



Environmental Best Management Practices

Oil & Gas Operations and Support Services Sector



For more information about Alberta Capital Region Wastewater Commission (ACRWC) and ACRWC's Source Control Program please visit ACRWC's website at www.acrwc.ab.ca

Table of Contents

1. Introduction
 - 1.1. Background
 - 1.2. Codes of Practice
 - 1.3. What are Petroleum Hydrocarbons
 - 1.4. What are Volatile Organic Compounds
 - 1.5. Why it is Important to Remove Petroleum Hydrocarbons/Volatile Organic Compounds from the Wastewater System
 - (i) How to Capture Hydrocarbons/ Volatile Organic Compounds
 - 1.6. Benefits of a Code of Practice
2. Summary of Regulatory Requirements
 - 2.1. Federal
 - 2.2. Provincial
 - 2.3. Regional
3. Applicability
4. Mandatory Requirements
 - 5.1 Discharge Regulations
 - 5.2 Monitoring
 - 5.3 Storage and Containment
 - 5.4 Spill Response Plans
 - 5.5 Record Keeping and Retention (Mandatory Requirements)
5. Best Management Practices
 - 5.1. Pretreatment
 - 5.2. Monitoring
 - 5.3. Spills
 - 5.4. Waste Oil
 - 5.5. Equipment, Engine and Parts Cleaning and Degreasing
 - 5.6. Facilities
 - 5.7. Storage
 - 5.8. General Maintenance
 - 5.9. Documentation
 - 5.10. Employee Education
 - 5.11. Environmental Certification
6. Code of Practice Implementation Plan
 - 6.1. Inspections, Monitoring and Enforcement
7. Glossary of Terms and Acronyms
8. Acknowledgements and References

1. INTRODUCTION

The Alberta Capital Region Wastewater Commission's (ACRWC) Source Control program has identified Oil & Gas Operations and Support Services Industrial, Commercial and Institutional (ICI) facilities as a significant contributor of contaminants to the region's sanitary sewer system. Hundreds of Oil & Gas related ICIs operating within the Alberta Capital Region have the potential to discharge industrial wastewater laden with petroleum hydrocarbons and other contaminants, which may be volatile, flammable or even explosive in nature, into municipal sanitary sewer systems.

An Oil & Gas Operations and Support Services ICI is defined as any business with operations including but not limited to:

- Oil and gas upgrading, refining or distribution
- Oilfield services,
- Bulk liquid products transport,
- Waste recycling,
- Industrial laundering,
- Heavy-duty vehicle and/or equipment washing and/or servicing.

This document serves as a guide to the environmental regulations that apply to Oil & Gas Operations and Support Services ICIs operating in one or more of ACRWC's thirteen member municipalities. It also provides information on best management practices and serves to assist operators in meeting these regulations and improving their overall environmental performance.

1.1. BACKGROUND

To protect aquatic environments, public health and safety, sewage works, wastewater treatment processes and control biosolids quality, federal and provincial governments have regulations that limit the quality and quantity of substances of concern discharged into the environment via municipal sewer systems. As a result, municipalities have by-laws that control the quality and quantity of substances discharged into their sanitary and stormwater sewer systems by waste generators or "point sources" within their jurisdictions. Most municipalities undertake some form of treatment before wastewater from sanitary sewer systems is discharged into marine environments such as creeks, rivers, lakes and oceans. Wastewater that enters stormwater sewers does not generally receive treatment before being discharged into a watercourse. It is not important that operators understand how substance limits are established but rather that they do everything practical to reduce the quantity and types of substances discharged into sewers.

(Canadian Fuels Association (formerly Canadian Petroleum Products Institute) Best Management Practices)

ACRWC invited the City of Edmonton's Drainage Branch (Regulatory Services Division) to participate in a stakeholder engagement process. Fifteen regional Oil & Gas Operations and Support Services Sector ICIs of varying size and type with a range of experiences managing and treating their wastewater discharges were asked to provide input toward the development of a Code of Practice (COP). This process was comprised of a combination of one-on-one interviews, questionnaires and a stakeholder workshop.

1.2. Codes of Practice (COP)

In many cases, companies require a wastewater discharge permit to discharge industrial, commercial or institutional (ICI) wastewater into the municipal sanitary sewer system. However, the ACRWC's Bylaw No. 8 – Quality of Wastewater also provides for the discharge of certain types of wastewater under industry-specific COPs.

