

ILLINOIS POLLUTION CONTROL BOARD

June 18, 2015

IN THE MATTER OF:)
)
PETITION OF APEX MATERIAL) AS 15-2
TECHNOLOGIES, LLC FOR AN) (Adjusted Standard - Land)
ADJUSTED STANDARD FROM PORTIONS)
OF 35 ILL. ADM. CODE 807.104 AND)
810.103, OR, IN THE ALTERNATIVE, A)
FINDING OF INAPPLICABILITY)

JOSEPH L. PELLIS II, MICHAEL J. TENUTO, and DANIEL R. LAVOIE, PELLIS LAW GROUP, LLP, APPEARED ON BEHALF OF PETITIONER; and

MICHELLE M. RYAN, ASSISTANT COUNSEL, APPEARED ON BEHALF OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY.

OPINION AND ORDER OF THE BOARD (by J.D. O’Leary):

On August 8, 2014, APEX Material Technologies, LLC (APEX) filed a petition for a finding of inapplicability of specified Board waste disposal regulations. The petition requests relief for APEX’s operating production facility located at 10 Industry Avenue, Joliet, Will County. APEX seeks a determination that material it contemplates using in a production process, Copper Ammonium Chloride etchant, is not a “waste” and therefore is not subject to waste permit requirements under Parts 807 and 810 of the Board’s regulations. In the alternative, APEX seeks an adjusted standard from portions of 35 Ill. Adm. Code 807.104 (Solid Waste Definitions) and 810.103 (Solid Waste Disposal Definitions). The Board held a hearing on January 7, 2015. The Illinois Environmental Protection Agency (Agency or IEPA) recommends that the Board deny both the request for a finding of inapplicability and the petition for an adjusted standard.

Based on the record before it, the Board denies APEX’s request for a finding of inapplicability. The Board concludes that this record does not demonstrate that APEX’s proposed process falls outside of hazardous waste regulation. Having reached this conclusion, the Board also denies APEX’s alternative request for an adjusted standard from specified definitions in the Board’s solid waste definitions. The record shows that APEX contemplated a non-solid waste determination and also cited Alternate Fuels, Inc. v. IEPA, 830 N.E.2d 444 (2004) in support of regulatory relief. In light of its conclusion above, the Board is prepared to consider subsequent filings based on those authorities or others submitted under the Act and its procedural regulations.

In this opinion, the Board first provides the procedural history, the factual background of APEX’s facility and proposed operations, and the legal framework for consideration of APEX’s petition. The Board then summarizes APEX’s petition, the Agency’s recommendation, and

APEX's response. The Board next summarizes APEX's and the Agency's post-hearing briefs. The Board then discusses the issues presented and reaches its conclusions.

PROCEDURAL HISTORY

On August 8, 2014, APEX filed a petition (Pet.) for a finding of inapplicability or, in the alternative, an adjusted standard. Attached to the petition were 16 exhibits:

Process Flow Diagram and Material Balance (Aug. Exh. A);

Map of APEX facility (Aug. Exh. B);

Process Description and Flow Diagram (Aug. Exh. C);

City of Joliet Industrial Wastewater Discharge permit No. J1610 (Aug. Exh. D);

Inventory of proposed equipment and infrastructure improvements (Aug. Exh. E);

Quality Assurance/Quality Control protocols (Aug. Exh. F);

Raw Material Profile Form for Galaxy Circuits, Inc. (Aug. Exh. G);

Material Safety Data Sheet (Aug. Exh. H.)

Analytical Test Results of three samples of copper ammonium chloride (Aug. Exh. I);

Bills of Lading/Shipping Manifests (Aug. Exh. J);

Letter to Agency from APEX (May 9, 2014) (Aug. Exh. K);

Letter from APEX from Agency (June 9, 2014) (Aug. Exh. L);

Letter from Indiana Department of Environmental Management (IDEM) to Heritage Environmental Services (Apr. 14, 1994) (Aug. Exh. M);

Letter from United States Environmental Protection Agency (USEPA) to IDEM (Aug. 3, 1994) (Aug. Exh. N);

Letter from USEPA to IDEM (Sept. 7, 1995) (Aug. Exh. O);

Letter from Virginia Department of Environmental Quality (DEQ) to Heritage Environmental Services (Mar. 28, 1996) (Aug. Exh. P); and

Letter from Colorado Department of Public Health and Environment (DPHE) to Micronutrients (Dec. 3, 2001) (Aug. Exh. Q).

