructed/Modified)	MHDR (ton/hr)	Control Device
EP-19B	Internal warehouse loading system to rail. This point accounts for process operations from front end loader dropping product on the floor grate X-206 through the product transferring to belt conveyor BC-219a. There are four emission points with this process. This is warehouse system 2 of 3 for rail loading.	360	CD-19B baghouse
EP-19B	Internal warehouse alternate loading system to rail. This point accounts for process operations from the front end loader dropping product into hopper X-207 through the product transferring to belt conveyor BC-219a. There are four emission points for this process. This is warehouse system 3 of 3 for rail loading.	360	CD-19B baghouse
EP-19A	External warehouse loading system to rail, emission point for belt conveyor BC-219a drop point to belt conveyor BC-219b	360	CD-19A baghouse pickup from enclosed drop point
EP-19A	Internal warehouse loading system to EP-19A truck loading bay. This point accounts for process operations from the front end loader dropping product into floor grate X-205 through the product transferring to bucket elevator BE-213. There are three emission points for this process. This is warehouse system 1 of 3 for truck loading.	360	CD-19A baghouse
EP-19B	Internal warehouse loading system to EP-19B truck loading bay. This point accounts for process operations from the front end loader dropping product into floor grate X-206 through the product transferring to bucket elevator BE-214. There are three emission points for this process. This is warehouse system 2 of 3 for truck loading.	360	CD-19B baghouse
EP-19B	Internal warehouse alternate loading system to EP-19B truck loading bay. This point accounts for process operations from the front end loader dropping product into hopper X-207 through the product transferring to bucket elevator BE-215. There are three emission points for this process. This is warehouse system 3 of 3 for truck loading.	360	CD-19B baghouse
EP-19A	Truck loading bay EP-19A. This point accounts for process operations from BE-213 through the product transferring into the truck. There is one emission point for this process. This is the only operation in this loading bay.	360	CD-19A baghouse
EP-19B	Truck loading bay EP-19B. This point accounts for process operations from BE-214 through the product transferring into the truck. There is one emission point for this process. This is operation 1 of 2 in this loading bay.	360	CD-19B baghouse

EP #	Emission Point Description (Year Constructed/Modified)	MHDR (ton/hr)	Control Device
EP-19B	Truck loading bay EP-19B, alternate loading system. This point accounts for process operations from BE-215 through the product transferring into the truck. There is one emission point for this process. This is operation 2 of 2 in this loading bay.	360	CD-19B baghouse
Railcar trans Loading Tower (2007)			
EP-20	Railcar loading tower. This point accounts for process operations from BC-219b conveyor through the product transferring into the railcar. There is one emission point for this process, one railcar is loaded at a time.	360	CD-20: baghouse
Haul Roads			
HR1	Haul roads for EP-19A and EP-19B to Angelica Street	520	None
HR2	Haul roads for EP-10 to Angelica Street	500	None
HR2a	Haul roads for EP-10 to salt pile	500	None
HR2b	Haul roads for EP-10 to aggregate pile	500	None
HR3A	Haul roads from salt pile to Angelica Street	500	None
HR3B	Haul roads from aggregate pile to Angelica Street	500	None

In Table 3, emission points EP-9 and EP-10 have multiple identifiers. These identifiers are used to differentiate between the various materials that pass through the equipment contained in these emission points. The materials and identifiers are detailed in Table 4. The New Source Review permits that have been issued to Lange-Stegmann Co. are presented in Table 5.

Table 4: Details on emission point numbers

Material	EP 9 series (conveyors)	EP10 series (truck loading)	EP10 series (railcar loading)
Fertilizer other than urea	9	10	10D
Road Salt	9A	10A	Not loaded via railcar
Mixed Grain	9B	10B	10E
Clay Aggregate	9C	10C	Not loaded via railcar
Urea	9D	10G	10F

Table 5: Permit History

Permit Number	Description
98-12-080*	Washed stoker coal storage and transfer**
00-11-047*	Truck and railcar loading
042007-018	Fertilizer warehouse debottlenecking and granular urea reformulation plant
042007-018PM*	Recordkeeping changes to 042007-018
122013-005	Portable conveyor system for urea unloading

*Permits issued by City of St. Louis Air Pollution Control Program

**Equipment associated with this permit has been removed from site.

EMISSIONS/CONTROLS EVALUATION

The emission factors and control efficiencies used in this analysis were obtained from webFIRE and AP-42. Emission factors from codes 30502503 (road salt and clay aggregate), 30200802 (mixed grains), 30104007 (urea fertilizer), were used to calculate PM and PM₁₀ emissions. When PM_{2.5} emission factors were not available for these operations, an assumption of 25% of PM₁₀ was used.

