

An Environmental Guide for

Texas METAL Finishers

RG-291 Revised January 2000

Know the Rules

Reduce Pollution

Save Money

**Small Business and Local
Government Assistance (SB&LGA)**

(800) 447-2827

http://www.tnrcc.state.tx.us/exec/small_business

What can this guide do for me?

This guide contains information you need to know about environmental regulations as well as tips for protecting the environment and saving money. The appendices contain more detailed information on some subjects. ***This guide does NOT contain ALL the information you need*** to comply with the law.

If you have any questions, you can call the Small Business and Local Government Assistance Program for **free, confidential** assistance: **(800) 447-2827**

The Small Business and Local Government Assistance Program (SB&LGA) is an independent section of the Texas Natural Resource Conservation Commission (TNRCC). The enforcement division of the TNRCC cannot seek information regarding your contact with the SB&LGA.

What if I'm currently in violation of TNRCC regulations?

It is **always better to report your own violations** than to be the subject of a complaint or to have violations discovered by the TNRCC during an inspection. In many instances, small businesses will not face fines or sanctions for first-time violations if they make good-faith efforts to report problems as soon as they are aware of them and if they develop a TNRCC-approved plan to correct the problems.

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Waste Reduction

In this section:

How can reducing waste lower my liability and save me money?

What are some general waste reduction tips that any business can act on?

How can I develop my own environmental management program?

What are specialized tips that can help a business in my industry reduce waste?

Less Waste Saves You Money

If your business never had pollution, you wouldn't have to worry about regulations, permits, and other headaches you may already be dealing with. However, most companies must follow at least one environmental regulation. There are even rules about garbage. The good news is that the more you reduce waste, the fewer regulations apply to you and the less time you'll spend dealing with the government. And guess what? Less waste means lower costs for supplies and waste disposal. At the same time, you can lower your liability. Saving money and having less liability? You can't lose.

An example of a regulation that waste reduction can help you avoid is the Waste Reduction Policy Act. If your facility generates more than 1.102 tons (2,204 pounds) of hazardous waste in a year or you report under the Toxics Release Inventory program, you are required to submit a *pollution prevention plan* to the TNRCC. For more information on this requirement, you can order publication number RG-209, *Does the Waste Reduction Policy Apply to You?*, by calling (512) 239-0028.

General Waste Reduction Tips

Re-think, reduce, reuse, recycle. Four simple things that you can do to save money.

- Re-think your processes; sometimes a new approach can result in the greatest savings.
- Try to reduce the amount of materials you use.
- Whenever possible, reuse materials.
- If something cannot be reused, recycle it.

Getting Started with Waste Reduction

The following pointers will help you develop a plan for your business.

1. Identify your sources of waste or pollution.
2. Look at options for waste reduction.
3. Calculate what you spend to control or manage waste or pollutants from each source, and compare the figures with costs to reduce waste or prevent pollution from those sources.
4. Start with the waste reduction activities that have the most benefit.
5. Develop a way to track the effectiveness of your program.
6. Look at your operation on a regular basis to find new ways to reduce waste.

As you develop a pollution prevention program for your business, remember the following.

- The small business owner or manager determines the success of the program. His or her attitude will set the tone for the employees.
- Your employees will be the best source for ideas on waste reduction. Educate your staff about your goals, and then brainstorm for ideas on how to reduce or eliminate sources of pollution.
- Pollution prevention is a continuous process.

Specific Tips for the Metal Finishing Industry

There are many things that metal finishers can do to reduce waste and prevent pollution. Below is a list of some of these activities. Appendix I has a full description of the different suggestions listed below along with case studies.

Good Operating Practices

1. Regular inspection and maintenance.
2. Employee training
3. Quality circles
4. Inventory control and purchasing

Spill and Leak Prevention

5. Overflow alarms
6. Lids
7. Catch spills
8. Containment

Waste Stream Separation

9. Separate waste streams

Control Drag-out

10. Drain boards
11. Drip time
12. Parts arrangement
13. Parts rotation
14. Air knives
15. Wetting agents
16. Increasing bath temperature
17. Lowering process bath concentration

Cleaning

18. Less hazardous solvents
19. Blast cleaning
20. Solvent reclamation
21. Reuse cleaning baths
22. Precleaning
23. Equipment location
24. Bath or rinse level

Extending Bath Life

25. Covers
26. Purified water
27. Electrolytic dummieing
28. Filtration
29. Precipitation

Rinsing

30. Countercurrent rinsing
31. Agitate bath
32. Spray rinses
33. Be careful with rinse water

Material Substitutions

34. Noncyanide process chemicals
35. Less toxic substitutions

Air Regulations

In this section:

What is air pollution?

What kind of state authorization do I qualify for?

Which exemptions apply to my industry?

Are there special regulations for my county?

Do I need a federal operating permit?

What other air pollution requirements apply to my business?

What are the most common air violations for my industry?

Air Pollution Is . . .

anything other than steam or carbon dioxide that goes into the air from your business.

Types of State Authorization

If your business generates air pollution, you must have authorization from the Texas Natural Resource Conservation Commission (TNRCC) to construct or modify your facility, and then to operate. There are three types of state authorization:

- **Grandfathered status**
- **Standard Exemption**
- **State Air Permit**

Your authorization depends on three things:

- the processes and materials you use,
- the date you began operating, and
- your location.

Authorization does **not** depend on any financial aspect of your business, such as sales.

Grandfathered Status

Grandfathered status exempts a facility from the air permitting process. You must verify:

- your facility was in operation before September 1, 1971; **and**
- you have **not** modified or changed **any** methods of operation since September 1, 1971.

If you think you qualify for grandfathered status, call us at (800) 447-2827. If you are not eligible for grandfathered status, you may qualify for a standard exemption. Otherwise, you will need a state air permit.

Note: Even if you are eligible for grandfathered status, there still may be **additional local and state air quality requirements**, restrictions, fees, etc. that apply to your business.

Standard Exemptions (listed in Table 1)

Standard exemptions:

- have specific conditions that your business must meet,
- get approved more quickly than permits,
- do not require an application fee, and
- can help you reduce paperwork, reporting, and costs.

The conditions of a standard exemption are not negotiable. Your facility must meet all of them exactly to qualify.

Table 1: Standard Exemptions [S.E.] for Metal Finishers

✓	GENERAL TOPIC	S.E. #	RELEVANT EQUIPMENT AND PROCESSES	PAPERWORK REQUIRED
☐	Metal Finishers	106.375 or S.E. 41	S.E. 41 covers equipment using aqueous solutions for: ■ anodizing, electrodeposition, electroless plating, electrolytic polishing ■ stripping of brass, bronze, cadmium, copper, iron, lead, nickel, tin, zinc, and precious metals ■ cleaning, stripping, etching, or other surface preparation Note that this exemption does not include chromium, so chrome plating would not qualify. In addition, chemical milling or electrolytic metal recovery and reclaiming systems are not covered.	No paperwork required
☐	Decorative Chrome Plating	106.376	Decorative chromium electroplating operations that have a maximum combined rated capacity for all decorative chrome plating rectifiers of not more than 5,000 amperes and which use a fume suppressant or other equivalent control as sufficient to meet §113.190 of this title (relating to Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks (40 CFR 63, Subpart N)) are exempt. This exemption may not be used at any site where other chrome plating or chromic acid anodizing operations are conducted.	No paperwork required
☐	Surface Coating	106.433 or S.E. 75	S.E. 75 is for facilities that perform coating operations and opened after March 16, 1985. The exemption also limits hourly VOC emissions, but the limit depends on certain aspects of your business. Other conditions include requirements for exhaust fans and stacks, and record keeping. Metal spraying or metalizing operations may not use Standard Exemption 75. If you constructed your facility before March 16, 1985, then Standard Exemption 89 may apply to your business. Call us for more information.	TNRCC PI-7 form
☐	Hand-held Equipment	106.265 or S.E. 40	If you use hand-held or manually operated equipment , you may qualify for this standard exemption. This exemption has no specific conditions; any air pollutants resulting from such equipment are considered minimal and therefore exempt from permitting without conditions.	No paperwork needed
☐	Abrasive Blast Cleaning	106.452 or S.E. 102	You may be eligible if you do sandblasting or other abrasive cleaning processes indoors or outdoors.	No paperwork needed
☐	Chromium Electroplating and Chromium Anodizing	106.262 or S.E. 118	Standard Exemption 118 can be used by metal finishers that use chromium in their electroplating or anodizing process if they can meet the restrictive emission limits , distance limitation, and chemical requirements.	TNRCC PI-7 form
☐	Degreasing Units	106.454 or S.E. 107	Metal finishers that use degreasing units may use S.E. 107 if they meet specific requirements about equipment dimensions and location, operating procedures, solvent use and storage, ventilation, and record keeping. Chlorinated solvent usage must be less than 660 gallons per year and usage for all other solvents cannot exceed 1,500 gallons per year.	TNRCC PI-7 form may be needed
☐	Organic Liquids Loading	106.473 or S.E. 53	This exemption applies to equipment that loads or unloads organic liquids for rail cars, tank trucks, storage containers or drums. To qualify for S.E. 53, the total emissions of volatile organic compounds (VOCs) from the organic liquids must not exceed 25 tons per year.	No paperwork needed
☐	Hydrochloric Acid Storage	106.474 or S.E. 78	This exemption is for facilities that store hydrochloric acid with an acid strength of 38% by weight or less in tanks. If an acid more concentrated than 20% by weight is stored, the tank vent must be controlled to reduce emissions by at least 99%.	No paperwork needed

Call the SB&LGA at (800) 447-2827 for the full text of these standard exemptions or for copies of PI-7 forms to claim certain standard exemptions.

Claiming a Standard Exemption.

Some standard exemptions require you to register with the TNRCC by submitting Form PI-7. Others do not require registration. Standard exemptions apply to specific processes and/or equipment. Your business may include several processes, which may each qualify for different exemptions. Likewise, your business may require a permit for some processes while qualifying for exemptions for others.

To use standard exemptions, you cannot emit more than 25 tons per year of:

- Volatile Organic Compounds (VOCs)
- Sulfur oxides (SO₂)
- Particulate matter (PM10) that is small enough to be inhaled
- Other air contaminants (except carbon dioxide, water, nitrogen, methane, ethane, hydrogen, and oxygen)

If your facility cannot qualify for these standard exemptions, you may alter your process to fit the standard exemption or register for a state air permit.

Are There Special Regulations in My County?

Limits on volatile organic compound (VOC) emissions apply to businesses in some counties, called nonattainment areas, that have not met federal requirements for air quality. Nonattainment counties include those shown in Table 2.

