

# **Pollution Prevention for the Electroplating Industry**

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## **INDIANA METAL FINISHING STRATEGIC GOALS PROGRAM**

### **RCRA WORKGROUP**

#### **Introduction**

Over the last ten years the Environmental Protection Agency (EPA), has focused on the need to comprehensively address the environmental performance of industries as an alternative to the one-size-fits-all, pollutant-by-pollutant approaches of the past. In 1993, they made a key decision by establishing the Common Sense Initiative (CSI), a basically different approach to environmental, and public health protection. The goal was to involve all stakeholders in finding more flexible, cost-effective and environmentally protective solutions tailored to specific industry needs. Six business sectors were identified: automobiles, computers and electronics, iron and steel, metal plating and finishing, printing and oil refining. Currently, industries and stakeholders are engaged in many different programs that may greatly affect the future direction of environmental policy and practice. The most extensive effort is the Strategic Goals Program (SGP) for the metal finishing industry. The Strategic Goals Program evolved out of the CSI to "test new ideas" that are both bold and "common sense" in nature for improved environmental protection by the metal finishing industry. The Strategic Goals Program is a cooperative effort between the EPA, the American Electroplaters and Surface Finishers Society (AESF), the National Association of Metal Finishers (NAMF), and the Metal Finishing Suppliers Association (MFSA).

The Indiana Department of Environmental Management (IDEM) is working with a number of partners to implement the Strategic Goals Program. The SGP is a voluntary program that encourages metal finishing companies to go beyond baseline regulatory requirements. Going beyond these requirements not only enhances environmental protection by substantially reducing pollution, but may also improve the operating practices of participating facilities. The first of its kind, this innovative program stands as a model of environmental protection stewardship that should encourage other industries to pursue similarly high goals in the future. While the SGP is a national program with several core elements, it is implemented by a diverse group of stakeholders at the state and local level.

By providing tools and incentives to those who join the program, IDEM is helping the metal finishing industry achieve the Performance Goals outlined in the SGP. In addition, several Indiana publicly owned treatment works (POTWs) have also committed to working with IDEM and other SGP stakeholders in assisting local metal finishers in meeting their improved performance targets. IDEM also recognizes metal finishers and POTWs for their environmental protection efforts.

This last January at the AESF/EPA Conference for Environmental Excellence, Indiana was recognized by the EPA as the first state to launch a local SGP Program. The Indiana program has established five

Workgroups to accomplish the goals of the program. This paper discusses the RCRA Issues Workgroup and its projects. Additionally, there are other Workgroups, such as the POTW Issues Workgroup, the Technical and Financial Issues Workgroup, the Recruitment Workgroup, and the Recognition Workgroup that are all working toward achieving the goals of the program.

## **Why is there a RCRA Workgroup?**

In January of 1998, IDEM signed on to be a charter member of the CSI Metal Finishing Strategic Goals Program. During 1998, IDEM developed a timeline for implementation of Indiana's SGP. On November 19, 1998, IDEM and EPA met with SGP metal finishing facilities and their POTWs to assess implementation options and to discuss priority issues. In January of 1999, the metal finishers developed a wish list of twelve (12) proposed SGP incentives. On March 31, 1999, the Clean Manufacturing Technology and Safe Materials Institute hosted the second meeting for all of the stakeholders to determine the next actions needed to continue making progress in achieving the performance goals of the program. Workgroups were formed to address the proposed incentives.

The RCRA Issues Workgroup was assigned the following tasks:

- Prepared guidance for on-site processing of hazardous waste;
- Explore and document options for segregation of wastestreams/sludges to encourage recycling;
- Prepare a "model variance request" for SGP companies to use;
- Assist IDEM in their pursuit for authorization for delisting of hazardous wastes;
- Address the issue of state-to-state reciprocity for variances and delisting;
- Develop a database of recycling facilities;
- Other tasks as requested by SGP participants.

The Workgroup has completed or is in process of completing many of its original tasks through active participation in discussions in an open and informal setting. Both the regulators and the regulated have worked together in developing common sense solutions working toward a common goal. Participation in the SGP program creates opportunities for shareholders to develop solutions in non-adversarial ways.