The emission factors for EP-9, EP-10, and EP-10D, fertilizers other than urea, were calculated using the predictive emissions equation in AP-42 Section 13.2.4. The calculations used the worst case values from various MAP (monammonium phosphate) and DAP (diammonium phosphate) materials; and considered varying wind speeds for enclosed and open transfer points. The material moisture content is a critical component of the calculations. The emission factor that appears in Attachment A is based on the worst case of 0.8% moisture content.

There are two types of control devices used for the equipment contained in this permit: enclosed drop points and baghouses. The enclosed drop points were evaluated at 50% overall control efficiency. Baghouse CD-7 was evaluated at 99.5% control efficiency for PM and PM₁₀, with 99% control efficiency for PM_{2.5}; with differing capture efficiencies

determined by emission point. Baghouses CD-19A, 19B and 20 were evaluated at 99.99% control efficiency for PM, PM₁₀ and PM_{2.5}, with differing capture efficiencies determined by emission point. The difference in control efficiencies is due to the different types of bags used in the CD19A, 19B, and 20 baghouses and the documentation provided during the permit review. When the special conditions present an alternative, the emissions for this permit are based on the current specifications.

Haul Roads

The installation has haul roads that are used for multiple pathways for product shipping and storage. Portions of the haul roads are paved, while others are not. Haul road emissions were calculated using AP-42, Section 13.2.2, *Unpaved Roads*, November 2006 and AP-42, Section 13.2.1, *Paved Roads* (January 2011). For the paved haul roads, emissions were calculated based on a silt content of 0.5 grams/meter², while the unpaved portions were evaluated based on a silt content of 4.8%. Testing is required for the paved haul roads to ensure compliance. When the special conditions present an alternative, the emissions for this permit are based on the current specifications, where all haul roads consist of both paved and unpaved portions.

Permit Evaluation

The emissions for this project were evaluated using a past actuals to potentials analysis to account for the increase in production rate from 250 to 500 TPH for EP-9 and EP-10 systems, as well as the haul roads that existed at the time. The baseline years were designated as emission years 2005 and 2006, they are the most representative for the equipment covered in this permit that was originally permitted in 2007. Past actual emissions were evaluated by throughput data supplied by the installation, with the emission factors, capture, and control efficiencies established in this current permitting action. The emission points that had past actual emissions were the EP-9 conveyor system and the EP-10 loading tower, as well as haul roads HR2, HR2a, HR2b, HR3a and HR3b. The remaining equipment covered by this permit did not exist in 2005 or 2006, as it was permitted as new equipment in the 2007 construction permit. The potential emissions were calculated using controlled potential to emit values, with the emission factors, capture, and control efficiencies used in this project. The PM₁₀ limit established in this permit is based on de minimis plus baseline actual emissions. The values for this analysis are presented in Table 6 below. Table 7 provides an emissions summary for this project.

Table 6: Past actuals to future potential analysis

Pollutants	Controlled PTE of this project (tons/yr)	Past actuals of EP-9, EP-10, and haul roads (tons/year)	Project PTE minus past actuals (Baseline actual emissions) (tons/year)	Scaled to PM ₁₀ value of de minimis + past actual (tons/year)
PM	694.11	5.00	689.11	51.68
PM ₁₀	229.38	2.05	227.33	17.05
PM _{2.5}	37.81	0.40	37.40	2.81

Table 7: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions ¹	Existing Actual Emissions (2014 EIQ)	Potential Emissions of the Project ²	New Installation Conditioned Potential ¹
PM	25.0	ND	NR	51.68	ND
PM ₁₀	15.0	<100	13.71	17.05	ND
PM _{2.5}	10.0	ND	1.84	2.81	ND
SOx	40.0	ND	NR	ND	ND
NOx	40.0	ND	NR	ND	ND
VOC	40.0	ND	2.82	ND	ND
CO	100.0	ND	NR	ND	ND
GHG (CO ₂ e)	NA	ND	NR	ND	ND
GHG (mass)	NA	ND	NR	ND	ND
HAPs	10.0/25.0	ND	NR	ND	ND

ND = Not Determined; NR=Not Reported; Not Applicable

¹Existing potential emissions were not determined for this project. The installation is currently operating under the provisions of Intermediate Operating Permit number OP2011-039, which contains an emission limit of less than 100 tons/year of PM₁₀. The installation is required by Special Condition #7 of this permit to submit potential to emit calculations for the entire installation. Plant wide potential emissions will be evaluated during the next Operating Permit project.

²Potential emissions of the project are based upon PM₁₀ baseline actual emissions plus de minimis. Other pollutants were scaled to this limit, as shown in Table 6.

