

Keven Drummond Eiber  
Attorney at Law  
Also admitted in: Florida,  
Maryland and D.C.  
Direct Dial: 216.830.6816  
keiber@brouse.com



600 Superior Avenue East  
Suite 1600  
Cleveland, OH 44114  
Office: 216.830.6830  
Fax: 216.830.6807

388 South Main Street  
Suite 500  
Akron, OH 44311  
Office: 330.535.5711  
Fax: 330.253.8601

5321 Meadow Lane Court  
Suite 7  
Sheffield Village, OH 44035  
Office: 440.934.8080  
Fax: 440.934.8115

October 15, 2015

www.brouse.com

VIA FEDERAL EXPRESS OVERNIGHT DELIVERY

U.S. Environmental Protection Agency  
Eurika Durr, Clerk of the Board, Environmental Appeals Board  
1201 Constitution Avenue, NW  
WJC East Building, Room 3332  
Washington, DC 20460

RE: *In re: Carbon Injection Systems LLC, et al.*, RCRA Appeal No. 15-009  
(*sua sponte* review of *U.S. EPA v. Carbon Injection Systems, Eric Lofquist and Scott Forster*, Docket No. RCRA-05-2011-009)

Dear Eurika:

On behalf of my clients, Respondents Carbon Injection Systems LLC, Eric Lofquist and Scott Forster (collectively, "Respondents"), and pursuant to the Board's most recent Order Enclosed for filing please find the original and a copy of the Respondents' Post-Oral Argument Brief.

If you have any questions regarding this, please contact the undersigned.

Very truly yours,

A handwritten signature in cursive script, appearing to read 'Keven Eiber', written over a horizontal line.

Keven Drummond Eiber

cc: Catherine Garypie/Jeffrey Cahn  
Eric Lofquist  
Scott Forster  
Meagan Moore

RECEIVED  
U.S. E.P.A.  
2015 OCT 16 PM 3:24  
ENVIR. APPEALS BOARD

**BEFORE THE ENVIRONMENTAL APPEALS BOARD  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC**

ENVIR. APPEALS BOARD

2015 OCT 16 PM 3:24

RECEIVED  
U.S. E.P.A.

In re: )  
) RCRA Appeal No. 15-01  
Carbon Injection Systems LLC; )  
Scott Forster, and Eric Lofquist, )  
)  
Docket no. RCRA-05-2011-0009 )  
)  
Respondents. )

**RESPONDENTS CARBON INJECTION SYSTEMS LLC, SCOTT FORSTER AND  
ERIC LOFQUIST'S POST- ORAL ARGUMENT BRIEF**

Pursuant to the Board's October 2, 2015 Order on Post-Argument Briefing, Respondents Carbon Injection Systems LLC, Eric Lofquist and Scott Forster (collectively "Respondents") submit the following additional responses to issues raised at the oral argument on October 1, 2015.

**1. What is Meant by The Term "Net" In the Context of the Assertion that Injectants Provide "No Net Heat" in the Raceway of the Blast Furnace, and Is There a "Non-Net" Effect Sufficient to Confer Jurisdiction?**

The term "net" has several definitions. In the financial sense, it means "remaining after the deduction of all charges, outlay or loss." Merriam-Webster Online Dictionary, <http://www.merriam-webster.com/dictionary/net> (last visited October 9, 2015). This is the definition that would apply to the word "net" when used in the phrases "net earnings" or "net worth." *Id.* Merriam-Webster also defines "net" as "excluding all nonessential considerations." Merriam-Webster suggests that this is the definition that would apply to the word "net" when

used in the phrases “net effect” and “net result.” *Id.* Similarly, the Cambridge online dictionary defines net result as the result after everything has been considered. Cambridge Online Dictionary, <http://dictionary.cambridge.org/us/dictionary/english/net> (last visited October 9, 2015). Respondents suggest that the term “net” as it is used in the phrases “net effect” or “net result” is more appropriate to the situation presented in this case.

