Controlled Handling of Cleaning Wastewater

New Masonry Construction
Masonry Restoration

This document provides general information on methods for reducing risks related to masonry cleaning operations. Specific information on the use of PROSOCO's range of new construction, building maintenance and restoration cleaners is included.

For additional information on lead paint removal, refer to PROSOCO Technical Bulletin 1291-LBPA.

Consult all current local, state, and federal regulations which may impact your cleaning operation before proceeding. Always test your proposed cleaning methods and containment procedures to verify their effectiveness before proceeding with full-scale cleaning operations. If you need assistance, contact PROSOCO at 1-800-255-4255 for consultation or to schedule on-site assistance. PROSOCO's technical field representatives will be happy to demonstrate proper use of our Sure Klean®, Custom Masonry® and ENVIROKLEAN® products.

PROSOCO, Inc., Innovative solutions for buildings™

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My PROSOCO representative is _____

_____

Phone number:_____

Fax Number: _____

Since 1939, PROSOCO, Inc. has been a leader, providing products to clean, protect and maintain our built environment.

We can clean our built environment with no harm to the natural environment. It only takes a little care and foresight.

This technical bulletin discusses simple techniques for:

- √ **complying with rules and regulations governing cleaning wastewater**
- √ **handling, treating and discharging cleaning wastewater.**

Our goal is to provide cleaning contractors and specifiers with information needed to overcome common problems related to new construction or restoration cleaning operations.

This bulletin is not intended to be a substitute for consultation with appropriate authorities concerning the transfer and discharge of cleaning wastewater. Contractors must use their independent judgement and knowledge of site-specific information, environmental and weather conditions when designing a cleaning program.

If you have questions about the information or forms in this bulletin, call PROSOCO's Regulatory Compliance Department at 785-865-4200. We are glad to help!

Technical Bulletin 200-CW
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Wastewater Regulatory System Overview

As the cleaning contractor or specifier, your goal is to get the project cleaned as quickly and safely as possible.

Part of the cleaning operation includes rinsing the cleaner and dissolved staining off the masonry. This rinse creates wastewater.

Local operators of Publicly Owned Treatment Works (POTWs) have legitimate concerns regarding wastewater generated by a building cleaning operation. Those concerns include:

- keeping the sewage-handling system from being damaged or deteriorated by potentially harmful wastewater containing liquids or solids that are
  - ✓ ignitable
  - ✓ corrosive
  - ✓ flammable
  - ✓ reactive
- ensuring that the sewage plant's chemical or biological waste treatment process is not damaged or disrupted.
- preventing pollution of drinking water.

To avoid having your cleaning project delayed or shut down by officials from the local POTW:

1. Gather information on the cleaning products and procedures you plan to use.

   ✓ Contact your PROSOCO representative to determine which product(s) you will need.

   ✓ Gather copies of the most current Product Data Sheets (PDS) and Material Safety Data Sheets (MSDS) from your distributor, PROSOCO sales manager or representative, or from PROSOCO's web site www.prosoco.com.

2. Complete the enclosed Wastewater Checklists.

   Completing the checklists will help you gather and organize the information you will need when dealing with officials from the city or sewage treatment plant.

3. Communicate with local regulators BEFORE your project starts.

   In addition to creating goodwill with the regulators, early communication will help you identify the standards they will require you to meet when dealing with wastewater runoff.

Why do I need to bother if the wastewater is going to a sewer?

Changes in federal enforcement strategies have forced local POTW operators to pay close attention to their pretreatment programs and discharge standards. This makes it important for contractors who will generate a lot of cleaning wastewater to contact local regulators before their jobs start.

Not all sewers are the same.

A **sanitary sewer** is a drain that leads to a sewage treatment plant. Unless a building discharges to a septic system, most drains inside buildings are connected to the sanitary sewer which flows to the local POTW.

A **combined sewer** carries storm water and sanitary sewage to a POTW. Combined sewers are increasingly uncommon and are mostly found in older cities.

A **storm sewer** leads directly to a stream, lake, or river. In general, drains located outside buildings are connected to storm sewers. (The only way to find out for sure is to check with the appropriate local agency.) Storm sewers fall under the jurisdiction of the EPA. Many states run storm water regulation programs under EPA guidance.

A POTW operates under a National Pollutant Discharge Elimination System (NPDES) permit

issued by the state or the federal EPA. Under its NPDES permit, a POTW is required to monitor and limit industrial discharges to their sewage treatment plant. Discharge that could disrupt plant activity causing a bypass of untreated wastewater to a stream, river or lake is against federal law.

Who do I contact?

Contact your city's public works department. Ask to speak with someone regarding the city industrial pretreatment program.

Large cities with well-established pretreatment programs have a **"Pretreatment Coordinator."** A pretreatment permit program may regulate discharges. Cities without a pretreatment program may spread those responsibilities across several agencies, including:

- City Hall – Permit Department
- Water & Sewer Commission
- Office of Environmental Health
- Water Resources Authority
- Local Fire Department
- Sewage Treatment Authority
- Port Authority
- EPA

Many POTWs publish discharge standards to regulate the quality of the wastewater they receive. Most industrial pretreatment programs are designed around fixed industrial facilities with ongoing discharges. Ask if the city has published standards for cleaning wastewater generated by mobile pressure washing. The public works department should be able to get you a copy. Use it to design your cleaning operation.

When should I deal with these issues?

The test-panel stage is the best time to resolve these issues. Testing, and completion of the enclosed wastewater checklists, will give you much of the information you will need for planning your project and talking with regulating authorities.

Special arrangements should be made to capture or direct wastewaters generated by a cleaning operation if:

- There is potential for wastewater to reach a shallow drinking water aquifer or a cistern.
- There is potential for wastewater to enter nearby or supporting building spaces.
- There is concern about the toxicity of chemicals likely to be in the wastewater.
- There are concerns regarding the impact that excessive wastewater – or chemicals contained in the wastewater – may have on sensitive root structures of surrounding plantings or artifacts.

Wastewater Characteristics

Just because a product is classed as "hazardous" does not mean the wastewater generated from its use will be hazardous. The product and the wastewater will always have different characteristics.

Many cleaning products interact with the surface or the contaminant to which they are applied. That interaction, plus dilution of the cleaning product with water used to prewet or rinse the surface, can reduce or eliminate any hazardous characteristics of the resulting wastewater.

There are as many different kinds of wastewater as there are projects. Product, contaminant, dilution-rate, surface and other factors combine and interact to create wastewater that is as individual as the project**.**

For disposal purposes, there are three main types of wastewater:

1. **Non-hazardous wastewater**.

   Since it contains nothing harmful, non-hazardous wastewater may be okay for sanitary sewers, storm sewers or soaking into the ground. For example, prewetting a wall with fresh water could create non-hazardous wastewater.

2. **Acidic/caustic wastewater that can be neutralized on site**.