Also accompanying the petition and exhibits was a letter seeking trade secret protection for the entirety of Exhibits C, E, and F. *See* 415 ILCS 5/7, 7.1; 35 Ill. Adm. Code 130. On August 22, 2014, APEX timely filed a certificate of publication. Notice of filing the petition was published in *The Bugle* of Joliet on August 20, 2014. On September 18, 2014, the Board accepted the petition for hearing without making any determination on its sufficiency or merits.

On September 24, 2014, the Agency filed a motion for an extension of time to file its recommendation. On September 29, 2014, APEX filed its response. On September 30, 2014, the hearing officer issued an order granting the motion and extending the Agency's deadline to file a recommendation to October 6, 2014. On October 7, 2014, the hearing officer extended the deadline to October 9, 2014, and set a deadline of October 28, 2014 for APEX's response to the recommendation. On October 15, 2014, the Board received the Agency's recommendation (Rec.), attached to which were two exhibits, the first a letter to Olin Chemical from the Waste Identification Branch of the United States Environmental Protection Agency (USEPA) (Agency Exh. A), and the second consisting of specifications for two products (Agency Exh. B). *See* 35 Ill. Adm. Code 101.300(b). On October 28, 2014, APEX filed its response to the Agency's recommendation (Resp.).

On November 20, 2014, the hearing officer scheduled a hearing on January 7, 2015, in Bolingbrook. Notice of hearing was published in the Joliet *Herald News* on November 27, 2014.

On November 24, 2014, the hearing officer issued an order directing APEX to provide written responses to questions listed in an Attachment A by December 31, 2014. On December 29, 2014, APEX filed written answers to the Board's questions (APEX Ans.) including 12 exhibits:

Product Supply Agreement (Dec. Exh. 1);

Process information (Dec. Exh. 2);

Potential suppliers (Dec. Exh. 3);

Materials information (Dec. Exh. 4);

Letter to APEX from Phoenix Staffing & Management Systems, Inc. (Dec. 10, 2015) (Dec. Exh. 5);

Enlarged map of APEX facility (Dec. Exh. 6);

Contracting information (Dec. Exh. 7);

Materials information (Dec. Exh. 8);

Straight bill of lading for used etchant solution (Dec. Exh. 9);

Straight bill of lading for fresh etchant solution (Dec. Exh. 10);

Straight bill of lading for copper oxide (Dec. Exh. 11); and

Treatment information (Dec. Exh.12).

Accompanying the answers was a letter seeking trade secret protection for various specified responses, portions of responses, and exhibits. *See* 415 ILCS 5/7, 7.1; 35 Ill. Adm. Code 130.

The hearing took place as scheduled on January 7, 2015. Three witnesses testified on behalf of APEX: Mr. Lee Welgs and Mr. Timothy Racette of APEX and Mr. Rajani Patel of Delta Precision. On January 16, 2015, the Board received the transcript (Tr.). On January 20, 2015, the Board received the transcript of the portion of the hearing addressing materials for which APEX had requested trade secret protection.

On February 2, 2015, APEX filed its post-hearing brief (APEX Brief), which responded to questions posed by the Board and the Agency during the hearing. Accompanying the brief were eight exhibits:

Analytical reports from tests of CAC from Eagle, Delta Precision, Advanced Circuits, American Progressive Circuits, Sunrise, Alpha Circuits, MicroCircuits, Ampel Circuits, and Galaxy. (Feb. Exh. A);

Letters from potential customers regarding shipment of CAC (Feb. Exh. B);

Document for shipment of materials between countries (Feb. Exh. C);

Document for shipment of materials domestically (Feb. Exh. D);

APEX documents for tracking of various materials (Feb. Exh. E);

Two process flow diagrams regarding production of copper oxide (Feb. Exh. F);

Process flow diagram and mass balance sheet regarding production of copper oxide and ammonium chloride from CAC (Feb. Exh. G); and

Process flow diagram regarding treatment of waste stream prior to discharge (Feb. Exh. H).

Also accompanying the brief was a letter seeking trade secret protection for the entirety of Exhibits B, C, D, E, F, G, and H. *See* 415 ILCS 5/7, 7.1; 35 Ill. Adm. Code 130. On February 18, 2015, the Agency filed its post-hearing brief (Agency Brief). On February 24, 2015, APEX filed its reply to the Agency's post-hearing brief (Reply).

