LP (Liquid Petroleum) Gas Program

Location/Applicability: Phosphate Business Unit			Document Identifier: 1101374
Document Owner: Director, EHS Services - Phosphates Business Unit			
Effective Date:	10/01/2021	Review Due Date:	10/01/2028

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1. PURPOSE

To establish uniform guidelines for safe handling, storage and use of liquid petroleum gas to protect against potential fire and explosion hazards.

2. SCOPE

This Program is applicable to Mosaic Fertilizer's Phosphate Business Unit facilities.

3. DEFINITIONS

3.1 LPG or LP Gas- Liquid Petroleum Gas (propanes, propylene, butanes, butylene's or a mixture)

3.2 ASME - American Society of Mechanical Engineering.

3.3 NFPA - National Fire Protection Association

3.4 DOT - U. S. Department of Transportation.

3.5 ICC - U.S. Interstate Commerce Commission (replaced by DOT).

3.6 Container - All vessels, such as tanks, cylinders, or drums used for transporting or storing LP Gas.

3.7 Cylinder - A container constructed in accordance with U. S. DOT specifications.

3.8 System - An assembly of equipment consisting of container(s), piping, excess flow valves, safety valves, check valves, screens, regulators and devices for use of LP Gas.

4. LP GAS REQUIREMENTS

4.1 LP Gas Design - LP Gas storage and delivery systems shall be designed according to good engineering practice and in compliance with government regulations and national consensus standards. The overriding standard shall be 29 CFR 1910.110 and 29 CFR 1910.126.

4.1.1 LP Gas systems shall be in compliance with 29 CFR 1910.110(c) & (d), NFPA 54 and NFPA 58. A minimum operating pressure of 250 PSIG shall be used for the design of all stationary LP Gas systems.

a. Pipe shall in compliance with 29 CFR 1910.110(b)(8) and shall be ASTM A53 Grade B steel (black or galvanized) pipe with a minimum schedule 80 rating pipe for pipe 2" diameter and less and scheduled 40 rating for pipe for 3" diameter and larger.

b. Tubing shall be in compliance with 29 CFR 1910.110(b) (8) and shall be seamless and of copper (type K or L), brass, or steel.

c. Hoses shall be in compliance with 29 CFR 1910.110(b) (9) and shall be fabricated of materials that are resistant to LP Gas in the liquid and vapor phases. Braiding, if used, shall be stainless steel. Hoses shall be marked "LP Gas" or "LPG" at no greater than 10 foot intervals.

4.1.2 Hydrostatic relief valves shall be installed between each pair of block valves on all LP Gas liquid lines per 29 CFR 1910.110(b) (10).

4.1.3 All vaporizers shall be in compliance with 29 CFR 1910.110(b) (11).

4.1.4 All appliances shall be in compliance with 29 CFR 1910.110(b) (20).

4.2 LP Gas Storage and Handling - Storage of LP Gas shall be in accordance with government regulations or national consensus standards. The overriding standard shall be 29 CFR 1910.110 and 29 CFR 1910.126.

4.2.1 All Containers shall be designed for the storage of LP Gas and shall have either an ASME legible name tag or be stamped with the appropriate DOT Markings. ASME name tag must contain the information noted in 29 CFR 191.110(B) (5) including the container is for "LP Gas Service" with a minimum design pressure rating of 250 PSIG. Typical DOT markings for LP Gas include 4B-240, 4BA-240, 4BW-240, 4E-240 4-300 and 26 -300.

4.2.2 All stationary LP Gas containers shall be located a minimum distance from all buildings based on capacity as follows: less than 125 Gallons - none, 125 to 500 Gallons - 10 feet, 501 to 2,000 Gallons - 25 feet, and 2,001 gallons to 30,000 gallons - 50 feet.

4.2.3 LP Gas containers (cylinders) larger than 2.5 LB shall not be stored inside a building. The total quantity of 2.5 LB LP Gas cylinders stored shall not exceed 200 lb.

4.2.4 Stationary LP Gas containers shall not be relocated without engineering design review of the system, approval of management, and recording change in associated documentation.

4.2.5 All stationary LP Gas containers shall be located a minimum of 10 feet from any public road or highway and 5 feet from any driveway or interior road.

4.2.6 All stationary LP Gas containers shall be adequately barricaded for protection from vehicular and equipment traffic.

4.2.7 All stationary LP Gas containers shall be above ground mounted on concrete pads or supports and be adequately supported to prevent damage from high wind loads.

4.2.8 Combustible material, weeds or dry grass shall not be permitted within 10 feet of LP Gas containers.

4.2.9 All containers must be labeled "Flammable" and either "LP-Gas", "LP-GAS" or "Propane" per NFPA 58 2.2.6.1. "Danger - No Smoking or Open Flames" signs must be posted at the containers.

4.2.10 A fire extinguisher with a minimum rating of 8-B, C must be located in the area of the container at least 20 feet from the container.

4.2.11 A Safety Shut-off Valve shall be installed in a safe location to interrupt the gas supply in the main pipeline between the source (Tank, cylinder or pipeline) and the system.

4.2.12 LP Gas piping systems shall be installed according to the ASME B31.3 Code using materials as specified by NFPA 58 Section 2.4 or 29 CFR 1910.110(B)(8).

a. LP Gas piping shall be installed by a contractor licensed by the State for installation and inspection of LP Gas Piping Systems or qualified contractor who shall have the piping inspected and certified by a contractor licensed by the State for installation and inspection of LP Gas Piping before the piping is placed in service.

b. LP Gas piping shall be tested after installation by a method capable of disclosing all leaks per NFPA 54 Part 4. The test pressure is to be 1-1/2 times the maximum working pressure, but not less than 3 PSIG, irrespective of the design pressure.

c. LP Gas piping systems shall be painted yellow and/or be marked “LP Gas” or “Propane” every 20 feet.

