Testimony of
Lisa Evans, Senior Administrative Counsel, Earthjustice
before the
Subcommittee on Energy and Environment,
Committee on Energy and Commerce,
U.S. House of Representatives
April 14, 2011

Attachments

Attachment 1

Attachment 1

A Review of State Regulatory Programs for the Disposal of Coal Ash
Summary of Earthjustice's Analysis of 37 Coal Ash-Generating States[1]

As part of its June 2010 proposal for rulemaking, EPA requested comments on the current management practices of state programs, including the specific requirements that states have in place to regulate coal combustion residue (CCR) and the extent to which such requirements apply to older, existing units. Earthjustice reviewed the regulatory programs of 37 states, looking specifically at whether states have imposed requirements to address: (1) groundwater monitoring; (2) unit liners; (3) leachate collection systems; (4) financial assurance; (5) post-closure monitoring and maintenance; and (6) extent of permitting requirements—issues EPA has identified as having particular relevance to its decision-making process.[2] Our analyses of these issues provide an up-to-date and comprehensive picture of the significant regulatory gaps that currently exist in state programs. Our conclusion is that these programs do not and cannot adequately protect health and the environment from the dangers posed by CCR disposal. Such gaps illustrate the necessity for EPA to promulgate expeditiously mandatory minimum federal standards under subtitle C of RCRA for the safe disposal of CCR.

[1] The full 37-state analysis is included in the comments submitted by Earthjustice to the rulemaking record, Docket No. EPA-HQ-RCRA-2009-0640, available at www.regulations.org and http://earthjustice.org/node/9571.
[2] 75 Fed. Reg. at 35,157.

Table 1. Overview of Mandatory State Requirements for CCR Disposal

STATE REGULATORY REQUIREMENT	ALL (NEW AND EXISTING) LANDFILLS	ALL (NEW AND EXISTING) SURFACE IMPOUNDMENTS	NEW LANDFILLS	NEW SURFACE IMPOUNDMENTS
Groundwater Monitoring (during operation)	4 states/3.66%*	6 states/19.12%	7 states/13.24%	6 states/19.12%
Composite Liner	*No states have retroactive liner requirements*	*No states have retroactive liner requirements*	5 states/7.19%	4 states/19.61%
Leachate Collection System	*No states have retroactive leachate collection requirements*	*No states have retroactive leachate collection requirements*	12 states/30.21%	7 states/23.14%
Daily Cover	7 states/25.99%	N/A[a]	7 states/25.99%	N/A
Dust Controls	13 states/39.37%	1 state/10.88%	13 states/39.37%	1 state/10.88%
Run-off Controls	17 states/42.81%	3 states/13.7%	17 states/42.81%	3 states/13.7%
Separation from Water Table	*No states have retroactive siting requirements*	*No states have retroactive siting requirements*	21 states/56.64%	7 states/25.64%
Financial Assurance	16 states/41.78%	4 states/15.85%	14 states/38.2%	3 states/14.17%
Composite Final Cover	1 state/1.14%	1 state/1.14%	1 state/1.14%	1 state/1.14%
Groundwater Monitoring (30 years after closure)	5 states/25.64%	1 state/1.14%	5 states/25.64%	1 state/1.14%

* Number of states out of 37 surveyed with requirement/percentage total CCR generated in U.S. in 2005 by states.
a: We did not review daily cover requirements for surface impoundments.

The above table is an indictment of current state of regulatory programs, revealing a widespread absence of mandatory basic safeguards. For example:

- Only 4 states (comprising less than 4 percent of the CCR generated in the U.S) require groundwater monitoring at all new and existing landfills in their states;
- Only 6 states (comprising 19 percent of the CCR generated in the U.S.) require groundwater monitoring at all new and existing surface impoundments;
- Only 5 states (comprising 7 percent of the CCR generated in the U.S.) require composite liners for all new landfills; and
- Only 4 states (comprising 19 percent of the CCR generated in the U.S.) require composite liners for all new surface impoundments.

Not only is the national picture dismal, but some of the largest coal ash-generating states in the country have no or nearly no coal ash regulatory programs. As described above, three states—Alabama, New Mexico, and Utah[3]—exempt coal ash completely from regulation as a solid waste, leaving the disposal of CCR virtually unregulated. In addition, Ohio excludes virtually all CCR from regulation by classifying it as "nontoxic" and, therefore, exempt.[4] Texas excludes all coal ash that is disposed of on-site (defined as anywhere within 50 miles of the place of generation) or destined for beneficial reuse (the vast majority of the state's CCR) from regulation.[5] In these states, which together generate approximately 33.4 million tons of CCR each year (almost a quarter of total CCR generated in the U.S.), none of the basic safeguards such as groundwater monitoring that EPA recognizes as necessary are required.

1. States Fail to Require Groundwater Monitoring.

Despite the critical need to monitor for potential contamination of water resources at CCR disposal units, a majority of the states examined do not require groundwater monitoring for both existing and new CCR landfills. We reviewed whether states required all of their operating landfills (and surface impoundments) to conduct groundwater monitoring, not just those built after a certain date. For the protection of public health, it is absolutely essential that all units be monitored. In fact, it is arguably more important for older units to be monitored because older units are more likely to be constructed without liners and leachate collection systems. When states "grandfather" older waste units, they likely are exempting a large proportion of the state's waste disposal units, because both landfills and surface impoundments are used for many decades.

The resulting analysis reveals that the majority of coal ash in the U.S. is not subject to mandatory groundwater monitoring when disposed in landfills. In addition to the states identified above that completely exempt all or most of coal ash disposal from regulation, at least seven other states provide for wholesale exemption from regulation of CCR that is disposed in on-site or in monofills, and another seventeen states leave the decision of whether to require such monitoring at landfills up to the discretion of state agency staff. Thus, at least 30 states (which as a whole generated 85 percent of the total CCR in the United States in 2005) lack mandatory groundwater monitoring requirements for both new and existing CCR landfills. Of the states in which groundwater monitoring of CCR landfills is mandatory, only semi-annual sampling is required.

[3] Ala. Admin. Code r. 335-13-1-.03(12) (2010); N.M. Code § 20.9.2.7(S)(9) (2010); Utah Admin. Code r. § 19-6-102(18)(b)(iii).
[4] Ohio Admin. Code 3745:27-01(S)(23) (2010).
[5] 30 Tex. Admin. Code §§ 335.2(d); 335.1(138)(H) (2010).

Table 2. Is Groundwater Monitoring Mandatory at CCR Landfills?

Yes 7 out of 37 states surveyed 13.24% of total CCR	7 states require groundwater monitoring at CCR landfills: IL, NH, NJ, NV, LA*, MO*, WV*; 4 of these states (IL, NH, NJ, NV) require monitoring at new and existing units (representing 3.66% of total CCR)
No 30 out of 37 states surveyed 84.92% of total CCR	3 states exclude CCR from the definition of solid waste: AL, NM, UT 5 states leave question of whether to require monitoring to discretion of state regulators: AZ, KS, MD*, NC*, WI* 12 states provide for variance of monitoring requirements: IA, KY*, MN*, NY, ND, OK*, SD, TN, VA, WA, WY, GA 7 states exempt on-site or monofill disposal: CO, FL*, MS, MT, PA, TX* 4 states exempt CCR that meets certain toxicity criteria: IN, OH, MI, SC

*grandfathering of existing sites

Even fewer states require groundwater monitoring for all existing and new CCR surface impoundments. Of the 37 states examined, only six required any level of groundwater monitoring under state solid waste programs. Of those six, two states require monitoring of groundwater only after the closure of a disposal unit and one requires monitoring for surface impoundments located in specific areas associated with the water supply. Thus, at least 31 states (which as a whole generated 79% of the total CCR in the United States in 2005) lack mandatory groundwater monitoring requirements for all CCR surface impoundments. As discussed below, the fact that groundwater monitoring is not mandatory at the majority of CCR surface impoundments takes on particular significance in light of EPA's assumption that states without groundwater monitoring requirements for surface impoundments are unlikely to implement subtitle D criteria on their own accord.

Table 3. Is Groundwater Monitoring Mandatory at CCR Surface Impoundments?

Yes 6 out of 37 states surveyed 19.12% of total CCR	6 states require groundwater monitoring at both new and existing CCR surface impoundments: LA, PA, WA, IL (only in recharge areas); MI (only after unit closure); VA (only after unit closure)
No 31 out of 37 states surveyed 79.07 of total CCR	2 states provide for variance of monitoring requirements: ND, NY 5 leave question of whether to require monitoring to discretion of state regulators: KY, NJ, OK, WI, WV 7 states specifically exclude or exempt CCR impoundments from monitoring requirements: AL, FL, IN, MT, NH, NM, CO* 17 states have no groundwater monitoring requirements for CCR impoundments: AZ, GA, IA, KS, MD, MN, MO, MS, NC, NV, OH, SC, SD, TN, TX, UT, WY

*grandfathering of existing units

Even in states where groundwater monitoring is mandatory or where regulators have exercised their discretion to require such monitoring, the specific requirements in place are not necessarily protective of health and the environment. For example, all of the states that require groundwater monitoring at CCR landfills require only that monitoring wells be sampled twice a

year; yet semi-annual sampling is insufficiently protective. In order to ensure protection of groundwater and early detection of any contamination as well as understand seasonal variations in sampling results, quarterly sampling must be required.

Table 4. Is Quarterly Monitoring Required at CCR Landfills?

Yes 0 out of 37 states surveyed 0% of total CCR	None of the 37 states that require groundwater monitoring at CCR landfills require quarterly monitoring for active life of the unit.
No 37 out of 37 states surveyed 98.19% of total CCR	*Illinois requires quarterly monitoring for first five years of operation, but then allows for less frequent monitoring.* 4 of the states with qualified groundwater monitoring requirements (e.g., variance available, on-site/monofill exemptions) require quarterly groundwater monitoring at CCR landfills: MI, NY, PA, WA (14.61% of total CCR) 19 states call for semi-annual monitoring, in event groundwater monitoring is required at a particular unit: CO, FL, GA, IN, KY, LA, MS, MO, MT, NV, NJ, ND, SC, SD, TN, TX, VA, WV, WY 3 states call for annual monitoring, in event groundwater monitoring is required at a particular unit: IA, OH, OK 3 states leave monitoring frequency to the discretion of state regulators: MN, NH, IL (quarterly for first five years) 8 states have no groundwater monitoring requirements whatsoever: AL, AZ, SK, MD, NC, NM, UT, WI

Table 5. Is Quarterly Monitoring Required at CCR Surface Impoundments?

Yes 2 out of 37 states surveyed 11.88% of total CCR	2 states require quarterly groundwater monitoring at both new and existing CCR surface impoundments: PA, WA
No 35 out of 37 states surveyed 86.31% of total CCR	1 state requires semi-annual sampling: LA 4 of the states with qualified groundwater monitoring requirements at CCR landfills (e.g., variance available, on-site/monofill exemptions) call for quarterly sampling when groundwater monitoring is conducted: CO, IL, MI, NY (14.61% of total CCR) 6 leave question of whether to require monitoring to discretion of state regulators: KY, NJ, ND (semi-annual), OK, WI, WV (semi-annual) 7 states specifically exclude or exempt CCR impoundments from monitoring requirements: AL, FL, IN, MT, NH, NM, VA (after unit closure) 17 states have no groundwater monitoring requirements for CCR impoundments: AZ, GA, IA, KS, MD, MN, MO, MS, NC, NV, OH, SC, SD, TN, TX, UT, WY

Similarly, few states require the adequate minimum number of downgradient monitoring wells. A minimum of three wells is necessary to determine the direction of groundwater flow and, thus, the existence and extent of contamination originating at a CCR disposal unit. However, only a handful of states require the installation and sampling of three downgradient wells.[6] Without the ability to properly define groundwater movement and the presence and location of contaminants, a groundwater monitoring program cannot be effective.

Table 6. Are a Minimum of Three Downgradient Wells and One Upgradient Well Required at CCR Landfills?

Yes 4 out of 37 states surveyed 9.09% of total CCR	4 states require a minimum of three downgradient wells and one upgradient well at CCR landfills: NH, NJ, MO*, WV*; 2 of these states (NH, NJ) require monitoring at new and existing units (representing 0.65% of total CCR)
No 33 out of 37 states surveyed 89.1% of total CCR	7 of the states with qualified groundwater monitoring requirements (*e.g.*, variance available, on-site/monofill exemptions) require a minimum of three downgradient wells and one upgradient well at CCR landfills: IN, NY, OK, PA, SD, VA, WA 26 states do not require a minimum of three downgradient wells and one upgradient well at CCR landfills: AL, AZ, CO, FL, GA, IA, IL, KS, KY, LA, MS, MT, MN, MD, MI, NM, NC, ND, NV, OH, SC, TN, TX, UT, WI, WY

*grandfathering of existing sites

[6] Indeed, EPA identifies only *three* states that require a minimum of four monitoring wells (one upgradient and three downgradient) at CCR landfills. *2010 RIA*, at Exhibit E1.

Table 7. Are a Minimum of Three Downgradient Wells and One Upgradient Well Required at CCR Surface Impoundments?

Yes 2 out of 37 states surveyed 11.88% of total CCR	2 states require a minimum of three downgradient wells and one upgradient well at CCR surface impoundments: PA, WA
No 35 out of 37 states surveyed 86.31% of total CCR	*3 of the states with qualified groundwater monitoring requirements (e.g., variance available, on-site/monofill exemptions) require a minimum of three downgradient wells and one upgradient well at CCR surface impoundments: NJ, VA, WV* 32 states do not require a minimum of three downgradient wells and one upgradient well at CCR surface impoundments: AL, AZ, CO, FL, GA, IA, IL, IN, KS, KY, LA, MD, MI, MN, MO, MS, MT, NC, ND, NH, NM, NY, NV, OH, OK, SC, SD, TN, TX, UT, WI, WY

2. States Fail to Require Adequate Liners for CCR Landfills and Surface Impoundments.

The risks stemming from the lack of adequate groundwater monitoring requirements are exacerbated by the often parallel deficiencies in state regulation of landfill and surface impoundment design requirements. While EPA has stated that only composite liners are sufficient to protect human health and the environment,[7] only 5 of 37 states mandate the installation of composite liners at all new CCR landfills and only 4 of 37 states require composite liners at all new CCR surface impoundments. Seven states lack any liner requirement for CCR landfills, composite or otherwise, and another 19 states exempt certain landfills from liner requirements or allow variance of such requirements by state regulators.

The deficiencies in the regulation of surface impoundments are even more severe. Twenty-seven of the states that were reviewed have no liner requirement whatsoever for CCR surface impoundments. Indeed, some of the largest CCR-generating states (*e.g.*, Texas, Ohio, Kentucky, and Indiana) lack this basic safeguard. The lack of adequate liners at CCR surface impoundments underscores the importance of mandatory groundwater monitoring. Without sufficient barriers separating the millions of gallons of wet coal ash that are stored in surface impoundments from the groundwater below, seepage of hazardous constituents into the groundwater is bound to occur.

[7] A composite liner system that consists of two components: the upper component must consist of a minimum 30-mil flexible membrane liner (FML), and the lower component must consist of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1×10(-7) cm/sec. 75 Fed. Reg. at 35,174.