A COP is a regulatory document, developed by ACRWC, which contains mandatory requirements for specific ICI sectors. COPs set out minimum effluent treatment, equipment maintenance, hazardous wastes containment, spill response, discharge monitoring and record-keeping requirements for various sector operations. A business or organization operating under an approved COP may not require a wastewater discharge permit under the ACRWC bylaw. However, ICIs that discharge restricted waste, as defined in the bylaw, must also operate under a wastewater discharge permit. ACRWC reserves the right, if deemed necessary, to require any Oil & Gas and Support Services operation to obtain a wastewater discharge permit because of circumstances not covered under the COP. All other terms and conditions of the bylaw apply to the discharge to the municipal sanitary sewer system.

Any discrepancy between the COP and applicable Federal and Provincial Acts and Regulations and/or Municipal By-laws, the Acts, Regulations and/or By-laws take precedence.

COPs are available on ACRWC's website and are referenced within ACRWC's Bylaw No.8 – Quality of Wastewater.

1.3. What are Petroleum Hydrocarbons

Total Petroleum Hydrocarbons (TPH) are a large family of several hundred chemical compounds that originated from crude oil, which are used to make petroleum products (typical examples being fuels, motor oils and solvents). TPHs are an analytically defined, unclassified mixture of petroleum hydrocarbon constituents that are a subset of total oil and grease (includes animal, vegetable, and petroleum-based Fats, Oils, and Grease (FOG)). Because the chemical makeup of TPH is variable and dependent on the nature of the source (i.e. operations and effluent of ICI), the physio-chemical and toxicological properties are also variable.

Note: Laboratory testing is usually conducted under the parameter names Total Petroleum Hydrocarbons or Total Recoverable Hydrocarbons or Oil & Grease – Mineral & Synthetic (not to

be confused with Total Oil & Grease which is comprised of Oil & Grease – Animal & Vegetable + Oil & Grease – Mineral & Synthetic).

1.4. What are Volatile Organic Compounds (VOCs)

The US EPA (2004) defines VOCs as “...a large group of organic chemicals that include any compound of carbon (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate) and that participate in atmospheric photochemical reactions.” Common VOCs include formaldehyde, toluene, benzene, xylene, and perchloroethylene, and are potentially harmful to humans. Vapours of VOCs are a major concern because they can be toxic and carcinogenic, and may produce acute and chronic health effects after various periods of exposure. (US EPA 2004)

1.5. Why it is Important to Remove Petroleum Hydrocarbons/Volatile Organic Compounds (VOCs) from the Wastewater System

Some discharges can be highly toxic even in very low concentrations or can lead to a flammable or even explosive environment within the municipal sewer systems, thus placing ICI and municipal workers’ health and safety at risk, ICI and municipal infrastructure at risk and jeopardizing municipal biological wastewater treatment processes. While a single ICI operation might contribute only small quantities of petroleum hydrocarbons/VOCs to a sewer system, collectively all operations can be a significant contributor. Therefore, control of these substances at the source to comply with municipal bylaws is paramount for the protection of human health, the environment and structural integrity of the sewer system.

i. How to Capture Hydrocarbons/VOCs

Equipment and systems of varying complexity are available to pretreat wastewater containing petroleum hydrocarbons/VOCs prior to discharging to the sanitary sewer system. Some of the more common devices are in-ground sumps, oil-water separators and Dissolved Air Floatation (DAF).

1.6. Benefits of a Code of Practice (COP)

i. Benefits to ACRWC and its thirteen (13) Member Municipalities

To enable the provision of safe, reliable, and environmentally responsible wastewater collection, transmission and treatment services to the Alberta Capital Region by:

- Helping ICIs reduce their environmental impact
- Preventing poor quality discharge into the regional watershed
- Eliminating the discharge of toxic, flammable or explosive materials into the wastewater flow to protect the health and safety of the public, municipal utility employees and to protect municipal infrastructure.

- Reducing the amount of contaminants (TPH/VOC) being discharged to the regional wastewater treatment plants which in turn reduces poor quality discharge into the watershed

ii. Benefits to Industry

Benefits to industry include: environmental stewardship; protection of the health and safety of their employees and the public; protection of municipal and their own infrastructure and avoidance of costly fines.

2. SUMMARY OF REGULATORY REQUIREMENTS

2.1. Federal

The Canadian government has no specific requirements for the management of wastewater from Oil & Gas and Support Services ICIs. However, regulations adopted under federal enactments such as the Transportation of Dangerous Goods Act contain provisions that apply to the general transportation and handling of hazardous materials. The Canadian Environmental Protection Act gives Environment Canada the power to regulate substances that have been declared toxic as defined in the Act. Where import or export of hazardous waste occurs, the Export and Import of Hazardous Waste Regulations under the Canadian Environmental Protection Act would apply.

