Spot The Safety Violation: Why You Need a Spill Prevention Plan

What do you think could happen if this scary looking substance spilled into this floor drain’

It’s important to prevent spills of chemicals and other hazardous substances in the workplace, such as due to leaks from containers or pipes. Such spills can endanger not only

workers but also members of the public and the environment, especially if the spilled substance migrates from the property, such as by running into a drain.

It's unclear exactly what the substance is in the bucket in this picture but it certainly looks hazardous. It also appears that the substance has already leaked or spilled in the area'and right next to a drain in the floor. If the liquid is, in fact, hazardous and did run into that drain, it could contaminate soil and groundwater, and even rivers, lakes or other bodies of water depending on where the drain leads.

Example: Over two days, a spill from a pulp mill released 209,344,000 litres of deleterious effluent into the Columbia River. The mill was convicted of violating the BC *Environmental Management Act*. The court sentenced it to pay a $30,000 fine and $120,000 to the Habitat Conservation Trust Foundation [*Zellstoff Celgar LP*, Govt. News Release, July 26, 2012].

6 STEPS FOR CREATING A SPILL PREVENTION PLAN

The OHS laws and the environmental laws in your jurisdiction may have requirements that relate to the prevention of spills of hazardous substances and protecting workers and the environment from such spills when they occur. You should always ensure that you comply with any such requirements. But here are six basic steps you can take to create a plan for preventing spills:

Step #1: Identify Spill Hazards

First, identify all spill hazards in your facility, focusing on spills that:

- May occur at the facility or relate to its operations;
- Are reasonably foreseeable, that is, the circumstance leading up to the spill can be anticipated; and
- Could cause or have the potential to cause adverse

effects on the environment or workers.

Step #2: Analyze Likelihood of Spills Occurring

Next, analyze the likelihood of the spills identified in Step #1 occurring based on:

- The properties and characteristics of all hazardous substances used at the facility and, for each substance, the maximum expected quantity of it that may be at the facility;
- The manner in which each hazardous substance is stored, handled, processed and disposed of at the facility;
- The physical and geographic characteristics of the location at which each substance is stored, handled, processed and disposed of at the facility, such as proximity to a river or lake, near a floor drain, within a containment structure, indoors, etc.;
- Whether there have been previous spills at the facility or relating to its operations, which may provide insight into their frequency and the possibility of similar spills in the future; and
- Any other factors that are relevant, such as historical weather data, equipment failure rates and preventive maintenance data.

Step #3: Analyze Possible Adverse Effects of a Spill

You must also analyze the extent of potential adverse effects from a spill. Using a map, identify the places that may be impacted by each of the possible spills, including:

- Certain kinds of facilities, such as those for healthcare or education;
- Dwellings;
- Places of business;
- Transportation corridors; and
- Vulnerable environmental areas, such as sensitive ground water and wildlife habitat areas.

For each of these at-risk places identified, you should determine the type of adverse effect, if any, and the extent of that adverse effect.

Step #4: Prioritize Spill Risks

Next, assess the relative risk posed by each spill scenario that has the potential to cause adverse effects. Do so by considering the likelihood of the spill occurring in conjunction with the extent of the potential adverse effects. You should then rank the spill events from highest risk to lowest risk in order to better plan your spill prevention actions.

Step #5: Specify Steps to Address Significant Spill Risks

For all spills assessed to be of high risk and any moderate risk spills that you consider to be significant, identify all possible steps that could be taken to prevent or reduce the risk of such spills from occurring, such as:

- Constructing or installing containment structures to prevent spilled substances from entering the environment;
- Installing and maintaining mechanisms or equipment to monitor the facility's operations, such as an alarm or other notification system to alert personnel who operate the facility that a spill is imminent;
- Altering or redesigning industrial processes to prevent or reduce the risk or impact of a spill, such as replacing hazardous substances with less toxic ones, or installing equipment for the purpose; and
- Implementing preventive maintenance to avoid spills caused by equipment or infrastructure failure.

Step #6: Train Workers on the Plan

As always, it's critical to train all workers on the spill prevention plan, including the operation of any equipment or

mechanisms designed to prevent or contain spills and your spill prevention procedures.

And make sure that if your spill prevention plan fails to prevent a spill from occurring that you have appropriate procedures in place for responding to the spill, including complying with any reporting requirements.

For more on effectively handling hazardous spills from a chemical engineer's perspective, watch this recorded webinar by Matthew Allen, M.Eng., P.Eng., Vice President of Strategic Development for Health, Environmental & Regulatory Services at Intertek. The webinar covers:

- Anatomy of a spill: definition, types & severity factors
- Regulatory drivers and best practices
- Reporting and due diligence considerations
- Lessons learned and prevention.