Table 8. Type of Liner Required for New CCR Landfills

Composite 7.19% of total CCR	5 states require a composite liner at CCR landfills: LA, MS, NC, NV, WI
Clay 10.33% of total CCR	4 states require a clay liner at CCR landfills: MD, MO, NJ, WV
Soil 21.65% of total CCR	5 states require a soil liner at CCR landfills: IL, IN, MI, NH, PA
Variance available 16.27% of total CCR	10 states provide for variance of liner requirements at CCR landfills: GA, MN, NY, ND, OK, SD, TN, VA, WA, WY
Exemption 25.1% of total CCR	6 states exempt certain CCR landfills from liner requirements: SC, FL, MT, CO, OH, TX
No Requirement 17.65% of total CCR	7 states do not require liners at CCR landfills: AL, AZ, IA, KS, KY, NM, UT

Table 9. Type of Liner Required for New CCR Surface Impoundments

Composite 19.61% of total CCR	4 states require a composite liner at CCR surface impoundments: LA, NY, PA, WV
Clay 3.79% of total CCR	2 states require a clay liner at CCR surface impoundments: IL (only in setback/recharge zones), OK
Soil 5.36% of total CCR	4 states require a soil liner at CCR surface impoundments: CO, ND, WA, WI
No Requirement 69.43% of total CCR	27 states do not require liners at CCR surface impoundments: AL, AZ, FL, GA, IN, IA, KS, KY, MD, MI, MN, MS, MO, MT, NJ, NV, NH, NM, NC, OH, SC, SD, TN, TX, UT, VA, WY

3. States Fail to Require Leachate Collection Systems for CCR Landfills.

Fewer than half of the 37 state programs we reviewed require leachate collection systems for CCR landfills, and only seven states require such systems for CCR surface impoundments. Without leachate collection systems,[8] liquids that collect at a landfill can compromise even the best liner system. The pooling of water above a liner causes the liner to become saturated, thereby exhausting its permeability and eliminating its effectiveness at leakage prevention.

[8] Leachate collection systems capture pollutants that may have escaped through the flexible membrane layer located above it. Pumps are employed to move the leachate out of the landfill where it can be treated to safe levels.

Table 10. Is a Leachate Collection System Mandatory for CCR Landfills?*

Yes 12 out of 37 states surveyed 30.21% of total CCR	12 states require a leachate collection system at CCR landfills: LA, MI, MS, MO, MD, NH, NJ, NC, NV, PA, WV, WI
No 25 out of 37 states surveyed 67.98% of total CCR	7 states do not require a leachate collection system at CCR landfills: AL, AZ, NM, IA, KS, KY, UT (17.65% of total CCR) 8 states exempt certain CCR landfills from leachate collection requirements: CO (on-site), FL (on-site), IN (required only in karst), IL (monofill), MT (on-site), OH (nontoxic), SC (TCLP), TX (on-site) (34.06% of total CCR) 10 states provide for variance of leachate collection requirements: GA (at monofills), OK, MN, NY, ND, SD, TN, VA, WA, WY (16.27% of total CCR)

Table 11. Is a Leachate Collection System Mandatory for CCR Surface Impoundments?*

Yes 7 out of 37 states surveyed 23.14% of total CCR	7 states require a leachate collection system at CCR surface impoundments: NJ, NY, ND, PA, WA, WV, WI
No 30 out of 37 states surveyed 75.05% of total CCR	30 states do not require a leachate collection system at CCR surface impoundments: AL, AZ, CO, FL, GA, IN, IA, IL (requirement only applies on setback/recharge areas), KS, KY, LA, MD, MI, MN, MS, MO, MT, NV, NH, NM, NC, OH, OK, SC, SD, TN, TX, UT, VA, WY

4. States Fail to Control Fugitive Dust at CCR Landfills and Surface Impoundments.

Operational safeguards at CCR disposal sites are also severely lacking under current state regulatory programs. Only 7 of the 37 states evaluated require daily cover at CCR landfills. Seven additional states require cover, but not on a daily basis. Five states allow for variance or waiver of cover requirements, and 18 states had no cover requirement of any kind. Fewer than half of the states examined require fugitive dust controls at CCR landfills, and only one state (Pennsylvania) has mandatory dust controls for CCR surface impoundments. Of the states that require dust controls, none requires specific measures for the control of dust on a daily basis; significant discretion is left in the hands of state permitting authorities and facility operators. EPA found, however, that daily cover was necessary to protect the health of residents near CCR landfills in its 2010 report, *Inhalation of Fugitive Dust: A Screening Assessment of the Risks Posed by Coal Combustion Waste Landfills*. The screening assessment found that daily cover was necessary to prevent NAAQS violations.

Table 12. Is Daily Cover Mandatory at CCR Landfills?*

Yes 7 out of 37 states surveyed 25.99% of total CCR	7 states require daily cover at CCR landfills: IL, LA, NV, NJ, NC, PA, WV
No 30 out of 37 states surveyed 72. 2% of total CCR	18 states do not require daily cover at CCR landfills: AL, AZ, FL (on-site), IN (required only at Type I), IA, KS, KY, MD, MI, MT (required only for Class II/on-site exempt), NH, NM, OH (nontoxic), SC (required only at Class III), TX, UT, VA, WA (53.64% of total CCR) 7 states require some cover at CCR landfills, but not daily: MS, MO, ND, OK, TN, WI, WY (10.85% of total CCR) 5 states provide for variance of daily cover requirements: CO (on-site), GA (monofill), MN, NY, SD (7.71% of total CCR)

Similarly, dust controls are necessary at CCR landfills to prevent exposure to airborne ash during landfill operations. Dumping, truck traffic on the surface of the landfill, and spreading can generate significant fugitive dust, sufficient to endanger the health of nearby residents. Our study found, however, that less than half of the states examined mandated dust controls at CCR landfills, and only a single state required dust controls at CCR surface impoundments.

Table 13. Are Dust Controls Mandatory at CCR Landfills?

Yes 13 out of 37 states surveyed 39.37% of total CCR	13 states require dust controls at CCR landfills: IL, IN, IA, MD, MI, MO, NV, NJ, NC, PA, SC, WV, WI
No 24 out of 37 states surveyed 58.82% of total CCR	15 states do not require dust controls at CCR landfills: AL, AZ, CO (on-site), FL (on-site), GA, KS, KY, LA, MS, MT, NH, NM, OH (nontoxic), TX, UT (46.85% of total CCR) 9 states allow for variance of dust control requirements: MN, NY, ND, OK, SD, TN, VA, WA, WY (11.97% of total CCR)

Table 14. Are Dust Controls Mandatory at CCR Surface Impoundments?

Yes 1 out of 37 states surveyed 10.88% of total CCR	Only 1 state requires dust controls at CCR surface impoundments: PA
No 36 out of 37 states surveyed 87.31% of total CCR	36 states do not require dust controls at CCR surface impoundments: AL, AZ, CO, FL, GA, IL, IN, IA, KS, KY, LA, MD, MI, MN, MO, MS, MT, ND, NY, NH, NM, NC, NV, NJ, OH, OK, SC, SD, TN, TX, UT, VA, WA, WI, WV, WY

5. States Fail to Require Run-on and Run-off Controls.

Good CCR landfill design includes run-on and run-off controls. Run-on must be diverted to prevent erosion to the landfill. Run-off of precipitation must be collected and managed to reduce the potential for off-site migration of contaminants. Less than half of the states examined required such controls for CCR landfills and only three states required such controls for CCR surface impoundments.

Table 15. Are Run-off Controls Mandatory at CCR Landfills?

Yes 17 out of 37 states surveyed 42.81% of total CCR	17 states require run-off controls at CCR landfills: IL, IN, IA, LA, MD, MI, MS, MO, MT, NV, NH, NJ, NC, PA, SC, WV, WI
No 20 out of 37 states surveyed 55.38% of total CCR	10 states do not require run-off controls at CCR landfills: AL, AZ, CO (on-site), FL (on-site), KS, KY, NM, TX, UT, VA (33.41% of total CCR) 10 states allow for variance of run-off controls at CCR landfills: GA (monofills), MN, NY, ND, OH, OK, SD, TN, WA, WY (21.97% of total CCR)

Table 16. Are Run-off Controls Mandatory at CCR Surface Impoundments?

Yes 3 out of 37 states surveyed 13.7% of total CCR	3 states require run-off controls at CCR surface impoundments: LA, MI, PA
No 34 out of 37 states surveyed 84.49% of total CCR	31 states do not require run-off controls at CCR surface impoundments: AL, AZ, CO, FL, GA, IL, IN, IA, KS, KY, MD, MN, MS, MO, MT, NV, NH, NJ, NM, NY, NC, OH, SC, SD, TN, TX, UT, VA, WI, WV, WY 3 states allow variance of run-off controls at CCR surface impoundments: ND, OK, WA

6. States Fail to Require Isolation of CCR from Groundwater when Placed in Landfills and Surface Impoundments.

Coal ash must be isolated from contact with groundwater to prevent the migration of toxic contaminants from the waste into the underlying water table. This is the purpose of an impermeable composite liner. When coal ash is placed in contact with water, or when the separation from the water table is insufficient, soluble metals in the ash will migrate to the underlying groundwater. Although mandating separation from the water table is one of the most basic tenets of proper waste management, 16 of 37 states place no restriction on the location of ash landfills with respect to the water table and 30 of 37 states place no restrictions with regard to the location of coal ash surface impoundments.

Table 17. Can CCR Landfills to be Constructed in the Water Table?

No 21 out of 37 states surveyed 56.64% of total CCR	21 states prohibit the location of CCR landfills within a certain distance of the water table: CO, IA, IL, MD, MI, MN, MS, NC, NH, NJ, NV, NY, OH, OK, PA, SC, TN, TX, WA, WI, WV
Yes 16 out of 37 states surveyed 41.55% of total CCR	16 states place no restriction on the location of CCR landfills with respect to the water table: AL, AZ, GA, FL, IN, KS, KY, LA, MO, MT, ND, NM, SD, UT, VA, WY

Table 18. Can CCR Surface Impoundments to be Constructed in the Water Table?

No 7 out of 37 states surveyed 25.64% of total CCR	7 states prohibit the location of CCR surface impoundments within a certain distance of the water table: CO, NC, NY, OK, PA, WI, WV
Yes 30 out of 37 states surveyed 72.55% of total CCR	30 states place no restriction on the location of CCR surface impoundments with respect to the water table: AL, AZ, GA, FL, IA, IL, IN, KS, KY, LA, MD, MI, MN, MO, MT, MS, ND, NH, NJ, NM, NV, OH, SC, SD, TN, TX, UT, VA, WA, WY

7. States Fail to Place Other Location Restrictions on CCR Landfills and Surface Impoundments.

While we did not conduct an independent assessment of state regulation of disposal unit location, EPA's *2010 RIA* includes a synopsis of state government restrictions on locating CCR landfills and surface impoundments for the top 25 coal usage states.[9] The *2010 RIA*'s summary of six categories of location restrictions—water table, wetlands, floodplains, faulty areas, seismic zones, unstable karst terrain—highlights the inadequacy of state regulation of disposal unit siting. Only 5 of the 25 states reviewed restricted the siting of CCR surface impoundments below the natural water table; only eight states placed such restrictions on CCR landfill siting. Only 5 of 25 states restricted the siting of CCR surface impoundments in wetland areas; 17 states restricted such siting for CCR landfills. Eight of the 25 states reviewed restricted locating CCR surface impoundments in floodplains; 20 of 25 states placed such restrictions on CCR landfills. A mere two states had restrictions on the siting of CCR surface impoundments in fault areas or seismic zones; seven states restricted locating CCR landfills in fault areas, and eight restricted such siting in seismic zones. Five states restricted the siting of CCR surface impoundments in areas of unstable (karst) terrain, and 12 states restricted the location of CCR landfills in such areas.

[9] *2010 RIA* at 46–47.

8. States Fail to Require Financial Assurances for CCR Landfills and Surface Impoundments.

Financial assurance for landfills and surface impoundments is a critical safeguard and an important tool for ensuring safe waste disposal operations. Fewer than half of the states surveyed, however, require financial assurances for all CCR landfills, and only four states mandate financial assurances for all CCR surface impoundments.

Table 19. Are Financial Assurances Mandatory for CCR Landfills?

Yes 16 out of 37 states surveyed 41.78% of total CCR	16 states require financial assurances for CCR landfills: GA, IN, IA, LA, MI*, MS, MO*, NV, NH, NJ, NC, PA, SC, SD, WV, WI
No 21 out of 37 states surveyed 56.41% of total CCR	6 states have no financial assurance requirement: AL, AZ, KS, MD, NM, UT (11.71% of total CCR) 6 states exempt certain CCR landfills from financial assurances requirements: CO, IL, FL, MT, OH, TX (26.29% of total CCR) 9 states allow for variance of financial assurance requirement: KY, MN, NY, ND, OK, TN, VA, WA, WY (18.41% of total CCR)

* grandfathering of existing units

Table 20. Are Financial Assurances Mandatory for CCR Surface Impoundments?

Yes 4 out of 37 states surveyed 15.85% of total CCR	4 states require financial assurances for CCR surface impoundments: LA, MI*, PA, ND
No 33 out of 37 states surveyed 82.34% of total CCR	33 states have no financial assurance requirement for CCR surface impoundments: AL, AZ, CO, FL, GA, IN, IA, IL, KS, KY, MD, MN, MS, MO, MT, NH, NJ, NY, NV, NM, NC, OH, OK,SC, SD, TN, TX, UT, VA, WA, WI, WV, WY

* grandfathering of existing units

9. States Fail to Require Safe Closure of CCR Landfills or Surface Impoundments.

Our analyses revealed significant deficiencies in the states' regulation of the closure of CCR disposal units at the end of their active lives. Only one of the state programs reviewed includes a mandatory requirement that final cover for all CCR landfills and surface impoundments include a composite element. Fourteen states require less protective materials such as clay or soil, and 22 state programs lack any mandatory requirements for final cover materials. Impermeable covers are essential for coal ash landfills and surface impoundments to prevent precipitation from infiltrating the closed unit. Impermeable covers are especially essential for coal ash landfills and ponds, because so many of these units are unlined. Water percolating through a closed, unlined landfill will facilitate the migration of contaminants from the ash into the underlying groundwater.

Table 21. Type of Final Cover Required for CCR Landfills

Composite 1.14% of total CCR	1 state requires a composite final cover for CCR landfills: LA
Clay 21.69% of total CCR	5 states require clay final cover for CCR landfills: MO, MD, PA, WV, WI
Soil 17.14% of total CCR	9 states require soil final cover for CCR landfills: IA, IL, IN, MI, MS, NJ, NH, NC, NV
Variance available 16.27% of total CCR	10 states allow for variance of final cover requirements for CCR landfills: GA, SD, VA, NY, ND, OK, TN, WA, WY, MN
Exemption 25.1% of total CCR	6 states exempt certain CCR landfills from final cover requirements: CO, FL, MT, OH, SC, TX
No Requirement 16.85% of total CCR	6 states have no final cover requirement for CCR landfills: AL, AZ, KS, KY, NM, UT

Table 22. Type of Final Cover Required for CCR Surface Impoundments

Composite 1.14% of total CCR	1 state requires a composite final cover for CCR surface impoundments: LA
Clay 11.94% of total CCR	2 states require clay final cover for CCR surface impoundments: OK, PA
Soil 2.68% of total CCR	2 states require soil final cover for CCR surface impoundments: MI, WA
Removal upon closure 3.72% of total CCR	3 states require that CCR surface impoundments be removed upon closure: ND, NJ, NY
No requirement 78.71% of total CCR	29 states have no final cover requirement for CCR surface impoundments: AL, AZ, CO, FL, GA, IN, IA, IL, KS, KY, MD, MN, MS, MO, MT, NV, NH, NM, NC, OH, SC, SD, TN, TX, UT, VA, WI, WV, WY

Long-term post-closure monitoring of coal ash landfills and surface impoundments is critical to ensure that contaminants are not migrating from the disposal units. Early detection of contaminated groundwater is necessary to protect the health of nearby communities. Such monitoring is essential, once again, because of the hundreds of unlined landfills and ponds that are currently in operation or that have already retired. All units, both those that will close and those already retired, must be monitored so that leaks are detected before substantial migration can occur. Lastly, it is necessary that post-closure monitoring be at least 30 years because coal ash is not a stable material, and its condition changes over time. Especially if exposed to the water table or precipitation, coal ash will evolve slowly and release its harmful contaminants over the course of decades. A dump that is not releasing contamination five years after closure says absolutely nothing about its potential to poison groundwater 10, 20, 30 or 50 years later. According to EPA's 2010 Risk Assessment, peak contaminant releases from CCR surface impoundments will not occur until over 70 years after waste placement, and the peak release

period for CCR landfills is thousands of years.[10] A post-closure monitoring period of at least 50 years is indeed reasonable and necessary. Almost no states, however, require a mandatory monitoring period of at least 30 years, as shown in the table below.

