

Objective:

To remove all chemicals and chemically contaminated equipment, piping, and building materials from processing facilities prior to property sale or termination of property lease. This closure plan provides a standard method that may be expanded to include facility-specific issues.

Environmental Cleanup Team:

Facility cleanup will include many non-routine maintenance tasks that are unique for each facility. All team members must be willing to develop and follow safe work practices. The cleanup team will normally include technicians from the local facility and/or outside contractors. Personnel without technical skills may be included under the direct supervision of the cleanup crew. Unskilled personnel will not handle hazardous chemicals or power tools.

Team Leadership:

A team leader will be designated for each facility closure project. The team leader will have the following responsibilities:

- *Plan, coordinate and supervise the activities of the cleanup team to accomplish the objective.*
- *Assist the cleanup team in development of safe work practices and ensure their use.*
- *Document the team's efforts with the Environmental Closure Checklist.*

Standard Closure Equipment:

- *Air compressor (portable is acceptable).*
- *Garden hoses with spray nozzle (3/4" ID).*
- *Pressure washer (electric or gas with extension hoses - do not operate gas units inside).*
- *Wet vacuum.*
- *Brooms, squeegees, mops, mop bucket.*
- *Safety glasses, face shields, chemical aprons, chemical gloves, leather gloves and hard hats.*
- *Active outside telephone line maintained at all times.*
- *Eyewash and emergency showers (existing in facility or rental).*

Safety Requirements:

- **Chemical Safety** - Cleanup team members that work in chemical areas must be familiar with the chemicals they may come into contact with and have received Hazard Communication Training for Chemical Workers. Material Safety Data Sheets must be maintained on site during chemical cleanup activities. All cleanup workers should be aware that dangerous amounts of chlorine gas could be released if chlorine bleach contacts fixer or bleach-fix (including dried deposits). Avoid the use of chlorine bleach to clean tanks containing process chemicals or dried chemical deposits on the floor.
- **Personal Protective Equipment** - Safety glasses, face shields, chemical aprons, chemical gloves, leather gloves, hard hats, and safety shoes should be used where appropriate. All workers should review each task and select appropriate safety equipment. Safety glasses with side shields AND a face shield must be worn when removing rinsed chemical lines from overhead. Hard hats must be worn when demolishing walls or mezzanines.
- **Emergency Planning** - An outside line telephone must be maintained at all times with emergency numbers (ambulance, police, fire, alarm company) posted nearby. Fire safety systems and emergency lighting must be maintained through closure.
- **Lone Operator** - No worker will operate power equipment or manage hazardous chemicals while alone in the facility. A lone worker will carry a portable phone to summon help in an emergency.
- **Lockout / Tagout** - All workers must be familiar with lockout / tagout procedures and understand the lockout/tagout system that will be used during closure activities.
- **Safety Equipment** - Existing emergency eyewash and showers must be tested and maintained until chemical activities are completed (rental units may be substituted if required).
- **Asbestos** – For buildings constructed prior to 1980, the potential for asbestos-containing materials (ACM) must be evaluated. The asbestos inspection report for the facility (if performed) may identify mastic under floor tile as an ACM. If small amounts of floor tile must be removed it should be wetted with water and gently peeled up with a large putty knife. If tile is brittle and breaks easily use a heat gun to soften tile for removal. Remember that floor tile mastic cannot release fibers until exposed - seal any exposed mastic with shellac. Never use tile chipping or sanding equipment on floor tile. If large areas of tile must be removed an asbestos remediation contractor will be retained.

Action Items for Cleanup Team:

The actual sequence of activities is left to the discretion of the Team Leader to optimize available resources.

1. Review existing facility permits, licenses, and local regulations regarding notification requirements prior to shutdown.

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2. *Team leader will review the asbestos inspection report for the facility, if available.*
 3. *Team leader will review potential chemical hazards, appropriate personal protective equipment, and location of safety equipment with the cleanup team.*
 4. *Team leader will review safe working practices related to asbestos containing materials, lone operator policy, and lockout/tagout procedures with the cleanup team.*
 5. *Team leader will ensure standard closure equipment is available when required. Equipment should be stored in a secure location.*
 6. *Transfer all process solutions containing silver (fix, bleach-fix, low-flow wash) to the silver recovery system as soon as possible after processing ceases. NOTE: the cleanup task will be substantially more difficult if process chemicals are allowed to dry and crystallize.*
 7. *Other tank solutions should be emptied from processors the week after processing ceases. Adhere to local wastewater discharge ordinances.*
 8. *All processor tanks must be cleaned by: removing filters, filling with water and circulating to remove chemical residue from the tempering systems three times (triple rinsing). Remove bottom plates (if any) from tanks and rinse out any residue. Rinse water may be drained to the sewer if allowed by local ordinance.*
 9. *Rinse exterior of processors and drain trays to remove chemical deposits before removal.*
 10. *Pressure wash any platforms to remove chemical deposits. The cleaned wood can be disposed as solid waste.*
 11. *Remove cleaned processors and transfer to other facilities or dispose as solid waste. Stainless steel may be recycled as scrap metal.*
 12. *After all silver solutions have been treated, drain the primary silver recovery equipment into the secondary recovery system (i.e. electrolytic plating units to the TMT system or metallic replacement cartridges (MRCs)). Fill primary units with water and circulate to flush remaining chemicals. Remove any silver sludge from the ballast tanks and drum for shipment to the silver refiner. Pressure wash interior and exterior of all ballast and collection tanks.*
 13. *After all silver solutions have been treated place all filters from TMT system in drum for shipment to the refiner. Fill TMT unit with hot water and mix to flush remaining chemicals. Pressure wash interior and exterior of settling and filter bag tanks to remove yellow residue. All rinse water may be drained to the sewer if allowed by local ordinance. For MRCs, prepare units for shipment to silver refiner. Properly package and ship all reclaimed silver materials to the silver refiner. The cleanup team is responsible for making the last shipment of reclaimed silver to the refiner. They will coordinate documentation and obtain proper shipping documents.*