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ENVIR. APPEALS BOARD

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

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

RESPONDENTS CARBON INJECTION SYSTEMS LLC, SCOTT FORSTER AND
ERIC LOFQUIST'S OPENING BRIEF

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INTRODUCTION

This contested case raises for the first time the question of whether materials, such as the three products at issue here, are burned for energy recovery when they are used as injectants in a blast furnace to make iron. This question involves the interpretation of complicated regulations regarding the definition of solid and hazardous waste. For over 30 years, U.S. EPA has interpreted the phrase “burning for energy recovery” in its definition of solid waste to mean burning for the *purpose of obtaining useful heat energy* or burning that provides *substantial useful heat energy*. That was Region 5’s interpretation when it commenced this enforcement action in 2011. However, confronted with unrefuted proof that, in fact, injectants contribute no substantial useful heat energy when injected into a blast furnace, Region 5 for the first time attempted to argue that “energy” should be interpreted broadly to include the enthalpy that exists in all matter. The Board should reject Region 5’s interpretation, should reaffirm that “burning for energy recovery” means what U.S. EPA has always said it means: burning for the purpose of obtaining useful heat energy or burning that provides substantial useful heat energy, should affirm the Initial Decision, and should dismiss the administrative complaint in its entirety with no finding of liability.

ISSUES PRESENTED FOR REVIEW

A. Whether the phrase “burned for energy recovery” includes materials burned to recover chemical energy.

B. Whether U.S. EPA, prior to initiating this enforcement proceeding, provided notice of its interpretation that the phrase “burned for energy recovery” extends to burning for the recovery of chemical energy.

C. If not, whether it was appropriate for U.S. EPA Region 5 to rely on this interpretation in seeking civil penalties for past behavior.

D. Whether the hydrocarbon materials distributed by Carbon Injection Systems to WCI Steel, Inc., supplied substantial, useful heat energy upon combustion in the raceway of WCI Steel's iron blast furnace.

E. Whether U.S. EPA or Respondents bear the burden of proof with respect to the various issues raised above.

FACTUAL AND PROCEDURAL BACKGROUND

The evidence presented at the hearing showed that Respondent Carbon Injection Systems LLC ("CIS") was a small company formed by Respondents Eric Lofquist and Scott Forster in 2005 for the sole purpose of supplying oil to a single customer, the owner of a blast furnace. The oil was to be supplied for use as an injectant in the blast furnace.

The evidence also showed that in connection with the startup of their business in 2005, Respondents, along with others, consulted with industry and regulatory experts and reasonably concluded that injectants are not burned for energy recovery in a blast furnace, but rather are used primarily as a carbon source for reducing gases and iron. (*See, eg.* CX-2, pp. 2809-2816). Respondents communicated with both Troy Charpia and Ernie Willis of Innovative Waste Management, a broker that sold oil to CIS. Mr. Charpia and Mr. Willis, in turn retained an expert, David Wakelin, regarding the use of injectants in blast furnaces. (Tr., Vol. VIII, pp. 1861-1862; CX-2, pp. 2884-2885). They also communicated with various regulatory agencies, including the Louisiana Department of Environmental Quality and the Ohio EPA, in addition to U.S. EPA, to obtain agency concurrence that the use of injectants in the blast furnace was not subject to RCRA regulation. (Tr., Vol. VIII, pp. 1790-1795, 1843, 1874; CX-2, pp. 2758-2773,

2778-2798, 2803-2808, 2882-2883). Respondent Mr. Lofquist also communicated with Mr. Zygmunt Osiecki, the environmental director for Neville Chemical Company, who in turn consulted with legal counsel, Colleen Donofrio of the law firm of Babst Calland, regarding the issue. (Tr., Vol. VIII, pp. 1941-1943; CX-2, pp. 2740-2741, 2752, 2801-2802). And, Mr. Lofquist communicated directly with CIS's primary contact at Ohio EPA, Greg Orr. (Tr., Vol. VIII, pp. 2003-2006; CX-2, pp. 2732-2739). The initial indications that Respondents received from all who were consulted was that there was a reasonable basis to conclude that the use of injectants in a blast furnace, as described by knowledgeable blast furnace experts, would not be governed by the RCRA regulations. (Tr., Vol. VIII, pp. 2004-2005).

However, the evidence also showed that notwithstanding its understanding that injectants are not burned for energy recovery in a blast furnace, CIS and its potential suppliers took the extra step of seeking a more formal acknowledgement from U.S. EPA and Ohio EPA that they concurred that injectants are not burned for energy recovery in a blast furnace. In December 2005, Respondents learned that U.S. EPA and Ohio EPA continued to believe that injectants would supply useful heat energy to a blast furnace:

The common use of the term "fuel" is any material used to produce *heat or power by burning*. A blast furnace receives some of its *heat energy* from the combustion of the coke that is charged into the furnace, as well as combustion of material injected into the tuyeres. Combustion of the coke *provides heat* needed to melt the iron-bearing material in the furnace, and any substitute for coke is an alternate *heat source* or fuel.

(December 9, 2005 Letter from Margaret M. Guerriero of U.S. EPA to Ernie Willis (CX-47) (emphasis added)). The communications which culminated in Ms. Guerriero's letter made clear that, in 2005, U.S. EPA and Ohio EPA were relying primarily, if not exclusively, on the 20-year-

old discussion of the use of Cadence product in a blast furnace in the preamble to the final BIF Rule.¹

From that time forward, although Respondents disagreed, they abided by U.S. EPA's and Ohio EPA's determination, and did not include materials that otherwise would be considered wastes in their supply of injectants, regardless of how suitable they were for such use.² Notwithstanding Respondents' efforts to conform their operations to U.S. EPA's and Ohio EPA's outdated understanding of how a blast furnace works, on February 8, 2008, Region 5 issued a Notice of Violation ("NOV") to CIS. (See Exhibit CX-30). In the NOV, Region 5 asserted that a single shipment of material generated by JLM Chemicals and received at the CIS facility prior to December 2005 was "a hazardous waste when injected into a blast furnace." As further explanation to support its assertion that this amounted to a violation, Region 5 pointed to the same Federal Register discussion regarding the use of Cadence product, a "waste fuel with a *high heating value* in a blast furnace," which it enclosed along with the NOV. Region 5 also enclosed copies of Ohio EPA's 2005 communications to Mr. Ernie Willis and Troy Charpia which, as well, were premised on the same Federal Register discussion of Cadence product and which concluded that an injectant is used as a fuel in the blast furnace because it has significant BTU (i.e., thermal) value. (CX-30, pp. EPA-16965, EPA-16968).

¹ Hazardous Waste Management System; Burning of Waste Fuel and Used Oil Fuel in Boilers and Industrial Furnaces, 50 Fed. Reg. 49164, 49167 (Nov. 29, 1985) (to be codified as 40 CFR Parts 261, 264, 265, 266, and 271) ("BIF Rule").

² The only alleged "hazardous wastes" that Region 5 claims were supplied to the blast furnace as injectants by CIS at any time after December 2005 are Unitene LE® and Unitene AGR®, products that were neither listed nor characteristic hazardous wastes according to the manufacturer. CIS disputes that these materials were wastes for reasons in addition to the fact that they were not burned to recover energy in the blast furnace. The EAB has not identified these other issues for briefing at this time.

Subsequently, Region 5 filed its administrative complaint in this matter on May 13, 2011, seeking almost \$2 million in civil penalties.³ In March, 2012, the parties filed cross motions for accelerated decision. By order dated June 4, 2012, the ALJ determined that there were genuine issues of material fact that required a full hearing. Accordingly, the cross motions for accelerated decision were denied. This matter proceeded to a hearing in Cleveland, Ohio, beginning on June 18, 2012, and finally concluded on July 16, 2012, following a hiatus of several weeks.

Eventually, on March 17, 2015, the ALJ issued her Initial Decision finding that Region 5 had not sustained its burden of proving, by a preponderance of the evidence, that the materials at issue were discarded “solid wastes.” The ALJ concluded that “a preponderance of the evidence fails to establish that materials injected into a blast furnace supply substantial and useful heat energy to the furnace upon initial combustion in the raceway” (Initial Decision, p. 83). Having already determined that “a fair reading by the regulated community of the phrase ‘burning for energy recovery’ as used in the applicable regulations is the burning of a material such that substantial, useful heat energy is obtained from the combustion,” (Initial Decision, p. 47), the ALJ concluded that the materials supplied by CIS did not constitute “solid wastes” because they had not been discarded by being burned for energy recovery, and were not subject to regulation under Ohio Admin. Code § 3745-51-02(C) (Initial Decision, p. 87). The administrative complaint was dismissed in its entirety.

Following entry of the Initial Decision, Region 5 declined to appeal. The Environmental Appeals Board (“EAB”), however, elected to exercise its rarely-used *sua sponte* review

³ The proposed penalty in the May 13, 2011 administrative complaint was based on shipments of Unitene LE® and Unitene AGR®, which Region 5 claimed, for the first time, were “hazardous wastes.”

authority. (See May 18, 2015, Order Electing to Exercise *Sua Sponte* Review). Subsequently, on July 14, 2015, the EAB issued its Order Identifying Issues to Be Briefed.