2.2. Provincial

Alberta's Release Reporting Regulation (117/1993) under the Environmental Protection and Enhancement Act and supporting document, "A Guide to Release Reporting," requires that any release of a substance into the environment that could cause an adverse effect be reported to Alberta Environment. The Release Reporting Regulation sets out what must be reported, when, how and to who reports must be made.

Alberta's Waste Control Regulation (192/1996) under the Environmental Protection and Enhancement Act and supporting document regulates the generation, storage, treatment, recycling and disposal of hazardous wastes to the environment. Schedule 1 of the regulation identifies the properties of Hazardous Wastes and refers to the supporting document Alberta User Guide for Waste Managers.

Alberta's Environmental Quality Guidelines for Alberta Surface Waters contains provisions for the protection of aquatic life (PAL). As aquatic species are typically immersed in the aquatic environment for all or part of their life cycle, PAL guidelines are often more stringent than for other water uses, including drinking water. PAL guidelines are a tool in environmental protection and in keeping with the *Environmental Protection and Enhancement Act*, are meant to apply to all surface waters. The *Act* defines surface waters as "...water in a watercourse.."

and includes standing and flowing waters, both natural and man-made. (*Alberta's Environmental Quality Guidelines for Alberta Surface Waters*)

Effluent from the two regional municipal wastewater treatment plants is discharged directly to the North Saskatchewan River, thus ACRWC's bylaw takes the Environmental Quality Guidelines for Alberta Surface Waters into account when setting prohibitions and restrictions. The regional treatment plants do not have the ability to treat toxic nor hazardous waste discharges from regional ICIs into a municipal sanitary system, thus these ICI discharges should be considered as an indirect discharge to the environment.

The AB Fire Code specifies storage, handling and identification requirements for flammable and combustible materials, including solvents. This regulation also contains requirements for spill containment and clean-up.

The Province of Alberta's Plumbing Code Regulation (119/2007) under the Safety Codes Act specifies standards for the design and installation of plumbing systems.

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

2.3. Regional

The Alberta Capital Region Wastewater Commission Regulation 129/1985 under the Municipal Government Act establishes ACRWC as a regional services commission providing wastewater transmission and treatment services to the following member municipalities:

City of Fort Saskatchewan; City of Leduc; City of Spruce Grove; City of St. Albert; Leduc County; Parkland County; Strathcona County; Sturgeon County; Town of Beaumont; Town of Bon Accord; Town of Gibbons; Town of Morinville; and Town of Stony Plain.

ACRWC's Bylaw No.8 - Quality of Wastewater regulates discharges into ACRWC's regional wastewater transmission and treatment system. Subsequently, ACRWC's thirteen member municipalities' Sewer Use/Utility Bylaw's reflect the requirements and prohibitions of ACRWC's Bylaw and regulate discharges into their respective wastewater collection systems which all discharge into ACRWC's regional system.

ACRWC's Bylaw outlines controls for the discharge of pollutants to the sewer system with objectives to:

- Protect the sewer system from corrosion, other damage and obstruction.
- Protect the wastewater treatment plant process from upset.
- Protect the public, Commission and municipal workers and property from hazardous conditions (such as explosions).
- Protect wastewater biosolids quality.

- Protect the environment from contaminants that are not removed by the Alberta Capital Region Wastewater Treatment Plant or the Goldbar Wastewater Treatment Plant.

ACRWC's Source Control program focuses on ICI inspections and monitoring, communication and education activities, and compliance to ACRWC's and its member's bylaws.

Municipal plumbing bylaws also specify requirements for installation and maintenance of plumbing and drainage equipment.

3. APPLICABILITY

3.1. The Oil & Gas Operations and Support Services Sector COP, available on ACRWC's website and referenced within ACRWC's Bylaw No.8 – Quality of Wastewater, prescribes conditions governing the discharge of wastewater from Oil & Gas Operations and Support Services directly or indirectly into one or more of ACRWC's thirteen member municipalities' sanitary sewer system.

3.2. This document (Environmental Best Management Practices for Oil & Gas Operations and Support Services Sector) also provides guidance to Oil & Gas Operations and Support Services ICIs in the form of Best Management Practices on how to reduce their discharge of Petroleum Hydrocarbons/VOCs into the municipal sanitary sewer system.

4. MANDATORY REQUIREMENTS

This section mirrors the content of the regulatory requirements of the Oil & Gas Operations and Support Services Sector COP. If there is any discrepancy between the information within this section and the COP, the COP will take precedence.