4.2.13 LP Gas systems and containers not in service or required for future use, shall be drained, purged with an inert gas and removed from the facility.

4.3 LP Gas Portable Cylinder Handling

4.3.1 Portable Cylinder Handling

a. All portable cylinders and associated equipment shall be inspected for leaks or damage before each use.

b. Inactive portable cylinders not refilled or inspected within one year shall be removed from service and inspected before reuse.

4.3.2 PPE

a. Gloves which will not absorb liquid propane and which are low temperature should be used when exchanging or breaking lines.

b. Safety glasses are required as a minimum eye projection.

4.3.3 Container Identification

a. Only authorized DOT or ICC cylinders with designations contained in NFPA 58 section 4.1.5 and Appendix C are permitted to be refilled. Typical DOT markings for LP Gas include 4B-240, 4BA-240, 4BW-240, 4E-240 4-300 and 26 -300.

4.3.4 Transport

a. Cylinders shall be transported in open vehicles and shall not be transported in enclosed vans, cabs of vehicles, vehicles with toppers on the bed, etc.

b. Cylinders shall be properly secured to prevent movement during transport.

c. Cylinders shall be transported with valves closed and plastic filler caps in place.

4.4 Maintenance

4.4.1 Repairs

a. Repairs to LP Gas containers are permitted only

b. By facilities authorized for fabrication or repairs by either DOT or ASME.

c. Repairs to LP Gas piping systems are permitted

d. Only by authorized personnel who are trained and qualified to perform the repairs.

e. LP Gas ASME containers are to be repaired only by an ASME authorized code repair facility and an “R” stamp is to be affixed to the repaired container.

f. Documentation shall be furnished by the authorized repair facility on repairs to all Mosaic Phosphates owned containers. The documentation is to include hydrostatic test records performed on the container after the repairs have been completed.

g. Repairs to vendor owned LP Gas containers shall be the responsibility of the container owner. Documentation shall be furnished to Mosaic Phosphates verifying the repairs have been performed by an authorized repair facility before the container is returned to Mosaic Phosphates property.

h. Repairs to LP Gas piping shall be performed according to the ASME B31.3 Code using materials as specified by NFPA 58 section 2.4 or 29 CFR 1910.110(B)(8). The repairs shall be made by a contractor licensed by the State for installation and inspection of LP Gas Piping Systems or shall be inspected and certified by a contractor licensed by the State for installation and inspection of LP Gas Piping before the piping is placed in service.

4.4.2 Inspections

a. LP Gas stationary containers and piping systems shall be inspected annually per LP Gas Inspection Form (see Appendix A) and LP Gas Inspections Guidelines (see Appendix B).

b. LP Gas piping shall be inspected and certified for use by a contractor licensed by the State for Installation and Inspection of LP Gas Piping after all repairs and before the piping is placed in service.

c. LP Gas portable cylinders, associated accessories and LP Gas hoses shall be inspected for leaks or damage before each use.

4.4.3 Testing

a. DOT LP Gas containers shall be retested and requalified twelve years after the date of fabrication. After the first requalification, containers marked with an “S” shall be requalified every seven years and containers marked with an “E” shall be requalified every five years.

b. LP Gas piping shall be tested after all repairs by a method capable of disclosing all leaks per NFPA 54 Part 4. The test pressure shall be 1-1/2 times the maximum working pressure, but not less than 3 PSIG, irrespective of the design pressure.

5. TRAINING

5.1 LP Gas Awareness training shall be given to all employees who are exposed to or handle LP Gas. Training shall cover safe storage, handling, potential hazards and procedures for handling emergencies.

5.2 Training for LP Gas Powered Forklifts is outlined in the Powered Industrial Trucks Program.

6. PROGRAM REVIEW/INSPECTIONS

6.1 Inspections on cylinders, systems, and piping shall be completed as outlined in section 4.4.2 above.

7. APPENDICES

7.1 Appendix A - LP Gas Inspection Form

7.2 Appendix B - LP Gas Inspection Guidelines

8. REFERENCES

8.1 OSHA -

8.1.1 29 CFR 1910.110 - Storage and handling of liquefied petroleum gases

8.1.2 29 CFR 1910.126 - Additional requirements for special dipping and coating operations

8.1.3 29 CFR 1926.153 Liquefied Petroleum Gas LP-Gas

8.2 NFPA

8.2.1 54/ ANSI Z223.1–2006 - National Fuel Gas Code

8.2.2 58 - Liquefied Petroleum Gas Code

9. REVISION LOG

Revision Log				
Rev. No.	Requested By	Approved By	Revised By	Rev.Date
0	Initial Issue	Safety Advisory Panel	Task Team	7/8/99
1	Original Task Team recommendation- remove LP Gas filling station section after removal of filling stations	Safety Advisory Panel	J. Heaser	8/14/01
2	Logo Change	Safety and Health	J. Marshall	11/21/06
3	Minor revisions to standardize format	D. Allen	D. Allen	5/14/07
	Reformat for ISO		D. Allen	7/7/2011
4	Minor revisions		Ron Moran	12/28/2011
	Minor revisions to standardize format		D. Allen	1/26/2012
5	Review date past due	EHSS PMO	EHSS PMO	09/30/2021

Contact the Subject Matter Expert for additional information on this program.