
**BEST
MANAGEMENT
PRACTICES
FOR LEAK AND
SPILL CONTROL**

Summary

Keeping a facility clean helps improve productivity and employee morale. In addition, it presents a positive image to customers, stakeholders and the community.

A clean facility can also help ensure greater compliance with environmental, health and safety regulations.

Leaks and spills can happen anywhere – from the front office to the shipping dock; and beyond. These spills create waste and can lead to costly environmental fines - especially if the spill leaves the facility.

Leaks and spills can also contribute to worker injuries, causing piles of medical bills, workman's compensation claims and lost work time.

Some facilities look to highly-engineered, custom-designed solutions for containing and controlling leaks and spills. But, engineered solutions are usually costly, time consuming to implement and hard to re-engineer when facility processes or designs change.

Pre-fabricated control and containment devices save time and money; are usually ready-to-ship; and allow facilities greater freedom to change facility layouts as needs change. They also help meet regulations in the same ways that higher-cost, highly-engineered solutions do.

- Leaks and spills can lead to costly environmental and safety violations
- Control and containment solutions help avoid compliance problems
- Pre-fabricated control and containment devices solve compliance problems in the same way that expensive, highly-engineered systems do

Regulations

Properly managing leaks and spills helps facilities comply with several EPA and OSHA regulations. Some of the most common ones are presented here. State regulations can vary, but they must be at least as stringent as federal requirements. Certain industries and industrial processes are also governed by specific federal and local regulations.

The EPA's mission is to protect human health and the environment. Regulations governing air, land and water pollution help accomplish this goal.

Facilities that generate wastes must determine if those wastes are hazardous under the Resource Conservation and Recovery Act (RCRA). For wastes that are hazardous, "generator standards" (40 CFR 260-265) apply to the storage, management and disposal of those wastes.

Because hazardous wastes are commonly stored or managed in tanks or portable containers, RCRA regulations specify standards to minimize spills and hazards. One example of this is the containment regulation (40 CFR 264.175) that requires containers of hazardous waste to be stored in a manner that prevents a release, should the primary containers storing the hazardous waste fail.

Containers of hazardous wastes must also be kept closed unless waste is being added or removed from the container. (40 CFR 264.173)

Stormwater regulations (40 CFR 122) govern discharges that enter navigable waterways from a point source, such as a drainage pipe from a facility. Pollutants can include solids, dirt, chemicals and even process water that is hotter or colder than the receiving waters.

Facilities discharging to water must obtain a National Pollution Discharge Elimination System (NPDES) permit. Before a permit is issued, a Stormwater Pollution Prevention Plan (SWPPP) is needed. This plan outlines the Best Management Practices (BMPs) that the facility will use to prevent discharges.

Facilities that store, process or use large quantities of oil or oil products may also be subject to Spill Prevention Control and Countermeasures (SPCC) Regulations. (40 CFR 112) Like Stormwater Regulations, SPCC regulations require facilities to have processes in place to prevent oil spills from entering the nation's waters. Facilities are also required to be prepared and have resources for spill response.

OSHA is concerned with worker safety. Slips, trips and falls to the same level are a leading cause of worker injuries and death. To help minimize slip and fall injuries, OSHA requires the floors in a workplace to be "clean and dry" wherever possible. [29 CFR 1910.22(a)(2)]

Establishing procedures for the proper handling of fluids and having the correct tools and equipment helps to minimize spills. These “best practices” can include things such as providing training and instructions to help workers safely manage fluid transfers, having a checklist to follow when starting a process, providing proper containment and tools to control spills, and having an annual drill to remind workers how to handle incidental or common leaks and spills in the facility.

Because each facility is different, the EPA does not outline specific best practices. Facilities have the liberty of evaluating their processes and determining what practices, procedures, equipment and tools will work for them.

Outdoor Leaks and Spills

When spills happen outdoors, quick response is essential. Parking lots and delivery areas typically slope to drains, grassy areas or waterways; inclement weather is sometimes a factor; and it may not be as convenient to keep spill response products nearby.

Outdoor spills are also much more visible to the public. Being prepared for spills helps minimize their scope and speed clean-up efforts.

Bulk Fluid Transfers

Whether large quantities of fluids arrive by rail or by truck, the process of transferring them to holding tanks relies on pipes or hoses with fittings that are firmly connected. Even if the fluid transfer goes smoothly; when hazardous chemicals are involved, the residual fluid in a hose or pipe can cause compliance problems if the fluids leak or drip and are allowed to enter storm drains or contaminate soil.

