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**TITLE:** Clarification of the Listings for Metal Heat  
Treating Wastes F010, F011, and F012

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Key Words: Cyanide

Regulations: 40 CFR 261.31

Subject: Clarification of the Listings for Metal Heat Treating Wastes  
F010, F011, and F012

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Summary:

If a metal heat treating process uses any form of cyanide--complex or free--the process is covered by the hazardous waste listings F010, F011, and F012.

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Clarification of the Listings For Metal Heat Treating Wastes  
F010, F011, and F012.

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Residuals Management Branch  
Air & Waste Management Division  
Region IV

This memorandum is in response to your question regarding the scope of the cyanide listings for metal heat treating operations (EPA Hazardous Waste Nos. F010, F011, and F012). In particular, you asked whether the form of cyanide (i.e., complex cyanide or free cyanide) was germane in determining whether one had a listed waste. In short, the answer is no. In listing these wastes as hazardous, the Agency was (and is still) concerned with the management (or mismanagement) of cyanide wastes (both complex cyanide and cyanide salts). If the Agency felt that a distinction was necessary, it would have done so in the listing. For example, EPA Hazardous Waste No. F012 would have been listed as follows:

"Quenching wastewater treatment sludges from metal heat treating operations where complexed cyanides are used in the process (except for precious metals heat treating quenching wastewater treatment sludges)."

In addition, you should be aware that the form of cyanide often changes during the heat treating operation or subsequent treatment; therefore, although you may begin with cyanide salts (free cyanide) your waste may be primarily complex cyanide. The waste listings take this into account by differentiating between the form of cyanide present in the waste (i.e., only cyanide-salt containing wastes (free cyanides) are listed as posing a reactivity hazard).

Furthermore, it should be noted that although complex cyanides are less toxic than free cyanides, complex cyanide-bearing wastes are of concern because of their potential to undergo photodecomposition to form toxic hydrogen cyanide and free cyanide decomposition by-products. (See Listing Background Document for Cyanide Wastes, Response to Comments Section, Comment No. 3 for more details.)<sup>1/</sup> Therefore, if the metal heat treating process uses cyanides in any form, the process is covered by the hazardous waste listings.

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<sup>1/</sup> This document is included in the document §§261.31 and 261.32 - Listing of Hazardous Wastes (Finalization of May 19, 1980 Hazardous Waste List), #1941.28 November 14, 1980.