ARGUMENT

A. The Phrase “Burned For Energy Recovery” Does Not Include Materials Burned to Recover Chemical Energy.

1. The Standard of Review

In enforcement proceedings, the Board generally reviews both the factual and legal conclusions of the presiding officer *de novo*. See 40 C.F.R. § 22.30(f); see *In re Morton L. Friedman & Schmitt Const. Co.*, 11 E.A.D. 302, 314 (EAB 2004), *aff'd*, *Friedman v. United States Environmental Protection Agency*, No. 2:04-CV-00517-WBS-DAD (E.D. Cal. Feb. 25, 2005) (“*In re Friedman*”); *In re Smith Farm Enterprises, LLC*, 15 E.A.D. at 6, CWA Appeal No. 08-02, 2011 EPA App. LEXIS 10 (EAB, March 16, 2011). In reviewing *de novo* an initial decision in an administrative penalty proceeding, the Board applies the “preponderance of the evidence” standard established by 40 C.F.R. § 22.24(b). *Id.* The EPA Region bears the burden of demonstrating that the alleged violation occurred. 40 C.F.R. § 22.24(a). Although findings of fact are reviewed *de novo*, the Board generally defers to a presiding officer’s factual findings when those findings rely on witness testimony and when the credibility of the witnesses is a factor in the presiding officer’s decision making. *In re Smith Farm*, 15 E.A.D. at 7; see also *In re Ocean State Asbestos Removal, Inc.*, 7 E.A.D. 522, 530 (EAB 1998). A factual determination meets the preponderance of evidence standard if the fact finder concludes that it is more likely true than not. See *In re Julie’s Limousine & Coachworks, Inc.*, 11 E.A.D. 498, 507 n.20 (EAB 2004); *In re Lyon Cnty. Landfill*, 10 E.A.D. 416, 427 n.10 (EAB 2002), *aff'd*, No. Civ-02-907 (D. Minn., June 7, 2004), *aff'd*, 406 F.3d 981 (8th Cir. 2005); *In re The Bullen Co. Inc.*, 9 E.A.D. 620, 632 (EAB 2001).

2. The Definition of Solid Waste.

As succinctly set forth by Judge Biro in her March 17, 2015, Initial Decision, U.S. EPA has authority to regulate “hazardous wastes.” (Initial Decision, p. 9). In order for a material to constitute a “hazardous waste,” it must first be determined to be a “solid waste.” *American Mining Congress v. EPA*, 824 F.2d 1177, 1179 (D.C. Cir. 1987). The applicable definition of “solid waste” is found in section 3745-51-02 of the Ohio Administrative Code, which states, in pertinent part as follows:

3745-51-02 Definition of waste

(A)(1) A “waste” is any discarded material that is not excluded by paragraph (A) of rule 3745-51-04 of the Administrative Code or that is not excluded by variance granted under rules 3745-50-23 and 3745-50-24 of the Administrative Code.

(2) A “discarded material” is any material which is: . . .

(b) Recycled, as explained in paragraph (C) of this rule; . . .

(C) Materials are wastes if they are recycled or accumulated, stored, or treated before recycling, as specified in paragraphs (C)(1) to (C)(4) of this rule. . . .

(2) Burning for energy recovery.

(a) Materials noted with an asterisk in column 2 of the table in this rule are wastes when they are:

(i) Burned to recover energy; . . .

Ohio Admin. Code § 3745-51-02.⁴ The inclusion of materials “burned to recover energy” within the definition of “waste” is reiterated in the recycling provisions of the rule in 3745-51-02(E)(2):

(2) The following materials are wastes, even if the recycling involves use, reuse, or return to the original process [described in paragraphs (E)(1)(a), (E)(1)(b) and (E)(1)(c) of this rule:

(b) Materials burned for energy recovery, used to produce a fuel, or contained in fuels; . . .

Ohio Admin. Code § 3745-51-02(E)(2) and 40 C.F.R. § 261.2(e)(2). The term “burned” and the phrase “for energy recovery” are not further defined in this definition of solid waste.

The EAB set forth the factors that must be considered when construing an administrative regulation in *In re Howmet Corporation*, 13 E.A.D. 272 (EAB 2007):

⁴ Ohio Admin. Code § 3745-51-02 and 40 C.F.R. § 261.2 are substantially the same, although not identical.

As we have explained in previous cases, “[w]hen construing an administrative regulation, the normal tenets of statutory construction are generally applied.” *In re Bil-Dry Corp.*, 9 E.A.D. 575, 595 (EAB 2001) (citing *Black & Decker Corp. v. Comm’r*, 986 F.2d 60, 65 (4th Cir. 1993)). “The plain meaning of words is ordinarily the guide to the definition of a regulatory term.” *Id.* (citing *T.S. v. Bd. of Educ.*, 10 F.3d 87, 89 (2d Cir. 1993)). “Additionally, the regulation must, of course, be ‘interpreted so as to harmonize with and further and not to conflict with the objective of the statute it implements.’” *Id.* (quoting *Sec. of Labor v. W. Fuels-Utah, Inc.*, 900 F.2d 318, 320 (D.C. Cir. 1990)). Moreover, in interpreting a regulation, we examine not just the provision at issue, but the entire regulation. *In re U.S. Army, Fort Wainwright Cent. Heating & Power Plant*, 11 E.A.D. 126, 141 (EAB 2003) (“The meaning -- or ambiguity -- of certain words or phrases may only become evident when placed in context.”) (quoting *Food & Drug Admin. v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 132 (2000)). See generally *In re Harpoon P’ship*, 12 E.A.D. 182, 195-96 (EAB 2005), *appeal dismissed*, *Harpoon P’ship v. EPA*, No. 05-2806 (7th Cir. Aug. 24, 2005). Cf. *United States Nat’l Bank of Or. v. Indep. Ins. Agents of Am.*, 508 U.S. 439, 455 (1993) (“In expounding a statute, we must not be guided by a single sentence or member of a sentence, but look to the provisions of the whole law * * * .”) (citations omitted). Moreover, just as legislative history can be helpful in interpreting a statute, regulatory history, such as preamble statements, assists us in interpreting regulations. See *In re Morton L. Friedman & Schmitt Const. Co.*, 11 E.A.D. 302, 328 (EAB 2004), *aff’d*, *Friedman v. United States Environmental Protection Agency*, No. 2:04-CV-00517-WBS-DAD (E.D. Cal. Feb. 25, 2005). Last, we give greater deference to a position when it is supported by Agency rulings, statements, and opinions that have been consistent over time. See *In re Lazarus, Inc.*, 7 E.A.D. 318, 352-53 (EAB 1997).

In re Howmet Corp., 13 E.A.D. at 282. The ALJ carefully and thoroughly analyzed these factors and determined that “the phrase ‘burning for energy recovery’ as used in the applicable regulations is the burning of a material such that substantial, useful heat energy is obtained from the combustion.” (Initial Decision, p. 47). The ALJ specifically rejected Region 5’s more “expansive reading of the phrase ‘burning for energy recovery.’” “[T]he form of energy described by Professor Fruehan is not what U.S. EPA meant by the single word ‘energy’ when it first promulgated, and later explained, what it meant by the phrase ‘burning for energy recovery.’” (Initial Decision, p. 46). The EAB should affirm the ALJ’s Initial Decision in this regard.

3. The Plain Meaning of “Burning for Energy Recovery” Does Not Include The Enthalpy of Materials Used in Chemical Reactions, or “Chemical Energy.”

U.S. EPA did not define the word burning in its regulations, and nowhere in its various preambles to the regulations did it discuss what it meant by the word “burning.” *Howmet* instructs that words in a regulation should ordinarily be given their plain meaning. The ALJ considered the plain meaning of the words “burn” and “energy recovery” by turning to standard dictionary definitions (Initial Decision, pp. 40-42), which is appropriate. “In order to determine the ordinary meaning of a term, courts routinely rely on dictionary definitions.” *United States v. Havelock*, 664 F.3d 1284, 1293 (9th Cir. 2012) (relying on dictionary definition to determine the ordinary meaning of the term “address” in a statute) (citing *Johnson v. United States*, 130 S. Ct. 1265, 1270 (2010) (relying on dictionary definition to determine the ordinary meaning of the term “physical force”)).

Burning generally is defined in terms of fire and heat: “to set on fire or subject to combustion, as in order to produce heat, light or power” or “to cause by fire, heat, etc.” Webster’s New World College Dictionary (4th ed. 2005); *see also* Merriam-Webster’s Collegiate Dictionary 153 (10th ed. 1997) (“to consume fuel and give off heat” or “to undergo alteration or destruction by the action of fire or heat”). Region 5’s expert witness, Professor Fruehan, confirmed that the ordinary meaning of burn should apply here. He specifically declined to provide a scientific definition of burning, and indicated that a layperson’s understanding of the term should be used. “Burning is not a scientific term. Okay? I’m a scientist, I deal with scientific terms so when you talk about burning, you’re talking about what laypeople think about it as opposed to what it really is, okay?” (Tr., Vol. V, pp. 1152-1153).

