Sector P: Land transportation and warehousing

Industrial stormwater pollution prevention

Sector P is described by Standard Industrial Classification (SIC) codes 4221, 4222, 4225, and only if doing vehicle maintenance 4011, 4013, 4111, 4119, 4121, 4131, 4141, 4142, 4151, 4173, 4212-4215, 4226, 4231, 4311, and 5171.

Activities at land transportation and warehousing facilities that can impact stormwater include vehicle fueling and maintenance, vehicle parking, equipment storage, sanding, painting and above ground storage tanks. Common pollutants are heavy metals, solvents, fuels, oil and grease.

Pollution prevention ideas

Minnesota’s industrial stormwater permit requires a written Stormwater Pollution Prevention Plan (SWPPP). Use the SWPPP to assess potential sources of pollutants at your facility and then identify practices that will minimize these pollutants in runoff from the site. This fact sheet lists pollution prevention (P2) practices that can be incorporated into your facility’s SWPPP.

Keep in mind that pollution prevention is best achieved by qualifying for the No Exposure exclusion. No Exposure means that rain, snow, and runoff do not contact pollutant-containing materials or activities. Your facility can apply for the No Exposure certification as soon as you qualify, even if you already have the full permit. For more information visit the MPCA’s No Exposure web page at http://www.pca.state.mn.us/noexposure.

General strategies

- Keep materials and activities indoors as much as possible. Confine outdoor materials and activities to designated areas that are covered, have an impervious concrete surface, or have a system (such as berms or dikes) to prevent run-on of stormwater and runoff of pollutants.
- Regularly clean up areas used for material handling and storage, vehicle and equipment maintenance and fueling using dry methods such as sweeping, squeegee and dust pan, reusable socks, vacuums, and as a last resort, use loose granular absorbents.
- Plug drains or use diversion devices to prevent spilled materials and liquids (including wash water) from entering floor drains, sewer connections or storm drains.
- Use drip pans for spill and drip protection when fueling or under vehicles and equipment awaiting maintenance. Have spill clean-up items on hand at all times.

Liquid storage in tanks

- Clearly label all drums and tanks.
- Use double-walled tanks that are durable, non-leaking and non-corrosive.
- Provide secondary containment for all above ground storage tanks and empty or used drums.
- Keep liquid transfer nozzles and hoses in secondary containment areas.
Fueling

- When fueling in uncovered areas, fuel on impervious surfaces such as concrete pads. Asphalt is not chemically resistant to fuels.
- Use fueling hoses with check valves.
- Discourage topping off.

Vehicle and equipment maintenance and washing

- Maintain an organized inventory of materials used in the maintenance shop to reduce waste, including tracking the date received and expiration dates.
- Reduce the amount of hazardous materials and waste by substituting nonhazardous or less hazardous materials. For example, switch to water-based cleaners for parts washing.
- Keep containers closed as much as possible during use and seal tightly after use.
- Use funnels when transferring liquids.
- Drain, segregate and contain all fluids from wrecked vehicles and parts cars. Reuse "good" liquids, such as antifreeze.
- Place drip pans, large plastic sheets, or canvas under vehicles or equipment during maintenance and dismantling.
- Empty and clean drip pans and containers rather than leaving them full and open around the shop.
- Confine cleaning to a centralized station.
- Do not vent Freon to the atmosphere. Follow US Environmental Protection Agency (EPA) requirements for handling refrigerants.
- Store batteries indoors.
- If reclaiming used solvents, conduct operation indoors.
- Keep compressed gas tanks in good condition to prevent leaks or spills. Most tanks are made of steel so monitor them for rust as well.
• Do not pour liquids (including wash water) into floor drains, sinks, outdoor storm drain inlets or other storm drain or sewer connections.

**Body repair, sanding and painting**

• Enclose and contain sanding and painting activities in order to contain debris, such as by doing these activities in a booth, or indoors surrounded by plastic barriers or tarpaulins. This may already be required by other permits or regulations.
• Use high-efficiency equipment that delivers more paint to the target and less overspray.
• Allow a wet sanding area to dry before clean-up so you can use dry cleanup methods such as sweeping.

**Storage**

• Avoid accidentally mixing different types of wastes by using designated, labeled containers. Store indoors whenever possible.
• Keep tanks and containers in good condition, free of any visible leaks, structural damage or deterioration.
• Provide secondary containment for all drums, empty or used, and all above ground tanks.
• Use secondary containment for stored liquids such as oil, gas and antifreeze, as well as for lead acid batteries. Store indoors.
• Secondary containment valves should be kept in the "off" position and locked at all times, except when collected water is removed.
• Provide sufficient spacing or aisles for access during inspections.
• Keep cleanup equipment on hand to clean up spills immediately.
• Provide impervious surface for outdoor vehicle parking.
• Do not stockpile old tires. Use indoor tire racks.
• Recycle obsolete equipment before it has a chance to leak or rust.

