

Region 6 - Enforcement & Compliance Assurance Division
INSPECTION REPORT

Inspection Date(s):	7/26/2022 - 7/29/2022	
Media Program:	Air	
Regulatory Program(s)	RMP	
Company Name:	Linde Inc.	
Facility Name:	Linde – Geismar, LA	
Facility Physical Location:	9154 HWY 75	
(city, state, zip code)	Geismar, LA, 70734	
Mailing address:	P.O. Box 230	
(city, state, zip code)	Geismar, LA	
County/Parish:	Ascension Parish	
Facility Phone Number	(225) 673-8831	
Facility Contact:	Jacob Keeling	Plant Manager
	Jacob.keeling@linde.com	
FRS Number:	110046264760	
Identification/Permit Number:	Air Operating Permit ID: 0180-00031-V6	
Media Identifier Number:	RMP: 100000144426	
NAICS:	325120 – Industrial Gas Manufacturing	
SIC:	2813 - Industrial Gases	
Personnel participating in inspection:		
Jacob Keeling	Linde Inc.	Plant Manager
Yuka Monhollen	Linde Inc.	Process Engineer
Eric Paster	Linde Inc.	Operations Specialist
Keith Miller	Linde Inc.	Safety, Health & Environmental (SH&E) Specialist
Heather McCormick	Linde Inc.	Environmental Manager
Paul Thompson	Linde Inc.	Plant Manager
Dionne Nobles	Linde Inc.	HYCO PSM Manager
Steven Maniscallo	Linde Inc.	Engineering Manager
Keri Meyers	LDEQ	Chemical Accident Prevention Program (CAPP) Inspector
Jamie Vicknair	LDEQ	CAPP Inspector
Glen Jenkins	LDEQ	CAPP Inspector
EPA Lead Inspector	<i>Kayla Buchanan</i>	
Signature/Date	Kayla Buchanan	10/25/2022
		Date
Supervisor		
Signature/Date	Samuel Tates	Date

Section I – INTRODUCTION

PURPOSE OF THE INSPECTION

The Environmental Protection Agency (EPA) Region 6 inspector Kayla Buchanan arrived at Linde – Geismar, LA (Linde Geismar) at 9:00 AM on July 26, 2022, for an announced inspection. Louisiana Department of Environmental Quality (LDEQ) Chemical Accident Prevention Program (CAPP) inspectors also attended and participated in the inspection. EPA convened an opening conference and met with several representatives from the facility (*see Appendix 1*). Kayla Buchanan presented her credentials to the opening conference attendees and informed them that this was an EPA inspection to determine Linde Geismar's compliance with Section 112r (1) and (7) the General Duty Clause and Risk Management Program (RMP) requirements.

FACILITY DESCRIPTION

Linde Geismar is located at 9154 HWY 75 Geismar, Louisiana, 70734. Approximately 52 full time employees work onsite. The facility operates steam-methane reformer (SMR) units, each of which produces a flammable gas mixture called synthesis gas (syngas). This "syngas" contains primarily hydrogen, carbon monoxide, methane and small amounts of other flammable and inert gases. The syngas from the units is further refined on-site into final products of hydrogen and carbon monoxide. Linde Geismar produces, handles, or stores the following RMP toxic and flammable substances above the designated threshold amounts: formaldehyde (solution), ammonia, methane, hydrogen, and a flammable mixture (syngas). The facility has three RMP Level 3 processes.

Section II - OBSERVATIONS

On July 28, 2022, EPA and LDEQ conducted a walking tour of the Linde Geismar and were accompanied by Jacob Keeling, Plant Manager. EPA and LDEQ observed the covered process, equipment, operations, control rooms, and emergency equipment. EPA and LDEQ interviewed operators and asked questions about their training, the Management of Change (MOC) and Process Hazard Analysis (PHA) processes, and the facility's regular operating and emergency procedures.

40 C.F.R. § 68.10 Applicability – Linde Geismar is the owner/operator of a stationary source that has more than the threshold quantities of two toxic and three flammable regulated substances in its processes; therefore, the RMP regulations are applicable. Linde Geismar has a Clean Air Act Title V permit and an Air Operating Permit and is classified under the North American Industrial Classification System (NAICS) Code 32511 (Petrochemical Manufacturing). In addition, this facility is subject to the Occupational Safety and Health Administration's (OSHA) Process Safety Management (PSM) Standard (29 C.F.R. § 1910.119), which categorizes Linde Geismar as a Program 3 facility. Linde Geismar last submitted a Risk Management Plan to EPA on April 15, 2019, which describes the processes containing the regulated chemicals stored at more than threshold quantities.