Compliance

Attachment A provides the compliance demonstration for the PM₁₀ limitation in this permit. The emission factors, capture, and control efficiencies were established during the permit review. As explained above, the emission factors for EP9, EP-10, and EP-10A are based upon the moisture content of the various MAP and DAP (non-urea) materials that were provided during the permit review. If other materials with moisture content of less than 0.8% are used, then the emission factor must be revised. For the warehouse and loading operations, the emission factor of 0.017 is based on the information provided by the applicant that indicates urea is the material handled in these processes. If other materials pass through these operations, the emission factor must be revised.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM are greater than the threshold value of 25 tons/year. However, no modeling is required because there is no modeling standard for PM. Potential emissions of PM₁₀ are conditioned below de minimis levels.

APPLICABLE REQUIREMENTS

Lange-Stegmann Co. shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Nicole Weidenbenner, P.E.
New Source Review Unit

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated January 31, 2014, received January 31, 2014, designating Lange-Stegmann Co. as the owner and operator of the installation.
- Supplemental information received January 31, 2014 through May 11, 2016

Attachment A – PM₁₀ Compliance Worksheet

Lange-Stegmann Co.

St. Louis City

Project Number: 2014-01-053, Installation ID Number: 510-0468

This sheet covers the month of _____ in the year _____

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
EP# and description, (total number of drop points)	Amount of material throughput (tons)	PM ₁₀ Emission factors (lb/ton)	Control efficiencies per drop point	# of drop points at specified control efficiency	Total emissions (tons)
<i>Example: EP-9 barge unloading fertilizer, (3)</i>	2,000	0.02	0%	1	0.02
			50%	2	0.02
EP-9 Barge unloading-fertilizer other than urea, (3)		0.009	0%	1	
		0.0005	50%	2	
EP-9A Barge unloading-road salt, (3)		0.0064	0%	1	
			50%	2	
EP-9B Barge unloading-mixed grain, (3)		0.004	0%	1	
			50%	2	
EP-9C Barge unloading-clay aggregate, (3)		0.0064	0%	1	
			50%	2	
EP-9D Barge unloading-urea (3)		0.017	0%	1	
			50%	2	
EP-10 Truck loading tower-fertilizer other than urea, (1)		0.009	49.75% or 79.6%*	1	
EP-10A Truck loading tower-road salt, (1)		0.0064	49.75% or 79.6%*	1	
EP-10B Truck loading tower-mixed grain, (1)		0.029	49.75% or 79.6%*	1	
EP-10C Truck loading tower-clay aggregate, (1)		0.0064	49.75% or 79.6%*	1	
EP-10D Railcar loading tower-fertilizer other than urea, (1)		0.009	49.75% or 79.6%*	1	
EP-10E Railcar loading tower-mixed grain, (1)		0.0022	49.75% or 79.6%*	1	
EP-10F Railcar loading tower-urea, (1)		0.017	49.75% or 79.6%*	1	

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
EP# and description, (total number of drop points)	Amount of material throughput (tons)	PM ₁₀ Emission factors (lb/ton)	Control efficiencies per drop point	# of drop points at specified control efficiency	Total emissions (tons)
EP-10G Truck loading tower-urea, (1)		0.017	49.75% or 79.6%*	1	
EP-10S2 spout to BC-222, (1)		0.017	89.5% or 98.5%*	1	
EP-10S2 BC-222 to BC-228, (1)		0.017	99.99%	1	
EP-19A Internal warehouse receiving operations from BC-228 to bins, (1)		0.017	99.99%	1	
EP-19B Internal warehouse receiving operations from SNC, (2)		0.017	99.99%	2	
EP-19A and EP-19B Internal warehouse haul roads for front end loaders#1 and #2		0.0003	99.99%	1	
EP-19B Internal warehouse loading operations to SNC, (3)		0.017	99.99%	3	
EP-19A and 19B Internal warehouse loading systems 1,2 and 3, (4)		0.017	99.99%	4	
EP-19A and EP-19B Internal warehouse loading systems #1, #2, and #3 to truck loading bays, (3)		0.017	99.99%	3	
EP-19A and EP-19B Truck loading bay systems #1, #2, and #3, (1)		0.017	99.99%	1	
EP-19A External warehouse loading operations to rail, BC-219a to BC-291b, (1)		0.017	98.99%	1	
EP-20 Rail loading tower, (1)		0.017	79.99%	1	
HR1 Haul roads for EP-19A and EP-19B to Angelica Street		0.006 or 0.001*	NA	NA	
HR2 Haul roads for EP-10 to Angelica Street		0.006 or 0.0006*	NA	NA	
HR2a Haul roads for EP-10 to salt pile		0.011 or 0.001*	NA	NA	
HR2b Haul roads for EP-10 to aggregate pile		0.009 or 0.001*	NA	NA	
HR3a Haul roads from salt pile to Angelica Street		0.007 or 0.001*	NA	NA	
HR3b Haul roads from aggregate pile to Angelica Street		0.005 or 0.001*	NA	NA	

