



Process Safety  
**Beacon**  
Messages for Manufacturing Personnel

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## Peristiwa Loss of Primary Containment (LOPC) memicu sebuah insiden

Desember 2025

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**Corrosion Under Insulation (CUI)**

**What can happen?**

- A tank or pipe insulation system can become breached because of corrosion damage. The quality of the pipe insulation system is particularly important during the service life of the vessel or pipe. If the insulation is breached, it can allow water to penetrate the insulation.
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**Do you know?**

- Common CUI insulation fails if it becomes wet, piping, tanks, and structures are exposed to water or moisture.
- Leaking insulation can be a source of equipment damage because of component failure or operational error.
- Water in insulation can cause significant damage to insulation, other forms of equipment damage before insulation, insulation damage, or damage after insulation damage.
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**What can you do?**

- For process plants construction or maintenance workers, follow the required procedures. This includes proper coating of tools and equipment, proper cleaning or painting of the equipment to be insulated.
- When performing insulation tasks, take care to avoid damage to insulation.
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**Take care of the insulation in your plant to prevent corrosion!**

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Januari 2014

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**How do you know your safety devices are working?**

**Did You Know?**

- Active safety devices such as alarms, interlocks, or emergency shutdown systems are designed to detect a reliability deteriorates over time (Fig. 4). This is particularly true for safety devices that require regular calibration.
- Most safety devices are not called to action during normal operations because they are not needed because of component failure or an operational error.
- A robust reliability program of components is a key element of a successful safety culture. It includes inspection, testing, and maintenance frequency based on reliability calculations and performance based on reliability calculations and performance.
- Test results should be measured to identify chronic problems. If the test results are not consistent with the design's assumptions, What Can You Do?
- If a safety device is not functioning correctly, it may be disabled or removed from the system. When this happens, it is important to ensure that the safety device is still functional and reliable.
- Use written checklists and procedures to ensure that the safety device is functioning correctly.
- Always remember to test the safety device back online after it has been disabled or removed from the system. However, the alarm panel did not receive a signal from the alarm warning light (Fig. 2) and was not activated. Some detection was not received by the alarm panel, so the signal was not received by the alarm panel.
- Other detectors were correctly set up, but the signals not received by the alarm panel. To troubleshoot the problem, inspect and test the detector, and make sure the detector is connected to the alarm panel and power supply.

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

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Okttober 2021

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**Wrong material + Wrong tank = Trouble**

**Did You Know?**

- Every day, millions of pounds of hazardous materials are transported across the country in railcars, barges and ships to the many sites. Millions of these drivers are trained to handle these materials safely.
- Where delivery drivers are directly involved in unloading materials, it is important that drivers and management must share the responsibility to ensure safe handling.
- Hazardous materials must be handled and stored properly to prevent damage to the environment and personal health.
- Proper labeling of containers is critical to ensure proper handling and storage of hazardous materials.
- When making rounds, take notice of the signs labeling shipping and dangerous goods to be replicated properly.
- When loading and unloading materials, verify that the materials are properly packed during deliveries, both visually and through proper documentation.
- Operate and drivers should wear the correct PPE for the task at hand and be trained on how to properly handle it.

**What Can You Do?**

- When making rounds, take notice of the signs labeling shipping and dangerous goods to be replicated properly.
- When loading and unloading materials, verify that the materials are properly packed during deliveries, both visually and through proper documentation.
- Read and follow the procedure for unloading. If there is any question about the correct procedure, ask the driver or supervisor for assistance.
- Report any damage to the transfer truck to the owner and have them corrected.
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**Manual chemical transfers require accurate procedures that are consistently followed!**

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Mei 2023

Insiden Keselamatan proses terjadi dalam berbagai skala operasi, di industri petrokimia dan banyak industri lainnya yang menangani bahan kimia. Banyak insiden proses memiliki satu kesamaan; semua dimulai dengan peristiwa *Loss of Primary Containment (LOPC)*. Berikut adalah 3 Beacon terdahulu yang menunjukkan fakta ini:

Korosi dapat menjadi penyebab tersembunyi dalam peristiwa LOPC. Beacon Januari 2014 menunjukkan bagaimana isolasi dapat menyembunyikan dan memicu *Corrosion Under Insulation (CUI)*. (<https://ccps.aiche.org/resources/process-safety-beacon/archives?page=3>)

Isolasi perpipaan dan peralatan yang buruk merupakan penyebab umum terjadinya LOPC. Beacon Oktober 2021 membahas sebuah insiden dimana isolasi yang tidak memadai mengakibatkan 2 orang mengalami cedera fatal. (<https://ccps.aiche.org/resources/process-safety-beacon/archives?page=2>)

Pelepasan material berbahaya juga dapat disebabkan oleh pencampuran material yang tidak kompatibel. Beacon Mei 2023 menunjukkan contoh dimana penambahan material yang salah ke dalam sebuah tangki dapat menimbulkan dampak yang besar. (<https://ccps.aiche.org/resources/process-safety-beacon/archives?page=2>)

## Tahukah Anda ?

- *Loss of Primary Containment (LOPC)* adalah pelepasan material dari kontainmen utama yang tidak direncanakan atau tidak terkendali.
- Peristiwa *Loss of Primary Containment (LOPC)* sering memiliki tanda peringatan seperti korosi yang parah atau valve pada kontainmen yang berisi material berbahaya tidak diberi penutup atau sumbat.
- LOPC disebabkan oleh banyak faktor selain yang tercantum di atas, antara lain seperti: benturan kendaraan, kerusakan mekanis, getaran, kesalahan pengoperasian, pemilihan material konstruksi yang tidak tepat, perubahan suhu atau tekanan dan lain-lain
- Insulasi yang rusak memungkinkan air masuk ke dalam insulasi dan dapat menyebabkan *Corrosion Under Insulation (CUI)*.
- Peristiwa *LOPC* dapat dicegah!

## Apa yang Dapat Anda Lakukan?

- Saat melakukan inspeksi rutin, waspadai kebocoran dan segera laporan.
- Pasang pembatas di sekitar area kebocoran sampai material yang bocor dapat teridentifikasi dan kebocoran dihentikan.
- Laporkan isolasi yang hilang atau rusak.
- Identifikasi kebocoran yang terjadi di tempat yang sama atau pada material yang sama. Kebocoran ini mungkin mengindikasikan titik lemah dalam sistem atau masalah yang lebih besar.
- Laporkan dan diskusikan peristiwa *LOPC* selama pelaksanaan Analisis Bahaya Proses (*Process Hazard Analyses-PHA*)

**Cegah LOPC – pastikan material berbahaya berada di tempat yang tepat!**