   When acidic cleaners are rinsed off a surface, the wastewater is likely to be acidic. When alkaline cleaners are rinsed off a surface, the wastewater is likely to be alkaline.

   The concentration of cleaner in the wastewater will determine the wastewater pH. The pH will determine whether the wastewater is acceptable for discharge.

   Corrosive wastewater can be neutralized. Catch the wastewater, measure the pH, and add sufficient neutralizing agent to bring the pH to an acceptable level.

   To neutralize acidic waste water, add an alkaline neutralizing agent. To neutralize alkaline or caustic wastewater, add an acidic neutralizing agent.

3. **Wastewater that CANNOT be neutralized on site**.

   Wastewater that contains solvents like methylene chloride (used in some paint strippers) cannot be neutralized in the field. They should be collected and characterized to determine whether it would be classed as a hazardous or special waste. Hazardous waste must be transported by a licensed waste handling company and taken to a Transport, Storage and Disposal (TSD) facility. TSDs generally deal with special waste and the documentation requirements are not as stringent.

Neutralizing Wastewater

Neutralization is a form of wastewater pretreatment in which pH is adjusted to an acceptable level before discharge. POTWs usually set discharge permit limits for pH between 5.5 to 10.5. They cannot allow discharges with pH below 5.

What is pH?

pH is a unit of measure that indicates the relative corrosivity of a liquid. pH is measured on a scale of 0 to 14.

A pH of 7 is neutral. Numbers lower than 7 are acidic. Numbers higher than 7 are caustic or alkaline. Most healthy lakes and streams have a pH at or near 7.

Each numerical step in the pH scale represents a 10-fold change in relative corrosiveness. A material with a pH of 6 is ten times more acidic than a neutral pH 7 material. A material with a pH of 5 is one hundred times more acidic than a neutral pH 7 material. A material with a pH of 4 is one thousand times more acidic than a neutral pH 7 material.

To put things in perspective, the pH of most cola-type soft drinks is just over 2.0. The pH of stomach acid is 1.7. Acid rain found in the northeastern United States has a pH around 4.0. Smog in the Los Angeles area has registered pH measurements as low as 2.5.

In neutralization, alkaline/caustic materials are used to neutralize acidic wastewater. Acidic materials are used to neutralize alkaline/caustic wastewater.

How do I measure pH?

Liquid pH is tested with paper pH test strips or a calibrated meter. Though meters are more accurate than pH papers, their use requires some training and frequent calibration with a pH reference standard.
Paper test strips are readily available from a swimming pool or industrial supply house. pH meters and laboratory grade pH test strips are

available from laboratory and industrial supply companies.

Once acidic or alkaline wastewaters are neutralized, the resulting wastewater is a harmless solution of organic or inorganic salts.

Most PROSOCO new masonry cleaners and restoration cleaners are blends of mineral and organic acids, or mineral caustics. You can easily neutralize wastewater from these products before discharge. The resulting neutral pH solutions contain environmentally harmless salts.

Handling Acidic or Alkaline Wastewater

Acidic or caustic wastewater generated on a project may fall within the acceptable pH range. It depends on the product(s) and rinsing procedures used, and the soiling being removed.

In new construction cleaning, blends of mineral and organic acids are used to remove excess mortar and job dirt. Interaction of the prepared cleaner with the mortar and substrate is often enough to bring the pH within the acceptable pH range.

If the wastewater falls in the acceptable pH range and contains no hazardous ingredients, regulators and building owners may let you discharge directly to soils surrounding the building, or to the sanitary sewer.

This is especially true on projects where soil pH is scheduled to be adjusted before landscaping.

Some building owners and regulators will not allow any wastewater, regardless of its characteristics, to soak into the soil. In all cases, remember the properties of the chemicals involved and clearly communicate your plans with the building owner.
If the cleaning wastewater falls outside of the acceptable pH range or contains hazardous ingredients, the rinse waters should be retained at the base of the surface being cleaned. It can be neutralized there or collected for disposal as hazardous or "special" waste.

Protect plants from over spray and contact with cleaning wastewater. Low pH (acidic) rinse waters can leach nutrients from the soil, stress plant root systems or damage exposed foliage.

STEP 1
Contain / direct the wastewater

If slight pH adjustments are required to bring low volumes of cleaning wastewater to within the acceptable pH range, a **neutralization trench** may be all you need.

A typical neutralization trench is created by digging an area 12 inches wide and 12 inches deep along the edge of the building. The trench should be positioned to collect and hold cleaning wastewater which runs down the face of the wall. Continue the trench to direct the wastewater to the nearest sanitary sewer or combined storm sewer after neutralization.

When approved by the property owner and regulators, the bottom of the neutralizing trench may be left exposed, letting collected wastewater evaporate or soak into the soil. When exposed trenches are not authorized, line the neutralizing trench with durable plastic sheeting to prevent soaking into surrounding soils.

If pH adjustments are needed to bring large volumes of cleaning wastewater to within the locally acceptable pH range, a **containment system – consisting of troughs and storage tanks or pools –** will be required.

Build **wastewater capture troughs** of wood and line them with any durable plastic sheeting or EPDM, Neoprene or Butyl roofing membranes. Alternatively, many contractors cut and glue modular PVC "gutters" on site to create inexpensive, reusable containment devices.

These troughs or gutters capture and direct the wastewater to a plastic lined, open **pooling area** for treatment or transfer to a closed storage tank.

When capturing wastewater on hard surfaces, such as parking lots, it may be impractical to dig a trench. In that case, consider a wet-vacuum accessory system such as "Vacu-Boom." Information on Vacu-Boom is available from Pressure Power Systems, Inc., in Kernsville, NC, (910) 996-5585.

Alternatively, sandbags or water-filled swimming pool pillows can be stacked to create **containment dykes** to contain the wastewater. When building such dykes, line the containment area with durable plastic sheeting. This will prevent staining of the pavement and minimize any potential damage caused by wastewater seeping through the pavement to underlying soils or structures.

If solids are present (as in paint stripping), capture the wastewater in an open pooling area. Allow the solids to settle to the bottom. Transfer liquid wastewater which does not evaporate to a holding tank for neutralization or disposal. Collect the remaining solid waste for appropriate disposal.

If solids are not a concern, use the pooling area to neutralize the wastewater, or to collect the wastewater for transfer to a storage and neutralization tank.

Use an inexpensive, corrosion-resistant **wastewater transfer pump** to transfer wastewater. The pump should be accessible and easy to replace.

The **storage and neutralization tank** holds wastewater until it is neutralized and ready for release. Though any polyethylene tank will work, thin-walled tanks may bend or breach from heat generated by neutralization. Thick-walled, high density polyethylene tanks are best. Such tanks are available at any agricultural supply company.

A neutralization tank must be the right size for proper dilution and contact time. A cleaning job with two pressure washers generating 10-18 gallons of water per minute will require a 300 to 500 gallon neutralization tank. Larger tanks offer more flexibility for placing pH probes, discharge outlets and mixers.

