



U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 9
CLEAN WATER ACT COMPLIANCE OFFICE

NPDES COMPLIANCE EVALUATION INSPECTION REPORT

Industrial User: Sanford Metal Processing
990 O'Brien Street, Menlo Park, California 94025
40 CFR 433 Subpart A – New Source Metal Finishing

Treatment Works: South Bayside System Authority
Regional Water Treatment Plant
(NPDES Permit CA0038369)

Date of Inspection: April 4, 2006

Inspection Participants:

US EPA: Greg V. Arthur, Region 9, CWA Compliance Office, (415) 972-3504

RWQCB-Oakland: None

SBSA: Robert Chapman, Water Quality Specialist, (650) 594-8411 ex141

Sanford Metal Processing: Jose Sandoval, Owner, (650) 327-5172

Report Prepared By: Greg V. Arthur, Environmental Engineer
September 20, 2006



1.0 Scope and Purpose

On April 4, 2006, EPA, and the South Bayside System Authority (“SBSA”) conducted a compliance evaluation inspection of Sanford Metal Processing in Menlo Park, California. The purpose was to ensure compliance with the Federal regulations covering the discharge of non-domestic wastewaters into the sewers. In particular, it was to ensure:

- Classification in the proper Federal categories;
- Application of the correct standards at the correct sampling points;
- Consistent compliance with the standards; and
- Fulfillment of Federal self-monitoring requirements.

Sanford Metal Processing is a significant industrial user (“SIU”) within the SBSA sewer service area whose compliance was assessed as part of an on-going EPA evaluation of industrial users in EPA Region 9 by sector. The inspection participants are listed on the title page. Arthur conducted the inspection on April 4.

1.1 Process Description

Sanford Metal Processing is a metal finishing job-shop that provides aluminum anodizing and general plating of brass, copper, stainless steel. The aluminum anodizing line involves alkaline cleaning, nitric-acid desmut, alkaline caustic etch, sulfuric-acid Type II anodizing, sulfuric-acid Type III hard anodizing, dyeing, chromium conversion coating, and dichromate and nickel acetate sealing. The other steel/stainless/copper processing lines involve alkaline cleaning, hydrochloric-acid derust, cyanide-copper plating, cyanide-cadmium plating, electroless nickel plating, sulfamate-nickel strike, acid bright dipping, chromium conversion coating, zinc phosphating, nitric-acid passivation, nitric-acid cleaning, hydrochloric-acid activation, nickel strip, and cadmium strip. Other operations include sand blast abrasion, dry-booth painting, and parts drying. Sanford Metal Processing does not perform bright nickel or chromium electroplating.

Sanford Metal Processing does not own parts that undergo metal finishing on-site. No changes in configuration have been made to the metal finishing lines since start-up in 1979. However, according to Sandoval, the owner of Sanford Metal Processing, all of the metal finishing lines were removed in sections in 1994 in order to install secondary containment liners underneath the entire metal finishing area. Sanford Metal Processing discharges its non-domestic wastewaters to the Menlo Park domestic sewers through a single sewer connection designated in this report by permit number as IWD-050215. Domestic sewage discharges through separate connections downstream of the industrial wastewater connection.

1.2 Facility SIC Code

Sanford Metal Processing is assigned the SIC code for electroplating (SIC 3471).



1.3 Facility Wastewater Sources

The metal finishing lines generate spents, rinses, and scrap plate-out. For the purposes of this report, the tank designations are essentially the same as published in the December 2004 Sanford Metal Processing permit application to SBSA. *See* Appendix 1.

Spent Solutions – The imparted contamination from the processing of parts and the progressive drop in solution strength results in the generation of spent solutions. According to Sandoval, Sanford Metal Processing hauls off-site for disposal just the deoxidation, alodine, and a few other chromium conversion coating spents. Sandoval asserts that all other solutions are regenerated strictly through additions and that no spents are discharged directly to the sewers. The list of spent solutions and the asserted disposal methods follows below.

Hauled Off-site to Haz	Tanks Regenerated By Additions	
A4 – nitric-acid deox A6 - alodining A13 - nickel acetate seal D3 - acid derust P3 - acid activation N6 - electroless nickel ✓	A1 - alkaline cleaning A3 - Alkaline etching A7 - Type II anodizing A9 - Type III anodizing A10 - black dye A15 - color dye A16 - color dye A17 - color dye A18 - color dye Z1 - chromium conversion Z2 - chromium conversion A12 - hot water seal A20 - dichromate seal	P1 - alkaline cleaning N4 - cyanide-copper plate N7 - cyanide activation P5 - cyanide-cadmium plate unk - cadmium strip B1 - zinc phosphate N1 - nitric-acid passivation N2 - nitric-acid descale N3 - acid activation N11 - nickel strip N13 - nickel strike N9 - nickel acetate seal B7 - dichromate seal
✓ w/ in-tank plate-out		
Hauled Off-site	Additions Only - No Discharge	

Rinses – Sanford Metal Processing generally employs first-stage on-demand low-overflows on timers and drag-out static rinses either returned to the solution tanks as make-up or hauled off-site as hazardous. There is very little use of first- and second-stage rinsing. The list of rinses follows below.