In the case of a blast furnace, the net effect of introducing injectants into the blast furnace on heat is negative. This is because injectants are introduced into the raceway at a relatively low temperature, and any heat that theoretically would be generated from their partial combustion in the raceway is less than the amount of heat energy required to bring them up to raceway temperatures. (Tr., Vol. XI, pp. 2541, 2544-45). Moreover, notwithstanding the use of the phrase “net effect” or “net result” by the experts in this case, what happens to injectant material upon introduction into the raceway cannot be considered as a multi-phase or multi-stage process. The residence time is literally instantaneous. The three-stage process described in the Cadence discussion is an artificial construct that attempts to break down the process into steps for ease of explanation and understanding by laypersons. Moreover, it is a description that Region 5’s own expert rejected as not the way he would break it down. Regardless of whether the reaction can be described as either taking place in two steps or three, it ignores that, in real life and in real time, there is no pause button for the raceway. The individual “stages” that U.S. EPA described in 1985 cannot be said to have any individual or separate effect because they cannot be individual or stand-alone events. The idea that the Cadence second step (Professor Fruehan’s first step), standing alone, can form the basis for jurisdiction in this case, should be rejected.

In addition, the more credible evidence showed that the reaction stages described in Cadence and by Professor Fruehan truly are theoretical, and do not happen in the actual raceway

environment. Judge Biro evaluated the credibility of the witnesses and determined that the testimony of Respondents' experts was more credible, and was entitled to more weight, than the evidence offered by Region 5 on this subject. The most authoritative literature on the subject states as follows:

In addition, when a fuel is injected into the blast furnace, it can only burn to carbon monoxide and hydrogen. According to the laws of thermodynamics, it cannot burn to CO<sub>2</sub> and H<sub>2</sub>O in the presence of carbon at the high temperatures of the tuyere zone (3200 -4000 F).<sup>1</sup>

(RX-102, Declaration of Joseph J. Poveromo, attached to Respondents' Memorandum in Opposition to Complainant's Motion for Partial Accelerated Decision as to Liability (hereafter (Poveromo Decl."), p. 4 (*quoting*, Poveromo, J.J., *Blast Furnace Fuel Injection*, McMaster University Blast Furnace Ironmaking Course, 1994)). U.S. EPA in 1985 and Professor Fruehan, without taking into account the presence of carbon at the high raceway temperatures, claim that injectants first oxidize to carbon dioxide and water (H<sub>2</sub>O + CO<sub>2</sub>) (Cadence's "second stage" and Professor Fruehan's "first stage"). According to U.S. EPA in its Cadence discussion, "fuel injectants first behave as *bona fide* fuels by combusting to (ideally) carbon dioxide and water. The amount of sensible heat released during this combustion phase is measured by a fuel injectant's heating value in Btu/lb." (50 Fed. Reg., p. 49172). They then describe the next stage as the dissociation to hydrogen and carbon monoxide (H + 2CO) (Cadence's "third stage" and Professor Fruehan's "second stage"). EPA and Professor Fruehan both claim that the first of these two stages is exothermic, while acknowledging that taken together, the entire process is endothermic.

---

<sup>1</sup> The principle of thermodynamics referred to here is the "Boudouard Reaction" and it explains how very high temperatures like those in the raceway of a blast furnace change the exothermic effect of the reaction of hydrocarbons in presence of carbon.

Cadence and Professor Fruehan's descriptions fail to take into account that fact that this is all happening in the presence of carbon at raceway temperatures and the injectants are not preheated to those temperatures.<sup>2</sup> The raceway environment where the reaction occurs cannot simply be ignored.

U.S. EPA, in its 1985 discussion of the Cadence product, clearly acknowledged the overall net endothermic effect of using injectants, but nonetheless concluded that injectants can be said to provide heat in the raceway because one stage of the reaction is exothermic. U.S. EPA appeared to reach this conclusion because it understood that injectants are a simple substitute for coke, and coke provides the heat to the blast furnace. This last point is why U.S. EPA stated that Cadence's argument proved too much. Respondents assert, and Judge Biro concluded, that in hindsight, U.S. EPA's understanding was incorrect.