Call the SB&LGA at (800) 447-2827 for information on what you need to do if you operate a metal finishing shop in one of these counties and

- you have a vapor or cold-cleaning degreasing machine or
- your facility emits more than the VOC limit for your county.

These rules apply to businesses in most nonattainment counties regardless of any standard exemptions or permits the businesses may have been granted. They apply even to businesses that have been grandfathered.

State Air Permits

If your business is not grandfathered and cannot qualify for standard exemptions, you must have a state air permit. To get a permit, you must do four things:

- submit TNRCC Form PI-1,
- pay a fee,
- supply additional information about your process, and
- post public notice.

If your application is approved, you will usually receive your permit within several months. You may then begin to construct your facility. *By law, you must obtain your permit before you begin to construct and operate your facility.* If you have questions about the permitting process, or have already started construction on your facility without authorization, please call the Small Business and Local Government Assistance Program hot line at (800) 447-2827.

Table 2: Counties in Nonattainment Areas

1	1	2	3
Beaumont-Port Arthur Hardin Jefferson Orange	Dallas-Fort Worth Collin Dallas Denton Tarrant	El Paso El Paso	Houston-Galveston Brazoria Chambers Fort Bend Galveston Harris Liberty Montgomery Waller
1 Moderate nonattainment (limit: 100 tons/year VOCs) 2 Serious nonattainment (limit: 50 tons/year VOCs) 3 Severe nonattainment (limit: 25 tons/year VOCs)			

Note: In 1997 the EPA proposed that the DFW nonattainment area be “bumped up” to the “serious” classification. If this proposal becomes final, the effective date is expected to be in February 1998. A similar action is expected for the Beaumont area.

Federal Operating Permits

Facilities that emit or have the potential to emit large amounts of air pollutants are called *major sources*. These facilities must comply with additional regulations including registering with the Environmental Protection Agency (EPA). See Appendix II to determine if you are a major source of air emissions.

NESHAP/MACT for Chromium Plating and Chromium Anodizing

The EPA developed a National Emission Standard for Hazardous Air Pollutants (NESHAP) for chromium plating and chromium anodizing. The requirements of this particular NESHAP are sometimes referred to as a Maximum Achievable Control Technology (MACT). Among other things, this NESHAP requires chrome platers and anodizers to meet an emission concentration limit **and list** specific emission reduction techniques to achieve this limit. See Appendix II for complete information on this regulation.

NESHAP for Halogenated Solvent Cleaners

The EPA also developed a NESHAP for businesses that use halogenated solvent cleaners such as methylene chloride. The section below will help you to decide whether this regulation applies to your operation.

Does This NESHAP Apply to Me?

Yes, if you:

- own or operate a solvent cleaning machine; and
- use a solvent in your machine that contains (in total) 5 percent by weight or more of any of the following regulated solvents:
 - Carbon tetrachloride
 - 1,1,1-Trichloroethane
 - Chloroform
 - Trichloroethylene
 - Perchloroethylene
 - Methylene chloride

Clean Air Act Section 112 (r)

This rule affects metal finishers that use certain listed chemicals in specific amounts. For example, if a facility uses:

- 1,000 lbs. or more of hydrofluoric (50 percent concentration or greater) or
- 10,000 lbs. or more of hydrochloric acid (30 percent concentration or greater),

then the company will have to develop a risk management plan by June 20, 1999.

A company using any chemicals on the list will have to follow the general duty clause, which says that businesses must:

- identify hazards that may result from accidental releases, using appropriate hazard assessment techniques;
- design, maintain, and operate a safe facility; and
- minimize the effects of an accidental release.

For further information about MACT, NESHAP, or 112 (r) requirements, call the SB&LGA at (800) 447-2827.

Other General Air Regulations That May Apply

Meet Applicable "Emissions Inventory" Requirements

If you emit more than 10 tons per year of either volatile organic compounds (VOCs) or hazardous air pollutants (HAPs), you must file an annual report with the TNRCC called an Emissions Inventory. Emissions Inventory reports help track and plan the state's progress in reducing air pollution.

Don't Be a Nuisance

Your facility is not allowed to create emissions, including odors, that adversely affect human health or welfare, animal life, vegetation, or the normal use and enjoyment of property.

Prevent Visible Emissions

Your facility must not give off visible emissions or fine particles of matter. If this type of matter can be seen coming from your facility, call the SB&LGA for more information on how these emissions are regulated.

Waste Regulations

In this section:

What is waste?

What is a waste stream?

What categories apply to my waste?

What is “generator status” and how do I determine mine?

What waste management forms do I need?

How should I handle my waste before I dispose of it?

What are specific waste concerns for my industry?

Waste or Product?

If a product can no longer be used for its intended purpose or you no longer need it, it becomes a waste. If a product is in storage to be used at some later date, it is not a waste. However, even unused product can be a waste if it is stored past the shelf life, or if it is spilled.

Waste Streams

When a waste is created, it is called a waste stream. The box below gives you a quick overview of some of the terms that you will need to know for parts of this section.

Regulations for waste management depend on the type of waste you have. Figure 1 (page 10) summarizes the main types of hazardous and nonhazardous waste.

What Is Hazardous Waste?

There is an easy way to determine if your waste is hazardous. Any waste that is “listed” as hazardous in EPA regulations or that has one or more hazardous “characteristics” is considered a hazardous waste.

What Is a Waste Stream?

Definition: A waste stream can be described as a particular TYPE of waste from a particular TYPE of process. One waste stream cannot have more than one CLASSIFICATION, but it can have more than one WASTE CODE.

DIFFERENT wastes from the SAME process are DIFFERENT waste streams.

For example, a sludge removed from a vat is not the same waste stream as a liquid removed from the same vat.

SIMILAR wastes from DIFFERENT processes are DIFFERENT waste streams.

For example, mineral spirits used to degrease auto parts is not the same waste stream as mineral spirits used to clean paint guns.

Important: If a waste stream is treated or changes physically in any way, a NEW waste stream has been generated.

EPA-Listed Hazardous Waste

Over 400 discarded chemical products and wastes from specific processes are listed as hazardous. These waste products are identified in four separate lists by a single letter (F, K, P or U) and a three-digit code. See Appendix III (page 37) for more information on specific lists of hazardous wastes.

Reminder:

If your product contains one of the listed chemicals as an *ingredient*, then the product is not automatically hazardous. See “Determining If My Waste Is Hazardous” (page 11).

Acutely Hazardous Wastes

“Acutely” hazardous wastes are a small subset of listed hazardous wastes that are considered very harmful. They include certain pesticides, for example. Small businesses rarely generate acutely hazardous waste.

Characteristic Hazardous Wastes

The EPA has four criteria that can make a waste hazardous:

Ignitability: A waste with a flash point of less than 140°F and easily combustible or flammable. *Example: solvents and degreasers*

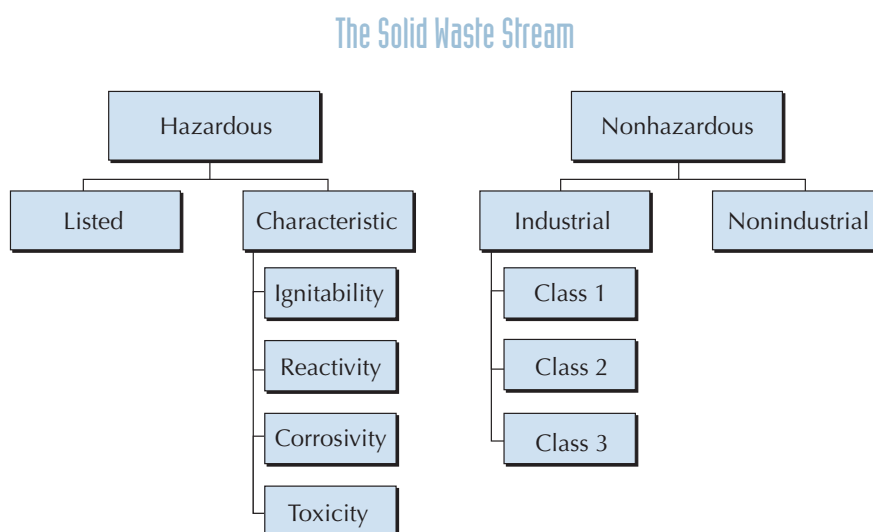
Reactivity: A waste that is unstable or undergoes a rapid, violent chemical reaction with water or other materials. *Example: peroxides and some bleaches.*

Corrosivity: A liquid waste that has a pH less than or equal to 2, or greater than or equal to 12.5. Also, any waste that dissolves metals or other materials, or burns the skin. *Example: hydrochloric acid or sodium hydroxide.*

Toxicity: A waste that leaches specific amounts of a regulated toxic constituent is toxic. The EPA designates a test called the Toxicity Characteristic Leaching Procedure (TCLP) to determine if a waste is toxic. An analytical laboratory can perform this test for a fee. *Example: wastes that contain heavy metals (some paints), pesticides, or solvents.*

*Note: Some wastes can be both a **listed** and a **characteristic** hazardous waste.*

Figure 1. Hazardous and Nonhazardous Wastes



Note: For regulatory purposes, all wastes are called “solid” wastes, even if they are liquids or contained gases.

Determining If My Waste Is Hazardous

The law requires you to identify all hazardous waste you generate. This is called “making a hazardous waste determination,” and there are three ways to do it.

1. Compare the waste to the EPA lists and to the EPA-defined characteristics for hazardous waste (toxicity, reactivity, ignitability, and corrosivity). If the waste is made of a single component, and that component found on the lists or has hazardous characteristics, then it is hazardous.
2. Use your knowledge of the waste and what is in it to compare the waste to the lists and characteristics. This method is called process knowledge. Product labels, MSDSs, etc. are useful to determine if the waste is on a list or is characteristically hazardous.
3. Arrange for a lab to test the waste and tell you whether it is hazardous or not.

*Note: If you use **process knowledge** and/or **lab analysis** to make a hazardous waste determination, **keep accurate and complete records** of the information you rely on.*

You are only required to make a hazardous waste determination on each waste one time. You do not have to make another hazardous waste determination unless you generate a new waste or your waste content changes.

Nonhazardous Waste

Any waste that is not listed or characteristic for hazardous waste is a nonhazardous waste. Texas law requires you to properly dispose of all waste, hazardous or nonhazardous. This section will help you determine how to classify your nonhazardous waste and how to dispose of it. For the purposes of classifying nonhazardous waste, there are two types of facilities—industrial and nonindustrial.

Industrial facilities make products for wholesale according to a predetermined plan. These types of facilities may use an assembly-line operation. **Metal finishers are industrial facilities.**

Nonindustrial facilities provide some kind of service, such as repair or cleaning. Custom products manufacturers may fall under the nonindustrial designation.