In light of Professor Fruehan’s testimony and the standard dictionary definitions of the word “burn,” the EAB should find that a layperson would not be expected to use the word “burn”

to mean a chemical reaction. Unquestionably, a layperson would not understand the word "burn" to mean the "semi-continuous process" of direct and indirect reduction that converts iron ore to elemental iron in what Professor Fruehan called a "countercurrent reactor." (Tr., Vol. V, pp. 1074, 1079-1080).

The words "energy" and "recovery" also are not defined anywhere in the regulation. As with the word "burn," Professor Fruehan declined to offer any opinion regarding U.S. EPA's meaning of the word "energy" in the regulations. "I'm not familiar exactly how they're using that term." (Tr., Vol. V, p. 1152). In his direct testimony, however, Professor Fruehan acknowledged that "[w]e normally think about energy as heat energy." (Tr., Vol. V, p. 1117).

Professor Fruehan then attempted to define "energy" quite differently, acknowledging that this definition of energy is "not an easy thing to understand":

Okay. What I want to do is because it's, we don't often think, we always think of energy as heat and I want to explain what we mean by chemical energy and I want to start off by talking about iron oxide, just to simplify matters, as the major component that we have to reduce.

This iron oxide is an ionically bonded material. That means the iron is charged as a two plus ion and the oxygen is a minus two ion and that means that they're very strongly bonded together and it takes quite a bit of energy just to break them apart.

Just for the sake of one of the numbers, it takes, 217 kilojoules, this is for one mole of iron oxide. . . .

Now what I am going to show here is an engineering diagram where I'm going to talk about the enthalpy or heat of formation. This is the very well recognized international thermodynamics that everybody in the world uses and if we talk about iron, Fe, its enthalpy is here so all international organizations, all thermodynamic textbooks, all thermodynamic data says elements in their normal state have an enthalpy of zero by definition. It doesn't matter if it's, what, a computer thermodynamic basis, all of them use that convention and so FeO is more stable, so it's down here at minus 217, okay?

So if I want to take FeO and make iron, I've got to supply that much energy, the 217 -- that says kilograms. It should say kJ, kilojoules. I've got to supply that energy in order to break the iron and the oxygen apart.

Where do I get that energy? I get that energy from the carbon monoxide.

If this is carbon, carbon monoxide is right here and carbon monoxide has an energy formation of minus 214 kilojoules.

If I take that CO and go to CO₂, CO₂ is down at minus 395, so 217 subtracted from 395, if I'm not mistaken, says I have 281 available from that reaction so this energy from the carbon is used to break apart the iron oxide molecule and produces my iron. That is what I mean by chemical energy. . . .

I hope that helps. It's not an easy thing to understand.

(Tr., Vol. V, pp. 1098-1100).

This definition of the word "energy" might be found in a thermodynamics textbook, as Professor Fruehan suggested, but it is not the ordinary, everyday, common meaning of the word "energy." Moreover, although Professor Fruehan described how the enthalpy, or "chemical energy" of the carbon-containing materials converts iron ore to iron by stripping it of its oxygen molecules, he never testified that their "chemical energy" was "recovered" by "burning." The chemical reactions described by Professor Fruehan, Dr. Poveromo and Mr. Rorick are not combustion reactions. They are a process of indirect or direct reduction, which is a chemical reaction.

One way we know these reactions are not "burning" or "combustion" is because of where they take place in the blast furnace. In a blast furnace, burning, or combustion, takes place in an area called the raceway. Professor Fruehan clearly testified that the raceway is "where the combustion takes place[.]" (Tr., Vol. V, p. 1189). In fact, the experts agreed that the only place where combustion takes place in the blast furnace is in the raceway because this is the only place where there is any free oxygen. Free oxygen is necessary for burning to occur. (Tr. Vol. XI, p. 2550; Tr., Vol. V, pp. 1153-1154). Reduction reactions, on the other hand, do not take place in the raceway. As Mr. Rorick explained, the reduction reactions take place in the main area of the blast furnace above the raceway:

Q. These reactions that you've just described take place where in terms of zones in the blast furnace?

A. All of these, these issues that I talked about begin by the red cohesive zone in the center, from there up. Everything that I've talked about here takes from there

up because the melting, if you remember by definition is the exit of the cohesive zone, that's where the things are now liquid so the melting is done, so melting, reduction and drying all happen from the lower boundary of the red cohesive zone upward.

(Tr., Vol. X, pp. 2379-2381; *see also* Vol. V, pp. 1079-1080). The chemical reaction described above by Profession Fruehan simply is not "burning."

The plain meaning of the words "burning" and "energy recovery" do not support Region 5's position in this case that the use of injectants in a blast furnace amounts to "burning for energy recovery" as that phrase is used in the regulatory definition of solid waste.

4. Region 5's Expansive Interpretation of Energy as Including Chemical Energy Cannot Be Harmonized with the Objectives of the Statute.

The inclusion of use of "chemical energy" within the meaning of "burning for energy recovery" would be inconsistent with the overall objectives of RCRA which was primarily intended to address the growing problem of discarded materials:

The Resource Conservation and Recovery Act of 1976 is a multi-faceted approach toward solving the problems associated with the 3-4 billion tons of discarded materials generated each year, and the problems resulting from the anticipated 8% annual increase in the volume of such waste.

H.R. Rep. No. 94-1491, pt. I, at p. 2. In focusing on the discarded materials problem, Congress expressly avoided regulating the nation's manufacturing operations. Thus, "[r]ather than place restrictions on the generation of hazardous waste, which [in] many instances would amount to interference with the productive process itself, the Committee has limited the responsibility of the generator for hazardous waste to one of providing information." *Id.* at p. 26.

U.S. EPA has recognized that Congress' objective was for U.S. EPA to regulate waste generated by production processes, but not the actual production processes. U.S. EPA recognized this when it explained in its preamble to the final definition of solid waste rule that "[w]hen industrial furnaces burn for energy recovery, regulation of the burning would not

constitute an impermissible intrusion into the production process because burning for energy recovery is an activity that is not central to the usual function of an industrial furnace. . . .” Hazardous Waste Management System; Definition of Solid Waste, 50 Fed. Reg. 614, 630-631 (Jan. 4, 1985) (to be codified as 40 CFR parts 260, 261, 264, 265, and 266. Implied in this statement is the recognition that when materials are utilized in an industrial furnace in chemical reactions that *are* central to the usual function of the industrial furnace, such as the use of reducing gases to react with iron ore, reducing it to pure iron, regulation of that process by U.S. EPA would intrude on the production process.

U.S. EPA further described its general intent, and the limits of its RCRA jurisdiction, in connection with the use of secondary materials as part of normal production processes. “When secondary materials are used (or in the case of previously used materials, reused) in these ways,⁵ . . . they function as raw materials in normal manufacturing operations or as products in normal commercial applications.” 50 Fed. Reg. 614, 638. “The Agency accordingly has interpreted its jurisdiction so as to avoid regulating secondary materials recycled in ways that most closely resemble normal production processes. These types of recycling are use of secondary materials as ingredients or as direct commercial substitutes.” *Id.* at 638. Accordingly, U.S. EPA drafted the final regulation to explicitly provide that secondary materials used or reused in these ways are not solid wastes, and then set forth certain exceptions for circumstances “where the nature of the material or the nature of the recycling activity indicates that RCRA jurisdiction exists[.]” *Id.* As U.S. EPA further explained, these circumstances include “where the material is used by being incorporated into a fuel, or being burned directly as a fuel.” *Id.*

⁵ Examples offered by U.S. EPA included the use of chemical industry still bottoms as feedstock, use of air emission control dust as a drinking water fluoridating agent and use of spent pickle liquor as a wastewater conditioner. 50 Fed. Reg. 614, 637.

The sweeping inclusion of the use of the “chemical energy” of materials when they react in a production process within the meaning of “burning for energy recovery” is inconsistent with the overall focus and objectives of RCRA as aimed primarily at the problem of discarded materials.

5. The Regulatory History Demonstrates That “Burning for Energy Recovery” Means the Generation of Substantial Useful Heat Energy, not Chemical Energy.

Region 5’s interpretation is not supported by an examination of the solid waste regulations in their entirety or by an examination of the regulatory history.⁶ Nowhere in the solid waste regulations is the concept of “energy recovery” associated with the complex definition of “chemical energy” provided by Professor Fruehan. The regulatory history does, however, demonstrate that the phrase “burning for energy recovery” in the rule means burning for the *purpose of obtaining useful heat energy* or burning that provides *substantial useful heat energy*. This interpretation is based not only on the language of the regulation in its entirety, but on U.S. EPA’s explanations in preambles to both the proposed and final solid waste rules, the proposed and final BIF rule, and on U.S. EPA’s correspondence on the subject directly relevant to this proceeding.

U.S. EPA explained in part what “burning for energy recovery” meant when it first proposed the recycling exclusion on April 4, 1983.⁷ The proposed rule included new definitions

⁶ The legislative history also does not support Region 5’s interpretation. Having observed that “raw municipal refuse has a typical heating value (energy content) of about 4600 British Thermal Units (BTU) per pound”, the House Committee of Science and Technology explained what was meant more broadly by “resource recovery,” stating that “[t]he general term used, ‘resource recovery,’ refers to the extraction of any resource, including energy, from the solid waste stream. Resource recovery is thus a very broad concept which could include recovery of heat (energy) from an incinerator or extraction of iron and steel scrap from waste.” H.R. Rep. 94-1491, pt. II, at pp. 89-90.