The additional flaws in U.S. EPA's 1985 factual analysis were twofold. First was its failure to account for the fact that even that stage of the reaction is not truly exothermic, in the sense of actually providing sensible heat, because the surrounding raceway temperatures are so much hotter. Moreover, the heating up of the material must occur at this stage in order for the next stage to occur, as it inevitably does given the temperatures in the raceway. The second flaw in the U.S. EPA's 1985 factual analysis was its assumption that injectants act the same way as coke in the raceway -- in other words, that injectants are true substitutes for coke. They are not. When injectants are used, more coke is burned. Less coke is used overall, but a greater proportion of that coke is used for heat energy, and less is used as a reductant. Had U.S. EPA

---

<sup>2</sup> Similarly, the excerpt of Mr. Rorick's testimony provided by the Board at oral argument, in which he states that energy is released when carbon is oxidized was simply a "standard science" statement, and, like the description of burning to H<sub>2</sub>O and CO<sub>2</sub> as being "exothermic" in the Cadence discussion, it was made without taking into account the presence of carbon and the high temperatures of the raceway per Boudouard. (See, Tr., Vol. X, pp. 2489-2490).

fully understood and considered these two points, it would not have concluded that any theoretic exothermic reactions involving injectants in the raceway provided substantial useful heat energy to the blast furnace.

In any event, U.S. EPA's conclusion in 1985 that it had jurisdiction to regulate the Cadence product did not depend solely on its singling out the one theoretic exothermic aspect of the overall effect of injectants. U.S. EPA concluded that to the extent that steel manufacturers use blast furnace top gases as fuels to heat the hot blast air, this would amount to the recovery of thermal energy sufficient to confer jurisdiction. And, with respect specifically to the Cadence product, which was a spent solvent and paint waste mixture, U.S. EPA concluded that it *also* had jurisdiction to regulate it as an inherently waste-like material. (50 Fed. Reg. 49173 ("stepping back for a moment from the intricacies of blast furnace operations, it is apparent to the Agency that the Cadence product is the type of material EPA is empowered to evaluate and regulate if necessary to protect human health and the environment"))).

For these reasons, the U.S. EPA's 1985 preamble does not compel the consideration of the "non-net" single exothermic aspect of the overall effect of injectants. The more appropriate approach, which is the approach taken by Judge Biro, considers the entire "net effect" of injectants. This approach is consistent U.S. EPA's later 1987 preamble, is consistent with the evidence that was presented at the hearing, is consistent with modern blast furnace science and technology,<sup>3</sup> and is consistent with the U.S. EPA's long-standing interpretation of the phrase "burning for energy recovery." In addition, this approach does not undermine the ultimate

---

<sup>3</sup> As the ALJ reasoned in her decision, "the industry's understanding of the operation of a blast furnace and the function of injectants has sufficiently advanced since the issuance of the final BIF Rule approximately 30 years ago that looking to the highly technical determinations rendered by the Agency at that time for guidance is less reasonable than relying upon the evidence presented by the parties in this proceeding." (Initial Decision, p. 82).

conclusion that U.S. EPA reached in 1985 regarding its jurisdiction to regulate the Cadence product as a hazardous waste.

**2. Using A "Non-net" Approach, Does The Hypothetical Exothermic Partial Combustion of Injectants in the Raceway Produce Heat That Is Either Substantial Or Useful?**

As noted by Judge Fraser at the oral argument, typical oil injectants have a recognized BTU value of approximately 17,000 BTU per pound. Just looking at the so-called "exothermic" stage on a stand-alone basis, all of this BTU value is incapable of providing sensible heat because it is not enough to make the injectants as hot, or hotter, than the surrounding environment.

Scientists and Engineers have multiple ways to characterize and measure the *capacity* of materials to provide energy. A material can be said to have a BTU value, a specific heat, a caloric value, and/or an enthalpy. The British Thermal Unit, or BTU, is the amount of heat to raise 1 lb. of water by 1° F. The calorie is the amount of heat to raise 1 gram of water by 1° C. Specific heat is the amount of heat required to change one kilogram of the material by one 1° F. But the fact that a material can be measured or characterized in these ways, or has the capacity to provide heat, does not mean that these values are in fact recovered when the material is used. For example, many oils have similar BTU values as fuel oils and could be burned for heat, but their BTU values are not recovered when the oil is used, for example, to refinish wood furniture or in fine art painting. Similarly, BTUs are not recovered from baby oil when used as a skin lotion. The BTU value of a material is recovered when the material is combusted and heat is given off. To the extent that a material is not combusted, it does not provide heat, and its BTU value provides no meaningful measure of heat recovered.