4.1. DISCHARGE REGULATIONS

4.1.1. An operator of an Oil & Gas Operations and Support Services ICI discharging to the sanitary sewer system shall not discharge wastewater which, at the point of discharge into a sewer, contains:

- (a) Prohibited waste as set out in Schedule "A" of ACRWC's Bylaw No. 8;
- (b) Restricted waste as set out in Schedule "B" of ACRWC's Bylaw No. 8 without a Wastewater Discharge Permit;
- (c) Water that accumulates in any fuel or oil storage tank without pretreatment prior to discharge so as to adhere to the requirements of subsections (a) and (b); or
- (d) Rinse water from equipment or parts that have been washed in solvent

- (e) Wastewater contaminated with hazardous wastes from rag, linen or other fabric washing or cleaning;
- (f) Wastewater from engine or equipment washing or cleaning without pretreatment prior to discharge so as to adhere to the requirements of subsections (a) and (b); or
- (g) Stormwater or groundwater, whether it be contaminated or not, into a sanitary sewer unless permitted to do so by a Wastewater Discharge Permit.

4.1.2. An operator of an Oil & Gas Operations and Support Services ICI discharging to the sanitary sewer system shall:

- (a) After January 1, 2019, not discharge wastewater into a sewer unless equipped with one or more oil-water separators to pretreat the wastewater in accordance with this COP.
- (b) After January 1, 2019, use an alternate pretreatment works, or a combination of pretreatment works other than that described in this COP, to pretreat wastewater if the alternate pretreatment works produces effluent that complies with Section 4.1.1 prior to discharge into a municipal sanitary sewer and where valid analytical test data has been submitted to, and accepted by, ACRWC.
- (c) After January 1, 2019, direct all process wastewater to one or more pretreatment works referred to in Sections 4.1.2(a) and 4.1.2(b), before discharge into a municipal sanitary sewer.
- (d) Ensure that all wastewater from washrooms, non-industrial washing machines and change rooms bypasses the pretreatment works.
- (e) Not use, or allow the use of, chemical agents, solvent-containing products, hot water or other agents with the intention of facilitating the passage of oil and grease through a pretreatment works.
- (f) After January 1, 2019, equip the pretreatment works with a monitoring point located either at the outlet of the pretreatment works or downstream of the pretreatment works at a location upstream of the point of discharge of other wastewater; and
- (g) Locate the pretreatment works so that they are readily and easily accessible for inspection and maintenance.

- (h) While operating an oil-water separator, not permit the floating oil and grease to accumulate in the final stage chamber of the oil-water separator in excess of the lesser of 5 cm or 5% of the wetted height of the oil-water separator or in adherence to the manufacturer's recommended levels.
- (i) While operating an oil-water separator, not permit the settled solids to accumulate in the final stage chamber of the oil-water separator in excess of the lesser of 15 cm or 25% of the wetted height of the oil-water separator or in adherence to the manufacturer's recommended levels.
- (j) While operating an oil-water separator, inspect the oil-water separator and measure the accumulated solids and floating oils at least once every three months to check the levels specified under Sections 4.1.2(h) and 4.1.2(i).
- (k) Clean out an oil-water separator within seven days of determining that the levels specified under Sections 4.1.2(h) or 4.1.2(i) have been exceeded.
- (l) Clean out an oil-water separator at least once every 12 months.
- (m) When the oil/water separator is cleaned, the oil and grease or solids shall not be disposed of directly or indirectly into the municipal sewer system or in any place where it may be introduced to a storm sewer or a watercourse.

4.2. MONITORING

4.2.1. An operator of an Oil & Gas Operations and Support Services ICI discharging to the sanitary sewer system shall:

- (a) At their expense, conduct quarterly sampling of wastewater effluent to analyze the concentration (mg/L) of Oil & Grease – mineral and synthetic/petroleum hydrocarbons. Quarterly samples shall be obtained at least 60 days apart.

Change in sampling frequency

The sampling frequency set out in section 4.2.1.(a) can be reduced to annually if 4 consecutive quarterly samples tested do not exceed the Restricted waste limit for Oil and Grease – Mineral and Synthetic/Petroleum Hydrocarbons as set out in Schedule 'B' Table 'B' of ACRWC's Bylaw No. 8.

- (b) At their expense, conduct annual sampling of wastewater effluent to analyze the concentration (mg/L) of BTEX (Benzene, Toluene, Ethylbenzene and Xylene) and flashpoint (°C - closed cup method). Annual samples shall be obtained at least 6 months apart.