⁷ Hazardous Waste Management System; General; Identification and Listing of Hazardous Waste; Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; and Standards for the Management of Specific Wastes and Management Standards for Specific Types of Facilities, 48 Fed. Reg. 14472, 14485, n.19 (proposed on April 4, 1983) (to be codified as 40 CFR Parts 260, 261, 264, 265, and 266).

of incinerators, boilers and industrial furnaces, and U.S. EPA's discussion of these new definitions readily shows what U.S. EPA meant by the phrase "burning for energy recovery" in the context of describing these new definitions. Incinerators and boilers were defined on the basis of their design: "The key distinction between boilers and incinerators is that boilers achieve heat transfer within the combustion chamber itself, generally by exposing the heat recovery surface to the flame. In contrast, heat transfer does not ordinarily occur in the combustion chamber of an incinerator. Rather, combustion gases are transferred elsewhere in the device, where heat transfer may occur." 48 Fed. Reg. 14472, 14483. The proposed definition of industrial furnaces lists certain other specific types of "flame combustion devices" distinguishable from boilers and incinerators, based on certain criteria. *Id.* With respect to the proposed rule, then, the U.S. EPA stated:

In interpreting this provision, the Agency does not consider materials to be burned as fuels when both material values and energy are recovered from burning a single material, and material recovery is an important part of the recovery operation. For example, furnaces burning secondary materials to recover economically significant amounts of contained chemicals, and that also recover energy from the same materials, are not considered to be burning the materials as fuels.

Id. at 14485, n.19. In promulgating the rule, the U.S. EPA was focused on preventing potentially harmful low temperature incineration of wastes in residential and municipal boilers under the guise of thermal energy recovery. *Id.* at 14481-14482. Unquestionably, U.S. EPA considered "energy recovery" to mean *thermal* energy recovery.

U.S. EPA further explained what it meant by burning for energy recovery when it issued the final rule on January 4, 1985. "Today's regulations apply to hazardous waste burned for 'energy recovery.' This limitation raises two issues: Distinguishing burning for energy recovery from burning for destruction, and determining how to regulate wastes if they are burned to

recover materials.” 50 Fed. Reg. 614, 630. Referring back to its tripartite division of controlled flame combustion units into incinerators, boilers and industrial furnaces, and noting that by definition boilers recover energy, U.S. EPA explained:

A second question is the scope of these regulations when burning involves material recovery. The Agency views these regulations as applying whenever hazardous wastes are burned in boilers. Boilers, by definition, recover energy. If materials are also recovered, this recovery is ancillary to the purpose of the boiler, and so does not alter the regulatory status of the activity.

Burning for material recovery in industrial furnaces, however, raises different kinds of issues. As discussed above, industrial furnaces are used as integral components of manufacturing processes to recover materials. Thus, regulation under RCRA of actual burning in industrial furnaces could, in some circumstances, represent an intrusion into a normal production process, particularly if the material being recovered is the same material the furnace ordinarily produces. On the other hand, when an industrial furnace is used for material recovery and the secondary material being burned is (a) Not ordinarily associated with the furnace (for example, organic still bottoms), (b) different in composition from materials ordinarily burned in the unit (as when the secondary material contains Appendix VIII hazardous constituents different from, or in concentrations in excess of those in materials ordinarily burned in the furnace, or (c) burned for a purpose ancillary to the chief function of the furnace, we think that RCRA jurisdiction over the burning exists. . . .

When industrial furnaces burn for energy recovery, regulation of the burning would not constitute an impermissible intrusion into the production process because burning for energy recovery is an activity that is not central to the usual function of an industrial furnace. . . . We therefore are asserting RCRA jurisdiction when an industrial furnace burns hazardous secondary materials -- *i.e.* hazardous wastes -- for energy recovery.

The regulations would also apply when an industrial furnace burns that same secondary material for both energy and material recovery. Examples are blast furnaces that burn organic wastes to recover both energy and carbon values. . . . These activities are not so integrally tied to the production nature of the furnace as to raise questions about the Agency’s jurisdiction. . . . In taking this view, we thus reconsider and withdraw footnote 19 of the preamble to the proposed rule where we said we would count materials burned in industrial furnaces for both energy and material recovery as being burned for material recovery. For the reasons given above, we think that was a mistaken idea.

50 Fed. Reg. 614, 630-631.

In the same preamble, U.S. EPA also stated that what is meant by the phrase “burning for energy recovery” for purposes of the recycling exclusion is “integrally related to other

regulations proposed or being developed by the Agency” (*Id.* at 629), namely the regulations governing hazardous waste and used oil burned for energy recovery in boilers and industrial furnaces, codified as 40 C.F.R. Part 266 (the BIF Rule). U.S. EPA issued its proposed BIF Rule the following week on January 11, 1985,⁸ and promulgated its final BIF Rule on November 29, 1985.⁹ In its November 29, 1985 preamble to the final BIF Rule, U.S. EPA reaffirmed its intent to regulate situations involving both energy recovery and material recovery in industrial furnaces, but also clarified that this did not include situations where energy recovery is merely incidental, or where energy recovery is not significant or purposeful.

Today’s regulations, however, do not apply to hazardous wastes burned in industrial furnaces solely for material recovery. . . . [A]s discussed in the January 4, 1985 preamble to the definition of solid waste and the preamble to the proposed rule in this proceeding, there are certain situations where control of burning for material recovery in industrial furnaces could lead to an impermissible intrusion into the production process and so be beyond EPA’s authority under RCRA.

50 Fed. Reg. 49164, 49167. The Agency further explained:

Certain commenters questioned whether these rules (and by extension RCRA section 3004(q)) would apply when energy recovery from burning hazardous wastes is merely incidental, or when energy recovery is not the principal purpose of burning. *Today’s rules apply where the energy recovery is significant or purposeful.*

Id. at 49167 (emphasis added).

Finally and consistently, U.S. EPA’s final explanation of “energy recovery” is in its preamble to the final BIF rule. In that discussion, U.S. EPA clearly interpreted “energy recovery” to mean obtaining the heat from a material when it is burned:

These rules do apply, however, if hazardous wastes . . . are burned in industrial furnaces or boilers *to recover energy (i.e., to provide substantial, useful heat energy)* and for some other recycling purpose, even if energy recovery is not the

⁸ Hazardous Waste Management System: Standards for the Management of Specific Wastes and Specific Types of Facilities, 50 Fed. Reg. 1684 (proposed on Jan. 11, 1985) (to be codified as 40 CFR Part 266).

⁹ 50 Fed. Reg. 49164, 49167.

predominant purpose of the burning. . . . Consequently, these rules apply where hazardous wastes are burned in boilers or industrial furnaces and provide *substantial, useful heat energy*.

Id. at 49167 (emphasis added).

Furthermore, in the same preamble in the context of its specific discussion of the use of Cadence product in a blast furnace, U.S. EPA reiterated its position that energy means heat energy. “We find that Cadence product is burned partially for energy recovery because the heat energy contributed by the product to the blast furnace is substantial and useful.” *Id.* at 49171. At the time, U.S. EPA disagreed that energy released from injectants was “incidental” and “unavoidable,” and instead concluded that injectants in a blast furnace release “substantial, useful heat energy.” *Id.* at 49171. As discussed, *infra*, U.S. EPA was mistaken in its understanding of the use of injectants in a blast furnace, but its interpretation of energy to mean heat or thermal energy was absolutely clear.

Nowhere in the history of the regulations did U.S. EPA provide any indication that it intended to include the inherent enthalpy of materials used in chemical reactions within the meaning of the word “energy.” Moreover, in Agency communications directly applicable to this case, U.S. EPA reiterated its view of what was meant by “energy recovery.” Specifically, it provided Innovative Waste Management with its final determination on the use of K022 Waste in a blast furnace on December 9, 2005:

You state the only hindrance under the regulations is whether or not the material is burned for energy recovery. The pertinent regulations for this situation is OAC 3745-51-02 (C)(2)(a) and (E)(2)(b) in the Ohio EPA hazardous waste regulations. They say that even if recycling of the solid waste involves use or reuse, but it is burned for energy recovery, used to produce a fuel, or contained in fuels, it remains a solid waste. The common use of the term “fuel” is any material used to produce heat or power by burning. A blast furnace receives some of its *heat energy* from the combustion of the coke that is charged into the furnace, as well as combustion of material injected into the tuyeres. Combustion of the coke provides *heat* needed to melt the iron-bearing material in the furnace, and any

substitute for coke is an alternate *heat source* or fuel. Therefore, the use of K022 in the blast furnace as a substitute for coke makes it a fuel.

(CX-47; CX-13, p. 10112). Similarly, Jeff Mayhugh of Ohio EPA determined, based on the preamble to the November 29, 1985 BIF rule, that a product would be considered to be burned for energy recovery if the material had a significant BTU value. In the case of K022 wasted, Jeff Mayhugh noted that “K022 has a *heating* value of 15,000 BTU per pound.” (CX-13, p. 10176) (emphasis added). These communications demonstrate unequivocally that U.S. EPA’s continued interpretation, in 2005 when Respondents were actively seeking U.S. EPA’s guidance on the subject, of burning for “energy recovery” to mean burning for “heat energy.”