- a. *The Theoretical Amount of Heat Assumed Based on BTU Value of the Materials at Issue in this Case is Not Substantial.*

As demonstrated by the evidence presented at the hearing and as discussed above, injectants do not provide additional heat to the blast furnace and are not a substitute for coke in this regard. Nonetheless, the hypothetical question was posed whether the combustion of 30 to 40 percent of approximately 60 million gallons of oil with a BTU value of 17,000 would provide a substantial amount of heat on a "non-net" basis. Although the answer to this hypothetical question would be yes *if* the combustion took place at normal room temperatures, or would be yes *if* the oil was preheated to raceway temperatures before being combusted, the answer in this case is no. Moreover, the hypothetical question as posed is not really useful for two other reasons. First, while the resulting figure from the hypothetical as posed sounds significant, in the context of the overall production rates of the blast furnace, it is extremely small. The injection system capacity at WCI was 75 gallons per minute to a blast furnace with a production rate of 8,000 to 10,000 *tons* per day. (See, CX-24, p. EPA-13130). Injectants amounted to less than .01% of the raw materials introduced in the WCI blast furnace. One hundredth of one percent is not substantial. Second, and more importantly, there are not 60 million gallons of material at issue in this case. The single shipment of alleged hazardous waste in 2005 amounted to 5814 gallons. This material, assuming it was in fact injected, would have been consumed in about an hour and 15 minutes. Region 5 also alleged that CIS received approximately 189 shipments of Unitene® products, for a total of about 1 million gallons. Respondents disputed whether this material could ever be considered a hazardous waste for other reasons that were not reached by Judge Biro, but even if it could, the evidence suggested that much of it was resold and never injected by WCI into its blast furnace. And, even if it was, it amounts to less than 2% of the total amount of injectants sold by CIS to WCI. (See, Tr. Vol. VIII, p. 2022; Vol. X, p. 2310; CX-5, pp. EPA-6704-6705; CX-26, p. EPA-15532). At issue here is material that constituted .0002



*percent* of the overall input to the blast furnace over the time that CIS was in operation. Even if this material supplied heat, relative to the overall blast furnace operation, it cannot be said to be substantial.

b. *The Amount of Heat Assumed Above is Not Useful.*

Injectants supplied to the blast furnace do not supply useful heat. The more injectants that are used, the more additional heat energy from another source is required to support their use. Increased combustion of coke supplies the additional heat.<sup>4</sup> Injectants provide efficient reduction gases because they have more hydrogen, and thus are used *despite* the fact that adjustments have to be made to the blast furnace to maintain the high temperatures. If injectants provided both useful heat and reducing gases, like coke, it would be possible to achieve much greater reductions in coke rates by use of injectants.

EPA appears to have recognized that, in the blast furnace itself, injectants supply no useful or substantial heat. In its 1987 preamble to proposed rules regarding the burning of hazardous waste in boilers and industrial furnaces, EPA abandoned its previously held view that injectants provide substantial useful heat by being combusted in the blast furnace itself, confining its justification for exercising jurisdiction over blast furnace systems to the use of top gases in stoves and boilers. (*See*, 52 Fed. Reg. 16982, 16987-16990).

**3. Was Region 5's Burden Limited to Proving Merely That The Injectants Were Burned?**

Region 5 in this case claimed that the materials at issue were wastes because they were recycled by being burned for energy recovery, pursuant to Ohio Admin. Code § 3745-51-02(C) (40 C.F.R. 261.2 (c)). Region 5 did *not* charge, and there would be no evidence to support, that

---

<sup>4</sup> This does not have the effect of increasing overall coke rates because, at the same time, less coke is consumed as a reductant.

the materials were “abandoned” by being “burned or incinerated,” pursuant to Ohio Admin. Code § 3745-51-02(A)(2)(a) and (B)(2) (40 C.F.R. 261.2 (a)(2)(A) and (b)(2)). Clearly the record evidence showed that the materials were not, in fact, abandoned, and Region 5 never attempted to show otherwise. Counsel for Region 5 correctly stated at oral argument that Region 5’s *prima facie* case required a showing that the materials were not just burned, but were burned for energy recovery.

