



**Canadian  
Petroleum  
Products  
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pétroliers**

## **Best Management Practices**

# **Vehicle Wash Operations**

**Prepared by the Canadian Petroleum Products Institute (CPPI)**

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# 1.0 Introduction

This Best Management Practices (BMP) document is intended to assist operators of CPPI member company identified vehicle wash facilities to minimize effects of their operations on the quality of wastewater sent to sewers from their sites.

The Best Management Practice (BMP) is a document that, when adopted by a municipality into its by-law, provides an alternate and efficient sewer discharge management tool. Should there be any discrepancy between the BMP and applicable Federal and Provincial Acts and Regulations and/or Municipal By-laws, the Acts, Regulations and/or By-laws take precedence.

The types of vehicle washes covered by this document include commercial car and/or truck and/or heavy equipment wash facilities, plus any other washing of vehicle exteriors, i.e. tunnel washes, rollover washes, wand washes and “charity” hand washes. Volumes and flow rates of waste water generated by these different types of facilities will vary, as will the spill control and pollution prevention equipment that is in place.

## 1.1 Why is Effluent from Vehicle Wash Operations a Concern?

The wastewater from a vehicle wash is not generally contaminated. However, accumulated sediments may have contaminants that reach concentrations where the sludge is considered a regulated waste. In addition, the wastewater may include metals, elevated levels of oil and grease, and unacceptable levels of acidity or alkalinity.

# 2.0 Summary of Regulatory Requirements

## 2.1 Federal Government

Improper connections to sanitary or storm sewers, or runoff that could introduce substances to local watercourses, may be a violation of the *Federal Fisheries Act*. All wastewater should be directed to a sanitary sewer with only stormwater runoff allowed to enter the stormwater collection system.

## 2.2 Provincial Government

Provincial regulations require the reporting of all spills that could cause pollution. The regulations identify the substances and the minimum spill quantities that should be reported. It is important that facility staff understands these requirements and have ready access to spill report telephone numbers in the facility’s emergency response plan.

Provincial Fire Codes or Fuel Handling Codes specify storage, handling and identification requirements for petroleum products. They also contain requirements for spill prevention, containment and clean up.

Some provinces require that permits or approvals be obtained prior to installing equipment such as oil/water separators that discharge to storm sewers or directly to the environment.

The Provincial Occupational Health and Safety Acts or Regulations contain requirements for Workplace Hazardous Materials Information System (WHMIS) training including chemical labeling, storage and record keeping.

Provincial Waste Regulations require specific waste disposal and record keeping requirements for certain types of wastes. In the context of this BMP, the regulations may apply to petroleum products recovered during spill recovery or oil/water separator maintenance; to sludge removed from oil/water separators and to used sorbent materials.

## 2.3 Regional and Municipal Governments – Sewer Use By-laws

Municipal or regional governments have the authority to regulate discharges to sanitary and storm sewers within their boundaries. The intention of these by-laws is to protect:

- all aquatic receiving environments
- public health and safety
- sewage works
- wastewater treatment processes
- biosolids quality; and
- promote responsible waste management practices and pollution prevention (P2)

In many cases, the by-laws require that companies obtain a waste discharge permit to discharge wastewater into municipal sewers or file a report with the municipality describing its facilities.

## 2.4 Discharge Prohibitions

Vehicle wash operations should not discharge into the sewer non-domestic waste that contains:

- **Prohibited waste** – any material that could cause a fire or explosion, block the sewers, cause odours, or corrode or damage the sewer system
- **Special waste** – any material governed by the Provincial Regulation such as waste paint, flammable materials, acids and waste antifreeze
- **Uncontaminated water** in quantities greater than two cubic metres per day. (Uncontaminated water takes up valuable capacity that could be used to handle wastewater that needs treatment).
- **Restricted waste** as defined in the applicable municipal by-law (e.g. 50 mg/L for iron, 0.2 mg/L for total xylenes and 350 mg/L for total suspended solids).
- **Oil and grease** in a concentration exceeding 50 mg/L.
- **Waste water from engine cleaning**
- **Trucked liquid waste**
- **Carpet cleaner waste**
- **Recreational vehicle waste**
- **Wastewater from oily rag washing or cleaning**
- **Storm water** as defined by the by-law – i.e. rain, snow, sleet and hail. (The wash area should be designed to prevent storm water from outside the wash area and roof drains from flowing into the sewer connected to a sewage facility drain).
- **Contaminated ground water** as defined in applicable Provincial Regulations. (The disposal of treated groundwater generally requires a provincial permit or authorization).