Industrial Waste

There are three categories of industrial waste. If you have an industrial facility, you must determine which category applies to your nonhazardous waste. For more information, call our hot line at (800) 447-2827.

Class 1 wastes are considered potentially threatening to human health and the environment. There are special requirements for handling and disposing of Class 1 wastes.

Class 2 wastes are considered less threatening to human health and the environment. Examples include food wastes, packaging, and paper products. This class of waste is often accepted by local landfills (check with them in advance) and does not require manifesting.

Class 3 wastes are considered nonthreatening. Demolition debris is an example of Class 3 waste. This class of waste is often accepted by local landfills and does not require manifesting.

Nonindustrial Waste

For nonindustrial facilities, all nonhazardous waste is simply referred to as “municipal.” Dispose of your municipal waste through your regular garbage hauler.

Determining Generator Status

Now that you can identify your wastes, the next step is to figure out your generator status. Generator status is based on **hazardous waste** generation. It has nothing to do with **nonhazardous** waste or hazardous **materials**.

Definition:

Hazardous *materials* are supplies that have not been used and that contain hazardous ingredients. They are not wastes. *Example: unused solvent or paint thinner.*

The three levels of generator status are:

- Conditionally Exempt Small-Quantity Generator (CESQG) = generates less than 220 pounds of hazardous waste per month;
- Small-Quantity Generator (SQG) = generates between 220 and 2,200 pounds of hazardous waste per month;
- Large-Quantity Generator (LQG) = generates more than 2,200 pounds of hazardous waste per month.

Table 3 shows some requirements that waste generators need to follow. Some of these points are discussed in more detail under “EPA Registration,” “TNRCC Registration,” and “Manifests” on page 13.

Table 3: Hazardous Waste Limits Based on Generator Status

TYPE OF WASTE	REGISTER FOR A TNRCC GENERATOR ID NUMBER IF YOU:	REGISTER FOR AN EPA GENERATOR ID NUMBER IF YOU:	MAXIMUM LENGTH OF TIME YOU CAN ACCUMULATE WASTE ON-SITE: ¹	MAXIMUM AMOUNT OF WASTE YOU CAN ACCUMULATE AT ONE TIME:	WASTE SHIPMENTS MUST BE MANIFESTED IF YOU ARE A:	USE A REGISTERED TRANSPORTER IF YOU ARE A:
Hazardous	Generate over 220 pounds in a calendar month	Generate over 220 pounds in a calendar month	CESQG= No limit SQG = 180 days ² LQG = 90 days	CESQG = 2,200 lbs SQG = 13,200 lbs LQG = No limit	CESQG = No SQG = Yes LQG = Yes	CESQG = No SQG = Yes LQG = Yes
Class 1 (industrial)	Generate over 220 pounds in a calendar month	No registration required	No limit	No limit	CESQG = No SQG = Yes LQG = Yes	CESQG = No SQG = Yes LQG = Yes
Class 2 (industrial)	No registration required	No registration required	No limit	No limit	No	No
Class 3 (industrial)	No registration required	No registration required	No limit	No limit	No	No
Nonhazardous (nonindustrial)	No registration required	No registration required	No limit	No limit	No	No

¹ A waste management unit is an area in your facility where you collect, treat, or store the waste that you generate. It may be a storage shed, a room, an area within a berm, a solvent distillation unit, etc. Accumulation begins when the storage container is placed in the waste management unit. Containers must be labeled “hazardous” and dated.

² The limit is 270 days if the treatment, storage, and disposal facility (TSDF) is more than 200 miles away.

Satellite Accumulation Sites versus Waste Management Units

A satellite accumulation site is different from a waste management unit. The satellite site is for accumulating hazardous waste at or near the point of generation. You may accumulate up to 55 gallons of hazardous waste or one quart of acutely hazardous waste at a satellite accumulation site. Once the satellite accumulation container is full, the 55 gallon drum or one quart container must be relocated to a waste management unit within three days.

From the moment you relocate the waste into a waste management unit, the clock starts ticking on how long you can keep it there. The length of time you can keep hazardous waste in your waste management unit is determined by law and depends on your generator status (see Table 3).

What Waste Management Forms Do I Need?

At this point, you should:

- be able to identify each waste you generate as hazardous or nonhazardous;
- know whether your facility is industrial or nonindustrial—if you are industrial, you should also know whether your nonhazardous wastes are Class 1, 2, or 3; and
- know your generator status.

With this information, you can decide which forms you need to fill out to comply with state and federal waste regulations. Details about the forms (what they are, who has to fill them out, when, and why) are given in Appendix III, and the information is summarized in Table 4.

The Difference between “Registration” and a Hazardous Waste Permit

When it comes to hazardous waste, many people confuse registration and having a permit. A hazardous waste permit is permission by the EPA and TNRCC to treat or dispose of your waste on your facility’s property or to **store in quantities and for time periods that exceed** what your generator status allows. **Most small businesses do not need a hazardous waste permit** because they have their wastes hauled off by a registered transporter.

EPA Registration

All CESQs are exempt from registering with the EPA. All SQGs and LQGs must register with the EPA, but only one time for any site. You should register before you ever have your hazardous waste transported, treated, or disposed of. Contact the SB&LGA for assistance with EPA registration.

TNRCC Registration

All SQGs and LQGs must register with the TNRCC. The **only** CESQs that must register with the TNRCC are those industrial CESQs that:

- generate 220 pounds or more of Class 1 nonhazardous waste monthly. **They must register all wastes**, both hazardous and nonhazardous, with the TNRCC. (Remember, Class 1 wastes do not include things like food scraps and general office trash.)

Note: Those who must register **only have to do this one time** for any site. You should register **within 90 days** of generating hazardous waste for the first time. Contact the SB&LGA for assistance with TNRCC registration.

Manifests

Before you collect the maximum amount of hazardous waste allowed by your generator status, and/or before you keep it on-site for the maximum time allowed, you should prepare to have it hauled off-site for treatment or disposal. **Use a registered transporter and disposal company** for hazardous waste disposal. **Do not dispose of hazardous waste yourself** unless you have a permit allowing you to do so.

Each time you have waste hauled, complete the form titled Uniform Hazardous Waste Manifest (TNRCC-0311). Often called a manifest, this form has four copies.

Green copy:

you keep this copy, which the transporter has signed.

Yellow copy:

the transporter keeps this copy.

Pink copy:

the disposal facility keeps this copy.

White copy:

returned to you by the disposal facility, with all the signature blocks completed.

Table 4: Summary of Forms for Hazardous and Industrial Waste Generators

WHO HAS TO COMPLETE IT	FORM TITLE	FORM NUMBER	FORM PURPOSE	WHEN TO COMPLETE FORM
All (industrial and nonindustrial) SQGs and LQGs .	Notification of Regulated Waste Activity	EPA 8700-12	To register with the EPA as a hazardous waste generator and receive a permanent EPA identification number; should list all hazardous wastes generated at the site to be registered.	Once, the first time you generate any hazardous waste at your site; before you have it transported, treated, or disposed of.
All SQGs and LQGs and industrial generators that generate over 220 pounds of Class 1 waste per month.	Initial Notification Form	TNRCC-0002	To register with the TNRCC as a hazardous or industrial waste generator and receive a permanent TNRCC registration number; should list all hazardous <u>and</u> , if industrial, nonhazardous wastes generated at the site to be registered.	Once, the first time you generate waste at your site; within 90 days of generating it or prior to shipment, whichever occurs first.
Any registered generator that needs to add a waste code to its NOR.	Hazardous or Industrial Waste Stream Notification Form	TNRCC-0002-A	To notify the TNRCC any time you generate a new waste .	Each time you generate a new waste; within 90 days of generating it or before shipment, whichever occurs first.
Any registered generator that needs to add a waste management unit to its NOR.	Hazardous or Industrial Waste Management Form	TNRCC-0002-B	To notify the TNRCC any time you add a new waste management unit to your site.	Each time you add a new waste management unit, 90 days before installing it.
All SQGs and LQGs and industrial generators that generate over 220 pounds of Class 1 waste per month.	Uniform Hazardous Waste Manifest	TNRCC-0311	A four-part form that accompanies hazardous and Class 1 waste during shipment . Tracks a waste from generation to disposal.	Every time you have hazardous or Class 1 nonhazardous waste hauled. (Not necessary for any Class 1 waste being recycled.)
All SQGs and LQGs and industrial generators that generate over 220 pounds of Class 1 waste per month.	Annual Waste Summary	TNRCC-0436-A	To report all hazardous or Class 1 nonhazardous wastes generated at a facility within the calendar year. (Not necessary to include any Class 1 waste that was recycled.)	Each year, by January 25.
Any unregistered generator that needs temporary waste numbers (waste codes, EPA ID#, and state registration #); or any registered generator that needs a temporary waste code .	One-Time Shipment Request	TNRCC-0757	To notify the TNRCC that you are shipping a waste you only generate one time . If you are a registered generator, you can use this instead of form 0002-A. You may still need to manifest the waste.	Any time you generate a one-time waste; before shipment.
Any unregistered generator who completed the form 0757 and shipped in the previous month ; or any generator who shipped out of state or country in the previous month.	Waste Shipment Summary	TNRCC-0040A	For unregistered generators to report any wastes shipped in the previous month that required the form 0757. For any generator to report waste shipped out of state or country .	Due on the 25th of the month following the month of the reporting period. (For example, the report for shipments made in May is due on June 25.)

The use of this tracking form is called “manifesting your waste.”

You are responsible for what happens to any waste you generate, including proper disposal. If you don’t get the white copy of your manifest back within 35 days of having your waste hauled, call your transporter and/or a TSDF. If you still haven’t received the white copy within another 10 days, you must inform the TNRCC in writing. This is called filing an exception report (no special form is needed).

When having your waste shipped off-site for disposal, you must also do the following:

- Choose a registered hazardous-waste transporter that will take it to a TNRCC-approved facility. Call our toll-free number to verify a company’s registration or permit number. You can also get a list of registered transporters and approved recycling or disposal facilities.
- Package and label your wastes properly for shipping. Your transporter should be able to help you.

Informing the TNRCC of a Change in Generator Status

A business should review its generator status each year to see if it is properly classified. For example, an SQG may qualify for CESQG status if it has reduced waste. To change from an SQG to CESQG with the TNRCC:

- write a letter saying you changed from SQG to CESQG and are giving up your EPA and state hazardous waste generator number(s), **and**
- Check box No. 22 on the Annual Waste Summary, if you receive one.

One-Time Shipments

Sometimes a business generates a certain waste only one time. You may use the one-time shipment form instead of adding this waste to your registration.

Handling Waste before Disposal

While you collect and keep wastes on-site, you must properly maintain the containers your wastes are in. Wastes may be stored in 55-gallon drums, tanks, or other containers suitable for the type of waste to be collected. You must do the following when storing hazardous waste.

- Clearly label each container with the words “Hazardous Waste,” the date you actually begin to collect waste, and the name(s) of the waste(s) in the container.
- Keep containers in good condition and do not allow leaks.
- Inspect containers weekly for leaks, corrosion, and bulging.
- Keep containers closed except when filling or emptying them.
- Keep containers with ignitable or reactive wastes away from your facility’s property line and as far as possible from your general work areas.
- Never collect different wastes in the same container that could react with one another.

Waste Codes

There are **two sets of waste “codes”** you need to **fill out TNRCC and EPA waste paperwork**. The first set of numbers lists the EPA Hazardous Waste Numbers. The other set is the Texas Form Codes. See Appendix III for a detailed listing of these codes.

Water Regulations

In this section:

What is wastewater and where should it go?

Do I need an EPA stormwater permit?

What if I have a septic tank?

What specific wastewater considerations apply to my industry?

Wastewater Is . . .

- Water contaminated with solvents, adhesives, paints, and other coatings
- Any other water that is left over after a process

You must make a hazardous waste determination on all your wastes using the methods described in the Waste Regulations section of this guide (See “Determining If My Waste Is Hazardous” on page 11). If a water waste is hazardous, follow the procedures for storing, reporting, and disposing of hazardous waste.

Metal Finishing Point Source Category

Do you do **one of these six processes**?

- Electroplating
- Electroless plating
- Anodizing
- Coating (chromating, phosphating, and coloring)
- Chemical etching and milling
- Printed circuit board manufacturing

Where You Discharge Your Wastewater . . .

- to a wastewater treatment facility, also known as publicly owned treatment works (POTW)
- in or next to waters of the state such as a lake, river, stream, pond, springs, creek, estuary, wetland, ditch, storm drain, etc.

. . . Determines Which Permit You Need

1. **If your wastewater goes to a Publicly Owned Treatment Works (POTW):** Call your POTW in your city or town to obtain a wastewater discharge permit.
2. **If the POTW does not have a pretreatment program:** Notify TNRCC’s Data Management Team in Compliance and Enforcement at (512) 239-4467 to request TNRCC’s semiannual reporting requirements and categorical discharge limits.
3. **If your wastewater goes into or near a lake, river, or stream:** Call the TNRCC’s Wastewater Permits Section at (512) 239-4433 for an Industrial Wastewater Discharge Permit under the Texas Pollutant Discharge Elimination System (TPDES).

Hooking up to a POTW may be an easier process for your operation than obtaining permits or discharging wastewater into a body of water.

If you perform one of the six processes listed, then the *Metal Finishing Point Source Category* applies to your business. In addition, this category covers all of the following 40 process operations:

Assembly
Brazing
Burnishing
Calibration
Cleaning
Electric discharge machining
Electrochemical machining
Electron beam machining
Electropainting
Electrostatic painting
Flame spraying
Grinding
Heat treating
Hot dip coating
Impact deformation
Laminating
Laser beam machining
Machining
Mechanical plating
Other abrasive jet machining
Paint stripping
Painting
Plasma arc machining
Polishing
Pressure deformation
Salt bath descaling
Sandblasting
Shearing
Sintering
Soldering
Solvent degreasing
Sputtering
Testing
Thermal cutting
Thermal infusion
Tumbling
Ultrasonic machining
Vacuum metalizing
Vapor plating
Welding

The **Metal Finishing Point Source Category** gives guidelines for wastewater effluent. These guidelines include:

- a list of regulated pollutants,
- monitoring requirements,
- effluent limits, and
- pretreatment standards for existing (pre-1982) and new source (post-1982) facilities.

Regulated Pollutants.

For a list of pollutants covered, call the SB&LGA at (800) 447-2827.

Monitoring Requirements.

Instead of continuously monitoring for all Total Toxic Organics (some of the regulated chemicals), you could do the following three things:

1. Make a “certification statement” to whomever gives you permission to discharge wastewater to a publicly owned treatment works (POTW, also known as a wastewater treatment plant) or whomever has the authority to let you discharge directly into Texas waters. In this statement, you can use language such as,
“I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewaters has occurred since filing of the last discharge monitoring report.”

If monitoring is necessary, you are required to analyze wastewater discharges for only those pollutants that you would reasonably expect to be present.

2. Give the same permitting or control authority a toxic organic management plan (TOMP). This plan would include:
 - toxic organic compounds used,
 - method of disposal used instead of dumping, and
 - procedures for ensuring that toxic organics do not spill or leak into the wastewater.
3. Self-monitoring for cyanide after cyanide treatment and before dilution with other streams.

Effluent Limitations.

There are very specific limits on the quantity of certain pollutants that may be released to Texas waters. These limits are set at a maximum one-day level and a monthly average level.

Pretreatment Standards.

There are also specific limits on amounts of certain pollutants that will be discharged to the POTW after they have been pretreated.

To obtain a copy of this water regulation, call the SB&LGA at (800) 447-2827

What If I Have an On-Site Sewage Facility (OSSF)?

If your business has an on-site sewage facility:

- do not use it for discharge or production wastewater containing metals or industrial cleaning products,
- use it only for domestic waste;
- generate no more than 5,000 gallons of domestic waste per day; and
- treat and dispose of this waste on site.

All OSSFs must be constructed and installed according to TNRCC standards. Also, you must obtain a permit to construct and operate an OSSF. Permits to construct and operate OSSFs are issued by a local governmental agency if they are an authorized agent of the state or by the TNRCC if a local agency is not authorized. Call the TNRCC regional office in your area for more information.

EPA Stormwater Permits

A metal finishing company may need an industrial multisector stormwater permit. To apply, contact the EPA through September 29, 2000; contact the TNRCC after that date. For information about who should apply, call EPA's stormwater hot line at (800) 245-6510 or TNRCC's Wastewater Permits Section at (512) 239-4433.

General Regulations

In this section:

What if I plan to make changes to my business?

What records should I keep?

What is the Toxics Release Inventory?

What other agencies might regulate my business?

Changes to Your Business

If you plan to change any process, method of operation, or equipment at your business, you must first consider whether you can still meet all the conditions of your standard exemption or permit. Changes may trigger the need for a permit or permit amendment.

Record Keeping

You must keep whatever records are necessary to verify your compliance with the conditions of your permit or standard exemption. Each permit specifies its own record-keeping requirements.

The length of time you need to keep records for the TNRCC varies. For example, any business that creates hazardous waste must keep records such as shipping manifests, notices of registration, and annual waste summaries for three years. However, compliance records for air authorization such as Standard Exemption 75 must only be kept for two years. Call our toll-free hot line for more information.

If your business falls under the reporting requirements for either Emissions Inventory (see Appendix II) or Toxics Release Inventory (see Appendix IV), you must also keep whatever records are necessary to file those reports.

Toxics Release Inventory

Under the federal right-to-know law, certain facilities must report “releases” of toxics or “transfers” of specific toxic chemicals in waste, using Form R. These reports are compiled into a state-by-state Toxics Release Inventory (TRI). Some things you might need to report on your Form R include toxics in your air emissions, waste you send to a landfill, waste that you recycle, or toxics in your water discharges. To learn more about TRI, see Appendix IV.

You need to report if you:

- have 10 or more full-time employees or their equivalent in total annual employee hours worked—that is, 20,000 hours;
- use at least 10,000 pounds of a TRI-listed chemical annually; **and**
- have a manufacturing business or a business that is included in Standard Industrial Classification (SIC) Codes 20 through 39.

If you do need to report, you can get a Form R by calling (512) 239-3100.

Proposition 2 Tax Exemption

Did you know that your pollution control equipment may be tax exempt? Under Proposition 2, adopted by the Texas Legislature in 1993, certain property that you use for environmental compliance could be exempt from property taxes. Your equipment may be on the preapproved list. If it is not, you may still ask the TNRCC to determine if you will be allowed to claim a tax exemption for your equipment. A few examples of preapproved equipment used by metal finishers include:

- vent hoods, collection and control systems used to filter emissions;
- secondary containment systems used to collect liquids spilled from a primary system;
- piping, blowers, and compressors used to recover vapors; and
- water clarifiers and settling basins used to separate solids from wastewater.

If you think your business might qualify for this tax exemption, call the TNRCC's publications unit at (512) 239-0028 to obtain a copy of *Use Determination for Pollution Control Property* (RG-102). For further information, call the Chief Engineer's Office at (512) 239-6348.

Texas Environmental, Health, and Safety Audit Privilege Act ("Audit Act")

The Audit Act provides an incentive for you to perform voluntary audits of your company's compliance with environmental, health, and safety regulations. If you notify the TNRCC that you **plan** to do an audit, **complete** the audit, **tell** the TNRCC what problems you found, and **then correct** these potential violations in a timely manner, you could be exempt from penalties.

Some information discovered in an audit is privileged and confidential, and cannot be used against you in civil and administrative proceedings.

For information about this audit process, call the TNRCC's Publications Office at (512) 239-0028 to order the guidance document for the *Texas Environmental, Health, and Safety Audit Privilege Act* (RG-173). For more information, call TNRCC's Litigation Support Division at (512) 239-3400.

Other Agency Rules

There may be other agencies—local, city, county, state, and federal—that require registration, notification, permits, inspections, certificates of occupancy, business licenses, etc. Here are some examples.

- You may need to obtain a discharge permit from (or at least notify) your municipal sewage treatment plant.
- The Texas Department of Health may require you to comply with a program called Tier II (see Appendix IV).
- You should also check with your local fire department.
- Be familiar with Occupational Safety and Health Administration (OSHA) standards.

Appendix V gives addresses and phone numbers for major agencies.

Appendix I

Waste Reduction Tips for Metal Finishers

Topic	Page
Good Operating Practices	23
Spill and Leak Prevention	24
Waste Stream Separation	24
Control Drag-out	24
Cleaning	25
Extending Bath Life	25
Rinsing	26
Material Substitutions	26

Good Operating Practices

Good housekeeping and employee training are two easy things that cost little or no money but can significantly reduce your pollution and save you money.

Regular Inspection and Maintenance

Regularly inspect pipes and tanks for leaks, and make immediate repairs. Preventive maintenance helps make sure equipment is running well and can prevent production losses, poor quality products, spill violations, and employee injuries. *In 1994, one company realized a 40 percent reduction in solvent loss and saved \$4,800 in supply and disposal costs. The company changed operating procedures and scheduled maintenance for two in-line degreasers that use trichloroethylene.*

Employee Training

Train employees to use equipment and handle chemicals properly. One EPA study found a 32 percent reduction in sludge and a savings of \$2,000 in off-site waste treatment costs as a result of employee training in plating and wastewater treatment operations. High turnover among

line workers makes it difficult to educate employees about environmental health and safety. Focus on the stable, permanent group of employees. They can serve as models for newer employees. *For one hour each month, managers at a company in Portland, Oregon, meet with 25 percent of the staff to discuss pollution prevention, RCRA, OSHA, and DOT requirements.*

Quality Circles

Ask employees for their ideas about ways to reduce pollution. The people directly involved in production often have good ideas about how to reduce waste. Many companies have been pleasantly surprised by financial gains realized from their employees' ideas.

Inventory Control and Purchasing

Purchase chemicals in the smallest quantities possible. Inventory and purchasing should be controlled by a central person. Limit access to chemical supplies. Chemicals should be stored in a locked, covered space and have a floor and containment area that is compatible with the chemical. *One company saved money and supplies by reusing solvent from cleaner to dirtier*

processes and by having a foreman control solvent distribution. The company reduced its waste from 310 to 152 tons per year and saved \$7,200 in disposal and feedstock costs.

Spill and Leak Prevention

Spills can be reduced by making simple adjustments to production lines and training personnel in handling materials and spills. The following precautions can reduce spills, saving you money in lost supplies.

Overflow Alarms

Keep tank water from running over by installing overflow alarms for all tanks and vessels.

Lids

Supply containers can spill or their contents evaporate if left open. Don't leave almost empty containers laying around. Dispose of them properly. Finish what you have before opening more.

Catch Spills

Use spouts, funnels, and drip pans during material transfer.

Containment

Install secondary containment areas around any container that could potentially leak or spill: tanks, waste drums, supply areas.

Waste Stream Separation

Separate Waste Streams

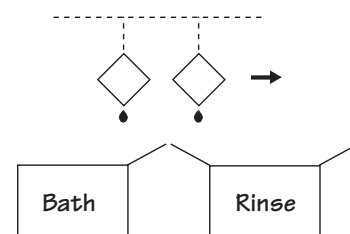
When employees mix wastes, contamination spreads and the resulting waste may be more expensive to treat or dispose of. Avoid mixing different kinds of hazardous wastes. Also, keep hazardous and nonhazardous waste streams separated. By keeping potentially nonpolluting rinse streams separate and adjusting pH, you may be able to send these streams directly to the sewer. Nonpolluting streams represent about one-third of all plating process water.

Control Drag-out

Drag-out is bath solution that is wasted when it is carried over into the rinse water or drips onto the floor. The following techniques will help reduce drag-out.

Drain Boards

Improve drag-out recovery by installing drain boards on tanks. Drain boards keep drips off the floor by sending them back into the tank.



Drip Time

Increasing drip time over solution tanks. Drainage for most shapes is almost complete within 15 seconds after you pull the parts from the tank. For assembly line operations, keep speed to less than 11 feet per minute.

Parts Arrangement

Arrange parts on rack so liquids will drain off more easily.

Parts Rotation

Rotate parts to allow condensed solvent or bath to drop off.

Air Knives

Air knives push liquid back into the process or rinse tank by blowing air onto the work piece. Make sure compressed air has been filtered to remove contaminants. *The Institute of Advanced Manufacturing Science states that air knives reduce drag-out by 75 percent.*

Wetting Agents

Using surfactants and other wetting agents will decrease the surface tension in your tank. Lower surface tension reduces drain time and has the potential to reduce drag-out by 50 percent.

Increasing Bath Temperature

Higher temperatures correspond to lower viscosity and result in less drag-out. Increasing tank temperature is also beneficial because every 20 degrees Fahrenheit rise in temperature doubles the reaction rate in the tank.

Lowering Process Bath Concentration

Lower your process bath concentration to reduce the amount and chemical concentration of the drag-out. Chemical manufacturers often recommend higher concentrations than are necessary. *The EPA studied the effect of using low- concentration plating solutions instead of midpoint concentrations, to reduce the total mass of chemicals being dragged out. With five nickel tanks, annual drag-out fell by 2,500 gallons. There was no capital cost, and feedstock reduction savings were \$1,300.*

Cleaning

Less Hazardous Solvents

Substitute less hazardous solvent degreasers (aqueous-based solvents are less hazardous than petroleum-based products). Use less toxic solvents such as dibasic acid esters, terpenes, amines, and alcohols.

Blast Cleaning

Use an air blast system that shoots sand or plastic beads at a surface to strip paint, rust, or soils from a part. *One company used sand blasting instead of methylene chloride to remove paint and eliminated F001 spent halogenated solvents used in degreasing waste from this process.* Blast cleaning still may generate hazardous waste if the material you are removing from the part is hazardous. For example, if you sandblast lead paint from a part, then the sand/lead paint waste may be hazardous.

Solvent Reclamation

Reclaim solvents for reuse. Either on-site or off-site filtration, gravity separation, or distillation may be used to reclaim solvents.

Reuse Cleaning Baths

When possible, use cleaning baths as pH adjusters.

Precleaning

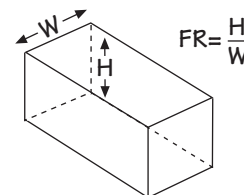
Extend solvent life by precleaning parts (wiping with a rag or using an air blower).

Location

Locate cold cleaning equipment away from drafts, fans, or windows. Minimize air flow over tanks so vapors hovering above tanks are not blown away, thus contributing to air pollution. If you use Standard Exemption 106.454, previously known as No. 107, refer to the rule for ventilation requirements.

Bath or Rinse Level

Leaving a space between the top of the tank and the liquid level will help reduce overflow spills and hold in vapors. For solvent degreasing equipment, the freeboard ratio (FR) has to do with the distance between the solvent and the top of the tank (H), and the width (W) of the tank. $FR = H/W$. If you use Standard Exemption 106.454, see section (c)(1), for specifications.



Extending Bath Life

As baths become more contaminated, higher levels of chemicals are added to ensure proper plating. There are several ideas to avoid or remove contaminants from baths. Metal recovery and water reuse techniques include electrolytic dummieing, filtration, precipitation, reverse osmosis, ion exchange, and electrodialysis.

Covers

Install tops (not hinged) on baths when not in use to avoid contamination.

Purified Water

Contaminants in tap water can foul up bath chemistry and create extra sludge. Use deionized, distilled or softened water in baths.

Electrolytic Dummyming

If the metal contaminant has a lower electrolytic potential than the process bath metals, then you can dummy out these metal contaminants. For example, the copper contaminants are removed in zinc and nickel baths by inserting an electrolytic plate and applying a low current to it, which attracts the copper contaminants.

Filtration

Filtering out suspended particulates will increase the effectiveness of the process bath. Polypropylene filter cartridges and reusable filters are some options. *One company reduced feedstock costs by 50 percent and reduced waste production by 50 percent after installing in-tank filtration. Capital cost for a 1,200 gallons per hour in-tank filter system was \$500. Operation and maintenance cost was \$1,391. The payback period was less than five months.*

Precipitation

To extend the life of the plating bath, you may be able to remove metal contaminants. For example, lead and cadmium sulfide salts are very insoluble, therefore, by adding ferric sulfide, cadmium and lead can be precipitated and filtered from the process bath.

Tank A can then be used as makeup water for the process bath. *Water usage can be reduced by 90 percent in countercurrent rinsing as opposed to a single-stage rinsing system. Reusing rinse water will reduce wastewater treatment costs as well as supply water costs.*

Agitate Bath

Agitate rinse bath or part in the rinse to make rinse more effective.

Spray Rinses

Fixed or movable spray nozzles can be installed to rinse parts over the process tank. Spray rinsing removes drag-out and reduces the amount of contaminant passing into the next tank. This rinse water can renew the process bath and replace evaporation loss. *Deionized water spray rinsing can reduce drag-out by 75 percent.*

Be Careful with Rinse Water

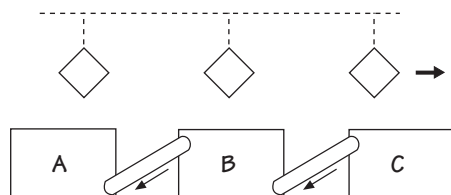
Since hard chrome platers often rinse over their chrome baths, be careful to keep rinse water over the tank. Unsealed concrete is porous and will absorb chemicals sprayed on it. Once the chromium rinse touches concrete, chromium leaches into the soil and possibly into the groundwater.

Material Substitutions

Many chemicals commonly used in the metal finishing industry are hazardous to human health and the environment. The EPA has targeted three bath materials in particular for reduction: cyanide, cadmium, and chromium. Manufacturers of metal finishing supplies are exploring alternatives to these bath materials as well as many hazardous cleaning supplies. Work with your supply vendor to find alternatives that work for your processes. Since customer specifications often require specific chemistries and processes, talk with your customer to find out how much flexibility they have.

Rinsing

Finding ways to reduce water use will reduce wastewater treatment bills as well as water supply costs.



Countercurrent Rinsing

Rinse water is recirculated from cleanest to dirtiest tanks. If you have rinse tanks A, B, and C, C feeds B, which feeds A.

Cyanide has been a key ingredient in plating baths for years because it performs well and is easy to control. However, employee health and safety concerns, use reduction laws, air releases, and treatment and disposal costs are pushing

platers to look for alternatives. Below are some alternative chemistries to cyanides that have been developed and used successfully for various applications.

Noncyanide Process Chemicals

CHEMISTRY	SUBSTITUTION	COMMENTS
Heavy copper cyanide plating baths	Copper sulfate and alkaline pyrophosphate	Excellent throwing power, bright smooth rapid finish. Not effective for steel, zinc, or tin-based metals.
Zinc plating	Noncyanide alkaline bath based on sodium hydroxide	Good quality and less expensive.
Zinc plating	Acid baths	High cathode efficiency, lower voltage requirements. Deposits are brilliant and leveling but throwing power is less.
Cyanide cleaners	Trisodium phosphate or ammonia	Good degreaser when hot and in ultrasonic bath. Highly basic solution may complex with soluble metals if used as intermediate rinse between plating baths. Metal ions may be dragged into cleaner and cause wastewater treatment problems.
Tin cyanide	Acid tin chloride	Works faster and better.

One company reduced treatment chemical purchases and sludge disposal costs by replacing the cyanide bath with a noncyanide bath. Hypochlorite chemicals, which had been used to treat cyanide and which contributed to sludge volume, were reduced. Capital costs were given as zero. Operational and maintenance costs were expected to be more than conventional cyanide baths, but exact figures were not given. Disposal and feedstock savings were estimated between \$3,600 and \$4,800 per year.

Less Toxic Substitutions

CHEMISTRY	SUBSTITUTION	COMMENTS
Hexavalent chromium plating	Trivalent chromium plating for decorative plating	Reduces drag-out and sludge due to lower concentration of chromium. Good adherence. Throw and coverage are improved. Limited to 0.1 mil. Usually not suitable for thicker coating (crack and split). Reduces worker exposure to hydrogen gas. For color differences, additives can be added.
Chromic acid pickles, deoxidizer and bright dips	Sulfuric acid and hydrogen peroxide	It is a nonchromium substitute and is nonfuming.
Hydrofluoric acid in pickling and stripping	Proprietary fluoride salts.	Reduces worker exposure.
Organic solvents such as TCE, TCA, perchloroethylene and methylene chloride	Aqueous-based cleaners	TCE, TCA, perc, and meth are toxic, deplete the ozone, and resist biodegradation. Aqueous-based cleaners are at least 95 percent water and use detergents, acids, and alkaline compounds to clean soils.

One company reduced all spent trichloroethylene and methyl chloroform wastes by substituting a heated detergent solution for chlorinated solvents. The capital cost was \$10,000 and the payback period was three months.

Another company substituted a dilute terpene-based cleaner for TCA and methanol, added a heater to an ultrasound bath, installed a stainless steel bath, installed an immersion heater and a heat gun. These measures eliminated the monthly generation of half a barrel of TCA and methanol waste. The capital cost was \$1,793 and the payback period was 4.5 months. This company saved \$4,800 on avoided disposal costs and avoided supply costs.

Appendix II

Details on Specific Air Regulations

Topic	Page
How Can I Meet the Emission Limits?	29
What Do I Need to Report and When?	30
Where Should I Send These Forms or Reports?	31
What If I Missed These Deadlines?	31
Are You a “Major Source” of Air Emissions?	31

NESHAP/MACT for Chromium Plating and Chromium Anodizing

How Can I Meet the Emission Limits?

As discussed in the main text of this guidebook (see page 6), the Environmental Protection Agency (EPA) developed a National Emission Standard for Hazardous Air Pollutants (NESHAP) for chromium plating and chromium anodizing. Some of the requirements of this particular NESHAP are

referred to as a Maximum Achievable Control Technology (MACT). Among other things, the NESHAP requires chrome platers and anodizers to meet an emission concentration limit and list specific emission reduction techniques they will use to achieve this limit.

Techniques such as control devices and fume suppressants can be used to lower emissions to limits set by this NESHAP. The emission reduction option corresponding to the emission limit is shown in Table II-1. While you may use another technique, you must be at or below the emission limit **and prove to the EPA** that your technology works.

Table II-1. EPA Required Emission Limits

TYPE OF OPERATION	AFFECTED TANKS	EMISSION LIMIT	EMISSION REDUCTION OPTION
Hard chromium plating tanks	Small, existing tanks	0.03 mg/dscm	Packed-bed scrubber (PBS)
	All other tanks	0.015 mg/dscm	Composite mesh-pad (CMP) system
Decorative chromium plating tanks using a chromic acid bath	All tanks	0.01 mg/dscm or 45 dynes/cm	Fume suppressant (FS) that contains a wetting agent
Decorative chromium plating tanks using a trivalent chromium bath	All tanks	Subject only to record keeping and reporting	
Chromium anodizing tanks	All tanks	0.01 mg/dscm or 45 dynes/cm	FS that contains a wetting agent

What Do I Need to Report and When?

As shown in Table II-2, the extent and frequency of reporting depends on the type and size of your source.

Where Should I Send These Forms or Reports?

Mr. John R. Hepola (6EN-A)
Toxics Enforcement Section
Environmental Protection Agency, Region VI
1445 Ross Ave.
Dallas TX 75202

Table II-2: Emission Reporting Requirements

TYPE OF TANK	REQUIREMENT	DATE
All tanks	Initial notification*	7/24/95
Decorative chromium plating tanks using a chromic acid tank	Compliance deadline	1/25/96
	Notification of performance test*	at least 60 days before performance test (before 5/23/96)
	Performance testing deadline	7/23/96
	Notification of compliance status*	no more than 90 days after test or 2/24/96 if no test is required
	Notification of test results no more than 90 days after test	
Decorative chromium plating tanks using a trivalent chromium tank	Notification of compliance status*	2/24/96
	Notification of process change*	no more than 30 days after change
Hard chromium plating and chromium anodizing tanks	Compliance deadline	1/25/97
	Notification of performance test*	at least 60 days before test (before 5/24/97)
	Performance testing deadline	7/24/97
	Notification of compliance status*	no more than 90 days after test or 2/24/97 if no test is required
	Notification of test results no more than 90 days after test	

* This symbol means you need to send a report to the EPA at this stage. Sample forms have been created by the EPA to help you report notification, performance test, and compliance information. You are not required to fill out these specific forms, but you do need to send the EPA all the information requested on these forms. These sample forms can be found in the guide, *Clean Air Compliance for Chromium Emissions from Electrolytic Processes* (EPA 453/B-95-001). Call the SB&LGA at (800) 447-2827 for a copy.

** Sources that meet the following criteria **do not** have to perform initial testing:

1. **decorative chromium plating tanks or chromium anodizing tanks that use a wetting agent and limit surface tension of the bath to 45 dynes per centimeter (dynes/cm), or**

If you meet #1:

You still have to send the EPA **confirmation** that your bath is below 45 dynes/cm.

Do this by submitting four things:

- The date the test was performed
- The surface tension level in dynes (even if below 45)
- Your name and company name
- Your address

2. **decorative chromium plating tanks that use a trivalent chromium bath.**

What If I Missed These Deadlines?

If you are a new source, you need to send in this paperwork before you start operating.

If you are an existing source and missed the deadlines, send in the paperwork as soon as possible.

For more information about the NESHAP and what you need to do to be in compliance, please call us at (800) 447-2827.

Are You a "Major Source" of Air Emissions?

Facilities that emit or have the potential to emit large amounts of air pollutants are called major sources, and must comply with additional regulations including registering with the EPA.

The amount of pollution you must emit to be a major source varies depending on your county (see Table 2, Counties in Nonattainment Areas, page 5). The worse the pollution in a county, the less you can emit before becoming a major source. It is your responsibility to determine whether or not your facility is a major source.

If you use more than 6,000 gallons* of solvents, paints, and other coatings per year (or have the potential to use that amount if your facility were operating at full capacity, 24 hours a day, 365 days a year) you should calculate your emissions exactly to determine whether you are a major source. For more information, call the Small Business and Local Government Assistance Program hot line at (800) 447-2827.

* This number is an estimate assuming the following:

The limit of allowable emissions is 25 tons (or 50,000 lbs) of VOCs

One gallon of water weighs 8 lbs.

The weight of a gallon of water approximates the weight of a gallon of solvents

$50,000 \text{ lbs} \div 8 \text{ lbs/gallon} = 6,250 \text{ gallons}$

All solvents are 100 percent VOCs (the highest possible VOC content)

Appendix III

Generator Status, Forms, and Waste Codes

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Generator Status

The three levels of generator status are:

- Conditionally Exempt Small-Quantity Generator (CESQG)
- Small-Quantity Generator (SQG)
- Large-Quantity Generator (LQG)

Conditionally Exempt Small-Quantity Generator [CESQG]

CESQGs generate less than 100 kilograms of hazardous waste per month. This is 220 pounds or about half of a 55-gallon drum of liquid waste. Additionally, a CESQG must generate no more than 1 kilogram (2.2 pounds) of “acutely” hazardous waste per month.

Small-Quantity Generator [SQG]

SQGs generate between 100 and 1,000 kilograms of hazardous waste per month. This is between 220 pounds (about half of a 55-gallon drum of liquid waste) and 2,200 pounds (about five 55-gallon drums of liquid waste) per month. Like CESQGs, SQGs cannot generate more than 1 kilogram (2.2 pounds) of “acutely” hazardous waste per month.

Large-Quantity Generator [LQG]

LQGs generate 1,000 kilograms or more of waste per month. This is 2,200 pounds or about five 55-gallon drums of liquid waste. Also, if more than one kilogram (2.2 pounds) of “acutely” hazardous waste is generated in a month, LQG status will apply to all wastes generated that month.

Registration and Notification Forms

Under the heading “Manifests” on page 13 in the main text of this guidebook, we discussed the Uniform Hazardous Waste Manifest (TNRCC-0311). This form is usually completed by the waste hauler, but as the generator, you should make sure that the manifest is filled out properly. In addition, the forms discussed on the following pages are necessary for compliance with federal and state regulations. Read each section carefully. Each form has a number that you can use when referring to the form with a TNRCC or EPA staff member. If you have questions about any of the forms, call our hot line at (800) 447-2827. (Table III-1 gives an overview of forms used in registration and notification.)

Notification of Regulated Waste Activity Form [EPA-8700-12]

All SQGs and LQGs must register with the EPA. **All CESQGs are exempt from registering with the EPA.** Those who must register only have to do this one time for any site by geographic location. You should register before you ever have your hazardous waste transported, treated, or disposed of.

To register with form EPA-8700-12, complete the form titled Notification of Regulated Waste Activity (8700-12). Although this is an EPA form, you can get a copy from the TNRCC. Also, send your completed form to the TNRCC, which will forward it to the EPA. The EPA will then provide the TNRCC with a **federal waste identification number**. The TNRCC will give you a state and federal number to be used on other forms.