- (c) Conduct sampling in accordance with Section 4 Sampling of the ACRWC Bylaw No. 8 – Quality of Wastewater.
- (d) For a period of two years, maintain documentation of the date and time all samples are collected, the method used, the names of the staff involved in the collection, the volume obtained and any other relevant information.
- (e) For a period of two years, maintain written or electronic records of test results of the sampling.
- (f) Report test results to ACRWC by email at discharge@acrwc.ab.ca on an annual basis.
- (g) Report to ACRWC by email at discharge@acrwc.ab.ca within seven days of determining the Restricted waste limit has been exceeded for:
 - Oil and Grease – Mineral and Synthetic/Petroleum Hydrocarbons and/or BTEX as set out in Schedule ‘B’ Table ‘B’ of ACRWC’s Bylaw No. 8. ; and/or
 - Flashpoint as set out in Schedule ‘B’ Table ‘D’ of ACRWC’s Bylaw No. 8..

4.2.2. More frequent and/or additional sampling may be required as a condition under a Wastewater Discharge Permit issued in accordance to Section 18(3) of ACRWC’s Bylaw No.8.

4.3. STORAGE AND CONTAINMENT

4.3.1. An operator of an Oil & Gas Operations and Support Services ICI must ensure that the following materials are stored using spill containment that will prevent the release of spilled material from entering into a municipal sanitary sewer system:

- (a) Wastewater containing used solvent, used antifreeze, used oils, used oil filters, used engine and transmission fluids;
- (b) Above ground oil or fuel storage tanks; and
- (c) Any hazardous waste or hazardous recyclable as defined in provincial (Alberta) legislation as referenced in Section 2.2.

4.3.2. An operator of an Oil & Gas Operations and Support Services ICI must supervise the discharge of accumulated stormwater from a spill containment system to ensure that the discharge does not bypass the pretreatment works.

4.4. SPILL RESPONSE PLANS

4.4.1. An operator of an Oil & Gas Operations and Support Services ICI must:

- (a) Have a spill response plan.
- (b) If commencing operation after the date this code of practice comes into effect, prepare a spill response plan at least 30 days prior to commencing operation.
- (c) Have the spill response plan required under Sections 4.4.1(a) or 4.4.1(b) available on the premises of the operation.
- (d) In the event of a spill, immediately carry out the provisions of the spill response plan, when safe to do so, to prevent or discontinue the discharge of spilled material into a sewer.
- (e) As part of a spill response plan, inspect any pretreatment works for spilled material immediately after having knowledge of the spill.
- (f) When observing spilled material in the pretreatment works during an inspection under Section 4.4.1(e) have the spilled material removed before resuming wastewater discharge from the operation.
- (g) Maintain the spill prevention, clean-up equipment and supplies identified in the spill response plan specified in Sections 4.4.1(a) or 4.4.1(b) and have them readily available for use at all times.

4.5. RECORD KEEPING AND RETENTION

4.5.1. An operator of an Oil & Gas Operations and Support Services ICI who installs one or more pretreatment works must keep a record at the premises of the operation of all inspection and maintenance activities for the pretreatment works, including the:

- (a) Date of inspection or maintenance;
- (b) Description of inspection or maintenance conducted;
- (c) Measured depth of settled material and depth of floating material in the oil-water separator, as required in Sections 4.1.2(h) and 4.1.2(i);
- (d) Quantity and description of material removed from the pretreatment works; and

(e) Name, civic and postal address, and telephone number of the disposal or recycling company or facility collecting or transporting the material removed from the treatment works.

4.5.2. An operator of an Oil & Gas Operations and Support Services ICI who installs pretreatment works must keep records of the pretreatment works design calculations and drawings available for inspection at the request by ACRWC and/or member municipality.

4.5.3. The design drawings required under Section 4.5.2 must show the point of connection of the treatment works to the sanitary sewer.

4.5.4. An operator of an Oil & Gas Operations and Support Services ICI must keep a record at the premises of all disposal or recycling services for wastewater and other substances specified in Section 4.1.1 to be disposed or recycled, including the:

(a) Name, civic and postal address, and telephone number of each disposal or recycling company or facility used;

(b) Type of material transferred to each company or facility;

(c) Quantity of material transferred to each company or facility; and

(d) Date of material transferred to each company or facility.

4.5.5. The records required under Sections 4.5.1 and 4.5.4 must be retained for a period of two years and must be available for inspection on request by ACRWC and/or member municipality.

