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RCRA Docket Information Center (OS-305)  
U.S. EPA  
401 M Street, SW  
Washington, DC 20460

Re: F-93-RCKA-FFFFF

Dear Sir/Madam:

This letter constitutes the joint comments of the Environmental Defense Fund (EDF) and the Hazardous Waste Treatment Council (HWTC) on EPA's Report to Congress on Cement Kiln Dust and the associated regulatory determination options published by **EPA** at 59 FR 709-714 (January 6, 1994). Under separate cover, HWTC is also filing additional comments and materials.

Description of the Commenters

EDF is a national non-profit environmental advocacy organization with more than 250,000 members dedicated to the protection of human health and the environment by ~~inter alia~~, eliminating unnecessary exposure to hazardous substances, including hazardous wastes. EDF members live, work, and recreate in areas immediately affected by the improper management of hazardous and industrial wastes, such as cement kiln dust. EDF participates extensively in RCRA implementation and oversight, including activities in the regulatory, legislative, and judicial contexts.

HWTC is a national, non-profit trade association located in Washington, D.C. **HWTC's** member companies provide advanced technologies for the treatment, recycling and disposal of hazardous wastes. The Treatment Council represents the full spectrum of thermal and non-thermal technologies including incinerators, cement kilns, industrial furnaces and thermal desorbers. Since its formation in 1982, HWTC has devoted unprecedented resources to the development of protective thermal destruction standards in the United States. It is the largest organization representing technology-based waste management firms.



## RCRA Reaulation is Both **Necessary** and Desirable

### A. Management Practices and Resulting Damage Cases

There can be no dispute that current cement kiln dust (CKD) management practices are extremely inadequate, and in the absence of RCRA regulation, will not improve substantially in a timely manner. Disposal methods could not be much worse, and **offsite** reuses are largely uncontrolled despite the potential for widespread public and environmental exposure in some cases.

According to EPA's Report to Congress, the domestic cement industry consists of 115 facilities. At over 75% of these facilities, in excess of 33,000 metric tons of CKD on average is land disposed **onsite** per site per year.<sup>1</sup> In most cases, this land disposal is conducted with little or no engineering controls, as graphically illustrated by Exhibit 4-4 of the Report to Congress and reproduced as an attachment to these comments. Of all the possible pollution control techniques available, only run-off controls are present at even the barest majority of CKD land disposal units (51%). Techniques to minimize the migration of **CKD** contaminants to air (i.e., dust suppression) are used at less than half the facilities, and engineering controls for groundwater protection (i.e., use of liners, **leachate** collection systems) are installed at less than one-fifth of CKD land disposal units.

This lack of engineering controls is not surprising given the predominant **onsite** disposal practice is dumping the material into unlined quarries or ravines.<sup>2</sup> The second most predominant practice is dumping **CKD** onto non-engineered **onsite** piles, sometimes bordering surface waters or property **boundaries**.<sup>3</sup> These archaic practices, reminiscent of the 1960s or before, demonstrate the inability of states or non-RCRA authorities to fill the void left by 14 years of delay in imposing RCRA controls on **CKD**.

These archaic practices have also produced an alarmingly high proportion of damage cases. Of 127 facilities reviewed by EPA (115 active facilities and 12 inactive sites), 17% are associated with damage cases sufficiently documented to meet the arbitrarily high evidentiary standard used by EPA in the Report

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<sup>1</sup> Report to Congress at 4-1.

<sup>2</sup> Report to Congress at 4-2.

<sup>3</sup> **Id.**

to Congress.<sup>4</sup> In fact, the proportion of land disposal facilities actually producing damage cases is probably much higher for a variety of reasons.

First, some of the 115 active facilities recycle all of the CKD they produce, therefore these facilities do not have an onsite waste management unit. If only facilities with CKD land disposal units are considered, the proportion would be substantially higher.

Second, EPA obtained evidence on "alleged" damages for an additional 12% of the facilities, but because state and federal regulation of these facilities is so lax, the Agency could not obtain sufficient documentation of the damage to meet its evidentiary standards. It is fair to assume that at least some of these facilities are associated with actual damage cases.

