

EPA Finalizing Proposal on Cost Reducing Options for Sludge Disposal

Electroplating sludge disposal is, more often than not, the number one environmental cost for printed circuit board (PCB) manufacturers and other manufacturing industries that conduct electroplating. The U.S. Environmental Protection Agency (EPA) has publicly committed to proposing a rule that could greatly lower the cost of sludge disposal by exempting it from Resource Conservation and Recovery Act (RCRA) Hazardous Waste Regulations. EPA expects to publish the proposed rule for public comment in January 2006 and has committed to meeting with interested parties during IPC's Printed Circuits Expo, APEX and the Designers Summit this February.

Ever since 1980, sludge generated during the treatment of electroplating wastewater has been a listed hazardous waste under RCRA. As an RCRA hazardous waste, electroplating sludge, also known as F006, can only be treated by heavily regulated RCRA Treatment, Storage, and Disposal Facilities (TSDFs). Unfortunately, most government regulations have a lifetime that far exceeds their useful value to society. In the case of F006, changes in PCB manufacturing processes mean that it's no longer accurate to say that all, or even most, F006 waste contains hazardous levels of cyanide, cadmium and chromium.

The current regulatory structure has resulted in a business environment in which it is cheaper to landfill wastes than it is to recycle them – despite the fact that copper hydroxide sludge from the PCB industry averages 10 to 20 times as much copper as virgin ore.

Wastewater treatment sludge from electroplating operations, predominantly from the metal finishing and PCB industries represent one of the largest sources in the United States of untapped metal-bearing secondary materials amenable to metal recovery. It is estimated that there are about one million tons of wastewater treatment sludges generated each year in the United States from electroplating operations. In spite of this large concentration of recoverable metals, a number of regulatory and non-regulatory factors have resulted in a relatively low (20 percent to 30 percent) recovery rate, compared to the more than 80 percent recovery rate for other metal-bearing hazardous waste, such as spent lead-acid batteries and emission control dust from electric arc furnaces.

The current regulatory situation has resulted in a limited number of facilities in the United States that can accept electroplating waste sludge for recovery or reclamation. Many potential facilities that could recycle electroplating wastewater sludge through metals recovery have been discouraged from recycling by regulatory requirements that result in higher operating costs. Businesses that must balance civic responsibility against responsibility to shareholders often are driven to choose a landfill over recycling, while many IPC members pay a higher price in order to have their sludge recycled rather than sent to a landfill. The result is the opposite of environmental protection and resource conservation. Valuable metals are permanently landfilled or transported longer distances (requiring more energy and causing more pollution), while mining of virgin ore continues.

Now that's all about to change. The IPC, along with the metal finishing industries has for some time been advocating that EPA reconsider the automatic hazardous waste classification of electroplating sludge. Ever since the EPA's Common Sense Initiative was abandoned and other promising initiatives under Project XL languished, circuit board manufacturers have despaired of having a common sense solution to this problem. But in 2003, under the leadership of then Assistant Administrator for the EPA's Office of Solid Waste and Emergency Response, Marianne Lamont Horinko, EPA began work on a rule to put resource conservation and recovery back into RCRA. In 2003, EPA engineers, accompanied by IPC staff, visited Colonial Circuits in Fredericksburg, Va., and Dynamic Details in Sterling, Va., to learn more about the circuit board industry.

Unfortunately, previous efforts to change the F006 designation have been torpedoed by groups expressing concern that the treatment or reclamation of F006 at non-RCRA TSDFs would constitute an unreasonable environmental risk. This point of view incorrectly discounts the fact that reclamation of F006 materials does not handicap a recovery facility's ability to comply with environmental regulations. Recovery and reclamation facilities still must be required to handle materials in a way that is protective of the environment, regardless of the RCRA status of PCB electroplating sludge being recycled. With or without a hazardous waste designation, the handling of the sludge will be subject to a full spectrum of OSHA (Occupational Safety and Health Administration) and EPA standards that protect worker health and safety and the environment.

The EPA is currently in the process of finalizing a proposal which is expected to offer two separate cost reducing options. The first, a conditional exclusion from hazardous waste regulations, has the potential to significantly reduce sludge disposal costs while increasing the opportunity for environmentally beneficial metals recycling. This option, known as 'commodity-like,' would be available only for sludges that, based on high concentration of metals, are considered inherently valuable, i.e. more like a commodity than a waste. Based on current data obtained from a smelter, EPA proposes to establish minimum concentrations of 18 percent copper or 12 percent nickel to qualify for the exclusion. Ion exchange systems used to treat wastewaters from electroplating operations sent off-site for canister and resin regeneration would also be excluded from RCRA hazardous waste regulations.

While the proposed commodity-like exclusion has the potential to significantly increase sludge recycling rates, the metals thresholds are unnecessarily high. Industry members are concerned that while metals prices fluctuate according to market rates, EPA has based its metals thresholds upon data from a single point in time. EPA has also, somewhat arbitrarily, ignored other potential uses for sludge and instead relied solely upon a select group of smelters to determine the criteria for commodity-like sludge.

EPA is also proposing a second 'Tier 2' option, which would provide an alternative RCRA Subtitle C regulatory framework for recyclable electroplating waste. To qualify for the Tier 2, sludges must contain a minimum of 1.4 percent copper or 1.0 percent nickel. Under the alternative framework, sludge generators would enjoy some level of

regulatory relief, but recycling facilities would still need to follow RCRA TSDF requirements. Unfortunately, this option is unlikely to have any significant effect on the economics of recycling.

In addition to the proposed two-tier system, EPA is asking for comments on a number of alternative approaches to determining commodity-like thresholds, including: relying on contract specifications rather than specified concentrations; relying on a periodically adjusted range of concentrations, relying on facility records associated average annual slag concentrations, and relying on facility based mass balance approach to estimate metal recovery rates and demonstration of a useful contribution to recovery process.

Clearly the commodity-like exclusion is the only one that has the potential to save money and reduce the cost for businesses doing the right thing by recycling these valuable metals resources. While the EPA's expected threshold of 18 percent copper would be difficult for many PCB manufacturers to meet on a consistent basis, it is only a proposal. Industry will have the opportunity, in the form of a 60-day comment period, to persuade EPA to adopt a more reasonable definition of commodity-like materials so that more companies can take advantage of the proposed exclusion.

To maximize our opportunity to influence the development of this important regulation, IPC has arranged for EPA Project Manager Jim O'Leary, to meet with our members during IPC's Printed Circuits Expo, APEX and the Designers Summit on February 9. This is your opportunity to directly influence the development of regulatory climate under which your facility operates. Don't miss this chance to save your facility money. For more information, visit GoIPCShows.org.