**4. Should the Board be Troubled By Evidence That CIS Claimed Alternative Fuel Mix Tax Credits Yet Contends Here That These Materials Were Not Burned for Energy Recovery?**

Region 5, throughout its investigation and at the hearing, emphasized the labeling of injectants as “fuels,” not only by Respondent CIS in its contract with WCI, but also by WCI and by blast furnace operators historically. Region 5 pointed out that CIS had applied for certain fuel tax credits, as part of this aspect of its case, in order to establish that Respondents considered injectants to be “fuels.”<sup>5</sup> As Professor Poveromo explained in this testimony, however, the use of the term “fuel” to describe injectants by those in the industry has now been accepted as outdated and inaccurate. (Tr. Vol. XI, pp. 2532-2537). Even Professor Fruehan remarked, “Who cares what you call it? It’s an energy source.” (Tr. Vol. V, p. 1196). Respondents, readily admitted that the word “fuel” often was used in the trade in various ways, and that they had applied for available IRS tax credits. The ALJ considered the record evidence and concluded, properly, that this case does not depend on how the injectants have been labeled either historically or by Respondents, but rather depends on how the injectants at issue actually impact blast furnace operations.

---

<sup>5</sup> Region 5 obtained evidence of Respondents’ tax returns in connection with evaluating their ability to pay. Notwithstanding that Respondents did not assert an ability to pay defense, Region 5 introduced the returns, arguing that the decision to claim a tax credit showed control by the individual respondents which was relevant to the issue of their individual liability. This issue was not reached by Judge Biro.

Consideration of the scant evidence in the record that related to tax credits for any other purpose than offered by Region 5 would require a great deal of speculation. There is simply no evidence regarding how any credit was calculated, what alternative fuel mixtures were the basis for the credit, whether they included the materials at issue in this case, the specific legal basis for the credits or, or the final allowance or disallowance of any credit. Moreover, whether a material is “burned for energy recovery” for purposes of U.S. EPA regulations does not depend on how the IRS regulations define “fuel.”<sup>6</sup> The definitional sections of the pertinent Ohio EPA regulations and the IRS regulations specifically provide for their applicability, and neither refers to the other. It would be unreasonable to suggest that the regulated community should be expected to look to the IRS tax code in order to evaluate how to comply with U.S. EPA’s solid and hazardous waste regulations.

#### **5. What Issues Are Appropriate For Remand?**

This case does not require remand to Judge Biro for further consideration. Respondents in this case did not challenge the U.S. EPA’s long-standing and consistent interpretation of the phrase “burning for energy recovery,” as meaning burning for “substantial and useful heat energy.” Respondents sought to *preserve* that interpretation, and Judge Biro agreed. Rather, this case involves a specific issue of fact regarding whether U.S. EPA had jurisdiction to regulate three specific products that were supplied to WCI by CIS. Judge Biro correctly determined that on the record evidence, jurisdiction was lacking in this case. Judge Biro may have reached her result in part because Region 5 chose not to introduce any evidence regarding how WCI utilized

---

<sup>6</sup> The word “fuel” finds its way into many IRS definitions, but Respondents have been unable to find any that include the phrase “burned for energy recovery” or that cross-reference U.S. EPA’s solid and hazardous waste rules.

its top gases.<sup>7</sup> Region 5's strategic decisions in this enforcement case, however, do not fundamentally change U.S. EPA interpretation of what its regulations mean, or render them inapplicable on a wider basis.

Nor should U.S. EPA be overly concerned that the result obtained by Respondents in this case in any way opens the door to the unregulated burning of hazardous wastes in blast furnaces. The operation of modern day blast furnaces is highly technical and material inputs must adhere to strict specifications. Materials with unknown impurities, unlike the three products at issue here, would be unsuitable for use.<sup>8</sup> Such materials, including the Cadence product, could in any event potentially be regulated by U.S. EPA as wastes to the extent that they are "inherently waste-like" under 40 C.F.R. 261.2(a)(1)(C).<sup>9</sup>

In addition, operations at facilities such as the former CIS facility are highly regulated in many, and many similar, ways. Federal and state Department of Transportation regulations control the transport of hazardous materials, including tanker truck requirements, labeling and placarding, shipping papers, and the like. RCRA, and state and local fire codes, govern the construction, maintenance and use of above-ground tanks. U.S. EPA and state environmental regulations regarding air emissions, local emergency planning, annual reporting of toxic and

---

<sup>7</sup> Respondents do not concede that a blast furnace operator's use of top gases as a fuel would confer jurisdiction on a supplier of injectants or other raw materials. Respondents take no position regarding whether WCI would have been subject to the BIF rules or otherwise under U.S. EPA's jurisdiction with regard to its use of any top gases generated by it.