Table III-1: Notification and Registration

FORM NUMBER	FORM NAME	DESCRIPTION	CESQG	SQG	LQG	RETENTION
EPA-8700-12	Notification of Regulated Waste Activity	To register with the EPA as a hazardous waste generator and receive an EPA identification number	No	Yes	Yes	3 years
TNRCC-0002	Initial Notification Package for Hazardous or Industrial Waste Management	To register with the TNRCC as a hazardous or industrial waste generator and receive a TNRCC registration number	No*	Yes	Yes	3 years
TNRCC-0002A	Hazardous or Industrial Waste Stream Notification Form	To notify the TNRCC any time a new waste stream is generated	No*	Yes	Yes	3 years
TNRCC-0002B	Hazardous or Industrial Waste Management Units Form	To notify the TNRCC any time a new waste management unit is added at a facility	No*	Yes	Yes	3 years
NOR	Notice of Registration	A document the TNRCC sends to the generator listing specific waste streams and waste management units on file with the TNRCC	No*	Yes	Yes	3 years
TNRCC-0525	Generator Notification Form for Recycling Hazardous or Industrial Waste	To notify the TNRCC any time a waste is sent off-site for recycling or recycled on-site if the unit does not appear on the NOR	No*	Yes	Yes	3 years
TNRCC-0436 A or B	Annual Waste Summary	To notify the TNRCC of the amount of hazardous and Class 1 waste generated and handled at a facility each year	No*	Yes	Yes	3 years
WAP	Waste Analysis Plan	To notify the TNRCC regional office if hazardous waste will be treated on-site without a permit	No*	Yes	Yes	3 years
EPA Form R (TRI)**	Toxics Release Inventory	To report TRI regulated chemicals	If needed	If needed	If needed	3 years
Tier II**	Tier II Form/Form Letter	To report Tier II chemicals and substances	If needed	If needed	If needed	3 years

* Industrial facilities that generate ≥ 100 kg per month of Class 1 waste **MUST** complete these forms

** See Appendix IV for a comparison of TRI and Tier II

Initial Notification Package for Hazardous or Industrial Waste Management Form (TNRCC-0002)

The TNRCC requires certain hazardous and nonhazardous waste generators to register their sites. Whether you must register your facility with the TNRCC depends partly on your generator status. **All SQGs and LQGs must register with the TNRCC.** If you are a CESQG, it then depends on whether you are industrial or nonindustrial. All nonindustrial CESQGs are exempt from registering with the TNRCC. Industrial CESQGs that generate less than 220 pounds of Class 1 nonhazardous waste monthly are also exempt from registering with the TNRCC. However, **industrial CESQGs that generate 220 pounds or more of Class 1 nonhazardous waste monthly must register all wastes, both hazardous and nonhazardous, with the TNRCC.** (Remember that Class 1 wastes do not include things like food scraps and general office trash.)

Note: Those who must register only have to do this one time for any site. You should register within 90 days of generating hazardous waste for the first time.

To register with form TNRCC-0002, complete and submit the Initial Notification Form (TNRCC-0002). To complete this TNRCC form, classify your wastes based on their composition and the process that generates them. Then assign a waste code to each waste. The waste codes are numbers that describe the wastes. You can get guidance for assigning waste codes from the TNRCC's Waste Evaluation Section (see back cover for address). On this form, you also register any waste management units at your facility.

Send your completed form to the TNRCC. After receiving your form, the TNRCC will provide you with a solid waste registration number, sometimes referred to as a **“generator ID number.”** You should use this number for all waste management activities at your facility.

The TNRCC will also provide you with a Notice of Registration (NOR), which is a complete list of the hazardous and, if industrial, the nonhazardous wastes you generate. It is important to keep your NOR for your files.

Hazardous or Industrial Waste Stream Notification Form (TNRCC-0002A)

If, at any time after registering with the TNRCC, your facility begins to generate a new waste, you must inform the TNRCC and provide an additional waste code. To do this, send the TNRCC a completed Hazardous or Industrial Waste Stream Notification Form (TNRCC-0002-A). The TNRCC will then send you an updated NOR, which you should keep in your files.

Hazardous or Industrial Waste Management Unit Form (TNRCC-0002B)

Definition:

A waste management unit (WMU) is any area or equipment used to store, treat, recycle, or dispose of hazardous or industrial waste. For example, if a site has four containers for storing hazardous or industrial waste and one distillation unit, then the site has five separate WMUs.

When you first register with the TNRCC, you need to list the number and location of all your waste management units (WMUs) on your Initial Notification Form. If you later add a new unit, complete and submit a Hazardous or Industrial Waste Management Unit Form (TNRCC-0002-B). If you didn't have to register with the TNRCC in the first place, you will never need this form. After you update the TNRCC about changes or additions to your wastes or WMUs, the TNRCC will send you back an updated NOR. To inactivate or make changes to a WMU at your site, you can simply write a letter to the TNRCC's Waste Evaluation Section. You do not need a special form.

Notice of Registration

When you submit the initial notification package (TNRCC-002) to the TNRCC, you will receive a Notice of Registration (NOR) from the TNRCC verifying the information you submitted. Look at the NOR every so often to make sure that it accurately reflects your facility's waste streams and waste management units.

Generator Notification Form for Recycling Hazardous or Industrial Waste (TNRCC-0525)

If you recycle hazardous waste at your facility (distillation unit, etc.) and the recycling unit is not on your NOR, then you must submit form TNRCC-0525. You must also send this form to the TNRCC if you send hazardous waste off-site to be recycled.

Annual Waste Summary (TNRCC-0436-A or B)

Every company registered as a hazardous waste or industrial waste generator must report to the TNRCC all hazardous and nonrecycled industrial Class 1 wastes generated and disposed of each calendar year. (Remember, many CESQGs do not have to register and therefore do not report.) As a registered generator, you should automatically receive an Annual Waste Summary (TNRCC-0436A) by December each year. You will need information from your manifests and hazardous waste generation records to complete this form. You must then return the completed form to the TNRCC by January 25. The information that you provide on this form is used to calculate your bill for waste generation for your hazardous waste fee.

Waste Analysis Plan

If you will be treating hazardous waste on site without a permit, you must submit this plan to the local TNRCC regional office and keep a copy available on site.

What Waste Codes Will I Need to Fill Out Paperwork?

There are **two sets of “waste codes”** you will need to **fill out both TNRCC and EPA waste paperwork**. The first set of numbers lists the EPA Hazardous Waste Numbers. These numbers describe wastes that have certain characteristics (characteristically hazardous waste) or are included in any of four lists (listed wastes). EPA Hazardous Waste Numbers are four-digit codes consisting of a letter and three digits. For example, D001 would be the EPA Hazardous Waste Number used to describe waste that is hazardous for the characteristic of ignitability.

The second set of codes is the Texas Form Codes. These are three-digit codes that describe general classifications of wastes; for example, Texas Form Code 110 is caustic aqueous waste. See the TNRCC booklet, *Guidelines for the Classification & Coding of Industrial Wastes and Hazardous Wastes* (RG-22), for further information on how to properly classify your waste streams. For a copy, call the SB&LGA at (800) 447-2827.

Listed Hazardous Waste

Over 400 discarded chemical products and wastes from specific processes are listed as hazardous. Four separate lists designate these waste products. Listed hazardous wastes are identified by a single letter (F, K, P, or U) and a three-digit code.

“F” listed wastes (F001-F039) are from non-specific sources. Examples: some spent solvents.

“K” listed wastes (K001-K151) are from specific sources such as the production of pesticides.

“P” listed wastes (P001-P122) are discarded commercial chemical products, off-specification materials, residues in containers, and spill residues that are acutely hazardous.

“U” listed wastes (U001-U0359) are discarded commercial chemical products, off-specification materials, residues in containers, and spill residues that are toxic hazardous wastes.

EPA Hazardous Waste Numbers

Solvents

Spent solvents, spent solvent mixtures, and solvent still bottoms are often hazardous. This includes solvents used for degreasing and distillation residues from reclamation. Table III-2 lists some commonly used solvents and their corresponding EPA hazardous waste numbers.

Spent Plating and Cyanide Wastes

Spent plating wastes contain cleaning solutions and plating solutions with caustics, solvents, heavy metals, and cyanides. Cyanide wastes may also be generated from heat treatment operations, pigment production, and manufacturing of anticaking agents. Plating wastes are generally EPA Hazardous Waste Nos. F006-F009 (see Table III-3).

Waste Codes F010-F012

Cyanide heat treating wastes are generally EPA hazardous waste numbers **F010-F012**.

- **F010:** Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process
- **F011:** Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations
- **F012:** Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process

For a copy of the EPA's Lists of Hazardous Wastes, call the Small Business and Local Government Assistance Program at (800) 447-2827.

Table III-2: EPA Waste Identification Codes

MATERIAL	COMMON EPA CODE
Cresols (cresylic acid)	F004
Ethylene dichloride	D001
Kerosene	D001
Methyl ethyl ketone	F005
Methyl isobutyl ketone	D001
Methylene chloride	F001 or F002*
Naphtha	D001
Petroleum solvents (flash point less than 140°F)	D001
1,1,1-Trichloroethane (or methyl chloroform)	F001 or F002*
1,1,2-Trichloroethane	F002
Tetrachloroethylene (or perchloroethylene)	F001 or F002
Toluene	F005
Trichloroethylene (or TCE)	F001 or F002
Trichlorofluoromethane	F002
Trichlorofluoroethane (or Valclene or CFC-113)	F002
White spirits	D001

* F001 is for spent halogenated solvents used in degreasing; F002 is for spent halogenated solvents in other applications.

Texas Waste Codes

Table III-4 contains a list of wastes that metal finishers might generate and the corresponding Texas Waste Code for use on TNRCC paperwork. If you are unsure which category your waste is in:

- ask your supply vendor,
- look at the Material Safety Data Sheet for a description of the material, or
- call the Small Business and Local Government Assistance Program at (800) 447-2827.

Transportation and Disposal

Before you collect the maximum amount of hazardous waste allowed by your generator status, and/or before you keep it on-site for the maximum time allowed, you should prepare to have it hauled off-site for treatment or disposal. **Use a registered transporter and disposal company** for hazardous waste disposal. **Do not dispose of hazardous waste yourself** unless you have a permit allowing you to do so.

Table III-5 has a list of forms you may need to complete and submit depending on your activities. Some of these are only used by the hazardous waste transporter. The following paragraphs describe forms usually filled out by the hazardous waste generator.