## **Solid Waste Variance Request for F006 Wastewater Treatment Sludge as a "Model" for the Indiana SGP Participants**

"Wastewater treatment sludges from electroplating operations are one of the largest metal-bearing secondary material streams in the United States. And despite a relatively low recovery rate, these sludges represent a very large supply of untapped secondary metals with potential for recovery."<sup>1</sup>

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<sup>1</sup> Borst, Paul A., Environmental Protection Specialist, U.S. Environmental Protection Agency, Office of Solid Waste, Economics, Methods and Risk Assessment Division, 1996 "Recycling of Wastewater Treatment Sludges from Electroplating Operations, F006." p. 1.

HH Sumco, Inc. generates wastewater treatment sludge (WWT) that is currently classified and managed as an F006 listed hazardous waste under 40 CFR 261.30 and 261.31(a). The sludge is accumulated in a hazardous waste storage area, labeled as a hazardous waste, and shipped via hazardous waste transporters to facilities, which specialize in producing metal concentrates. These metal concentrates are marketed to smelters for the purpose of metals recovery. The purpose of this variance request is to test the premise that HH Sumco's F006 can be safely recycled by primary metals smelters or other appropriate metal reclamation facilities without having to be put through the rigor of the RCRA Subtitle C regulatory system. HH Sumco, Inc. believes that the direct recycling may result in overall environmental benefits, and will pose no greater risk than indirect recycling which is currently occurring. In order to accomplish this the F006 WWT must be granted a variance from classification as a solid waste. In Indiana, IDEM has been granted authority by the EPA to administer a program to allow facilities to exclude solid wastes materials from the definition of a solid waste. Through the SGP, IDEM has verbally committed to "fast track" submittals from SGP stakeholders for F006 variances from the definition of a solid waste. HH Sumco's variance request is expected to be the first request from an SGP facility in Indiana. As part of the Indiana SGP Implementation Plan, the request submitted by HH Sumco will be used as a model request for other Indiana SGP companies.

Under 329 IAC 3.1-5-4 and 40 CFR §260.30(c) (incorporated by reference), facilities may petition IDEM to exclude a material from the definition of solid waste which has been partially reclaimed but needs further reclamation before recovery is complete. To qualify for the exclusion, the material resulting from the initial reclamation must be commodity-like (even though it is not yet a commercial product, and has to be reclaimed further). Petitioners must provide sufficient information to IDEM to allow the Agency to make a determination that the material is not a solid waste, pursuant to criteria set forth at 40 CFR §260.31(c), which are incorporated by reference at 329 IAC 3.1-5-4. The determination will be based on the following factors:

1. The degree of processing the material has undergone and the degree of further processing that is required;
2. The value of the material after it has been reclaimed;
3. The degree to which the reclaimed material is like an analogous raw material;
4. The extent to which an end market for the reclaimed material is guaranteed;
5. The extent the reclaimed material is handled to minimize loss;
6. Other relevant factors.

Pursuant to 40 CFR §260.30(c), HH Sumco, Inc. is submitting to IDEM a petition for a variance from classification as solid waste for metal-rich wastewater treatment sludge produced at its facility in Indianapolis, Indiana. Currently, the SGP RCRA Workgroup has been reviewing and refining the draft variance request. The request is anticipated to be submitted to the Commissioner at IDEM at the end of March 2000.

## **State-to-State Reciprocity Issues with Solid Waste Variances**

EPA has decentralized the solid waste variance program by granting some states authorization to administer the program. There was concern that state-to-state reciprocity may not exist in all cases where variances have been granted. Nate Nemani, from EPA's Region 5 Office and an SGP participant, researched the issue and found that the states which are authorized for the solid waste exemption, (40 CFR 260.30(c)) have the right to require a brand new application/petition even if the facility has successfully received an approval of the petition from another authorized state. In other words, no reciprocity between states with respect to this rule. Additionally, Dave Berry, the person responsible for

reviewing variance requests from IDEM, has also researched the issue at the State level through a “Definition of Solid Waste Network”. The network is comprised of Agency representatives from 47 States. It was formed to critique and update State and Federal Guidance on RCRA areas such as variances, recycling, and exemptions. Dave determined that the granting of variances is a State administrative action done under State rules and that State statutory authority has no effect outside the boundaries of the state granting the variance. A company will have to get a variance from both States, if the receiving facility is out of state. Technically, a variance will also need to be granted by states that the material passes through on the way to the receiving facility. This issue does not appear to have a resolution in the near future. The spirit of the Resource Conservation and Recovery Act is to encourage recycling activities and the existing regulatory structure as it is now discourages it by issues such as this.