Table 23. Is 30 Years of Post-Closure Groundwater Monitoring Required for CCR Landfills?

Yes 5 out of 37 states surveyed 25.64% of total CCR	5 states require post-closure groundwater monitoring for 30 years at all CCR landfills: LA, MI, MO, NV, WV
No 32 out of 37 states surveyed 72.55% of total CCR	32 states do not require post-closure groundwater monitoring for 30 years at all CCR landfills: AL, AZ, CO (on-site), FL (on-site), GA (variance for monofills), IL, IN (Type III exempt), IA, KS, KY, MD, MN, MS, MT (on-site), NH, NJ, NM, NY, NC (on-site), ND, OH, OK, PA, SC, SD, TN, TX (on-site), UT, VA, WA, WI, WY

Table 24. Is 30 Years Post-Closure Groundwater Monitoring Required for CCR Surface Impoundments?

Yes 1 out of 37 states surveyed 1.14% of total CCR	1 state requires post-closure groundwater monitoring for 30 years at all CCR surface impoundments: LA
No 36 out of 37 states surveyed 97.05% of total CCR	36 states do not require post-closure groundwater monitoring for 30 years at all CCR surface impoundments: AL, AZ, CO, FL, GA, IL, IN, IA, KS, KY, MD, MI, MN, MS, MO, MT, NV, NH, NJ, NM, NY, NC, ND, OH, OK, PA, SC, SD, TN, TX, UT, VA, WA, WV, WI, WY

10. Grandfathering of Existing Units Encourages Prolonging Life of Aging Ponds and Landfills.

States routinely allow the continued operation of existing landfills and surface impoundments, without requiring the older units to comply with newly-imposed safeguards. This widespread practice encourages the use of existing units for as long as possible. In the 1999 Report to Congress, EPA estimated that the average age of surface impoundments and landfills was about 40 years. Yet many ponds and landfills are operating for decades longer.[11] Section III.B.1.d.i.2., *infra*, discusses in detail the aging of the nation's fleet of surface impoundments. The continued operation and expansion of hundreds of ponds and landfills without liners, leachate collection systems, monitoring and other basic safeguards is another critical reason why regulation under subtitle C is essential.

[10] 2010 Risk Assessment, at 4-11.
[11] *See* EPA, Coal Combustion Residuals Impoundment Assessment Reports, http://www.epa.gov/osw/nonhaz/industrial/special/fossil/surveys/index.htm.

Attachment 2

RECYCLING OF HAZARDOUS WASTE: RCRA'S UNSUNG SUCCESS STORY

PREPARED BY:

RICHARD C. FORTUNA
PRESIDENT
STRATEGIC ENVIRONMENTAL ANALYSIS, L.C.

PREPARED FOR:

THE SIERRA CLUB, EARTH JUSTICE
NATURAL RESOURCES DEFENSE COUNCIL

November 20, 2010

November 20, 2010

Mr. Patrick Gallagher
Director of Environmental Law
Sierra Club
85 Second Street, 5th Floor
San Francisco, CA 94105

Re: *"Recycling of Hazardous Waste"*

Dear Mr. Gallagher:

Pursuant to your request, I am submitting my Report on the current status, trends, and history of hazardous waste recycling under the Resource Conservation and Recovery Act (RCRA).

Appendix A summarizes my 30+ years of involvement with the RCRA Program and related environmental statutes. **Appendix B** provides a detailed accounting of the false claims of "stigma" that have been made over 30+ years of RCRA rulemakings.

I appreciate the opportunity to be of assistance to you, the Sierra Club, Earth Justice, the NRDC and the communities which have been affected or threatened by this glaring gap in RCRA's regulatory regime.

Sincerely,

/S/ Richard C. Fortuna

Richard C. Fortuna
President
SEA, LC
8828 Harness Trail
Potomac, MD 20854
301-299-6013

TABLE OF CONTENTS

I. RECYCLING OF HAZARDOUS WASTE IS ALIVE AND WELL UNDER RCRA. 1

II. BENEFICIAL REUSE AND RECYCLING HAS INCREASED DRAMATICALLY AS REGULATORY STANDARDS HAVE INCREASED UNDER RCRA AND OTHER FEDERAL STATUTES. 5

III. USE AND/OR RECYCLING OF RCRA HAZARDOUS WASTES IS FLOURISHING IN THE CONSUMER/RESIDENTIAL SECTORS AS WELL. . 14

IV. CALIFORNIA'S USED OIL RECYCLING PROGRAM, WHICH LISTS USED OIL AS A HAZARDOUS WASTE, HAS A HIGHER BENEFICIAL REUSE RATE THAN THE FEDERAL PROGRAM WHICH, WITH LIMITED EXCEPTIONS, DOES NOT LIST USED OIL AS HAZARDOUS. 18

V. INDUSTRIES' ARGUMENTS THAT RCRA REGULATION WILL REDUCE BENEFICIAL REUSE AND RECYCLING ARE UNFOUNDED AND UNORIGINAL. 21

APPENDICES

A. QUALIFICATIONS.. . . . . A-1

B. "STIGMA" CLAIMS v. MARKETPLACE REALITY – 1979 TO PRESENT. . . B-1

I. RECYCLING OF HAZARDOUS WASTE IS ALIVE AND WELL UNDER RCRA

A. Introduction

Since RCRA's adoption and implementation in the late 1970's, RCRA[1] regulation has enhanced recycling and beneficial reuse and assured environmental protection in the process. As discussed in greater detail below, this is in part because under RCRA, environmentally protective recycling is preferred to the land disposal of a waste material.

Despite the clear evidence of RCRA's success at driving increases in reuse and recycling, industries have often resisted RCRA regulation by arguing, for example, that RCRA regulation would reduce recycling because it is supposedly too burdensome,[2] or because labeling a material as "hazardous" would stigmatize the material and reduce people's willingness to reuse it; so called "stigma" arguments. According to these assertions, the only way to encourage recycling is to exempt it from hazardous waste regulation.

In this regard, industry's current opposition to EPA's proposal to regulate Coal Combustion Residue ("CCR") under RCRA Subtitle C repeats the same arguments that industry has asserted over the past thirty-plus years of RCRA's implementation, However, the history of RCRA regulation demonstrates the fallacy of these assertions. RCRA regulation of a substance does not decrease recycling and beneficial reuse of the substance -- whether because of the alleged burden of such regulation, or because of a supposed stigma from labeling a product as hazardous – to the contrary, RCRA regulation has just the opposite effect on recycling rates.

As discussed in this Report, the beneficial reuse and recycling of materials under RCRA has been a tremendous success. This Report is divided into 6 sections, each

---

[1] The statute governing the daily management of "hazardous waste" in the U.S. is known as the Resource Conservation and Recovery Act (RCRA; pronounced Rec-Ra). RCRA or P.L. 94-580 was enacted in 1976 and amended the Solid Waste Disposal Act (SWDA) P.L. 89-272, enacted in 1965. RCRA incorporated Subtitle C, the Hazardous Waste Program. The Hazardous and Solid Waste Amendments (HSWA) of 1984, P.L. 98-616, effectively rewrote Subtitle C of the SWDA. Of all these acronyms, it is "RCRA" that is most frequently used to refer to the SWDA and its collective amendments.

RCRA is the nation's basic authority governing the daily management and ongoing releases from waste management units. CERCLA OR "Superfund" is the nation's cleanup and emergency response authority for releases of hazardous substances. The preventive standards of RCRA are intended to avert the creation of future problem sites requiring cleanup under CERCLA.

[2] According to the "regulatory burden" argument, the increased burden of RCRA compliance will increase the costs of the recycled products produced from a waste material and in turn disadvantage or "stigmatize" them in the marketplace.

examining a separate aspect of RCRA's recycling history and trends and their applicability to the CCR rulemaking. **Section I** examines several general trends in hazardous waste recycling under RCRA. **Section II** uses specific illustrative examples to demonstrate that reuse and recycling of materials has increased under RCRA regulation. **Section III** examines the accelerating trends in the recycling of consumer-based hazardous waste. **Section IV** examines how California's Used Oil Program has a higher rate of recycling than the Federal Program. **Section V** examines the historical claims of "stigma" associated with recycling-related rulemakings under RCRA from 1979-present and compares these claims with marketplace reality.

B. Overview of Data

Actual data on RCRA generation and waste management provides empirical evidence demonstrating that hazardous waste recycling under RCRA is in fact a great success. More specifically, RCRA requires that every two years waste generators and managers submit data regarding their waste generation and management in what is called the RCRA Biennial Report Survey (BRS).[3] This survey examines on a biennial basis the full spectrum of waste generation and management, including recycling practices, and attempts to quantify the volumes of wastes managed and generated by facility type, location, and volume. The Biennial Report assigns hazardous waste recycling practices to one of 5 subcategories. **See Table 1**.

TABLE 1: Reclamation and Recovery Management Codes

Code	Recycling Activity
H010	Metals recovery including retorting, smelting, chemical, etc.
H020	Solvent recovery (distillation, extraction, etc.)
H039	Other recovery or reclamation for reuse including acid regeneration, organics recover, etc.
H050	Energy recovery at this site – used as a fuel (includes onsite fuel blending before energy recovery)
H061	Fuel blending prior to energy recovery at another site (waste generated either onsite or received from offsite)

In examining the Biennial Report data for 2007, the last year for which complete tabulated data exists, one sees a wide range of waste being reclaimed in substantial volumes under the hazardous waste regulations. For example, as shown in **Table 2** below, which summarizes some of the most commonly generated wastestreams and

[3] 40 **CFR** Parts 262.41, 264.75, and 270.30(l)(9)

the volume of those wastes reclaimed during 2007, over a million tons of ignitable, corrosive, and/or leachable metal-bearing wastes were recycled in 2007.

TABLE 2: Volume of Various RCRA Hazardous Waste Recycled in 2007		
Waste Code	**Waste Description**	**Recycled (Tons)**
D001 - D009 characteristic waste	ignitable, corrosive and/or leachable metal-bearing wastes	1,461,006
D002 - Corrosives	lead acid batteries	1,299,823
D009 - Mercury	fluorescent lamps	813,935
F001 - F005 listed waste	chlorinated solvents	311,521
F006 - F009 listed waste	metal bearing wastes	37,857

Source: 2007 RCRA Biennial Report Survey (BRS) Database. FOIA Request HQ-FOI-01815-10. October 12, 2010. 2007 is the most current year for which data has been tabulated and published.

Indeed, for some commonly generated hazardous waste the recycling rate is 67% or greater as shown in **Table 3**.

TABLE 3: Recycling Rates for Various Large Volume RCRA Hazardous Wastes				
Waste Code	**Waste Type**	**Volume Recycled (tons)***	**Volume Generated (tons)****	**Recycling Rate**
K048-52	Petroleum Refining Sludge	23,878	34,777	69%+
K061	Electric Arc Furnace Dust	610,000***	923,546	67%
K171-172	Petroleum Refining Catalysts	49,336	61,127	81%
D002	Lead Acid Batteries	1,300,000	1,400,000	93%++

* FOIA Request HQ-FOI-01815-10

** Supplemental data provided by RCRA BRS Staff, October 21, 2010.

*** EPA, Office of Resource Conservation and Recovery, "Assessing the Management of Lead in Scrap Metal and Electric Arc Furnace Dust; Final Report," EPA 530-R-09-004, April, 2009, p. 18.

\+ This is an underestimate as many refineries dispose/recycle their K048-52 wastes in their coking systems or use it to quench the coking cycle.

++ "Waste Recycling," Solid Waste Association of North America (SWANA), Silver Spring, MD, 2008; Presentation of Dr. Reinhart. Data was from a 2003 Survey.

Lastly, another measure of the frequent and routine nature of hazardous waste recycling under RCRA is revealed by examining all 563 waste codes listed or identified under RCRA and determining which of those codes were not recycled at all. The BRS data reveals that only 4 of the 563 waste codes for which data was reported in 2007 had no recycling whatsoever. These codes were largely dioxin-containing wastes and/or vinyl chloride production wastes. In short, 99.3% of all RCRA waste codes underwent some level of recycling during the 2007 reporting period, as reflected in **Table 4** below.

TABLE 4: Percentage of RCRA Waste Codes for Which Some Level of Recycling Was Reported in the 2007 Biennial Report

Number of RCRA Waste Codes*	Number Reporting No Recycling**	% RCRA Wastes Codes Reporting Some Recycling
563	4+	~99.3%***

* 2007 RCRA Biennial Report Survey, pp. D1 - D17.

** Supplemental data provided by RCRA BRS Staff, October 22, 2010.

*** 559÷563 = 99.3%. Some obscure "P" and "U" list wastes may not have been generated during the BRS reporting period.

\+ Except for RCRA waste codes F020, F023, K174, K178; every "D", "F" and "K" code wastes were recycled in 2007, frequently by multiple methods.

II. BENEFICIAL REUSE AND RECYCLING HAS INCREASED DRAMATICALLY AS REGULATORY STANDARDS HAVE INCREASED UNDER RCRA AND OTHER FEDERAL STATUTES

A. Background – RCRA's Land Disposal Restriction (LDR) Program

This section provides a more in depth analysis of trends in hazardous waste recycling using three different hazardous wastestreams: i.e., K061 Electric Arc Furnace Dust, D009 mercury containing fluorescent lamps, and D009 mercury-containing automotive switches. This analysis reveals a trend which is typical of many wastestreams that have been recycled under RCRA; namely, that the rate of recycling increases as the standards under RCRA became more stringent.

The passage of the initial RCRA-based program regulations in 1980 prompted a minimal level of recycling to be undertaken for many wastestreams.[4] However, it was not until RCRA's Land Disposal Restriction (LDR) program was implemented in 1986-1990 that the recycling of many RCRA wastestreams began to accelerate.[5] The Land Disposal Restrictions (or LDR Program) is a two part program that: 1) prohibited all land disposal unless wastes were first treated to reduce toxicity to the greatest extent achievable by Best Demonstrated Available Treatment (BDAT), and 2) required that the residues of such treatment be placed only into units meeting state-of-the-art liner and containment standards. The LDR program has its genesis in the 1984 Hazardous and Solid Waste Amendments (HSWA) which established a phased, multi-year program that required best treatment followed by best containment. As discussed in greater detail below, by requiring that waste material be pre-treated and disposed of in an environmentally appropriate manner, RCRA and its LDR program allowed resource recovery and recycling to flourish by making it cost-competitive with the alternative-disposal of the material.

The institution of the LDR program in the 1984 HSWA truly put an end to the land disposal of untreated wastes, and by doing so provided a level playing field on which treatment and recycling technologies could compete. Prior to the institution of the LDR program, very few treatment or recycling technologies could financially compete with an unregulated, unlined hole in the ground. This section examines the beneficial impact of RCRA's increasing stringency on the rate and volumes of hazardous waste being recycled.

---

[4] 45 **FR** 33066 (May 19, 1980). The RCRA "Base Program" Regulations; Final Rule.

[5] www.epa.gov/wastes/hazard/tsd/ldr/index.htm. RCRA 3004(b) - (p), especially 3004(m), (o).

B. The Electric Arc Furnace Dust Recycling Market: A RCRA Success Story Of Increased Regulation And Resulting Increases In Recycling

1. Management Trends for EAF Dust: 1983-1993. Vastly More Recycling After RCRA LDRs

In 1995 I was retained by EPA to make a presentation before their Common Sense Initiative (CSI) Subcommittee on Iron and Steel Industry Wastes.[6] Much of the data for this study was derived from the available Biennial Report data at the time.

As reflected in **Table 5**, "K061 Management Trends from 1983-1993," in 1983, when there were no requirements under RCRA to immobilize or recycle the toxic constituents contained in K061 Electric Arc Furnace dust prior to land placement, less than 10% of the electric arc furnace dust waste stream was recycled. The vast majority was simply land disposed. By 1993, ten years later, over 70% of this waste stream was being reclaimed, either on-site or off-site; virtually a complete reversal in ten years time. The massive jump in recycling was driven by the LDR program's treatment requirements.

