Industrial Wastewater in California:

A Clean Water Connection

When your business properly disposes wastewater, your state and local communities benefit from cleaner water and reduced wastewater treatment costs. This information sheet will provide you with general guidelines for discharging industrial wastewater into the sanitary sewer system in the state of California and locally in the City of Merced service area. Our goal is to help you conduct your business while you comply with the regulations.

Merced's Industrial Pretreatment Program

The General Pretreatment Regulations establish responsibilities of Federal, State, local government, industries, and the public to implement Pretreatment Standards to control pollutants from the industrial users which may pass through or interfere with Publicly Owned Treatment Works (POTW) treatment processes or which may contaminate sewage sludge. The Industrial Pretreatment (Source Control) Program administers the state's industrial waste regulations for local businesses that discharge industrial wastewater to sewage treatment plants throughout the state of California. Program activities include administration of waste discharge permits, inspections, enforcement, sample collection to determine compliance, and collection of surcharge and monitoring fees. Routine monitoring is conducted within the individual municipalities to trace discharges that could harm workers or disrupt treatment plant operations. Source Control staff also work with businesses to help them identfy and employ pollution prevention practices.

How the Wastewater System Works

What is industrial waste?

Industrial waste is a generic term for any waste material (solid, gas, or liquid) generated by a commercial, industrial, or nonresidential activity. The Source Control Program focuses on companies that discharge wastewater during manufacturing, remediation, cleaning, or rinsing processes. This waste differs from residential household wastewater which includes *domestic sewage* from toilets, showers, washing machines, and other household-related activities.

What is hazardous waste?

Hazardous waste is a federal and state designation for waste material that is toxic, flammable, corrosive, or reactive; this kind of waste requires special handling and treatment at a licensed treatment, storage, disposal facility (TSDF). For information on how to manage and dispose of your hazardous waste, visit the Certified Unified Program Agencies (CUPAs) at http://www.calepa.ca.gov/CUPA/About.htm .

What is the difference between combined and separated sewers?

Separate from the sewage system, the storm drainage system is a small diameter, gravity flow drain line that transports stormwater to the nearest body of water *without* any treatment. Because of this, it is extremely important to keep contaminants out of storm drains. Most of the municipalities in California have separate storm and sewer drainage systems. In some portions of the state however, stormwater combines with sewage in a "combined sewage system" and is treated at a wastewater treatment plant. All discharges to the combined system must meet local discharge limits. The City of Merced's Sewer Use Ordinance, prohibits stormwater discharge to the sanitary sewer.

How is wastewater treated?

Municipal sewage treatment facilities are designed to treat domestic sewage and other waste through a process known as secondary treatment. The facilities send organic material through a series of skimmers, screens, and sedimentation tanks and then subject it to microbial breakdown. Microbial breakdown uses "bugs" to convert organic material to harmless by-products which settle and are removed from the wastewater. Some municipal sewage treatment facilities also remove nutrients, such as ammonia nitrogen and phosphorous. Heavy metals and some chemicals cannot break down in the biological process, or may be toxic to the "bugs", causing interference or passing through the treatment process into the river.

What is Wastewater pretreatment?

Municipal sewage treatment plants are designed to break down and treat biological wastes. Wastewater pollutants such as heavy metals and oils will not break down in the treatment plants; therefore, certain businesses need to treat their wastewater *before* discharging to the sewer. The pretreatment system, such as oil/water separation, chemical precipitation, or filtration, will depend on the type of concentration of pollutants in the wastewater. If your wastewater requires pretreatment, you are required to get an approval from the City of Merced Source Control Program before discharging or connecting to the sewer.

What are Biosolids?

Biosolids is the name for the solids produced by the municipal wastewater treatment process. Biosolids, like treatment plant effluent, must meet federal quality standards in order to be recycled in a beneficial manner. Most municipalities in California either use compost facilities to manage biosolids or reuse the biosolids as a soil conditioner on farm and forest lands throughout the state.

Guidelines for Businesses Discharging Industrial Waste

How does my business obtain approval to discharge?

Prior to discharging industrial waste to the sewer, all dischargers who generate and dispose of industrial wastewater (not including toilets) should contact the City of Merced Source Control Program to determine if

written discharge approval is necessary. Information may be requested by contacting the Water Quality Control Division at 209-385-6204 or environmentalcontrol@cityofmerced.org.