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
EP# and description, (total number of drop points)	Amount of material throughput (tons)	PM ₁₀ Emission factors (lb/ton)	Control efficiencies per drop point	# of drop points at specified control efficiency	Total emissions (tons)
Summation and calculation of consecutive 12-month total					
(b) Total PM ₁₀ emissions calculated for this month (tons):					
(c) 12-month PM ₁₀ emissions total from previous month's worksheet (tons):					
(d) Monthly PM ₁₀ emissions total from previous year's worksheet (tons):					
(e) New 12-month PM ₁₀ emissions total (tons):					

*Values that present alternative emission factors or control efficiencies are explained in Special Conditions 4B and 6E.

Instructions:

(a) Calculation methodology:

1. Enter monthly throughput of material for the specific emission unit in Column 2.
2. Multiply Column 2 by emission factor in Column 3. Multiply this value by (1-control efficiency) per drop point in Column 4, then multiply that value by number of drop points in Column 5. Enter this value in Column 6. Repeat this step for all drop points assigned to that emissions unit.

a. Example: 2,000 tons of fertilizer passed through EP-9 in the current month

$$2000 \frac{\text{tons}}{\text{month}} \times 0.02 \frac{\text{lbs PM}_{10}}{\text{ton}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} \times (1 - 0 \text{ control}) \times 1 \text{ drop point} = 0.02 \text{ tons (1 drop point at 0\% control)}$$

$$2000 \frac{\text{tons}}{\text{month}} \times 0.02 \frac{\text{lbs PM}_{10}}{\text{ton}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} \times (1 - 0.50 \text{ control}) \times 2 \text{ drop points} = 0.02 \text{ tons (2 drop points at 50\% control)}$$

(b) Summation of Column 6.

(c) 12-month PM₁₀ emissions total from previous month's worksheet (tons).

(d) Monthly PM₁₀ emissions total from previous year's worksheet (tons).

(e) Calculate the new 12 month PM₁₀ emissions total. **A total of less than 17.05 indicates compliance.**

APPENDIX A

Abbreviations and Acronyms

%	percent	m/s	meters per second
°F	degrees Fahrenheit	Mgal	1,000 gallons
acfm	actual cubic feet per minute	MW	megawatt
BACT	Best Available Control Technology	MHDR	maximum hourly design rate
BMPs	Best Management Practices	MMBtu	Million British thermal units
Btu	British thermal unit	MMCF	million cubic feet
CAM	Compliance Assurance Monitoring	MSDS	Material Safety Data Sheet
CAS	Chemical Abstracts Service	NAAQS ...	National Ambient Air Quality Standards
CEMS	Continuous Emission Monitor System	NESHAPs	
CFR	Code of Federal Regulations	National Emissions Standards for Hazardous Air Pollutants
CO	carbon monoxide	NO_x	nitrogen oxides
CO₂	carbon dioxide	NSPS	New Source Performance Standards
CO_{2e}	carbon dioxide equivalent	NSR	New Source Review
COMS	Continuous Opacity Monitoring System	PM	particulate matter
CSR	Code of State Regulations	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
dscf	dry standard cubic feet	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
EQ	Emission Inventory Questionnaire	ppm	parts per million
EP	Emission Point	PSD	Prevention of Significant Deterioration
EPA	Environmental Protection Agency	PTE	potential to emit
EU	Emission Unit	RACT	Reasonable Available Control Technology
fps	feet per second	RAL	Risk Assessment Level
ft	feet	SCC	Source Classification Code
GACT	Generally Available Control Technology	scfm	standard cubic feet per minute
GHG	Greenhouse Gas	SIC	Standard Industrial Classification
gpm	gallons per minute	SIP	State Implementation Plan
gr	grains	SMAL	Screening Model Action Levels
GWP	Global Warming Potential	SO_x	sulfur oxides
HAP	Hazardous Air Pollutant	SO₂	sulfur dioxide
hr	hour	tph	tons per hour
hp	horsepower	tpy	tons per year
lb	pound	VMT	vehicle miles traveled
lbs/hr	pounds per hour	VOC	Volatile Organic Compound
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		

Mr. Joe Garuccio
Director of Environment, Safety and Health
Lange-Stegmann Co.
1 Angelica Street
St. Louis, MO 63147

RE: New Source Review Permit - Project Number: 2014-01-053

Dear Mr. Garuccio:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application and with your operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Nicole Weidenbenner, P.E., at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:nwj

Enclosures

c: St. Louis Regional Office
PAMS File: 2014-01-053

Permit Number: