BEFORE THE ENVIRONMENTAL APPEALS BOARD

U.S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

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ORDER SCHEDULING ORAL ARGUMENT



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| IN RE: | : | |
| CARBON INJECTION SYSTEMS, LLC, SCOTT FORSTER, AND ERIC LOFQUIST | : | RCRA Appeal No. 15-01 |
| Docket No. RCRA-05-2011-0009 | : | |

Thursday,
October 1, 2015

Administrative Courtroom
Room 1152
EPA East Building
1201 Constitution Avenue, NW
Washington, DC

The above-entitled matter came on for hearing, pursuant to notice, at 1:35 p.m.

BEFORE:

THE HONORABLE LESLYE FRASER
Environmental Appeals Judge

THE HONORABLE KATHIE A. STEIN
Environmental Appeals Judge

THE HONORABLE MARY BETH WARD
Environmental Appeals Judge

ORIGINAL

APPEARANCES:

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ALSO PRESENT:

Eurika Durr, Clerk of the Board
Eric Lofquist, Appellant

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P-R-O-C-E-E-D-I-N-G-S

(1:35 p.m.)

JUDGE FRASER: Good afternoon.

Counsel, can you please introduce yourselves? For Carbon Injection Systems? If you could please stand and introduce yourself for the record?

MS. EIBER: Good afternoon. My name is Keven Eiber. I'm with the law firm of Brouse McDowell. I'm here on behalf of Carbon Injection Systems, Eric Lofquist and Scott Forster.

MS. MOORE: I'm Meagan Moore. I'm with the law firm of Brouse McDowell, and I'm also here on behalf of our clients, Carbon Injection System, Eric Lofquist and Scott Forster.

MR. LOFQUIST: Good afternoon. My name's Eric Lofquist.

JUDGE FRASER: Thank you.

And for EPA? You probably have to speak into the microphone.

MR. CAHN: Good afternoon. I'm

Jeffrey Cahn. I'm from Region V, and I'm one of the attorneys representing EPA today.

MS. GARYPIE: Good afternoon. Catherine Garypie with Region V, also representing EPA today.

MR. RAACK: Peter Raack with the Office of Civil Enforcement with EPA.

JUDGE FRASER: Thank you.

My name is Judge Fraser. I'm joined by Judge Stein on my right and Judge Ward on my left. We thank you all for being here today.

Today's case is an enforcement action arising under the Resource Conservation and Recovery Act, or RCRA, involving the use of hydrocarbon injectants in an iron blast furnace.

For the benefit of those attending in the audience, I am going to begin with some background information on how a blast furnace operates and how injectants are used in a furnace and a brief summary of the positions of the parties and the Administrative Law Judges, or ALJs, decision.

I have prepared this summary based on the record below, included the decision of the ALJ and EPA's preamble to the 1985 rulemaking pertinent to this case.

If counsel believe I have misstated either the background facts or their positions, they should certainly bring that to our attention when they get their chance to speak.

The purpose of an iron blast furnace is to convert iron ore, which is primarily a chemically-bonded mixture of iron and oxygen into elemental iron by stripping the oxygen from the ore.

Blast furnaces work through a combination of very high levels of heat and chemical reactions.

A mixture of iron ore and coke is loaded onto the top -- into the top of the blast furnace then extremely hot air at approximately 2,000 degrees Fahrenheit called the hot blast is pumped into the furnace from the bottom through injection ports known as tuyeres.

The hot air ignites the coke in the combustion zone, or raceway, near the bottom of the furnace, raising the temperature in this zone to over 3,500 degrees Fahrenheit.

The burning of the coke also creates residues of carbon and carbon monoxide gas that flow up through the blast furnace. The carbon monoxide serves as a reducing agent to strip oxygen from the iron ore in a chemical reaction. Some of the carbon also bonds with the now-reduced iron.

Liquid iron is collected at the bottom of the furnace.

Due to cost considerations, iron manufacturers have used alternatives to coke in the iron production process.

The most common alternatives are hydrocarbon-based injectants, which are materials containing hydrogen and carbon, such as pulverized coal, oil and natural gas.

These hydrocarbon materials are injected with the hot blast at the bottom of the

furnace through the tuyeres.

In this case, EPA Region V charged that Carbon Injection Systems, or CIS, the Respondent here, used hazardous waste as an injectant without first obtaining a RCRA permit for treatment, storage, and disposal of a hazardous waste.

EPA's case turns on whether certain hydrocarbon injectants used by CIS qualify as solid waste.

Under RCRA, a material cannot be a hazardous waste unless it meets the definition of a solid waste.

EPA's position is that some of CIS's injectants were solid waste because they were spent materials or byproducts that were recycled by being burned for energy recovery. As defined by EPA's Hazardous Waste Management System, burning of waste fuel and used oil fuel in boilers and industrial furnaces final rule, also known as the BIF rule.

On the other hand, CIS asserts that

the hydrocarbon materials were not burned for energy recovery, but rather, were added to the blast furnace only as a replacement for coke's role in providing reducing gases and not to replace coke's role in providing heat.

When EPA promulgated the BIF final rule in 1985, it provided an explanation in the preamble to the final rule summarizing what the rule covered and providing responses to public comments that EPA had received.

One comment EPA had received concerned the use of a hydrocarbon hazardous waste injectant called Cadence that was used in blast furnaces.

In that case, the commenter argued that Cadence should not be considered a hazardous waste fuel under the BIF rule, because it was not burned in the blast furnace for energy recovery, but as an ingredient in the iron making process to provide carbon.

The commenters further argued that using Cadence has the beneficial effect of

cooling flame temperatures in the combustion zone and any heat release was incidental and unavoidable.

EPA responded that the BIF final rule applied if hazardous wastes are burned in industrial furnaces both to recover energy, i.e., to provide substantial useful heat energy and for some other recycling purpose even if energy recovery is not the predominant purpose of the burning.

And then, specifically, found the Cadence product was burned partially for energy recovery.

The Administrative Law Judge before whom this case was first heard held, one, under the plain language of the Statute and EPA's regulations, burning for energy recovery means burning to recover heat energy not burning to recover chemical energy.

Two, the Cadence example was distinguishable from the incident case.

And three, EPA did not meet its burden

of proving injectants in a blast furnace are burned for their heat value.

On this latter point, the ALJ reasoned that injectants burned in the blast furnace did not provide substantial useful heat because the use of the hydrocarbons had an overall net cooling effect on the blast furnace.

The Environmental Appeals Board took this case for review on its own initiative due to questions the Board has regarding the ALJ's conclusion on the interpretation of the regulatory phrase, "burned to recover energy", and the ALJ's finding on the heat supplied by injectants when burned in a blast furnace.

That concludes the summary of the case.

Turning now to the parties before the Board.

In initiating review of this case, the Board requested that you address five separate issues.

The Judges today may have questions on

all five issues, but we intend to focus primarily on two of those issues.

First, how has EPA interpreted the phrase "burned to recovery energy" prior to initiating this enforcement action?

And, second, does the burning of injectants in a blast furnace supply substantial useful heat energy?

On this latter issue, we specifically ask you to address the substantial useful heat standard and to explain how that standard applies to the net impact calculation that the ALJ found to be decisive.

In your brief's, however, both parties focused only on the net impacts of using injectants. We have questions regarding the correctness of the net approach.

The term "net" is defined by the dictionary as what remains after the deduction of all charges, outlay or loss. In other words, it is the balance one obtains after all deductions have been made.

Translating this definition to the heat energy of the injectants in the case before the Board yields the following equation, A - B = C, where A is the heat energy in of the injectants, B is the heat energy out of the injectants and C is the net energy that remains.

Quite a bit of your arguments before the Board and in the underlying case before the ALJ focused on the heat energy taken out by the injectants and the resultant net impact on the temperature.

In our questioning today, the Board will be focusing particularly on understanding the heat energy in supplied by injectants and whether that heat energy in is substantial, useful heat energy.

Once that issue is clear, we will turn to the appropriateness of the use of the net approach in defining what is substantial useful energy.

EPA, we have asked you to argue first, so Mr. Cahn, we will start by asking you

questions on the issue of what has been EPA's announced interpretation of the phrase "burned to recovery energy" before initiating this case.

And I -- just a point of clarification for both parties. This is a case that the Board, as you know, took on sua sponte review. And so, as such, we really are using this as an opportunity to ask a number of clarifying questions that we have.

We don't really need opening statements and so forth. We really are using this as an opportunity to get clarity on quite a number of questions that we have before us.

So, just want to save you that worry about needing to do that.

Mr. Cahn, in your brief, you state that the meaning of the word "burn" is not at issue. Doesn't that influence how the phrase "burn to recover energy" is interpreted? And, given the plain meaning of that term, doesn't it suggest that the phrase was narrowly directed at the use of burning waste materials to produce

heat?

MR. CAHN: I was re -- in our brief, we were referring to the fact that the ALJ concluded that neither of the parties was contesting the meaning of that phrase.

Of course, burning is relevant to the question of whether materials are being oxidized.

JUDGE FRASER: You relied on expert witnesses in interpreting this regulatory language. What is EPA's view of the circumstances under which an expert's view of that meaning is relevant versus layperson's view?

MR. CAHN: I'm not sure that we relied on the experts to define that phrase "burning for energy recovery." The Agency's expert, Professor Freuhan, testified as to what happens inside a blast furnace, what types of energy are produced when an injectant is oxidized in the raceway. That was our focus.

The -- I'm sorry, could you repeat the question? I apologize.

JUDGE FRASER: It was more a

clarification of there's quite a bit of discussion in the ALJ's decision about the common man's language, I don't if that's the exact terminology she used, versus when is it --

And so, we're really trying to get a sense of when does EPA this it's appropriate to use the common language versus a technical expertise?

MR. CAHN: Thank you, Judge Fraser, for clarifying that for me.

I think, looking at the phrase "burning for energy recovery" in this context, it's appropriate to use not the simplistic approach that is advocated by the Respondents below in this matter.

Rather, a more intelligent understanding of the meaning of the phrase is appropriate.

We're dealing with pretty complex -- a pretty complex regulatory scheme. Respondent's own witness, Mr. Rorick identified or testified that blast furnace operations were very complex,

that terms of art are used by the operators, that there's jargon that's relied on in the industry and that chemical phrases in terminology are used.

So, in that context, and in order to give meaning to the phrase, at least as it applies to blast furnace operations, it's appropriate to use more than just the simple understanding that burning means giving off heat.

Therefore, it's appropriate to consider the other types of energy that are -- fall within the meaning of the term "burning for energy recovery" including chemical energy or kinetic energy.

JUDGE STEIN: I want to go back to what, I think, was Judge Fraser's question, which was really the definition of "burn." And I'm having a little difficulty understanding why we're looking to expert witnesses to interpret that term as opposed to how it's used and applied in the context of the regulations.

I mean, I understand the difference

between simple and more complex, but, you know, what do we have to go on other than the way it's been used and applied in the regulations?

MR. CAHN: Judge, I don't think the experts, again, were testifying as to the meaning of the phrase, rather, the experts were testifying as to what occurs inside a blast furnace.

The phrase "burning" is very, as the experts explained, an imprecise and nontechnical term. The way the experts understand what happens in combustion is oxidation.

JUDGE STEIN: Thank you.

JUDGE FRASER: I also -- we see quite a bit of time in the briefs spent to arguing that EPA intended the phrase to consider chemical energy as well.

And I'd like to ask what statements do you think point out in the preamble that that was something EPA envisioned at the time?

MR. CAHN: I think that if you look at the -- in the Cadence discussion --

JUDGE FRASER: And I'm sorry, just for -- if you could move the microphone maybe, if it moves it all, does it come a little closer to you?

MR. CAHN: Closer to me, okay. It may be a little harder to turn the pages, but --

JUDGE FRASER: No, no, that's fi -- thank you.

MR. CAHN: No worries.

In the Cadence discussion at 50 Federal Register Page 49172 in the first column, if I'm not mistaken, EPA expressed consideration of the chemical energy produced by the oxidation of injectants in the raceway by making the clear statement that carbon monoxide reduces the iron ore by net energy absorbing reactions to produce iron.

That's an acknowledgment that chemical energy is used up. The energy that -- the carbon monoxide is one of the products of the combustion of the injectant and that carbon monoxide is used up.

What you get coming out of the top gases of the blast furnace has less carbon in it or carbon monoxide in it than it had in the raceway or when it left the raceway.