<sup>8</sup> At the oral argument, it was suggested that the materials at issue in this case included spent materials. The three products alleged by Region 5 to be wastes in this case were not spent materials. All three were virgin materials, produced by chemical manufacturers, never commingled with wastes, and handled as valuable products. Judge Biro did not reach this issue, but there is a plethora of evidence in the record regarding the nature of the materials at issue here.

<sup>9</sup> Indeed, Cadence argued that its chlorinated solvent waste was suitable because chlorine was beneficial to the blast furnace process. Mr. Rorick disagreed with Cadence on this point and would *not* have testified that Cadence was a suitable substitute for coke in the blast furnace. (Tr., Vol. X, pp. 2456-2458). Professor Fruehan refused to confirm Cadence's view that chlorine was beneficial. (Tr., Vol. V, p. 1174).

hazardous substances, and spill prevention, control and countermeasures (SPCC) still apply, and OSHA regulations impose a wide array of worker safety and hazard communication requirements on companies. The former CIS facility and the former WCI facility were highly regulated, separate and apart from U.S. EPA's attempt to exercise RCRA jurisdiction in this case.

#### CONCLUSION

As Respondents have demonstrated at hearing and throughout this review, Region 5 failed to satisfy its burden to prove that the three materials at issue in this case were solid wastes. Judge Biro's decision was reached a decade after the alleged violation, following intensive, protracted and expensive investigation, discovery, and administrative litigation. To the extent that the result in this case is in any way attributable to strategic enforcement decisions made by Region 5, that should not entitle Region 5 to a mulligan. Respondents defended the case that Region 5 brought. Judge Biro's decision is well reasoned, and is consistent with U.S. EPA's long-ago articulated interpretation of what it meant by "burning for energy recovery." It contains no new pronouncements of law, and does not significantly change U.S. EPA's regulatory program in any meaningful way. For these reasons, Judge Biro's decision should be affirmed in its entirety and this matter should be finally concluded.

Respectfully submitted,



Keven Drummond Eiber (OH 0043746)

Meagan L. Moore (OH 0079429)

Michael P. O'Donnell (OH 0078390)

Brouse McDowell, L.P.A.

1001 Lakeside Ave., Suite 1600

Cleveland, Ohio 44114

Telephone: (216) 830-6830

Facsimile: (216) 830-6807

[keiber@brouse.com](mailto:keiber@brouse.com)

[mmoore@brouse.com](mailto:mmoore@brouse.com)

[modonnell@brouse.com](mailto:modonnell@brouse.com)

*Attorneys for Respondents Carbon Injection  
Systems LLC, Scott Forster, and Eric Lofquist*

In re Carbon Injection Systems LLC, Scott Forster, and Eric Lofquist, Docket No. RCRA-05-2011-0009, RCRA Appeal No. 15-01

**CERTIFICATE OF SERVICE**

I, Keven Drummond Eiber, an attorney, hereby certify that on October 15, 2015, the original and one copy of the foregoing Post-Oral Argument Brief was sent by Federal Express Overnight Delivery to:

U.S. Environmental Protection Agency  
Clerk of the Board, Environmental Appeals Board  
1201 Constitution Avenue, NW  
WJC East Building, Rm. 3332  
Washington, DC 20460


I further certify that true and accurate service copies of the foregoing Response Brief also was sent by Federal Express Overnight Delivery on October 15, 2015, to:

Environmental Appeals Board  
U.S. Environmental Protection Agency  
1201 Constitution Avenue, NW  
WJC East Building, Rm. 3332  
Washington, DC 20460

Jonathan Fleuchaus, Esq.  
Counsel to the Environmental Appeals Board  
U.S. Environmental Protection Agency  
1201 Constitution Avenue, NW  
WJC East Building, Rm. 3332  
Washington, DC 20460

Catherine Garypie, Esq.  
Jeffrey Cahn, Esq.  
Office of Regional Counsel  
U.S. EPA Region 5  
77 West Jackson Blvd.  
Chicago, IL 60622

October 15, 2015:

  
Keven Drummond Eiber