FACTUAL BACKGROUND AND APEX'S ACTIVITY

General Overview

APEX states that its production facility was constructed in 1972 by CP Inorganic, Inc., which operated it until Phibro-Tech acquired it in 1994. Pet. at 4; *see* Tr. at 11. “APEX acquired the facility on March 1, 2011.” Pet. at 4; *see* Tr. at 11. APEX states that it now employs 27 people: “17 hourly, 5 salaried, 2 interns, and 3 contract temporary employees.” Pet. at 4; *see* Tr. at 12. APEX states that it manufactures “high-quality copper, cobalt, and nickel chemicals for the semiconductor, printed circuit board, catalyst, petrochemical, and battery industries.” *Id.* at 1; *see* APEX Ans. at 17; Tr. at 11.

APEX seeks to purchase used etchant solution, or Copper Ammonium Chloride (CAC), from its prospective customers, manufacturers of printed circuit boards. Pet. at 2; *see* Tr. at 13. APEX describes CAC as “an ammonia-based fluid that is used to strip away excess copper from printed circuit boards.” Pet. at 2. The purchase price of CAC is based on its copper content (Tr. at 13), causing the price paid to vary from supplier to supplier (*id.* at 46). At hearing, Mr. Welgs testified that generators store spent etchant in drums, totes, or tanks. Tr. at 22. He added that customers generally lack space to store large volumes of liquid and would be unable to store it for as long as one month. *Id.* APEX states that CAC “is not classified as a solid waste or a hazardous waste for regulatory purposes” and that it “never exhibits characteristics of corrosivity or toxicity.” *Id.* at 7. APEX further states that recent analytical tests including the Toxicity Characteristic Leaching Procedure (TCLP) on a representative sample “demonstrate CAC’s non-corrosive and non-hazardous properties.” *Id.*, citing Aug. Exh. I (analytical test results).

APEX states that it would “process the used etchant solution and separate the dissolved copper from the ammonia solution to make two useful products,” copper oxide and ammonium chloride. Pet. at 2; *see* Tr. at 13. APEX intends to sell the ammonia chloride back to its original customers as “fresh etchant solution” for use in the same process that produced the used etchant solution. Pet. at 7; *see* Aug. Exh. 1 (Product Supply Agreement). APEX asserts that this process “creates a ‘closed loop’ for this material” and reduces costs and use of resources otherwise required to produce fresh etchant. Pet. at 5. In its November 24, 2014 hearing officer order, the Board asked whether customers who supply used etchant will be required to purchase the same amount of processed solution to maintain a “closed loop.” Mr. Welgs testified that, as a result of evaporation and wastewater treatment, customers lose approximately 15 percent of fresh etchant in their processes, “[s]o they will only send us back about 85 percent of the fresh etchant. . . .” Tr. at 45. He noted that APEX’s proposed contract requires that customers purchase all of their fresh etchant from APEX, “[s]o we would actually have to supplement the etchant that we send back to them.” *Id.* at 45-46; *see* Dec. Exh. 1 (Product Supply Agreement).

APEX stated that it intends to “sell the copper oxide as a product into the pigment, frit, and/or micronutrient industries.” *Id.* at 2; *see* APEX Ans. at 12. APEX argues that its “process minimizes the use of reagents and heat associated with making copper oxide from copper metal and the associated reagents. . . .” Pet. at 6. APEX states that there is a significant market for its intended process, although it is aware of only two other companies in the United States that now

perform it. *Id.* at 2; *see* Tr. at 14. APEX argues that performing its process will “inject a level of competition” into the market for processing CAC. Pet. at 6.

APEX states that it intends to spend “\$1 million or more on upgrading its existing infrastructure to properly process that CAC material. . . .” Pet. at 4, citing Aug. Exh. E (inventory of proposed improvements submitted as trade secret); *see* Tr. at 15. APEX projects that, on beginning to process CAC, “it will be able to employ an additional 5 people, for a total of 32 employees – 24 hourly, 5 salaried, and 3 interns.” *Id.*; *see* Tr. at 12.

In summarizing these intended expenditures, the Board has considered August Exhibit E, a listing of proposed improvements submitted with a request for trade secret protection.

