CRUM & FORSTER
A FAIRFAX COMPANY

RISK ENGINEERING

LP-GAS ODORIZATION – NFPA 58 (4.2.3)

Odorant Verification

The purpose of this document is to address the performance and documentation of sniff-testing to determine if there is a distinctive detection of odorant in LP-Gas and the major change within NFPA 58.

Up until the 2017 edition of NFPA 58 4.2.3, it was required to verify the presence of odorant by sniff-testing or other means, and the results documented when:

1. LP–Gas is delivered to a bulk plant
2. Shipments of LP–Gas bypass the bulk plant

The code did not specifically require the transport driver to perform the sniff test. However, with many deliveries there is nobody available to perform the sniff test, so the transport driver normally would document a sniff test on the bill of lading. If there was a company representative available, they could also perform the sniff test. The code did not specify who did it, but the sniff test or other approved method for detecting the presence of odorant had to be performed and documented.

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Odorant Verification

Risk Engineering

In the 2017 edition of NFPA 58, section 4.2.3 was changed to the following: ***The presence of the odorant shall be verified by sniff-testing or other means and the results documented prior to final delivery to the end-use customer.*** This change means that the before propane is delivered to a customer who will use the propane for cooking, heating, or other use, a sniff-test or other means shall be performed and documented.

Therefore, the change in the NFPA 58 2017 edition no longer requires a sniff test to be performed at the delivery to a bulk plant or when bypasses a bulk plant to an end-user. The sniff test can be performed later in the delivery process, just as long as it is performed before delivering to an end user. Each company will need to develop their own policy for detecting the presence of odorant. This may include a sniff test at the bulk plant, when bobtails are filled, when propane is delivered to each end-user, or a combination of all three.

Although bills of lading are documented with how much ethyl mercaptan was injected, this does not guarantee the proper level of odorant was actually added. Mechanical failures can happen. Unfortunately, there have been a couple of instances of non-odorized propane delivered to bulk plants due to malfunctions of odorant injection systems.

A sniff test when product was delivered to the bulk plant may possibly have identified the lack of odorant prior to being introduced into the bulk storage tanks. These situations caused major disruptions with the propane companies trying to determine which customers received the product and if there was enough odorant in the gas to be identified should there be a leak. Not only did this divert time and energy to non-productive activity, it creates concerns on behalf of the customer, both in credibility of the propane supplier and safety; along with increased liability on the propane company.

Below is a sample of verifying odorant by a sniff test on a delivery ticket.

Odorant Testing "Other Means"

In reference to the meaning of "other means" for testing the presence of odorant, you can refer to NFPA 58 Appendix A 4.2.3, which describes the alternative of performing an odorant test with a stain tube. When it is known that propane has been received without or inadequate levels of odorant, it may be necessary to perform stain tube tests in the storage and customer tanks known to receive the product to determine if there is adequate levels of odorant.

Rail Receiving

As a reminder, when receiving LP-Gas by rail, a sniff test shall be performed and documented before unloading and perform a test for ammonia with red litmus paper. It is preferred to perform a stain tube test and photo the stain tube to document the level of propane.

Photo of a stain tube:

Customer Odor Verification

Although it is an NFPA 58 requirement to verify there is odorant in the LP-Gas prior to final delivery to an end-user, it is also good to have your customers verify that they can also smell the odorant. Obtaining verification from end users there is odorant in the propane sure helps in the event there is a claim gas could not be detected. When setting up new customers, it is recommended to have the customer perform a sniff-test and document the test. Have the customer sign your company form documenting the sniff test. Sending out safety brochures with a scratch and sniff is another good company policy to provide safety information and a means to have the customer know what the odorant smells like should they have a leak. Again, document who and when you send this information.

Customer Acknowledgement: I acknowledge, by checking each of the following items, that:

☐ I have informed the service technician of all gas-burning appliances, gas lines, and unused piping not connected to any gas appliance on my property.

☐ I have been informed of what deficiencies, repairs &/or alterations, if any, were made to my gas system or appliances.

☐ I have been told what to do if I smell a gas odor or otherwise suspect a gas leak and have been shown how to turn the gas supply off at the tank or cylinder.

☐ I have smelled propane gas and can detect its odor.

☐ I have been told to consider installing one or more gas detectors that are listed by Underwriters Laboratories.

☐ I have received safety information and told to read it and share it with all family members.

☐ I am satisfied with the service work performed.

Conclusion

Review your company procedures to ensure your company has appropriate procedures in place to perform and document that a sniff-test or other appropriate means of testing for odorant in LP-Gas prior to the final delivery to the end user. Catching product that does not have a distinctive odor will save you time, expense, and customer complaints before getting into the customer distribution system.

Safety Talk

Verifying Propane Odorization

Because propane is flammable, DOT regulations and NFPA 58 require that propane be odorized before delivery to a bulk plant or when the shipment will bypass the bulk plant. Propane personnel are required to verify the presence of odorant at various times, typically through a "sniff test." It is essential that you understand how to perform these tests safely and document them for your company.

WHEN PERFORMING A SNIFF TEST, AT TIME OF BULK PLANT DELIVERY:

- ☑ Protect yourself by wearing appropriate personal protective equipment (PPE).
- ☑ Vent only a small amount of liquid propane.
- ☑ Sniff only after the vent is closed and the liquid propane has vaporized.
- ☑ Understand your company's policies and procedures, including how to document the presence of odorant, and what to do if you believe propane is not properly odorized.

WHEN PERFORMING A SNIFF TEST, WHILE LOADING A BOBTAIL:

- ☑ After you secure the plant liquid transfer hose to the cargo tank connection and before you fill the cargo tank, briefly open and close the transfer hose end valve.
- ☑ Vent a small amount of liquid propane through a #54 vent and then close it.
- ☑ Sniff the area immediately after the liquid vaporizes.
- ☑ If you can smell propane odorant, proceed with loading your truck.
- ☑ If you cannot smell propane odorant, or smell anything unusual, do not load the cargo tank. Contact your supervisor immediately and tell others not to load until approved by the facility manager or supervisor.
- ☑ Record your sniff test on your loading ticket, daily routing report, or other company form and proceed with the loading operation.

IF YOU CANNOT SMELL PROPANE ODORANT:

In some situations, odorant can oxidize or fade, thus producing a potential hazard. If you cannot detect propane odor via sniff test (or other measure, such as an odorometer), carefully take the following actions:

- ☑ Do not load the cargo tank or cylinder.
- ☑ Disconnect the transfer hoses and secure them in their storage racks.
- ☑ Contact your supervisor immediately.
- ☑ Warn others not to load until approved by your supervisor. Your company may also require you to close and tag the withdrawal valves on the storage container so that the propane is not distributed to consumers.

Discussion Topics

1. While loading a bobtail, you detect a smell you do not recognize. What do you do?
2. Discuss company and other practices for documenting propane odorants.

LEARNING ACTIVITY

Secure an odorometer and stain tubes and discuss alternative methods to verify odorant in different situations.

Source: Propane Delivery Operations and Cylinder Delivery (PERC)

For more information about verifying propane odorization, visit propanesafety.com.

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