THE EIGHT MOST COMMON HAZARDOUS WASTE MANAGEMENT VIOLATIONS AT ELECTROPLATING FACILITIES AND HOW TO PREVENT OR CORRECT THEM

Introduction

The Department of Toxic Substances Control (DTSC) has identified eight hazardous waste management violations that are occurring frequently at electroplating facilities. These violations are considered serious, and may be subject to formal enforcement action and substantial fines or penalties. This document was prepared to help electroplating facilities prevent or correct these violations and avoid costly fines and penalties.

The most common hazardous waste management violations that DTSC has identified at electroplating facilities[1]:

1. Failure to prepare a written hazardous waste tank system assessment certified by an independent, qualified, professional engineer registered in California, and failure to reassess hazardous waste tank systems as required by regulations.
2. Failure to provide adequate secondary containment for tanks and containers.
3. Failure to segregate incompatible wastes.
4. Many facilities perform certain activities that are considered "treatment" under current law, such as the rinsing of filters contaminated with plating bath residues. These treatment activities require a permit or grant of authorization.
5. Failure to prepare a written waste analysis plan and maintain waste analysis records for all hazardous wastes treated onsite under Permit by Rule (PBR).
6. Failure to adequately train employees that manage hazardous wastes, and failure to maintain their training records.
7. Failure to clean up spilled hazardous plating chemicals from the floor of the facility.
8. Failure to correctly label containers and tanks that are used to hold hazardous wastes.

The following discussion describes how electroplating facilities can correct or address common violations[2]. How to correct or address each violation is discussed in the same order as the violations are listed above.

1. **Tank Systems:** If you use tanks to hold or treat hazardous waste, you should keep an up-to-date written, certified assessment for all hazardous waste tanks and associated ancillary equipment (e.g., piping, pumps, etc.) on file at the same facility where your tanks are located. The assessment must include specific written statements listed in the California Code of Regulations, title 22, section 66265.192. An independent, *qualified*, professional engineer, registered in California, must certify the assessment, attesting that all written statements in the assessment are accurate, and that the tank system is suitably designed to safely hold or store hazardous wastes. DTSC previously requested that the

[1] A list of references for various statutory and regulatory citations related to items in this list of common violations is contained in Attachment 1.
[2] Attachment 2 contains definitions for certain terms used in the following discussion.

California Board of Professional Engineers and Land Surveyors make a determination regarding what type of engineer is "qualified" to assess hazardous waste tank systems. In 1996, the Board of Professional Engineers and Land Surveyors made a determination that only registered civil or mechanical engineers are *qualified* to certify hazardous waste tank assessments[3]. Most tank systems must be reassessed every five years from the date of the initial assessment, or anytime a new component is added to, or removed from, the tank system (reassessment is NOT required for routine maintenance or replacement of defective pumps or plumbing with identical parts). It is essential that you consult the California Code of Regulations, title 22, section 66265.192 to determine what written statements must be included in your tank system assessment, and how often you must reassess your tank system.

2. **Secondary Containment:** You may have to provide secondary containment for your hazardous waste tank system depending on the age of your facility, the date your tank system was installed, and the types of waste managed in the tanks. You should review California Code of Regulations, title 22, section 66265.193 to determine if your tank system needs secondary containment. Nearly all hazardous waste tank systems used to treat waste under PBR, or one of the lower tiers of the tiered permitting system, must have secondary containment. If your tank system requires secondary containment, then the written certified tank system assessment described above must include a description of your secondary containment system, and must contain written statements, certified by an independent, *qualified*, professional engineer registered in California, indicating that your secondary containment is in compliance with applicable regulatory requirements.

   When required, you must provide secondary containment for your tanks. You do not have to provide secondary containment for the piping connected to the tanks if you inspect your tank system, including the piping, daily for signs of corrosion or leaks. If you do not inspect your tank system daily, and maintain a record of the daily inspections, then you must provide secondary containment for all piping connected to the tanks. Specific information must be recorded in the record of daily inspections, and you should consult the California Code of Regulations, title 22, section 66265.195 for specific information regarding tank system inspections.

   It is important to recognize that incompatible and reactive wastes ***cannot be placed in the same tank system***. Therefore, since secondary containment is defined as part of the tank system, separate secondary containment must be provided for any tanks holding incompatible wastes, such as acidic and cyanide-bearing wastes.

[3] However, DTSC recently requested that the Board of Professional Engineers and Land Surveyors review current hazardous waste tank system assessment requirements and again make a determination regarding what type(s) of engineer is "qualified" to certify hazardous waste tank system assessments. As of the date this guidance information was prepared, DTSC was still awaiting a response from the Board of Professional Engineers and Land Surveyors. After the Board of Professional Engineers and Land Surveyors makes its determination, DTSC will notify your facility.