Summary of APEX Process

APEX’s petition describes its anticipated process. *See* Aug. Exh. B (facility map); *see also* Dec. Exh. 6 (map submitted as trade secret). “CAC coming into the APEX facility is brought in via truck in drums, totes, and/or tankers.” Pet. at 3. “Drums and totes are stored in segregated areas” where they may remain “no more than 7 days until they are pumped into tanks D37 and D38 or directly into processing tanks. *Id.*; *see* Aug. Exh. B; Tr. at 23-24. APEX reports that tankers are brought into a designated unloading area, where material is pumped into Storage Tanks D37 and D38. Pet. at 3. APEX states that it “anticipates instances where certain customers’ CAC material would be comingled for a short period of time prior to processing.” APEX Ans. at 14. Materials may remain in those tanks for as long as one week before processing. *Id.*

In a November 24, 2014 hearing officer order, the Board asked whether used etchant solution has a shelf life. APEX responded that, “[w]ith the exception of the ammonia in the CAC material volatilizing, the remainder of the constituents in the CAC do not have a shelf life.” APEX Ans. at 12; *see* Dec. Exh. 5. APEX stated that, if CAC is properly sealed, it would expect no volatilization to occur. APEX Ans. at 12. APEX added that it did not expect to store CAC at its facility long enough for any significant amount of volatilization to occur. *Id.* Consequently, APEX states that “the material would not have a traditional shelf-life” and will not expire or deteriorate while in APEX’s possession. *Id.*; *see* Dec. Exh. 5.

The Board also asked whether APEX will speculatively accumulate used etchant at its facility. APEX responded that it would not do so. APEX Ans. at 14. “All customers will sell CAC to APEX for processing with the specific understanding and agreement that they will be purchasing fresh etchant back from APEX. . . .” *Id.*; *see* Dec. Exh. 1 (Product Supply Agreement). APEX further responded that there is a large and under-served market generating demand for the copper oxide created by its process. *Id.*

“From storage in tanks D37 and D38, the CAC material will move into processing starting with Reaction Vessels H73 and G65.” Pet. at 3, citing Aug. Exh. C (process description and flow diagram submitted as trade secret); *see* Aug. Exh. B. Projecting incoming volumes, APEX “expects to process approximately 1 tanker truck per day, or approximately 3,500 gallons of CAC.” Pet. at 3. Projecting outgoing volumes, APEX “expects to process approximately 1/2

tanker load per day of finished products, or approximately 3,500 to 4,375 pounds of copper every 2 days.” *Id.* APEX indicates that it “anticipates fully turning over all inventories of raw feeds and finished products on at least a 30 day cycle, and most likely on a 10-15 day cycle.” *Id.*

APEX states that its process “uses 100% of the incoming CAC material. . . .” Pet. at 3, citing Aug. Exh. A (process flow diagram and material balance). APEX adds that “the process generates no by-product streams other than processed wash water brine. . . .” Pet. at 3; *see* Aug. Exh. A. The process generates 7,133 gallons of treated water discharge for each 4,000 gallons of used etchant input. Aug. Exh. A. APEX states that “[t]he water brine contains salt (18% NaCl), the sodium component of which is derived from the sodium hydroxide (NaOH), which APEX adds during the process for pH control.” Pet. at 4; *see* Aug. Exh. A. APEX’s process adds 949 gallons of NaOH for each 4,000 gallons of used etchant input. Aug. Exh. A. APEX asserts that the “facility is already specifically authorized to discharge the water brine that will be generated from its process.” Pet. at 4. APEX states that the water brine “will be managed on-site under APEX’s existing industrial pretreatment permit” and then discharged to publicly owned treatment works. *Id.*, citing Aug. Exh. D (City of Joliet Permit No. J1610); *see* Tr. at 19. APEX adds that its “current permit allows discharges from the ‘manufacture of ammonia-based etchants’ and ‘boiling spent ammonia copper etchant with sodium hydroxide to produce copper oxide.” Pet. at 4; *see* Aug. Exh. D at 2 (Permit Section A.1: Facility Description); Tr. at 19.

In preparing the summary of APEX’s process above, the Board has considered August Exhibit C, December Exhibits 2 and 8, and February Exhibit F and G, descriptions and diagrams of the process submitted with a request for trade secret protection. The Board has also considered December Exhibit 4, protocols and operating procedures, which were also submitted as trade secrets.

CAC and Quality Assurance/Quality Control Procedures

APEX states that it has Quality Assurance/Quality Control (QA/QC) protocols that it will follow to ensure proper handling and storage of CAC at the facility. Pet. at 6, citing Aug. Exh. F (protocols submitted as trade secret). APEX will maintain a profile establishing specifications for CAC. Pet. at 6. APEX states that “the Profile Sheet will be the same for all customers.” APEX Ans. at 10. APEX will require each circuit board manufacturer from which it purchases CAC to certify that its material meets those specifications and “is free from hazardous waste or hazardous materials.” Pet. at 6; *see* Tr. at 18, 39. Sales contracts with manufacturers “will allow APEX to return any material that does not meet its stated specifications.” Pet. at 6.