JUDGE FRASER: Yes, there is numerous statements in the Cadence example that there is a chemical reaction as well as heat going on. But, throughout, when you explain what is meant by "burned for energy recovery" the examples you give are providing substantial useful heat.

So, there's a disconnect between the discussion that there is a chemical and a heat reaction -- heat occurring versus what the Agency has said.

And so, doesn't that cut actually against you that you have not said "burn for energy recovery" is chemical energy as well?

MR. CAHN: If you're talking about in the Cadence discussion, I think the Cadence discussion talks about energy in two forms, the chemical energy like I just talked about, the carbon monoxide reducing the iron ore by net

energy absorbing reactions and then the heat energy from subsequent reactions that occur outside the raceway which I understand to mean, the use of the top gas as a fuel in the stoves that are used to preheat the hot blast that goes into the raceway or the blast furnace that's providing actual heat energy.

I have a demonstrative that I could put up if that would assist the Board.

JUDGE FRASER: Sure.

MR. CAHN: And, Judge Fraser, I think you probably -- it sounds like you already understand all of this, but --

JUDGE FRASER: I will tag on with Judge Ward.

Is there a way of showing what he has on the screen up on our monitors? Thank you.

MR. CAHN: So this is the injection, this is the raceway. This is the location where the hot blast and the hydrocarbon injectants come in. This is a countercurrent reactor, so gases go up as material descends.

The top gases are captured. They go into a device that cleans the gases of contaminants, for example, metals. Then they go in -- then the top gases go into these stoves, they come back out, and go back into the blast furnace. These stoves burn the remaining carbon that's contained in the top gases.

So, I think the Cadence discussion is talking about the reactions, the useful heat energy that's produced outside the raceway, when the top gases are burned in the stoves.

JUDGE FRASER: We will come back to the top gas discussion as it applies here. I'm really getting at the rest of the preamble discussion when the Agency is explaining what the rule means and defining what is meant by "burn for energy recovery."

For example, there's a place where the Agency says, i.e., this means substantial useful heat energy. There's no -- and i.e. means that is, not for example.

And so, there is no "i.e. that is

substantial useful heat energy or chemical energy or nuclear energy or any other kind of energy."

So, I'm struggling to find where, in the preamble, language and explanation of what the Agency intended that chemical energy was intended to be included in the regulation scope.

MR. CAHN: Well, another place that might be helpful to look to put this in context is the definition of industrial furnace that's contained in the RCRA regulations.

Trying to put the phrase "burning for energy recovery" into context, the definition of an industrial furnace includes a blast furnace and such other devices as the administrator may, after notice and comment, add to this list on the basis of one or more of the following factors.

The use of the device to burn or reduce raw materials to make a material, the use of the device to burn or reduce secondary materials as substitutes for raw materials or the use of a device to burn or reduce secondary materials as ingredients.

I think the fact that the definition of industrial furnace recognizes reduction which is a form of chemical energy should assist the Board in understanding the meaning of the phrase "burn for energy recovery."

JUDGE FRASER: But the introductory part of what you just read said the agency may promulgate regulations after notice and comment.

And so, the BIF rule that you promulgated after notice and comment then throughout the preamble discusses essentially, here's what we mean "burn for energy recovery" is substantial useful heat is generated whether its primary purpose was burned for that or secondary.

So, there, I would think, that if that was what you intended to be covered, there would be more discussion on chemical energy being within the scope of -- the intended scope for the regulation.

MR. CAHN: I believe that in the preamble to that definition of industrial furnace, the Agency spoke to that.

JUDGE STEIN: Could you give us a cite when you --

MR. CAHN: I'm --

JUDGE STEIN: -- when you provide it?

MR. CAHN: I am looking for that if you give me one moment.

All right, the October 26, 1989 Supplemental Proposal to the May 6, 1987 Proposal published at 54 Federal Register 43719, Footnote 1, for purposes of this notice, burning in industrial furnaces includes reduction as well as combustion.

I think that's another indication that chemical energy was intended to be captured within the concept of burning in an industrial furnace.

JUDGE STEIN: I mean, I feel like on some levels, Counsel, you're grasping at phrases in an overall very lengthy complex regulation. And I may not be convinced that you couldn't interpret the term as broadly as you seem to want to, but I'm struggling to figure out how somebody

reasonably reading these regulations is really, by use of the word, you know, a word or a phrase, reduction or materials recovery is supposed to know that chemical energy is what's covered when, really, all of your major examples don't really fit that bill.

MR. CAHN: Well, the plain language of the phrase "burning for energy recovery" isn't limited. And I think what's -- so, I think something that's important is to put the phrase into the context of the regulatory scheme and what Congress intended to be regulated with the HSWA Amendments in '84.

And looking at the recent decision in NRDC v. EPA, which invalidated the Comparable Fuels rule, the Court explained that the loophole that the Agency had created by excluding certain hazardous wastes from the definition of solid waste if the comparable fuel was similar to a fossil fuel was not permissible.

In a sense, by limiting the definition of "burning for energy recovery" to substantial

useful heat energy, the ALJ and this Board, if it upholds the ALJ is, in a sense, reopening or creating a new loophole to the definition of solid waste.

JUDGE STEIN: Well, I'm not convinced the ALJ has properly interpreted the term. But, I'm still looking for something that would be somewhat more obvious or somewhat easier to glean from these complicated regulations.

And if you're regulating chemical energy, presumably, there are a whole host of issues that could come within the term chemical energy. And I would have expected if that's what EPA had intended to do, that there would have been a lot more precise discussion about, you know, what chemical energy meant, you know, where it began, where it ended, how it related to the manufacturing process.

And I see pieces of phrases, or I see phrases, and, you know, I'm not convinced that you couldn't interpret the term that broadly.

So, I, you know, not convinced as a

matter of plain language it's limited. But I'm finding difficultly looking at EPA's language in these regulations and in its guidance documents that makes it clear that chemical energy is really the focus here.

MR. CAHN: I think the best -- the Cadence discussion does talk about the three steps that occur in the raceway when, upon initial combustion, there's a disassociation then there's a -- which is an endothermic reaction. Then there's an exothermic reaction. And then there's again an endothermic reaction in the raceway.

I am not aware of anything in the record that supports the proposition that in the raceway the net reaction is exothermic.

JUDGE WARD: But, Mr. Cahn, isn't part of it exothermic? I think it goes back to -- and we'll get to the net energy question in a bit -- but I think that that discussion is really actually proving or, at least, seems to lead one to conclude that EPA was focusing on the heat

contribution at that point in the process.

And frankly, if the focus of Cadence were the chemical energy, the discussion could have been a lot shorter.

So, you know, I think it's difficult to see how the reference to the exothermic aspect of it somehow, nevertheless, a net endothermic reaction somehow proves that the Agency was focusing on the net impact, but rather the heat contribution from the BTU value of the fuel injectant.

JUDGE FRASER: If I could ask the clerk, I have some handouts here I'd like to give three copies per table and one to the Court Reporter. There're some other pages we'll be referencing throughout our discussion.

And one of those I'd like to turn your attention to or just point out is that we also have looked at EPA's RCRA Orientation Manual which seems to be a pretty comprehensive explanation of RCRA's requirements. And, by its terms, it states that it is intended to aid

regulated parties' compliance with RCRA.

And at least since 2003 all the way up to 2014, and I'm referencing page nine in your packet, the manual defines the phrase "burn to recover energy" as burning hazardous waste for its heating value as a fuel.

So, again, it seems to suggest strongly to us that the Agency was not thinking of chemical energy, else, in this orientation manual, it certainly would seem that the definition would be a little broader than what it says before you.

MR. CAHN: Well then, I would have to go back to the top gas analysis and when the injectants are combusted or oxidized in the raceway, the top gases -- the reducing gases ascend the blast furnace, reducing the iron ore to iron and whatever remains in the top gases, whatever fuel value remains in the top gases is cycled back to the stoves where it's burned, producing useful substantial heat, roughly 2,000 degrees, which is then blown into the bottom of

the blast furnace through the tuyeres to heat up the raceway.

JUDGE WARD: Mr. Cahn --

MR CAHN: That's substantial useful heat that --

JUDGE WARD: Mr. Cahn, did you present or introduce any evidence about the use by WCI or this particular blast furnace of the top gas in this case?

MR. CAHN: No, the Agency did not have any direct evidence for the relevant time period about what this specific blast furnace does or did. But the Agency did present evidence with respect to what all blast furnaces do.

C Ex 20 -- C Ex 86 is an exhibit that talks about -- it's from American Steel or the American Iron and Steel Institute talks about how blast furnaces operate. They all recycle the top gas.

Mr. Rorick, the witness for Respondents testified to the fact that this is something you don't waste. You capture it, you

use it. It's recycled into the stoves, where it's burned.

JUDGE WARD: Does that -- does it state that all furnaces do, or that the industry practice is to use the top gas that way?

MR. CAHN: I can't say all. I mean, I just couldn't say all. But I think the record evidence -- the only conclusion that can be drawn from the record evidence is this is what blast furnaces do. I can't qualify it and say all.

JUDGE FRASER: So, if I understand your argument about the top gas, are you essentially saying that you're moving away from the chemical energy argument and going to the heat recovery energy argument or -- I'm not sure where you're -- what the relevance of the top gas is to the question of how the Agency has interpreted this regulation to cover chemical energy.

MR. CAHN: Judge Fraser, I think the Cadence discussion talks about both. I think the Cadence discussion talks about what happens in

the raceway, and I think the Cadence discussion talks about subsequent reactions outside of the raceway.

And injectants in the raceway undergo an endothermic, then an exothermic, then an endothermic reaction. And then the top gases are later used where they produce useful substantial heat energy in the form of the hot blast.

I think it's both, and that's consistent with our understanding of -- what we believe the plain meaning of the phrase "burning for energy recovery" should be which is something broader than the limited definition that the ALJ was suggesting.

JUDGE WARD: So, let's assume that we don't agree with your reading of the preamble in the record in this case in terms of -- on the issue of chemical energy, versus heat energy, do you have any other argument in terms of fair notice to carbon injection here of your interpretation?

MR. CAHN: Well, I think that the

record contains evidence that shows that the Respondents below knew and understood that their secondary material was going to be regulated when it was burned or oxidized in the adjacent blast furnace.

I think if we look to, if I'm not mistaken, C Ex 47 is a letter from the Region V Division Director informing Respondents that she believed that their material would be regulated, that their material provided both power and heat.

Their e-mail exchanges, I would direct the Board to C Ex 2 at EPA page number 2772 which is an e-mail from U.S. EPA -- or e-mail exchange between EPA and Innovative Waste Management, which was forwarded to Scott Forster talking about how K022, which was one of the materials that they were marketing or selling to the adjacent blast furnace was regulated.

C Ex 2, again, at EPA 2758, e-mails between Ohio EPA and Innovative Waste Management forwarded to Mr. Forster. K022 is burned for energy recovery in a blast furnace.

So, I think there's actual notice. And in addition to that, I think the notice was -- or the Agency's view on whether this burning of secondary materials was regulated was reasonably ascertainable by looking at the regulatory scheme and Congress's intent in promulgating 3004Q and the regulations that we promulgated in response.

JUDGE WARD: So, your position is they were on notice that they were regulated even if they weren't on notice of your specific interpretation of the regulation to include chemical as well as heat energy?

MR. CAHN: I think the Cadence discussion discussed chemical energy and that discussion should have put them on notice.

JUDGE WARD: I'm actually asking you to assume that we don't agree with that reading of the preamble.

So assume we don't agree with that reading of the preamble, what's your view on the question of fair notice as to the application of RCRA to this facility, or to their waste -- the

injectants?

MR. CAHN: It's clear that the Agency intended to regulate secondary materials if they were burned for energy recovery, and that's what happens when the top gases are burned in the stoves. So there was fair notice at least on that point, if the Board disagrees with the interpretation of energy including chemical energy.

JUDGE WARD: So, actually, I did want to draw at least a -- or make a point, in terms of the brief that you filed, your initial opening brief, when we asked this question or the question was if we didn't agree with the -- your view of the preamble or the regulatory history here, was it appropriate for Region V to rely on this interpretation, that is the chemical energy interpretation, in seeking civil penalties for past behavior?

And your response there was because we believe that EPA clearly provided fair notice, this question is not applicable.

And I just wanted to point out, at least from my take of this, that wasn't a very helpful response. We were asking for the Agency to assume that we didn't agree with your reading of the regulatory history here, and, in that case, what was your position in terms of fair notice?

So, I think in future briefings, if you could be a little bit more forthcoming in terms of your response.

MR. CAHN: I apologize.

JUDGE STEIN: I'd be interested if you could cite any case law that suggests that if the Agency advances one interpretation in giving someone notice that they're regulated that fair notice can be provided if the Agency is proceeding along the lines of a different interpretation.

So, if the Agency has such case law, I'd be interested in seeing it. I don't need it at this very moment, obviously, but I think with respect to chemical energy, if the Board

disagrees that fair notice was provided by the regulations, I think what you're asking us to do is to say that because we told this company it was regulated, that that's fair notice.

But, I'm looking for how they had fair notice of your particular interpretation which I believe is the language that is used in some of the federal court case law and in Board case law.

MR. CAHN: I did not do research on that topic before coming here today. I was looking at the -- how net analysis and the reasonable ascertainable standard and continue to believe that the Cadence discussion should have put the parties on notice, the Respondents on notice.

JUDGE FRASER: Just before turning to the next set of questions which may take us a little bit, I'll ask the clerk to add 15 minutes to EPA's time as well as CIS's time when we get to that point. I don't think we'll get through them in the next three and a half minutes.

So, I want to turn to heat energy, and

this goes back to the equation that we're dealing with which, as we look at it is, the question before us is substantial useful heat energy.

We understand that CIS has argued net as being -- we will come back to net, but for now, if we go back to the equation in my introductory comments, we look at net as being the difference or the sum of heat energy in minus heat energy out. And so, the next set of questions will be focused on heat energy in.

So I just want to make sure we're all on the same page. So, do you agree that what the standard that the Agency set in the BIF final rule was that "burned for energy recovery" at least in part, I know you have chemical energy, but at least in part is burned to recover substantial useful heat energy?

Is that something that you see in the preamble to the rule?

MR. CAHN: I do.

JUDGE FRASER: Okay. And so that's where, again, that's where we would like to start

with our conversation.

As I read the administrator's decision on Cadence, I think she was -- or he was, at the time, -- focused on the heat in question and not the overall net impact of the injectants.

The preamble does talk about the endothermic reactions of the injectants, but then stresses the importance of the heat in provided by the injectants as well.

So, for example, and this is on page four of the packets that we handed you, the administrator writes, Cadence's argument ignores the fact that fuel injectants first behave as bonafide fuels by combusting to, ideally, carbon dioxide and water.

The fact that fuel injectants release substantial heat energy while providing hydrocarbon for reactions enables operators to reduce coke rates.

And that's cited from line 50 of the Federal Register, page 49172, column 3.

Essentially, I read this as saying

that heat from injectants is critical to driving those reduction reactants in the furnace, do you agree with that?

MR. CAHN: I think the record -- I think that Professor Freuhan's testimony does support that conclusion.

JUDGE FRASER: And Professor Freuhan was EPA's expert, was he not?

MR. CAHN: Correct.

JUDGE FRASER: And so, if we do turn to his testimony, and we have an excerpt on page 11 of the packet that we handed you, it's actually taken from pages 1180 to 1181 of the transcript before the Administrative Law Judge, the question to Professor Freuhan was, if we look at all three steps and taking -- and he's talking about the reaction of the injectants in the raceway, is it your testimony that it is, when looked at as a whole, an exothermic reaction?

Professor Freuhan responded the reaction itself, just the reaction now, not heating up components -- your question -- the

reaction itself, he answered, is exothermic.

You came back and said, if you look at all three steps together?

Professor Freuhan said yes.

So, in this case, doesn't exothermic mean give off heat?

And so, Professor Freuhan is saying -- you have to answer, I'm sorry, you can't nod.

MR. CAHN: Yes.

JUDGE FRASER: Yes. Thank you. So, he stated that the injectants are providing heat in the raceway?

MR. CAHN: Yes, I think -- in the whole discussion from -- I looked at it from page 1176 to 1182.

JUDGE FRASER: Okay.

MR. CAHN: He does say that. Yes.

JUDGE FRASER: If we turn to Mr. Rorick, who was the expert who testified on behalf of Carbon Injection Systems, one of the experts, his relevant testimony was on pages 2489 through 2390 of the transcript, and it's on page

13 of the packet that we handed you at Counsel's table.

The question posed to him was, if carbon is oxidized, doesn't that also mean that energy is being released?

Mr. Rorick answered, when a carbon molecule changes state from carbon to a CO, carbon monoxide, or carbon to CO2, carbon dioxide, which is probably a better example, that change in state of that, there is an energy release?

That is correct, that's standard science.

So, didn't Mr. Rorick also admit that burning injectants to CO or CO2 also releases heat energy?

MR. CAHN: Judge Fraser, I was a history major, so I'm a little bit at a disadvantage. I actually read that answer as supporting the conclusion that there's chemical energy that's being released.

I did not see it -- I don't -- I

didn't read that as including heat or an exothermic reaction. I see that there's energy there. I suppose if -- I just didn't read it that way.

But I'm not a scientist, I apologize.

JUDGE FRASER: No problem, but exothermic is releasing -- the release of energy and -- but thank you for that answer.

And then my next question would be, and I will also direct this to Counsel for Carbon Injection, so they can come back as well.

With Dr. Poveromo, and I hope I'm not butchering his --

MS. EIBER: Poveromo.

JUDGE FRASER: I'm sorry?

MS. EIBER: Poveromo.

JUDGE FRASER: Poveromo. Thank you very much for that correction.

He's another expert who testified on behalf of Carbon Injection Systems, and he wasn't asked about this issue directly at the hearing as best we can tell from reading the transcript, but

he does stress that the injectants have a net cooling effect on the furnace.

And he ties this cooling effect to the fact that they are added into the blast furnace cold. But he didn't say that burning injectants provide no heat, he came back to net heat.

And I don't know if you saw anything in the testimony on your review that talked about no heat being provided by the injectants from any of the expert testimony on the other side.

MR. CAHN: All I could point to in Dr. Poveromo's testimony is at Transcript Volume 11 page 2546, there is a standalone comment where Dr. Poveromo said that outside the raceway, the reducing gases from the injectants have both exothermic and endothermic reactions.

JUDGE FRASER: And yet, if you -- on those same pages, the question was asked to him, and this is on page 15 of the packet we handed you, Counsel, but if we stick within the raceway zone for a moment, is it your testimony that the oil injectants that react in the raceway on

balance provide no energy to the system?

And Dr. Poveromo responded, they provide no net energy to the system when consider the role of the reactant, the reaction products, and the subsequent role they play in the process.

The key word here is net energy, and that's pages 2545 to 46 that you cited.

So, we do look at -- from the question we have is we're looking at, he has addressed the heat in, but he's addressing it indirectly through a net answer, which is that other side of the equation.

I think I will save the rest of the questions on Dr. Poveromo for the opposing counsel.

JUDGE WARD: So, just one other question on the issue of top gases, I think that in addition to the general industry practice that you'd cited in your reply brief, you had attached a study concerning this facility, but dating several years prior to the period of violations or alleged violations here.

And I think you have provided to the Board, saying that we can take judicial notice of that study. I think you cited the Halmet decision for their proposition.

And looking at the document that was at issue in Halmet, this one doesn't seem to fit in that box.

Do you have any other cases to cite in support of our considering or taking that into account on principles of judicial notice?

MR. CAHN: Not readily at hand, I'm afraid.

The Agency began research on that topic. I think that the question is, you know, is it a document in the public domain? Does it contain information that's readily ascertainable? Is it reliable in that sense?

This was a document that was part of a rule-making docket. It is readily available within reason, I guess, because it's not published online. You have to ask for it from the person that runs the docket.

It was submitted as part of a rule-making. I think it's something that the Board can look to for assistance in understanding what was occurring, at least at some point in time, at the LTD facility that later became a WCI facility.

JUDGE WARD: And let me turn now to questions in terms of burden of proof, and, hopefully, we can walk through these pretty quickly.

But, in the opinion below, in a footnote, the ALJ concludes that or states that the standard here, what you needed to prove was that it was burned for energy recovery. And having not proved that, it wasn't a solid waste. If it wasn't burned for energy recovery, it was still burned, correct?

MR. CAHN: Correct, it was oxidized.

JUDGE WARD: So, at least presumptively, for purposes of the definition of solid waste, it was a solid waste because it was burned, even if not burned for energy recovery,

correct?

MR. CAHN: That is an argument that could be made, correct.

JUDGE WARD: And so, if you had argued that in the alternative, wouldn't that have put the burden -- shifted the burden then to carbon injection to show not just that it was a material used in industrial -- in this process, but that there was also a known market for this ingredient or these injectants, correct?

MR. CAHN: Judge Ward, the way the Agency allocated its time was, I was responsible for the first four questions of the Board and Ms. Garypie was going to address the burden questions. She, I think, is better prepared to address that question than I am.

JUDGE WARD: That's fine.

JUDGE FRASER: Happy to have her come forward.

MR. CAHN: I don't want to interrupt the Board's flow if there were more question on the first four topics, I'd try to address them,

but if this is a convenient breaking point, I'm happy to allow Ms. Garypie to proceed.

JUDGE FRASER: We're fine with the first four for now and would invite Ms. Garypie to come forward. Thank you.

MR. CAHN: Before I step down, I want to thank the Board too for accommodating my personal schedule.

JUDGE FRASER: Thank you.

MS. GARYPIE: Good afternoon.

JUDGE FRASER: Good afternoon.

MS. GARYPIE: It may assist the Board to take a look at the Authorized Regulations, specifically, I'm looking to Illinois Administrative Code 3745-51-02 and, particularly, Section E.

JUDGE FRASER: I'm sorry, you said Illinois, or Ohio?

MS. GARYPIE: I'm sorry, Ohio.

JUDGE FRASER: Okay.

MS. GARYPIE: I apologize.

I think, as the Board is aware, the

parties largely agree on burden of proof, and, in this matter, it's laid out pretty succinctly in 40 CFR Section 22.24(a).

So, initially, the Complainant has the burden of presentation and persuasion that the violation --

JUDGE WARD: Actually, if I could focus your --

MS. GARYPIE: Absolutely.

JUDGE WARD: -- response here.

So, what I was just asking, if it wasn't burn for energy recovery, it was burned, it would still be at least presumptively a solid waste. That would have shifted the burden then to Carbon Injection to prove one of the exemptions apply.

MS. GARYPIE: Right.

JUDGE WARD: And the ALJ found, at least, that they had demonstrated, on this record, that it was used or reused as an ingredient in an industrial process.

Carbon Injection also points out or

makes the claim in their reply briefs that they demonstrated the other aspect of the exemption, or at least the requirement in F of the Ohio regulations to demonstrate that there is no market for this material.

And they claim they did so based on the specific contracts in this case with WCI as well as some general statements in, I think it's Mr. Rorick's testimony, that injectants are and have been used as a substitute for coke.

And I'm trying to -- I just wanted to probe and ask you if you thought that demonstrated within the meaning of this regulatory term that, in fact, that's evidence of a known market for these injectants that were used in this case?

MS. GARYPIE: Frankly, I was looking strictly at burden of proof issues when I was preparing for today. We had a third attorney who was on this case when it was below, and that was his area.

What I can say, however, is that if we

have -- if the materials were burned for energy recovery, then it's our position that we don't actually get to Section E where the defenses occur.

And that is because particularly, (e)(2) because at (e)(2)(b), it takes out materials burned for energy recovery. But if what you're saying is that -- we don't really get to that point if EPA hasn't --

JUDGE WARD: I was just going to say, in the footnote, it just -- it seemed to, from the ALJ, the way that she had written the footnote was, having failed to prove that it was burned for energy recovery, the case is over. And it just --

MS. GARYPIE: Right.

JUDGE WARD: -- I just wanted to probe a little bit, well -- even if let's assume that's true. Let's assume that the Board were to conclude you had failed to prove that it was burn for energy recovery within the meaning of the regulations, wouldn't there be an alternative

argument that it was still burned, and so the burden would have shifted to the company to prove that the exemption applied including demonstrating that there was a known market for these injectants?

MS. GARYPIE: Well, I think that our prima facie case is, in Section C, is burn for energy recovery, so we would have to prove the whole -- the entirety of it.

So, I think if we didn't get to -- if we just had that it was burned but not for energy recovery, I think we, you know, I think that our initial burden would not have been met, and so we wouldn't go -- then move to (e)(1).

JUDGE WARD: But your burden would have been met to show it was a solid waste, because it was at least burned. They would then have to demonstrate that the exemption applied including Subsection F.

MS. GARYPIE: That is certainly one reading, I think. I guess when we looked at it, we assumed that we would need to prove burning

for energy recovery at our initial prima facie case. And so, we would need to prove both.

And so, if we're not proving both, we don't then move to (e) --

JUDGE WARD: And you didn't argue in the alternative to, at least, put in question the issue of these injectants -- that there be a known market for these particular injectants?

MS. GARYPIE: That is correct. In the briefs on appeal, we did not. I think below, my co-counsel did get into some of that discussion, and I can certainly provide citations to the briefs to the Board if that's required. I cannot right now, but --

JUDGE WARD: All right. No further questions on that.

JUDGE FRASER: Any further questions for EPA?

We thank EPA, and we invite Carbon Injection to the stand. And I will ask at the outset, if you wanted to reserve any of your time at the end, or not sure we're coming back to EPA.

It would have been EPA, I'm sorry. You do have a minute left I saw.

We added 15 minutes, and it was initially? So, it's 45 total. If we could reset the clock before us.

Thank you.

Ms. Eiber, is it? Eiber?

MS. EIBER: Eiber. Thank you.

JUDGE FRASER: Eiber.

MS. EIBER: Thank you very much. I'm Keven Eiber. I'm here for the Respondents, Carbon Injection Systems. Eric Lofquist and his partner, Scott Forster, who's holding down the fort back home and my partner, Meagan Moore, is with us today.

So, we've not had the opportunity to appear previously before the Board. It's a beautiful space that you have. I wish I could say we were completely delighted to be here. I don't think we are delighted to be here.

When Mr. Lofquist and his business partner, Scott Forster, started Carbon Injection

Systems, this is certainly not a place where any of us expected to end up, particularly with respect to the issues that we're addressing here this afternoon.

Just briefly, by way of a little background, the evidence showed at the hearing that back in 2005, when they were building the facility in Warren, Ohio, for the storage and the supply of oil to the blast furnace, my clients and a number of brokers and generators of chemical intermediary materials worked very hard exploring the whole issue that we're talking about here today.

They explored whether injectants were intended for the blast furnace, whether injectants intended for a blast furnace would be regulated by EPA as waste because they were being burned for energy recovery.

Nobody had any question about what the Cadence discussion addressed or the nature of the conclusions that had been reached back in 1985 by EPA. Everybody understood that.

But, those conclusions were thought to be wrong. And so, an effort was undertaken in 2005 to approach the Agency, to approach U.S. EPA and to approach Ohio EPA to try to convince them that, in fact, they ought to revisit that discussion in Cadence and reach a different conclusion about whether injectants supplied substantial useful heat energy to a blast furnace.

JUDGE FRASER: And didn't you get an answer that the Agency stood by Cadence?

MS. EIBER: We did. We did. In December of 2005, there was a letter that came from Margaret -- I'm going to pronounce it --

JUDGE FRASER: Guerriero.

MS. EIBER: Thank you.

And also, at the same time, a letter from her counterpart at Ohio EPA that said yes, we're sticking by our Cadence discussion.

That was the whole basis for the fair notice defense that we raised in the case below.

There was one shipment of material

that could have been characterized, admittedly was characterized, as a hazardous waste that had been received by the facility prior to that determination being made in December of 2005.

And the position that we took was that, we get it. That shipment never should have come in. We jumped the gun. It slipped in. The people at the factory didn't know, you know, what the decision had been made at the corporate office.

But that was it. These individuals, this company was approached over the years many, many times with offers to buy different materials for the blast furnace. And every time they asked the question, could this be characterized as a hazardous waste? If the answer was yes, they said we're not taking it.

They never bought any material. In other words, they acquiesced in the decision that they got in 2005. And they didn't pursue it further. We thought about it in 2006. It's very expensive. To go through a delisting procedure

would be astronomically expensive, and there were other circumstances that came up in April of 2006 that prevented them from really devoting any more time and resource to the question.

They just bought other material. It didn't really matter. They weren't buying hazardous waste. They weren't accepting hazardous waste at this facility.

So, and there was plenty of evidence of this at the hearing from the three brokers that testified and from the two Respondents that testified.

And there was a -- there are boxes of e-mail correspondence back and forth that demonstrate this course of dealing. If it was offered, if it was a hazardous waste, they didn't buy it.

JUDGE STEIN: So, does your point go to liability, or does your point go to if liability is found there -- this should be taken into account in determining a penalty. I'm trying to figure out where you're heading.

MS. EIBER: It goes a little -- I think it goes to the fair notice question that has been raised. And there was a suggestion during the course of Mr. Cahn's comments that somehow there was a misunderstanding about what Cadence meant.

There was no misunderstanding about what EPA intended to regulate. That's not enough to give notice, though, of this chemical energy theory. It gave them notice as of December of 2005 that EPA would intend to regulate these materials. That's why they didn't take these materials any more.

JUDGE STEIN: But, let's assume that --

MS. EIBER: There was one shipment that came in.

JUDGE STEIN: -- excuse me. Let's assume that I buy your argument that if EPA intended to regulate chemical energy as opposed to the Cadence discussion and heat value, if there isn't fair notice, okay? Where does that

take you with respect to the questions that Judge Fraser was asking about the heat value?

Because it seems to me that Cadence did put you on notice as of the time of the regulations and as the basis for all the inquires to EPA that you knew that the Cadence product was regulated.

So, that's why I'm -- are you telling me that the only thing that is at issue here -- that this case is about one shipment of hazardous waste?

MS. EIBER: No.

JUDGE STEIN: Or potentially hazardous waste?

MS. EIBER: If the Agency intended to regulate this material, the point -- the only point that I was trying to make to the Board is that my clients acquiesced in this. They acquiesced in this back in 2005.

That's why we don't really -- that's why we never expected to be here. Okay? We're now almost a decade later, and we're still

litigating this.

They understood what the Agency wanted to do. They got it. But they always thought that the Agency was wrong. Okay?

And the Agency brought this case anyway. And at the end of the day, we went to a hearing, and I think we proved that, in fact, the Agency was wrong.

We acquiesced in what the Agency wanted us to do, but the Agency was wrong. They did not have the jurisdiction to regulate this material in the blast furnace.

And so, at the end of the day, it's not just about one shipment, it's not about that at all. The question is whether or not these materials, in fact, provide heat energy to the blast furnace. And if they don't, then the Agency can't regulate them as a solid waste or, therefore, a hazardous waste.

JUDGE FRASER: Well, let's turn --

MS. EIGER: Because for something to be a hazardous waste, it has to be a solid waste.

JUDGE FRASER: Let's turn to that question, so we can come back to fair notice and potentially what you would see, were we to remand this case, what you would think appropriate remedy or issues that are left on the table, all of those questions.

But, if we get back to -- and putting -- let's assume we agree with you that the Agency didn't provide adequate notice that the regulation includes burning for chemical recovery.

So, we're dealing with burning for heat recovery type of questions at this stage of the questioning.

I want to take a slightly different tack just for a minute.

In reading the ALJ's decision and then the underlying record, didn't Carbon Injection Systems claim a $10 million tax credit in alternative fuel mixture -- alternative fuel mixture tax credits in the years 2007 to 2009 for the hydrocarbon materials it was injecting into

the WCI blast furnace?

MS. EIBER: There were -- I don't know a lot about the tax credit issues.

There were, my understanding, tax credits available for the type of operation that they had as a result of their inclusion of certain renewable-sourced materials in with the oil.

JUDGE FRASER: Right, and -- but, the definition of fuel in the relevant IRS Bulletin, it's not identical but, arguably, it's essentially equivalent to how EPA defines burning for energy recovery in the 1985 preamble that is something burned for its heat value.

And so, the question that we have is if the company is claiming it's a fuel, the oil that they're using as injectants are fuels for purposes of the IRS, a sister Agency, and getting a $10 million tax credit for that, how can they argue before us that it's not a fuel?

MS. EIBER: I don't think the IRS is concerned with heat, and I don't think IRS is

concerned with products of incomplete combustion, and I don't think IRS is concerned with the problem of the volume of solid wastes and hazardous wastes.

JUDGE FRASER: Well, with all due respect, the IRS definition of alternative fuel mixture is a mixture is used as a fuel when it is consumed in the production of energy.

Thus, for example, a mixture is used as a fuel when it is consumed in an internal combustion engine to power a vehicle or in a furnace to produce heat.

MS. EIBER: IRS's regulations were concerned primarily with the -- with encouraging renewable energy sources versus petroleum-based or non-renewable sources.

And I don't think that it would be fair or really meaningful to try and draw conclusions about what EPA meant in 1985 when it wrote these regulations based on something that the IRS put in a the tax code many, many, many decades later.

JUDGE FRASER: Right, the question I have is --

MS. EIBER: That, to me, seems like way too tenuous of a --

JUDGE FRASER: Well, no, I'm saying that this is the U.S. Government. And so, your client has argued before one branch of the government that the materials that they are using are fuels and that the fact that they are using fuels, and one of the definitions is the production of energy, so they're using them as fuels. One of the examples is heat.

The other branch, they're coming to EPA saying, but we're not a fuel.

And so, I'm really trying to reconcile those two points.

MS. EIBER: My client doesn't come to the EPA, in this case, and say these aren't fuels in the way that the tax code means.

My client comes to the EPA in this case and says, these materials don't provide energy to the blast furnace.

IRS doesn't care about that. That's not their issue.

Whether they're fuels or not, is sort of an interesting question but it raises a whole host of other regulatory conundrums in the context of this case.

Because there are other provisions in the solid waste definition that says if you're using these things as fuels, and they are fuels, then they're still not solid wastes.

The EPA's position in this case is that they weren't fuels.

JUDGE FRASER: Well, turning --

MS. EIBER: They said that they were -- they gave energy recovery because we called them fuels, but they weren't fuels, because if they'd been fuels, they would have been exempt under a different provision.

JUDGE FRASER: So, turning to the standard, the regulation that EPA used as the basis of the charges against Carbon Injection Systems, I take it you agree that for a material

to be burned to recover energy, it must be burned to provide substantial useful heat energy?

MS. EIBER: That is correct. That is our position. That's always been our position, and we believe that when you look at the course of the discussion in the various preambles over the years, that EPA really made that clear.

JUDGE FRASER: Okay. So, if we go back to that standard, and looking at the -- not the net part of the equation, but the heat in part of the equation, that is where the Board is focusing in light of that standard of do these injectants provide substantial useful heat energy, we first want to look at what's the energy coming in, then we will look at whether that's substantial and then whether it was useful. Those are the three pieces we're trying to pull apart.

So, in your response brief, you write that EPA in the Cadence discussion wrongly concluded that the injectants provided sensible heat because the Agency failed to consider that

the injectants are added cold and the reducing gases they produce needed to raise -- the reducing gases they produce need to be raised to raceway temperature.

And then you add, quote, "this requires more heat energy than can be supplied by the combustion of the injectants."

So, when you say more heat energy, the implication I get from that is you are acknowledging that burning the injectants actually is giving off some heat. It's just not enough heat to get to the raceway temperature.

MS. EIBER: Theoretically, theoretically, if these materials are burned, burned in the sense of combusted, combusted to CO2 and H2O which is the, you know, the old triangle we all saw in Girl Scouts where you need fuel, oxygen, and heat, right?

So, theoretically, if you take these materials, and you burn them, you get heat at room temperature, at room temperature.

Dr. Poveromo testified that, in the

blast furnace and at the temperatures that are in the raceway, they're not even combusted. They are immediately and instantaneously dissociated into carbon and to 2CO. And that's the point -- and I think it's actually in one of the pages that you handed out in your handout a moment ago, I have that quote, I think it's on page 8 or our reply brief as well.

So, they're not even combusted. They're immediately dissociated. And it's interesting, when you look at the Cadence discussion, Cadence talks about this reaction in the raceway of these materials as if it's something that happens in three stages.

I questioned Dr. Freuhan about that at the hearing. Dr. Freuhan didn't agree with this sort of three stage, he sort of talked about two stages, then he said he really talks about it all as one.

And when you look at Mr. Rorick's testimony, I think it really makes no sense to even try and break it up into three, it's one.

These materials move through this raceway in .003 seconds, three-thousandths of a second. Okay? For these mate -- for whatever happens to these materials, it's in three-thousandths of a second in this raceway, and they go from coming in to being -- some of the materials go straight out, because we know from Mr. Rorick's testimony that some of this carbon is not combusted at all. Only a portion of it is even dissociated into these reducing gases, but it's immediately dissociated. And that is an overall endothermic reaction. All three experts were very clear about that. And Cadence is actually -- the Cadence discussion is very clear about that.

When you look at this together, it is overwhelmingly endothermic. And even if you just -- and even if you want to break it into these three little pieces like Cadence did and you just look at that middle step which is, in theory, what you would call combustion which is when these injections go to H2O and CO2 before they

get to 2CO and carbon.

If you look at just that step alone, at the raceway temperature, they provide no heat because they can't get to the point of dissociation until they are heated up.

JUDGE FRASER: Ms. Eiber, if I go back to -- you said all three agreed. If I go back to the questions I was asking EPA, and so we'll start with Dr. Freuhan on page 11 of the handout, and this is from the transcript of the hearing, pages 1180 to 1181.

MS. EIBER: Yes, he said exothermic.

JUDGE FRASER: He says it's an exothermic reaction. That's --

MS. EIBER: I think he was confused. I --

JUDGE FRASER: So, you're saying that --

ME. EIBER: He was confused -- he was actually confused about a lot of that discussion. He was confused about Cadence.

JUDGE FRASER: But, does the -- did

you take -- did you challenge that conclusion at the time in the hearing or is that the conclusion in the record from the hearing?

MS. EIBER: I think if you look at --

JUDGE FRASER: Our job is to look at the record.

MS. EIBER: I think if you look at his entire testimony, I think you would agree that, at the end of the day, Dr. Freuhan agreed with Dr. Poveromo on these issues. And I think that's why he didn't come back on rebuttal.

JUDGE FRASER: And what about Mr. Rorick, you don't think that he testified it's exothermic, either?

If we look at page 13 of the material we handed to you, the question was asked if carbon is oxidized, doesn't that mean energy is being released?

And he says, when the carbon changes from CO or to CO2, there is an energy release.

That is correct, that's standard science.

That's your own expert.

MS. EIBER: When -- if you look at that entire discussion with Mr. Rorick at that point of the hearing, I think what you will see is that he was talking about these not as what is happening at a raceway temperature in the raceway, he made that statement in the context of that is sort of basic chemistry.

In other words, when you --

JUDGE FRASER: And you think the chemistry is changing?

MS. EIBER: No, he was talking about sort of basic chemistry. Go back to your triangle with, you know, fuel, heat and oxygen. He wasn't talking about what happens at the raceway temperature.

And that was the whole point that Dr. Poveromo made. He said, sure, you burn this stuff. You burn this stuff generally, you're going to get -- these are generally considered to be exothermic reactions when you have a combustion reaction. No question. That's what

Dr. -- or Mr. Rorick was talking about when he made that statement.

But Dr. Poveromo's whole point is that when you do this at 2,800 degrees Fahrenheit, that's not what happens. At 2,800 degrees Fahrenheit, in the raceway, when you're at those raceway temperatures, you have -- you don't have that sort of standard grade school science combustion reaction.

What you have is this dissociation immediately which requires a lot of energy which is why, when you put these materials into the raceway, it lowers the temperature.

That's why you have to put more oxygen enrichment in. That's why you have to control these -- you know, that's why you have these --

JUDGE FRASER: But, we're --

MS. EIBER: -- operating controls.

JUDGE FRASER: The question we're asking you isn't whether the injectants give you all the heat you need to get back up to the raceway temperature. We're trying to ask, are

the injectants bringing any heat at all to the table?

We can get to the different question of whether it's substantial. We can get to the question of whether it's useful. But, you still -- it seems to me, you're still arguing net, that there is no net increase as opposed to the very fact that the simple burning of the hydrocarbons in the oil that are being injected is giving off heat.

ME. EIBER: I think when you look at the statement from Dr. Poveromo's report, Dr. Poveromo says, there's no heat. There is no heat from that reaction that you gain in the raceway, even when you break it down to that middle step, there's no heat.

Now I think that's clear from Dr. Poveromo's written statements that were introduced into evidence. I understand that the experts aren't 100 percent crystal clear on that, but I think, on balance, at the end of the day, Judge Biro did a very careful and thorough

evaluation of all of this testimony and of all of these statements and concluded that, on balance, what Dr. Poveromo had to say about it was the more compelling of the evidence that she had in front of her.

JUDGE FRASER: Well, let's go to the heat energy in of the injectants. So, I want to discuss the contract that Carbon Injection Systems had with WCI.

Doesn't that contract call for an injectant with a minimum of roughly 17,000 BTUs per pound?

MS. EIBER: It does. And there was testimony, both from experts and from the brokers and, I believe, it was from Dr. Sass and also, I don't remember if it was from Mr. Forster or from Mr. Lofquist, but they talked about why they were using BTU as a measure in their specifications in their contract.

And I think that EPA's expert addressed this as well, but generally speaking, a BTU test is a fairly good, from a businessman's

purpose, equivalent of the carbon content that you'll get from the material.

You can do a BTU test on site at the facility quickly. It doesn't cost much. You can do it while the truck is there.

If you're going to do a carbon -- a more sophisticated carbon content test, that's like, I think the testimony might have been $200 or $300 per test and there has to be --

JUDGE FRASER: No, I understand that they were using it as a marker for carbon.

MS. EIBER: They're using it as a marker for carbon.

JUDGE FRASER: But, doesn't that still mean that you may have been using it as a marker for carbon, but the very fact that you had that higher carbon content at 17,000 BTUs per pound, it's still indicative of how much heat you can get out of the burning of that material. Is it not?

MS. EIBER: Not at all.

JUDGE FRASER: Why isn't it not?

MS. EIBER: No. Because the material is not being combusted for heat. It's been dissociated into its elements, and the elements then are reacting and reducing reactions throughout the upper part of the blast furnace --

JUDGE FRASER: But, didn't the Cadence discussion say it didn't matter?

MS. EIBER: They're not providing --

JUDGE FRASER: Cadence said it doesn't matter if you get -- even if the heat you get is incidental to the primary purpose. The Cadence discussion, the Agency was very clear, that said heat can be an incidental side effect, but the fact that you get heat out of it doesn't mean that we're not regulating this material if it provides substantial useful heat.

MS. EIBER: The overwhelming evidence at the hearing was, was that notwithstanding how much carbon is in these materials, you're not getting heat from them.

When the carbon reacts in the blast furnace, in order for that carbon to strip an

oxygen molecule from the iron ore, that is a highly endothermic reaction. It is absorbing heat. You're not getting any heat from these materials.

So, you're not giving off --

JUDGE STEIN: So, you're not getting heat?

MS. EIBER: They're not giving off heat. They're not being burned.

JUDGE STEIN: They're not giving off heat, or you're not getting net heat?

MS. EIBER: They're not giving off heat. They are not giving off heat. These are endothermic reactions. They are heat-absorbing chemical reactions.

The heat is coming solely from two sources, all of the heat in the blast furnace comes from two places. It comes from coke that is being combusted, and it's coming from the hot blast air that's coming in through the tuyeres. There's no heat coming from these injectant materials.

JUDGE WARD: When the carbon turns to CO or CO2, isn't that combustion, and doesn't that generate heat?

MS. EIBER: That's not combustion, and it does not generate heat, no.

JUDGE WARD: Because?

MS. EIBER: Because when the materials go from carbon dioxide to carbon --

JUDGE WARD: I'm starting -- I'm taking you all the way back. So, the carbon -- the hydrocarbons? When the hydrocarbons -- the hydrogen and the carbon are separated and the carbon becomes either CO2 and then CO or, I think, you're trying -- you've made the argument that it instantaneously becomes CO, but that process is oxidation, and that does generate heat, doesn't it?

MS. EIBER: That whole process --

JUDGE WARD: Just the step of C to CO, or CO2, does that generate heat?

MS. EIBER: From -- well, it doesn't start out as C, so it doesn't go from C to CO2.

But, that step alone would, in theory, provide some sensible heat if it was done at room temperature.

If it's done at a raceway temperature, it does not. That was what Dr. Poveromo testified to.

So, in the raceway, it doesn't. That's what the evidence showed.

JUDGE WARD: So, at page 10 of your reply brief, there's a couple of points that you're making here about it being the combustion occurring so rapidly as to be virtually instantaneous. I don't think it -- it's not instantaneous, there is a however finite a period of time or a small period of time, there is a period of time that passes, correct?

MS. EIBER: Dr. Rorick testified that these materials pass through the raceway at -- in a time span of between .003 and .005 seconds. So, between three and five thousandths of a second.

Now, if for purposes of applying

regulations to the regulated community, that's not instantaneous, I don't know what instantaneous would be. But, that's the time frame.

JUDGE WARD: So, the time matters how long it takes for something to combust as to whether it's regulated or not?

MS. EIBER: I think it matters if you want to say are these materials combusted, and do they give off heat, yes, I think it matters. I think it is impracticable for a regulation to only apply if you can break something down to something that happens in less than .003 seconds when what happens is an overall decrease in heat value that results from the use of these materials.

JUDGE WARD: So, in terms of the preamble in 1985, the Agency wasn't really concerned with how much time it took for those steps to occur, the Agency was looking at however quickly it occurred that there was at least in one step of that process the release of heat

energy.

And so, didn't that -- I mean to now be arguing that you're not covered by that discussion because, in your view, it happened too quickly to really have happened?

MS. EIBER: I think it's interesting, if you look at the progression of the Agency's discussion of what happens in a blast furnace, I think that that might be instructive on this point.

Because, in Cadence, there is this discussion that sort of breaks it down into endothermic, exothermic, endothermic, overall endothermic. I think that's what Cadence says about the energy from these reactions.

The Cadence argument concludes that there's energy supplied by these injectants, despite that analysis. The Cadence discussion concludes that there's energy provided by these injectants, because it goes back to the overall, sort of, global energy balance that Dr. Freuhan talked about in his testimony where they just

say, look, in a very simplistic way, we're going to take the BTU value of everything that goes into the blast furnace and the BTU value of everything that comes out of the blast furnace in an on balance, you know, it uses a whole lot of energy and it comes from coke, but if you substitute anything for coke, then, you know, we're going to equate it to what you get from coke.

It was a very simplistic overall energy balance theory. And at the end of the Cadence argument, Cadence concludes that it's okay for EPA to reach the conclusion that the use of these materials supplies some heat energy because of that overall energy balance approach and because of the top gas argument.

And then if you go to the 1987 discussion, there's a whole other discussion of the blast furnace.

The Agency, in that discussion, has completely abandoned this notion that injectants supply heat energy, and the only thing that forms

the basis for the Agency's continuing view that there's some heat energy supplied, is the use of top gases. That's it.

And then, you go to 1991, and the Agency doesn't even revisit it.

So, I think the Agency abandoned this notion that somehow injectants supply any amount of heat energy. They abandoned that by 1987.

And so, if you look at the discussion in the 1987 preamble, you won't see it. You won't see it.

Basically, what the Agency did over these -- over its sort of, you know, progression of thinking about these issues, the Agency struggled a lot with the whole idea of material recovery versus energy recovery.

You know, the Agency came up with this -- the Agency clearly was concerned with burning. We know that when you go back to the 1983 preamble, and you can see why, it makes sense. Burning is an issue, but jurisdiction's also an issue.

And so, the Agency said, look, we've got three different kinds of combustion devices. We've got incinerators, we don't have any issues with incinerators. People put things in incinerators to get rid of them, that's clearly waste disposal. We can stop talking about that.

We've got boilers. Boilers clearly are used for heat energy. You know, that's what a boiler does. You can burn anything in a boiler and you get heat from it. You can get heat from pretty much anything you want to burn, you know, in a boiler kind of a setting.

So, the Agency's comfortable with its boilers, because you can logically determine that heat's the purpose there.

But they struggled with the idea of these other types of furnaces and the blast furnace was one where, really, there's material recovery going on. And what do we do about that? Because we're not sure that's really waste disposal, that's not really part of the waste disposal problem.