On-demand	Drag-Out Rinses	
A2 - alk clean/etch 1°ovrflw A5 - acid/alodine 1°ovrflow A8 - anodize 1°overflow A11 - dye/seal 1°overflow D2 - alk clean 1°overflow P2 - acid/activate 1°ovrflow S4 - acid/passivate 1°ovrflw - electroless-Ni 2°ovrflw Z6 - Cr-conversion 2°static	Z1 - Cr-conversion 1°static Z2 - Cr-conversion 1°static A20 - dichrome seal 1°static N9 - Ni acetate seal 1°static B7 - dichrome seal 1°static Z8 - Cr-conversion 1°static unk - Zn-phosphate 1°static unk - electroless-Ni 1°static N6.5 - nickel strike 1°static	C1 - CN-cadmium 1°static C2 - CN-cadmium 1°static C3 - CN-cadmium 1°static C5 - Cr-conversion 1°static
Discharged to IWD-050215	Additions Only	Spents Hauled Off-site



Residuals – Sanford Metal Processing does not employ any methods to extend the useful life of the metal finishing solutions beyond the use of three activation steps (one cyanide and two acidic) that neutralize the surface chemistry of the previous steps. Sanford Metal Processing does plate-out electroless nickel spents through steel wool cementation prior to off-site hauling. Otherwise, Sanford Metal Processing generates no residuals because it provides no treatment or preconditioning of any spent solutions, spent static rinses, or overflow rinses.

1.4 Facility Process Wastewater Composition

The process wastewaters listed in section 1.3 above would be expected to contain cadmium, copper, chromium, lead, nickel, silver, zinc, amenable cyanide, and acidity, as well as oil & grease, salts, and surfactants, iron, aluminum, free oils, suspended solids, and other pollutants in the surface grime cleaned off of parts.

1.5 Facility Process Wastewater Treatment

Untreated process wastewaters discharge to the sewers through a single connection designated in this report after the SBSA permit number as IWD-050215. The 2004-2005 sampling data indicates that discharge averages ~1,500 gallons per day (“gpd”). *See* Appendix 1.

Delivery – Overflow rinses discharge by hard-pipeline from the secondary containment areas to a final sewer discharge sump into the sewers. There is one portable sump pump on-site with ~30 feet of hosing presumably used to transfer spent solutions and spent static rinses to barrels for off-site hauling or to return drag-out static rinses to their solutions as make-up.

Treatment – Treatment consists solely of uncontrolled final pH adjustment the small final sewer discharge sump. Caustic is bled into the sump without mixing or pH metered control. There is no other treatment in use although an unused flow-through metals precipitation and settling treatment unit that was decommissioned in 1990 is still on-site.



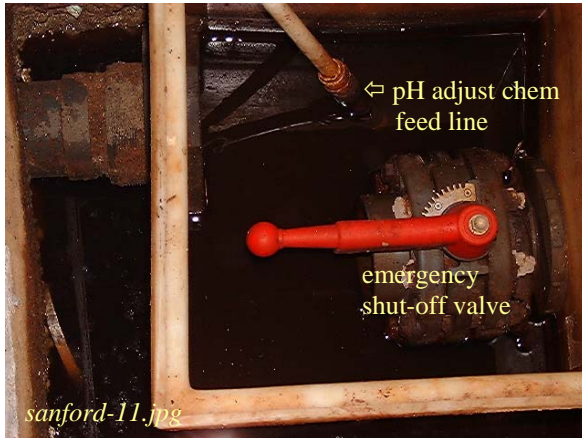
Photo: Shop Floor Showing 2° Containment
Taken By: Greg V. Arthur
Date: 04/04/06



Photo: Decommissioned Treatment Unit
Taken By: Greg V. Arthur
Date: 04/04/06



Sewer Discharge – The final sewer discharge sump drains to the sewers through a non-domestic in-plant sewer line connection and the permitted compliance sampling point, which is designated in this report after the SBSA permit number as IWD-050215. Sanford Metal Processing has the capability of shutting off discharge in an emergency.