You must also provide secondary containment for any containers that are used to treat hazardous waste under a PBR. However, the secondary containment requirements for containers are slightly different than the secondary containment requirements for tanks. You must obtain a written statement signed by an independent, qualified, professional engineer, registered in California, indicating that the containment system for any containers used to treat hazardous waste under PBR is suitable to achieve the requirements specified in California Code of Regulations, title 22, section 66264.175.

(Please note that containers used only to accumulate hazardous waste until the waste is transferred offsite to a permitted facility are not required by DTSC to have secondary containment. However, local codes may require secondary containment for such containers.)

3. **Segregate Incompatible Wastes:** You must segregate your incompatible or reactive wastes, such as cyanide waste and acidic waste. If waste containing cyanide accidentally mixes with acidic waste, it might generate poisonous hydrogen cyanide gas that could harm you or your employees. ***ALL*** containers holding incompatible or reactive wastes, whether or not those containers are being used to treat the waste, must be separated by means of a dike, berm, wall, or other device that is capable of keeping the wastes from mixing if a spill occurred. You must segregate ***ALL*** tanks or containers holding cyanide-bearing waste from all tanks or containers holding incompatible wastes. You must also make sure that ***ALL*** tanks or containers holding cyanide-bearing wastes are segregated from any containers holding acidic material, whether or not the acidic material is waste.

4. **Treatment:** You must obtain a permit, or grant of authorization, from the appropriate regulatory agency before you treat any hazardous waste. All hazardous waste treatment activities require a permit or grant of authorization, unless the specific treatment activity is exempt or excluded from the requirement for a permit or authorization. In addition to the examples given in the definition of treatment that appears in Attachment 2, other examples of hazardous waste treatment include cleaning plating bath filters to remove plating bath residues, electrowinning of cyanide-bearing wastes, evaporation of liquid wastes by addition of heat or chemicals, or any other activity designed to change the hazardous characteristics or properties of the waste. You may contact your local Certified Unified Program Agency (CUPA) or DTSC, for assistance with obtaining the appropriate permit to treat your hazardous wastes. ***Only DTSC can issue permits for the treatment of extremely hazardous waste***. Thus, the treatment of rinse waters containing cyanide, plating bath residues containing cyanide, or plating bath filters containing cyanide, all require a permit or grant of authorization from DTSC. The rinsing of filters that contain plating bath residues from cyanide plating processes, and the treatment of the cyanide in the water

that was used to rinse those filters, is hazardous waste treatment that requires a permit or grant of authorization from DTSC. You may contact one of the DTSC public liaisons at the telephone number provided at the end of this document for further assistance.

5. **Waste Analysis Plan and Records:** If you treat your hazardous wastes under a PBR, you must prepare a waste analysis plan, and keep this plan at the same facility where you are treating your hazardous wastes. The waste analysis plan must specify:

   a. The specific wastes and the specific constituents in the waste that must be tested to determine the hazardous characteristics of your waste. For example, rinse water from electroplating operations may need to be analyzed for the metal concentration of the waste;
   b. The specific methods that will be used to analyze your hazardous waste;
   c. The sampling and sample management methods that will be used to obtain a sample of your waste for analysis; and
   d. How frequently the analysis needs to be repeated to ensure that the analysis is accurate and up-to-date.

   You must have all of your hazardous waste that is to be treated under PBR analyzed according to your waste analysis plan. You must maintain this "waste analysis record" at the same facility where you are treating your waste.

   (Please note that facilities operating under PBR must maintain a waste analysis plan and records. Facilities operating under Conditional Authorization or Conditional Exemption do not require a waste analysis plan and records, but still must maintain sufficient documentation to show that they know the hazardous characteristics of their waste, and that the treatment method is suitable for reducing the hazardous characteristics of their waste.)

6. **Training:** You must train all of your employees that manage hazardous waste, and you must maintain employee-training records at your facility, including records of on-the-job training. Training requirements should include a program of classroom instruction or on-the-job training that teaches each employee involved with hazardous waste management to perform their duties in a way that ensures the facility's compliance with applicable regulatory requirements. Two types of training are required:
   a Implementation of the facility contingency plan: This training may include Hazardous Waste Operations and Emergency Response (HAZWOPER) training, although HAZWOPER training alone is not sufficient to meet the training requirement. The training should also include training in how to respond to hazardous waste spills and emergencies at the facility.

b Hazardous waste management procedures such as container and tank labeling, inspecting hazardous waste tanks, operation of waste treatment units, etc.