STEP 2
Determine wastewater pH

Use a full-spectrum pH paper or a commercial pH meter to test the wastewater pH before discharge. When using a neutralization trench as described above, test the pH at a location immediately before the wastewater stream enters the sanitary sewer. Since wastewater pH and quality will vary throughout the cleaning operation, test pH at regular timed intervals.

Keep a pH record of all pH measurements on site. Note each measurement, including the time and date. Inspectors and regulators may ask to see these records. NOTE: This Bulletin includes a sample Wastewater Quality Log Sheet on page 19.

A typical acceptable pH range is pH 5.5 to pH 10.5. Verify with your POTW what the acceptable pH range is in your area.

The process of measuring and adjusting pH can be time consuming. If a large building is involved, or if your company does a lot of work requiring pH adjustment of wastewater, an automatic pH controller may be a wise investment.

STEP 3
Neutralize the wastewater

Treating alkaline/caustic wastewater:
If wastewater measures above the acceptable pH range, add an acidic neutralizing agent. Suitable acidic neutralizing agents include:

- acetic acid
- muriatic / hydrochloric acid
- powdered citric acid
- malic acid

- powdered oxalic acid
- phosphoric acid.

Treating acidic wastewater:
If wastewater measures below the acceptable pH range, add an alkaline/caustic neutralizing agent. Suitable alkaline/caustic neutralizing agents include:

- sodium hydroxide
- potassium hydroxide
- baking soda
- caustic potash
- garden lime
- hydrated lime.

Predilute neutralizing agents with fresh water to increase solubility and improve efficiency in adjusting wastewater pH. Small amounts of wastewater can be neutralized without predilution. See top of next column.

Never add a neutralizing agent to a concentrated product.

If you are using acidic cleaners AND alkaline cleaners on the same project, combine the waste streams to minimize the need for further pH adjustment.

For example, pooling wastewater from use of the alkaline Sure Klean® Limestone & Masonry Prewash with the acidic Sure Klean® Limestone & Masonry Afterwash frequently results in a combined waste stream with a pH within the acceptable range.

How much neutralizing agent do I need to add?

Wastewater pH and the nature of your neutralizing agent may vary from job to job. For this reason, there is no standard formula that will determine how much neutralizing agent you will need to achieve an acceptable pH.

Many of the neutralizing agents listed above are available in powdered form. A good starting point is to use 2.5 pounds of powder for each gallon of concentrated cleaner you have rinsed off of the wall.

If you are dealing with small amounts of wastewater collected in a neutralizing trench, the powder may be carefully spread over the surface of the trench. Once the powder has dissolved, measure your pH and adjust your spreading rate as needed. Monitor and replenish the neutralizing agent as it washes away.

When dealing with larger volumes of wastewater in a pooling area or neutralization tank, premix your powdered neutralizing agent at a rate of 2.5 pounds of powder per gallon of fresh water. This will save time and reduce the amount of mixing required to achieve a stable pH.

Add one gallon of prepared neutralizing solution for each one gallon of concentrated cleaner rinsed into the containment area. After mixing, measure the pH. Add additional neutralizing solution as required to achieve an acceptable pH.

STEP 4
Test the wastewater again

Using a full spectrum pH paper or a commercial pH meter, test the wastewater pH again to insure it is within the acceptable pH range. If outside the acceptable range, add additional neutralizing solution as required to achieve an acceptable pH. As pH approaches the target range, smaller quantities of neutralizing solution will cause greater changes in pH.

STEP 5 – Discharge

Unless a building discharges to a septic system, most drains inside buildings are connected to the **sanitary sewer** that leads to a POTW.

A **combined sewer** carries storm water and sanitary sewage to a POTW.

A **storm sewer** leads directly to a stream, lake, or river. In general, drains located outside buildings are connected to storm sewers.

The only way to find out for sure is to check with the appropriate local agency. Do not discharge wastewater to storm sewers.

Discharge wastewater to a sanitary sewer, combined sewer or soil ONLY after checking with all federal, state and local authorities with jurisdiction over wastewater and related job site issues. Regulators may require you to obtain a permit before discharging wastewater.

Wastewater That Contains Solvent Residues

Unlike acidic and alkaline chemistries, a solvent such as methylene chloride cannot be neutralized. Methylene Chloride does not biodegrade well and is considered a pollutant. Even if the solution it is in has a measurable pH that CAN be neutralized, the solvent itself remains intact.

Some solvents can be filtered out of wastewater and fuel-blended for consumption in manufacturing processes requiring heat or energy. Solvent solutions with no fuel value are often burned in waste incinerators. Neither process is done in the field.

Even when solvents are not classified as "hazardous," a licensed Transport, Storage and Disposal facility (TSD) is often used to dispose of wastewater containing organic solvents, including methylene chloride.

In some areas, it is possible to get permission for a short-term discharge of wastewater containing methylene chloride to a sanitary sewer or combined sewer.

Consult with the pretreatment coordinator at the receiving POTW to see if it is allowed, and if any special permits are required.

If limited discharges are not authorized by your POTW, catch and hold the wastewater for disposal as a hazardous or "special" waste through a TSD.

Since the person who generates hazardous waste is responsible for it from creation to destruction, it is important to find a reputable TSD.

Your state environmental agency can give you a list of licensed TSDs in your area. Their lists can include companies with questionable practices. Check references!

Check with regulators who have jurisdiction over wastewater and other job site issues to find out what disposal alternatives are available on your project. If you still have questions, contact PROSOCO's Regulatory Compliance Department at (785) 865-4200.

Wastewater Generated by Use of "Non-Hazardous" Cleaners

Wastewater generated by use of cleaners promoted as being "non-hazardous" or "environmentally friendly" may be mild enough to drain to the ground. However, before doing so, refer to the Product Data Sheet, Material Safety Data Sheet and, if necessary, the manufacturer to verify what ingredients are in the product.

Even if the products you intend to use are truly non-hazardous, talk with the wastewater regulators and the property owner before the cleaning project begins. Inform them of the cleaning products you intend to use and your plans for handling wastewater.

Though some **high-phosphate cleaners** are mildly alkaline, many have the same chemistry as common fertilizers. Discharged to the soil or storm sewers, wastewater containing high concentrations of phosphates encourage growth of algae in lakes, rivers, and streams. For this reason, some areas restrict the use of high-phosphate cleaners for residential use. Commercial and industrial use of high phosphate cleaners are often exempt from such regulations.

Surfactant-based cleaners generally contain mild chemicals. Their toxicity is usually low. Their biodegradability is usually high.

Oxygen bleach cleaners pose little threat once applied and rinsed. The oxidation potential of such cleaners is largely consumed by reaction with biological growth and staining on the surface being cleaned. Further dilution of the product with rinse waters typically renders any cleaner residue non-hazardous.