How much advance notice must be given to discharge industrial wastewater?

The time is takes to obtain a permit depends upon the type and amount of wastewater a company discharges to the sewer. There are two types of standards and limitations (Federal Pretreatment Limits and Municipal Local Limits) that apply to a company's discharge. See page 4 for a list of federally regulated industries. Some approvals for very low-volume or one-time discharges can be made verbally or by letter.
For federally regulated new dischargers (significant industrial users) a company must apply for a permit 90 days prior to discharge. Typically, significant industries meet one or more of the following conditions:

- The facility discharges more than 25,000 gallons a day of process wastewater
- The facility includes a federally identified categorical process (see page 4)
- The facility discharges 5% or more hydraulic or organic load to the municipal sewage treatment system
- The facility has the potential to cause upset or pass through the municipal sewage treatment process

What are the types of approvals?

The City of Merced Source Control Program issues several types of discharge approvals. These may include permits, discharge authorizations, discharge letters, and verbal approvals. The type of approval is established by the local municipality, and is determined by the volume discharged, the nature of the business, the characteristics of the wastewater, and the potential risk to the municipal treatment plant. A permit is required if you discharge more than 25,000 gallons per day or are a federally regulated industry.

What fees does the Industrial Pretreatment Program Charge?

The City of Merced does not charge any fees related to the issuance and renewal of Industrial Waste Discharge Permits (IWDP's), Discharge Authorizations, and Letters of Authorization. Companies may be charged an additional fee depending on what pollutants are present in the wastewater and the volume of the discharge. These charges are in addition to the base sewer rate charged by the City of Merced and are billed monthly as part of your sewer bill.

What is an extra strength industrial waste discharge?

Extra strength Industrial Waste Discharge is defined as industrial, commercial, or hospital industrial wastes discharged into the sewer system containing a total of more than 60 pounds of Biochemical Oxygen Demand (BOD), or Total Suspended Solids (TSS) in any one day and having an average strength in excess of 300 mg/L of BOD, or TSS. Charges are assessed per each 300 mg/L of BOD or TSS, or fraction thereof, in excess of the first 300 mg/L of BOD or TSS, per 1,000 gallons of water delivered to the premises. This surcharge is in addition to the charge of industrial sewer service.

These facilities are charged an additional fee to pay for the costs of treating this high-strength wastewater. The surcharge or high-strength fee is based on the volume of water discharged and the amount of BOD or TSS in the wastewater. The discharger may be required to monitor the waste strength on a regular basis.

Industries that may be subject to local surcharge fees include:

Dairy Products, Breweries and Wineries, Commercial Laundries, Food Processing, Meat and Fish processing, and Soft Drink bottlers. For more information on fees, contact the City of Merced Source Control Program.

Discharge Limits

In California, municipalities are required to establish local limits to ensure that industrial discharges do not damage the municipal treatment plants and the surrounding environment. In addition to local limits, some businesses are subject to federal pretreatment regulations which may be more stringent than the local limits. If your business falls in one of the industrial categories listed below you are subject to federal pretreatment regulations.

Federal Categorical Pretreatment Limits

The Federal government has established discharge limits for specific activities, or categories. The following is a partial list of industries considered "categorical dischargers". These companies require a full permit regardless of wastewater discharge volume.

Aluminum forming
Nonferrous metal manufacturing
Copper forming
Pharmaceutical manufacturing
Porcelain enameling
Leather tanning finishing
Inorganic chemical manufacturing
Metal foundries
Coil Coating
Petroleum refining
Electroplating
Pulp/paper mills
Wood preserving
Metal finishing
Battery manufacturing
Pesticide manufacturing
Electrical/electronic components
Circuit board manufacturing
Iron/steel manufacturing
Centralized waste treatment

Local Limits

Technically based Local Limits are established for specific municipal wastewater treatment plants, and are established to protect the municipal treatment process, quality of the biosolids, and worker health and safety. These local limits apply to significant industrial dischargers that discharge industrial process wastewater to regional sewer system. Check with the City of Merced to determine if local limits may apply to your business. The following pollutants may be subject to local limits.