**Improper connections to storm sewer**

• If it is unknown whether the sanitary water system and storm sewer system are connected, perform dye testing.
• Update facility schematics to accurately reflect all plumbing connections.
• Maintain and inspect the integrity of oil-water separator tanks; replace when necessary.

**Inspections**

• Regularly inspect fueling areas, vehicle and equipment maintenance and cleaning areas, and areas where vehicles and equipment are stored while awaiting maintenance. Inspect all storage containers and storage areas to detect potential leaks.
• Frequently inspect liquid storage tanks for leaks and wear. Check the foundation, connections, coatings, walls and piping system. Inspect piping systems (pipes, pumps, flanges, couplings, hoses, and valves) for failures or leaks. Perform preventative maintenance as needed.
• Check the storage yard regularly for filled drip pans; empty and clean drip pans and containers.
• Inspect vehicles and equipment regularly for leaks.

**Employee training**

• Train employees on proper sanding, painting, spraying techniques and use of spray equipment.
• Train employees on proper fueling and chemical transfer techniques.
• Train employees on proper collection, storage, reuse, recycling or disposal of batteries, oil, mineral spirits, antifreeze, mercury switches, refrigerants and solvents.
• Train employees in spill prevention, control, cleanup and materials management techniques.
• Train employees on good housekeeping measures including all SWPPP components.

**Cold climate considerations**

Minnesota experiences challenging climatic conditions that require thoughtful P2 design and operation. Cold weather, snow and ice result in extended storage of pollutants in the snowpack. The following P2 activities can help minimize the impact of cold climate on stormwater:

• Collect and remove debris from paved areas before snowfall to avoid collecting debris when plowing.
• Store materials away from areas where it could get mixed with snow and moved around when the area is plowed. Keep materials out of accumulated or dumped snow.
• Inspect tanks, containers, trailers and equipment throughout the winter to be sure they withstand the cold.
• Sweep sand, salt, and spilled materials from paved surfaces throughout the winter and before snow melts.
• Cover salt storage areas to help minimize contact with stormwater.
• Use judicious amounts of de-icing and anti-skid chemicals and road salt.
• Keep plowed snow out of retention ponds. This ensures the treatment capacity of the pond is available during snowmelt or rain on frozen ground.

**Stormwater treatment best management practices**

Stormwater treatment Best Management Practices (BMPs) are engineered structures that treat stormwater runoff or reduce the stormwater runoff rate, volume and velocity. In combination with P2 practices, stormwater treatment BMPs such as retention ponds act as a second line of defense against polluting downstream waterbodies. Treatment BMPs should be used down-gradient of areas where P2 activities have been fully implemented. Specific guidance on stormwater treatment BMPs is in the *Minnesota Stormwater Manual* and the *BMP Guidebook*, which are linked in the Resources section at the end of this fact sheet.

**Groundwater pollution potential**

Land transportation and warehousing facilities have the potential to contaminate groundwater with pollutants such as heavy metals, solvents, fuels, oil and grease in their stormwater runoff. One gallon of gasoline can contaminate hundreds of thousands of gallons of groundwater. Groundwater contamination is of greatest concern where there is a high water table and in karst regions. A water table that is close to the surface can allow pollutants to enter the groundwater system quickly. Karst is common in southeastern Minnesota and is largely shaped by the dissolving action of water on limestone. Over time, this creates features such as sinkholes, disappearing streams, complex underground drainage systems and caves. Water and pollutants can flow rapidly through these features to wells and streams.

Extra precautions to prevent groundwater contamination from land transportation and warehousing facilities in these areas include P2 measures such as more frequent inspections of leaks from equipment, regular and thorough inspections of storage tanks and delivery lines, physical barriers between industrial activities and permeable areas and moving as many vehicle and material storage areas indoors as possible. Stormwater treatment BMPs should be designed with sensitivity to local conditions.

**Resources**


Industrial stormwater webpages on the MPCA website at [http://www.pca.state.mn.us/industrialstormwater](http://www.pca.state.mn.us/industrialstormwater).


*Low Impact Development for Businesses* webpage on the MPCA website at [http://www.pca.state.mn.us/veiz7d0](http://www.pca.state.mn.us/veiz7d0).


*Minnesota Stormwater Manual* is available on the MPCA website at [http://stormwater.pca.state.mn.us](http://stormwater.pca.state.mn.us).


**More information**

For more information e-mail the MPCA’s industrial stormwater program at iswprogram.pca@state.mn.us or call the stormwater hotline at 651-757-2119 or 800-657-3804 (non-metro only).