Based on both the language of the regulations, and U.S. EPA’s explanations in its preambles to the proposed and final solid waste and BIF rules, and in its correspondence on the subject directly relevant to this proceeding, the phrase “burning for energy recovery” means burning for the *purpose of obtaining useful heat* energy or burning that provides *substantial useful heat* energy.

6. Region 5’s Interpretation is Not Supported by U.S. EPA’s Previously Articulated Interpretations and is Entitled to No Deference.

Region 5’s interpretation of the phrase “burning for energy recovery” which it advanced for the first time in its post-hearing brief in this case, is not supported by prior agency rulings, statement or opinions that have been consistent over time. Moreover, as noted by the ALJ, Region 5’s interpretation of “burning for energy recovery” as encompassing the recovery of chemical energy is no more than a “litigation position advanced by enforcement counsel.” (*See* Initial Decision, p. 40, and cases cited therein). For these reasons, and others, Region 5’s interpretation is entitled to little or no deference.

As discussed above, U.S. EPA previously has interpreted “burning for energy recovery”

to mean the recovery of “thermal” or “heat” energy from a material when it is burned or combusted. This interpretation was expressed by U.S. EPA in its preambles to the proposed and final rules regarding the definition of solid waste directly at issue here, as well as in its preambles to the proposed and final BIF rule, which was promulgated at the same time. This interpretation was, and is, consistent with the agency’s expressed interest in protecting against the risk of environmental dispersal of hazardous waste constituents and products of incomplete combustion. 48 Fed. Reg. 14472, 14482; *see also*, 50 Fed. Reg. 1684, 1686 (“The major risk attributable to burning waste fuels is from exposure to emissions[.]”) The “chemical energy” of a material that is exchanged during a chemical reaction such as the reducing reactions that take place in a blast furnace has never been included within the meaning of energy recovery previously articulated by U.S. EPA. This is appropriate and logical, because such chemical reactions do not generate “products of complete combustion” and thus, from the standpoint of environmental protection, are of no interest to U.S. EPA. And, although U.S. EPA considered the use of Cadence product as an injectant in a blast furnace in connection with promulgating the final BIF rule, it did so based on a mistaken understanding that the injectant was burned to provide heat energy. 50 Fed. Reg. 49164, 49172. The evidence presented at the hearing overwhelmingly demonstrated that U.S. EPA simply got its blast furnace facts wrong and its discussion of the use of Cadence product should no longer be considered useful or appropriate as guidance.

Moreover, U.S. EPA has taken multiple inconsistent positions regarding the applicability of the recycling provision in the solid waste rule where recovery of material values is involved. In its original guidance, U.S. EPA stated that “the Agency does not consider materials to be burned as fuels when both material values and energy are recovered[.]” 48 Fed. Reg. 14472, 14485, n.19. It later “withdrew” footnote 19, yet in subsequent guidance letters, U.S. EPA

confirmed its original interpretation, agreeing that the recycling exclusion applied to wastes used in an electric arc furnace and in a steel manufacturing “melting process.” (CX-2, pp. 2837-2838) Furthermore, in its preamble to the final BIF rule, U.S. EPA suggested that it was reserving its position on the issue, choosing to leave open how it intended to interpret its rules with respect to high BTU materials. 50 Fed. Reg. 49164, 49167. The inconsistencies in U.S. EPA’s positions do not require nor permit that deference be afforded the now entirely new position Region 5 now urges in this proceeding.

Although it is well established that an agency’s interpretation of its own rules is entitled to substantial deference, this principle does not require that agency interpretations always be given controlling effect. *Udall v. Tallman*, 380 U.S. 1, 16 S. Ct. 792 (1965); *General Carbon Co. v. Occupational Safety & Health Review Comm’n.*, 860 F.2d 479, 483 (D.C. Cir. 1988). Where an agency’s interpretation is inconsistent with the regulation and its own previous construction, such deference is not appropriate. *Norfolk S. Ry. Co. v. Shanklin*, 529 U.S. 344, 356, 120 S. Ct. 1467 (2000).

Furthermore, an agency’s interpretation that is not based on the agency’s expertise or superior understanding of an issue is not entitled to deference. *Donovan v. A. Amorello & Sons, Inc.*, 761 F.2d 61, 63-64 (1st Cir. 1985); *Long Island Care at Home, Ltd. v. Coke*, 551 U.S. 158, 127 S. Ct. 2339 (2007). U.S. EPA, in various preambles, and Region 5 in its presentation of expert testimony at the hearing in this matter, demonstrated that their mixed interpretations are based on subject matters that are well outside the Agency’s own expertise, and in fact are outdated. Modern day blast furnace science demonstrates that the basic energy balances they relied upon are simplistic and have been replaced in industry use by more precise calculations, that the iron-making industry has moved beyond outdated “combustion” theories and the use of

“fuels” terminology, and that when the actual production processes are examined in light of current blast furnace research and technology, the use of injectants is understood to be for their chemical values as reductants, that their reaction in the raceway is endothermic, and that they provide no net heat energy, certainly no substantial or purposeful heat energy, to the blast furnace. U.S. EPA’s prior regulatory interpretation, based on its obviously flawed understanding of the iron-making process, a process with which it has no expertise of its own, is not entitled to deference.

For these reasons, Region 5’s interpretation of “burning for energy recovery” to encompass the recovery of “chemical energy” is entitled to no deference. Instead, for all of the reasons stated above and based on the factors as set forth in *Howmet*, it should be determined that “burning for energy recovery” means burning for the *purpose of obtaining useful heat energy* or burning that provides *substantial useful heat energy*.

B. Region 5, Prior to Initiating This Enforcement Proceeding, Did Not Provide Notice of its Interpretation That the Phrase “Burned for Energy Recovery” Extends to Burning for the Recovery of Chemical Energy.

Region 5 did not provide notice of its interpretation that the phrase “burned for energy recovery” included burning to recover chemical energy. As discussed in more detail above, nowhere in the solid waste regulations or legislative history of RCRA is the concept of “energy recovery” associated with “chemical energy.” Both prior to initiating this enforcement proceeding and prior to the alleged violations, U.S. EPA, and Region 5 in particular, had consistently articulated the belief that the phrase “burning for energy recovery” meant burning, in the normal sense of the word, for the purpose of recovering substantial heat energy. Both prior to initiating this enforcement proceeding and prior to the alleged violations, U.S. EPA had never provided notice of any interpretation that the phrase “burned for energy recovery”

extended to the recovery of “chemical energy.” The first notice that Respondents had of this novel interpretation of the phrase “burning for energy recovery” was in Region 5’s Response to Respondent’s Motion for Accelerated Decision which was submitted on April 2, 2012.

Region 5 initiated this enforcement proceeding on February 8, 2008, through the issuance of a Notice of Violation (“NOV”) directed to CIS. (CX-30). In that notice, Region 5 asserted that the use of K-022 wastes generated by JLM Chemicals were “burned for energy recovery, used as a fuel, or contained in a fuel.” In support of its claim that a violation had occurred, Region 5 pointed to several prior instances where Respondents and others had used the word “fuel” to describe the materials in question. Also in the NOV, Region 5 directed CIS to the 1985 Federal Register “Cadence” discussion “regarding the use of waste fuel with a high heating value in a blast furnace.” Respondents’ response to the NOV showed that, in 2008, Respondents’ understood Region 5’s interpretation in this regard, although they disagreed with it.

Region 5 filed its administrative complaint on May 11, 2011, and it filed an amended complaint on April 12, 2012. Both complaints are silent with respect to the reasons for Region 5’s conclusion that injectants burned in a blast furnace are burned for energy recovery and what is meant by “energy.” However, Region 5 did file a motion for accelerated decision on March 16, 2012 in which it clearly stated that its view that injectants supply heat energy. (*See* Complainant’s Memorandum in Support of its Motion for Partial Accelerated Decision, p. 40 (“[T]he blended fuel was immediately combusted upon entering the column and provided heat energy, which replaces the heat energy of the displaced coke.”)). In support of its motion, Region 5 submitted the Declaration of Richard J. Fruehan, an expert on steel making. In his Declaration, Professor Fruehan asserted that injectants supply heat energy in the blast furnace: “when oil containing hydrocarbons are injected at the tuyere level, they are immediately

combusted. This combustion created heat energy, which helps fuel the reduction of iron ore.” (Declaration of Richard J. Fruehan, ¶ 28). Professor Fruehan also stated in his declaration that “the fuel oil injected at the tuyere level serves the purpose of being a fuel that raises hot blast temperature to optimum levels and also serves the purpose of ensuring that appropriate furnace gas composition conducive to iron ore reduction is maintained.” (*Id.*, ¶ 30). Nowhere in his declaration did Professor Fruehan discuss injectants being “burned for chemical energy.”

It was not until Complainant’s Response to Respondent’s Motion for Accelerated Decision that Region 5 first introduced the idea that the injection of the materials when “burned in the blast furnace [] recover heat energy and chemical energy.” (Complainant’s Response to Respondents’ Motion for Accelerated Decision, p. 26). This was apparently a response to the credible and authoritative explanation of the use of reductants in the chemical reactions that take place in the blast furnace by Respondents’ expert, Mr. Rorick, submitted in support of Respondents’ Motion for Accelerated Decision. The notion that the meaning of “burned for energy recovery” also includes chemical energy was developed by Region 5 late in this enforcement proceeding.