Protective Considerations

No matter how careful you are, some cleaning compounds will damage glass, architectural metals, wood, painted surfaces, foliage and exposed human tissues. Read and comply with all precautionary, safety and handling information presented on the product container label and Material Safety Data Sheet (MSDS). Since formulations change over time, always make sure that the product literature matches the manufacture date of your product.

Manufacturers are required to make Material Safety Data Sheets available on request. Material Safety Data Sheets for PROSOCO products are available from your distributor, PROSOCO sales manager or representative, or from PROSOCO's web site at www.prosoco.com.

To minimize the potential for damage from overspray, backsplash or wind drift of cleaning compounds and rinse water:

- **Conduct thorough pretesting** to determine the most effective cleaner concentration and surface contact time.
- With concentrated cleaning solutions**, use the highest water dilution ratio possible** to achieve desired cleaning results.
- **Apply all cleaning products and neutralizing agents in a controlled manner.**
- **Brush apply the cleaner** when possible. Brush application in a gentle scrubbing manner improves overall cleaning results and may permit a higher water dilution ratio.
- **When spray applying the cleaner, use the lowest pressure possible** to minimize potential for overspray and wind drift.
- **Avoid applying cleaning compounds during periods of high wind.**
- **Avoid applying cleaning compounds during peak traffic periods**, if thorough protection of pedestrian and vehicular traffic is not practical.
- **Using low-pressure water, prerinse treated surfaces thoroughly** to remove heavy concentrations of cleaner residue. Dissolved staining and remaining cleaner residue should then be flushed from the surface using a high-pressure water rinse.
- **Pressure rinse from the bottom of the treated area to the top**, using a slow, deliberate overlapping spray pattern.
- **Rinse treated surfaces thoroughly** to remove all traces of cleaner residue.

To minimize potential for contamination of interior building spaces by cleaner overspray, rinse waters and vapors:

- **Shut down and cover air-handling equipment that could circulate cleaning vapors into or through a building.** If this is not practical, contact your PROSOCO sales manager or representative to find out what HVAC protective measures have proven effective on neighboring projects.
- **Close all doors and windows.** Cover the window frames and doorways with plastic or other protective materials. Include a sign clearly indicating that the door or window is temporarily out of use.
- **Inform the building manager and building occupants of ongoing cleaning operations**. Apologize for any inconvenience and thank them for their understanding.

- **Avoid situations where liquids could migrate into the building or nearby spaces** through cracks in the masonry and around windows and doors.

To minimize potential for damage to surrounding plants:

- **Avoid exposing plants to excessive wastewater of any type.**
- **Take particular care to protect plants from accidental contact** with cleaning solutions or rinse waters with a low or high pH.
- **Protect plants from accidental contact with concentrated neutralizing agents.**
- **When using polyethylene sheeting for plant protection** during hot weather, place a low volume lawn sprinkler or soaker hose beneath the sheeting to keep plants cooled and running wet with fresh water.

WASTEWATER CHECKLISTS

√ **Product Information**
√ **Project Information**
√ **Wastewater Information**

Use these checklists as you plan your cleaning project. They will help identify the properties of the wastewater your project will generate.

Compile as much of this information as possible BEFORE contacting local authorities. It will make your life easier when it is time to deal with them.

Regulations relating to pretreatment and wastewater discharge *can* be complicated and frustrating.

If you have trouble completing the forms, fill in what you can. Then call PROSOCO's Regulatory Compliance Department at 785-865-4200. We will be glad to help!

PRODUCT INFORMATION

(Complete one PRODUCT INFORMATION *sheet for each product employed in the cleaning operation. Consult Product Data and Material Safety Data Sheets for technical information.)*

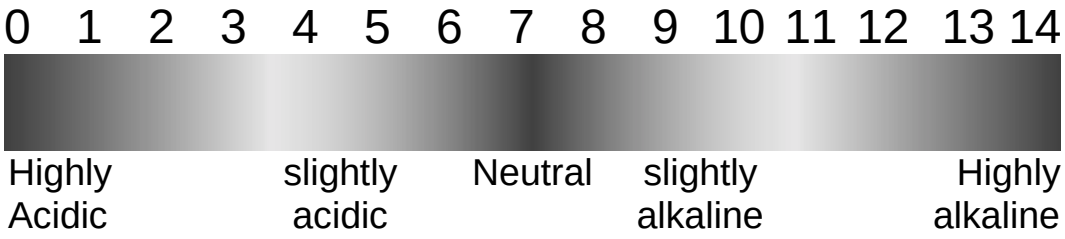
1. **Product name**: _____

2. **Product form**:
   - ❑ Solid
   - ❑ Powder
   - ❑ Liquid
   - ❑ Gel
   - ❑ Paste

3. The product is:
   - ❑ acidic *****
   - ❑ alkaline *****
   - ❑ solvent based

   ***** Circle the **product pH**.

pH Scale



This **pH** represents the product:
- ❑ in concentrate.
- ❑ diluted with __ parts water before application.
- ❑ after dilution with rinse waters.

4. The product **flash point** in concentrate is _____.

5. The **surface(s) to be cleaned** with this product are:

SURFACE	TYPE OF SOILING
_____	_____
_____	_____
_____	_____

6. The **surfaces to be protected** from contact with this cleaning product are:

SURFACE	METHOD OF PROTECTION
_____	_____
_____	_____
_____	_____

7. The product will be applied:
   - ❑ in concentrate.
   - ❑ diluted with ____ parts fresh water before application.

8. The method for applying the product will be:
   - ❑ brush.
   - ❑ roller.
   - ❑ trowel.
   - ❑ low pressure spray.
   - ❑ high pressure spray.
   - ❑ other _____.

9. The product will remain on the surface for _____ before rinsing.

10. Treated surfaces will be rinsed using:
   - ❑ low pressure (cold / hot) water.
   - ❑ high pressure (cold / hot) water.
   - ❑ low pressure (cold / hot) water followed by high pressure (cold / hot) water.
   - ❑ steam.
   - ❑ other _____ .

11. The PROSOCO product representative on this project is:

_____

Telephone: _____
Cell phone: _____
Pager: _____

PROJECT INFORMATION

1. Project Name: _____

2. Project location: _____
_____
_____
_____

3. I am cleaning / removing (check all that apply):
   - ❑ excess mortar & job dirt from new construction
   - ❑ carbon and atmospheric staining from existing construction
   - ❑ biological growth
   - ❑ paint / graffiti or other coatings
   - ❑ lead-based paint
   - ❑ other staining – describe _____

_____
_____

4. The surfaces I will be cleaning are (check all that apply / describe):
   - ❑ Vertical / _____
   - ❑ Horizontal / _____
   - ❑ Sloped / _____
   - ❑ Interior / _____
   - ❑ Exterior / _____

5. I will use the following equipment to access the surfaces to be cleaned:
   - ❑ No access equipment required
   - ❑ Ladder
   - ❑ Lift
   - ❑ Tubular scaffolding
   - ❑ Swing stage / cradle
   - ❑ Other (explain) _____