Prohibition of uncontrolled land disposal provided the engine for this transition to recycling. This fact is and has been acknowledged by industry, including the American Iron and Steel Institute (AISI) representative in attendance at my presentation to the EPA.[7]

TABLE 5: K061 Management Trends: 1983-1993*

Management Method	Percent (%) EAF Dust Managed-1983	Percent (%) EAF Dust Managed-1993 +
HTMR**	<10%	72 (86.5)+
Other Recovery, Reuse	----	6 (2.3)+
Landfill	>80%	19 (11.2)+

* Data based on 1983, 1993 Biennial Reporting data.
** HTMR-High Temperature Metals Recovery
\+ Figures in ( ) are for 1992, based on a 1993 PRI Study, "Electric Arc Furnace Dust – 1993 Overview," EPRI Center for Materials Production, CMP Report 93-1, July, 1993, p. 3-5.

---

[6] Fortuna, Richard C., "Steel Industry Waste and RCRA's Solid Waste Definition," Presentation before EPA's Common Sense Initiative, Iron & Steel Society Committee; Ambassador West Hotel, Chicago, IL, August 24, 1995.

[7] At this CSI Session, John Wittenborne of the American Iron and Steel Institute, (AISI) acknowledged this finding in his own presentation as well.

2. Twenty-One Firms Were Developing Technologies To Reclaim EAF Dust After The LDRs Took Effect

Another indication of the robust market for recycling electric arc furnace dust is the number of firms that invested in new technologies to recycle the material. In 1995 there were 21 separate firms developing a broad array of recycling technologies to reclaim zinc and other metals from electric arc furnace dust. These methods included: electrowinning, plasma cupola, plasma arc, hydrometallurgy and the re-injection of EAF dust back into the electric arc furnace. This recycling based industry was driven by the LDR program – indeed, virtually none of these technologies existed prior to the LDR program.

3. RCRA's Impact On Recycling Economics; Without RCRA Most Recycling Would Be Impossible

Another measure of the premise at issue would be to examine whether RCRA regulations were making it economically impossible for firms to enter or compete in this marketplace. The argument is frequently made that the cost of permitting and compliance are so high that economically sensitive operations such as recycling facilities must be exempt from RCRA regulation in order to survive.

In fact, quite the opposite is the case. It is precisely due to RCRA regulation that many otherwise marginal, or non-profitable recycling and/or reuse operations are able to provide services that both return resources back to the economy and protect the environment. For example, the Electric Power Research Institute (EPRI) released a study of electric arc furnace dust recyclers concluding that none of the leading commercially available EAF dust zinc reclaimers would be profitable without a hazardous waste tipping fee.[8] Data from this study, reflected in **Table 6**,[9] demonstrates that no facility in existence in 1994 (i.e., Bold entries in **Table 6**) could survive on the sale of reclaimed zinc product alone. Five of the eight existing and proposed facilities in **Table 6** would not be profitable without a hazardous waste tipping fee. In fact, it is the hazardous waste tipping fee companies charge that makes both the facility profitable, <u>and</u> provides the revenues to ensure that the toxic residues of recycling are properly managed.

---

[8] A “tipping fee” is the fee a firm charges for proper management of a waste and its residuals. The term originated when land disposal was the predominant method of management (i.e., trucks tipping their contents into the disposal cell), but now refers to the fee charged for all forms of management, including recycling.

[9] The EPRI Center for Materials Production. Proceedings of the CMP Electric Arc Furnace Dust Treatment Symposium IV. A Summary of the Technical Presentations and Panel Discussion from the January 25, 1994 Symposium. February 1994. CMP Report No. 94-2.

Thus, while industry has in the past argued that the cost of RCRA permitting and compliance are so high that economically sensitive operations such as recycling facilities cannot afford to comply and will be shut down, just the opposite is true. RCRA regulation makes recycling economically feasible, and provides stability in the market by serving as a buffer against the sometimes violent pricing swings in commodity markets, avoiding the temptation to then cut corners on environmental compliance requirements.

TABLE 6: Comparative Earnings of EAF Dust Recyclers Before Taxes**		
Process	**Earnings/Ton ($) For EAF Dust Facilities Scaled To 100,000 Tons Per Year*****	
	No Tip Fee	**Tip Fee**
Metal Producers		
Enviroplas	37	103
Modified Zincex	24	83
Oxide Producers		
Ausmelt	**NP***	**108**
Flame Reactor	**NP**	**120**
Enviroplas	NP	66
ScanArc	NP	71
Single Stage Waelz Kiln	**8**	**119**
Two Stage Waelz Kiln	**NP**	**75**

* NP=Not Profitable

** The EPRI Center for Materials Production. Proceedings of the CMP Electric Arc Furnace Dust Treatment Symposium IV. A Summary of the Technical Presentations and Panel Discussion from the January 25, 1994 Symposium. February 1994. CMP Report No. 94-2.

*** Pre-tax earnings are per ton, and are based on facilities scaled to manage at least 100,000 tons/yr. "Earnings" typically refers to actual revenues, minus the cost of sales, before taxes.

4. Comparative Analysis of EAF Dust Recycling In The U.S. Versus Canada

A comparison of electric arc furnace dust recycling markets in the United States and in Canada provides further evidence that RCRA regulation – particularly its LDR program – can and will drive increases in recycling and reuse rates. As discussed above,

electric arc furnace dust became regulated under RCRA in the 1980's, and by 1993, over 70 percent of the dust was being recycled.

At the same time, however, Canada left electric arc furnace dust largely unregulated. Ontario did not institute an RCRA-type LDR program until approximately 2005, nearly 20 years after the RCRA LDR program was enacted in HSWA. Quebec still has no program comparable to the RCRA LDR program.[10]

In the 1993-95 period, when the United States was recycling 70 percent of its electric arc furnace dust, in Ontario most such waste (i.e., K061-type waste (Ontario waste code 143H (NA 9380)) was simply stored or disposed of in piles on-site. Moreover, the volume of EAF dust being recycled in Canada from domestic sources in most areas was virtually zero, and was merely being piled on the ground.[11] Other large EAF dust recyclers in the U.S. also investigated various Canadian markets in the early 1990s and found no interest in recycling or treatment technologies for EAF dust as well. One Canadian steel manufacturer was interested in recycling EAF dust, but only if it was "free."

Thus, in 1995 the very waste that was being reclaimed to a 70%-86% level (**Table 5**) in this country was simply being placed into huge land-based piles in Ontario, much as it was in the U.S. prior to the existence of the RCRA Land Disposal Restrictions (LDR) program of 1984.

C. RCRA's Land Disposal Restriction Program Has Driven The Success Of Mercury Lamp Recycling

RCRA regulation, and the LDR program in particular, has had a similarly beneficial impact on recycling of Mercury lamps. Prior to the institution of the Land Disposal Restrictions for mercury-containing waste in 1990, including mercury-containing lamps,[12] virtually no mercury recycling was occurring. There were only three firms

---

[10] The only standards that conceivably govern such wastes in Canada, are the characteristic leaching tests for heavy metals. These levels are quite permissive and could be easily achieved. Typically, the U.S. LDR standards for reclamation residues will be at least one order of magnitude more stringent then the characteristic leach levels for Pb, Hg, and Cr.

[11] "Evaluation of the Future Market for EAF Recycling in the U.S. and Canada," prepared for the Scientific Ecology Group, prepared by Strategic Environmental Analysis, L.C., May 8, 1995.

[12] 55 **FR** 22520 (June 1, 1990). Third Third Scheduled Waste; Final Rule. This rule established the treatment standards for a wide range of RCRA hazardous waste including the "D" code characteristic wastes such as D009 mercury-containing lamps. The LDR for D009 largely required the use of thermal retorting technology to achieve the maximum amount of mercury recovery prior to the land disposal of any remaining mercury-containing residuals. 40 **CFR** 268.40, 268.48. Recycling via retorting was deemed Best Demonstrated Available Treatment (BDAT) to achieve maximum toxicity reduction prior to the land disposal of mercury-containing residuals.

recycling lamps in the U.S. in 1990, handling only about 5 million lamps total.[13] Subsequent to the implementation of the LDR program for mercury-containing waste, including mercury lamps, by 2000, there were over 60 businesses operating in 33 states to collect and recycle mercury-containing products.[14] This growth continued after 2000 as well. The 2007 RCRA Biennial Report Survey reports that as of 2007, there were 814,000 tons of mercury-containing lamps recycled in the U.S., the last year for which complete data is available, as indicated in **Table 2** above

In addition, to facilitate the recycling of mercury-containing lamps from small businesses, retailers and households, EPA amended the Universal Waste Rule to include mercury-containing lamps in 1999.[15] The recycling of mercury-containing lamps, a frequently generated household hazardous waste, and the establishment of an industry to facilitate this recycling, would not have occurred but for the increased stringency of RCRA's hazardous waste regulations.[16]

D. Regulation Under The Clean Air Act NESHAP Program Has Driven The Success Of Mercury Auto Switch Recycling

Most automobiles built through 2003 commonly utilized mercury-containing switches to operate a variety of lighting and other circuitry in the vehicle. At the end of a vehicle's life, these mercury-containing switches were typically crushed and shredded, along with

---

[13] Presentation of Paul Abernathy, Executive Director, Association of Lighting and Mercury Recyclers (ALMR) before the U.S. EPA Workshop on Mercury Products, Processes, Wastes, and the Environment; Plenary Session: National Implementation of the Universal Waste Rule for Mercury Lamps. Baltimore, MD, March 22, 2000, p. 1.

[14] Ibid.

[15] 64 **FR** 36465 (July 6, 1999); Final Rule. Amendments to the Universal Waste Rule to include mercury-containing lamps. The Universal Waste Rule (UWR) provided a modified regulatory system to ease the regulatory burdens on retail stores and others that wish to collect wastes such as mercury-containing lamps and encourage the development of municipal and commercial programs to reduce the quantity of these wastes going to municipal solid waste landfills or combustors. In addition the UWR regulations ensure that the wastes subject to this system will go to appropriate treatment and recycling facilities pursuant to the full hazardous waste regulatory controls. www.epa.gov/wastes/hazard/wastetypes/universal/.

[16] Recycling of mercury lamps was further aided by EPA's 1999 amendment of the Universal Waste Rule which advanced the recycling of mercury-containing lamps by small businesses, retailers and households 64 **FR** 36465 (July 6, 1999); Final Rule. Amendments to the Universal Waste Rule to include mercury-containing lamps. More specifically, the Universal Waste Rule (UWR) provided a modified regulatory system to ease the regulatory burdens on retail stores and others that wish to collect wastes such as mercury-containing lamps and encourage the development of municipal and commercial programs to reduce the quantity of these wastes going to municipal solid waste landfills or combustors. In addition, the UWR regulations ensure that the wastes subject to this system will go to appropriate treatment and recycling facilities pursuant to the full hazardous waste regulatory controls. www.epa.gov/wastes/hazard/wastetypes/universal/.

the balance of the automobile, resulting in the rapid volatilization and environmental release of the mercury contained therein.

In 2007, EPA instituted a National Emissions Standard for Hazardous Air Pollutants (NESHAPs) for Electric Arc Furnace (EAF) Steelmaking.[17] Among the regulatory and demonstration provisions included in the rulemaking was a provision requiring MACT standards for the control of mercury from EAFs.[18] This program states that the final standards for mercury are based on pollution prevention and requires EAF owners or operators who melt scrap for motor vehicles either to purchase or otherwise obtain the motor vehicle scrap only from scrap providers participating in an EPA-approved program for removal of mercury switches. EAF facilities participating in an approved program must maintain records identifying each scrap provider and documenting the scrap provider's participation in an EPA-approved mercury switch removal program.

Until the institution of the NESHAP program there was no regulatory requirement or program to collect mercury switches and as a result none had been collected. As a result of the NESHAP CAA regulation, in 2007, 2008 and 2009, a total of over 2,584,000 mercury-containing switches have been removed from automobiles prior to scrapping.[19] Absent this regulatory program established under the Clean Air Act NESHAP program, very few of these switches would be collected, recycled and removed from becoming part of the waste disposal problem.

E. Halogenated Solvent Recovery Flourishes under RCRA

Historically, solvent recycling facilities have been one of the leading causes of Superfund sites or otherwise have been a leading source of environmental damages for many years. According to a 1992 survey, solvent recycling sites were the second most prevalent recycling-based cause of Superfund sites.[20] Today, there are more solvent recovery facilities permitted under RCRA (i.e., 456) than any other type of hazardous waste management facility.

Moreover, in the solvent recovery sector there are a large number of facilities (i.e., 456) managing a significant, but relatively smaller, volume of solvents[21] (i.e., 328,000 tons).

---

[17] 72 **FR** 74088 (Dec. 28, 2007).

[18] 72 **FR** 74088, 74089-90 (Dec. 28, 2007).

[19] Personal communication with and data transmitted from Charles Griffith, Executive Director, The Ecology Center, Ann Arbor, Michigan, Oct. 27, 2010; www.ecocenter.org.

[20] "RCRA's Recycling Loopholes," EDF/HWTC, April, 1992. Submitted at the hearing of the House Energy and Commerce Committee on Sham Recycling, April, 1992.

[21] Web citation: http://www.epa.gov/osw/hazard/recycling/index.htm

This means that there is a relatively large number of small volume solvent reclamation facilities permitted under RCRA. Apparently, even small recycling operations were not "stigmatized" by RCRA's "onerous" and "burdensome" regulatory requirements.

Solvents are inherently much more dangerous than coal ash. Exposure to organic solvents can result in serious health impacts, including major birth defects, immune system disorders (such as rheumatoid arthritis, scleroderma, and lupus erythematosus), and several kinds of cancer. Yet a healthy reuse market, used to great advantage by large corporations such as Safety-Kleen, operate without the extreme trepidations expressed by coal ash reuse industries. Spent solvents are collected in great quantities daily by such companies, transported large distances to reclamation/distillation facilities, and freely returned to companies for reuse. The recycling companies manage the risks posed by spills of the material during transport, storage and processing without great impact to their bottom line. Users of solvents, including both small and large businesses, accept the risk of use and storage without a second thought.

Furthermore, ASTM provides specifications for the reuse of solvents and thus, by implication, does not appear to take issue with the use of these recycled wastes, despite their classification as hazardous wastes when disposed.[22] If risk and environmental impact were taken into account, there is far more reason for solvent recyclers to be driven from this enterprise than concrete and wallboard manufacturers.

F. Catalyst from Petroleum Refining Are Almost Universally Reclaimed

Prior to the enactment of RCRA and the 1986-90 Land Disposal Restriction Program, large volumes of catalysts used in the refining process were simply land-disposed, rather than reclaimed.[23] Data from the 2007 BRS reveals that in 2007 81% of petroleum refining catalysts were recycled, directly contradicting the dire predictions of the petroleum industry when EPA proposed the regulation of such material. **See Table 3** above, and **Appendix B**.

The parallels between EPA's proposed regulation of CCR wastes at issue here and EPA's regulation of catalyst waste are striking. When RCRA regulation of petroleum catalysts was first proposed, the petroleum industry resisted RCRA regulation on the grounds that RCRA regulation would depress beneficial reuse and recycling, just as the electric industry has asserted that RCRA regulation would depress beneficial reuse and recycling of CCR. However, the empirical evidence is that RCRA regulation of

---

[22] **See**, for example, ASTM Volume 15.05, Engine Coolants, Halogenated Organic Solvents and Fire Extinguishing Agents; Industrial and Specialty Chemicals, http://www.normas.com/ASTM/BOS/volume1505.html. **See** also ASTM D5396 - 04 Standard Specification for Reclaimed Perchloroethylene, http://www.astm.org/Standards/D5396.htm.

[23] Personal communication with former executives of Duratherm, a leading petroleum residuals recycling firm.

petroleum catalysts has had just the opposite effect, and has instead driven reuse and recycling to 81 percent, directly contradicting the dire and predictions of the petroleum industry.