(1) The required training should be given by a person who is trained in hazardous waste management requirements;

(2) The training program shall ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems; and

(3) Facility personnel shall successfully complete the training program within six months after the date of their employment or assignment to a facility, or to a new position at a facility. Employees shall not work in unsupervised positions until they have completed all training requirements.

You must maintain the following training documents and records at your facility:

- The job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job;
- A written job description for each position. This description shall include the requisite skill, education, or other qualifications, and duties of facility personnel assigned to each position;
- A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position; and
- Records that document that the required training or job experience has been given to, and completed by, facility personnel.

7. **Managing Spills:** When a material is spilled onto the ground or onto the floor of your facility, it becomes a waste if, because of the spill, it can no longer be used for its original purpose. For example, if a plating bath solution spills on the floor of your facility and you cannot return it to your plating bath, the spilled plating solution becomes a waste. If the plating solution is hazardous, then the spilled plating solution would be a hazardous waste. You must clean up all spilled hazardous waste immediately when the spill occurs. Even if the spilled material is not waste because it can be reused, you still must clean up the spilled material immediately when the spill occurs so that it does not harm your employees or the environment. Failure to clean up spilled hazardous waste or materials is considered a serious violation because it poses a threat to the health and safety of your employees and to the environment. Any spilled hazardous waste should be placed in an appropriately labeled container or hazardous waste tank, and either treated onsite (if the facility is authorized to treat the waste), or transferred offsite to a facility that is permitted to treat, store, or dispose of the waste.

Most hazardous waste tanks must have secondary containment. You must not allow any spilled liquids, whether or not they are hazardous, or any spilled hazardous waste, to remain in the secondary containment of your hazardous waste tank system. While you must clean up spilled hazardous waste and hazardous materials from the floor of your facility immediately when the spill occurs, you must clean up all spilled liquids from your secondary containment, whether or not the spilled liquid is a hazardous waste, within 24 hours of when the spill occurs, or in as timely a manner as possible.

8. **Container and Tank Labeling:** Tanks or containers that are used to hold hazardous waste must be labeled with certain information, including:

   a. The name and address of your facility;
   b. The date the first drop of waste was placed in the tank or container (the accumulation start date);
   c. The identity or source of the waste (for example, spent plating solution);
   d. What makes the waste hazardous (for example, does it contain cyanide, dissolved metals, or acid?);
   e. The hazardous characteristic of the waste (is the waste toxic, corrosive, ignitable, or reactive?); and
   f. The physical state of the waste (is it liquid or solid?).

   Any hazardous waste treatment unit (consisting of all the tanks and containers used to treat a specific hazardous waste) must be labeled with the name of the person that owns or operates the treatment unit, the facility Environmental Protection Agency (EPA) or State identification number. In addition, any treatment unit used to treat waste under a PBR must also be labeled with a facility-specific serial number. You can assign any serial number to your treatment units, but the serial number displayed on the treatment unit should be the same number referred to in any permit or grant of authorization that you have obtained to operate the treatment unit.

Where can I go for help?

You may contact your local CUPA for assistance. CUPA contact information may be obtained from the California Environmental Protection Agency's (Cal/EPA) website at www.calepa.ca.gov/CUPA/CUPAMail.htm. Additional assistance may also be obtained through DTSC's website at www.dtsc.ca.gov, or by contacting one of DTSC's Public and Business Liaisons at (800) 72TOXIC - that's: (800) 728-6942, or from outside of California call (916) 255-3617.

Attachment 1
List of References

1) Tank Assessment Standards
   - Article 10 of chapter 15 in title 22 of the California Code of Regulations, section 662656.190 et seq. contains requirements, including tank assessment requirements and secondary containment requirements, for operating tanks and tank systems used to manage hazardous waste under Permit by Rule and lower tiers of the tiered permitting system;
   - Health and Safety Code section 25200.3, regarding the treatment of waste under Conditional Authorization, the California Code of Regulations, title 22, section 67450.3, subdivision (c), regarding the treatment of waste under Permit by Rule (PBR), and California Code of Regulations, title 22, section 66262.34, subdivision (a), regarding accumulation of waste by generators, all incorporate article 10 of chapter 15 in title 22 by reference.

2) Secondary Containment Requirements
   - California Code of Regulations, title 22, section 66265.193 lists secondary containment requirements for tank systems used to manage hazardous waste under Permit by Rule and lower tiers of the tiered permitting system;
   - California Code of Regulations, title 22, section 66264.175, incorporated by reference in California Code of Regulations, title 22, section 67450.3, subdivision (c), lists secondary containment requirements for containers used to treat hazardous waste under Permit by Rule.