6. The cleaning operations will be carried out (check all that apply):
   - ❑ Weekdays
     - ❑ Midnight to 6:00 AM
     - ❑ 6:00 AM to 6:00 PM
     - ❑ 6:00 PM to Midnight
   - ❑ Weekends
     - ❑ Midnight to 6:00 AM
     - ❑ 6:00 AM to 6:00 PM
     - ❑ 6:00 PM to Midnight
   - ❑ Other - (explain) _____

7. Cleaning operations are scheduled to start on: ____/____/____, and should be completed by: ____/____/____.

8. The cleaning operatives will be employees of:

_____
_____
_____

9. The project supervisor(s) will be: _____
   Telephone: _____
   Cell phone: _____
   Pager : _____

10. While cleaning is underway, product information, safety information, etc. will be retained on file at: _____

_____
_____

11. In case of emergency, contact: _____
    Telephone: _____
    Cell phone: _____
    Pager: _____

WASTEWATER INFORMATION

The wastewater generated by your cleaning operation can differ significantly from the cleaning product(s) you employ. Prewetting and rinse waters dilute the wastewater. Contaminants cleaned from the masonry may alter the wastewater. **Here is how to calculate the percent of product in your wastewater:**

_____ **Application rate** (sq. ft./ gal of **concentrated** cleaning product)
_____ **Production rate** (square feet rinsed/washed per minute)
_____ **Water usage rate** (gallons per minute)

$$\% \text{ Product in wastewater} = \frac{100}{(\text{Application rate} / \text{Production rate}) \times \text{Water usage}}$$

- ❑ The wastewater is being filtered/strained to remove solids before discharge.
- ❑ The wastewater is being collected for pH adjustment before discharge.
- ❑ The wastewater is being discharged directly to surrounding earth.
- ❑ The wastewater is fairly clean.

The pH of the wastewater before neutralization (if known) = pH____

DRAIN INFORMATION

I want to discharge to a:

- ❑ Sanitary Sewer (goes to a sewage treatment plant)
- ❑ Storm Sewer (goes to a stream or lake)
- ❑ Combined storm sewer (carries storm water and sewage to a treatment plant
- ❑ I have no idea.

WASTEWATER DISCHARGE INFORMATION

- ❑ I am discharging wastewater continuously at around ___ gallons per minute.
- ❑ I am monitoring pH of the wastewater once every _____.
- ❑ I am collecting, monitoring pH and neutralizing ____ gallon batches of wastewater.
- ❑ I am neutralizing wastewater to a pH of between pH ___ and pH___.
- ❑ I am discharging ____ gallon batches of neutralized wastewater once every _____ at a rate of _____ gallons per minute.

WASTE WATER QUALITY LOG SHEET

Company Name: _____ **Project Name:** _____

Date/Time	Wastewater ph	Metering Device (e.g. Litmus paper, meter)	Quantity Discharged	Sampler Name

FAQ

Dealing with Hazardous Waste

What is "hazardous waste?"
Hazardous waste is any liquid or solid with properties or characteristics defined under the Resource Conservation and Recovery Act (RCRA) as being:

- ✓ Ignitable
- ✓ Corrosive
- ✓ Flammable
- ✓ Reactive

Certain chemicals are listed by RCRA as being hazardous. Their presence in a mixed waste stream will cause the mixture to be classed as hazardous.

Is the product I am using or its rinse water classed as hazardous waste?
Many PROSOCO cleaner concentrates are either corrosive or contain flammable solvents. As such, the concentrate formulations are classified as "hazardous".

There is a major difference, however, between the product as it comes out of the container and the wastewater you generate by using the product.

When applied to a surface, cleaning products interact with the substrate and the soiling matter being removed. This interaction - combined with the prewetting and rinse waters - can reduce or eliminate the "hazardous" characteristics of the resulting wastewater.

Acidic or alkaline characteristics of the wastewater are easily rendered harmless by neutralization. The ignitable characteristics of some organic solvents are eliminated during application and subsequent wash down.

Just because a product is classified as "hazardous", does not necessarily mean that the wastewater generated during a cleaning operation will be.

If my wastewater is hazardous, how do I dispose of it?
Hazardous wastes are regulated from "cradle to grave." The party that generates hazardous waste is responsible for assuring that the waste is disposed of in a manner allowed by law.

Except in cases where very small quantities of waste are generated, the packaging, transportation and disposal of hazardous waste is governed by state and federal regulations.

Hazardous waste must be disposed of via a licensed Transportation, Storage and Disposal (TSD) facility.

Solvent wastes are typically blended with fuel to derive a beneficial use. Corrosive wastes are generally neutralized in bulk. Solutions consisting of solvents mixed with water or "aqueous" solvent solutions with insignificant fuel value are typically incinerated at a higher cost than for fuel blending.

Some wastes do not meet the definition for being hazardous, but may still be restricted from a landfill or a sanitary sewer. In this case, the material is treated as a "special" waste.

How do I find a reputable hazardous waste disposal company?
Since the person who generates a hazardous waste is responsible for the waste from creation to destruction, it is important to find a reputable waste disposal company.

Your state environmental agency can give you a list of licensed TSDs in your area. Such lists can include companies with questionable practices. Check out their references.

If you need help selecting a reputable TSD, contact PROSOCO's Regulatory Compliance Department at (785) 865-4200 for assistance.

FAQ

Discharging Wastewater

What is a sanitary sewer?
A sanitary sewer is a drain that leads to a Publicly Owned Treatment Works (POTW) more widely known as a sewage treatment plant.

POTWs operate under heavy regulation with discharge permits issued by the USEPA. Federal law prohibits any discharge to a POTW that has the potential to disrupt plant activity that could cause a bypass of untreated waste to a river, lake or stream.

POTWs regulate the quality of the wastewater they receive through published discharge standards governed at the municipal level. In some cases, all discharges are regulated by a Pretreatment Permit program. Some municipalities have separate programs that recognize the special needs of the mobile pressure washing industry.

How do I tell the difference between a sanitary and a storm sewer?
Unless a building discharges to a septic system, most drains inside buildings are connected to the sanitary sewer. The other types of connections are a storm sewer and a combined sewer.

A storm sewer leads directly to a stream, lake, or river. A combined sewer carries both storm water and sanitary sewage to a POTW. Combined sewers are uncommon and are typically found in older cities.

In general, drains located outside buildings are connected to a storm sewer. The only way to find out for sure is to check with the appropriate local agency.

How are storm sewers regulated? Storm sewers fall under the jurisdiction of the USEPA. Many states run storm water regulation programs under the guidance of the USEPA.

Can rinse water be allowed to soak into the soil?
It depends on the product and the situation. Some building owners and regulators will not allow any materials, regardless of the chemistry, to soak into soil. In all cases, remember the properties of the chemicals involved and clearly communicate your plans with the building owner.

Consider the following:

- Is there potential for rinse water to reach a shallow drinking water aquifer or a cistern?
- Is there an issue with toxicity of the chemical and its persistence in the environment?
- Are there concerns regarding root structures of sensitive plantings?