G. Lead Acid Battery Recycling -- No Longer a Leading Cause of Superfund Sites

In a 1992 survey, battery reclamation sites were the 4th leading cause of recycling-related Superfund sites identified in that survey.[24] Today, however, as the data from Table 3 reveals, 93% of lead acid batteries were being reclaimed rather than disposed of (**See Table 3**). This is due in no small part to the transformation in management practices for lead acid battery reclaimers brought about by the imposition of RCRA regulations throughout the 1980's and 90's.

H. RCRA Requirements Or Procedures Are Not An Impediment To Recycling Markets Or Market Entry

As the above examples demonstrate, RCRA has a stimulating effect on beneficial reuse and recycling. Time and again, recycling and reuse have increased dramatically after wastes become RCRA regulated, for the reasons identified above.

Moreover, the entities that are actually participating in the recycling and reuse markets of materials that have already been regulated under RCRA do not assert that RCRA regulations are unduly burdensome, onerous, or an impediment to recycling, contrary to the arguments advanced by industries when they oppose proposals by EPA to extend RCRA regulation in the first instance, such as the comments asserted in the present case in opposition to EPA's proposed regulation of CCR as a subtitle C waste. In the only survey ever conducted on this question, only 7 percent of the facilities surveyed identified RCRA permitting, manifesting or financial responsibility requirements as the impediment to market entry.[25] Good recycling is its own incentive, and should not have to be subsidized by sub-standard regulatory controls.

---

[24] "RCRA's Recycling Loopholes," EDF/HWTC, April, 1992. Submitted at the hearing of the House Energy and Commerce Committee on Sham Recycling, April, 1992.

[25] U.S. EPA, 1993 RCRA Biennial Report, Exhibit 3-11, based on 1988-1989 data. This data was collected long after RCRA corrective action and permitting requirements were in effect.

III. USE AND/OR RECYCLING OF RCRA HAZARDOUS WASTES IS FLOURISHING IN THE CONSUMER/RESIDENTIAL SECTORS AS WELL

A. Background

In much the same way that RCRA regulation has seen dramatic increases in industrial recycling/reuse of a regulated substance, the history of RCRA regulation shows increasing rates of use and recycling of RCRA regulated substances in the consumer/residential sectors as well. This indicates that RCRA's regulation of the substance does not stigmatize it and/or reduce its use/recycling, regardless of whether the use and recycling is in the industrial, commercial or residential sectors. Examples of this trend are discussed in greater detail below.

B. Use And Recycling of Mercury Lamps Has Been Unaffected by RCRA's Hazardous Waste Listing. Demand for CFL's Is Flourishing

Mercury lamps have been regulated as hazardous since 1980 pursuant to the initial RCRA regulatory program, and were further subject to the Land Disposal Restriction Program in the late 1980s. Neither of these promulgations in any way diminished demand for mercury-containing fluorescent lamps. If anything, demand for high efficiency or compact florescent mercury-containing lamps (CFLs) has flourished, as has the recycling and reuse of these lamps. As **Table 2** above indicates, in 2007, approximately 814,000 tons of mercury lamps were recycled as "hazardous waste."

Indeed, mercury lamps represent one of the most commonly occurring household hazardous wastes generated. Increasingly lamp manufacturers as well as retail stores are instituting take-back programs to collect and recycle yet additional volumes of mercury lamps generated at the household level. The fact that these materials, once their useful lives are past, are regulated as "hazardous waste" has in no way deterred, and in fact has accelerated, the purchase of these products and the responsible recycling of spent mercury fluorescent lamps. The increasing rates of purchase, use, and subsequent recycling of a RCRA regulated substance in residential and commercial applications refutes the assertion by industry that RCRA regulation would stigmatize CCR and depress its beneficial reuse/recycling by consumers.

C. "Stigma" Never Affected Saccharin

For many years saccharin, clearly a consumer product, and its salts have been listed as a hazardous waste under RCRA, Waste Code U202. Saccharin was listed as a hazardous waste due to the determination by EPA's Carcinogen Assessment Group was that it was a potential human carcinogen. Listing saccharin as a "hazardous

waste" on the "U" list of waste has meant that since 1980 the disposal of saccharin as a pure product must occur in accordance with hazardous waste regulations.[26]

Despite its many years of regulation as a hazardous waste, there was no apparent stigma from RCRA's hazardous waste listing that was in any way distinguishable from broader public concerns regarding saccharin's carcinogenic potential. Indeed, saccharin continues to be important for a wide range of low-calorie and sugar-free food and beverage applications.[27] In fact, in its public discussion of its petition to remove saccharin from RCRA's list of hazardous waste, the Calorie Control Council (CCC) makes no mention whatsoever of the stigmatic effects of the RCRA listing on the use of saccharin as a consumer product.

D. Other Household Chemical Products--No Stigma Here

In addition to saccharin, there are numerous other commonly encountered household and personal care chemicals that have been listed as "hazardous" under RCRA since 1980, and yet which consumers readily purchase. These include, for example: acetone (U002), or nail polish remover; 1-butanol (U031), a compound which has many uses including a flavoring ingredient in a wide range of foods; and methyl alcohol or methanol (U154), the most common additive to gasolines and something which is encountered by the typical consumer on an almost weekly basis. In fact, the most recent BRS data for 2007 shows that these and other commercial chemical products are also being recycled as well.

Despite being listed as hazardous waste, for the last thirty-plus years, there is no evidence whatsoever that the consumer has attached any "stigma" to the use of these products either in the car, in the home, or on their own person. Nor is there any evidence that suggests that CCR, if regulated as a hazardous waste under RCRA, would be treated any differently by the consumer than, for example, nail polish remover.

E. Do-It-Yourselfer Used Oil Collection–Stigma Takes a Holiday

Several states have established targeted programs for the collection of do-it-yourselfer (DIY) used oil collection. California, which lists used oil as "hazardous," has been a leader in championing used oil collection from do-it-yourselfers as it has one of the best tracking and management systems in the country. California's ability to measure what

---

[26] As a result of recent determinations by the National Toxicology Program that saccharin is not reasonably expected to be a human carcinogen, EPA has proposed to remove saccharin from the "U" list of wastes. www.epa.gov/osw/hazard/wastetypes/wasteid/saccharin/faqs.htm

[27] www.caloriecontrol.org/sweetners-and-lite/sugar-substitutes/saccharin

is happening with used oil and why is the nation's most effective do-it-yourselfer used oil programs.[28]

The California program promotes curbside collection and includes state certified collection centers and local government and state-wide education and information efforts. The program is funded by a fee ($0.04 a quart) on lubricating oil. Grants are available to local governments as an incentive to recycle. In physical year, 2005 - 2006, approximately 7.8 million gallons of used oil were collected from do-it-yourselfers over 2500 collection sites in California, the most of any state in the nation.[29]

Thus, despite listing used oil as a hazardous waste and widely publicizing its status as a hazardous waste, California has not only developed a robust state-wide collection program from all used oil generators as discussed in greater detail in **Section IV** below, but moreover, has succeeded in targeting the DIY market unlike any other state in the nation. In short, listing used oil as a hazardous waste in California, has done nothing to "stigmatize" or discourage the purchase and recycling of oil.

F. The American Consumer Has Shown Growing Sophistication in Understanding Hazardous Material Threats in the Home and Is Increasingly Engaging in Proper Management of These Materials

The American consumer has demonstrated increasing sophistication in understanding the breadth and depth of hazardous materials contained in the typical household. Consumers are well aware that a wide range of household cleaners, automotive products, toner cartridges, mercury lamps, batteries, pharmaceuticals, paints, and home maintenance chemicals contain a wide variety of hazardous substances which much be managed properly.

This awareness is attested by the dramatic growth in household hazardous waste collection programs throughout the nation. In fact, EPA issued its first manual to guide communities in establishing household hazardous waste collection programs in 1993.[30] Since 1993 states, counties, and commercial management firms have established broad-ranging household hazardous waste collection programs for a wide range of

---

[28] Arner, Robert, "2006 Used Oil Recycling In America," Presented Before the 22nd International Conference on Solid Waste Technology and Management, March, 19, 2007, p. 4, www.robarner.com/usedoil.html.

[29] Arner, Robert, "2006 Used Oil Recycling In America," Presented Before the 22nd International Conference on Solid Waste Technology and Management, March, 19, 2007, p. 3, www.robarner.com/usedoil.html.

[30] U.S. EPA, Office of Solid Waste and Emergency Response, "Household Hazardous Waste Management," EPA 530-R-92-026, August, 1993.

household hazardous waste, many of which are in fully concentrated form, or are not encapsulated or bound-up to prevent contaminant release.

In fact, interviews with leading commercial waste management firms indicate that: 1) over the past 15 years all major firms have established separate programs or divisions dedicated to household hazardous waste collection; and, 2) the trends in household hazardous waste collection has been “dramatic” since the early 1990's. Most firms experienced a 4% yearly increase in household hazardous waste collection since 1995, for an overall increase of approximately 60% over this period.[31]

The assertion that consumers will shun any products employing coal combustion residuals (CCR), even those such as cement or wallboard which are encapsulated uses of CCR, because of an alleged stigma associated with treating disposed CCR wastes as hazardous is simply untenable. All available evidence points to the fact that consumers purchase, properly manage, and are increasingly recycling full strength, non-encapsulated chemicals found throughout the home, workshop and garage – including chemicals subject to regulation under RCRA.

[31] Interviews with sales managers of various commercial waste management firms.

IV. CALIFORNIA'S USED OIL RECYCLING PROGRAM, WHICH LISTS USED OIL AS A HAZARDOUS WASTE, HAS A HIGHER BENEFICIAL REUSE RATE THAN THE FEDERAL PROGRAM WHICH, WITH LIMITED EXCEPTIONS, DOES NOT LIST USED OIL AS HAZARDOUS

Perhaps the most striking evidence that listing a used material as a hazardous waste does not stigmatize that material and depress its reuse – even when that material is a consumer product used in residential contexts – is California's used oil program. California classifies used oil as a hazardous waste.[32] Meanwhile, the volume and rate of used oil recycling in California has increased virtually every year from 1995 through 2005, the last year for which complete data is available. **Table 7** depicts these trends in terms of the volume and rate of used oil recycling in the State. In 2005, California recycled used oil at a 59% rate. However, in reviewing the table, it is important to note -- for comparison with federal used oil reuse rates -- that the reuse rates expressed in **Table 7** do not include burning used oil for energy recovery as a form of recycling/reuse. The State estimates that, if one includes used oil that is recycled/reused by burning for energy recovery, California's reuse rates would increase by another 20 to 40 percent of total used oil volume. Thus, in 2005, if one includes burning used oil for energy recovery, the recycling/reuse rate would be at least 79% and potentially much higher.

TABLE 7: California Used Oil Recycling Rates 1995-2005[+++]

	1995	1997	1999	2001	2003	2005
Lube Oil Sales[+] (M gal)	140.8	137.5	150.0	163.6	150.2	153.3
Lube Oil Recycled (M gal)	54.6	60.9	76.9	81.9	83.7	91.3
Recycling Rate[++]	39% (59%)	44% (64%)	51% (71%)	50% (71%)	58% (78%)	59% (79%)

[+] Reflects only volumes of lubricating oils, not industrial oils.

[++] Lube oil recycling rate does not account for oil that is burned or spilled during use which is estimated at 20-40%. Figures in parenthesis ( ) represent the addition of the low end of this 20-40% range to the documented recycling rate.

[+++] Calrecycle, "Used Oil Recycling Rate Annual Report: 2005," www.calrecycle.ca.gov/usedoil/RateInfo/

In comparison, the Federal RCRA program does not list used oil as a hazardous waste. Notably, as **Table 8** reveals, in 1992, approximately 1.35 billion gallons of used oil were generated in the U.S., of which only approximately 63 percent or 850 million gallons were recycled (this figure does include recycling through burning for energy

[32] American Petroleum Institute, Used Motor Oil, Frequently Asked Questions, 2010, www.recycleoil.org/faqs/index.html

recovery – in fact, the vast majority -- 90 percent -- was recycled by burning for energy recovery).[33]

Fourteen years later, the Department of Energy conducted a survey of the used oil generation and management methods and determined that in 2006, 1.37 billion gallons of used oil was generated of which approximately 780 million was used as a fuel, 165 million was re-refined, for a total recycle rate of only about 69% – while the remaining 426 million gallons were annually disposed of in landfills or improper locations.[34]

TABLE 8: Used Oil Management Trends in the U.S. 1992- 2006

Year	Total Volume Generated (Gallons) (1) *	Total Volume Recycled (Gallons) (2) **	Volume Burned Fuel (Gallons) (3)	Volume Re-Refined (4)	Total Volume Disposed (5)	Total Recycle Rate (6) ***	Re-Refining Rate (7) +
1992	**1.35 B**	**850 M**	765 M	85 M	**500 M**	63%	6.3%
2006	**1.37 B**	**945 M**	780 M	165 M	**426 M**	69%	12.0%

* Column (1) = Columns (2) + (5)
** Column (2) = Columns (3) + (4)
*** Column (6) = Column (2) ÷ Column (1)
\+ Column (7) = Column (4) ÷ Column (1)

Thus, at the very least, the California Used Oil Recycling/Reuse Rate -- including burning – is substantially greater (at least 79% and potentially as high as a 99% recycling rate) than that which is occurring on a national basis (69%), despite, and most likely because of the fact that the material is listed as a "hazardous waste" in California.

Just as important for present purposes is that the "hazardous" material at issue is being reused in a consumer product purchased retail for commercial and residential applications, such as personal automobile use. The experience in California therefore indicates that consumers will in fact purchase consumer products derived from a waste listed as "hazardous" – they do it each time they purchase oil for their cars that has been through the recycling process.

[33] Used Oil Recycling Markets and Best Management Practices In The United States," Presented To The National Recycling Congress, Boston, Massachusetts, October 27, 1992, p. 50.

[34] U.S. Department of Energy, "Used Oil Re-Refining Study To Address Energy Policy Act Of 2005, Section 1838, " 2006, p. 5-1.

This is affirmative evidence that “stigma” has not attached to the used oil recycling industry in California to deter or diminish the willingness of retail consumers to purchase consumer products containing that “hazardous” material. To the contrary, they readily purchase oil that was recycled – that is, oil that was derived from a listed hazardous waste (used oil), and that they then recycle again. If anything, the State’s “hazardous waste” based used oil recycling program has resulted in even more robust recycling program than one sees on the national level.

V. INDUSTRIES' ARGUMENTS THAT RCRA REGULATION WILL REDUCE BENEFICIAL REUSE AND RECYCLING ARE UNFOUNDED AND UNORIGINAL

A. Background

In the context of the pending coal combustion residuals (CCR) rulemaking, opponents of EPA's proposed approach have argued that listing of any coal combustion residuals as "hazardous waste" under RCRA will reduce the beneficial reuse and recycling of material. To this end, opponents have asserted that, for example, applying the label of "hazardous" to a material will create an adverse public perception or "stigma" that will reduce the public's willingness to purchase products made from the material.[35] They have also asserted that regulating a material under RCRA will result in such additional regulatory burdens that industry will not be willing to recycle the material, or that the recycled product will be disadvantaged or "stigmatized" by virtue of higher production costs due to RCRA compliance requirements. These arguments are referred to variously as "stigma" and/or "regulatory burden" type arguments, the essence of which is that regulating a material as "hazardous" under RCRA will inherently discourage its use particularly in recycling applications.

In this rulemaking, opponents of listing CCR wastes under subtitle C assert both types of arguments. For example, the American Coal Ash Association (ACAA) has asserted that listing CCR wastes under Subtitle C would result in an adverse public perception and an unwillingness to use the product and depress beneficial reuse and recycling of the product.[36] Similarly, the National Ready Mix Concrete Association (NRMCA) has argued that listing CCR wastes under Subtitle C would result in significant additional regulatory burdens that would depress beneficial reuse.[37]

As discussed above, empirical data over the last thirty years of RCRA rulemaking demonstrates the fallacy of Industry's arguments that RCRA regulation will depress

---

[35] EPA has made several attempts over the years to address the "hazardous waste" label aspect of the "stigma" argument, but to no avail. While most proponents of recycling-related stigma assert that it is only the "hazardous waste" label that they object to; in reality it is the substantive requirements for hazardous waste facilities that are frequently the source of their objection. **See Appendix B**; Statements of API (1983), Cadence (1986), Lafarge (1987), and Horseheads (1995).

