

***National Emission Standards for Hazardous
Air Pollutants (NESHAP) for Hydrochloric
Acid Production***

Leak Detection and Repair Plan

Dow Silicones Corporation
Midland Plant

August 1, 2018

1. Purpose

The Dow Silicones Corporation (DSC) Midland Plant is subject to Title 40 Code of Federal Regulations (CFR) Part 63, Subpart NNNNN - “National Emission Standards for Hazardous Air Pollutants: Hydrochloric Acid Production” (HCl MACT). The HCl production facility at the site is required to comply with 40 CFR 63.9000(a), which incorporates the emission limits and work practice standards in Table 1 of HCl MACT. Table 1 includes provisions related to equipment leak standards for equipment in HCl service. Item 4.a in Table 1 requires that the DSC Midland Plant prepare and operate at all times according to an equipment Leak Detection and Repair (LDAR) Plan that describes in detail the measures that will be put in place to detect leaks and repair them in a timely fashion. As such, the purpose of this LDAR Plan is to document (for the equipment leak provisions) how the HCl production facility located at DSC’s Midland Plant will identify and respond to leaking equipment.

2. Definitions

All definitions utilized in this LDAR Plan are taken from the definitions section of HCl MACT (§63.9075) unless otherwise specified. In the event that a definition is not available in HCl MACT, the definitions contained within 40 CFR 63, Subpart UU were utilized.

5/15 Day Rule – Leaking Equipment must be repaired as soon as possible. A first repair attempt is required within 5 days of the leak discovery. A final repair attempt must be made within 15 days of the leak discovery, unless following the delay of repair option provided in Section 6 of this LDAR Plan.

Equipment – Each of the following:

- Pump,
- Compressor,
- Agitator,
- Pressure relief device,
- Sampling connection system,
- Open-ended valve or line,
- Valve,
- Connector, or
- Instrumentation system.

Equipment in HCl Service – Each piece of equipment in an HCl production facility that contains 30 weight percent or greater of liquid HCl or 5 weight percent or greater of gaseous HCl at any time.

HCl – Hydrochloric acid.

HCl MACT – 40 CFR 63, Subpart NNNNN

HCl Production Facility – The collection of unit operations and equipment associated with the production of liquid HCl product at a concentration greater than 30 weight percent during normal operation. [§63.8985(a)(1)]

LDAR – Leak Detection and Repair.

Leak – A leak is defined as an audio, visual, or olfactory indication of a leak from a piece of equipment in HCl service.

LeakDAS – The database of all LDAR subject components.

Repaired – Equipment is adjusted, or otherwise altered to eliminate a leak as defined in this section.

3. Applicability

HCl MACT applies to the portion of the 356 Process that is used for manufacturing aqueous HCl, as well as storing the HCl and transferring it to HCl storage tanks in buildings 321 (4755) and 340 (8750), and railcars. Per 40 CFR 63.8985(a)(2), storage tanks that are dedicated feedstock tanks (e.g., 4755 / 8750) are not considered part of the HCl production facility. Therefore, the boundary of HCl MACT applicability follows the transfer lines up to the dedicated HCl storage tanks for other processes, but does not include these storage tanks. The equipment associated with the process lines subject to HCl MACT at the DSC Midland Plant are documented in the LeakDAS database.

Per 40 CFR 63.8990(b)(4) and Table 1 to Subpart NNNNN, Item 4, the LDAR Plan required by HCl MACT applies to equipment in HCl service that are part of the affected source subject to the HCl MACT.

Note, HCl MACT does not apply to the production of anhydrous HCl or the production of aqueous HCl as a byproduct via a hydrolysis process.¹ As such, HCl MACT does not apply to any other processes in the DSC Midland Plant.

¹ The HCl produced via hydrolysis is produced as a by-product. The primary purpose is not the production of HCl, therefore it is not defined as an HCl production process.

4. Equipment Identification

The official equipment identification will be performed via the LeakDAS database. As a supplement, the facility may tag equipment in HCl service in the field and on process and instrumentation diagrams (P&IDs).²

The equipment in HCl Service will be added to the LeakDAS database under the applicable regulation (in the database, this is “Subpart NNNNN”). This database will maintain the component list, the inspection history, the leak history, and the repair history.

² If the facility elects to identify equipment subject to HCl MACT in the field, this tagging will be in line with the tagging performed on equipment subject to LDAR requirements under other regulations.

5. Inspection Requirements

All equipment in HCl service will be inspected on an annual basis, except as specified herein. The inspection will consist of an audio, visual, and olfactory (AVO) inspection of each piece of equipment. The inspection history will be tracked in LeakDAS.

The aqueous HCl process may not operate 8,760 hours per year (The HCl Production Facility is subject at all times, even those times when a liquid HCl product of a lower concentration is being produced).³ Routine inspection will occur during normal operation of the aqueous HCl process. If the aqueous HCl process is not operating, the inspection may be performed if all equipment in HCl service is currently charged with at least 30 weight percent aqueous HCl or at least 5 weight percent gaseous HCl. Equipment taken out-of-service and equipment operating less than 300 hours per year are not subject to the routine inspection requirements.

Repairs are to be consistent with the 5/15 Day Rule.

³ From the 2003 preamble to HCl MACT: ...*The final rule states that an HCl production facility that produces a liquid HCl product at a concentration of 30 weight percent or greater is subject to the final rule. That means that this unit is subject at all times, even those times when a liquid HCl product of a lower concentration is being produced. Therefore, the final rule will cover facilities like the one pointed out by the commenter that occasionally produce liquid HCl product at concentrations less than 30 percent, even when those lower concentration products are being produced...*

6. Leak Identification and Repair

If a leak is found, a leak tag is to be hung on the piece of equipment. The leak information will be entered into LeakDAS.

The expected procedure will be the following:

- If the LDAR technician performing the inspection finds the leak, they will hang a leak tag on the piece of equipment identifying the equipment and the date found leaking. The leak tag will remain on the piece of equipment until it is repaired. All applicable leak information will be entered into the LeakDAS database.
- If a leak is found outside of the annual inspection, building personnel are responsible for hanging the leak tag on the piece of leaking equipment and submitting the AVO Leak Report Form.⁴

Facility and/or LDAR technician personnel will follow standard facility practices for following up on leak repairs. Repaired means that equipment is adjusted, or otherwise altered, in order to eliminate a leak as defined in Section 2. Confirmation of leak repair will be performed via AVO inspection.

In the event delay of repair is required (i.e., the repair cannot be made within the 15 day repair deadline), approval from the LDAR Coordinator and knowledgeable operations personnel is required. Delay of repair will be allowed in the following, but not limited to, circumstances:

- For a continuous process, if repair is technically infeasible without an entire process unit shutdown as defined in 40 CFR 63.1020. Repair must then be made by the end of the next scheduled process unit shutdown;
- Equipment that is isolated from the process and is not in service;
- If the emissions of purged material resulting from an immediate repair would be greater than the fugitive emission likely to result from a delay of repair;
- For any pump, agitator, or compressor, if repair requires the replacing the existing seal design to a new system that will provide better performance (e.g., single mechanical to canned);
- Repairing a leak during cold weather conditions could cause freezing in the process and damage equipment; or
- Repairing a leak threatens the safety of the workers doing the repair.

⁴ This is the standard form utilized by the DSC Midland Plant for all LDAR Programs and it is incorporated by reference for this plan.