In its November 24, 2014 hearing officer order, the Board requested that APEX explain whether its specifications are based on copper content or based on TCLP limits under Part 721. APEX responded that the specifications are based on CAC having “at least a minimum amount of copper” and on its being non-hazardous and not posing any threat to employees, customers, human health, or the environment. APEX Ans. at 10. APEX adds that, “[s]hould either of these two factors fail to meet the specifications, then the material will not be accepted for delivery.” *Id.* At hearing, the Agency asked APEX what it would do if a test of incoming material revealed a hazardous level of a constituent. Mr. Welgs testified that it would have to be returned to the customer. Tr. at 24-25. He also testified that, if an incoming load of CAC exceeded TCLP

levels and had to be rejected, that load would remain at APEX for no more than one week for testing and manifesting before it was returned to the customer. *Id.* at 28.

The Board also asked whether APEX proposed a copper content of 10-20% as an acceptable specification for CAC, as reflected in the MSDS for Galaxy Circuits, Inc. submitted as August Exhibit G. If so, the Board asked that APEX comment on the rationale for that proposed range. APEX responded that the range of 10-20% “simply reflects the typical range at which the copper level in CAC will be when it is being considered for delivery to APEX.” APEX Ans. at 10. APEX added that it “is prepared to accept CAC with a copper concentration lower than 10% and higher than 20%; however, we would anticipate these instances to be rare.” *Id.*; *see* Tr. at 30-32.

APEX states that “CAC is not classified as a solid waste or a hazardous waste for regulatory purposes. CAC has a pH of 8 to 9 and never exhibits characteristics of corrosivity or toxicity.” Pet. at 7. APEX reports that it “performed analytical tests, including TCLP and pH, on a representative sample of CAC.” *Id.* APEX asserts that results of these tests show that CAC is neither corrosive nor hazardous. *Id.*, citing Aug. Exh. I (test results and laboratory report). Results shown in Exhibit I show that total chromium concentrations in samples from Midwest Printed Circuits and Galaxy Circuits are 29 mg/L and 41 mg/L, respectively. *See* Aug. Exh. I.

In its November 24, 2014 hearing officer order, the Board noted that August Exhibit I shows concentrations of the following contaminants listed under federal hazardous waste rules: cadmium, chromium, and lead. *See* 40 C.F.R. § 261.24. The test results report that “[n]o other TCLP metals were analyzed as they are not used nor present at the processing facilities.” Aug. Exh. I. The hearing officer order requested that APEX “[i]ndicate the method or methods that were utilized to obtain the results reported in [August] Exhibit I and if the methods are consistent with the test methods under 35 Ill. Adm. Code 721.124.”

APEX responded that First Environmental Laboratories, Inc. (First Environmental) tested CAC for TCLP metals lead and hexavalent chrome. APEX Ans. at 2. First Environmental “is an IEPA and National Environmental Laboratory Accreditation Program (NELAP) certified laboratory with Accreditation Number 100292.” *Id.* APEX stated that First Environmental used test methods consistent with Method 1311, TCLP. “The methods used to determine lead and hexavalent chromium are 3060A/7196A and 6010C, respectively.” *Id.* APEX added that “[c]admium was determined by APEX’s internal lab using method 7000B. pH was determined by APEX’s internal lab consistent with Method 1311.” *Id.*

Regarding the toxicity characteristic, the Board also requested that APEX “provide test results for the full suite of contaminants listed in 35 Ill. Adm. Code 721.124(b) [40 CFR 261.24] using Method 1311. . . .” APEX responds that it “would have First Environmental perform such comprehensive testing for all new customers.” APEX Ans. at 3. APEX states that, for subsequent shipments, it “proposed to use its in-house lab to test only for those substances that APEX believes might have a reasonable scientific probability for being present in the CAC.” *Id.* APEX argues that such a belief would be “based upon APEX’s knowledge of the processes that generated the CAC material at the customer’s location.” *Id.* APEX states that its “in-house lab has the same or similar capabilities and utilizes the same scientifically approved methodologies

as First Environmental. While the APEX lab is not currently NELAP accredited, . . . APEX will consider obtaining its NELAP certification and bringing all of the pre-shipment testing in-house, while maintaining the validation testing as currently proposed.” *Id.* at 4.