Because the potential for spills is always present during fluid transfers, being prepared to handle them is an important skill.



Spill kits are a form of “active containment” for facilities that need to comply with SPCC regulations, and can also help facilities comply with Stormwater and contingency planning regulations.

Spill kits commonly contain a variety of absorbent products, including socks or booms to contain and absorb a spill; and mats and pillows to help absorb the contained spill.

Most spill kits also have room in them to store basic tools and personal protective items to help keep workers safe during response.

Protecting drains is a common part of spill planning because when a drain is sealed, pollution can be eliminated or minimized.



Drain protection can be done proactively or reactively. Some facilities make covering drains a routine part of their delivery process by covering drains before fluid delivery begins. Other facilities will have drain covers readily available to deploy in the event of a spill.

Some facilities even use drain covers in lieu of absorbents for spill response. A covered drain allows a spill to pool so that it can be vacuumed or pumped for recovery.

Flexible polyurethane drain covers quickly seal drains and are reusable – making them an ideal choice for either proactive or reactive deployment. To divert liquids from sensitive areas like wetlands or doorways, polyurethane dikes can also be used. They are also flexible, and like drain covers, seal to flat surfaces.

If an absolute seal is not required; for example, if facilities have on-site water treatment capabilities, water-filled drain covers and dikes are an economical alternative. Both can be filled quickly with water to cover a drain or create a dike, and emptied for compact storage when they're not in use.



Some facilities choose drive-through containment devices for bulk fluid delivery vehicles. These units can be left in place for facilities that receive shipments frequently, or they can be put up and taken down quickly for facilities with more sporadic delivery schedules.

Because the sidewalls collapse, vehicles can drive in and out of the units easily. The sidewalls can either be manually flipped-up when the vehicle is parked inside them, or floats can be installed to allow the sidewalls to rise only in the event of a spill.

Containers Stored Outdoors

Very few facilities have the luxury of unlimited indoor storage space. This sometimes leads to containers and totes being stored outside while they await use or shipment. Whether the containers house virgin product or wastes, it's a good idea to have a plan that helps ensure their security and minimize the chance of failure.



For hazardous wastes, secondary containment is a requirement. Secondary containment products collect spilled liquids if a primary container fails.

Preventing “run-on” (rainwater or snowmelt) from filling the sump is also a concern for hazardous wastes stored outdoors, because if a containment sump is full of water, it may not be capable of containing a spill.

Covered containment systems keep containers out of the elements, and provide secondary containment without the worries of rain water or snow melt filling the sump.

Covered containment systems are also a convenient option for fluid dispensing or waste collection stations that need to be located outdoors. Because they are covered; pumps, funnels and drum tops stay clean and are protected from the elements.



Large, portable containment systems are a popular option for facilities with varying storage needs because they can be set up when needed, then folded and stored after use.

Although rainwater and snowmelt will collect in units that are not covered, drain valves integrated into the sidewalls can be opened to allow water to be removed.

Equipment and Machinery Stored Outdoors

Like containers that are stored outdoors, equipment and machinery that is stored outdoors is also prone to leaking that could cause environmental problems. As regulations become more stringent, it has become increasingly important to capture even small leaks and drips.



Capturing leaks and drips from equipment that is stored on gravel or other un-paved surfaces can be achieved with portable containment systems; but for a variety of situations, they are overkill and can be a costly solution.

Weighted drip pads can be positioned under engines, leaky valves, saddle tanks or other areas prone to leaks and drips. The low profile keeps them in place better than pans and containers with higher sidewalls.



Moving equipment and machinery to parking lots and paved areas can help minimize the impact of leaks and drips when trace oily leaks and drips are captured in drain inserts that are seated below storm drain grates to collect trace amounts of oil while allowing water to pass.

In addition to capturing trace oils, they can also capture sediment. Some models can even collect phosphates, heavy metals and other contaminants.

Transformers

Oil-filled power generation, staging and transfer equipment presents problems because leaks and drips of clear oil can be hard to detect. And since many transformers and other equipment are in areas that aren't manned on a daily basis, leaks and drips may go unnoticed, which can lead to environmental compliance violations.