In new construction cleaning, blends of mineral and organic acids are used to remove excess mortar and job dirt. Often, interaction with the mortar and substrate is enough to bring the pH to a neutral state. If lime or another source of caustic is being used as a neutralizing agent on the ground, the end products of neutralization should be benign. (Basic soil chemistry includes such materials as chlorides, calcium, potassium, sodium, and background levels of fluorides.)

Landscapers typically adjust soil pH before installing sod and plantings. Additional fertilizer may be needed to replace naturally occurring nutrients (calcium, magnesium, potassium, nitrate) leached from the soil by acidic rinse water.

Restoration cleaning is a bit more complicated due to the number of varied applications and product types. Restoration cleaners fall under the following general categories:

- Acidic cleaners

- Alkaline cleaners and paint strippers
- Surfactant and detergent based cleaners
- Solvent based paint strippers and graffiti removers
- Oxidizing cleaners (bleaches)

Acidic restoration cleaners have the same basic properties as new construction cleaners with the primary difference being that existing structures may have mature lawns and plants nearby.

Alkaline cleaners and paint strippers are generally based on either sodium hydroxide or potassium hydroxide. Assuming that powdered citric acid is used as a neutralizing compound, the end results of neutralization are either sodium citrate or potassium citrate, both of which are common food additives.

High phosphate cleaners can be mildly alkaline, but have the same chemistry as common fertilizers. While some areas restrict the use of high phosphate laundry detergents, industrial and commercial use products typically remain unregulated.

Surfactant-based cleaners generally contain mild chemicals with low toxicity and good biodegradability.

Many solvent-based paint strippers pose a problem with regard to discharge to soils. Some non-methylene chloride strippers contain readily biodegradable solvents although toxicity and residence time are an issue. Methylene chloride has poor biodegradability and is considered a pollutant.

Oxygen bleach cleaners pose little threat once used and rinsed. The oxidation potential is generally spent during reaction with materials being cleaned (biological growth and stains). Unspent material is rendered non-hazardous by dilution during pressure washing.

What job-site practices help minimize damage to vegetation?

The primary exposure paths for vegetation are through the root system and on leafy surfaces.

In general, non-corrosive cleaners pose little threat to the health of plants.

Paint strippers or solvent-based cleaning products that contain methylene chloride form hydrochloric acid upon contact with water. Deal with their waste accordingly.
Handle acidic and alkaline cleaning products as instructed in product literature or labels. Avoid direct contact with leafy surfaces and neutralize wastewater pH before discharge.

Minimize exposure to leafy surfaces during application and pressure rinsing of any cleaning product. Always apply cleaning products in a controlled manner. If applying under pressure, use the absolute minimum pressure required. Prerinse treated surfaces with a low-pressure water spray before pressure washing to assure that product residues are not atomized.

Other common practices include:

- Covering plantings with a protective polyethylene sheet.
- Rinsing plants with a soaker hose during the cleaning operations.
- Using cleaning products while it is raining.

Root structures on plants can be protected using wastewater control methods listed under "Handling Acidic or Alkaline Wastewater," starting on page 7.

FAQ

Neutralizing Wastewater

What is neutralization?
Neutralization is a form of wastewater pretreatment in which pH is adjusted to an acceptable range before discharge. In general, POTWs set permit limits to allow pH ranging from 5.5 to10.5. In no case can they allow discharges with pH below 5.

The concept behind neutralization is that alkali/basic materials are used to neutralize acidic materials. Acidic materials are used to neutralize alkali/basic materials.

Acid/base chemistry is fairly simple. Once combined to achieve a neutral pH, the resulting waste is an aqueous solution of organic or inorganic salts.

What chemicals are most effective in adjusting pH?
In situations where neutralizing agents are to be broadcast, powders such as baking soda, lime and hydrated lime are commonly used to neutralize acidic wastewaters.

Powdered oxalic or citric acid are commonly used to neutralize caustic/alkaline wastewaters.

The most common liquid neutralizing agents are solutions of potassium or sodium hydroxide to neutralize acidic waste water. Solutions of hydrochloric / muriatic acid are used to neutralize caustic/alkaline wastewaters.

Note: Never add a neutralizing compound directly to a concentrated product as a dangerous heat-producing reaction will occur.

How much material do I use to neutralize my wastewater?
The pH of wastewater varies widely from application to application. Wastewater being pretreated before discharge to a sanitary sewer should be tested and neutralized as needed.

In applications where material is being broadcast to protect soil chemistry for landscaping, the rule of thumb is to use 2.5 pounds of hydrated lime per gallon of concentrated acidic cleaner. An excess amount of lime in soil is not typically harmful as it is a common soil amendment.

What is the effect of a low pH rinse water on soil and plantings?
Low pH rinse waters can leach nutrients from soil and release certain elements, such as aluminum, that are normally bound to soil particles. This can stress the root systems of plants.

Direct contact of rinse water on leafy surfaces will stress plants in the same way that acid rain does.

Can a solvent be neutralized?
There are some commercially available solvents that have a measurable pH when in an aqueous solution. Though the pH of this type of material may be neutralized, the molecular structure of the organic solvent remains intact.

In the case of a solvent-based paint stripper, it is possible to filter out or otherwise remove a solvent from water using very specialized equipment, but there is no way to render it inert in solution as is possible in a simple acid or base.

Hydrated lime ($CaCO_3$) is often used to neutralize diluted acids in construction. The chart below shows by-products of acids neutralized with hydrated lime:

Chemical	***Neutralization By-product***	***Typical By-product Uses***
Acetic acid (vinegar)	Calcium acetate	Food anti-mold agent
Citric acid	Calcium citrate	Dietary supplement
Gluconic acid	Calcium gluconate	Food additive/vitamin
Glycolic acid (sugar derivative)	Calcium glycoate	Source for glycolic acid
Hydrochloric acid	Calcium chloride	Deicing salt/tomato canning
Hydrofluoric acid	Calcium fluoride	Inert mineral
Muriatic acid	Calcium chloride	Deicing salt/tomato canning
Oxalic acid	Calcium oxalate	Inert mineral
Phosphoric acid	Calcium phosphate	Baking powder/Fertilizer
Sulfuric acid	Calcium sulfate	Wallboard/food additive

Dilute caustics are often neutralized with dilute hydrochloric acid, muriatic acid or a powdered organic acid such as oxalic acid. Caustic solutions neutralized with hydrochloric acid result in salt water as shown:

Chemical	***Neutralization By-product***	***Typical By-product Uses***
Potassium hydroxide	Potassium chloride	Sea salt
Sodium hydroxide	Sodium chloride	Table salt

FAQ

Wastewater Characteristics

What is pH?

pH is a unit of measure that indicates the relative corrosiveness of a liquid. pH is measured on a scale of 0 to 14.