So, you've got this struggle about, is it within our jurisdiction or is it without our jurisdiction when we're talking about material recovery?

And so, there's this progression of thinking. And the Agency, when it's talking about blast furnaces, comes up in this Cadence discussion with this idea that, okay, we can regulate the blast furnace because we're getting heat energy overall, this sort of global energy balance concept, and we've got these top gases.

In '87, well, we've still got the top gases, that's all we've got, at this point, and then they don't revisit it again.

JUDGE FRASER: So, if the Agency had proven in this case that Carbon Injection Systems was using the energy in the top gas or the heat in the top gas in some way, then we would be having a different conversation from your perspective? Is it all about where the top gases are used?

MS. EIBER: We'd be having a very

different conversation. I think we'd still be having a conversation. It would be different.

When, first of all, the Agency in this case, I think, unquestionably took the position that, based on Cadence, and really without going further than Cadence, that all they had to show was the use of injectants in the raceway of the blast furnace. That was their case going into this hearing, you know, that was their approach.

They elected to really ignore the top gas issue, in large part, except in the context of their penalty discussion. The Agency said, well, we've got to worry about these top gases, because we've got emissions, and we've got --

JUDGE FRASER: But didn't Mr. Rorick say that the blast furnace at issue here was a closed system?

MS. EIBER: No, he did not.

JUDGE FRASER: I think that's in his declaration.

ME. EIBER: He said that -- well, he may have said that it was a closed system in the

sense that they're not just going to straight to the atmosphere.

In most blast furnaces, and, in fact, I think Mr. Beedle testified in this case that there was an air permit at the WCI facility and there was a scrubber and a dust collection system.

So, in that sense, absolutely, it's a closed system in the sense that these are not uncontrolled air emissions.

The question, though, about top gases is, what's the facility doing with them. Okay? And when you look at these sort of general statements about how a typical blast furnace is built or how a typical steel plant works, what you see is that top gases are considered useful.

You know, no manufacturer gets rid of something that's useful if they can use it, right, that's -- you might as well just put your money up the stack. So, they're useful.

Typically, they're used in power plants. They might be used at the steel mill.

They could be used in boilers. But, they're not necessarily used in the stoves to heat the hot blast, and they're oftentimes flared.

We sat in the courtroom at the hearing in this case and looked at the flare at the LTV stack that was visible through the window of the courthouse.

JUST WARD: So, Counsel, I think that the Agency argued here that the record shows that it's not just -- it's industry practice to use these top gases in the blast furnace or otherwise, perhaps.

MS. EIBER: Or otherwise.

JUDGE WARD: But, and as you just said, what manufacturer would simply just let them go to waste? They'd put them to some use.

And so, if they were used in some way, whether they were used in this blast furnace or otherwise put to some use, doesn't that bring the top gases into -- bring these injectants into the regulatory scheme because of that use of the top gases?

MS. EIBER: Well, first of all, they're not out of the regulatory scheme. Okay? Top gases are clearly regulated by the EPA.

JUDGE FRASER: I think the question is whether the injectants. Doesn't it bring the injectants into the regulatory scheme, because they're being put to some use?

MS. EIBER: Not any more so than the iron ore, or the limestone, or the coke, or anything else. Under that, if you take that approach to its logical conclusion, every raw material that's used in the manufacturing operation, if the manufacturing operation has a coke product or a byproduct that you could say is ever burned anywhere or is discarded in some way if it's thrown away in a landfill, by that rationale, every raw material ends up being a solid waste at the outset.

And I think it's really interesting to think about this in a slightly related, but different context.

Issues about what's a solid waste and

what isn't a solid waste come up a lot of different ways. This is a very complicated rule, and it's got lots of little parts and exceptions and exclusions and bells and whistles. And one of those has to do with spent materials.

And I will say that your introduction I guess it was still this afternoon was very, very good except for one point that I do want to point out.

There was never, I don't think, any assertion in this case that the materials in question here were ever spent materials. These were clean manufactured streams that came straight out of chemical manufacturing facilities. These are not like Cadence, they're not spent products, they're not spent solvents. They're not previously used in any way.

But it's interesting to think about spent materials as an analogy because when -- and I don't remember exactly which case it was, but when a regulated entity has a material that they have used for its original purpose and they then

want to take that, when they can't use it for that purpose any more, and they want to use it for something else like a fertilizer, okay? That regulated entity may say, look, it's not a spent material. Okay?

It's not a solid waste, because it's not a spent material yet, because it's not spent, because I can still take it and use it for this, and then I can use it for this, even if it's not in the same facility and not for the same purpose and maybe not even by the same people.

And the Agency says, no, we're not going to do that. We're going to look at the original process, the original purpose, and we're going to stick to this process. And we're going to say, is this a solid waste based on sort of this parameter or this sort of scope.

JUDGE FRASER: Ms. Eiber, I think we're -- if I can -- please hold on just for a second, hold on for a second.

I'd like to return to the top gases and what I really want to hear from you is, did

you introduce any evidence at the hearing below as to how this facility was using the top gases, or did you stay silent on that point?

MS. EIBER: We addressed the top gas issue in response to the way that Region V raised it in this case.

So, we actually put in a lot of evidence about the top gases, but EPA never claimed that this blast furnace got heat energy from top gases. That was not part of their case.

And so, we did put in a fair amount of evidence about the top gases and what our evidence showed was that top gases are generated by a blast furnace inevitably. And that the volume of top gases that is generated is a function of the production rate of the furnace.

JUDGE WARD: I don't mean to cut you off, but I really want to get to the point. So, it doesn't sound as if you introduced any evidence as to how these top gases were used, maybe about their composition and how they might have been generated, but you didn't introduce

evidence as to how they were used at this facility?

MS. EIBER: There was one piece of evidence that was introduced as to how the top gases were used at this facility and that was a letter that I believe was authored by Mr. Lofquist back during the 2005 exchange of communications with the Agencies that indicated that the top gases were not used in the stoves.

Now, Judge Biro mentions that one piece of evidence. As far as I am aware, that is the only piece of evidence that is in the record as to how the top gases were used at this particular facility because the EPA didn't base their case on the use of the top gases in this facility.

It was the EPA's position that they were uncontrolled, and that it was an open system. And we addressed that.

Now what Mr. Rorick did say, though, that goes to the extent to which the injectants even contribute to top gases is that if you use

injectants as a substitute for coke, the volume of your top gases goes down.

JUDGE FRASER: Can I go to that point right now on coke? So, coke is added to the furnace, the blast furnace, to provide heat, correct?

MS. EIBER: It provides three different roles in the blast furnace. The coke goes in at the top. It's charged into the top in layers with the iron ore and limestone and other dry, lumpy raw materials. And it provides -- it's in there for three purposes.

It's in there because, as rocks, as big chunks, it provides this permeable grid. If you can imagine water in a bucket of rocks. So, it provides structure to what's happening in the gas furnace.

It also provides a source of reducing gases. So, it's in there for its material value. And it provides, by being combusted in the raceway, it provides the heat that then generates the reduction reactions that take place

throughout the various levels of the blast furnace.

JUDGE FRASER: And with respect to the heat component of those three functions for coke, do you know what the BTU per pound value is of coke roughly?

MS. EIBER: I don't know off the top of my head.

JUDGE FRASER: I think it's in the 12,000, 13,000 BTU per pound range.

MS. EIBER: It could be, I don't know the answer to that.

JUDGE FRASER: So, presuming that, if we have coke at 12 to 13,000 BTU per pound and you're adding these injectants at 17,000 BTU per pound, isn't it reasonable to conclude that the injectants are, by the very nature of however fast it takes, combusting, releasing that amount of the heat energy into the system?

MS. EIBER: No, because the injectants aren't going in as an actual substitute for any of the amount of the coke in the blast furnace

that is providing the heat.

Not all the coke is burned. There's -- coke does three different things.

JUDGE FRASER: No, I heard that, but I also -- but I heard you say that coke is in part -- I want to focus on the heat part of coke, not the other two components of coke, just the heating value.

So, if we are talking about how much heat is being generated by the coke and you're adding -- and you have a blast furnace that has no injectants and then you have a blast furnace that has these oil injectants, don't you need less coke -- it's still the same amount of coke?

MS. EIBER: You actually use a little more coke because you need a little more heat because of the injectants.

So, you actually -- you don't use as much coke -- the amount of coke that's in that blast furnace that is being burned goes up a little. And the amount of coke that's in that blast furnace that is being -- that is reacting

as a source of reducing gases is going down. Okay?

But, the amount of coke that's being burned goes up.

JUDGE FRASER: And is the --

MS. EIBER: So, because coke is doing three different things. Not every molecule of coke does all three things, different amounts of -- it's like a, you know, some of the coke does this, some of the coke does this and some of the coke does this.

The injectants only substitute for the coke that's providing reducing gases and it doesn't substitute at all, in fact, it requires a little more of the coke that is providing heat.

JUDGE FRASER: But in --

MS. EIBER: The coke that provides heat is not the same as the coke that's providing the reducing gases, it's doing three different things.

JUDGE FRASER: I understand that and I'm not worried about those other two right now,

I'm trying to get back to the heat end. And so, we can put aside the reducing gases, we can put aside the grid, I want to focus on the burning of the coke and that there is coke -- the carbon in the coke is going to carbon monoxide in the raceway, is it not? Just that part of that coke, the function of that part of the coke?

MS. EIBER: It would be such a wonderful thing to be able to have our experts here today. I'm sure it would be useful to all of us.

I don't think it would be accurate, according to Dr. Poveromo, to say that the coke is providing -- did you say carbon dioxide or --

JUDGE FRASER: Carbon monoxide, CO.

MS. EIBER: Carbon monoxide in the raceway. The carbon monoxide is all up in the furnace. Nothing stays in the raceway. It doesn't stay in the raceway.

JUDGE FRASER: So, none of the coke that's at the -- that's coming down into the raceway zone is not combusting there and the

carbon is not generating the gases? Because I understood the gases were going up.

MS. EIBER: The gases go up.

JUDGE FRASER: So, they've got to be coming from some place to -- they've got to combust down below from something to be able to become CO to go up.

MS. EIBER: That's right. The coke combusts in the raceway.

JUDGE FRASER: So, that is the carbon in the coke is combusting in the raceway to make CO?

MS. EIBER: It doesn't combust to CO, it combusts to CO2 and H2O. It dissociates which is an endothermic reaction to CO and carbon.

JUDGE FRASER: And that occurs --

MS. EIBER: That was the whole point of the three step reaction that Cadence talked about and that Professor Freuhan sort of condensed into one step or two steps, depending on which question he was answering.

JUDGE FRASER: So, it's your position

that the injectants are not providing any heat to the furnace?

MS. EIBER: Correct.

JUDGE FRASER: And that is counter to a statement that, if we turn to pages 29, actually, it's page 32 in the handout, but this is a Compliance Inspection Report that was introduced into evidence before the ALJ. The EPA inspector was Michael Beedle and the conversation was had with Bob DeLost or DeLost --

MS. EIBER: DeLost.

JUDGE FRASER: DeLost, coordinator of blast furnace operations and his statement on page 32 is that the injection of the fuel increases the temperature from approximately 1,600 to 3,300. The injection point of the oil and natural gas is at the bottom of the furnace and that the purpose of the injection is to add heat value and that there is a baseline BTU value of the fuel, otherwise, there would be a cooling reaction.

And then, on the next page, he says,

WCI uses the oil for the BTU value in the blast furnace.

So, how do you reconcile these statements by the blast furnace operator at the time of the inspection that the injectants are being used to provide heat with the later statements before the hearing -- in the hearing?

MS. EIBER: I don't think any of the three blast furnace expects that testified at the hearing would agree with this statement. I don't think any person from EPA who authored any of the discussions that we've seen in the preambles would agree with this statement.

This statement's just completely wrong. Mr. DeLost, I don't know who he is, he's not the blast furnace operator, he says he's the coordinator of blast furnace -- it says he's the coordinator of blast furnace operations. I don't know what that means. I don't know what his educational background is. I don't know what his experience is. And I don't know whether Mr. Beedle accurately transcribed what he heard from

him.

He was not called to testify at the hearing. And, you know, we don't who he is. But I don't think there's any question but that this statement is completely wrong.

JUDGE STEIN: But this was introduced at the hearing, was it not?

MS. EIBER: I don't think EPA would stand up here today and tell you that this statement was correct in any way.