40 C.F.R. § 68.12 General requirements – The owner or operator of a stationary source subject to this regulation must submit Risk Management Plan, as provided in 40 C.F.R. § 68.150 to § 68.185. The RMP must include a registration that reflects the covered processes. I reviewed the re-submission of Linde Geismar's RMP. It listed the toxic and flammable regulated chemicals and the associated Program 3 processes.

40 C.F.R. § 68.15 Management – Linde Geismar developed a management system to oversee the implementation of the risk management program elements. It assigned a qualified position that has overall responsibility for the development, implementation, and integration of the risk management

program elements. Responsibility for implementing individual requirements of this part was assigned to persons other than the person identified, so the names or positions of these people were documented, and the lines of authority were defined through an organization chart or similar document.

Subpart B – Hazard Assessment

40 C.F.R. § 68.20 Applicability – Linde Geismar is a Program 3 stationary source subject to this subpart; therefore, it is required to prepare a worst-case release scenario analysis and complete the five-year accident history.

40 C.F.R. § 68.22 Off Site Consequence Analysis Parameters – Linde Geismar employed the parameters specified by EPA in this rule by using the RMP*Comp™ software. EPA reviewed the offsite consequence analysis and supporting documentation to assure the data was accurate and correct.

40 C.F.R. § 68.25 Worse-case release scenario analysis – Linde Geismar identified and analyzed worst-case scenarios for each toxic (ammonia and formaldehyde) and flammable (methane, hydrogen, and a flammable mixture (syngas)) substance in its Program 3 process using the RMP*Comp™ software, thus meeting the requirements of the regulation.

40 C.F.R. § 68.28 Alternative Release Scenario Analysis – Linde Geismar identified and analyzed at least one alternative release scenario for each toxic and flammable substance in its Program 3 process using the RMP*Comp™ software, thus meeting the requirements of the regulation.

40 C.F.R. § 68.30 Defining Off Site impacts - Population – Linde Geismar used the 2010 Census Bureau population data and the distances to endpoints, as specified in the regulation, to calculate the population numbers reported in their RMP. Linde Geismar used the Circular Area Profiles application to define the population surrounding the facility. In addition, Linde Geismar provided a map documenting the nearest public receptor.

40 C.F.R. § 68.33 Defining Off Site impacts – Environment – Linde Geismar used US Geological Survey maps data to determine the environmental receptors and the distances to endpoints.

40 C.F.R. § 68.36 Review and Update – Linde Geismar reviews and updates its offsite consequence analysis every 5 years. The most recent review occurred in 2019.

40 C.F.R. § 68.39 Documentation – Linde Geismar maintained records of the offsite consequence analyses in accordance with this subpart. These records included:

- a description of the vessel or pipeline and substance selected as worst case and alternate release scenarios, assumptions and parameters used, and the rationale for selection of specific substances
- documentation of estimated quantity released, release rate, and duration of release
- methodology used to determine distance to endpoint
- data used to estimate population and environmental receptors

40 C.F.R. § 68.42 Five-year accident history – The regulation requires Linde Geismar to include in its five-year accident history in its RMP submission, all accidental releases from covered processes that resulted in deaths, injuries, or significant property damage on site, or known offsite deaths, injuries, evacuations, sheltering in place, property damage, or environmental damage. Linde Geismar stated it

did not have any accidental releases in the past five years that met these criteria. EPA examined incident investigations conducted at the facility as well as Linde Geismar OSHA Form 300 logs from 2017 to present to ensure that additional releases from the facility, which could possibly be included in the facility's five-year accident history, were not omitted.

40 C.F.R. § 68.65 Process Safety Information (PSI) – EPA and LDEQ reviewed Linde Geismar's PSI. The written process safety information enables the owner or operator and the employees involved in operating the process to identify and understand the hazards posed by those processes involving regulated substance. Linde Geismar's compilation of written process safety information included information pertaining to the hazards of the regulated substances used or produced by the process, information pertaining to the technology of the process, and information pertaining to the equipment in the process. Linde Geismar documented that its equipment complies with recognized and generally accepted good engineering practices (RAGAGEP).

40 C.F.R. § 68.67 Process Hazard Analysis (PHA) – EPA and LDEQ reviewed Linde Geismar's PHAs. Linde Geismar uses the Hazard and Operability Study (HAZOP) and Layer of Protection Analysis (LOPA) methodologies to determine and evaluate the hazards of the process being analyzed.

EPA specifically examined Linde Geismar's 2015 Unit 1 PHA and the 2021 Unit 7 PHA units. The PHAs reviewed addressed: (1) the hazards of the process; (2) the identification of any previous incident which had a likely potential for catastrophic consequences; (3) engineering and administrative controls applicable to the hazards, and their interrelationships; and (4) consequences of failure of engineering and administrative controls.

The PHAs were performed by a team with expertise in engineering and process operations. The team included at least one employee who had experience and knowledge that was specific to the process being evaluated, and one employee who was knowledgeable in the specific PHA methodology used.