Table III-3: F006 — F009 RCRA-Listed Wastes

INDUSTRY AND EPA HAZARDOUS WASTE NUMBER	HAZARDOUS WASTE	HAZARD CODE
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc, and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	Toxic (T)
F007	Spent cyanide plating bath solutions from electroplating operations	Reactive (R), Toxic (T)
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	Reactive (R), Toxic (T)
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.	Reactive (R), Toxic (T)

Table III-4: Texas Waste Identification

WASTE CATEGORY	TEXAS FORMS CODE	WASTE CATEGORY	TEXAS FORMS CODE
SOLIDS		LIQUIDS	
Soil contaminated with organics	301	Aqueous waste with low solvents	101
Soil contaminated with inorganics only	302	Aqueous waste with low other toxic organics	102
Empty or crushed metal drums or containers	308	Spent acid with metals	103
Spent solid filters or adsorbents	310	Spent acid without metals	104
Metal cyanide salts/chemicals	312	Acidic aqueous waste	105
Reactive cyanide salts/chemicals	313	Caustic solution with metals but no cyanides	106
Other metal salts/chemicals	316	Caustic solution with metals and cyanides	107
Nonhazardous dewatered air pollution control device sludge	392	Caustic solution with cyanides but no metals	108
ORGANIC SOLIDS		Spent caustic	109
Dewatered biological treatment sludge	491	Caustic aqueous waste	110
Dewatered sewage or other untreated biological sludge	492	Aqueous waste with reactive sulfides	111
SLUDGES		Other inorganic liquids (Specify in comments)	119
Wastewater treatment sludge with toxic organics	503	ORGANIC LIQUIDS	
Untreated plating sludge without cyanides	505	Halogenated (e.g., chlorinated) solvent	202
Untreated plating sludge with cyanides	506	Nonhalogenated solvent	203
Other sludge with cyanides	507	Halogenated/nonhalogenated solvent mixture	204
Degreasing sludge with metal scale or filings	510	Concentrated aqueous solution of other organics	207
ORGANIC SLUDGES		Paint thinner or petroleum distillates	211
Still bottoms of halogenated (e.g., chlorinated) solvents or other organic liquids	601	For more detailed information on waste disposal paperwork and waste codes, see the TNRCC publication, <i>Guidelines for the Classification & Coding of Industrial Wastes and Hazardous Wastes</i> (RG-22). Call the SB&LGA at (800) 447-2827 for a copy of this publication.	
Still bottoms of nonhalogenated solvents or other organic liquids	602		
Other organic sludges (specify in comments)	609		

One-Time Shipment Request [TNRCC-0757]

Sometimes a business generates a certain waste only one time. You may not wish to add this waste to your Notice of Registration. Instead, you have the option to use the One-Time Shipment Request form in order to have the waste transported and disposed.

Waste Shipment Summary [TNRCC-0040]

If you are an unregistered generator who shipped waste using a One-Time Shipment Request form, or a registered generator who shipped waste out of the state or country, you will need to complete a Waste Shipment Summary form. *This form is completed monthly, not yearly, and you only submit it for those months in which you used a One-Time Shipment Request form.*

Exception Report

You are responsible for what happens to any waste you generate including proper disposal. If you don't get the white copy of your manifest back within 35 days of having your waste

hauled, call your transporter and/or TSDF. If you still haven't received the white copy within another 10 days, you must inform the TNRCC in writing. This is called filing an exception report (no special form is needed).

Other Requirements

Hazardous waste generators under RCRA are required to have a Hazardous Waste Management Plan that covers:

- Preparedness and Prevention Measures
- Contingency Plan/Emergency Procedures
- Personnel Training Program
- Inspection Logs
- Generator's Biennial Report

The Department of Transportation (DOT) has several regulations for generators that ship hazardous materials off-site for disposal. DOT HM-181, HM-208, and HM-126F require registration, packaging, labeling, training, and certification of employees. For information on these requirements, contact the SB&LGA.

Table III-5: Transportation and Disposal

FORM	FORM NAME	DESCRIPTION	CESQG	SQG	LQG	RETENTION
TNRCC-0311	Texas Uniform Hazardous Waste Manifest	A four-part form that accompanies hazardous and Class 1 waste during shipment and disposal	No*	Yes	Yes	3 years
TNRCC-0311B	Uniform Hazardous Waste Manifest Continuation Sheet	To add additional information to the manifest form if needed	No*	Yes	Yes	3 years
TNRCC-0040	Waste Shipment Summary	To notify the TNRCC of any waste shipped by an unregistered generator or out of state or country	No*	Yes	Yes	3 years
TNRCC-0757	One-Time Shipment Request	To notify the TNRCC that a waste stream not identified on your NOR has been generated and needs to be shipped from the facility	If needed	Yes	Yes	3 years
Exception Report	No Form	To notify the TNRCC if manifests not received back from the TSD facility (letter from generator)	No*	Yes	Yes	3 years
Land Ban Documentation	No Form	To notify the disposal facility as to the land ban status of the waste (letter from generator)	No	Yes	Yes	3 years

* Industrial facilities that generate ≥ 100 kg per month of Class 1 waste **must** complete these forms.

Appendix IV

Toxics Release Inventory and Tier II

What Is the Difference between TRI and Tier II?

The Emergency Planning and Community Right-to-Know Act (EPCRA) requires businesses that store and/or manufacture, process, or use certain chemicals to complete the Tier II report and/or the Toxics Release Inventory report (Form R). While both of these reports originate in the same Act, they do have significant differences and those are outlined in Table IV-1.

Table IV-1. Differences between TRI and Tier II

TOXICS RELEASE INVENTORY (FORM R)	TIER II
■ SIC codes 20-39 ■ 10 full-time employees (20,000 or more worker hours) ■ Chemicals listed in the TRI reporting packet	APPLIES TO: ■ Any Texas facility using hazardous chemicals as defined by 29 CFR, Part 1910.1200
THRESHOLD AMOUNTS: ■ Manufacture more than 25,000 lbs. of any of the TRI chemicals ■ Process more than 25,000 lbs. of any of the TRI chemicals ■ Otherwise use more than 10,000 lbs. of any of the TRI chemicals	■ Have on-site more than 10,000 lbs. of any hazardous chemical ■ Have on-site more than 500 lbs. or the Threshold Planning Quantity of any extremely hazardous substance (listed in the Tier II packet)
DUE DATE: ■ July 1 for the previous calendar year	■ March 1 for the previous calendar year
SEND TO: ■ Environmental Protection Agency (EPA) Emergency Planning and Community Right-to-Know Act (EPCRA) Reporting Center, P.O. Box 3348, Merrifield, VA 22116-3348 Attn: Toxic Chemical Release Inventory ■ Texas Natural Resource Conservation Commission (TNRCC)--Pollution Prevention TRI Program, MC-112, P.O. Box 13087, Austin, TX 78711-3087	■ Texas Dept. of Health (TDH) State Emergency Response Commission, c/o Texas Department of Health, 1100 W. 49th St., Austin, TX 78756 ■ The local emergency planning committee; fire department should also receive copies
FORMS: ■ Texas Natural Resource Conservation Commission (TNRCC)--Pollution Prevention, TRI Program, MC-112, P.O. Box 13087, Austin, TX 78711-3087 ■ EPA accepts electronic versions of Form R as well as hard copies ■ TNRCC accepts diskettes or hard copies	■ TDH accepts both electronic and hard copies. The electronic copies may be obtained from the Emergency Planning and Community Right-to-Know Act (EPCRA) hot line (800) 535-0202. ■ Call the Texas Department of Health to get a copy of the cover sheet needed to accompany the electronic version.
FEE: Yes	Yes
QUESTIONS: ■ TNRCC TRI coordinators (512) 239-3100	■ Texas Department of Health, Hazard Communication Branch (800) 452-2791

Appendix V

Other Useful Sources of Information

Topic

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Written Materials

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Web Sites for Metal Finishers

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Written Materials

General Information

1. *Profile of the Fabricated Metal Products Industry*, Environmental Protection Agency (EPA), Sept. 1995, 140 pp.
2. *Profile of the Metal Finishing Industry*, WRITAR, Prepared for the Cleveland Advanced Manufacturing Program under contract with the Energy, Environment and Manufacturing Project of the Technology Reinvestment Program, April 1995, 74 pp.

Air Regulations

1. *New Regulation Controlling Air Emissions from Chromium Electroplating and Anodizing Tanks*, EPA, March 1995, 2 pp.
2. *Clean Air Compliance for Chromium Emissions from Electrolytic Processes*, EPA, Oct. 1995.

Waste Regulations

1. *Meeting Hazardous Waste Requirements for Metal Finishers*, EPA, Sept. 1987.
2. *Guidelines for the Classification & Coding of Industrial Wastes and Hazardous Waste*, TNRCC, Nov. 1993, 52 pp.

Water Regulations

1. *Guidance Manual for Electroplating and Metal Finishing Pretreatment Standards*, EPA, Feb. 1984.

Waste Reduction and Pollution Prevention

1. *Metal Finishing in Arizona: Pollution Prevention Opportunities, Practices, and Cost Benefits*, Arizona Department of Environmental Quality, August 1995. This booklet gives a list of 40 pollution prevention techniques and technologies, along with explanations, advantages, and disadvantages for each.
2. *Pollution Prevention in Rhode Island: Case Studies*, Rhode Island Department of Environmental Management, Pollution Prevention Program, 1994. This booklet of metal finishing case studies is well organized and gives good contextual information.
3. *Guides to Pollution Prevention: The Fabricated Metal Products Industry*, EPA, Office of Research and Development, July 1990. This publication contains detailed information about waste minimization options.

Web Sites for Metal Finishers

Federal Air, Water, and Waste Regulations

1. <http://law.house.gov/cfr.htm>
2. <http://www.epa.gov/epa.home/rules.html>

State of Texas Air, Water, and Waste Regulations

1. <http://tnrcc.state.tx.us>

Waste Reduction and Pollution Prevention

1. <http://www.nmfrc.org>
This is the National Metal Finishing Resource Center's Web page. This site contains useful information about metals prices, regulations, and pollution prevention technologies. There are also links to other pollution prevention sites.
2. <http://www.epa.gov>
Within this site's menu, click on "Programs & Initiatives." Then scroll down the list of programs to the Pollution Prevention section.

3. <http://es.inel.gov>

This is the EPA's Enviro\$en\$e Web site.

In the box where it asks for the industry you want, type in Fabricated Metal Products. You will have to save this report to a disk or your hard drive in order to read it.

4. <http://pprc.pnl.gov/pprc>

The Northwest Pollution Prevention Resource Center has many pollution prevention documents available here.

5. <http://www.aesf.com>

The American Electroplaters and Surface Finishers' Web site.

Other Agency Information

For information on pollution prevention and waste reduction contact:

TNRCC's Small Business and Environmental Assistance Division MC-112
PO Box 13087
Austin TX 78711-3087
(512) 239-3100

To order forms or TNRCC publications listed in this document, contact:

TNRCC Publications MC-195
PO Box 13087
Austin TX 78711-3087
(512) 239-0028

For information on waste registration, record keeping, and reporting, contact:

TNRCC Waste Evaluation Section MC-129
PO Box 13087
Austin TX 78711-3087
(512) 239-6832

For Texas Tier II information and forms, contact:

State Emergency Response Commission
c/o Texas Department of Health
Hazard Communication Branch
1100 West 49th Street
Austin TX 78756
1-800-452-2791

For information on state occupational safety and health requirements, contact:

OSHCON
Texas Workers Compensation Commission
4000 South IH 35
Southfield Building
Austin TX 78704
1-800-687-7080

For information about federal occupational safety requirements, consult your local telephone directory for an office nearest you, or contact:

Occupational Safety and Health Administration
U.S. Department of Labor
611 East 6th Street, Suite 303
Austin TX 78701
(512) 482-5783