*Photo: Final Sump Discharge
Taken By: Greg V. Arthur
Date: 04/04/06*

1.6 POTW Legal Authorities

South Bayside System Authority – SBSA is a Joint Powers Authority comprised of the Cities of San Carlos, Belmont, Redwood City, and the West Bay Sanitary District, as member agencies. SBSA operates an EPA-approved pretreatment program as required by the State of California in the San Francisco RWQCB's Waste Discharge Requirements, No. R2-2001-012, reissued to SBSA in 2001 and serving as NPDES Permit No. CA0038369. As part of this, SBSA and the member agencies have established sewer use ordinances that applies to all industrial users in its sewer system. Under this authority, SBSA issued an industrial user permit to Sanford Metal Finishing, No. 05-0215 covering the sewer discharge from IWD-050215.

1.7 Photo Documentation

Arthur took 10 digital photos during this inspection, recorded as the jpeg files named *sanford-1.jpg* through *sanford-11.jpg*. Those not published in this report are duplicates or depicted the wastewater delivery through hard-piping installed in floor trenches.

1.8 Sampling Record

All compliance samples are collected by SBSA from a monitoring box located in front of 990 O'Brien Drive, just outside of the front door, and designated in this report after the permit number as IWD-050215. *See* Appendix 3 for a summary of the 2004-2006 sampling.



2.0 Sewer Discharge Standards and Limits

Federal categorical pretreatment standards (where they exist), national prohibitions, and the local limits (where they exist) must be applied to the sewer discharges from industrial users. (40 CFR 403.5 and 403.6).

Summary

The Federal categorical pretreatment standards for new source metal finishing in 40 CFR 433 apply to the process wastewater discharges from Sanford Metal Processing through IWD-050215. The SBSA permit applied the local limits and misapplied the Federal standards for existing source job-shop metal finishers in 40 CFR 413. As a result, the SBSA permit does not accurately state the discharge requirements for Sanford Metal Processing. The application of Federal categorical standards, national prohibitions, and local limits was determined through visual inspection. See Appendices 2, 3, and 4 for the sewer discharge standards and limits.

Requirements

- The Federal standards for new source metal finishing must be applied to the discharges through IWD-050215.
- The permit must prohibit dilution as a substitute for any treatment necessary to comply with Federal standards and prohibit the bypassing of any treatment necessary to comply with either Federal standards or local limits.

Recommendations

- None.

2.1 Classification by Federal Point Source Category

Sanford Metal Processing qualifies as a job-shop metal finisher subject to the Federal metal finishing standards for new sources in 40 CFR 433. SBSA misclassified Sanford Metal Processing as subject to the job-shop electroplating standards for existing sources discharging less than 10,000 gallons per day. Federal standards are self-implementing which means they apply to regulated waste streams whether or not they are implemented in a local permit. The Federal rules in 40 CFR 403.6 define domestic sewage and non-contact waste-waters to be dilution waters.

New or Existing Sources – Sanford Metal Processing no longer is subject to the Federal standards for existing sources but rather is now required to comply with Federal new source standards. Under the definitions in 40 CFR 403.3(k), a process constructed at an existing source job-shop metal finisher after August 31, 1982 is a new source (1) if it entirely replaces a process which caused a discharge from an existing source or (2) if it is substantially independent of the existing sources on-site. This means new source standards apply to the



original installation of the metal finishing lines, rebuilt or moved lines, or existing lines converted to do new operations. This also means that the new source standards generally do not apply to the piecemeal replacement of tanks for maintenance in otherwise intact metal finishing lines, nor do they apply to treatment upgrades without altering production. The preamble to the final 1988 Federal rule states that the new source standards apply when “an existing source undertakes major construction that legitimately provides it with the opportunity to install the best and most efficient production process and wastewater treatment technologies” (*Fed Register, Vol.53, No.200, October 17, 1988, p.40601*).

Sanford Metal Processing removed and rebuilt all metal finishing lines in order to install secondary containment in 1994. This qualifies as major construction that provided the opportunity to install the best and most efficient production process and wastewater treatment technologies.

2.2 Local Limits and National Prohibitions

Local limits and the national prohibitions are meant to express the limitations on non-domestic discharges necessary to protect the sewers, treatment plants and their receiving waters from adverse impacts. In particular, they prohibit discharges that can cause the pass-through of pollutants into the receiving waters or into reuse, the operational interference of the sewage treatment works, the contamination of the sewage sludge, sewer worker health and safety risks, fire or explosive risks, and corrosive damage to the sewers. The national prohibitions apply nationwide to all non-domestic sewer discharges. The SBSA local limits apply to non-domestic discharges in the Menlo Park service area.