3) Segregation of Incompatible or Reactive Wastes
   - California Code of Regulations, title 22, section 66265.177, requires segregation of incompatible wastes;
   - California Code of Regulations, title 22, sections 66265.198 and 66265.199 prohibit the placement of, or treatment of, incompatible or reactive wastes in the same tank system.

4) Permit Requirement for Hazardous Waste Treatment
   - Section 25201 of the Health and Safety Code requires a permit, or other grant of authorization, for hazardous waste treatment, storage, or disposal.

5) Waste Analysis Plan and Records
   - California Code of Regulations, title 22, section 66265.13, subdivision (b), incorporated by reference in California Code of Regulations, title 22, section 67450.3, subdivision (c), requires the owner or operator of a facility treating waste under Permit by Rule to prepare a written waste analysis plan and maintain waste analysis records.

6) Training Personnel
   - California Code of Regulations, title 22, section 66265.16, requires that facility personnel be given specific training, and requires that the facility owner or operator maintain specific training records.

Attachment 1
List of References

7) Managing Spilled Plating Chemicals
   - California Code of Regulations, title 22, section 66265.31 states that facilities shall be maintained and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water, which could threaten human health or the environment.

8) Tank and Container Labeling
   - California Code of Regulations, title 22, section 66262.34, subdivision (f) lists all the required information that must be included in a label for a tank or container holding hazardous waste.
   - California Code of Regulations, title 22, section 67450.3, subdivision (c)(7), states that the owner or operator of a fixed treatment unit operating under PBR shall permanently mark the exterior of each treatment unit with the name of the person that owns or operates the unit, the facility identification number, and an individual serial number.

Attachment 2
Definitions of Terms

- A “waste” is defined in the California Code of Regulations, title 22, section 66261.2 as any material that you intend to dispose of or discard. To "Discard" means to relinquish, or recycle.

  Waste may include:

  a) Any material that is disposed of by being thrown in the garbage, burned, or incinerated;
  b) Any material that you accumulate, store, or treat instead of throwing it in the garbage or incinerating it;
  c) Any material that is recycled, accumulated, stored or treated before recycling; or
  d) Any material that is inherently “waste-like”.

  "Hazardous waste" is a waste which not excluded from the definition of hazardous waste by a specific law or regulation. Hazardous waste is also any waste that has any of the characteristics of a hazardous waste. Some, but not all, hazardous wastes are listed in chapter 11 of title 22 of the California Code of Regulations.

  Hazardous waste is defined in section 25117 of the Health and Safety Code as a waste that meets any of the criteria for the identification of a hazardous waste adopted by DTSC. A waste may also be a “hazardous waste” if it is poisonous or toxic, corrosive, reactive, or if it can be set on fire.

  A waste is hazardous if, because of its concentration, quantity, physical, or chemical characteristics, it may pose a present or potential hazard to human health or the environment.

- “Treatment” is defined in section 25123.5 of the Health and Safety Code as any method, technique, or process designed to change the physical, chemical, or biological character or composition of any hazardous waste, or which removes or reduces the harmful properties or characteristics of the waste for any purpose. Filtering, evaporating with added heat, gravity settling, the addition of chemicals to alter chemical characteristics, and dilution from the addition of water or from the commingling of different waste streams, are all examples of treatment.

- “Tank,” “tank system,” and “container” (2) are defined in California Code of Regulations, title 22, section 66260.10. A “tank” is any device that is fixed in place, or that cannot be moved when full, that is designed to contain hazardous waste and is constructed primarily of nonearthen materials. A “tank system” is a hazardous waste tank, and its associated plumbing, piping, and pumps, and secondary containment. A “container” is any device that is portable when full, in which a material may be stored, handled, treated, transported, recycled, or disposed of.

Attachment 2
Definitions of Terms

- Ancillary equipment is all the plumbing, piping, and pumps associated with a hazardous waste tank or tank system.

- A treatment unit is any combination of tanks that is permanently stationed at a single facility, or any combination of tanks and/or containers located together, that are used in sequence to treat one or more compatible hazardous waste streams. The devices are either plumbed together or otherwise linked so as to form one treatment system.

- Incompatible or reactive wastes are wastes that might cause a violent chemical reaction, generate toxic fumes, or gas if they come in contact with each other. Common incompatible or reactive wastes generated in electroplating operations are cyanide-bearing wastes and acidic wastes.