Third, given groundwater monitoring is only conducted at 17% of the waste management units, other environmental monitoring may be equally infrequent, and little or no effort has been devoted to regulating CKD at the state level, it is not likely that damages have been detected at many locations where they have occurred. In fact, the proportion of known damage cases is quite remarkable under the present regulatory circumstances.

Significantly, these damage cases involve a variety of exposure pathways, through air, groundwater and surface water. As discussed further below, this variety of potential human and environmental exposure pathways is an important factor when weighing various regulatory options.

All three media are of concern because of the high concentration of toxic metals in CKD. Levels up to 7,390 ppm lead, 293 ppm chromium, 80.7 ppm cadmium, and 159 ppm arsenic were measured in CKD.<sup>5</sup> Even average concentrations are substantial. "As managed" CKD contains an average of 858 ppm lead, 40 ppm chromium, 24 ppm cadmium, and 16 ppm arsenic.<sup>6</sup> These levels are many orders of magnitude greater than corresponding inhalation/ingestion health-based numbers or aquatic toxicity numbers for these metals, and these metals bioaccumulate posing substantial risks through both direct and

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<sup>4</sup> Report to Congress at 5-4. EPA claims three of these facilities are merely responsible for "potential" damage, since the contamination has not yet migrated offsite. For the purpose of identifying damage cases, there is no legal or policy basis for distinguishing between onsite and offsite contamination.

<sup>5</sup> Report to Congress, Exhibit 3-18.

<sup>6</sup> Report to Congress, Exhibit 3-20.

indirect exposure pathways. The higher concentrations of lead in CKD would trigger CERCLA or RCRA cleanups under conditions where the public could be exposed to the lead, as under current CKD practices. Indeed, current Superfund guidance establishes a cleanup target of 500-1,000 ppm for lead in residential soil.

In the case of offsite CKD reuses, much less is known about environmental practices or effects. Reuses of CKD involving hazardous waste stabilization are not of great concern, given the CKD is subsequently managed in regulated Subtitle C units. However, some types of reuse, such as reuse as a materials additive in cement, as a soil amendment or fertilizer, or in road construction, pose greater concerns since the potential for human and environmental exposure to CKD contaminants is large. In these instances, the lack of knowledge as to the fate of CKD contaminants, coupled with the present vacuum of regulatory oversight over these reuses, is troubling.

Offsite CKD reuses should be proven safe before they are condoned or encouraged. EPA's conclusory judgments in the Report to Congress concerning the risks posed by these practices are largely unsupported and naive.<sup>7</sup>

For example, EPA suggests the risks from CKD used to make concrete are small once the CKD is locked into the concrete because releases that may occur when the concrete is cut apart or broken up during construction or demolition "would be small and temporary compared to air releases from uncovered CKD piles at cement plants". However, EPA fails to consider the routine deterioration of concrete in urban areas, as displayed by the attached photographs of sidewalks in a residential area of Washington (photographs attached to original only), and the potential uses of concrete in playgrounds and schools where exposures to sensitive populations could be prolonged and substantial.<sup>8</sup> This matter is of particular concern given the severe lead problems that now exist in most urban areas and the high lead concentrations in CKD. EPA's failure to assess this potential human/child exposure scenario in a rigorous manner is especially disturbing since the Agency acknowledges the use of CKD to make concrete may adversely affect cement strength and durability.<sup>9</sup>

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<sup>7</sup> EPA should be extremely concerned about potential reuses when CKD is just "given away". See Report to Congress at 9-9.

<sup>8</sup> Cement use in sidewalks and playgrounds, and residential/public buildings, is prevalent and accounts for a large proportion of domestic cement consumption. See Report to Congress at 2-3.

<sup>9</sup> Report to Congress at 8-32, 8-33.

In summary, RCRA regulation of CKD is necessary and desirable because existing management practices are grossly unprotective, causing significant environmental damage at a substantial portion of CKD facilities.