[36] See Webinar conducted by Citizens for Recycling First, ACAA, NRMCA, and NPCA on August 19, 2010, concrete_products_webinar__81910.pdf. **See** in particular the presentation of ACAA.

[37] See Webinar conducted by Citizens for Recycling First, ACAA, NRMCA, and NPCA on August 19, 2010, concrete_products_webinar__81910.pdf. **See** in particular the presentation of NRMCA complaining that as a result of the RCRA listing of CCR, states would establish stricter management laws. **See** also transcript of August 30, 2010, EPA Public Hearing on the Proposed CCR Rule in which industry witnesses discussed the "burdensome" nature of RCRA's regulatory requirements in the event of a Subtitle C listing and the potentially costly impact on their recycled product.

beneficial reuse and recycling. Beneficial reuse and recycling has increased after a material is regulated under RCRA Subtitle C. Direct comparisons between markets where the same or similar material is regulated as hazardous in one, and not regulated as hazardous in the other – examples such as electric arc furnace dust and used oil – demonstrate that the beneficial reuse/recycling/reclamation of the material is higher in those areas where the material is regulated as a hazardous waste. Indeed, to a large extent, many recycling markets would not exist, but for hazardous waste regulations [**See Section II** above].

What makes industry's argument even more untenable in this case is that EPA is not, in fact, proposing to list as hazardous CCR that is beneficially reused. To the contrary, EPA is only proposing to list CCR as hazardous if, and when, it is disposed of. Not only does this negate the argument that EPA's proposal to regulate CCR will result in an adverse public perception or stigma – because, in fact, no "hazardous" label will be applied to reused CCR–but moreover, it creates an even stronger incentive for industry to reuse the materials and not dispose of it as waste. Industry's efforts to stretch the stigma argument to CCR material that will not even be labeled as hazardous is both unprecedented and absurd. Usually "stigma" is a self-serving smokescreen to preserve an unregulated status quo. In this case utilities are attempting to avoid RCRA regulation of their disposal practices which, based on science and risk, is indefensible. Therefore, they have tried to move the argument away from disposal to the purported negative impact on beneficial use by arguing "stigma."

The balance of this section: 1) tracks industry's repeatedly false assertions over the last 30 years that RCRA regulation will depress beneficial reuse and recycling; and, 2) provides information as to what actually happened when the materials were regulated. Not once have claims of stigma ever been realized in the hazardous waste marketplace. Industry's claims in this regard are nothing short of RCRA's equivalent of the "boy crying wolf." **Section C** below and **Appendix B** provide detailed examples of the false claims of "stigma" over the past 30 years – claims which are both unfounded and unoriginal.

B. Even Opponents Of Subtitle C Regulation of CCR's Acknowledge That Beneficial Reuses of Fly Ash Will Be Largely Unaffected by the Rule. Promises of Better Management Practices Are 30+ Years Old

1. The August, 2010 Industry Webinar

On Friday, August 19, 2010, a consortium of groups opposed to the regulation of CCR under Subtitle C conducted a "webinar" under the auspices of a group entitled, "Citizens For Recycling First," chaired by John Ward. This Webinar produced some interesting, if not ironic results. Presentations were made by the following groups: Citizens For Recycling First, ACAA (American Coal/Ash Association), the NRMCA (National Ready Mixed Concrete Association), and the NPCA (National Precast Concrete Association).

Both the NRMCA and NPCA conducted surveys of their members regarding the impact of a Subtitle C listing of disposed of CCR residuals. In response to a question from the NRMCA to its membership regarding whether they would continue to use fly ash in their products if CCR's were listed as a Subtitle C waste when disposed, 69 percent responded affirmatively.[38]

In addition, in response to a question from the NPCA to its membership, 84 percent of surveyed participants indicated they would still use fly ash even if the EPA designated it as a Subtitle C hazardous waste.[39]

2. March, 1979 Comments of the National Ash Association

Assertions regarding the recyclable nature of fly ash and assurances by ash generators to regulate themselves date back to 1979. Ironically, in 1979 the National Ash Association in its comments on the very first RCRA rulemaking stated:

> "Power plant ash is becoming available in greater quantities in more locations across the country, the quality is improving, and acceptability continues to increase. We are dealing with a recoverable resource and not a discarded material. . . .What we are really trying to point out is that the ash industry has demonstrated the capability of initiating an effective ash management program . . . ."[40]

Thirty years later, 64% of coal combustion residual (CCR) is still simply being disposed of in landfills, surface impoundments or caves and mines, rather than recycled.[41] Damage incidents from improper disposal, and some recycling operations continue to mount.[42] The utility industry has failed to institute any industry-wide minimum standards of practice to prevent damage as such has occurred at the TVA. Properly regulated CCR, which will put a higher price on disposal, will provide the economic incentives needed to increase, not decrease, the recycling of fly ash, and reverse this 30+ year pattern of excessive dependence on sub-standard landfills, lagoons and piles.

---

[38] "Coal Ash as Hazardous Waste," NRMCA response, Lionel Lemay, Senior Vice President Sustainable Development, Presentation At Industry Webinar, August 19, 2010, p. 14.

[39] Presentation of National Precast Concrete Association, Claude Goguen, Director of Technical Services, Industry Webinar, August 19, 2010, p. 9.

[40] RCRA Docket EPA-HQ-RCRA-1980-002, Docket ID # A-D1-TT-01000, pp. 1 - 2.

[41] **See** 75 **FR** 35128, 35151 (June 21, 2010); CCR Proposed Rule.

[42] Stant, Jeff, "Out of Control: Mounting Damages from Coal Ash Waste Sites," Environmental Integrity Project and Earth Justice; Feb. 24, 2010.

C. What They Said About "Stigma" and What Really Happened in the Marketplace

In order to examine the veracity of "stigma" claims attributable to recycling-related regulations under RCRA, a thorough review of major RCRA recycling-related rulemakings since 1979 was conducted. These assertions were then compared with what actually happened in the hazardous waste marketplace regarding the recycling practices in question. In short, this analysis reveals that claims of "stigma" associated with recycling-related rulemakings under RCRA are wholly unfounded and baseless. Not once have any of these claims come to pass. Not only are these claims untrue, but in many cases the exact opposite result was witnessed in the marketplace compared to the contentions of the industry.

Immediately below, four examples of "stigma" claims that closely approximate the ones being made in the CCR rulemaking are contrasted with what actually happened in the hazardous waste marketplace.

1979 – Phoenix Cement Company: In commenting on EPA's first proposed RCRA regulation, which would have potentially regulated some forms of recycling including burning hazardous waste for energy and/or materials recovery, Phoenix Cement in their comments stated as follows:

> "Instead, the harsh 'cradle to grave' regulations that are proposed by EPA would impose regulatory costs and administrative burdens that will permanently discourage producer interest in recycling. . . .Also, individuals, private industry and governmental agencies will totally avoid any items carrying the 'hazardous waste' label even if the application is termed environmentally safe."[43]

Subsequently, EPA regulated burning hazardous wastes for recovery. Today, burning hazardous waste in cement kilns for energy and/or materials recovery is a major method of thermal processing of hazardous waste, despite a series of strict operational and MACT emission control standards issued throughout the 1980's, 1990's, and 2000's. In 2007, approximately 1.1 million tons of hazardous wastes are burned in commercial cement kilns compared to 0.6 million tons burned in commercial incinerators.[44] Clearly industry's assertion that stricter recycling rules would "permanently discourage" burning for recovery proved false.

---

[43] RCRA Docket EPA-HQ-RCRA-1980-002; Docket ID #: A-D1-TT-01120, p. 2. Comments of the National Ash Association, Marcy 14, 1979.

[44] 2007 National Biennial RCRA Hazardous Waste Report. **See** also www.epa.gov/epawastes/hazard/tsd/td/combustion.htm.

1983 – Cadence Chemical Resources (CCR): In a 1983-85 rulemaking to revise RCRA's "Definition of Solid Waste," extending RCRA jurisdiction to many previously exempt recycling practices, including fuel blending and burning for energy recovery, Cadence Chemical stated: "To label the primary result of such effort [fuel blending to produce a hazardous waste-derived fuel] as 'waste" or employing a euphemism such as 'regulated recyclable materials' as is done in Proposed Section 261.6, would be a significant disincentive for future development of bonafide recycling of energy-bearing residuals. This is because designating residual-derived products as 'waste' or 'regulated recyclable materials' would exacerbate the already negative and highly volatile public perception of such materials."[45]

EPA moved forward with its regulations and again industry's dire predictions that EPA's proposed regulations would depress beneficial use proved false. Despite a series of increasing stringent regulations on fuel blending and burning for energy recovery throughout the 1980's and 1990's, by 2007 burning for energy recovery combined with blending of waste-derived fuels emerged as the dominant method of hazardous waste recycling, accounting for 2.5 million tons of hazardous waste managed in 2007.[46]

1985 – Halogenated Solvents Industry Alliance (HSIA): The HSIA, which represented most of the largest chemical companies in the country, opposed EPA's 1985 attempt to establish a stopgap measure to distinguish between burning for energy recovery, which was unregulated at the time, and incineration which was fully controlled. The proposal stated that burning any waste materials with less than 4,000 BTUs per pound would be deemed to be "burning for destruction" and would be regulated as incineration until such time as formal and comprehensive standards for burning hazardous waste in boilers and industrial furnaces (BIFs) were proposed in 1987 and issued in the 1991.[47] In proposing these standards for burning some of the most toxic and potentially carcinogenic solvents, (i.e., perchloroethylene, trichloroethylene and chloroform), the HSIA grabbed for a familiar argument, "stigma":

> "The labeling of these blended fuels as 'hazardous waste fuels' is not only unnecessary, but counterproductive to encouraging this beneficial and effective means of reducing or eliminating any risk that might be related to other disposal."[48]

---

[45] RCRA Docket: EPA-HQ-RCRA-1985-006; Docket ID#: A-DW-16-00003; p. 21.

[46] The National Biennial RCRA Hazardous Waste Report, 2007, Exhibit 2.5. Combination of Fuel Blending and Energy Recovery volumes. Combined Volume is the largest of any recycling method surveyed in the 2007 Biennial Report.

[47] 56 **FR** 7208 (Februrary 21, 1991). The original Boiler and Industrial Furnace Rule (BIF Rule); Final Rule.

[48] RCRA Docket: EPA-HQ-RCRA-1985-0002, Docket ID#: BWOF002, Slide 1337, p. 3

Once again, industry's arguments proved false. The solvent manufacturing and recovery industries were affected by numerous RCRA rulemakings throughout the 1980's, including the BIF rule. Despite these regulations, both energy recovery and solvent recovery are flourishing. According to the 2007 Biennial Report there were 456 separate solvent recovery facilities, accounting for 32.7% of all RCRA hazardous waste management facilities in existence. Moreover, given the fact that a relatively smaller total volume of hazardous waste (i.e., 329,000 tons) are managed via "Solvent Recovery" indicates that many of the 456 facilities engaging in the recovery of this 329,000 tons of solvent are relatively small recovery operations. Apparently, even small recycling operations are not "stigmatized" by RCRA's regulatory requirements.[49]

1996 – American Petroleum Institute (API): In 1995, EPA proposed to list various refinery residuals as hazardous waste, including several spent catalysts the refining process. 60 **FR** 57747 (Nov. 20, 1995). Virtually without exception every member of the petroleum industry predicted that listing spent catalysts would discourage if not fully undermine recovery of these catalysts. Along with BP, Exxon Mobil and others, the trade association for the petroleum industry, the American Petroleum Institute, invoked "stigma" once again:

> In addition, listing of these residuals could actually discourage additional or innovative recycling/reclamation practices. . . Designating these materials as listed hazardous waste would discourage existing recycling and further increase the costs of recycling relative to disposal.[50]

This did not happen. In fact, In 2007, over 80% of refinery catalysts that were listed as hazardous under RCRA were recycled, not disposed.[51] **Appendix B** chronicles the many additional, and amiss, claims of "stigma" in RCRA rulemakings beginning in 1979.

D. Even Major Proponents of "Stigma" Such as the Cement Industry Acknowledge that this Factor Plays No Role in Business Decision Making

One of the most frequent advocates of "stigma" in recycling-related rulemakings has been the cement industry. Since 1979, the cement industry has been asserting "stigma" virtually whenever EPA has proposed to regulate any aspect of its operations involving the burning of hazardous waste for either energy or materials recovery.[52] In

---

[49] 2007 RCRA Biennial Report, Exhibits 2.6 and 2.7.

[50] RCRA Docket: EPA-HQ-RCRA-1995-0058, Docket ID#: F-95-PRLP-00046, pp. 2, 101.

[51] **Table 3** above, 2007 RCRA Biennial Report Survey Database.

[52] See **Appendix B**, comments of Phoenix Cement, Portland Cement Association, Lafarge Corporation, and Cadence Chemical.

the pending CCR rulemaking the cement industry has resurrected the "stigma" stalking horse once again.[53] In fact, it is difficult to find a RCRA rulemaking of any kind where someone in the cement industry didn't summon a claim of "stigma."[54]

For the record, not one of these many claims of "stigma" by the cement industry has ever been realized. Even when commercial hazardous waste incinerators, which compete with cement kilns in the hazardous waste combustion marketplace, tried to "stigmatize" the cement produced by plants that burn hazardous waste as a fuel, there was no perceptible marketplace impact whatsoever from these efforts. If anything, there was a backlash against the incinerator consortium.

Moreover, when cement kilns have announced decisions to cease burning hazardous waste fuels in some of their facilities, "stigma" is never mentioned as a reason for ceasing this hazardous waste management practice. While some cement kilns have cited the MACT standards and their related compliance costs as a basis for ceasing to burn hazardous waste, stigma has never been mentioned. If "stigma" were as potent a force as the cement industry repeatedly contends, one would expect that they could produce a bounty of press releases, customer letters, supplier letters, and/or SEC 10-K filings that identified "stigma" as the basis for ceasing their recycling activities. Such releases and filings do not exist because "stigma" has never played such a role.

For example, this past summer TXI, formerly known as Texas Industries, announced that it would close four of its oldest cement kilns and stop burning hazardous waste fuel altogether.[55] A TXI company spokesperson stated that the decision was "based on its desire to boost efficiency in preparation for a recovery in the North Texas construction market." The TXI spokesperson even went so far as to say that new impending Federal MACT rules governing toxic air emissions from [non-hazardous waste burning] cement kilns did not contribute to the decision. Thus in this case there was "no stigma" from the CCR rule, not even an impact from pending Clean Air Act (MACT) regulations; simply a desire to boost overall production efficiency.

---

[53] Letter from Richard Stoll to Matt Hale, "Concerns over 'Stigma' for Coal Combustion Products," August 7, 2009.

[54] In addition to the various rulemakings identified in **Appendix B**, the Cement Industry also raised the specter of "stigma" when EPA proposed to regulate cement kiln dust (CKD) as "hazardous" under RCRA. 64 **FR** 45632 (Aug. 20, 1999); Proposed Rule. 67 **FR** 48648 (July 25, 2002); NODA. RCRA Docket ID: F-1999-CKD-FFFFF. See also Kelly, Kathryn, "Is CKD Hazardous to Your Health," Cement Americas, March 1, 2000.

[55] "TXI to Shut Four Older Cement Kilns, Quit Burning Hazardous Waste," The Dallas Morning News, July 7, 2010; www.dallasnews.com.

E. "Stigma" Under RCRA Is Illegal

In 1986 EPA issued a final decision not to list recycled oil as hazardous waste because the stigmatic effect of such a listing would discourage recycling.[56] Despite its own report indicating that certain types of used oil should be listed as hazardous waste because of various toxic constituents, EPA failed to act on its own determinations. As a result in the 1984 HSWA, Congress adopted Sections 241-242 requiring EPA to decide within a specified time whether to list used oils as hazardous.

