

MACHINE SHOP AND METAL FABRICATION FACILITIES SOURCE CONTROL PROGRAM

Background

In response to stringent standards for the Regional Water Quality Control Plant's (RWQCP's) discharge of treated sewage and industrial wastewater to San Francisco Bay, the RWQCP initiated pollution prevention programs. Because of their extensive use of metals, machine shops may discharge wastewater containing copper, nickel and other metals. Wastewater from parts tumbling and deburring and mop water from shop cleanup is the major source of pollutant discharge from machine shops. In 1993, a program for machine shops was implemented. In 1994, metal fabrication facilities were incorporated into the program. The program involves educating facilities on Best Management Practices (BMPs) and issuing permits to shops that discharge metal-bearing waste to the sanitary sewer.

Public Involvement

A Machine Shop committee, comprised of machine shop owners and managers, was formed by the RWQCP to be both an advisory group and a vehicle for information exchange with the business community. As the program and BMPs were being developed, RWQCP staff met with the committee for its input and advice. In 1993, the RWQCP developed BMPs. From the BMPs, a draft brochure was produced. A letter was sent to all shops and site visits were conducted to assess each shop's need for a discharge permit. Approximately 70 facilities were contacted and sent the BMP brochure. Two workshops were also held for machine shop operators to discuss the program and Best Management Practices. In 1994, metal fabrication facilities were added to the program due to their similarity to machine shops. Six representative facilities were visited to assess their processes. Several additional BMPs were developed and incorporated into a revised BMP brochure for both machine shops and metal fabrication facilities that was published and distributed in 1996.

Program Activities

During 1994, the RWQCP inspected all identified service area machine shops. Of the 86 machine shops inspected, 72 did not conduct activities that generate discharges of pollutants of concern or elected to continue to or switch to a "zero discharge" operation and filed a certification of this selection. All shops using wet cleanup methods agreed to reduce pollutant loads in mop water by following a three-step mopping procedure (clean up spills, sweep, then mop; and dump bucket in sink or toilet). The remaining 14 were issued permits.

Only two of these 14 facilities still have discharge permits; the remainder have changed practices to eliminate discharges, eliminated machining activities, closed, or relocated outside the RWQCP service area.

During the initial inspections, the shops received a brochure version of the BMPs, which cover the following topics:

- good housekeeping,
- preventing leaks and spills,
- cleaning parts in ways that reduce or eliminate fluids to the sewer, and
- product substitution.

The BMPs encourage shops to become "zero dischargers" if possible. Dry floor cleaning is encouraged, but those shops that conduct a designated three step cleaning process may mop floors and still qualify as "zero dischargers."

In 1995, machine shops handling only aluminum materials were investigated, on the basis of concerns raised from practices and metal working solutions observed during inspections of aluminum-handling at permitted industries in early 1995. The investigation did not find any potential for water pollutants of concern from machining practices used to work with aluminum.

The RWQCP investigated metal fabricators in its service area during 1994 and 1995 to learn about potential discharges from their operations to sewers and storm drains. Metal fabricators bend, coat, or assemble metal products; most local metal fabricators also conduct machining (and thus were already included in RWQCP programs). The study found that metal fabricators, like machine shops, have relatively few discharges. No metal fabricator was found to have a discharge other than mop water from the metal fabrication activities.

Requirements

To strengthen RWQCP regulatory authority over machine shops, critical elements of the BMPs (relating to conducting employee training and keeping spill prevention materials readily available) were adopted as requirements in the 1994 revision to the Sewer Use Ordinance. In addition, all facilities are required to comply with the discharge limits specified in the Sewer Use Ordinance. Process wastewater discharges, particularly from tumbling, deburring, and aqueous cleaning processes, must be both permitted and treated prior to discharge or collected for disposal as a hazardous waste.

Permits and Inspections

Annual inspections are planned for all machine shops to ensure continued compliance with BMPs and ordinance requirements. Facilities that discharge process wastewater to the sanitary sewer must obtain a discharge permit. The permit requires wastewater pretreatment and quarterly self-monitoring for the metals of concern. Permitted facilities must submit results of all sampling analyses on a quarterly basis to document their compliance.