REGIONAL WATER QUALITY CONTROL PLANT

OPERATED BY THE CITY OF PALO ALTO FOR THE EAST PALO ALTO SANITARY DISTRICT, LOS ALTOS, LOS ALTOS HILLS, STANFORD, MOUNTAIN VIEW, AND PALO ALTO

BEST MANAGEMENT PRACTICES

CYANIDE IN METAL FINISHING AND ELECTROPLATING PROCESSES

SANITARY SEWER DISCHARGE

Your local Sewer Use Ordinance prohibits discharging wastewater with a cyanide concentration greater than 0.5 mg/L down a sink or drain. Wastewater discharged to the sewer flows to the Palo Alto Regional Water Quality Control Plant (RWQCP) and ultimately to the San Francisco Bay. Follow these Best Management Practices required by your facility's Industrial Waste Discharge Permit to prevent cyanide pollution. Failure to comply is subject to enforcement and may result in fines.

These BMPs are intended to prevent cyanide releases to the sanitary sewer. They are not a complete list of actions to prevent or minimize cyanide exposure and human health risk in the workplace. Review and update your health and safety procedures to prevent cyanide exposure to workers or visitors.

Avoid Disposing Cyanide Waste Down the Drain

- ☐ Separate cyanide storage, processes, treatment, and disposal from non-cyanide containing systems.
- ☐ Do not rinse empty cyanide containers down a sanitary sewer drain. Collect rinse water and dispose as hazardous waste.

Prevent Cyanide Releases

- ☐ Store cyanide-based raw materials in a secure, dry, and well-ventilated storage area with compatible materials and secondary containment.
- ☐ Segregate all cyanide processes, pretreatment, storage and other operations from non-cyanide operations in a separate secondary containment system.
- ☐ All containers/tanks holding incompatible or reactive to cyanide wastes 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.
- ☐ The secondary containment vessel or area (e.g., a tray or bermed area) must hold at least 110% of the capacity of the primary container, or for multiple primary containers, 150% of the largest primary container.
- ☐ Cyanide reacts with moisture to produce toxic cyanide gas, ammonia, and formate. Do not store under a sprinkler system.
- ☐ Maintain primary containment tanks, drums, pipes, valves, pumps and other equipment to prevent leaks and spills.
- ☐ Do not drain secondary containment vessels (or areas) to the sanitary sewer or storm drain system. Spills into secondary containment should be collected and disposed of as hazardous waste.

Operating Practices

- ☐ Use the minimum amount of cyanide required for adequate process or operation.
- ☐ Use a closed-loop or modified closed-loop process.
- ☐ Incorporate three-stage, countercurrent rinsing to improve rinsing effectiveness and reduce wastewater generation.
- ☐ Reduce drag-out losses: lengthen the drag-out time from the plating baths and increase drip time over the solution tanks.
- ☐ Establish a drag-out time and either post times at the tanks to remind employees or mechanize the drag-out.
- ☐ Install drain boards or drip guards sloped away from rinse tanks to minimize spillage and return drag-out fluids back to plating tanks rather than rinse tanks.
- ☐ Install drip bars for hands-free draining to encourage longer drag-out times.
- ☐ Place parts on the drag-out rack to reduce pockets and minimize chemical pooling.
- ☐ Use drag-out/rinse water recovery technology (i.e. vacuum evaporation, reverse osmosis, or ion exchange) to reduce material costs, wastewater treatment, and water usage.
- ☐ Establish rinse water quality standards (e.g. the final process rinse has a cyanide residual of less than a specified concentration).
- ☐ Avoid air agitation or any other aeration of cyanide solutions.
- ☐ Do not use cyanide-based plating processes as cleaner and plating solution. Parts should have a water break-free surface to ensure surface cleanliness prior to plating.

For more information call the Regional Water Quality Control Plant at **(650) 329-2122,** email **Pretreatment@PaloAlto.gov**, or visit **PaloAlto.gov/wastewatertreatment-businesses.**

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Cyanide Management and Employee Training

- ☐ Establish well-defined personnel responsibilities, clear chains of command, and procedures for safe cyanide use and management.
- ☐ All personnel involved with cyanide must be fully trained on handling procedures, proper waste disposal and/or treatment, safety protocols, and emergency response. Staff must understand the extreme hazards associated with cyanide and the importance of segregation.
- ☐ Maintain records for required employee training, include staff names, job title, job descriptions, and documentation of completed required training.
- ☐ Keep copies of Safety Data Sheets (SDS) easily accessible for all on-site chemicals.

Safe Cyanide Spill Cleanup

- ☐ Develop and practice emergency procedures for cyanide spills.
- ☐ Keep spill prevention, clean-up equipment, and absorbent materials in stock and readily available.
- ☐ Do not allow a spill to run to a confined space, drain that goes to the sewer, or a storm drain.
- ☐ Do not spray a spill with a high-pressure hose.
- ☐ Smaller isolated spills (few gallons or less) that are not combined with other fluids may be cleaned by trained personnel. Cleanup may involve the use of a dedicated mop and bucket used only for cyanide spills and cleaned after every use (this includes a final soak in a dilute solution of sodium hypochlorite and water in a ventilated area). Collect all wash water for disposal as hazardous waste or treatment for cyanide destruction.
- ☐ If solid absorbents such as sand or proprietary materials are used, the materials must be disposed of as hazardous waste or treated for cyanide destruction.
- ☐ Large spills (more than a few gallons) or spills mixed with incompatible chemicals require an evacuation. If in doubt, evacuate and call local emergency services.

Effective Solution Maintenance

- ☐ Filter solutions to control particulates. Store used filters in a leak-proof container and dispose as hazardous waste.
- ☐ Treat solutions to control organics, carbonates, and metallic impurities.
- ☐ Set concentration limits for contaminants
- ☐ Set analytical control procedures to monitor contaminants and makeup chemicals.
- ☐ Discard solutions based on contaminant build-up and not on a simple time basis.

Hazardous Waste Management

- ☐ Before treating any hazardous waste onsite, a permit or grant of authorization is required from the appropriate regulatory agency. Treatments include cleaning plating bath filters to remove plating bath residues or electrowinning to recover metals from cyanide-bearing wastes. Contact your local Certified Unified Program Agency (CUPA) at calcupa.org or the California Department of Toxic Substances Control (DTSC) for assistance with obtaining the appropriate permit.
- ☐ Keep hazardous waste and hauling logs/records onsite for at least 3 years.

Consider Transitioning to Cyanide-Free Processes

- ☐ Non-cyanide surface finishing processes are available, including for silver and gold plating. Research alternatives for your electroplating processes and consider retrofitting your operation if appropriate.

Metalworking and Jewelry-Making

- ☐ Specific metalworking processes (casting, stripping, cleaning, and plating) produce hazardous wastes including corrosive degreasers, etchants, patinas, flammable solvents, toxic sealants, and cyanide electroplating compounds.
- ☐ All wastewater from metalworking and jewelry-making should be stored as hazardous waste and may be subject to federal Pretreatment regulations. Contact the RWQCP at Pretreatment@PaloAlto.gov to see if an Industrial Waste Discharge Permit is required.

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