5. Best Management Practices (BMPs)

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. BMP's emphasize reducing or eliminating pollutants and toxic materials at their source rather than removing them from a mixed waste stream. Preference should be given to practices highest in the following 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
- Reuse 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 have been developed to help Oil & Gas and Support Services ICIs decrease the amounts of contaminants entering a sewer system or septic system, comply with regulations, improve their operations and save money through applications of pollution prevention principles. Operators are also 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.

5.1. Pretreatment

- Common pretreatment devices used to manage the discharge from Oil & Gas Operations and Support Services ICIs include but are not limited to simple in-ground sumps, various styles of oil-water separators, Dissolved Air Flotation (DAF) devices, and innovative solutions involving skimmers and water recycling.
- Experience and stakeholder feedback demonstrate there is no single pretreatment solution for all applications. Solutions to remove targeted contaminants (Petroleum Hydrocarbons and Volatile Organic Compounds) are as diverse as the companies that need to treat the water. Variables such as the type of operation, volume of wastewater discharge, and the source, type and amount of targeted and other contaminants in the wastewater discharge combine to create distinct situations that require unique solutions. Thus it is recommended to seek out technical expertise, both in-house and via environmental consultation, to ensure the design, installation, operation and maintenance of a pretreatment system will meet the requirements of the regional bylaws and the Oil & Gas Operations and Support Services Sector COP.
- Documents obtainable from the United States Environmental Protection Agency (US EPA) and Canadian Fuels Association (formerly Canadian Petroleum Products Institute (CPPI)) for best available technology and management practices specific to categorical or industrial sectors should provide the necessary level of detail for ICIs to achieve 25 to 100 mg/L Total Petroleum Hydrocarbons concentrations in their discharge.
- Education, inspection and proper maintenance of any pretreatment technologies employed is critical to minimizing petroleum hydrocarbon and VOC concentrations and the associated risks to collection systems and human health.
- It should be expected that the performance of a properly operated and maintained three-chamber oil-water separator with a minimum volume of two cubic meters and a minimum two-hour retention time based on the maximum expected flow should meet the bylaw limit of 100 milligrams per litre (mg/L) for Oil and Grease – Mineral and Synthetic/Petroleum Hydrocarbons.

- Pretreatment monitoring points described in subsection 4.1.2(f) should be installed and be of the same diameter as the pretreatment works outlet pipe so that the monitoring point opens in a direction at right angles to, and vertically above, the flow in the sewer pipe.
- Inspect the oil/water separator immediately after clean out to ensure that it has been properly cleaned and that the water level has been restored.
- Compartment covers should be tightly closed to ensure that all floor drainage is directed to the first compartment of an in-floor sump.

5.2. Monitoring

- Composite samples are preferred over grab samples.
- A composite sample may be collected by automated or manual means. If manual collection is used, it shall be based on a time proportionate composite sample composed of at least one sample every two hours.
- Composite samples will normally be obtained on a time proportionate basis but may be obtained on a flow proportionate basis. In either case, the composite sample must be representative of the discharge to the municipal sewer system.
- Sampling shall occur at a representative sample point as described in Section 4.1.2(f).
- For the purpose of determining if a hazardous waste is being discharged, a sample may be taken at any point of discharge to a private drainage system connected to the municipal sanitary sewer system.

5.3. Spills

- Ensure the spill response plan's procedures for clean-up are followed.
- Designate two containers: one for partially-saturated rags to be reused and one for saturated rags to be disposed. Wring out saturated rags (recycling the collected material if possible) before disposal. Used rags may be considered a hazardous waste, so do not throw them into the garbage. Have a waste disposal company dispose of the used rags, floor sweepings, absorbent pads and towels. If laundering is done, use a professional laundry facility that has appropriate pretreatment works.

5.4. Waste Oil

- Properly dispose of waste oil and any oil filters containing greater than 3 percent oil (by weight) as they are considered hazardous wastes. Mechanical repair waste oil includes crankcase, gear and metalworking oil, and transmission and hydraulic fluid.
- Puncture oil filters and allow them to drain for 24 hours prior to recycling. To avoid injury, only use a puncture tool designed for this task. Store used filters in a separate labelled container.
- Keep waste oil in a separate, marked, watertight, rodent-proof container in a secure place prior to recycling. Make sure tanks or drums have proper containment (secondary containments such as double walled tanks or containment berms) in case of spills or leaks. Refer to Section 4.3. If the storage area is exposed to traffic, ensure that it is protected from vehicle contact (bollards or other).