<u>Metals and Cyanide</u>

Heavy metals in excess of the permitted limits can upset or disable treatment plant operations. Heavy metals either pass through the plant into the final effluent discharged to Hartley Slough or accumulate in the biosolids.
Below are the local limits for Merced that may be imposed. The values listed as metal limits are for total metals, not just dissolved metals. These limits may change periodically.

Parameter	Daily Maximum Limit mg/L
Arsenic (As)	0.1
Cadmium (Cd)	0.2
Copper (Cu)	2.0
Cyanide (CN)	1.0
Lead (Pb)	1.0
Mercury (Hg)	0.01
Nickel (Ni)	1.0
Silver (Ag)	0.2
Zinc (Zn)	3.0
p*H*	6.0 – 10 standard units
Oil & Grease	
Animal & Vegetable	300
Mineral & petroleum	100

Fats, Oils, and Grease (FOG)

FOG from petroleum, mineral, or non-biodegradable cutting oil origin (non-polar FOG) can harm the biological treatment process. Oil/water separators used to pretreat oily wastewater must be approved before installation. Contact the City of Merced Engineering Department (209-385-6846) to obtain information for submittal and installation guidelines.

FOG from an animal or vegetable origin (polar FOG) can block sewer lines. Dischargers are required to minimize free-floating polar FOG to prevent sewer line blockage. Dischargers may not add agents to emulsify free-floating polar FOG. Companies discharging polar FOG may be required to add additional pretreatment to correct these discharges.

Corrosive substances (pH)

Wastewater with a pH either above or below the permitted level can damage the sewer lines or disrupt treatment plant operations. It can also react with other substances in the sewage to create noxious fumes. The pH local limit minimum is 6.0. Discharging acidic waste with a pH below 5.0 is federally prohibited. Caustic waste with a pH above 11 is considered a hazardous waste, and is prohibited from discharge into the municipal system. Most municipalities in California have established pH discharge limits (upper and lower) somewhere between the prohibited discharge levels (Merced's Local Limits for pH are 6.0 – 10 standard units).

Flammable or explosive materials

Sewer lines have been known to explode, causing severe damage to people and property as a result of explosive and flammable materials entering the sewer. To prevent this hazard, certain pollutants are prohibited from the sewer system. Prohibited pollutants include, but are not limited to: gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides and sulfides and any other substance the local municipality, fire department, EPA, or the State of California recognizes as a hazard to the system.

Organic Compounds

Organic compounds such as solvents, cleaners, thinners, pesticides, and laboratory chemicals may cause toxic gases and fumes in sewer lines. Dischargers of pure organic products and discharges of compounds that may affect worker safety or health problems are prohibited.

Solids and food waste

Solids capable of settling can restrict or block flow in sewer lines. Restricting the capacity of a public sewer line is prohibited by federal law. The company discharging the solids is liable for any damages caused by sewage backups. Discharge of materials such as ashes, sand, grass, and gravel that can clog sewage flow is prohibited.

High temperature

High temperature can cause the release of gases in sewers or disrupt treatment plant operations. The temperature of industrial wastewater shall not exceed 40^{o}C (104^{o}F) at the point where the wastewater enters the public sewer system or which will cause the wastewater treatment plant influent to exceed 104^{o}F (40^{o}C).

Industrial waste sample collection

Prior to discharging industrial waste to the sewer system your business may need to have a representative sample of the wastewater analyzed and the results presented to the City of Merced before obtaining discharge approval. The discharger may also be responsible for installing and maintaining a flow meter and sampling site. Contact the City of Merced Source Control Program for guidance on approved sampling and analytical methods or design criteria and construction standards for sampling sites.

Industrial Waste Discharge Permits (IWDP's)

Industrial Waste Discharge Permits sanction the discharge of wastewater to the POTW upon condition that permit terms are adhered to. An IWDP is typically effective for a limited time period and revocable by the issuing authority at any time for just cause. In addition, the Control Authority's sewer use ordinance will

typically include a provision which forbids the discharge of industrial wastewater from a significant industrial user without a current industrial user permit.

An IWDP describes, in a single document, all of the duties and obligations of the permittee including all applicable pretreatment standards and requirements. These include prohibited discharge standards and any applicable categorical standards, local limits, and monitoring and reporting requirements. Permits generally contain actual numeric limitations (expressed in terms of concentration or mass of pollutants which may be discharged over a given time period), schedules for monitoring and reporting, and requirements regarding sampling location, sampling analysis and methodology references. These conditions reflect the most stringent of applicable Federal, State and local pretreatment standards and requirements. When an industrial user is issued an IWDP it is extremely advisable to know and understand the requirements that are laid out in the permit.