Even during the hearing, Region 5 offered evidence that injectants supply heat to the blast furnace. Professor Fruehan testified that injectants are completely combusted in the raceway and that this heats the gases in the blast furnace.¹⁰ (Tr., Vol. V, pp. 1097, 1159). And in its post-hearing brief, Region 5 pointed to the heating value, or BTU value, of a material as an indication that when burned, it results in “energy recovery” in the traditional sense, citing an otherwise inapplicable rule intended to curb sham recycling by prohibiting the burning of low-

¹⁰ On balance however, the ALJ found the evidence to the contrary more credible and determined, correctly, that Region 5 had failed to meet its burden of proof.

BTU material without a permit.¹¹

Unquestionably, Region 5 did not notify Respondents of its expanded interpretation of “energy recovery” prior to commencing enforcement. In fact, it was not until after Respondents presented their evidence that no heat energy is supplied by injectants that Region 5 first advanced the concept that “burned for energy recovery” also could include a complex definition of “chemical energy.” And, even after the hearing in this matter, Region 5 continued to argue that injectants supplied useful heat energy, apparently in continued recognition that this is what is meant by “burned for energy recovery” in the definition of “waste” in Ohio Admin. Code §3745-51-02(C).

C. It Was Not Appropriate for Region 5 to Rely on Its New “Chemical Energy” Interpretation in Seeking Civil Penalties for Past Behavior.

It is not appropriate for Region 5 to rely on an interpretation of “burned for energy recovery” that has never been articulated or advanced by U.S. EPA. Imposition of a monetary penalty on Respondents for violating a rule without first providing adequate notice of the substance of the rule violates traditional concepts of due process. *See Satellite Broadcasting Co. v. FCC*, 824 F.2d 1 (D.C. Cir. 1987). Due process requires that parties receive fair notice before being deprived of property. *See Mullane v. Central Hanover Bank & Trust Co.*, 339 U.S. 306, 314, 70 S. Ct. 652, 657 (1950). The due process clause thus “prevents . . . deference from validating the application of a regulation that fails to give fair warning of the conduct it prohibits or requires.” *Gates & Fox Co. v. OSHA*, 790 F.2d 154, 156 (D.C. Cir.1986). In the absence of notice—for example, where the regulation is not sufficiently clear to warn a party about what is

¹¹ Complainant acknowledges that this is a rule of thumb and not a rule of law that is directly applicable to the determination of whether a material is a solid waste. (*See Complainant’s Initial Post-hearing Brief*, pp. 53-54). However, it illustrates U.S. EPA’s consistent interpretation, even after the hearing in this case, of the phrase “burning for energy recovery” to mean obtaining the heat, or thermal energy from a material that is burned.

expected of it—an agency may not deprive a party of property by imposing civil or criminal liability. “The fair notice concept has been recognized in the civil administrative context, and is now thoroughly incorporated into administrative law.” *United States v. Southern Indiana Gas and Electric Co.*, 245 F. Supp. 2d 994, 1010 (S.D. Ind. 2003).

The test for the fair notice doctrine has been stated as:

If, by reviewing the regulations and other public statements issued by the agency, a regulated party acting in good faith would be able to identify, with “ascertainable certainty,” the standards with which the agency expects parties to conform, then the agency has fairly notified a petitioner of the agency's interpretation.

General Electric Co. v. United States EPA, 53 F.3d 1324, 1329 (Dist. D.C. 1995). Four principle factors should be taken into account regarding notice of the inclusion of “chemical energy” in the meaning of “burned for energy recovery”: 1) the text of the regulations; 2) the regulations as a whole; 3) the regulatory history or agency interpretive guidance; and 4) Respondents’ inquiries into the meaning of the regulation. These factors must be viewed from the perspective of the regulated party, not the agency. *Id.* at 1329 (finding that U.S. EPA did not give fair warning of its interpretation of the regulations because the regulations and other policy statements were unclear and subject to disagreement within the agency); *Southern Indiana Gas*, 245 F. Supp.2d at 1010; *United States v. Hoechst Celanese Corp.*, 128 F.3d 216, 224-230 (4th Cir. 1997).

As discussed in detail above, neither the text of the regulation, the regulations as a whole, nor the regulatory history and agency interpretive guidance provide notice that “chemical energy” is included with the meaning of “burned for energy recovery.” To the contrary, examination of these factors establishes that U.S. EPA consistently interpreted “energy recovery” to mean the recovery of “thermal” or “heat” energy.

With respect to the fourth factor, the evidence showed that Respondents, in fact, were

diligent in their efforts to understand and apply the regulations. Respondents were open and forthright in their efforts to convince U.S. EPA and Ohio EPA that injectants did not contribute useful heat energy to the blast furnace and should not be regulated as wastes. When their efforts to convince U.S. EPA and Ohio EPA were unsuccessful, Respondents abided by Ohio EPA's and U.S. EPA's interpretation. Nothing in the communications from Ohio EPA and U.S. EPA, or for that matter LaDEQ, could be interpreted as providing notice that even if Respondents were correct, injectants would nonetheless be regulated as wastes because they supplied "chemical energy" value to the blast furnace production process.

Indeed, at no time prior to the accelerated motion briefing in this case did Respondents have any understanding that U.S. EPA believed that burning for energy recovery referred to the energy inherent in all matter that is exchanged or transferred when chemical reactions take place. This interpretation is so far removed from the ordinary meaning of "burning for energy recovery" that Respondents could not have been fairly informed that this is what the rule meant. Because Region 5 did not provide Respondents with notice of its interpretation of "burned for energy recovery" in advance of any enforcement, Respondents cannot be found liable for civil penalties. To do so would be a violation of Respondents' constitutional right of due process.

D. The Hydrocarbon Materials Distributed by Carbon Injection Systems to WCI Steel, Inc., Did Not Supply Substantial, Useful Heat Energy Upon Combustion in the Raceway of WCI Steel's Iron Blast Furnace

1. The Standard of Review.

Although findings of fact are reviewed *de novo*, the Board generally defers to a presiding officer's factual findings when those findings rely on witness testimony and when the credibility of the witnesses is a factor in the presiding officer's decision making. 40 C.F.R. § 22.30(f); *See In re Smith Farm Enterprises, LLC*, 15 E.A.D. at 7, 43; *In re Gen. Motors Auto.*, 14 E.A.D. 1, 16

(EAB 2008); *In re City of Salisbury*, 10 E.A.D. 263, 276 (EAB 2002); *In re Echevarria*, 5 E.A.D. 626, 639 (EAB 1994); *In re Ocean State Asbestos Removal, Inc.*, 7 E.A.D. 522, 530 (EAB 1998). This approach recognizes that the [presiding officer] is best suited to evaluate credibility because the presiding officer “had the opportunity to observe the witnesses testify and to evaluate their credibility” first-hand. *Id.*; *Julie’s Limousine*, 11 E.A.D. at 507 n. 19. As stated in *In re Port of Oakland*, “[T]he presiding offer’s findings are entitled to weight because he has ‘lived with the case.’” 4 E.A.D. 170, 193 n.59 (EAB 1992), quoting *Universal Camera Corp. v. NLRB*, 340 U.S. 474, 496 (1951). Therefore, the Board should not second-guess an ALJ’s credibility determinations unless they are unsupported by a preponderance of the evidence in the record. See *In re Smith Farm Enterprises, LLC*, 15 E.A.D at 43.

2. Injectants Do Not Supply Substantial, Useful Heat Energy Upon Partial Combustion in the Raceway of A Blast Furnace.

The thermal energy needed to fuel the chemical reactions in a blast furnace comes from only two sources -- the hot blast air that is forced into the blast furnace and creates the area called the raceway, and the combustion of coke in that raceway.¹² (Tr., Vol. XI, p. 2542). The partial combustion of injectants in the raceway provides no additional heat energy. This is because it takes more energy to heat up the injectants, which do not descend from the top of the blast furnace and are therefore not preheated, to raceway temperatures than any heat that theoretically could be given off by their partial combustion. Any heat that theoretically would be generated from their partial combustion in the raceway is more than offset by the amount of heat energy required to bring them up to raceway temperatures. (Tr., Vol. XI, p. 2541). Professor Fruehan’s testimony agreed with Dr. Poveromo’s testimony on this point: “Because these

¹² The experts agreed that the only place where combustion takes place in the blast furnace is in the raceway because this is the only place where there is any free oxygen. Free oxygen is necessary for burning to occur. (Tr. Vol. XI, p. 2550; Tr., Vol. V, p. 1182).

injectants are going in at room temperature and the heat that's given off by their initial oxidation is not enough to get them back up to the flame temperature . . ." (Tr., Vol. V, p. 1159). The additional heat energy required to increase the temperature of the injectants comes from the increased combustion of coke achieved by the addition of oxygen to the hot blast air. (Tr., Vol. V, p. 1097; Vol. XI, pp. 2544-2545, 2547).