5.5. Equipment, Engine and Parts Cleaning and Degreasing

- Collect any equipment, engine and parts cleaning wastewater for reuse, recycling or for treatment and disposal as some cleaning procedures utilize toxic solvents to remove oil and dirt.
- Do not allow the wash area to drain to sanitary or storm sewers or a septic system.
- Consider steam cleaning using small amounts of detergent as an alternative method for cleaning.
- If your facility is using hazardous solvents in your equipment, engine and parts washing systems, consider replacing your solvents or degreaser with a non-hazardous substitute. Spent solvents are dangerous to workers because they can be toxic and they can emit harmful fumes.
- When not in use, cover all solvent cleaning tanks and close their drain plugs. Solvent losses due to inappropriate usage, equipment leaks, spills and evaporation can be up to 40 percent of total solvent usage.
- Reduce the need to dispose of or replace dirty solvent by increasing the degree of cleaning efficiency. Pre-clean parts in a container with a squeegee, rag or wire brush before soaking them in a parts washer.
- Do not change the solvent until it is necessary to do so. Consider having two tanks – one with old solvent to pre-soak and remove most of the dirt and grease and one with new solvent. This will extend the life of the solvent bath.

- Avoid chlorinated solvents and other solvents with a specific gravity greater than 1.0 (check Safety Data Sheet (SDS) for details). Aqueous or alkaline cleaners may be substituted for solvent-based cleaners in some applications, particularly for non-aluminum parts.
- Use spray cleaners only when parts cannot be removed from a vehicle or equipment and the placement of a cleaning sink or a pan under the part to catch drips is not possible.
- Consider replacing any solvent sinks with an aqueous-based parts washing system. Two methods are immersion with agitation (ultrasonic or mechanical) and pressurized jet-spray washers using heat and a caustic detergent to physically and chemically remove organic and inorganic contaminants.

5.6. Facilities

- Do not dispose of any facility wastes into a storm drain, septic tank, onto the ground or into surface water.
- Place drip pans underneath equipment and vehicles when performing maintenance such as removing parts, unscrewing filters and unclipping hoses. Do not leave drip pans or other open containers lying around.
- Place dirty parts in drip pans instead of on the floor.
- Never hose down spills with water.
- If the facility floor is to be washed, first wipe up all spills and do not use hot water or detergents as this causes oil and grease to emulsify and thereby not float to the surface for skimming off in pretreatment devices.

5.7. Storage

- All materials should be stored in the proper containers with the correct label in accordance with WHMIS procedures. Up-to-date SDS should be kept for each product.
- If your facility's towels contain solvents, store them in a double-bottomed drum to allow the solvent to drain so that it can be collected for reuse, recycling or disposal.
- Store materials and wastes indoors or under cover whenever possible to prevent moisture from seeping into the container. The storage areas should be locked and fenced if vandalism is a problem.

- Store flammable and combustible materials in fireproof cabinets.
- Ensure separate storage of incompatible chemicals to prevent cross contamination and chemical reactions.

5.8. General Maintenance

- Repair or replace all substantially cracked or otherwise damaged paved areas that can be contaminated by fluid leaks and spills.
- Inspect and clean all storm drain inlets on site regularly, especially after heavy storms.
- Perform frequent inspections for structural integrity of items such as piping, valves, controls, joints, welds, tanks, roofs, pavement or other areas of potential leaks and spills.
- Use a reputable waste hauler who will dispose of your wastes, recyclables and catch basin and oil/water separator wastes (or other pretreatment device) legally. If hazardous waste is dumped illegally, you may be held responsible.

5.9. Documentation

- Develop and maintain schematics for each process that generates wastewater. Schematics should include piping, instrumentation and pretreatment details.
- Develop and maintain procedures on how to operate and maintain wastewater processes (especially pretreatment devices).
- Develop and maintain records to demonstrate proper operation and maintenance of wastewater processes.

5.10. Employee Education

- Ensure employees are trained whenever new equipment is installed or new procedures are implemented. They should be familiar with the hazards associated with the material they are using and be aware of potential sources of contamination.
- Make sure employees are aware of the spill response plan and are properly trained to carry it out.
- Maintain awareness of best available technology, as many companies now consider environmental issues when designing and manufacturing their products.

- Maintain records of all employee-training.

5.11. Environmental Certification

Organizations of all kinds are increasingly concerned with achieving and demonstrating sound environmental performance by controlling the impacts of their activities, products and services on the environment. They do so in the context of increasingly stringent legislation, the development of economic policies and other measures that foster environmental protection, and increased concern expressed by interested parties about environmental matters and sustainable development.