## 2.5 Inspection and Maintenance of Sediment Pits and Oil/Water Separators

Most vehicle wash facilities have one or more sedimentation pits with a rare few having an oil/water separator. Inspection and maintenance efforts should adhere to the following:

- The sampling ports should be readily and easily accessible at all times. A sampling port may consist of a simple tee or an opening for a pump sampling tube.
- The sediment pits and oil/water separators should be inspected 4 times per year. The depth of bottom sludge and floating oils should be measured.
- The solids in the sedimentation pit(s) should not exceed 75 percent of the wetted height of the sedimentation pit. (As solids build up in the bottom of the pit, efficiency of the pit decreases and the chance of sludge passing through the interceptor increases.)
- Settled solids in the oil/water separator(s) should not be left to accumulate in excess of the lesser of 15 cm or 25 percent of the wetted height of the oil/water separator.
- Floating oil and grease in the oil/water separator(s) should not be left to accumulate in excess of the lesser of 5 cm or 5 percent<sup>1</sup> of the wetted height of the oil/water separator. Due to the volatile nature of some oils, solvents and fuels, these materials should not be left to accumulate as they can cause health and safety concerns. (Also, the efficiency of the interceptor decreases with increasing levels of floating material).
- The sediment pits and oil/water separators should be cleaned out within seven days if during inspection the measured amounts exceed the criteria noted in the three points above.
- Sediment pits and oil/water separators should be cleaned at least once every six months. Three compartment sediment pits and oil/water separators should be cleaned out at least annually regardless of the amount of oil or solids. This will ensure that sediment pits and oil/water separators receive at least a minimum level of maintenance on a regular basis.

When sediment pits and oil/water separators are cleaned, the oil and grease or solids should not be disposed of into the sewer connected to a sewage facility or in any location where it may be introduced to a storm sewer or a watercourse. Clean out should be done by a provincially licensed and approved waste collector.

- Hot water, detergents, solvents or any other chemical agents should not be used to flush oil out of the oil/water separator.

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<sup>1</sup> As the design and capacity of oil/water separators may vary, the manufacturer's maximum recommended levels may be used as alternative maximum floating oil and grease levels.

## 2.6 Spill Response

All vehicle wash operations should have an up-to-date and annually tested spill response plan.

- The spill response plan should be posted in a location readily accessible by facility staff, but because of contact name privacy issues, not visible to the general public. An appropriate quantity of clean-up equipment and supplies should be kept in stock at all times.
- All spills should be immediately cleaned up.
- If any spill of two litres or more gets into the sediment pits and oil/water separators, the sediment pits and oil/water separators should be immediately inspected and, if necessary, cleaned before resuming wastewater discharge from the operation.

## 2.7 Record Keeping and Retention

The operator of a vehicle wash operation will keep written records to document due diligence and to demonstrate that requirements of the BMP have been met.

Drawings for the sedimentation pit and oil/water separator should be available for inspection within three (3) working days. (Three days are allowed because some drawings are kept at regional or head offices as opposed to being on site). These documents should be retained for the entire time that the vehicle wash operation is in business.

Accurate and up-to-date records, sediment pit and oil/water separator inspections and maintenance procedures should be retained for a period of two years after the date of inspection and/or maintenance. The records shall include:

- dates of inspection or maintenance
- description of inspection or maintenance
- measured depth of settled material
- measured depth of floating material
- the type and quantity of material removed from the sediment pits and oil/water separators; and
- date of material transferred to each company or facility.

An operator shall retain on site or at the regional head office, for a minimum of two years after disposal date of any waste, a record of any waste disposed of off site. The record should contain the name of the disposal company, the date of disposal, the type and the quantity of wastes disposed. If an operation changes operators or owners, the outgoing operator shall provide the incoming operator with all applicable waste disposal records back for a minimum of two years.

Sample log sheets for sites with sediment pits and/or oil/water separators are included in the Appendix that follows. These may be changed to suit the facility or be substituted by another record keeping system.

## 3.0 Best Management Practices

Best management practices (BMPs) are activities developed to help operators reduce the amount of contaminants discharged to the environment, to comply with regulations and to improve overall waste management practices. BMPs are based on the pollution prevention (P2) principle, which emphasizes reducing or eliminating pollutants and toxic material at their source rather than removing them from a mixed waste stream. Preference should be given to practices highest in the following P2 hierarchy:

- Avoidance, elimination or substitution of polluting products or materials
- Reduction in the use of polluting products or materials
- Elimination and reduction of the generation of polluting by-products
- Re-use and recycling of polluting by-products
- Energy recovery from polluting by-products
- Treatment or containment of polluting residual by-products
- Remediation of contaminated sites.

The following BMPs will help vehicle wash operators decrease the quantities of contaminants entering the sewer system, comply with regulations, improve their operations and reduce costs through application of pollution prevention principles. Operators are encouraged to influence suppliers by requesting and purchasing less-toxic alternative cleaning products and buying from suppliers who accept materials and containers back for recycling.