A pH of 7 is neutral. Numbers lower than 7 are acidic. Numbers higher than 7 are caustic or alkaline. Most water found in lakes and streams has a pH at or near 7.

Each numerical step represents a ten-fold change in relative corrosiveness. A material with a pH of 6 is 10 times more acidic than a neutral liquid. A material with a pH of 5 is 100 times more acidic than a neutral liquid. A material with a pH of 4 is 1,000 times more acidic than a neutral liquid.

To put things in perspective, the pH of most cola type soft drinks is just over 2.0. The pH of stomach acid is 1.7. Acid rain found in the northeastern United States has a pH around 4.0 and fogs in the Los Angeles area typically measure between 2.5 and 3.0.

How do I measure pH?

Liquid pH is tested with pH test strips or a calibrated meter. Though meters are more accurate, they must be calibrated frequently using a reference standard.

Paper test strips are readily available from a pool or industrial supply house. Meters are available from laboratory and industrial supply companies.

What does the term "biodegradable" mean?

The definition of biodegradable is that a material is capable of being broken down into innocuous products by the action of living things and various environmental factors. In general terms, it is favorable for a material to biodegrade readily and quickly. For materials in soils or water, biodegradation in days or weeks is preferred. In a sewage treatment plant, degradation should occur in the typical residence time for the treatment process.

The term biodegradable is widely misunderstood. Just because a material is not readily biodegradable does not mean it is bad for human health or the environment. A neutral soil containing residual chloride ions from road salt or a hydrochloric acid-based cleaning product is not biodegradable, however, it is innocuous. Milk jugs and engine blocks degrade slowly, but cause no harm. Conversely, certain chemicals biodegrade rapidly but have such high toxicity that they still pose a threat.

Are rinse waters from PROSOCO cleaning and restoration products considered to be biodegradable?

The term "biodegradable" must be carefully applied depending on the chemistry of a product.

An acidic or alkaline cleaner is formulated with simple mineral and organic compounds that complex with neutralizing agents and soil minerals to form inert salts.

Certain solvents - such as the dipropylene glycol monomethyl ether found in Sure Klean® Heavy Duty Paint Stripper - are readily biodegradable and have low toxicity. Other commonly used chlorinated solvents found in many commercial products have poor biodegradability and questionable toxicity.

High-phosphate cleaners are not typically biodegradable. In small quantities, however, phosphates are commonly used as fertilizer. Portions of the country that have excess phosphates restrict their use in consumer products. Industrial and commercial use products are not generally regulated.

Overall biodegradability depends on many factors including the type of soil, climate,

UV/sun light exposure, temperature, moisture and the types of micro-organisms found in nature or in a sewage treatment process.

Can PROSOCO tell me what the pH of rinse water coming off of my building will be?

In general, we cannot determine the pH of a rinse water for a specific project. There are many factors that play a part in determining pH and it is simply not possible to test enough projects to come up with data representative of all projects.

The only exception to the rule is a situation where the product being used is already neutral. The substrate and water should do nothing to substantially change the pH.

GLOSSARY

Acid:	A material with a pH below 7. Strong acids will typically have a pH less than 2. Many acidic cleaning products have a pH below 0.2.
Acute toxicity:	The ability of a substance to cause poisonous effects resulting in severe biological harm or death soon after a single exposure or dose. Also, any severe poisonous effect resulting from a single short-term exposure to a toxic substance.
Biodegradable:	Descriptive term for material that breaks down into harmless products by the action of living things or environmental action. Overall biodegradability depends on many things, such as type of soil, climate, and types of microorganisms present. Quick biodegradability is generally a good thing, though slower rates are not necessarily bad. An engine block, for instance, degrades slowly, but poses no safety threat. Certain chemicals may degrade quickly, but still pose a toxic safety hazard until the biodegradation is complete.
Caustic:	A material with a pH above 7. Strong caustics will have a pH above 12. Many caustic cleaning products have a pH above 14.
Caustic Soda:	Sodium hydroxide, a strong alkaline substance used as the cleaning agent in some detergents.
Characteristic:	Any one of the four categories used in defining hazardous waste: ignitability, corrosivity, reactivity, and toxicity.
Chlorinated Solvents:	An organic solvent containing chlorine atoms, e.g. methylene chloride and 1,1,1-trichloromethane, which is used in aerosol, spray containers and in traffic paint.
Chronic toxicity:	The capacity of a substance to cause long-term poisonous human health effects.
Combined Sewers:	A sewer system that carries both sewage and storm water runoff. Normally, its entire flow goes to a waste treatment plant, but during a heavy storm, the storm water volume may be so great as to cause overflows. When this happens, untreated mixtures of storm water and sewage may flow into receiving waters. Storm water runoff may also carry toxic chemicals from industrial areas or streets into the sewer system.
Contaminant:	Any physical, chemical, biological, or radiological substance or matter that has an adverse effect on air, water, or soil.

Corrosive:	A chemical agent that reacts with the surface of a material causing it to deteriorate or wear away.
Degradation:	The process by which a chemical is reduced to a less complex form.
Dilution Ratio:	The relationship between the volume of water in a stream and the volume of incoming water. It affects the ability of the stream to assimilate waste.
Effluent:	Wastewater—treated or untreated—that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters.
Environmental Protection Agency (EPA):	A federal agency responsible for protecting the environment, i.e. air, soil, and water. It also regulates the generation and disposal of hazardous waste and administers cleanup of hazardous waste sites.
Ground Water:	The supply of fresh water found beneath the Earth's surface (usually in aquifers) which is often used for supplying wells and springs. Because ground water is a major source of drinking water there is growing concern over areas where leaching agricultural or industrial pollutants or substances from leaking underground storage tanks are contaminating ground water.
Hazardous Characteristics:	Resource Conservation and Recovery Act (RCRA) regulations spell out specific rules that define a "hazardous waste." There are four generic characteristics and a list of substances that are automatically defined as hazardous. The four characteristics are: (i) ignitability [flashpoint <=140°]; (ii) corrosivity [pH <2 or >12.5); (iii) toxicity [fails a testing protocol: the "TCLP"]; and (iv) reactivity [can have a strong exothermic reaction in landfill conditions]. In terms of standard products, all acidic or alkaline cleaners fall under the Corrosivity characteristic as hazardous waste. The majority of our solvent-based products contains listed compounds and will fail the toxicity test or have a flashpoint below 140°. Job-site wastes must be tested to determine if they are hazardous or not.
Hazardous Substance:	(1) Any material that poses a threat to human health and/or the environment. Typical hazardous substances are toxic, corrosive, ignitable, explosive, or chemically reactive. (2) Any substance named by the EPA to be reported if a designated quantity of the substance is spilled in the waters of the United States or if otherwise emitted into the environment.