Region 5's argument that injectants supply useful heat energy to the blast furnace is too simplistic. Essentially, Region 5 argued that because coke supplies the heat energy needed for the chemical reactions in the blast furnace to occur, and because injectants replace coke, then injectants must therefore supply heat energy, too. Professor Fruehan largely based his opinion that injectants supply energy to the blast furnace, without differentiating heat or thermal energy, on overall energy consumption calculations such as the one used by U.S. EPA in its November 29, 1985 preamble to the final BIF rule. Such generic calculations, however, are insufficient to answer the question of whether injectants used in a blast furnace contribute significant thermal or heat energy to the process because they do not distinguish between heat or thermal energy and other types of energy. As Professor Fruehan described these generic calculations, none of which Region 5 introduced into evidence and none of which are in the record, the total energy potential of all inputs into the blast furnace are taken into account without any attempt to quantify which contribute any specific measure of heat or chemicals to the process.

[W]henver they try to quantify the amount of energy that they consume in a blast furnace, they take all of the carbon that they use and calculate the energy that would be released if that carbon is turned into CO₂. . . They total those up and that's the energy they assign to that blast furnace or that series of blast furnaces and that's where they get this number of 15, 16 gigajoules. . . It doesn't matter if the carbon comes in with the coke. It doesn't matter if the carbon comes in with the injectants. . . Whatever carbon or hydrogen comes in is considered to be energy input into that blast furnace.

(Tr., Vol. V, pp. 1069-1070). However, expressions of the total enthalpy of a blast furnace do

not provide any indication of the actual thermal heat energy supplied by any input to the blast furnace. Indeed, Professor Fruehan clarified that his own calculation that he wrote out at the hearing and these generic published calculations include what he referred to as “chemical energy” and do not reflect the amount of heat energy contributed by any particular material input:

That is what I mean by chemical energy. That’s what AISI, International Iron & Steel Institute, and Department of Energy, that’s why they say all of the carbon is converted to CO₂ when I am computing the amount of energy that a blast furnace consumes and they say this is the amount of energy that’s available.

Tr., Vol. V, p. 1100). Again, Professor Fruehan and Dr. Poveromo appear to agree. Dr. Poveromo also explained that these energy balances are “somewhat simplistic in looking at an overall energy balance without breaking down the individual materials and what their roles are in each process and you really have to do that for each process and each material to precisely be able to say how they’re being used and why they’re being used.” (Tr., Vol. XI, p. 2557).

The flaw in Professor Fruehan’s approach, is that it fails to distinguish between the three roles that coke performs in the blast furnace and it fails to recognize that injectants are not, in fact, a substitute for *any* of the amount of coke that is performing two of those roles. Injectants only replace a relatively small portion of the coke that provides reductants. Injectants do not replace any of the coke that provides heat, and they do not replace any of the coke that provides structure. (Tr., Vol. XI, pp. 2538-2539). The injectants replace some of the coke that generates reducing gasses, but they do not replace any portion of the coke that is used to provide thermal energy to the blast furnace. Accordingly, injectants do not contribute any substantial or purposeful thermal energy to the blast furnace.

In support of these facts, rather than look to generic overall energy balances, Dr. Poveromo provided heat balance calculations for the raceway of a blast furnace that were

developed from actual research undertaken by U.S. Steel, taking into account the reactions of injectants in the raceway and then calculating how much additional heat energy is needed to bring the injectants up to raceway temperature. (Tr., Vol. XI, pp. 2552-2553). If more injectants are added, it requires more compensating heat energy from another source to make up for the overall endothermic effect of the injectants.

Dr. Poveromo testified that liquid hydrocarbons are not injected into the blast furnace for the purpose of obtaining heat energy:

Q: Given the explanation that you've given us and based on your experience, do you have an opinion regarding whether liquid hydrocarbons are injected into the blast furnace for the purpose of obtaining heat energy?

A. No. No. It's really for a material, a chemical reactant.

Q. When injectants are used in the blast furnace, are they used for their thermal energy?

A. No.

Q. If oil injectants are used in the blast furnace as a substitute or a replacement for coke, what is their purpose?

A. Their purpose is basically to fulfill some of the chemical role of coke. They can[t]¹³ fulfill all three roles of coke but at least that chemical role they can make a big dent in the amount of coke that's needed for its chemical role. . . .

Q. But even if we just limit the question to that raceway zone, do injectants produce heat and thermal energy in that zone?

A. On a net basis, no, no.

(Tr., Vol. XI, pp. 2554-2555). When asked if he agreed with Professor Fruehan that on balance, the injectants contribute heat energy to the reactions in the blast furnace, Dr. Poveromo testified "Oh, the whole purpose of this presentation is to really show that on a net basis they do not. They simply provide a chemical additive to the blast furnace replacing a portion of the chemical role of coke." (Tr., Vol. XI, pp. 2557-2558).

Dr. Poveromo's opinion testimony regarding these facts was not refuted. Rather, when pressed to refute Dr. Poveromo's calculations, and Rudolf Jeschar and Gerrit Dombrowski's

¹³ See Parties' Motion to Conform Transcript and August 15, 2012 Order on Motion to Conform Transcript granting the motion with modifications.

energy balance calculations,¹⁴ Professor Fruehan declined.¹⁵ Rather, he conceded the validity of the calculations performed by Mssrs. Jeschar and Dombrowski which demonstrated mathematically that less than a third of the *total* enthalpy of the blast furnace (not just injectants) is used for heat, or thermal, energy. "I have no objection to the mathematics and to this energy material balance." (Tr., Vol. V, p. 1117). Rather, Professor Fruehan argued that for purposes of determining whether injectants are burned for energy recovery, the "chemical energy" of the materials should be considered:

What I have an objection to is the circled 67.29 where he says 67 percent of the enthalpy is for reactions and it is interpreted to mean that it's not energy required. It is still energy that is required in the process and it's provided by the carbon and I tried to explain how that comes about, so it's the interpretation that this 67 percent is not energy as we normally think about it.

We normally think about energy as heat energy. It goes beyond heat energy. There's the chemical energy, so that 67 percent should not be singled out.

(Tr., Vol. V, pp. 1117-1118).

In the end, rather than rebut Dr. Poveromo, an expert with whom Professor Fruehan himself has consulted on matters related to iron making (Tr., Vol. V, pp. 1150-1151; *see also* Tr., Vol. V, pp. 1194-1195), Region 5 reverted to the arguments it first advanced in its Opposition to Respondents' Motion for Accelerated Decision that the "chemical energy" of the reducing gases supplied by the injectants in the upper regions of the blast furnace, and their contribution to the top gasses which might theoretically be burned for energy, brings their use within the phrase "burning for energy recovery." As discussed at length above, "chemical energy" is not what U.S. EPA meant by the word "energy" when it first promulgated, and later explained, what it meant by the phrase "burning for energy recovery" and in any event, the "chemical energy"

¹⁴ RX-96, Summary Evaluation and Assessment of Carbon and Hydrocarbon Raw Materials for Iron Ore Reduction, Rudolf Jeschar and Gerrit Dombrowski.

described by Professor Fruehan does not result from “burning.” And, Region 5 introduced no evidence that would support a finding that the injectants at issue here contributed to top gasses that were burned for energy elsewhere.

For these reasons, the Board should conclude that the preponderance of the evidence demonstrates that the injectants here, to the extent they were partially combusted in the raceway of the blast furnace, did not supply substantial, useful heat energy to the process. Accordingly, they were not “burned for energy recovery” as that phrase is used in the definition of solid waste and reiterated in the recycling provisions of the solid waste definition of the Ohio Administrative Code.

E. Region 5 Bears the Burden of Proof on the Various Issues Identified For Briefing.

Judge Biro correctly determined that Region 5, as the Complainant, had the burden of proof, by a preponderance of the evidence, to establish that injectants were solid wastes. 40 CFR § 22.24(a). There is no question that complainant has the burdens of presentation and persuasion to prove that the “violation occurred as set forth in the complaint and that the relief sought is appropriate.” 40 C.F.R. § 22.24(a); see *In re Vico Constr. Corp.*, 12 E.A.D. 298, 313 (EAB 2005); *In re LVI Env. Servs., Inc.*, 10 E.A.D. 99, 101 (EAB 2001); *In re City of Salisbury*, 10 E.A.D. at 278. Region 5’s *prima facie* showing of a violation, as complainant, is established upon its production of “evidence of sufficient quality and quantity on each of the [] elements that, if not rebutted, the trier of fact would ‘infer the fact at issue and rule in [complainant’s] favor.’” *In re City of Salisbury*, 10 E.A.D. at 283 (quoting Black’s Law Dictionary 1209 (7th ed. 1999)); see *United States v. RGM Corp.*, 222 F. Supp. 780, 783 (E.D. Va. 2002); *United States v. Lambert*, 915 F. Supp. 797, 802 (S.D. W. Va. 1996).

¹⁵ Professor Fruehan subsequently also declined to testify in rebuttal after listening to Dr. Poveromo’s testimony.