JUDGE STEIN: Was this introduced at the hearing or not?

MS. EIBER: EPA introduced every single piece of paper that it collected over a ten-year investigation at this hearing. There were hundreds and hundreds of thousands of pages --

JUDGE STEIN: I'm just asking for a simple question. Was it introduced or not?

MS. EIBER: This report was introduced at the hearing.

JUDGE STEIN: Thank you.

MS. EIBER: And, in fact, Mr. Beedle, at the hearing, recounted this statement. And I think that the takeaway, really, the only legitimate takeaway from this statement is that going into this hearing, EPA believed, and this is what Mr. Beedle was focused on, that it had to prove that the injectants provided heat in the raceway.

That's what he understood he needed to do. That's why he asked Mr. DeLost the question. That's why it's in the report, but it's not correct.

JUDGE WARD: So, I think that the question to focus on the addition or the addition of heat from the burning of these injectants, the reason it cools it off is because it nevertheless doesn't get up to the existing temperature in the raceway, correct?

MS. EIBER: Well, I don't read the statement from Dr. Poveromo's report as being limited to that single one point because he says in his report that these materials immediately

dissociate and don't combust at all at the temperatures that exist in the raceway.

He nonetheless does say, and I think there's a number, if you look at the Wakelin Report, if you look at the Jeschar & Dombrowski White Paper which has a number of very sort of interesting charts, you know, I think that they all agree that Because these materials go in cold and they have to be brought up to raceway temperatures, that that overall has a chilling effect on the raceway.

I mean, I think that everybody would conclude that is true.

JUDGE WARD: But when they combust, they still release positive heat even though it's not enough to bring it up to the raceway temperatures. And so, in that environment, the overall temperature is lower.

But it still seems, at least to me, that that is nevertheless adding positive heat through that combustion process even if it is virtually instantaneous. The record appears to -

- seems to suggest strongly that that is still, in fact, happening.

MS. EIBER: I think that the record -- I think there is conflicting information in the record on that point. That is, I think, the most that I would say about it.

I think that Dr. Poveromo is -- I think that his testimony suggests that there's not even heat to that extent, but there's certainly all of the other testimony would suggest that, at a minimum, there's still a chilling effect because of this need to bring the temperatures up and the fact that they go in at room temperature.

So, I think there's a little bit of testimony on both sides on that point.

JUDGE FRASER: Well, in turning to what Dr. Poveromo stated, and this is page 26 of your packet, it's page 2544 of the hearing transcript. And the question was posed, why don't injectants help perform the energy role that coke plays?

And Dr. Poveromo responded, the big problem is because they're injected cold into a blast furnace that's really the problem. If you had some way to get the injectants into the top of the furnace and somehow preheat them up to raceway temperature, then, indeed, they could provide an energy role. But, they're injected cold and so it takes a lot of energy to heat them back up to the raceway temperature and the net reaction of heating them up, plus the reactions themselves, those net reactions, are endothermic and require energy.

But so, I don't read this as saying that they're not brining -- the injectants aren't bringing anything to the table, they're still bringing 17,000 BTUs per pound to the table of heat energy versus steam which you also could get the hydrogen for the reducing agent which isn't bringing any heat energy to the table or would have a greater cooling effect, would it not?

So, what I'm struggling with is that question of heat energy in, that if you're

looking for an injectant to be a reducing agent, both of those injected cold would have to be elevated to raceway temperature. It may take more energy to do that.

But if there is one injectant that's bringing no BTU value to the table, there's nothing -- there's no carbon to burn and there's another injectant that's bringing even more BTUs per pound than coke has, how you can say that the injectant, even if it needs more of a push to get back to 3,500 isn't bringing in substantial -- isn't bringing in heat. We can get to substantial and usable isn't bringing in heat.

MS. EIBER: I think that you can certainly read the testimony that way. I do think, though, that you have to also look at Dr. Poveromo's statements about the immediate dissociation and the fact that this is an instantaneous sort of -- I hesitate to even call it a step. It's this instantaneous sort of process of these molecules dissociating, and at the very -- you can't get them to the

dissociation point where they're going to turn into the reducing cases without adding to them a whole lot of heat.

And you get that heat from the preheated coke that is burned in the raceway that you're burning at a greater rate because you are injecting oxygen in order to generate more coke burning in order to deal with the injectants that are going in.

JUDGE WARD: But, if you use steam as an injectant as opposed to these fuel, wouldn't you have to introduce even more energy?

MS. EIBER: I don't think you can use steam as an injectant. I think it's --

JUDGE WARD: I'm not sure exactly where that notion comes from.

JUDGE FRASER: It's in the testimony as examples of another reducing agent that even has a bigger chilling effect.

JUDGE WARD: Right. Or natural gas would have had an even greater --

MS. EIBER: Natural gas has more

hydrogen --

JUDGE WARD: So, if you started with natural gas --

MS. EIBER: -- and has a greater cooling effect.

JUDGE WARD: So, if you start with natural gas, you'd have to introduce more energy -- you have to introduce less energy because of what the fuel injectants bring to the table if you use them in lieu of natural gas, correct?

MS. EIBER: If you use natural gas, natural gas, I believe if I'm remembering the various sort of charts and graphs correctly, has more hydrogen. And so, there is more reducing gases that have to be brought up to temperature which requires more energy.

And if you use pulverized coal, you're at the other end of the spectrum with respect to injectants. And oil is sort of right in the middle.

JUDGE FRASER: And that's sort of how we are struggling with understanding, and we can

get to the net argument, but how we are looking at -- on that simplistic equation of heat energy in and we recognize you've been talking quite a bit about the flip side of the heat energy out, which is the other side of the equation, that they're absorbing heat. So, they may be --

But we're focusing on that heat energy in, so the very fact that oil is being used as an injectant and has significant BTU value in and of itself, it is bringing heat energy to the table.

We can then discuss how much it's taking off the table for whatever reason and then we can talk about what is net and what's the right interpretation of substantial useful heat.

MS. EIBER: I don't think that it would be correct, although I'd love to have a conversation with my expert. But I don't believe it would be correct to assume that the amount of heat, putting aside whether you want to call it substantial or useful, but the amount of the heat, even equates in any way to what you're referring to as the BTU value of these materials

because they are not completely combusted.

Even if they are, even if you want to take these three steps and look at this interim step, that's a small fraction of what's going in.

And so, you can't even look at -- I think it would be a mistake to assume that whatever the volume is times its BTU value would be some measure of what this little bit of heat is, if there is a little bit of heat which I'm not sure Dr. Poveromo would see --

JUDGE FRASER: Well, I guess I see a question about the little bit. I think Dr. Rorick's testimony was something like 30 to 40 percent is combusted in the raceway, or maybe he said 60 to 70.

There was some 30 to 40 percent --

MS. EIBER: I don't remember the percentages, but they may be.

JUDGE FRASER: Somewhere in that range, so let's presume it was 30 to 40 percent at 17,000 BTUs and I think the record shows there was something like roughly a million gallons per

month being injected into the furnace.

That seems to be quite a bit of heat in. I think the contract says up to 1.4 million gallons a month and the ALJ's decision at page 14 says a total of 55 to 60 million gallons total of injectants were at issue in this case.

MS. EIBER: If you look at on sort of a percentage basis with respect to the production volume of the blast furnace at the injection rates that were experienced at WCI, the injection volume was less than .01 percent of the materials going into the blast furnace. So, less than .01 percent --

JUDGE FRASER: Explain that. So, in my numbers that are in the contract and in the decision, so let's just use a round number, 60 million gallons total of injectants are used. Is that your .01 percent equals the 60 million or it's .01 of the 60 million? In which case, what's happening to the rest of it?

MS. EIBER: Point zero one percent -- if you look at what's going into a blast furnace

on a daily basis, let's say on a daily basis in terms of volume of materials. With the type injection that they were doing on a daily basis, the injectant would have amounted to .01 percent of what's going in.

The 60 million --

JUDGE FRASER: Of what's going into the furnace as a whole?

MS. EIBER: The furnace as a whole.

JUDGE FRASER: Okay. That --

MS. EIBER: Yes, so when you're talking about this 60 million pounds, I think that that was a figure about the amount of injectants that the CIS facility purchased over the life of the facility. It doesn't really bear a direct relationship to the percentage of injectants versus percentage of coke or other inputs into the blast furnace.

JUDGE FRASER: So, there's two different questions. I think you're answering a question of how much of the -- out of everything that's in the mix in that furnace, how much of

that mix was the injectants?

MS. EIBER: Correct.

JUDGE FRASER: And so maybe you're backing into -- so therefore, how much energy are they bringing into that process?

I'm asking a question of if you're -- even if you assume 30 to 40 percent is reacting, 30 to 40 percent of a million gallons a month times 17,000 BTUs per pound, seems like that would be some significant heat into your reaction as opposed to steam which may not be bringing anything on.

MS. EIBER: Yes, it would be --

JUDGE FRASER: I think.

MS. EIBER: Yes, I don't have any way to do that math. You know, I don't have any way to do that math. I can't tell you that that's significant or not.

I can tell you that in my view, the -- it's my view Because I don't have Mr. Rorick or Dr. Poveromo standing here behind me, you know, if going into this blast furnace production,

you've got .01 percent and then you're only combusting or getting any kind of heat use, if any, out of 30 percent of that, you know, what does that take you down to .003, is that significant? You'd have to as a blast furnace operator.

But I can assure you that Dr. Poveromo and Mr. Rorick, you know, the whole point of their testimony was that it was not.

You know, the whole point of their testimony at the hearing was to demonstrate to the Administrative Law Judge, and I think that they did demonstrate to the Administrative Law Judge that these materials, in fact, don't provide substantial useful heat energy. That's why they were there.

JUDGE STEIN: Didn't EPA really decide this question when it promulgated the regulations and put the Cadence example in? And wouldn't your client and other had an opportunity to then challenge those regulations at that time?

And if that's correct, why shouldn't

I just see this as a belated attack on the regulations that's out of time?

MS. EIBER: Well, there's I guess a number of different things I'd like to say in response to that.

EPA, back in 1985, could certainly decide what it meant, but I don't think EPA could decide what happens in a blast furnace. Okay? That's not something that's subject to an EPA decision.

With respect to whether this is a belated challenge, I'll go back to my opening remarks. When my clients first went into business two decades later, they approached the Agency and did challenge the Agency's understanding of this.

And when the Agency said, no, we're sticking by our earlier understanding of what goes on in a blast furnace, my clients basically said okay. And, you know, that was in 2005. It's a decade alter and here we are still fighting about it, but not Because we didn't say

okay. Okay?

You can't challenge -- the only way you can challenge something like this is you can try and go in and get a delisting of a specific material or you can fail to comply and invite an enforcement action. But, you can't go into a court and get a Declaratory Judgment that a regulation doesn't mean what the EPA has said it means.

There's no avenue really to challenge. So, my client said, okay, we're not going to challenge it.

JUDGE STEIN: Well, you could have challenged the regulation insofar as it swept in that particular interpretation. I don't see why you couldn't have brought that challenge when the regs were promulgated.

MS. EIBER: My client's weren't in business when the regulations were promulgated. You know, we're all, you know, back in college and high school when these regulations were promulgated.

JUDGE STEIN: But the particular regulation is challenged, then there's an opportunity to challenge that regulation. You don't get to come back 20 years later and argue about something that was swept in.

I mean, there's a specific time within that the Statute provides to make that challenge. And, typically, the Board does not revisit these regulations in a context of an enforcement action. That's kind of too late.

So, I don't want to interrupt Judge Fraser's line of questioning to the extent she has something else, but I hear the arguments that you're making, but I am not confident that Judge Biro was free to disregard the interpretation of the administrator of the Agency in promulgating a final rule.

MS. EIBER: Okay. Well --

JUDGE STEIN: And that is one of the things, not the only thing, but that's one of the things that I'm struggling with in the context of this case.

MS. EIBER: Yes. I think that there's a big difference between an agency saying this is what our regulations mean versus this is what happens in the real world. Okay?

And if the regulations are based on an understanding of what happens in the real world that is not correct, there must be an opportunity for somebody to come in and say, hey, look, you ought to look at what's really happening in the real world if those facts are wrong. And if the facts as they really are are such that you're outside your jurisdiction, you know, that's a jurisdictional question. It's not really a question of interpreting the Agency regulation, it's a question of does the Agency have jurisdiction over these materials?