Linde Geismar established a system to promptly address the PHA team's findings and recommendations and assure that the recommendations are resolved in a timely manner and that the resolution is documented. Each action item receives a risk ranking, and that ranking dictates the time period the action item must be completed.

40 C.F.R. § 68.69 Operating Procedures – LDEQ reviewed Linde Geismar's operating procedures for the operation of its process. The written operating procedures reviewed provided clear instructions for safely conducting activities involved in each covered process consistent with the process safety information. The operating procedures reviewed addressed: the steps for each of the operating phases, the operating limits including the consequences of deviation and mechanisms to correct and/or avoid deviation, and safety and health considerations, and safety systems and their functions. Operating procedures are accessible electronically and via hardcopy in binders located in the control room. Linde Geismar annually certified that its operating procedures are current and accurate.

EPA reviewed Linde Geismar's safe work procedures, including lock out/tag out procedures and safe confined space entry procedures. The safe work procedures apply to both employees and contractors.

40 C.F.R. § 68.71 Training – Linde Geismar is required to train each employee involved in operating a process in an overview of the process and in the operating procedures. Each employee presently involved in operating a process, and each employee before being involved in operating a newly assigned

process must be trained. In addition to initial training, employees must undergo refresher training at least every three years.

EPA randomly selected operators **for a training records review**. Linde Geismar could not produce initial and refresher training records for employee. According to the plant manager, a new training program is currently being implemented. Linde Geismar did provide EPA and LDEQ documentation of operators annually reviewing the standard operating procedures at the plant. **[AOC #1 - 40 C.F.R. § 68.71]**.

40 C.F.R. § 68.73 Mechanical Integrity – Linde Geismar established and implemented written procedures to maintain the on-going integrity of process equipment including pressure vessels and storage tanks, piping systems (including piping components such as valves), relief and vent systems and devices, emergency shutdown systems; controls (including monitoring devices and sensors, alarms, and interlocks) and pumps.

EPA and LDEQ reviewed inspection records for various process equipment. Each inspection and test reviewed identified the date of the inspection or test, the name of the person who performed the inspection or test, the serial number or other identifier of the equipment on which the inspection or test was performed, a description of the inspection or test performed, and the results of the inspection or test. The inspections and tests of process equipment reviewed followed recognized and generally accepted good engineering practices and were consistent with applicable manufacturers' recommendations and good engineering practices, and more frequently if determined to be necessary by prior operating experience. When deficiencies in equipment deficiencies in equipment that are outside acceptable limits, they were corrected.

40 C.F.R. § 68.75 Management of Change (MOC) – Linde Geismar established and implemented written procedures to manage changes (except for “replacements in kind”) to process chemicals, technology, equipment, and procedures, and changes to stationary sources that affect a covered process. The procedures assured that the following considerations were addressed prior to any change: technical basis for change, impact of change on safety and health, modifications to operating procedures, necessary time period for the change, and authorization requirements for a proposed change.

Linde Geismar employees involved in operating a process and maintenance and contract employees whose job tasks were affected by a change in the process were informed of, and trained in, the change prior to start-up of the process or affected part of the process. If a change covered by this paragraph resulted in a change in the process safety information or a in a change in the operating procedures or practices, the process safety information or operating procedure was changed accordingly.

40 C.F.R. § 68.77 Pre-startup review (PSSR) – EPA and LDEQ reviewed Linde Geismar’s written PSSR procedures, as well as various PSSRs completed by the facility within the past five years. The PSSRs reviewed confirmed that, prior to the introduction of a regulated substance into the process, the construction and equipment design were completed in accordance with design specifications, the required safety, operating, maintenance and emergency procedures were in place, and that training of each employee involved in operating a process was completed.

40 C.F.R. § 68.79 Compliance audits – EPA reviewed Linde Geismar’s two most recent compliance audits (conducted January 13-16, 2019, and January 10-14, 2022). Linde Geismar certified compliance with the provisions of this subpart at least every three years to verify that procedures and practices developed under this subpart are adequate and are being followed. Both compliance audits were conducted by at

least one person knowledgeable in the process. The audit team consists of corporate employees as well as employees from other Linde sites. The facility determined and documented an appropriate response to each of the findings of the compliance audit and document that deficiencies have been corrected.

40 C.F.R. § 68.81 Incident investigation – Linde Geismar is required to investigate each incident which resulted in or could reasonably have resulted in a catastrophic release of a regulated substance. EPA and LDEQ reviewed Linde Geismar's five incidents that met this criterion. Each incident investigation reviewed was initiated no later than 48 hours following the incident, and the incident investigation team consisted of at least one person knowledgeable in the process involved. At the conclusion of the investigation, a report was prepared that included: (1) Date of Incident (2) Date investigation began; (3) A description of the incident; (4) The factors that contributed to the incident; and (5) Any recommendations resulting from the investigation.