Hazardous Waste:	By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity) or appears on special EPA lists. Any waste which is a threat to health or the environment. Federal standards for classification, handling and disposal of potentially hazardous wastes are detailed in EPA's Resource Conservation and Recovery Act (RCRA) of 1976. Additional, more stringent regulations may be imposed by state and local regulatory authorities.
Listed Waste:	Wastes listed as hazardous under RCRA but which have not been subjected to the Toxic Characteristics Listing Process because the dangers they present are considered self-evident.
Material Safety Data Sheet (MSDS):	A compilation of information required under the OSHA Communication Standard on the identity of hazardous chemicals, health and physical hazards, exposure limits, and precautions. Section 311 of SARA requires a facility to submit an MSDS under certain circumstances. A technical fact sheet that describes the hazards of a chemical product and how to work safely with it. The OSHA Hazard Communication Standard requires manufacturers to provide an MSDS when selling their products.
National Institute for Occupational Safety And Health (NIOSH) / Mine Safety And Health Administration (MSHA):	These two federal agencies test and certify respirators. NIOSH is the research arm for OSHA.
Neutralization:	Decreasing the acidity or alkalinity of a substance by adding to it alkaline or acidic materials, respectively. Neutralization is the action of chemically altering a material to bring it to a neutral state. This can be achieved by adding caustic compounds to acidic rinse water, or acidic compounds to caustic rinse waters. A pH range between 5 and 9 is generally considered to be neutral. Please note that simply diluting an acidic or caustic wastewater with water will not necessarily neutralize it. Litmus paper is cheap; the customer still needs to test.
Occupational Safety and Health Administration (OSHA):	The main federal agency that enforces safety and health standards in the workplace.

Organic:	(1) Referring to or derived from living organisms. (2) In chemistry, any compound containing carbon.
pH:	A measure of the acidity or alkalinity of a liquid or solid material. This is a measure of the relative corrosivity of a material. The scale goes from 0-14, with 7 being considered as neutral. The scale is logarithmic, in other words each step on the scale is 10 times higher than the previous step. So a pH of 5 is 100 times more acidic then a pH of 7. pH can be measured with a meter (direct reading) or with litmus paper (color change).
Physical and Chemical Treatment:	Processes generally used in large-scale wastewater treatment facilities. Physical processes may involve air-stripping or filtration. Chemical treatment includes coagulation, chlorination, or ozone addition. The term can also refer to treatment processes, treatment of toxic materials in surface waters and ground waters, oil spills, and some methods of dealing with hazardous materials on or in the ground.
Point Source:	A stationery location or fixed facility from which pollutants are discharged or emitted. Also, any single identifiable source of pollution, e.g. a pipe, ditch, ship, ore pit, factory smokestack.
Pollutant:	Generally, any substance introduced into the environment that adversely affects the usefulness of a resource.
Pollution:	Generally, the presence of matter or energy whose nature, location, or quantity produces undesired environmental effects. Under the Clean Water Act, for example, the term is defined as the man-made or man-induced alteration of the physical, biological, and radiological integrity of water.
Potable Water:	Water that is safe for drinking and cooking.
Pretreatment:	Processes used to reduce, eliminate, or alter the nature of wastewater pollutants from non-domestic sources before they are discharged into publicly owned treatment works.
Publicly Owned Treatment Works (POTW):	A waste-treatment works owned by state, unit of local government, or Indian tribe, usually designed to treat domestic wastewaters.
Receiving Waters:	A river, lake, ocean, stream, or other watercourse into which wastewater or treated wastewater is discharged.
Residual:	Amount of a pollutant remaining in the environment after a natural or technological process has taken place, e.g. the sludge

remaining after initial wastewater treatment, or particulates remaining in air after the air passes through a scrubbing or other pollutant removal process.

Resource Conservation and Recovery Act (RCRA): Federal EPA regulation which sets the definitions of what is hazardous waste and how to dispose of it legally.

Runoff: That part of precipitation, snow melt, or irrigation water that runs off the land into streams or other surface-water. It can carry pollutants from the air and land into the receiving waters.

Salts: Minerals that water picks up as it passes through the air, over and under the ground, and as it is used by households and industry.

Sand Filters: Devices that remove some suspended solids from sewage. Air and bacterial decompose additional wastes filtering through the sand so that cleaner water drains from the bed.

Sanitary Sewer: Underground pipes that carry off only domestic or industrial waste, not storm water.

Sewer that runs to a Publicly Owned Treatment Works (POTW). Wastewater is treated before discharge to streams or rivers (our drinking water supply). These plants are highly regulated, and the operators get really picky about what goes in their sewer.

Separate Storm Sewer: This type does not go to the POTW.

Settleable Solids: Material heavy enough to sink to the bottom of a wastewater treatment tank.

Sewer: A channel or conduit that carries wastewater and storm water runoff from the source to a treatment plant or receiving stream. *Sanitary sewers* carry household, industrial, and commercial waste. *Storm sewers* carry runoff from rain or snow. *Combined sewers* are used for both purposes.

Slow Sand Filtration: Treatment process involving passage of raw water through a bed of sand at low velocity which results in the substantial removal of chemical and biological contaminants.

Soda Ash: Also known as caustic soda, this is an effective chemical to use in neutralizing acidic waters.

Sodium Bicarbonate: Baking soda. Also good for acid neutralization.

Solvent: Substance (usually liquid) capable of dissolving or dispersing one or more other substances.

Spill Prevention Control and Countermeasure Plan (SPCC):	Plan covering the release of hazardous substances as defined in the Clean Water Act.
Storm Sewer:	This is the kind of drain that you see on the street. This type of sewer does not always go to a treatment plant, but directly to a river, lake or stream instead.
Sump:	A pit or tank that catches liquid runoff for drainage or disposal.
Surface Water:	All water naturally open to the atmosphere (rivers, lakes, reservoirs, stream, impoundments, seas, estuaries, etc.); also refers to springs, wells, or other collectors which are directly influenced by surface water.
Total Suspended Solids (TSS):	A measure of the suspended solids in wastewater, effluent, or water bodies, determined by using tests for "total suspended non-filterable solids." (*See*: suspended solids.)
Toxicity:	The degree of danger posed by a substance to animal or plant life. (See: acute, chronic toxicity.)
Toxic Substance:	A chemical or mixture that may present an unreasonable risk of injury to health or the environment.
Treatment, Storage, and Disposal Facility (TSD):	Site where a hazardous substance is treated, stored, or disposed. TSD facilities are regulated by EPA and stated under RCRA.
Volatile Organic Compound (VOC):	Any organic compound which participates in atmospheric photochemical reactions except for those designated by the EPA Administrator as having negligible photochemical reactivity.
Waste Treatment Plant:	A facility containing a series of tanks, screens, filters, and other processes by which pollutants are removed from water.
Wastewater:	The spent or used water from individual homes, a community, a farm, or an industry that contains dissolved or suspended matter. Also, water– treated or untreated – that flows out of a treatment plant, sewer, or industrial outfall. Often refers to waters discharged into surface waters. Same as rinse water or washdown water.
Water Pollution:	The presence in water of enough harmful or objectionable material to damage the water's quality.