## **Guidance for On-site Treatment of Hazardous Waste by Generators**

IDEM, Office of Land Quality (OLQ), has a written Guidance Document, available on the IDEM website, for on-site RCRA generator treatment. This document was approved by the Office’s RCRA Advisory Group on June 29, 1999, and last revised to identify the new OLQ Office on January 18, 2000. Specifically, the document indicates that (except for incineration and thermal treatment) treatment is allowed by generators (without a permit) in containers, tanks, or containment buildings so long as all applicable generator requirements, including storage management standards, are observed. “Treatment” is considered as “... any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.” Dilution and evaporation are not permissible generator treatment. The document was presented to the SGP stakeholders at the August 25, 1999 Quarterly Meeting.

Using this guidance, one Strategic Goals’ plater ran bench tests to find a neutralizing/polymer combination that would treat his D002 (corrosive) spent cleaner to a non-hazardous waste. The cleaner also had chelators that were tying up the nickel in the wastewater. The resultant liquids meet POTW limits and the solids are filter pressed and dried. Reportedly, waste management savings for the facility were in the neighborhood of \$40,000/year.

It should be noted that some process strategies in the plating operations (such as rinse water or process bath evaporation) involve process water/baths which are not a waste at that point of the facility operations; management of such *process* fluids are not regulated under RCRA. In addition, the workgroup clarified that neutralization of wastes hazardous only as D002 (corrosive) is a RCRA-exempt activity; however, any accumulation of hazardous waste prior to neutralization would be regulated if the waste is not in an exempt unit (e.g., wastewater treatment unit, closed loop system, etc.).

## **Most Common General RCRA Compliance Problems Found**

The workgroup gathered data from the Hazardous Waste Compliance Section (now, the Industrial Waste Compliance Section) at IDEM as well as data from the Metal Finishing Sector of the Multimedia Compliance Pilot Project regarding common RCRA violations found during inspections.

The following list shows, in descending order, the ten violations found most frequently during all RCRA inspections conducted by IDEM hazardous waste inspectors during calendar year 1998. Included in this IDEM Guidance Document entitled “Top Ten Hazardous Waste Violations”, are the regulatory citations indicating where the particular standard is found in the federal regulations and a reference to any guidance document(s) available from the Industrial Waste Compliance Branch that contains additional information on the standard:

- *Lack of a proper waste determination:* While this is the most frequently cited violation, it is also the most fundamental management issue. Failure to properly identify a waste stream leads to numerous additional violations. Examples of when this is cited include “orphan” drums containing an unknown substance, contaminated wipes or rags, filters, and discarded fluorescent light bulbs. Facilities should have procedures for identifying all materials and conducting waste determinations prior to, or at the time of, waste generation.

Guidance Documents: Understanding the Hazardous Waste Determination Process; Indiana’s Universal Waste Rule; and Management of Contaminated Wipes

- *Satellite containers of hazardous waste not properly managed:* The use of satellite containers to accumulate hazardous waste is common. It is a violation of hazardous waste regulations to find satellite containers stored in areas that are not “at or near” the process or under the control of the operator or with an amount greater than 55 gallons. Other common satellite container violations include open containers (they should be stored closed) and lack of proper marking.

Guidance Document: Satellite Accumulation of Hazardous Waste by Generators; and Guidance on “Open Containers”

- *Containers not marked with the words “Used Oil”:* This regulation took effect in 1997. Tanks and containers storing used oil must be labeled or clearly marked with the words “Used Oil”. Fill pipes used to transfer used oil into underground storage tanks must also be marked with the words “Used Oil”.