### 3.1 Equipment and Materials

- Be knowledgeable of new and demonstrated technology because suppliers now consider environmental issues when designing and manufacturing their products.
- At new operations grade the site to prevent stormwater entering the sediment pits and oil/water separators.
- Use only biodegradable, low-phosphate content, water-based cleaners. Whenever possible, avoid the use of halogenated compounds, aromatic hydrocarbons, chlorinated hydrocarbons, petroleum-based cleaners or phenolics. (The presence of these substances can be checked in the MSDS sheets for each cleaner).
- Use pH 5.5 to 9.5 cleaners at the point of use (i.e. after dilution) to minimize dissolving metals. (Refer to MSDS).

### 3.2 Employee Education

- Ensure every employee is fully trained before beginning his or her first employment shift and whenever new equipment is installed or new procedures implemented. They should be familiar with the hazards that accompany the material they are using and be aware of potential sources of contamination (MSDS).
- Ensure employees are familiar with the site's layout and catch basin locations. Ensure they employ good housekeeping practices and understand proper reporting procedures.
- Ensure all employees are aware of the spill response plan and properly trained to carry it out.

- Document all employees' training and retain the records for a minimum of two years after the employee ceases employment, i.e. date and location of training, subject(s) covered, test results if applicable, trainer's name, etc.

### **3.3 Signage**

- At wand washes, there shall be signs which state that the wash area is for washing vehicle exteriors only and that other maintenance or cleaning activities such as oil changes and engine cleaning is prohibited. (Engine cleaning is prohibited in vehicle wash bay areas because solvents will remove oil and dirt from the engines that could enter the sewer).
- If engines and engine parts are washed on the premises, the wastewater produced should be collected in a separate holding tank and disposed of appropriately, as the water may be considered special waste. Such wastewater should not be discharged to the oil/water separator or to storm drains.
- At wand washes post signs indicating that no outside cleaning agents are allowed (as they may cause unknown chemical reactions and interfere with the sediment pits and oil/water separators).
- Never pour wastes into drains, into surface water, or onto the ground.
- Never hose down spills with water.

### **3.4 Chemicals Storage**

- Store materials such as detergents, other cleaning agents and machinery lubrication oils and greases in proper containers and identified with an appropriate MSDS compliant label. An up-to-date MSDS should be available for each product and employees should be knowledgeable of their content and how to access them at any time.
- Store flammable and combustible materials in fireproof cabinets or drums.
- Maintain an appropriate distance between different chemicals to prevent cross contamination and chemical reactions.

### **3.5 General Maintenance**

- Refer to the Stormwater Runoff from Petroleum Facilities BMP for surface drainage general maintenance.
- To ensure customers follow vehicle wash operation rules, post clearly worded signs in conspicuous locations.

### **3.6 Non-Hazardous Office Wastes**

- Choose products with the least packaging and the highest recyclable material content.
- Recycle regular office waste, waste paper, aluminum cans, newspaper, glass, cardboard and plastic containers wherever local recycling programs exist.
- If your facility shares property with other businesses, ask the property manager if there are recycling programs already established in the building.

## 4.0 Glossary of Terms

**Carpet cleaner waste:** A combination of water-carried liquid and solid wastes generated by carpet or furniture cleaning that is collected in a mobile holding tank or is discharged to a sewer, septic tank or holding tank.

**Contaminant:** A substance that is not naturally present in the environment or is present in elevated amounts, which, if in sufficient concentration, can adversely affect human health, flora, fauna and/or the environment.

**Code of practice (COP):** A regulatory document developed by the authority having jurisdiction and containing mandatory sanitary sewer discharge standards for specific industrial, institutional or commercial sectors.

**Effluent:** The liquid flowing out of a facility or household into a sewer system or water body.

**Heavy metals:** Metallic elements with high atomic weights, such as silver, iron, zinc, copper, lead, mercury, cadmium and arsenic. They are generally persistent in the environment, have the potential to accumulate in the food chain and in sewage treatment plant sludge, and can cause health effects in organisms.

**Milligrams per litre (mg/L):** The weight of a substance in milligrams in one litre of wastewater (may also be referred to as parts per million or ppm).

**Oil and grease:** An organic substance recoverable by procedures set out in *Standard Methods* or procedures authorized by the manager and includes, but is not limited to, hydrocarbons, esters, fats, oils, waxes and high-molecular weight carboxylic acids.

**Pollution prevention:** The use of processes, practices, materials and energy that avoid or minimize the creation of processing and other wastes.

**Sanitary sewer:** A collection system for domestic, commercial, institutional and industrial wastewater or any combination thereof.