#### B. Other Factors Also Support RCRA Regulation

In evaluating other special wastes, EPA previously considered factors such as quantities of waste, number of facilities, effects on state programs, and economic impacts in deciding **against** Subtitle C regulation of such wastes. In the case of CKD, however, these factors also support Subtitle C regulation of CKD waste.

First, neither the quantities of waste or the number of facilities are extraordinary in the Subtitle C context. Fewer than 100 additional facilities would require permits (subtracting those facilities already requiring a permit because they burn hazardous waste), and the amount of CKD disposed per site is less than the 45,000 MT/facility/year of solid mineral processing wastes brought within Subtitle C jurisdiction several years ago."

Second, the development of Subtitle C rules for CKD will not hinder existing state regulatory programs because many states don't regulate CKD well or at **all**.<sup>10</sup> Even Texas with its 11 facilities exempts **onsite** CKD disposal from enforceable rules and permits." Simply stated, EPA can only help current state programs by promulgating RCRA rules, especially since a significant percentage of facilities are already subject to RCRA permitting because they burn hazardous wastes.

Third, there is no economic bar to Subtitle C regulation. **Of** course, disposal costs will rise if RCRA regulations are imposed, because any reasonable practice will cost more than dumping CKD into unlined quarries. But as noted in the Report to Congress, the increased costs associated with the imposition of meaningful Subtitle C standards for this industry can be absorbed without severe economic **impact**.<sup>13</sup>

Finally, cheap and substandard disposal inhibits the further development of **onsite** CKD recycling and treatment activities

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<sup>10</sup> 54 FR 38594 (September 1, 1989).

<sup>11</sup> Report to Congress at 5-3.

<sup>12</sup> Report to Congress at 7-41.

<sup>13</sup> Report to Congress at 9-44.

consistent with EPA's pollution prevention policies. The purchase of equipment necessary to return CKD to the kiln and monitor CKD quality will be difficult to encourage when alternative quarry disposal costs are only **\$3.50/ton**.

### EPA's Risk Assessment Extremely Flawed

The only conceivable justification for not regulating CKD can be found in EPA's risk assessment, which indicates CKD poses a low risk under certain exposure and fate/transport assumptions. However, this assessment is not based upon assumptions that either reflect reality or are consistent with the damage cases documented by EPA. Moreover, and perhaps most importantly, the assessment does not reflect protective assumptions consistent with RCRA and Executive Order 12898.

First, the assessment does not reflect reality. The assessment was conducted as if the known information on CKD facilities and damage cases did not exist. For example, EPA does not even bother to consider the risks associated with lead and cadmium groundwater contamination because these constituents **"are relatively immobile under high pH conditions"**.<sup>14</sup> Yet of the five EPA documented groundwater contamination damage cases, four reported high lead levels and two involved high cadmium **levels**.<sup>15</sup>

In addition, the groundwater fate and transport modeling did not assume or consider the presence of karst terrain or fault zones, a common occurrence at limestone quarries where CKD is dumped. Accordingly, EPA's groundwater modeling assumes high dilution and attenuation factors that simply will not occur in many **locations**.<sup>16</sup>

It is also unlikely EPA's air modeling adequately considered the effects of equipment malfunctions, a predominant cause of air damage cases in the **Report**.<sup>17</sup> There are probably other examples of misguided assumptions as well. To identify all such instances, EPA should compare the assumptions used in the risk

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<sup>14</sup> Report to Congress at 6-11.

<sup>15</sup> Report to Congress, Exhibit 5-2.

<sup>16</sup> Furthermore, the MMSOILS model used in the risk assessment is problematic because it understates potential impacts even in non-karst terrain settings, according to EPA staff contacted by EDF and HWTC. Additional comments submitted by HWTC under separate cover will discuss this issue and others related to the model in greater detail.

<sup>17</sup> Report to Congress at 5-45.

assessment with the reality reflected by each damage case, and modify the risk assessment accordingly.