And that's why I think it's appropriate for us to challenge that at this proceeding or, you know, in any other proceeding that you can get to. There aren't a whole lot of opportunities to bring these challenges.

JUDGE STEIN: Well, with all due

respect, there are challenges to EPA regulations that say that EPA has exceeded its jurisdiction. And there are a number of them in, obviously, the, you know, solid and hazardous waste area about the extent to which it's gone into the manufacturing process.

So, I hear your point, but I'm not sure -- I'll reflect on that.

MS. EIBER: Well, I appreciate that and I think way over my time.

JUDGE FRASER: We have kept you here, yes, we've kept you here.

JUDGE WARD: I have just a few questions. Just a few questions on burden of proof as I'd asked EPA Counsel.

So, assuming the Board were to conclude this wasn't burned for energy recovery, wasn't it still burned and, therefore, at least presumptively, a solid waste?

MS. EIBER: No, I heard you ask that question earlier and I think the answer to that is no. I understand the provision that you're

looking at, but you have to take a look at the definition as whole.

And there are at least three other parts of that definition where the phrase burned is specifically burned for energy recovery, burned for energy recovery, burned for energy recovery.

And so, what you see is you see a definition of solid waste that -- I wish I had it in front of me -- but you have a definition of solid waste that says it is solid waste if it's burned for energy recovery.

And you look at this chart that's in the regulations, it's like a grid, and that grid says if it's this type of material, if it's a, you know, a commercial chemical product used as a substitute, you know, whatever different categories are, it's burned for energy recovery.

And then you get a definition of what is an exempt recycled material and then you get a sort of, you know, what I would say is sort a belt and suspenders exemption to the exclusion,

you get another sort of reiteration of but it is a solid waste still if it's burned for energy recovery.

And if you just look at that first statement that just says if it's burned, that's enough. You run into real jurisdictional problems which was the whole point of these earlier discussions about well, what kind of burning can we regulate? And EPA concluded, you know, over this whole entire legislative --

JUDGE WARD: Okay, we did hear you earlier, I just want -- and I don't want to keep you up here too much longer.

But so, let's assume, though, that we concluded, even if not burned for energy recovery, it was burned, and that that shifted the burden of proof to Carbon Injection to demonstrate the exemption including that these injectants -- that there's a no market for these injectants.

At least, as I read your briefs, you did litigate that issue. You did introduce

evidence, but that evidence seems could be viewed as a little thin, which is the contract at issue here which hardly proves that there's a no market elsewhere and Mr. Rorick's testimony of the general use of injectants, but not these specific injectants.

MS. EIBER: Well, I think that there was actually quite a bit more evidence than that. And I think that the -- that was the whole point of Footnote 30 in Judge Biro's decision, which goes on for four or five pages in small print and single space.

You know, that was her explanation of how the Respondents actually met their burden to the extent that they had a burden.

You know, so she basically said, look --

JUDGE WARD: But she didn't address F, she addressed whether it was used as an ingredient in the process. She didn't address, I don't think, the question of known market which is why, in your briefs, you dropped a footnote to

say, but here's the evidence. Is there any other evidence beyond what you cited in your footnotes in this case?

MS. EIBER: There was other evidence. There was a gentleman from Neville Chemicals that testified about, you know, their sale of these materials. There were three brokers that testified regarding their sale and market of these materials.

EPA put in boxes of email communications regarding the offer, sale, pricing, you know, basically the commerce surrounding these types of injectant materials.

You know from the evidence that we discussed a moment ago that, in fact, there were over 60 million gallons of various injectant materials that were purchased at this facility alone.

Mr. Rorick testified that injectants have been used in blast furnaces since, I don't know, for over half a century. And he talked about the different types of materials that are

suitable for use. There were specific expert opinion about the suitability of these materials for this purpose.

And then there was testimony from, I think, three IFF witnesses including information about their marketing of their materials, which were the other -- which was the other -- these were the unitine materials that were the other material the EPA claimed was a waste material.

But there was testimony from three people from their company and there were written responses to information requests that included all of this type of information, all of which were introduced by EPA which numbered from, you know, among their many exhibits which didn't really get a lot of discussion at the hearing and it never got a lot of discussion at the hearing and I guess it only merited a footnote in our briefs Because there really was no issue about this. It was well proved.

JUDGE WARD: All right, thank you.

JUDGE FRASER: I just have one

question just, you had talked about disassociation of the injectants almost instantaneously and I just wanted to -- was your argument that, therefore, that it was not burning or you were just saying it happens so fast? I was just trying to get -- what was the distinction you were drawing? Because you kept using the word disassociation in the construct here.

MS. EIBER: I think that when we were discussing this earlier, we were focused on the, you know, this sort of instantaneous reaction.

But, the point that you make about is that burning I think is a good point and I think we made that point in our briefs. That's not burning.

And EPA sort of ran right by the issue of what is burning and what is recovery. I think those are actually are important issues. And when you're talking about dissociation into chemical components and the use of those components in reducing reactions, you're not

actually talking about burning.

So, I think that that's a good point to remember.

JUDGE FRASER: And if we were to remand this case, are there further issues that you think would go before the ALJ that needed to be addressed that haven't been addressed?

MS. EIBER: The idea of this case getting remanded so that we can go back for years and years and years of more litigation is truly appalling to us, I have to say.

I don't know what would happen on remand. I don't know whether it would be a remand for the ALJ to consider the record that is already before her which, to us, would be preferable.

Obviously, what we would like to see in this case is an affirmance of the ALJ's decision.

We've been at this for a decade. This case means nothing to my clients from a business standpoint. It is just, you know, it's like

seven years of litigation really ought to be punishment enough.

JUDGE FRASER: Well, Ms. Eiber, thank you for your time. If you wanted to take two minutes to have uninterrupted closing statement?

MS. EIBER: I hope I've answered your questions to your satisfaction. Again, it would be delightful to be able to have my experts on my shoulders whispering my ear.

Like Mr. Cahn, you know, I'm not a chemist. So, I appreciate you listening to me.

JUDGE FRASER: Well, thank you very much.

Mr. Cahn, I have one final question for you. I had a question and then we were going to give you five minutes if you had -- since we went quite a well a ways over in questions Carbon Injection Systems.

But, I had a question going back to the brief that you had before us where quite a bit of your argument was also focused on the net question and less on the substantial useful heat

standard.

And so, wanting to know, has the Agency moved away from that? Is the Agency -- was that a -- were you simply responding to what Carbon Injection Systems had argued or is that the standard that the Agency is adopting for this case?

MS. CAHN: I have to base my answer on the Cadence discussion which says that all of the reactions are net endothermic.

If you step back and look at the whole blast furnace operation, everything is going in cold originally. All of the material, the coke, the limestone, it's all going into the top of the blast furnace cold.

So, everything is -- when you step back and look at it, is a net endothermic reaction.

That was my -- that's my reading of Cadence.

JUDGE FRASER: Okay, thank you.

MR. CAHN: I don't think we're

stepping -- I don't think that it's a step back.

JUDGE FRASER: Okay, thank you.

MR. CAHN: This is a, perhaps, too simplistic an answer to some of the questions that the Board has been asking. But, it's -- when you come down to it, carbon molecules, when they're standalone carbon molecules, whether they come from the coke or whether they come from the hydrocarbons, they're going to oxidize at the same temperature.

And an analogy for that would be a pot of hot water on a stove. If it goes on there preheated and a pot of cold water that goes on the stove cold, those two pots are going to both come to a boil at 212, it's just the one that's been preheated like the coke that's been descending and getting heated up is going to come to a boil quicker. But, they're both pots, both pots will come to a boil at 212.

The only evidence that I think that I'm aware of that the ALJ cited to with respect to top gas not being used is contained in C Ex 2

at page EPA 2734 and it's a letter from Mr. Lofquist acting on behalf of General Environmental Management to Ohio EPA.

It's the third paragraph and Mr. Lofquist writes, the purpose of high carbonaceous liquids is not to supply heat for the hot air blast.

And, Judge Biro, at page 86 of her decision identified this statement as self-serving and not entitled to much weight.

So, I think the Agency has gone forward with evidence to support the conclusion that industry practice is that top gases are used to supply substantial useful heat when those top gases are burned in the stoves. And that Respondents below put on no evidence to the contrary other than this one statement that was rejected.

My co-counsel was helpful and pointed out that in the recently filed EPA's Motion to Strike, we did cite two additional cases in addition to Halmet. One is Decision in Footprint

and I don't have the citation in front of me, I just have the case name. And then the second is Stevenson.

And both of those cases support the conclusion that it's appropriate for the Board to take administrative notice of the information that we cited to that's contained in the administrative record.

The last point I want to make is that I don't want the Board to be left with the impression that this case is about one load of K022 and that the company then towed the line with respect to burning of secondary materials or processing of secondary materials which were then burned by their customer.

This case is actually about thousands of gallons of secondary materials which the Agency, I believe, proved below were secondary materials in the sense they were still bottoms.

That's a fact, if this case is remanded for the ALJ still to determine, though.

JUDGE STEIN: I have a question that

I'm a little confused by. The Board doesn't take sua sponte very often. And we took it in this case in part because we think that the interpretation being advanced by the ALJ is a very important interpretation, you know, not just in this case, but also elsewhere.

And so, it's really important to us that, as we sort through the issues in this case, that we're clear that this really is the interpretation.

And looking at 50 Federal Register 49164, which does make a reference to net reactions, I didn't read that language as adopting a net test. I read it as rejecting a net test.

And I guess I think it would be helpful that before the Board ultimately decides this case if we can have some clarification on that point.

And I'm looking at language that basically says, Cadence argument, in fact, proves too much. It is clear that net furnace reactions

are endothermic. Heat from the coke and fuel injections is required to drive reactions that reduce iron ore to metallic iron.

Under Cadence's logic, the material involved in an endothermic reaction is not a fuel irrespective of heating value, the coke would not be a fuel.

It is the primary fuel source to the furnace. The fact is that both coke and fuel injections like Cadence product serve a dual purpose of providing substantial needed energy and reductants.

And I am concerned that this focus on net and, you know, exothermic and endothermic, you know, has added perhaps a lot of confusion to this case. And I'm not asking you to clarify that right now, I'll turn it back to Judge Fraser, but I continue to -- it'd be helpful to me to understand why the Agency believes that the net calculation is called for by the Cadence example because I need to understand why that's the case.

JUDGE FRASER: Thank you. I want to thank both parties, both for coming today for your responses to our prolonged questions. It's much appreciated in helping us to really address the important issues that are at play in this case.

Our goal is to try and get a decision done by the end of the year and so that we could at least bring some finality to this phase. And so, we appreciate your time in being here.

I would invite the parties to the extent they think it would be helpful to file a post-hearing brief with us not to exceed 15 pages by close of business next Friday. That doesn't count table of contents and cases and all of that.

And then particularly focusing on -- you don't need to repeat what else in your brief, but if you understand the focus of our questions today and the concluding question that Judge Stein just raised, in particular.

And with respect to that Cadence

example, I would invite both parties to look at the Babcock and Wilcox reference that's in Footnote 22 of the preamble to the final rule because it does address in more detail the endothermic nature of the reaction and what's going on at 35. I think it's 3,000 degrees Fahrenheit is what they address and points out that the heat that is absorbed is not lost. It is recovered when the gas is cooled down.

So, it lends some light, I think, to the text that's in the Cadence example.

And so, to the extent that the parties would like to file post-hearing briefs, that would be by close of business next Friday. We are not going to accept reply briefs arguing about what the other side said. This is really for us to the extent there are additional points you think would be helpful in our review and understanding based on the questions we had today and recognizing you did not have your experts here.

So, if there's an opportunity that

being put on the spot you gave an answer, but being able to go back and get further clarification and understanding, that would be helpful as well.

Yes, no new evidence, just -- no new declarations, just summary arguments to the extent you would like to.

And, with that, the hearing is closed. And, again, our thanks for your participation.

(Whereupon, the above-entitled matter was concluded at 4:00 p.m.)

## Q

# CERTIFICATE

This is to certify that the foregoing transcript

In the matter of: Carbon Injection Systems, Inc.

Before: US EPA/EAB

Date: 10-01-15

Place: Washington, DC

was duly recorded and accurately transcribed under my direction; further, that said transcript is a true and accurate record of the proceedings.

Neal R. Gross

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Court Reporter