**Sedimentation pit:** A single-stage pit or equivalent technology to remove a minimum of 99 percent of the grit and solids from wastewater prior to entry to an oil separation chamber of an oil/water separator or to the sanitary sewer.

**Special waste:** Any chemical, compound, mixture, substance or article as defined in the regulations of the authority having jurisdiction.

**Spill response plan:** A written plan developed for the operator to respond to any spills at a vehicle wash operation site. As a minimum, the plan should define the roles and responsibilities for spill response, contact names and numbers for the appropriate agencies, and a checklist of all spill response equipment.

**Standard Methods:** The latest edition of *Standard Methods for the Examination of Water and Wastewater* jointly prepared and published from time to time by the American Public Health Association, American Water Works Association and the Water Environmental Federation.

**Storm sewer:** A pipe, conduit, drain or other equipment or facilities for the collection and transmission of stormwater or uncontaminated water.

**Trucked liquid waste:** Any waste that is collected and transported from the site where the waste originated by means other than discharge to a sewer, but does not include septage waste, recreational vehicle waste, carpet cleaner waste, or ship and boat waste.

**Vehicle:** A vehicle as defined under the applicable jurisdiction's legislation, i.e. BC's Motor Vehicle Act as amended from time to time.

**Wastewater:** The spent or used water of a community or an industry.

**Wetted height:** The depth from the static water line to the bottom of the grease interceptor.



# Best Management Practices for Vehicle Wash Operations



The operator of a petroleum marketing facility has the responsibility to ensure compliance with all Federal, Provincial and Municipal Acts, Regulations and By-laws applicable to effluent discharges into sewer systems. To assist operators to minimize the risk of hazardous substances entering into sewer systems, Best Management Practices should be implemented. **The Best Management Practice (BMP) is a document that, when adopted by a municipality into its by-law, provides an alternate and efficient sewer discharge management tool. Should there be any discrepancy between the BMP and applicable Federal and Provincial Acts and Regulations and/or Municipal By-laws, the Acts, Regulations and/or By-laws take precedence.**

This information should be posted in a work area such that it is both conspicuous and readily accessible to all employees.



## Inspection and Maintenance of Sediment Pits and Oil/Water Separators

Most vehicle wash facilities have one or more sedimentation pits and a few may also have an oil/water separator. Inspection and maintenance of these sediment pits and oil/water separators should adhere to the following:

1. Sampling ports should be readily and easily accessible at all times.
2. The sediment pits and oil/water separators should be inspected 4 times per year and the depth of bottom sludge and floating oils should be measured.
3. The solids in the sedimentation pit(s) should not exceed 75 percent of the wetted height of the sedimentation pit. (As solids build up in the bottom of the pit the efficiency of the pit decreases and the chance of sludge passing through increases).
4. Settled solids in the oil/water separator should not be left to accumulate in excess of the lesser of 15 cm or 25 percent of the wetted height of the oil/water separator.
5. Floating oil and grease in the oil/water separator should not be left to accumulate in excess of the lesser of 5 cm or 5 percent<sup>2</sup> of the wetted height of the oil/water separator because the efficiency of the interceptor decreases with increasing levels of floating material. Due to the volatile nature of some oils, solvents and fuels, these materials should not be left to accumulate as they can cause health and safety concerns.
6. A sediment pit and oil/water separator should be cleaned out within seven days if during inspection the measured amounts exceed the criteria noted in the three points above.
7. When a sedimentation pit or an oil/water separator is cleaned, the oil and grease and bottom solids should not be disposed of into any sewer connected to a sewage treatment facility or at any location where it may be introduced to a storm sewer or a watercourse. Clean out should be done by a provincially licensed and approved waste collector.
8. Hot water, detergents, solvents or any other chemical agents should not be used to flush oil out of the oil/water separator.
9. At wand washes proper signage should be posted that informs people that engine washing and the disposal of oil, brake fluid, transmission fluid, antifreeze or other prohibited substances into a sewer connected to a sewage treatment facility is not allowed.

<sup>2</sup> As the design and capacity of oil/water separators may vary, the manufacturer's maximum recommended levels may be used as alternative maximum floating oil and grease levels.



## Spill Clean-up

1. All fuel spills should be immediately cleaned-up with rags or sorbents and disposed of according to applicable provincial regulations.
2. Rags used for spill clean up should be stored in closed containers awaiting collection and/or cleaning.
3. Sorbents used for spill clean up should be stored in closed containers awaiting disposal by a government licensed contractor.



## Vehicle Wash Chemicals and Soaps

1. Store vehicle wash chemicals such as detergents, waxes and other cleaning agents and machinery lubrication products in properly MSDS identified containers. An up-to-date MSDS should be available for each product and employees should be knowledgeable of their content and where to access them at any time.

