OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Hydrochloric Acid or Sulfuric Acid Spills from Trucks or Tank Cars

This is to provide guidance for cleanup of hydrochloric acid (HCl) or sulfuric acid (H_2SO_4) from truck or tank car spills. These chemicals correspond to Chemical Abstracts Service (CAS) Numbers 7647-01-0 and 7664-93-9, respectively. Spills of hydrochloric acid or sulfuric acid can lead to significant contamination of the environment if not handled quickly and properly. DEQ's goal is to clean up spills within 72 hours of an incident. Spills should be reported to DEQ's 24-hour hotline at (800) 522-0206. If reportable quantities (RQs) are exceeded, then other agencies will need to be notified.

Spills as the result of a collision on any public roadway must be cleaned up by a remediation contractor licensed by DEQ's Environmental Complaints and Local Services Division (ECLS). A list of these contractors can be found at http://www.deq.state.ok.us/ECLSnew/HighwaySpillRemed/highwayremediation.htm. The immediate objective is to neutralize and recover free liquids to prevent them from contaminating surface water or ground water. Appropriate action, such as using booms and dikes, must be taken to keep free liquids from reaching surface water. Once free liquids are addressed, excavation of contaminated soil will be necessary. Contaminated soil needs to be removed because contaminants can leach to groundwater or spread to surface water if there is rain.

If contaminated soil extends into groundwater or groundwater contamination is otherwise suspected, contact DEQ's Voluntary Cleanup Program (VCP) for assistance at (405) 702-5100. If public water supplies are threatened or surface water is impacted, notify DEQ's Water Quality Division.

For removal of contaminated soil, the standard practice is to excavate visible contamination, screen the excavation site for hot spots using pH strips as an indicator of contamination, then take confirmation samples to show that the contaminated soil has been removed.

Confirmation Sampling

Confirmation sampling consists of taking a minimum of five grab samples, one from each side wall and one from the bottom of the excavation for every 400 square feet of excavation area. For excavations exceeding 400 square feet, confirmation sampling would consist of one grab sample every 20 linear feet around the perimeter sidewalls and one from the bottom of the excavation for every 400 square feet of excavation area. For releases to ditches, grab samples should be taken every 20 feet and analyzed separately. Additional samples may be required for further delineation. Samples for acid spills must be analyzed for total soluble salts and the applicable anion. Note that the samples listed above are all grab samples; these discrete samples should not be composited.

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Hydrochloric Acid or Sulfuric Acid Spills

Acceptable cleanup levels for soil are:

Total soluble salts	<2,640 mg/kg
Chloride	<1,000 mg/kg
Sulfate	<1,000 mg/kg

Depending on site-specific conditions and response time, surface samples may be all that is needed. However, if more than one week has passed, or a significant rainfall event has occurred, or if plowed or sandy soil is present , collect soil samples at one-foot depth intervals to a depth of at least three feet, Grab samples at 0 to 1 feet, 1 to 2 feet, and 2 to 3 feet below excavated surface. If significant time has elapsed before cleanup is completed, testing the groundwater may be required.

Acceptable cleanup levels for acid spill impacted groundwater are:

Total soluble salts	<500 mg/l
Chloride	<250 mg/l
Sulfate	<250 mg/l

For certain sites, background levels may exceed the cleanup levels listed above; in this case, documented background samples from media unaffected by a spill must be taken to demonstrate adequate cleanup to background levels.

The following is further information on soil excavation and handling, acceptable analytical methods, and preparation of a final report.

Soil Excavation

Contaminated soil should be temporarily containerized or stockpiled on plastic sheeting, minimum 10 mil, covered and bermed to prevent run-on and run-off. If an open pit has to be backfilled due to extenuating circumstances, the floor of the excavation should be covered with plastic sheeting or some other suitable method to clearly define the sidewalls and bottom of the pit in the event test results show the need for further excavation.

Analytical Methods for Confirmation Samples

Soil samples should be placed in suitable, acid-resistant containers, with chain-of-custody records completed, and the samples sent to a certified lab. The samples should be analyzed for salinity parameters – for example, OSU's Comprehensive Salinity package – including pH, total soluble salts, chloride for hydrochloric acid spills, and sulfate for sulfuric acid spills.

Final Report

The responsible party should consult with DEQ to verify that the planned sampling adequately addresses the release. The responsible party should submit a final report to the DEQ ECLS Division documenting material spilled and actions taken. The report should also include analytical data to demonstrate that cleanup levels were achieved.

Spills of Materials Other Than Hydrochloric Acid or Sulfuric Acid

Spills other than hydrochloric acid or sulfuric acid need to be addressed on a case by case basis. If reportable quantities (RQs) are exceeded contact the National Response Center at (800) 424-8802. Other reporting requirements may be necessary. Contact DEQ's 24-hour hotline at (800) 522-0206 for assistance with reporting requirements.

OKLAHOMA Environmental Quality

References

Oklahoma Corporation Commission, July 2014, Pollution Abatement Department, Oil and Gas Conservation Division, Guardian Guidance for the Assessment and Cleanup of Complex Crude Oil, Condensate, and Other Hydrocarbon Release Sites, Including Historically Impacted Sites

Kansas Corporation Commission, Conservation Division, Clean up Guidelines for: Spills and Escapes

Spill Guidance Procedural Checklist

Contact information including name, phone and address of carrier, emergency response contractor, and insurance company:

	Yes	No	
1. Have liquids been contained and recovered?	☐	☐	If not, do so.
2. What was spilled?	How much? _____ gallons		
3. Has contamination reached surface water?	☐	☐	If yes, boom and vac. Contact DEQ's WQD at (405) 702-8100.
4. Have appropriate spill notifications been made? DEQ 24-hour hotline (800) 522-0206 National Response Center (800) 424-8802	☐ ☐	☐ ☐	
5. Is there surface water nearby?	☐	☐	If yes, how close?
6. Are there public water supply wells or water supply lines nearby?	☐	☐	If yes, contact the affected municipality and DEQ's WQD.
7. If water supply lines are nearby, what are they made of?			
8. Is the spill in a wellhead protection area?	☐	☐	
9. Are there private wells nearby?	☐	☐	If yes, what are the wells used for?
10. Are any utilities affected?	☐	☐	
11. Has contamination gotten into sewer lines?	☐	☐	
12. Has visibly contaminated soil been excavated?	☐	☐	Field screen with pH strips if possible.
13. Was groundwater encountered during excavation?	☐	☐	
14. Does contamination extend down to groundwater or is groundwater contamination otherwise suspected?	☐	☐	If yes, contact DEQ's VCP at (405) 702-5100.
15. Has contaminated soil been properly stockpiled or disposed?	☐	☐	
16. Has there been appropriate confirmation sampling?	☐	☐	
17. Were samples analyzed by correct methods?	☐	☐	
18. Do confirmation samples meet cleanup levels?	☐	☐	If not, dig more or contact DEQ's VCP.

Draw site map, noting relevant features, stockpile locations and similar items.