EPA's decision not to list used oil because of "stigma" was challenged by The Hazardous Waste Treatment Council (HWTC),[57] petroleum refining organizations and the Natural Resources Defense Council. In its opinion, the Court ruled unanimously, stating tersely that:

> The EPA erroneously based its decision not to list recycled oils as hazardous waste on the stigmatic effects of such a listing, a factor not permitted by the statute.[58]

---

[56] 51 **FR** 41900 (November 18, 1986), Used Oil Listing; Final Rule.

[57] I was the Executive Director of the HWTC at the time.

[58] 861 F.2d 270 (D.C. Cir. 1988), *Hazardous Waste Treatment Council v. EPA* (HWTC I). Used Oil Recycling Litigation.

APPENDIX A

I. QUALIFICATIONS

A. Overall Experience

I have over 30+ years experience in developing and implementing waste management policies involving solid, hazardous and radioactive wastes. I have developed key legislative provisions, implemented them for nearly 30 years, and witnessed firsthand regulated industry's response to statutory and regulatory directives of RCRA and CERCLA and the Clean Water Act (CWA). I have testified at over 20 Congressional hearings; organized eight other hearings while serving on the House Energy and Commerce Committee Staff; organized 12 national and regional conferences on hazardous waste policy and technology issues since 1984; and, been admitted as a RCRA/CERCLA and industry practices expert in Federal and State court and in an EPA Administrative Law proceeding.

I was a principal architect of the cornerstone elements of the 1984 Hazardous and Solid Waste Amendments (HSWA), including the "hammer" provision[59] as well as Corrective Action, the Land Disposal Restriction, and Burning and Blending Provisions. I led the nation's leading association of technology-based waste management firms, the Hazardous Waste Treatment Council (HWTC), for 11 years. HWTC members included hazardous waste incinerators, cement kilns, fuel blenders and other major solvent and metal-bearing waste recyclers. In addition, I authored a book on RCRA and the 1984 HSWA Amendments with a forward by Sen. John Chaffee, the Floor Manager of the HSWA, and co-authored by Dave Lennett, Chief RCRA Attorney for the Environmental Defense Fund (EDF) at the time. Other accomplishments include:

- As Executive Director of the HWTC, was involved in 10+ legal challenges to EPA and State interpretations of RCRA/CERCLA provisions, including a challenge which secured HSWA's "technology-based" treatment standards;[60]

- Submitted over 100 comments to Federal and State Agencies on RCRA, CERCLA, TSCA, and CWA proposed regulations;

---

[59] " RCRA: The Birth of the Hammer," The Environmental Forum, Environmental Law Institute, Washington, Vol. 7, No. 5, September/October 1990, p. 18.

[60] 62 **FR** 26041, 26058-60, (May 12, 1997), Land Disposal Restrictions Phase IV; Final Rule. "To satisfy RCRA Section 3004(m), EPA has chosen to promulgate treatment standards based on performance of 'best demonstrated available technology' (BDAT), **See** 51 **FR** 40,572, 40,578, (Nov. 7, 1988); provided such standards are not established at a point beyond which threats are minimized. **See** *Hazardous Waste Treatment Council v. EPA*, 886 F.2d 355, 361-66 (D.C. Cir. 1989) (upholding establishing technology-based treatment standards as a reasonable construction of RCRA section 3004(m), cert. denied, 498 U.S. 849 (1990) ('**HWTC III**')."

- Worked with over 200 commercial firms in navigating the waste management and remediation marketplaces; and,

- Conducted dozens of market studies in the thermal and other waste management sectors.

B. Specific Recycling Experience

In addition to these overall credentials, I have been involved in a number of specific regulatory, legal and investigatory projects regarding RCRA's Definition of Solid Waste and its recycling provisions. These accomplishments include:

- Worked for years to limit the exemptions from RCRA's Solid Waste Definition for various forms of recycling, especially use constituting disposal and burning for energy/materials recovery;

- Served as a RCRA regulatory and compliance Expert to the DOJ in a recent case involving a facility blending hazardous waste-derived fuels without a RCRA permit. Case involved the calculation of the economic benefit derived from illegal operation using the BEN Model and other methodologies;

- Commented on proposed Solid Waste Definition revisions since 1985;

- Filed the initial inquiry with EPA and the DOJ in 1986 on the legitimacy of Marine Shale Processors (MSP) recycling operation as head of HWTC. Our group initiated or participated in numerous administrative and legal proceedings at the Federal and State level to ensure proper enforcement of RCRA at MSP;[61]

- Filed a successful suit in 1987 to challenge EPA's decision to not list used oil based on "stigma." HWTC v. EPA (HWTC I);

- Authored numerous articles on RCRA policy and legislation including a 1988 article, "Escape from RCRA," in The Environmental Forum[62] which examined the impact of RCRA's recycling loopholes;

---

[61] **See** "An Assessment of Environmental Problems Associated with Recycling of Hazardous Secondary Materials," U.S. EPA, Office of Solid Waste, Appendix 2, p. 142, RCRA Docket # EPA-HQ-RCRA-2002-0031, for chronology of MSP events. **See** also Louisiana DEQ Press Release, September 18, 2006 stating that, "DEQ does not expect that [existing settlements of $6.2 M + $850,000 Letter of Credit] will be sufficient for a full remediation and will pursue other responsible parties for the remainder of the cost."

[62] The Environmental Forum, the Environmental Law Institute, Washington, D.C., May/June, 1988, p. 30;

- Participated in EPA's Solid Waste Definition Task Force in 1990, an Office of Solid Waste's initiative to reform the Solid Waste Definition as it pertained to recycling and reuse of secondary materials, and to better define *sham recycling*;

- Issued a Report with the Environmental Defense Fund on recycling loopholes in RCRA's Solid Waste Definition that was aired at a hearing of the House Energy and Commerce Committee in 1992;

- Filed several comments and actively worked with EPA to limit the use of hazardous waste as ingredients in fertilizers, particularly K061 Electric Arc Furnace (EAF) dust; and,

- Initiated numerous inquiries regarding the legitimacy of other purportedly exempt hazardous waste "recycling" practices.

APPENDIX B

"Stigma" Claims vs. Marketplace Reality – 1979 to Present

Date: March 13, 1979
Company: The National Ash Association, Inc.
RCRA Rulemaking: Original RCRA "Base Program" Rulemaking. Proposed Rule, 43 **FR** 58946, (December 18, 1978); Final Rule, 45 33066 (May 19, 1980).
Recycling Practice: General reuse of power plant ash

What They Said: "Power plant ash is becoming available in greater quantities in more locations across the country, the quality is improving, and acceptability continues to increase. We are dealing with a recoverable resource and not a discarded material. . . .What we are really trying to point out is that the ash industry has demonstrated the capability of initiating an effective ash management program . . . ."
Source: RCRA Docket EPA-HQ-RCRA-1980-002, Docket ID # A-D1-TT-01000, pp. 1 - 2.

What Really Happened: In 2008, 64% of coal combustion residual (CCR) was still being disposed of in landfills, surface impoundments or caves and mines, rather than recycled. **See** 75 **FR** 35128, 35151 (June 21, 2010); CCR Proposed Rule. Damage incidents from improper disposal, and some recycling operations continue to mount. The fly ash industry failed to institute any industry-wide minimum standards of practice to prevent damage as such has occurred in the TVA incident. While this example does not purely depict a false claim of "stigma" that was undermined by subsequent EPA regulation, it is included here as an example of the consequences of Agency acquiescence to a deregulatory argument such as "stigma" or an assurance to self-police.
Source: Stant, Jeff, "Out of Control: Mounting Damages from Coal Ash Waste Sites," Environmental Integrity Project and Earth Justice; Feb. 24, 2010.

"Stigma" Claims vs. Marketplace Reality – 1979 to Present

Date: March 14, 1979
Company: Phoenix Cement Company
RCRA Rulemaking: Original RCRA "Base Program" Rulemaking. Proposed Rule, 43 **FR** 58946, (December 18, 1978); Final Rule, 45 FR 33066, (May 19, 1980).
Recycling Practice: Burning hazardous waste for energy/materials recovery

What They Said: "Instead, the harsh 'cradle to grave' regulations that are proposed by EPA would impose regulatory costs and administrative burdens that will permanently discourage producer interest in recycling. . . .Also, individuals, private industry and governmental agencies will totally avoid any items carrying the 'hazardous waste' label even if the application is termed environmentally safe."
Source: RCRA Docket EPA-HQ-RCRA-1980-002; Docket ID #: A-D1-TT-01120, p. 2.

What Really Happened: Burning hazardous waste in cement kilns for either energy and/or materials recovery as a major method of thermal processing of hazardous waste, despite a series of strict operational and MACT emission control standards issued throughout the 1980's and 1990's. For example, with regard to commercial facilities, in 2007, approximately 1.1 million tons of hazardous tons of hazardous wastes are burned in commercial cement kilns compared to 0.6 million tons burned in commercial incinerators.
Source: 2007 National Biennial RCRA Hazardous Waste Report. **See** also www.epa.gov/epawastes/hazard/tsd/td/combustion.htm. **See** (*) at end of **Appendix B** describing methodology for calculating 1.1 m ton and 0.6 m ton volumes.

Date: December 1, 1981
Company: National Association of Recycling Industries, Inc. (NARI)
RCRA Rulemaking: Definition of Solid Waste Rulemaking. 48 **FR** 14471 (April 4, 1983); Proposed Rule. 50 **FR** 614 (January 4, 1985); Final Rule.
Recycling Practice: All recycling practices generally.

What They Said: NARI was commenting on the EPA's 1983-85 proposal to extend RCRA jurisdiction to a broader range of recycling practices that heretofore had been excluded from RCRA. In this regard NARI stated, "In any event, it is imperative for EPA effectively to exclude recyclable and recycled materials from the definition of 'solid waste' for the following reasons..."
Source: RCRA Docket, EPA-HQ-RCRA-1985-0006; Docket ID#: A-DW-11-00050, p. 1

What Really Happened: Despite extending RCRA regulation to a broad array of hazardous waste recycling practices in 1985, recycling is expansive and growing.
Source: **See** Tables 2, 3, and 4 above.

"Stigma" Claims vs. Marketplace Reality – 1979 to Present

Date: July 28, 1983
Company: Chemical Industries Council (CIC)
RCRA Rulemaking: Proposed Definition of Solid Waste Rulemaking. 48 **FR** 14471 (April 4, 1983); Proposed Rule. 50 **FR** 614 (January 4, 1985); Final Rule.
Recycling Practice: All recycling practice employed within the chemical industry at the time.

What They Said: CIC commented on EPA's 1983-85 proposal to extend RCRA jurisdiction to a broader range of recycling practices that heretofore had been excluded from RCRA. Regarding EPA's proposed actions, CIC stated, "More importantly, however, we believe the EPA proposal will be a strong deterrent to recycling and will thus result in more waste being generated. The concept that recycling is a waste treatment operation places a stigma in their communities on recyclers and on those wishing to use such facilities or conduct such activities onsite incidental to manufacturing operations."
Source: RCRA Docket: EPA-HQ-RCRA-1985-0006; Docket ID#: A-DW-2-XXXXX, Frames 0598-0602, p. 2.

What Really Happened: In 2007 only 4 of the 563 RCRA waste codes reported no recycling activity for that reporting year. Over 99% of RCRA waste codes reported at least some level of recycling during the 2007 biennial reporting period.
Source: **See** Table 4 above.

"Stigma" Claims vs. Marketplace Reality – 1979 to Present

Date: August 1, 1983
Company: Cadence Chemical Resources, Inc.
RCRA Rulemaking: Definition of Solid Waste Rulemaking. 48 **FR** 14471 (April 4, 1983); Proposed Rule. 50 **FR** 614 (January 4, 1985); Final Rule.
Recycling Practice: Fuel blending/burning for energy recovery

What They Said: In a 1983-85 rulemaking to revise RCRA's "Definition of Solid Waste," extending RCRA jurisdiction to many previously exempt recycling practices, including fuel blending and burning for energy recovery, Cadence Chemical stated: "To label the primary result of such effort [fuel blending to produce a hazardous waste-derived fuel] as 'waste" or employing a euphemism such as 'regulated recyclable materials' as is done in Proposed Section 261.6, would be a significant disincentive for future development of bonafide recycling of energy-bearing residuals. This is because designating residual-derived products as 'waste' or 'regulated recyclable materials' would exacerbate the already negative and highly volatile public perception of such materials."
Source: RCRA Docket: EPA-HQ-RCRA-1985-006; Docket ID#: A-DW-16-00003; p. 21.

What Really Happened: Despite a series of increasing stringent regulations on fuel blending and burning for energy recovery throughout the 1980's and 1990's, by 2007 burning for energy recovery combined with blending of waste-derived fuels was the most dominant method of recycling by volume, accounting for 2.5 million tons of hazardous waste managed in 2007, or more than any other method of recovery/recycling identified by the Biennial Report Survey.
Source: The National Biennial RCRA Hazardous Waste Report, 2007, Exhibit 2.5.

"Stigma" Claims vs. Marketplace Reality – 1979 to Present
Date: August 2, 1983 **Company:** American Petroleum Institute (API) **RCRA Rulemaking:** Proposed Definition of Solid Waste Rulemaking. 48 **FR** 14471 (April 4, 1983); Proposed Rule. 50 **FR** 614 (January 4, 1985); Final Rule. **Recycling Practice:** Petroleum waste recycling **What They Said:** API was commenting on the EPA's 1983-85 proposal to extend RCRA jurisdiction to a broader range of recycling practices that heretofore had been excluded from RCRA. In this regard API stated, "In order to mitigate the impact on recycling activities, EPA has designated 'hazardous waste' that are used, reused or reclaimed as 'regulated recyclable materials'. We oppose this approach for several reasons. First, the impact of recycling will be significant regardless of the new title EPA gives these materials because they would be subject to potentially expensive regulatory requirements." **Source:** RCRA Docket: EPA-HQ-RCRA-1985-0006; Docket ID#: AA-DW-5-00106. **What Really Happened:** Despite listing numerous petroleum refinery wastes as "hazardous" under RCRA and subjecting many petroleum waste recycling practices to separate regulations, petroleum wastes remain one of the most frequently recycled wastes generated by any industry in the U.S. Nearly 80% of refining sludges/catalysts are recycled according to the 2007 Biennial Report data. **Source:** **See Tables 3, 4** above.

"Stigma" Claims vs. Marketplace Reality – 1979 to Present

Date: March 12, 1985
Company: The Halogenated Solvents Industry Alliance (HSIA)
RCRA Rulemaking: Hazardous Waste as Fuel Specification. 50 **FR** 1684 (January 11, 1985); Proposed Rule 50 **FR** 49164 (November 29, 1985); Final Rule.
Recycling Practice: Solvent recovery and burning wastes fuels.

What They Said: The HSIA, which represented most of the largest chemical companies in the country, opposed EPA's 1985 attempt at established a stopgap measure to distinguish between burning for energy recovery, which was unregulated at the time, and incineration which was fully controlled. The proposal stated that burning any waste materials with less than 4,000 BTUs per pound would be deemed to be "burning for destruction" and would be regulated as incineration until such time as formal and comprehensive standards for burning hazardous waste in boilers and industrial furnaces (BIFs) were issued in the late 1980's. In proposing these standards for burning some of the most toxic and potentially carcinogenic solvents, (i.e., perchloroethylene, trichloroethylene and chloroform), the HSIA grabbed for a familiar argument, "stigma": "The labeling of these blended fuels as 'hazardous waste fuels' is not only unnecessary, but counterproductive to encouraging this beneficial and effective means of reducing or eliminating any risk that might be related to other disposal."
Source: RCRA Docket: EPA-HQ-RCRA-1985-0002, Docket ID#: BWOF002, Slide 1337, p. 3

What Really Happened: The solvent manufacturing and recovery industries were affected by numerous RCRA rulemakings throughout the 1980's including the burning of hazardous wastes for energy recovery. Despite these regulations, both energy recovery and solvent recovery are flourishing. The most prevalent type of hazardous waste management facility according to the 2007 Biennial Report was solvent recovery. In 2007 there were 456 separate solvent recovery facilities, accounting for 32.7% of all RCRA waste management facilities in existence. Moreover, given the fact that a relatively smaller total volume of hazardous waste (i.e., 329,000 tons) are managed via "Solvent Recovery" indicates that many of the 456 facilities engaging in the recovery of this 329,000 tons of solvent are relatively small recovery operations. Apparently, even small recycling operations were not "stigmatized" by RCRA's "onerous" and "burdensome" regulatory requirements.
Source: 2007 RCRA Biennial Report, Exhibits 2.6 and 2.7.