The following are some key areas of an IWDP that will help users understand and comply with their permit:

The Effective Date of the permit and the Expiration Date of the permit.

The permits effective date and expiration date is clearly set out in the permit and located on the cover page of the IWDP. The City of Merced may establish shorter durations, in no case will the effective duration extend more than 5 years, per EPA rule.

Wastewater Discharge Limitations

Once the City of Merced has reviewed the permit application and other supplemental materials requested from the industrial user, the permit writer can determine what pollutants are present. After determining what pollutants are present, the permit writer must decide which of these pollutants require regulation. The permit should contain effluent limits based on the following:

National Prohibited Discharges (general and specific) [40CFR 403.5 (a) and (b)]

Section 403.5 (a) and (b) of the General Pretreatment Regulations establishes general and specific prohibitions that apply to all nondomestic users that discharge to POTW's. Local ordinances for POTW's with approved pretreatment programs already include authority for local enforcement of these provisions. Please refer to pages 5 and 6 for definitions of pollutants which; create a fire, explosion hazard, or cause corrosive or structural damage to the POTW. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in interference, heat in amounts which will inhibit biological activity in the POTW resulting in interference, any pollutants, including oxygen demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the POTW are prohibited. At no time may a User introduce into a POTW any pollutants which will cause Pass Through or Interference.

Categorical Pretreatment Standards [40CFR Parts 405-471]

Categorical pretreatment standards are technology-based standards for a selected group of industries established by EPA under authority of the Clean Water Act. These standards are developed based upon industry-wide studies of current treatment practices for pollution control and, therefore, establish national baseline pollution control requirements for the regulated industrial categories.

Local Limits [40CFR 403.5 (c) and (d)]

Section 403.5 (c) and (d) of the General Pretreatment Regulations requires the Control Authority (City of Merced) to develop and enforce specific limits to implement the general prohibition against pass through and interference [40CRF 403.5 (a)] and the specific prohibitions [40 CRF403.5 (b)]. There are several considerations which may affect the Control Authority's decision on how to incorporate these local limits into industrial user permits. Please refer to page 4 for further information regarding local limits.

Monitoring Requirements

Once an industrial user's discharge limits are developed, the permit writer may require the industrial user to routinely self-monitor and report the results of such monitoring. Monitoring the discharge of an industrial user enables the City of Merced to keep informed about the characteristics of the user's discharge and compliance status so that any necessary permit modifications or enforcement actions can be initiated. To prevent or minimize problems, the permit clearly details monitoring and reporting requirements. The permit's monitoring and reporting section contains specific requirements for each of the following items:

- Sampling locations
- Pollutants to be monitored
- Sample collection method
- Monitoring frequencies
- Analytical methods
- Reporting Requirements

Reporting Requirements

Along with establishing the self-monitoring requirements, the permit specifies in a clear manner the reporting requirements of the permit. There are several different reporting requirements that could be included in a permit. The Federal reporting requirements contained in 40CFR 403.12 consist of the following reports:

- Baseline Monitoring Report [40 CRF 403.12 (b)]
- Reports on progress and compliance schedules [40 CFR 402.12 (c)]
- Final Compliance reports (90-Day Report) [40 CFR 403.12 (d)]
- Periodic reports on continued compliance [40 CFR 403.12 (e)]
- Notice of slug loading [40 CFR 403.12 (f)]
- Reports required for non-categorical industries [40 CFR 403.12 (h)]

- Notice by the industrial user of any violations within 24 hours of becoming aware of such violation and submission of results of repeat sampling within 30 days of said notice of violation [40 CFR 403.12 (g)]
- Notice of anticipated substantial changes in the volume or character of pollutants discharged [40 CFR 403.12 (j)]

The industrial users permit at a minimum contains the following information in sufficient detail:

- What types of information are to be contained in each report (e.g., analytical data, flow data, or production data)
- When each report is to be submitted (specifying the dates and frequency for submission)
- Who is responsible for signing the reports (e.g., an authorized corporate official)
- Where the reports are to be sent, including the control Authority's address and, if appropriate, the name of the person responsible for receipt of each report.

