

PPC 9441.1991(18)

SOLDER DROSS GENERATED IN MANUFACTURING PRINTED CIRCUIT BOARDS

OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE

DEC 9 1991

Mr. James C. Brown  
c/o American Electronics Association  
1225 Eye St., N.W., Suite 950  
Washington, D.C. 20005

Dear Mr. Brown:

Thank you for your letter of October 2, 1991, describing your concerns about our recent interpretation of Resource Conservation and Recovery Act (RCRA) regulations that apply to solder dross generated in manufacturing printed circuit boards.

To briefly restate the issue, you are concerned about a March 19, 1991 letter from David Bussard that classifies solder "dross" generated by the use of solder in printed circuit board manufacturing as a spent material under the RCRA hazardous waste regulations (and thus, as a solid and hazardous waste). The March 19 letter was based upon the information that we had at the time, and differentiates between spent materials and by-products. As you noted in our October 16 meeting, previous EPA statements about the status of solder dross and solder skimmings from printed circuit board manufacturing were that skimmings and drosses are by-products - and thus are not solid or hazardous wastes when reclaimed, under the federal RCRA regulations (40 CFR 261.2).

The term "dross" is frequently used by industry to refer to an oxide layer that forms on the surface of molten metal, regardless of whether the metal is a virgin metal being reshaped into a different form, or is a metal in use (such as solder). Previous statements, and an example in the January 4, 1985 Federal Register preamble, have generally referred to "drosses" as by-products under the RCRA hazardous waste regulations. Although some drosses are by-products under federal rules, the language of the regulations and the circumstances of a material's use, including whether the material becomes contaminated,

determine how it is classified. For example, when circuit board manufacturers have to change their solder baths due to contamination, the material removed from the bath is a spent material.

It appears that our imprecise use of the term "dross" and previous statements that solder skimmings or drosses are "by-products" may have led to widespread practices in the electronics manufacturing industries, where the skimmings have been managed as if they were by-products (and thus, neither solid nor hazardous wastes when reclaimed).

We think it is important to obtain additional information. We are currently in the process of gathering information to determine how the solder drosses or skimmings generated in printed circuit board manufacturing should be regulated, if at all, under RCRA Subtitle C. That information will include the levels of contamination in dross and skimmings as solders are used in circuit board manufacturing as well as a broader look at information bearing upon the handling of dross and skimmings after removal from the solder bath. The information, as well as the issues raised about classifying dross in the future under RCRA, are also relevant in the broader context of revisions to the definition of solid waste. We hope to publish an Advance Notice of Proposed Rulemaking discussing these revisions by the end of the year, to engage public debate on these important questions. Many of the issues you raised in your October 2 letter are part of larger questions, such as whether to use the regulations as a tool to encourage safely conducted resource recovery.

Therefore, until we have gathered more data on the industry's practices (both at generator sites and recycling facilities), we will continue to treat solder drosses generated from soldering printed circuit boards as by-products, rather than as spent materials. As a result, solder drosses from printed circuit board manufacturing that are reclaimed would not have to be managed as solid or hazardous wastes under RCRA regulations (40 CFR 261.2). Please note that this letter relates only to the federal hazardous waste regulations. States may have requirements that are more stringent or broader in scope; thus, you would need to contact individual states to determine their requirements in a specific situation.

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With respect to the particular solder drosses in question, this letter is based on specific factual circumstances, including your reliance on prior Agency statements. Thus, this letter has no application to other industries or materials.

Thank you once again for your interest in this matter. If you have further questions please contact David Bussard of my staff at (202) 260-4637.

Sincerely yours,

Original Document signed

Don R. Clay  
Assistant Administrator

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