



Messages for Manufacturing Personnel
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設備からの漏洩(LOPC)は事故の始まり

2025年12月

Corrosion Under Insulation (CUI)

What can happen?

A 4,000-barrel-per-day processing fluid handling facility located in a rural area experienced a major fire due to a CUI-related leak. The piping system was insulated with mineral wool, which was failing due to water intrusion. This particular section of pipe was re-insulated with a different material, but the problem continued. A worker was sent to inspect the piping, and while doing so, he heard a noise similar to a geyser when he walked along the piping. He checked the pipe which failed a safety valve that was installed to prevent overpressure. The worker then checked the piping for damage, and found a hole about 10 inches in diameter. CUI had caused the insulation to fail, and the worker had to cut through the insulation to find the hole. It was located above a pump which failed a safety valve that was installed to prevent overpressure. The worker then checked the piping for damage, and found a hole about 10 inches in diameter. CUI had caused the insulation to fail, and the worker had to cut through the insulation to find the hole. It was located above a pump which failed a safety valve that was installed to prevent overpressure.

Do you know?

Corrosion under insulation (CUI) is a type of corrosion that occurs when water or other impurities which act as an electrolyte come in contact with metal surfaces. This can lead to significant damage if left unchecked. CUI can occur in a variety of environments, such as chemical plants, refineries, and power generation facilities. It can cause damage to piping, valves, and other equipment, leading to costly downtime and potential safety hazards.

Take care of the insulation in your plant to prevent corrosion!

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2014年1月号

Hydrogen sulfide alarm sight

Did You Know?

After safety devices such as alarms, interlocks, or shutdown systems must be tested as scheduled, or after they have been disabled, it is particularly true of gas detectors which will activate again when they detect a hazard. This is because the detector has been calibrated to a specific level, and when it detects a hazard, it will trigger an alarm. If the detector is disabled, it will not trigger an alarm when it detects a hazard, and the user may not even know that the detector is disabled. This can lead to serious consequences, such as equipment damage or injury.

What Can You Do?

If there is a concern about the reliability of a safety device, it is important to take action. This includes performing a risk assessment to determine the potential consequences of a failure. If the risk is deemed unacceptable, then steps should be taken to mitigate the risk. This may involve replacing the detector, or taking other measures to ensure its reliability. It is also important to regularly inspect and maintain safety devices to ensure they are functioning correctly.

Inspect and test your safety systems to be sure they work!

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2021年10月号

Wrong material + Wrong tank = Trouble

Did You Know?

Even though millions of pounds of hazardous materials are transported via railcars, trucks, barges, and ships to the same sites, most of these materials are transported in incompatible tanks. While delivery drivers are directly involved in unloading these materials, plant operators and management must share the responsibility to ensure compatibility.

What Can You Do?

The day before the accident, two incompatible materials were accidentally loaded into the wrong tank at a chemical plant in Michigan. The incident occurred during a routine transfer operation at the plant's 200-acre site, which houses the MICH facility tank farm. The truck driver incorrectly attached the delivery hose to the wrong tank, and the two incompatible materials were mixed together. These two materials are not compatible, and mixing them together can cause a violent reaction, which can lead to explosion, fire, and/or environmental contamination.

Operators and drivers should wear the correct PPE for the materials being handled and be trained to recognize different materials.

Manual transfers require accurate procedures that consistently follow the correct sequence.

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2023年5月号

石油化学工業をはじめその他の多くの化学品を扱う産業において、取扱量によらず プロセス安全事故は発生している。多くのプロセス事故に共通している点は、これらがLOPCを発端としていることである。以下はこの事実を示す3件の過去のBeaconである:

腐食はLOPCの隠れた原因となる可能性がある。2014年1月号のBeaconは、断熱材が断熱材下腐食(CUI)をいかに隠し、かつ進行させるかを示している。(<https://ccps.aiche.org/resources/process-safety-beacon/archives?page=7>)

配管や機器の遮断が不完全で、しばしばLOPC事故が発生している。2021年10月号のBeaconは、遮断が不完全なため2名が死亡した事故を取り上げている。(<https://ccps.aiche.org/resources/process-safety-beacon/archives?page=2>)

危険物質の流出は混合危険物質が混ざることによって起こりうる。2023年5月号のBeaconは、誤った物資をタンクに加えると大事に至りうる事例を示している。(<https://ccps.aiche.org/resources/process-safety-beacon/archives?page=1>)

知っていますか

- LOPC(Loss of Primary Containment)は、取り扱い物質の封じ込め設備から物質の計画外または制御不能な放出である。
- LOPCは、激しい腐食の進行や危険物質取り扱い設備の末端バルブにキャップやプラグが装着されていないことの警告となることがしばしばある。
- LOPCの原因是上記以外にも多くあり、例えば:車両の衝突、機械的損傷、振動、誤操作、設備材質の誤り、温度や圧力の変動などが際立っている。
- 損傷した断熱材は水の侵入を招き、CUIの原因となりうる。
- LOPC事故は防ぐことができる！

あなたにできること

- 巡回中に漏洩を見つけたら、すぐに報告すること。
- 漏洩物が特定されて漏洩が止まるまで、漏れ箇所の周りをバリケードで囲うこと。
- 断熱材の欠損や損傷を報告すること。
- 同じ個所や同じ物質で再発している漏れを指摘すること。それらはシステムの弱点や更に大きな問題の兆候かもしれない。
- プロセスハザード分析(PHA)でLOPC事故を共有すること。

防げLOPC – 危険な物質はあるべき場所だけに保つこと！