Enforcement Provisions

In all IWDP's there are enforcement provisions that define what alternatives may be used by the City of Merced in order to bring an industry back into compliance with their permit. Continued violations by an industrial user could subject the user to enforcement proceedings, fines, penalties, civil and criminal liability and recovery of costs incurred by the POTW.

The following are brief examples of enforcement that could be used for non-compliance of a discharge permit:

Annual Publication

A list of all industrial users which were deemed in Significant Non Compliance during the twelve (12) previous months shall be published annually by the City of Merced in the local Newspaper. Accordingly, the permittee is apprised that noncompliance with the permit may lead to an enforcement action and may result in the publication of its name in accordance with this section.

Civil and Criminal Liability

Noncompliance with any term or condition of a permit, or any compliance schedule, shall constitute a violation of the City of Merced Sewer Use Ordinance (SUO), and may be grounds for administration action or enforcement proceedings including civil or criminal penalties, injunctive relief and summary abatement, as identified in the SUO.

Penalties for Violations of Permit Conditions

The SUO provides that any person who violates a permit condition is subject to a civil penalty of up to an amount of two thousand dollars ($2,000.00) for each day for failing or refusing to furnish technical or monitoring reports. In an amount up to three thousand dollars ($3,000.00) for each day for failing or

refusing to timely comply with any compliance schedule established by the city. In an amount up to five thousand dollars ($5,000.00) per violation for each day for discharges in violation of any waste discharge limitation, permit condition, or requirement issued, reissued or adopted by the city. In an amount up to ten dollars ($10.00) per gallon for discharges in violation of any suspension, cease and desist order or other orders, or prohibition issued, reissued or adopted by the city. Any person who willfully or negligently violates permit conditions is subject to criminal penalties of a fine per violation, or by imprisonment for one (1) year, or both. The permittee may also be subject to sanctions under State and/or Federal law.

Recovery of Costs Incurred

In addition to civil and criminal liability, the City of Merced may recover all verifiable costs resulting from a discharge not in compliance with the SUO, including but not limited to the repairing of damages to the sewer system, additional treatment costs, and additional maintenance costs. Regulatory agencies will assess the fines and penalties pertaining to violations that incurred at the treatment plant.

Industrial User Fact Sheet

The basis for decisions made during the permitting process are generally summarized in a document commonly referred to as the "industrial fact sheet". The fact sheet briefly sets forth the significant factual, legal, methodological, and policy questions considered in preparing the permit. The following table describes the information that may be contained in an industrial user fact sheet:

TABLE 1 COMPONENTS OF A PERMIT FACT SHEET

1. Description of industrial user, including:
   - Name, address, and location of the facility
   - Number of connections which the facility has to the sewer system, specifying the one(s) relevant to the fact sheet
   - Type of operations in which the facility is engaged (e.g., manufacturer of battery terminals)
   - Brief description of the plant process or other sources of generating wastewater
   - Categorical determination (if applicable).

2. Type and quantity of the discharge:
   - Rate or frequency of the discharge; the average and maximum daily flow
   - Daily maximum and monthly average discharge of any pollutants present in significant quantities or subject to limitations or prohibition.

3. Basis for the permit limits, including:
   - Permit application documents

- Analytical data for pollutants provided in both a complete and summary form so that they can be easily reviewed and verified.
- Copies of or citations to Federal, State and local regulations.
- Copies of literature information were used to develop the permit limits (e.g., pages from the development documents, Treatability Manual, etc.)
- Plant layouts and process and wastewater flow diagrams.

4. Detailed discussion of any special conditions in the permit and the rationale for pollutant selection and limits development.

5. Calculations showing the actual numbers used to derive each limit, including:
   - Combined wastestreams formula or flow weighted average calculations
   - Equivalent mass or concentration-based limit calculations
   - Local limits allocation basis

A final word: The high price of polluting

Discharging wastewater to the sanitary sewer is a privilege, not a right. Managing wastewater properly is good for the water, the environment, and community health. It's also good for business. Businesses or individuals who illegally discharge substances to the sanitary sewer system can be held liable for any damages and may be fined up to $5000.00 per violation per day. Companies may also be charged for increased monitoring and may be required to install upgraded pretreatment equipment. If everyone does their part, we all benefit.