Guidance Document: Complying with Indiana’s Used Oil Rule

- *Hazardous waste containers not marked with the start of accumulation date:* Hazardous waste containers must be marked with the date when waste first began accumulating. This is generally the date waste was first placed in the container, or when a satellite container reaches 55 gallons. In general, Large Quantity Generators (LQG’s) may not accumulate waste for more than 90 days, and Small Quantity Generators (SQG’s) may not accumulate hazardous waste for more than 180 days.

Guidance Document: Understanding the Hazardous Waste Rules: A Handbook for Small Businesses; also Satellite Accumulation of Hazardous Waste by Generators

- *Lack of training or training documents:* All personnel involved in hazardous waste management at LQG’s and Treatment, Storage, and Disposal (TSD) facilities are required to receive training on a yearly basis and document that training. SQG’s must ensure that all employees involved in hazardous waste management are “thoroughly familiar” with proper waste handling and emergency procedures.

Guidance Document: Hazardous Waste Personnel Training

- *Containers not marked with the words “Hazardous Waste”*: Containers accumulating hazardous waste in 90 (180)-day accumulation areas must be marked with the words “Hazardous Waste”.

Guidance Document: Understanding the Hazardous Waste Rules: A Handbook for Small Businesses

- *Lack of a proper contingency plan*: LQG’s and TSD’s must have a contingency plan containing all the required information.

Guidance Document: Hazardous Waste Contingency Plans

- *Satellite containers not properly marked*: Satellite containers must be marked with the words “Hazardous Waste “ or with other words that identify the contents of the containers.

Guidance Document: Satellite Accumulation of Hazardous Waste by Generators

- *Release of contaminants*: A facility may not deposit any contaminants on the ground. This is usually cited when there has been a used oil spill. Facilities should be managed to prevent and clean up used oil spills.

Guidance Document: Complying with Indiana’s Used Oil Rule

- *Hazardous waste containers not closed*: A container holding hazardous waste must always be closed during storage, except when it is necessary to add or remove waste.

Guidance Document: Guidance on “Closed Containers”

[Most guidance documents are available on the IDEM website and are also available through the Fax On Demand Service by calling 1-800-726-8000. Also, if you need documents, additional information, or have any questions or concerns, please contact the staff of the Compliance Branch, Office of Land Quality, at 317-308-3103. The IDEM toll-free telephone number (when calling within Indiana) is 1-800-451-6027.]

Fairly consistent with the above list, common RCRA violations found during multimedia inspections at metal finishing facilities for the FY’99 Multimedia Compliance Pilot Project (in order of frequency) were:

- Hazardous waste containers not closed (item #10 above);
- Containers not marked with the words “Used Oil” (item # 3 above);
- Containers not marked with the words “Hazardous Waste” (item # 6 above);
- Satellite containers not properly marked (item # 8 above);
- Release of contaminants (item # 9 above);
- Contingency Plan deficiencies (item # 7 above).

## **List of Reclaimers Being Developed**

IDEM Pollution Prevention and RCRA staff are compiling a list of Reclaimers/Recyclers of F006 (and F019) sludges. We currently have lists received from EPA Headquarters, Illinois EPA, North Carolina

Department of Environment and Natural Resources, as well as some internet generated lists. We have also generated a list of TSD facilities used by Indiana generators for F006 and F019 wastes. Some of the recycler lists appear to be incomplete or outdated. We hope to put together a fairly updated and complete list of facilities and their descriptions.

Some barriers have inhibited progress in developing this list. Many reclaimers do not want to handle a “listed” hazardous waste. The major RCRA impediments are storage permit requirements, corrective action, financial responsibility, and the “derived-from rule”. Unless the waste is processed immediately upon receipt, the reclaimer would be required to have a RCRA Storage Permit. With respect to the “derived-from rule”, any residue from the recovery process of a RCRA-listed waste would carry the RCRA-listing. In addition, non-regulatory factors that make the sludge not attractive include (1) relative small quantities of F006 received from a generator, (2) the composition of F006 is quite variable, (3) many platers commingle wastestreams that may not be high in desirable metal content, and (4) “contaminants” for the specific recycler may require additional processing or treatment.