Numerical Limits - The SBSA local limits for a number of toxic pollutants are annual mass averages to be compared to the average of the calculated daily-mass loadings for the previous 12 months. The SBSA permit for Sanford Metal Processing advances annual mass average limits for arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, zinc, phenols, total cyanide, amenable cyanide, and total toxic organics. The SBSA permit also advances numerical concentration limits for petroleum oil & grease, and numerical measurement limits for pH, and temperature.

2.3 Federal Categorical Pretreatment Standards New Source Metal Finishing - 40 CFR 433.17

40 CFR 433.17	Cd	Cr	Cu	Pb	Ni	Ag	Zn	CNt	CNa	TTO
daily-maximum (mg/l)	0.11	2.77	3.38	0.69	3.98	0.43	2.61	1.20	0.86	2.13
month-average (mg/l)	0.07	1.71	2.07	0.43	2.38	0.24	1.48	0.65	0.32	-

Applicability - Under 40 CFR 433.10(a), the metal finishing standards apply to the process wastewaters from the new source metal finishing lines because the facility’s operations involve electroplating, electroless plating, anodizing, chemical coating, and etching. The metal finishing standards “... apply to plants that perform ...” the core operations of electro-



plating, electroless plating, etching, anodizing, chemical coating, or printed circuit board manufacturing and they extend to other on-site operations, such as cleaning, associated with metal finishing and specifically listed in 40 CFR 433.10(a). If any of the core operations are performed, the new source metal finishing standards apply to discharges from any of the new source core or associated operations. As a result, the metal finishing standards apply to the process wastewater discharges through IWD-050215.

Basis of the Standards - The new source metal finishing standards were based on a model pretreatment unit that comprises metals precipitation, settling, sludge removal, source control of toxic organics, no discharge of cadmium-bearing wastewaters, and if necessary, cyanide destruction and chromium reduction. The best-available-technology standards were set where metal finishers with model treatment operated at a long-term average and variability that achieved a compliance rate of 99% (1 in 100 chance of violation).

Adjustments – Under 40 CFR 433.12(c), the cyanide standards as applied to metal finishing wastewater discharges must be adjusted to account for dilution from non-cyanide bearing waste streams (Federally-regulated and unregulated). At Sanford Metal Processing, cyanide-bearing wastewaters are generated by cyanide-copper plating, cyanide-cadmium plating, cyanide stripping and activation, and chromium conversion coating. As a result, the cyanide standards as applied to the discharges through IWD-050215 first must be adjusted proportionally downward to account for dilution from the non-cyanide bearing new source waste streams. EPA estimates the dilution at IWD-050215 to be ~2½:1 simply based on the number of tanks with cyanide-bearing wastewaters. As a result, the metal finishing standards for total and amenable cyanide adjust downward to 0.33 and 0.24 mg/l daily-maximum and 0.18 and 0.09 mg/l monthly-average, respectively. A more sophisticated analysis might yield different lower results in all likelihood.

Under 40 CFR 403.6(d) and (e), the Federal standards do not need to be adjusted to account for the application of multiple Federal categories or for dilution from non-contact wastewaters such as cooling tower blowdown, water preconditioning brines, or domestic sewage.

Compliance Deadline - New sources were required to comply on the first day of discharge.

2.4 Federal Prohibitions

The Federal standards in 40 CFR 403.6(d) and 403.17(d) prohibit dilution as a substitute for treatment, and the bypassing of any on-site treatment necessary to comply with standards, respectively. The SBSA permit advances a provision prohibiting dilution as a substitute for treatment. The permit does not include a provision against the bypassing treatment necessary to comply.



2.5 Point(s) of Compliance

The permit designates the SBSA monitoring box outside of the facility, downstream from the final sampling sump, and upstream of the facility domestic contributions, as the compliance point (designated in this report as IWD-050215).

Local Limits - Local limits and the national prohibitions apply end-of-pipe to all non-domestic flows from Sanford Metal Processing. The sample point designated in this report as IWD-050215 is a suitable end-of-pipe sample point representative of the day-to-day non-domestic wastewater discharges.

Federal Standards - Federal categorical pretreatment standards apply end-of-process-after-treatment to all Federally-regulated discharges to the sewers. The sample point IWD-050215 is also a suitable end-of-process-after-treatment sample point representative of the day-to-day discharge of Federally-regulated wastewaters.

2.6 Compliance Sampling

The national prohibitions are instantaneous-maximums and are comparable to samples of any length including single grab samples. However, the local limits are mass loadings comparable to average loadings calculated from a year's worth of representative sampling of any length. Federal categorical pretreatment standards are daily-maximums comparable to 24-hour composite samples. The 24-hour composite samples can be replaced with single grabs or manually-composited grabs that are representative of the sampling day's discharge.