Second, EPA relies on leach test results for the groundwater pathway that understate contaminant availability. The buffering capacity of CKD can mask the leachability of contaminants using the TCLP. Accordingly, EPA should have employed the Multiple Extraction Procedure, Method 1320, to obtain inputs for the groundwater pathway. Indeed, this method is already required for applications to delist stabilized wastes, and the use of CKD as a stabilization agent accounts for 71% of the CKD reused **offsite**.<sup>18</sup> The use of MEP is also appropriate in this context since CKD dumped on piles or in quarries is exposed to repeated precipitation events. Significantly, when questioned during a meeting why the MEP was not employed in preparing the Report to Congress given the requirement in the delisting guidance, staff could not provide an answer. And when asked whether EPA would correct the deficiency by conducting further sampling, staff replied they were unwilling to do so because of the expense and time involved. These are not acceptable answers should EPA rely upon the existing risk assessment in choosing a regulatory option.

Third, by focusing only on the location of existing groundwater wells and residential locations, the risk assessment completely fails to account for future uses and population growth. In many cases, even where the potential for groundwater contamination is high, EPA downplayed the risk because people were not currently drinking the groundwater near the **facility**.<sup>19</sup> In fact, of the five facilities where the groundwater pathway was modeled, only one facility was associated with significant **offsite** private water well usage at the present **time**.<sup>20</sup> However, the groundwater is still contaminated resulting in the loss of the resource, therefore EPA fails to protect human health and the environment by allowing the contamination regardless of the aquifer's present use. In addition, EPA fails to account for future beneficial uses of the aquifer. Similarly, EPA's air modeling is based upon estimates of the current nearest residence to the CKD **pile**.<sup>21</sup>

This failure to consider future uses violates both the

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<sup>18</sup> See Petition to **Delist** Hazardous Wastes - A Guidance Manual, **EPA/530-R-93-007**, March 1993, p. 6-5; Report to Congress at 4-10.

<sup>19</sup> Report to Congress at 6-20 through 6-23.

<sup>20</sup> Report to Congress at 6-34, 6-35.

<sup>21</sup> Report to Congress at 6-28, 6-29, 6-34.

generalized RCRA mandate to protect human health and the environment, and the Bevill Amendment to RCRA requiring consideration of the "potential danger" of CKD. See Section 8002(o)(2) of RCRA.

Finally, and perhaps most importantly, EPA's risk assessment relies upon central tendency, and in some cases "high end" assumptions, that are not protective of human health and the environment. Central tendency estimates are intended to provide a characterization of risk from a "typical situation", and therefore rely on exposure and fate/transport assumptions that will be protective only 50% of the time. It is totally inappropriate for EPA to rely upon central tendency results in determining whether to regulate a waste under Subtitle c of RCRA. By definition, central tendency assumptions are unprotective for many plausible scenarios, and are therefore inconsistent with the RCRA mandate to protect human health the environment. Moreover, Executive Order 12898 requires EPA to consider multiple and cumulative exposures of those population groups whose life style and consumption patterns pose risks often greater than central tendency assumptions. Reliance on central tendency estimates violates both RCRA and Executive Order 12898.

Reliance on central tendency estimates is also inconsistent with Agency policy. Toxicity characteristic concentrations for identifying hazardous wastes subject to Subtitle C regulation were established using the 85th percentile for DAFs. See 55 FR 11827 (March 29, 1990). Moreover, EPA's recently proposed carbamate listings are based upon "high end" risk estimates. These high end risk estimates reflect the risk above the 90th percentile of the distribution, and therefore estimate the risk expected to occur in "a small but plausible high-end segment of the population." See 59 FR 9826, 9836-39 (March 1, 1994).

In this regard, it is also important to note that what is regarded as "high end" under the "baseline scenario" in the Report to Congress risk assessment is not actually "high end" when sensitive populations are truly considered in EPA's usual manner. For example, under the baseline scenario in the Report to Congress, EPA's "high end" assumption is only 20% of a person's fish intake results from local fish consumption. And the so-called subsistence fishing scenario modeled in the Report to Congress, mislabeled a "hypothetical higher risk scenario", assumes only 75% of fish consumption is from a local stream contaminated with CKD.<sup>22</sup>

In fact, typical EPA high end exposure assumptions assume recreational fishermen consume 140g/d of fish, and all of the

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<sup>22</sup> Report to Congress at 6-45, 6-50.