Many organizations have undertaken environmental “reviews” or “audits” to assess their environmental performance. On their own, however, these “reviews” and “audits” may not be sufficient to provide an organization with the assurance that its performance not only meets, but will continue to meet, its legal and policy requirements. To be effective, they need to be conducted within a structured management system that is integrated within the organization.

Registration to the International Standard ISO 14001- Environmental Management Systems enables an organization to develop and implement a policy and objectives which take into account legal requirements and information about significant environmental aspects. ISO 14001 is intended to apply to all types and sizes of organization and to accommodate diverse geographical, cultural and social conditions. A system of this kind enables an organization to develop an environmental policy, establish objectives and processes to achieve the policy commitments, take action as needed to improve its environmental performance and demonstrate the conformity of the system to the requirements of the Standard. The overall aim of this Standard is to support environmental protection and prevention of pollution in balance with socio-economic needs.

(ISO 14001:2004 - International Standard for Environmental Management Systems)

6. CODE OF PRACTICE (COP) IMPLEMENTATION PLAN

The implementation plan for ACRWC COPs includes the following components:

- education
- inspection
- monitoring
- enforcement
- administration
- review

ACRWC’s Source Control staff and/or member municipality staff will carry out activities related to each component in partnership with each code sector.

6.1. Inspections, Monitoring and Enforcement

ACRWC's Source Control staff and/or staff from the applicable member municipality may carry out inspections, examine records or other documents, and take samples of effluent for analysis as specified under the ACRWC Bylaw No.8 – Quality of Wastewater and the applicable member municipality's utilities/sewer use bylaw. Compliance sampling may also be conducted at any time on the effluent from operations regulated under a COP. Repeat sampling may be necessary if non-compliance with the COP is suspected or high contaminant concentrations are detected in previous samples. In addition to ACRWC or member municipality staff sampling, self-monitoring by ICIs is also prescribed within some COPs.

A cooperative, gradually-escalating approach to enforcement will be used for all ACRWC source control COPs. Both administrative violations and wastewater discharge violations shall be considered. This approach will be established in an enforcement policy to be approved by the ACRWC Board of Directors. ACRWC's Board is comprised of one elected official from each of ACRWC's thirteen member municipalities.

Where cooperative efforts to achieve compliance using the enforcement policy have failed, fines and/or abatement of wastewater flows may be issued under the applicable member municipality's bylaws.

7. GLOSSARY OF TERMS AND ACRONYMS

Alberta Capital Region Wastewater Commission (ACRWC). A regional services commission that provides wastewater transmission and treatment services to thirteen member municipalities surrounding the City of Edmonton.

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 flora, fauna and/or the environment.

Code of Practice (COP). A regulatory document developed by ACRWC that contains mandatory sanitary sewer discharge standards for specific industrial, commercial or institutional sectors.

Effluent. Liquid flowing out of a facility or household into a sewer system or water body.

Hazardous waste. Any chemical, compound, mixture, substance or article as defined in the Alberta Waste Control Regulation and the Alberta User Guide for Waste Managers.

ICI - Industrial, Commercial, Institutional

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 – Mineral and Synthetic/Petroleum Hydrocarbons. An organic substance recoverable by procedures set out in standard methods or a procedure authorized by ACRWC and includes, but is not limited to, non-polar petroleum hydrocarbons.

Oil-Water Separator. Means a three-stage oil-water separator that meets the Standard for Oil-Water Separators (ULC-S656-14) prepared by Underwriters' Laboratories of Canada or the equivalent oil-water separation technology able to achieve an effluent quality of 75 mg/L of oil and grease (mineral-synthetic/hydrocarbons) or less.

Pretreatment works. Any works specified in a code of practice designed for the treatment of wastewater prior to being discharged to the municipal sanitary sewer system.

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

Septic system. An onsite sewage system for treating domestic waste.

Spill containment. Any impervious structure that surrounds a container or works that is sufficient to hold the larger of 110 percent of the largest volume of free liquid in the container or works OR 25 percent of the total volume of free liquid in storage.

Spill response plan. A written plan developed for the operator to respond to any spills at an Oil & Gas and Support Services operation site. As a minimum, the plan must 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.

TPH – Total Petroleum Hydrocarbons

VOC – Volatile Organic Compound

Wastewater. The spent or used water of a community, industry, commercial or institutional facility.

Wastewater Discharge Permit. A permit issued by ACRWC stipulating standard and specific terms and conditions regulating an industrial, commercial, or institutional wastewater discharge into the municipal sanitary sewer system.

Wetted height. The depth from the static water line to the bottom of the oil-water separator.

8. ACKNOWLEDGEMENTS & REFERENCES

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