40 C.F.R. § 68.83- Employee Participation – LDEQ reviewed Linde Geismar's written plan of action regarding the implementation of the employee participation. This plan outlines how Linde Geismar consults with employees and their representatives on the conduct and development of process hazards analyses and on the development of the other elements of process safety management.

40 C.F.R. § 68.85 Hot work permit – LDEQ reviewed two hot work permits issued by Linde Geismar (#133250 – Welding on or around North CO2 Compressor, #134034 – Welding on or around P-311A). Each permit reviewed documented that fire prevention and protection requirements were implemented prior to beginning hot work operations. The permits indicated the dates authorized for hot work and identified the object on which the hot work was performed. Each permit also had a JSA attached. Permits are kept for two months. These were the only permits for the last two months.

40 C.F.R. § 68.87 Contractors – Linde Geismar uses the online system Avetta to obtain and evaluate information regarding the contract owner or operator's safety performance and programs. Prior to starting work onsite, contractors must attend the Alliance Safety Council to receive site specific and general safety training during which the contractors are informed of known potential fire, explosion, or toxic release hazards related to the contractor's work and the process. Linde Geismar annually evaluates the performance of nested contract owners or operators in fulfilling their obligations. The frequency of evaluations for non-nested contractors is determined by how often the contractor is present onsite.

Subpart E- Emergency Response

40 C.F.R. § 68.90 Applicability – Linde Geismar is the owner or operator of a stationary source whose employees will not respond to accidental releases of regulated substances and therefore must comply with the requirements of 40 C.F.R. §§ 68.90(b), 68.93, and 68.96. Linde Geismar ensured that it is included in the community emergency response plan developed under 42 U.S.C. 11003. Linde Geismar has both toxic and flammable substances onsite and coordinated response actions with the local fire department; it has appropriate mechanisms in place to notify emergency responders when there is a need for a response. Linde Geismar relies on Industrial Emergency Services (IES) to provide emergency response services in the event of an accidental release of a toxic or flammable substance.

40 C.F.R. § 68.93 – Emergency response coordination activities – Linde Geismar coordinates response needs with local emergency planning and response organizations to determine how the stationary source is addressed in the community emergency response plan and to ensure that local response organizations are aware of the regulated substances at the stationary source, their quantities, the risks

presented by covered processes, and the resources and capabilities at the stationary source to respond to an accidental release of a regulated substance. EPA and LDEQ noted that Linde Geismar did not document coordination with local authorities, including: the names of individuals involved and their contact information (phone number, email address, and organizational affiliations); dates of coordination activities; and nature of coordination activities [**AOC #2 - 40 C.F.R. § 68.93**].

40 C.F.R. § 68.96 Emergency response exercises – As a part of coordination with local emergency response officials required by 40 C.F.R. § 68.93, Linde Geismar will be required to conduct an emergency response tabletop exercise before December 21, 2026, and at a minimum of at least once every three years thereafter.

Subpart G- Risk Management Plan

40 C.F.R. § 68.190 Updates – Linde Geismar resubmitted its RMP on April 15, 2019.

40 C.F.R. § 68.195 Required corrections – Linde Geismar next RMP re-submission is due by April 15, 2024, unless an update or correction is required by 40 C.F.R. § 68.190 and 40 C.F.R. § 68.195.

Section III – AREAS OF CONCERN

EPA Region 6 inspector, Kayla Buchanan, along with LDEQ inspectors, Keri Meyers, Jamie Vicknair, and Glen Jenkins, conducted a closing conference at Linde Geismar on July 28, 2022. During the closing conference, we reviewed the following Areas of Concern noted during the inspection.

AOC #1: Training - 40 C.F.R. § 68.71 requires Linde Geismar to train each presently involved in operating a process, and each employee before being involved in operating a newly assigned process, in an overview of the process and in the operating procedures. Refresher training must be provided at least every three years, and more often, if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures of the process. Linde Geismar must ascertain that each employee involved in operating a process has received and understood the training required by this paragraph. The owner or operator shall prepare a record which contains the identity of the employee, the date of training, and the means used to verify that the employee understood the training.

EPA randomly selected operators for a training records review. Linde Geismar could not produce initial and refresher training records for employee. According to the plant manager, a new training program is currently being implemented.

AOC #2: Emergency Response Coordination Activities - 40 C.F.R. § 68.93 - requires Linde Geismar to document coordination with local authorities, including: the names of individuals involved and their contact information (phone number, email address, and organizational affiliations); dates of coordination activities; and nature of coordination activities.

Linde Geismar could not produce this documentation.

Section IV – FOLLOW UP

No additional information was received by EPA after exiting the Facility on July 28, 2022.

Section V – LIST OF APPENDICES

No appendices were included in this report.