

manufacturer. It is not, as ETC asserts, an attempt to simply dispose of the sludge by diluting it into a much larger volume of raw materials. In making this claim, ETC ignores the fact that the sludge does indeed contribute a very integral part of the ingredient mixture necessary to produce cement (*i.e.*, calcium). Furthermore, as stated earlier, the concentrations of hazardous constituents in the sludge and in the analogous raw materials are comparable. Therefore, to the extent that there is any "dilution" of the hazardous constituents in the sludge, the Agency believes it would be nominal, incidental, and consistent with the processing that the normal raw materials undergo in the production of cement (*i.e.*, similar to the "dilution" that occurs when only normal raw materials are used). Finally, the Agency notes that ETC acknowledges in their comments that the Toxicity Characteristic Leaching Procedure (TCLP) data provided in support of this rulemaking indicate that the sludge would meet the applicable Land Disposal Restrictions treatment standards as generated, without requiring further treatment. Given that the sludge already meets the treatment standards that would apply if it was disposed of in a Subtitle C permitted hazardous waste landfill, "dilution" as an impermissible substitute for the appropriate treatment of the hazardous constituents is a moot point (*see* 40 CFR 268.3).

#### V. Discussion of the Change From the June 6, 2001 Proposed Rule

Since the June 6, 2001 proposal, IBM continued to sample and analyze the sludge that is the focus of this pilot project. In the course of this sampling and analysis effort, IBM discovered that the concentration of cadmium in the sludge had increased to 1.5182 ppm. IBM then conducted a thorough inventory of the materials and equipment used in the production processes and determined that cadmium is not used<sup>1</sup>. In the June 6, 2001 proposal, the Agency discussed IBM's assumption that the cadmium detected in the wastewater treatment sludge is present as a contaminant in the lime used in the wastewater treatment process (*see* Footnote 4, 66 FR 30354). This appears to be the case.

Upon learning that in some instances the sludge would not meet the threshold level that the Agency had originally

proposed for cadmium (*i.e.*, 0.88 mg/kg) for the sludge to be conditionally excluded from the definition of solid waste, IBM informed EPA; EPA then requested that IBM provide a detailed analysis of the lime used in the wastewater treatment process (which IBM received from the distributor of the lime). This analysis showed that the lime being used by IBM at the time contained 2.0 ppm cadmium. The Agency believes that, because the lime makes up such a high proportion of the sludge (typically more than 90%, according to IBM), the cadmium levels in the sludge are consistent with what would be expected given the cadmium levels in the lime.

In considering how to proceed, one option was to keep the proposed threshold level of cadmium in the wastewater treatment sludge and disallow any sludge not meeting this level from being conditionally excluded from the definition of solid waste under the pilot project. Under this approach, if the Agency finalizes the site-specific exclusion, and did so as originally proposed, IBM could begin to use the sludge as an ingredient in cement once the sludge met the proposed conditions of the exclusion. However, this approach seems inappropriate, especially considering that the lime containing 2.0 ppm cadmium could itself be used as an ingredient in cement outside of RCRA jurisdiction (the lime is a commercial product, not a solid waste). Put another way, the Agency believes it would be inappropriate to disallow the sludge (which is primarily lime) from being used as an ingredient because of a contaminant in the lime. Therefore this was not considered a viable option.

An alternative option is to re-propose a more realistic threshold level for cadmium, based on the potential presence of cadmium in the lime used in wastewater treatment. The Agency notes that the slightly higher concentration of cadmium in the sludge (as well as the proposed change to the cadmium threshold level to reflect that concentration) has no effect on the Agency's determination that the sludge is analogous to the raw materials that would otherwise be used as ingredients in the production of cement. And, as discussed briefly in the proposal (*see* 66 FR 30354, June 6, 2001), a certain amount of variability in the constituent concentrations in the normal raw materials used to produce cement is typical, if not expected. In proposing the original cadmium threshold of 0.88 mg/kg, the Agency assumed that this would account for such variability. Obviously, this was not the case. Therefore, the

Agency has determined that it is more appropriate to re-propose a cadmium threshold level that more accurately reflects the potential variability of cadmium concentrations in lime, and its attendant impact on the cadmium concentrations in the sludge generated using the lime.

In defining a cadmium threshold that would be more appropriate and reflect the natural variability in raw materials normally used as ingredients in cement, the Agency learned that the lime IBM uses for treating the electroplating wastewaters is held to a maximum concentration of 2.0 ppm, which is the standard for cadmium concentrations in lime used for conditioning (or treating) drinking water.<sup>2</sup> Assuming that the lime used to generate the sludge will not exceed 2.0 ppm cadmium, the sludge should also not exceed this level. Therefore, the Agency is today proposing that the threshold level for cadmium be set at 2.0 mg/kg (rather than the previously proposed level of 0.88 mg/kg). The Agency believes that this threshold level more accurately reflects the upper limit of the concentration of cadmium naturally occurring in the specific lime used to generate the electroplating sludge.

Finally, the Agency notes that while it is publishing the entire text of the regulatory language that was proposed in the June 6, 2001 **Federal Register** document to provide context for the proposed change in this supplemental proposal, the Agency is only soliciting comment on the revised cadmium threshold level.

<sup>2</sup> In considering a more appropriate cadmium threshold level, the Agency contacted the National Lime Association (NLA) for generic information regarding the variability of metal concentrations naturally occurring in lime on a national basis. Such comprehensive information was not readily available. However, in considering whether the Agency should characterize the constituent concentrations of cadmium in lime on a national basis (a somewhat daunting task), EPA learned that such a characterization may not be necessary to develop a threshold level that appropriately reflects the cadmium concentrations in the lime the IBM East Fishkill facility uses. Rather, as the Agency learned from the NLA, the lime products provided by IBM's distributor are ANSI-60 (UL) certified as water treatment chemicals. This means that these products (including the lime used in IBM's wastewater treatment system) meet the applicable concentration criteria for heavy metals, including cadmium (which is 2 ppm), as long as the products are used per specifications. In other words, the specific lime used by this specific IBM facility is certified to have no more than 2 ppm cadmium. Given that this is a site-specific rulemaking, EPA considers this 2 ppm cadmium concentration to be a more appropriate threshold level for this specific site than a threshold level reflecting the cadmium concentrations developed on a national basis.

<sup>1</sup> Note that, as mentioned in the original proposed rule (*see* Footnote 4, 66 FR at 30354, June 6, 2001), during the development of this XL project, IBM had previously conducted a review of the materials used in the facility's production processes and determined that cadmium is not used at the facility.