Another deterrent is the lack of reciprocity between states. If the generator obtains a Solid Waste Variance or delisting for his F006 (or F019) in his State, before the sludge can be shipped without a hazardous waste manifest he must also obtain that exemption from any “out of state” recycler’s state that he uses plus one from any state the sludge is transported through.

Many of these barriers are being addressed by interest groups in other states and at the National level. The March 1, 2000 signing of the new rule allowing an additional 90 days accumulation time for generators of F006 sludge who send the waste for recycling is expected to increase reclamation. In addition, a National CSI taskforce consisting of 11 members with representation from the plating and metal finishing industry, Federal and State government, and environmental groups is conducting Phase 2 of the Metal Finishing F006 Benchmark Study to consider options for reclamation of the high-metal sludges generated by platers. Current considerations include an exemption for used ion exchange units (including evaporator bottoms) when being recycled as well as a method to encourage reclamation of the best metal-containing sludges.

Two options are under evaluation by this national taskforce to assist metal finishers to be eligible for exemption from RCRA regulations for their F006. EPA is leaning toward the Solid Waste Variance approach, already in the regulations. This approach, as mentioned earlier, is time and resource intensive at the State level. Others favor a Federal rulemaking proposal for a “feedstock equivalency” conditional exclusion for metal finishing sludges that, as shipped, contain recoverable levels of metals equivalent to or greater than ores/ore concentrates that a primary smelter would ordinarily process for metal production. In both cases, conditions would limit non-recovered metals, cyanide levels, and organics. Most active members of our workgroup feel this conditional exclusion would be the best and most effective way to address and encourage the recycling of metal-rich F006 sludges.

Other regulatory exclusions and options do exist for generators. One exclusion the workgroup has been involved with covers materials that are not solid wastes when recycled (refer to 40 CFR 261.2(e)(1)(i)). Specifically, the exclusion states that “the materials are not solid wastes when they can be shown to be recycled by being used or reused as ingredients in an industrial process to make a product, provided the materials are not being reclaimed.” In this exclusion, an “industrial process to make a product” would not include a process like extraction of a metal from a smelting operation. The composition of an F006 (or F019) sludge may be equivalent to the composition of raw materials that would normally be purchased as ingredients to make a product.

## **Looking at Ideas/Suggestions for Proposed Rulemaking to EPA: “Feedstock Equivalency” Conditional Exclusion**

A proposed rulemaking has been made to EPA for a “feedstock equivalency” conditional exclusion for F006 sludges that, as shipped, contain recoverable levels of metals equivalent to or greater than ores/ore concentrates that a primary smelter would ordinarily process for metal production. Conditions would limit non-recovered metals and organics. Most on the workgroup agreed that this would be the best and most effective way to address this recycling of F006 issue.

### **Summary**

The RCRA Workgroup was formed just under one year ago. During the year, they have been able to complete many tasks through active participation in discussions in informal settings. Both the regulators and the regulated have worked together in developing common sense solutions working toward a common goal. Participation in the SGP program creates opportunities for shareholders to develop solutions in non-adversarial ways to better handle their wastes to meet SGP goals and/or provide cost savings.

The SGP Program is in its third year and it has moved from the conceptual stage into full implementation, especially at the local levels. Industry and Agency representatives have demonstrated that it takes courage, trust, and vision to bring new and innovative flexible techniques to protect the environment and allow for economic development. This progressive program is an environmental protection stewardship model to allow for a transition from the old command and control philosophy to an approach of pollution control and prevention strategies. The SGP will exist as long as industry is willing to participate and as you can tell the stakeholders are making things happen. Every metal finishing shop has an opportunity to make the necessary changes to improve environmental performance using cost effective means.

To learn more about the Metal Finishing Strategic Goals Program contact Robert McDowell, Sr. at 716.425.7500 or [rmcdowell@strategicgoals.org](mailto:rmcdowell@strategicgoals.org). Alternatively, visit one of the SGP web pages.

National SGP: [www.strategicgoals.org](http://www.strategicgoals.org)

Indiana SGP: [www.state.in.us/idem/strategicgoals](http://www.state.in.us/idem/strategicgoals)