Valves, flanges and fittings are common sources for leaks. Controlling small leaks at the source with valve wraps that can be cinched directly at the point of leaks keeps oil from hitting the ground.

Indoor Leaks and Spills

Last year, 8,763 reportable incidents were caused by equipment failure or operator error, according to National Response Center Statistics. That's over one spill per hour! When facilities that have proper spill containment and control products, the potential for reportable spills is minimized – and facilities can avoid costly clean ups and time consuming reporting obligations.

Spills can happen anywhere in a facility, but are more likely to occur in areas where fluids are transferred. Several regulations require facilities to be prepared to handle their “worst case scenario” spill. While this is certainly important, statistics show that most spills are well under 100 gallons. This makes planning for smaller, incidental spills just as essential.

Although each facility is unique, many have common areas where leaks and spills are most likely. The first step in being prepared for spills is identifying where they could happen. Use a floor plan or blueprint of the facility and walk through each area. Take pictures or make a list of materials stored as well as common processes that take place in each area. Ask workers about common leak and spill problems and how they are currently handled.

Knowing the spill potential for each area of the facility allows for realistic plans to be created for the areas, and for proper response materials to be readily available when and where they are needed.

Loading Docks

Because loading docks are high-traffic areas, the potential for spills cannot be discounted. Forklifts may graze a container, and palletized loads can shift. Even if material handling crews are well seasoned, no one can predict whether the truck that just backed up to the dock door will contain anything that's leaking.

Training crews to safely respond to incidental spills and stocking spill kits and response materials at or near dock doors can help speed up response and minimize downtime.



Consider spill kits that will handle a likely scenario. If mostly drums are shipped and received, choose a kit that will handle a 55 gallon spill. If 5-gallon pails and carboys make up a bulk of shipments and received goods, a smaller kit may be more appropriate.

Processing Areas

Common processing problems such as machinery that routinely leaks as part of its normal operation, overspray and mold lubricants can cause slippery walkways in work areas and allow fluids to become tracked to other areas of the facility.



For many of these problem areas, absorbent socks, mats, pillows and drip pans that capture leaks at or near their source keep work areas cleaner, drier and safer by capturing the fluids that otherwise make floors slippery.



Some facilities choose to capture and reuse processing fluids.

For these facilities, flexible berms that collapse to allow cart and forklift traffic to pass, then spring back into shape to contain leaks and spills help facilitate this process and help keep aisle ways safer and cleaner.

Protecting floor drains in processing areas is another common problem for many facilities. While preventing spills into drains that lead directly to waterways is essential, even facilities that have on-site water treatment capabilities are not often capable of handling larger spills.



Drain covers and flexible dikes help keep spills out of drains and channel spills away from sensitive areas. Some are even capable of withstanding forklift, cart and other traffic while still maintaining their seal.

Fluid Dispensing Areas

Find a faucet, valve or drum pump, and there is a decent chance that there will be a puddle under or near it. Even for facilities that use metered dispensing systems, incidental leaks and drips are not always eliminated.



Spill containment decks capture overfills, keeping spilled liquids contained and off of floors. Keeping wipers and absorbents well stocked in these areas is another alternative to keeping dispensing areas cleaner and safer because it encourages workers to clean up incidental leaks and drips as they happen.

Waste Collection and Storage Areas

Whether wastes are collected at satellite accumulation areas or go directly to a centralized waste accumulation area, transferring liquids into collection drums, totes and tanks presents another opportunity for leaks and spills.



User-friendly funnels that thread into bungs and have large openings help reduce leaks and spills because workers don't have to try to balance them with one hand while pouring with the other.

Funnels with seals and latching lids also encourage compliance with closed container and Subpart CC emissions standards because they remain on the container until it is filled, and are easier to open and close than bung caps.



Secondary containment needs to be provided for containers of hazardous waste. For facilities that generate large volumes of wastes, an entire room may be dedicated to this purpose.

For facilities that generate smaller volumes, containment pallets are an option that helps facilities meet secondary containment requirements without having concrete berms or retaining walls installed.

Being prepared for leaks and spills helps keep facilities cleaner and safer, and helps reduce the risk of accidental releases to the environment. Pre-fabricated solutions save facilities time and money because they are ready to use and can be easily moved when facilities expand or needs change.

In the time it takes an engineering firm to create the framework for a first draft; pre-fabricated solutions can be ordered and installed, simplifying compliance and encouraging safety for everyone.