Once Region 5 establishes its *prima face* case, the burden of presentation shifts to Respondents to establish any applicable defenses that will rebut the allegations in the complaint. *In re City of Salisbury*, 10 E.A.D. at 289; *see* 40 C.F.R. § 22.24(a). While the respondent has the burden of presentation with respect to its affirmative defenses, the complainant retains the ultimate burden of persuasion that the violations occurred as alleged in the complaint. *Id.*; *In re New Waterbury, Ltd.*, 5 E.A.D. 529, 542-543 (EAB 1993); 40 C.F.R. §22.24(a); *See also, In re Adams*, 13 E.A.D. 310, 321 (EAB 2007); *In re Friedman*, 11 E.A.D. at 315. Each matter in controversy must be decided upon a preponderance of the evidence. 40 C.F.R. § 22.24(b).

The ALJ correctly placed the burden of proof on Region 5 to establish, by a preponderance of the evidence, that the materials injected into the blast furnace were “wastes” within the meaning of Ohio Admin. Code § 3745-51-02(C). This required Region 5 to prove that the injectants were discarded by being “burned for energy recovery.” Although the ALJ found that Region 5 did not satisfy its burden as to Ohio Admin. Code § 3745-51-02(C), she nonetheless also found that Respondents had met their burden of proving that the injectants otherwise met the definition of recycled materials in Ohio Admin. Code § 3745-51-02(E). The ALJ properly placed the burden under Ohio Admin. Code § 3745-51-02(C) on Region 5, and the burden under Ohio Admin. Code § 3745-51-02(E) on Respondents. But at the end of the day, because Region 5 failed to meet its burden, the burden never shifted to Respondents. If it had, though, Respondents met their burden, which is the whole point of footnote 30 in the ALJ’s Initial Decision.

In footnotes 29 and 30, Judge Biro correctly clarified which party has the burden of proof and accurately stated that the initial burden of proof rested solely with Region 5. Region 5 has not disputed that it alone had the burden of proof to show that the injectants meet the regulatory

definitions of solid and hazardous wastes. (See Complainant's Initial Post-Hearing Brief, p. 8). However, Region 5 erroneously asserted in its earlier briefing that Respondents had the burden of proving that the materials at issue were *not* burned for energy recovery and that the materials were an ingredient in an industrial process to make a product in order to take advantage of the recycling provisions in Ohio Admin. Code § 3745-51-02(E)(1). (Complainant's Reply Br., p. 3).

Respondents acknowledge that the "party that claims the benefits of an exception to the prohibition of a statute . . . carr[ies] the burden [of proving the exception]." *United States v. First City Nat'l Bank of Houston*, 386 U.S. 361, 366 (1967); *United States v. Eastern of N.J.*, 77 F. Supp. 964, 980 (1991). At the hearing Respondents presented evidence that injectants were an ingredient in an industrial process to make a product in order to satisfy their burden of establishing the defense found in the recycling provision of Ohio Admin. Code § 3745-51-02(E)(1).¹⁶ However, as explained by the ALJ, the burden to prove the application of Ohio Admin. Code § 3745-51-02(E)(1) only shifted to Respondents *after* Region 5 made a *prima facie* case of liability. Accordingly, Region 5 had the burden of proving, by a preponderance of the evidence, that the materials injected into the blast furnace supplied substantial and useful heat energy to the blast furnace and therefore were a discarded waste. Only after Region 5 satisfied this burden would the burden shift to Respondents to prove that Ohio Admin. Code § 3745-51-02(E)(1) was applicable. Then, once Respondents produced evidence establishing that the recycling provisions applied, the burden shifted back to Region 5 to establish that the recycling provisions did not apply because the materials were burned for energy recovery. After respondent rebuts complainant's *prima facie* case, complainant may, in the interest of carrying

¹⁶ Respondents demonstrated by a preponderance of the evidence, through the testimony of Dr. Povoromo, Mr. Rorick and Professor Fruehan that the injectants that were used are ingredients both because they supplied carbon which is a component in liquid iron that lowers its melting point, and because they supplied reducing gases as summarized in footnote 30 of the Initial Decision.

the ultimate burden of persuasion, respond with additional evidence rebutting respondent's claims. *See In re New Waterbury*, 5 E.A.D. at 541-543.

Case law, the applicable regulations and prior Board decisions are clear that the burden of presentation and persuasion as to whether the materials injected into the blast furnace were burned for energy recovery, which was necessary to prove that the injectants were waste, properly is placed both initially and ultimately on Region 5. Judge Biro was correct both in determining that the initial and ultimate burden lies with Region 5, and that Region 5 failed to meet its burden.

Although ultimately Judge Biro found that Region 5 did not meet its burden of proof in establishing its *prima facie* case, she also found that Respondents met their burden under Ohio Admin. Code § 3745-51-02(E). Respondents introduced evidence at the hearing to support their defense that the injectants were recycled through injection in the blast furnace because they were re-used as ingredients in an industrial process to make a product *and* were not burned for energy recovery.¹⁷ Ohio Admin. Code § 3745-51-02(E)(1)(a). In Footnote 30, the ALJ explains her findings that, even if Region 5 had been able to present sufficient evidence establishing its *prima facie* case, the materials injected into the blast furnace would not be regulated pursuant to the recycling provision found in Ohio Admin. Code § 3745-51-02(E). Judge Biro correctly applied Ohio Admin. Code § 3745-51-02(E), finding that the materials injected into the blast furnace would fall within the recycling provision unless they were burned for energy recovery. (Initial Decision p. 48, fn. 30, p. 53).

¹⁷ Ohio Admin. Code § 3745-51-02(F) requires that in addition to establishing the application of an exclusion or exemption, the party claiming the exclusion or exemption must also demonstrate a known market or disposition of the materials. Respondents introduced evidence that there is a known market for the injectants. Respondents produced contract documents and testimony showing that the materials are used as an ingredient in a production process. *See* CX-24, pp. 13139-13152; Tr., Vol. X, pp. 2388-2389, 2495).

As this Board has acknowledged, the burden of production “may shift during the course of litigation; if a complainant satisfies its burden of production, the burden then shifts to the respondent to produce, or go forward with the introduction of, rebuttal evidence. The burden of persuasion comes into play only “if the parties have sustained their burdens of producing evidence and only when all the evidence has been introduced.” *In re City of Salisbury*, 10 E.A.D. at 278; *In re New Waterbury*, 5 E.A.D at 536-37 n. 15; *In re 170 Alaska Placer Mines, More or Less*, 1 E.A.D. 616, 623-624 (Adm’r 1980). Assuming Region 5 had established its *prima facie* case, resulting in a burden shift to Respondents, as footnote 30 details, Respondents demonstrated by a preponderance of the evidence that the injectants fall within the recycling provisions of Ohio Admin. Code § 3745-51-02(E)(1), thus, sustaining Respondents’ burden of establishing an applicable defense. *See First City Nat’l Bank*, 386 U.S. at 366; *Eastern of N.J.*, 77 F.Supp. at 980. The burden then shifts back to Region 5 to persuade the judge that the materials are not recycled as require by Ohio Admin. Code § 3745-51-02(E)(1). *See* Ohio Admin. Code § 3745-51-02(E)(2). Ohio Admin. Code §3745-51-02(E)(2) requires that Region 5 prove the recycled materials are burned for energy recovery as part of the recycling process (the same required to prove the materials are discarded by being recycled).

Again, the ALJ determined that the recycling provisions of Ohio Admin. Code § 3745-51-02(E)(1), while applicable, were not needed to reach a decision in the case. Because of the circular nature of the definition of “waste,” the dispositive issue in this case is whether the injectants were “burned for energy recovery” as provided for in Ohio Admin. Code § 3745-51-02(C). Both parties presented evidence regarding whether energy was recovered through the injection of the materials into the blast furnace. Both parties having presented evidence, the burden of persuasion ultimately rested solely on Region 5.

The ALJ's determination that Region 5 not did sustain its ultimate burden of persuasion that the materials injected into the blast furnace were burned for energy recovery and are therefore a waste, was based in large part in her evaluation of the credibility and demeanor of the expert witnesses. Her assessment of the witnesses should not be disregarded. Therefore, while Respondents put forth evidence supporting application of Ohio Admin. Code § 3745-51-02(E)(1), because the burden never shifted to Respondents to establish any defenses, the recycling provision need not be relied upon for ultimate resolution of the case.

For the above referenced reasons, the ALJ's discussion and conclusions regarding the burden of proof in footnotes 29 and 30 of the Initial Decision are correct.

CONCLUSION

The Board should find that "burning for energy recovery" means burning to obtain substantial, useful, heat energy. Because the Region did not satisfy its burden of proof that the injectants supplied substantial, useful heat energy to the blast furnace, the Board should affirm the ALJ's Initial Decision finding no liability and dismissing the administrative complaint in its entirety. If, however, the Board determines that "burning for energy recovery" could also include the use of materials solely for their "chemical energy," the administrative complaint nonetheless must be dismissed in its entirety for lack of fair notice to Respondents regarding the meaning of "burning for energy recovery."

Respectfully submitted,



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CERTIFICATE OF SERVICE

I, Keven Drummond Eiber, an attorney, hereby certify that on August 17, 2015, the original and one copy of the foregoing Opening Brief was sent by Federal Express Overnight Delivery to:

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I further certify that true and accurate service copies of the foregoing Opening Brief also was sent by Federal Express Overnight Delivery on August 17, 2015, to:

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