"Stigma" Claims vs. Marketplace Reality – 1979 to Present

Date: March 5, 1986
Company: Cadence Chemical Resources, Inc. (CCR)
RCRA Rulemaking: Hazardous Waste as Fuel Specification. 50 **FR** 1684 (January 11, 1985); Proposed Rule 50 **FR** 49164 (November 29, 1985); Final Rule.
Recycling Practice: Burning waste-derived fuels

What They Said: In response to EPA's 1985 Hazardous Waste Fuel Specification Rulemaking, Cadence once again pled their case that they should be exempt from such rules and citing among other things the stigma argument once again: "The regulation of the Cadence product as a 'hazardous waste' will discourage its production and use. Excessive and unjustifiable regulations, unnecessary permitting problems, and costly waste-end and taxes might eliminate this valuable recycling technology."
Source: RCRA Docket: EPA-HQ-RCRA-1987-0024, Docket ID#: F-1987-BBFP-S0047. A, p. 22.

What Really Happened: Burning waste-derived fuels for energy recovery has been a leading method of recycling since the mid-1980's and remains so to this day. In 2007, nearly 1.1 million tons of hazardous waste-derived fuels were burned in commercial BIFs, while 0.6 million tons were burned in commercial incinerators. In addition, Cadence Chemical Resources went on to become one of the largest and most successful hazardous waste fuel blending operations in the country. Ted Reese, Cadence President, discovered that there was life and indeed prosperity after RCRA regulation after all. Mr. Reese named his yacht after his company, "Cadence," and in 1990, 5 years after the Hazardous Waste Fuel Specification was finalized, Mr. Reese announced plans to build a new office building to house his rapidly growing company.
Source: **See** (*) at end of **Appendix B** describing methodology for calculating 1.1 m ton and 0.6 m ton volumes. **See** also www.chicagoyachtclub.org (**See** results of Heyworth Memorial Trophy race);
www.highbeam.com/doc/1N1-10852FE2B151C75E.html, "Cadence Has Bright Ideas For the Future," Post Tribune (Indiana), May 7, 1990.

"Stigma" Claims vs. Marketplace Reality – 1979 to Present

Date: June 26, 1987
Company: National Association of Solvent Recyclers (NASR)
RCRA Rulemaking: Burning Hazardous Waste in Boilers and Industrial Furnaces (BIFs) Rulemaking. 52 **FR** 16982 (May 6, 1987); Proposed Rule. 56 **FR** 7134 (February 21, 1991); Final Rule.
Recycling Practice: Burning hazardous waste for energy/materials recovery.

What They Said: In 1987, EPA proposed specific regulations on facilities burning hazardous waste in boilers and industrial furnaces pursuant to the directive of the 1984 HSWA. In their comments, NASR equated the new regulations with the specter of industrial furnaces to "cease burning hazardous waste fuel blends."
Source: RCRA Docket: EPA-HQ-RCRA-1987-0024; Docket ID#: F-1987-BBFP-00025.

What Really Happened: Burning hazardous waste in industrial furnaces became the dominant commercial method for burning hazardous waste of all kinds, dwarfing the volumes burned by permitted hazardous waste incinerators. In 2007, nearly 1.1 million tons of hazardous waste derived fuels were burned in commercial BIFs, while 0.6 million tons were burned in commercial incinerators.
Source: 2007 National Biennial RCRA Hazardous Waste Report. **See** (*) at end of **Appendix B** describing methodology for calculating 1.1 m ton and 0.6 m ton volumes.

"Stigma" Claims vs. Marketplace Reality – 1979 to Present

Date: July 1, 1987
Company: Portland Cement Association (PCA)
RCRA Rulemaking: Burning Hazardous Waste in Boilers and Industrial Furnaces (BIFs). 52 **FR** 16982 (May 6, 1987); Proposed Rule. 56 **FR** 7134 (February 21, 1991); Final Rule.
Recycling Practice: Burning hazardous waste for energy/materials recovery.

What They Said: In 1987, EPA proposed specific regulations on facilities burning hazardous waste in boilers and industrial furnaces pursuant to the directive of the 1984 HSWA. PCA in their comments stressed that the imposition of certain emission requirements would force all cement kilns to cease burning hazardous waste fuels. "An informal survey of the industry by this office indicates that virtually all cement companies would refrain from burning hazardous waste if the 100 ppm CO limit were required."
Source: RCRA Docket: EPA-HQ-RCRA-1987-0024; Docket ID#: F-1987-BBFP-0078, p. 2.

What Really Happened: After several revisions of the BIF rule, the CO limit for cement kilns was established at $\leq$100 ppm, the level that was deemed to be the death knell of burning hazardous waste fuels for energy recovery in cement kilns. Cement kilns remain the dominant method of thermal processing of hazardous waste today, burning nearly twice as much waste as commercial incinerators. While this constitutes more of a "regulatory burden" than a stigma argument, it is included for purposes of illustrating how easily and frequently recycling firms resort to hyperbole in responding to proposed regulatory requirements. The "if I am regulated, I will just quit" statement is an all too common theme in these contexts. **See** also comments of Lafarge (July 17, 1987).
Source: 2007 National Biennial RCRA Hazardous Waste Report. **See** also 56 **FR** 7208 (February 21, 1991); The BIF Rule.

"Stigma" Claims vs. Marketplace Reality – 1979 to Present
Date: July 6, 1987 **Company:** General Battery Corporation **RCRA Rulemaking:** Burning Hazardous Waste in Boilers and Industrial Furnaces (BIFs). 52 **FR** 16982 (May 6, 1987); Proposed Rule. 56 **FR** 7134 (February 21, 1991); Final Rule. **Recycling Practice:** Lead acid battery recycling. **What They Said:** General Battery Corporation was concerned that the 1987 Proposed BIF Rule would affect secondary lead smelters processing spent lead acid batteries. Their comment stated, "Increased regulation will discourage recycling. . . .It is also Exide/General Battery Corporation's belief that the increased regulation of recycling chains places stress on the system to the point that regulations act as an impediment to resource recovery and recycling. **Source:** RCRA Docket: EPA-HQ-RCRA-1987-0024; Docket ID#: F-1987-BBFP-00082, p. 4. **What Really Happened:** Despite the regulation of various aspects of lead acid battery recycling, in the most recent report, 1.30 million tons of lead acid batteries were recycled under RCRA regulation in 2007. The Solid Waste Association of North America (SWANA) estimated that in 2003 over 93% of automotive lead acid batteries were recycled. **Source:** 2007 RCRA Biennial Report, FOIA Request # HQ-FOI-01815-10. **See Table 2** above. **See** also "Waste Recycling," Solid Waste Association of North America (SWANA), Silver Spring, MD, 2008; Presentation of Dr. Reinhart.

"Stigma" Claims vs. Marketplace Reality – 1979 to Present

Date: July 17, 1987
Company: Lafarge Corporation
RCRA Rulemaking: Burning Hazardous Waste in Boilers and Industrial Furnaces (BIFs). 52 **FR** 16982 (May 6, 1987); Proposed Rule. 56 **FR** 7134 (February 21, 1991); Final Rule.
Recycling Practice: Burning waste derived fuels for energy recovery

What They Said: In their comments on the Proposed1987 BIF Rule, Lafarge, one of the largest cement kiln processors of hazardous waste derived fuels, cautioned that unless the BIF rules were substantially modified it would effectively bring about the end of hazardous waste derived fuel burning in cement kilns. "Responsible operators, such as fully permitted cement kilns, which may already have final Part B hazardous waste storage permits and state air permits, would be forced out of business [by the proposed BIF regulations]. This would have significant adverse effects on treatment capacity and environmental quality."
Source: RCRA Docket: EPA-HQ-RCRA-1987-0024; Docket ID#: F-1987-BBFP-00122, p. 38.

What Really Happened: Even after the BIF Rule was enacted in 1991, Lafarge continued to burn hazardous waste at all five of its cement producing plants in Alabama, California, Kansas, Michigan and Ohio. Lafarge remains one of the largest, if not the largest, single cement kiln processor of hazardous waste-derived fuels today.
Source: Various SEC 10-K Filings.

"Stigma" Claims vs. Marketplace Reality – 1979 to Present

Date: April 18, 1995
Company: Horsehead Resource Development Company, Inc.
RCRA Rulemaking: Use of Slag Residues Derived from HTMR Treatment of K061, K062, and F006 Waste. 59 **FR** 67256 (December 29, 1994); 60 **FR** 10052 (February 23, 1995); Proposed Rules.
Recycling Practice: Metals recovery from steel industry wastes

What They Said: In 1994, EPA proposed to regulate the use of slag residues derived from high temperature metal recovery treatment of electric arc furnace dust and related metal bearing wastes. 59 Fed Reg 67256 (Dec. 29, 1994). Despite establishing a relatively permissive regime for the management of these slag residues, the largest such recycler of K061 Electric Arc Furnace (EAF) dust envisioned an end to its recycling practice unless the slag was effectively exempt from all RCRA controls: "The HTMR Slag Product Rulemaking does contain several serious errors and inconsistencies and shortcomings, however, which will render EPA's Proposed Exclusion unnecessarily stringent and largely meaningless. Such a result would increase resource recovery and recycling costs and discourage further resource recovery and recycling, thereby frustrating EPA's stated purpose of the Rulemaking. . . .The most that this Rulemaking will accomplish is to not further discourage environmentally sound recycling, but only if the Rulemaking incorporates the changes recommended in these comments.
Source: RCRA Docket: EPA-HQ-RCRA-1994-0083; Docket ID#: F-1994-SRTP-00062, pp. 14-15, 20.

What Really Happened: EPA subsequently modified and strengthened the Proposed Rulemaking to require that slags derived from high temperature metals recovery of K061 Electric Arc Furnace dust, when applied to the land, must meet the same toxicity reduction standards as when those materials are placed into a landfill. Despite this increased stringency and HRD's dire predictions, HRD remains the largest EAF recovery facility in N. America, recovering approximately 2/3 of the approximate 1.0 million tons of EAF dust produced annually in the U.S.
Source: EPA, Office of Resource Conservation and Recovery, "Assessing the Management of Lead in Scrap Metal and Electric Arc Furnace Dust; Final Report," EPA 530-R-09-004, April, 2009, p. 18.

"Stigma" Claims vs. Marketplace Reality – 1979 to Present

Date: March 19, 1996
Company: BP Oil
RCRA Rulemaking: Listing of Petroleum Refinery Process Waste as Hazardous. 60 **FR** 57747 (November 20, 1995); Proposed Rule. 63 **FR** 42110 (August 6, 1998); Final Rule.
Recycling Practice: Recovery of Refining Catalysts.

What They Said: In 1995, EPA proposed to list various refinery residuals as hazardous waste, including several spent catalysts the refining process. 60 **FR** 57747 (Nov. 20, 1995). Virtually without exception every member of the petroleum industry predicted that listing spent catalysts would discourage if not fully undermine recovery of these catalysts. BP's comments were typical of Exxon, Mobil and others. "Listing catalysts as hazardous waste also serves to discourage the beneficial practice of in-situ or ex-situ regeneration since there is little or no incentive to render the material non-pyrophoric or non-characteristically hazardous prior to removal from the unit or in subsequent management."
Source: RCRA Docket: EPA-HQ-RCRA-1995-0058, Docket ID#: F-95-PRLP-00019, p. 4

What Really Happened: In 2007, over 80% of refinery catalysts that were listed as "hazardous" under RCRA were recycled, not disposed.
Source: Table 3 above, 2007 RCRA Biennial Report Survey Database

Date: March 21, 1996
Company: American Petroleum Institute (API)
RCRA Rulemaking: Listing of Petroleum Refinery Process Waste as Hazardous. 60 **FR** 57747 (November 20, 1995); Proposed Rule. 63 **FR** 42110 (August 6, 1998); Final Rule.
Recycling Practice: Recovery of Refining Catalysts.

What They Said: Along with BP, Exxon Mobil and others, the trade association for the petroleum industry, the American Petroleum Institute, chimed in on the stigma argument asserting that, "In addition, listing of these residuals could actual discourage additional or innovative recycling/reclamation practices, and direct contravention of the stated goals of both RCRA and EPA's pollution prevention effort. . . . Designating these materials as listed hazardous waste would discourage existing recycling and further increase the costs of recycling relative to disposal.
Source: RCRA Docket: EPA-HQ-RCRA-1995-0058, Docket ID#: F-95-PRLP-00046, pp. 2, 101.

What Really Happened: In 2007, over 80% of refinery catalysts that were listed as hazardous under RCRA were recycled not disposed.
Source: Table 3 above, 2007 RCRA Biennial Report Survey Database.

"Stigma" Claims vs. Marketplace Reality – 1979 to Present

Date: February 26, 2001
Company: Copper and Brass Fabricators Council, Inc.
RCRA Rulemaking: Using Metal-bearing Hazardous Waste to Produce Zinc-containing Fertilizers. 65 **FR** 70954 (November 28, 2000); Proposed Rule. 67 **FR** 48393 (July 24, 2002); Final Rule.
Recycling Practice: Zinc fertilizers made from hazardous waste.

What They Said: In 2000, EPA proposed various requirements for zinc-containing fertilizers made from hazardous waste. 65 **FR** 70953 (November 28, 2000). In proposing this rule, the Agency established several standards for testing of the zinc-containing hazardous waste to be used as a fertilizer including limits for toxic metals and dioxins, and required that the purveyors of this practice bear the burden of demonstrating the legitimacy of this practice and its compliance with applicable regulatory requirements. Virtually without exception all industry commenters on this rule found the testing and verification requirements to be burdensome and would effectively discourage the use of this practice. The comments below are typical: "The Agency should not impose expensive dioxin testing requirements on fertilizer manufacturers when there is no need to do so. . . . By imposing unnecessary testing burdens [for toxic metals such as lead, cadmium, arsenic, mercury, nickel, chrome] on the fertilizer manufacturer using secondary hazardous materials, the Agency is at odds with the stated objective of encouraging recycling of these materials. . . . Recycling of secondary hazardous materials is further discouraged by the burden shifting provision proposed."
Source: RCRA Docket: EPA-HQ-RCRA-2000-0054; Docket ID#: F-2000-RZFP-00104, pp. 3 - 7.

What Really Happened: Use of K061 and other metal-bearing wastes to produce zinc-based fertilizers continues despite the promulgation of final standards requiring testing for various heavy metals and dioxins.
Source: Hayden, Anita, L., "Truth About Fertilizer," 2008, www.drdaymaker.com.

* **Methodology for Obtaining Data on Incineration and Cement Kiln Volumes**: The EPA Biennial Report System (BRS) was searched for volumes of waste managed by incineration and energy recovery. EPA assigns a code of H040 for management of waste by incineration and H050 for energy recovery. Another code, H061, is assigned to fuel blending for TSDFs that accept hazardous waste and blends these to make a waste mix of sufficient heat content for use as a fuel. The database was sorted for these three management method codes to identify the quantities of waste managed by incineration and energy recovery in cement kilns. To do this the section of the BRS designated for "waste received" was searched, since incinerators and cement kilns would receive the waste from off-site generators. The search was limited to the 2007 reporting year, which is the most recent data available in the BRS. Specific waste types are also assigned a unique code and it was possible to also search for specific categories of waste such as solvents, used oil and other organic materials. For example the code W202 is used for halogenated solvents and W203 for non-halogenated solvents. W206 is assigned to waste oils. A simultaneous search can be done by management method (ie incineration – H040) and waste type (ie non-halogenated solvents – W203). This allows the volume of solvents managed by incineration vs energy recovery to be evaluated. It is also possible to search by specific RCRA waste codes such as F001 to F005 solvents.