SPILLS: Take 6 Steps to Create a Spill Prevention Plan

Many environmental laws require companies to have plans for how to respond to spills of hazardous substances that could adversely affect the environment. Even if the law in your jurisdiction doesn't require spill response or contingency plans you should still have one because a fast, organized response to a spill will minimize any harm done. But ideally, you want to prevent spills from happening in the first place to avoid any damage to the environment. So in addition to a spill response plan, you should also have a spill *prevention* plan that spells out the procedures and actions to be taken to eliminate or reduce the likelihood of a spill occurring. Here are six steps you can take to develop such a plan.

Defining Our Terms

Some environmental laws, including federal CEPA, require or give their environmental officials the power to require companies to implement *pollution* prevention (or P2) plans. P2 plans are designed to avoid the creation of pollution and waste by, say, improving the efficiency of processes and recycling. So although they may include some measures that prevent spills, when we talk about spill prevention plans in this article, we are *not* talking about pollution prevention plans.

WHAT THE LAW SAYS

Only three jurisdictions'BC, ON and YK'specifically address spill prevention plans in their environmental laws. In BC and YK, the government can require a person having possession, charge or control of a hazardous or polluting substance to assess the magnitude of the risk of a spill of that substance and develop a contingency plan to reduce that risk [See, Sec. 79(2) of BC's *Environmental Management Act*; Sec. 121 of Yukon's *Environment Act*.] In Ontario, Sec. 91.1(a) of the *Environmental Protection Act* requires every person who belongs to a class of persons prescribed by the regulations to develop and implement plans to prevent or reduce the risk of spills of pollutants. The *Spill Prevention and Contingency Plans Regulation* spells out the requirements for spill prevention plans in detail.

In the remaining jurisdictions, a company could be required after a spill or a conviction for an environmental offence to take steps to prevent future spills or violations, such as implementing a spill prevention plan. But regardless of the requirements in the environmental laws, you should have a spill prevention plan anyway, especially if your facility handles a lot of hazardous substances and the risk of a spill is high. It's best for both the company and the environment to be proactive and take steps to prevent spills from happening in the first place rather than dealing with them afterwards.

TAKE 6 STEPS

The Ontario Ministry of Environment's Guideline for Implementing Spill Prevention and Contingency Plan Regulatory Requirements spells out six basic steps for developing a spill prevention plan that should help you comply with any requirements for such plans in your jurisdiction, if there are any, or develop a comprehensive plan in the absence of such requirements.

[learn_more caption="Step #1: Identify Spill Hazards"]

The first step is to 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.

This analysis should include identification of:

- The hazardous substances in the facility that, once released, have the potential to cause an adverse effect due to their nature, quantities used, etc. as well as the locations where they're stored, handled or transferred and the processes in which they're used;
- Potential routes into the environment near to where those substances are stored, transported, used and processed, such as nearby drains leading to surface waters, vents, etc.; and
- Specific scenarios and circumstances, such as failure of a control mechanism, under which hazardous substances may enter the environment through the routes identified above and thus potentially cause an adverse effect.

To assist in identifying hazardous substances and spill scenarios that may lead to adverse effects, the Guideline recommends referring to existing information on such substances, such as their MSDSs/SDSs, scientific journals, etc.[/learn_more]

[learn_more caption="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, including the mechanisms (such as equipment, material, processes, etc.) used to store, handle, process and dispose of the substances;
- 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. The history of spills will provide insight into their frequency and the possibility of similar spills in the future. The historical spill analysis should go far enough back to provide a sufficient amount of data while still being relevant to the facility's current operations; and
- Any other factors that are relevant, such as historical weather data, equipment failure rates (historic and manufacturer) and preventive maintenance data.

The method used to determine likelihood may differ from spill to spill, depending on the availability of supporting data and the type of spill being analyzed. The Guidelines recommend that, regardless of the approach used to estimate likelihood, *all* spills should ultimately be analyzed on a common scale for comparative purposes. For example:

Likelihood/Probability	**Description**
Very unlikely	Less than 1 event every 200 years

Unlikely	At least 1 event every 200 years
Possible	At least 1 event every 30 years
Very possible	At least 1 event every 10 years
Certain	1 or more event every year

And for each spill risk analyzed, there must be a documented explanation in the plan of how the conclusion relating to the likelihood of the spill was determined.[/learn_more]

[learn_more caption="Step #3: Analyze Possible Adverse Effects of a Spill"]

Along with the analysis of likelihood, you must analyze the extent of potential adverse effects. The first step in this analysis is to identify, using a map, the places that may be impacted by each of the possible spills, including:

- Certain kinds of facilities, such as those for healthcare, child care, long-term care or education;
- Dwellings;
- Places of business;
- Transportation corridors; and

> Vulnerable environmental areas, such as sensitive ground water and surface water features, wells and intakes of drinking water systems, flood plains and fish 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. The potential adverse effects of a spill may be estimated using a variety of means. For example, you may consider any one or more of the following:

- Physical and chemical characteristics of the hazardous substance;
- How the substance may be released, such as into the air, land or water; and
- Known human health and environmental threats posed by the substance.

During this analysis, consider the range of possible scenarios, including the 'worst-case' scenario, such as the uncontrolled release of the maximum amount of a hazardous substance. If the worst-case scenario indicates the possibility of adverse effects, you should then consider any potential alternative scenarios. These scenarios, assuming any exist, would typically be those that are more likely to occur than the worst-case scenario while still having the potential to cause an adverse effect, such as where controls are only partially effective.

Again, regardless of the approach taken to estimate the adverse effects of each type of spill, it's recommended that *all* spills be analysed on a common scale for comparative purposes. The Guideline provides the following table as an example:

Impact	**Description**
Catastrophic	May cause fatalities
Severe	Impacts to health (non-fatal) or widespread injury or damage to the environment that's difficult to remediate
Moderate	Material discomfort or localized impacts to property or the environment that can be remediated
Low	Easily remediated impacts to individual property

None	No impact

[/learn_more]

[learn_more caption="Step #4: Prioritize Spill Risks"]

You should 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. See the box below for an example of a risk analysis matrix:

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[learn_more caption="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. In the plan, spell out those steps identified that have been or will be taken and explain why you haven't taken and won't be taking the other identified steps. Examples of some preventive steps to consider include:

- 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 used at the facility 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.[/learn_more]

[learn_more caption="Step #6: Train Workers on the Plan"]

As always, it's critical to train all workers on the spill prevention plan. Specifically, ensure that workers are trained on:

- The operation, maintenance and monitoring of any installed or constructed equipment, structures or mechanisms designed to prevent or contain spills; and
- Any spill prevention procedures included in the plan.[/learn_more]

BOTTOM LINE

The purpose of spill prevention plans is to assess and document the risk of spills happening at a particular facility so as to institute procedures and actions to reduce the risk of such spills from occurring. Conducting such an assessment and using the results to develop and implement a spill prevention plan can help protect the environment and your company from liability by ensuring that spills don't happen. In addition, if a spill occurs anyway, having a spill prevention plan may help you prove that you took all reasonable steps to prevent the spill from happening and thus exercised due diligence.