The hearing officer order also noted that the total chromium concentrations in samples from Midwest Printed Circuits and Galaxy Circuits are 29 mg/L and 41 mg/L, respectively. *See* Aug. Exh. I. Noting that the maximum concentration for the toxicity characteristic is 5.0 mg/L, the Board asked APEX to explain why it “did not consider the used etchant solution as a characteristic hazardous waste and seek a non-solid waste determination. *See* 35 Ill. Adm. Code 720.131. APEX responded that the criteria at 35 Ill. Adm. Code 720.131 “do not appear to apply to the CAC.” APEX Ans. at 6. APEX stated that it is not accumulating CAC speculatively under subsection (a) and is not reusing CAC “as feedstock within the original production process” under subsection (b). *Id.* APEX adds that, under subsection (c), the processed CAC is not “commodity-like” and does not need further reclamation. *Id.*

In addition, APEX argues that, although the Board’s regulations do not distinguish between the two forms, the chromium in CAC is trivalent chrome and not hexavalent chrome. APEX Ans. at 6, citing 35 Ill. Adm. Code 721.124(b). APEX asserts that Micronutrients allows 100% of the trivalent chromium in CAC to remain as an ingredient in its animal feed product. APEX Ans. at 6; *see* Tr. at 16, 27-28. APEX argues that trivalent chromium “going into an industrial application should be less of a concern from an environmental regulatory perspective.” APEX Ans. at 6. APEX further argues that the trivalent chromium concentrations “found in the representative samples of two potential customers are not, and should not be considered, a significant cause for concern as the APEX process is sufficiently protective to human health and the environment.” *Id.* at 7. Mr. Welgs testified that, when APEX accepts CAC, it will not “ensure that that chromium levels will be below the TCLP level as a total chromium.” Tr. at 27. He acknowledged that the level of total chromium “may be above the TCLP level.” *Id.* at 28.

In addition, the Board requested that APEX “[p]rovide test results for the used etchant solution from an independent Illinois EPA certified lab for each supplier APEX is currently considering to demonstrate whether the etchant solution exhibits any of the characteristics” of ignitability, corrosivity, reactivity, or toxicity identified in the Board’s hazardous waste regulations. *See* 35 Ill. Adm. Code 721.121, 721.122, 721.123, 721.124.

APEX states that, “[w]ith respect to initial testing of the CAC from all new customers, APEX proposes to have First Environmental perform a comprehensive analysis for Ignitability, Corrosivity, Reactivity, and Toxicity pursuant to Illinois regulations. This testing would be performed pre-shipment.” APEX Ans. at 2-3; *see* Tr. at 17-18. APEX will also test for copper content and pH. APEX Ans. at 9. After performing this initial test, “APEX would then test every subsequent load of CAC from that customer utilizing its own internal laboratory to verify the chemical composition of the CAC.” *Id.* at 3; *see id.* at 9, 11. APEX states that this testing verifies that the CAC matches the MSDS provided by customers. Pet. at 7, citing Aug. Exh. H (sample MSDS); Tr. at 18, 48. The MSDS prepared for Delta Precision Circuits states that “[i]t is reasonable to assume that ammonia etchant compounds contain arsenic, cadmium, chromium, and lead in concentrations ranging from a few parts per billion to several parts per million. Aug.

Exh. H at 7. Of the TCLP metals, “APEX will only test for those constituents that it has reason to believe might be in the CAC material.” APEX Ans. at 9; *see id.* at 11; Tr. at 43.

At hearing, the Agency asked how APEX would determine the constituents it might expect to find in customers’ material. Mr. Welgs testified that “most of our customers are using copper laminated fiberboard.” Tr. at 21. He indicated that APEX would expect to find constituents associated with those materials. *Id.* He testified that “[c]opper has trace elements in it and it’s mined oftentimes with lead, with zinc. . . . [Y]ou find a little bit of cadmium in it because in the same mine they often find copper.” *Id.* at 42. Testifying on behalf of APEX, however, Mr. Patel stated that manufacturers have replaced tin lead with tin as an etchant resist to protect the copper beneath it, “[s]o there wouldn’t be any traces of lead” in the etchant process. *Id.* at 57. Mr. Welgs suggested that APEX could verify customers’ use of any additives and determine any other metals that could be present in the CAC. *See id.* at 21. Mr. Welgs added that he was not aware that customers perform other processes that might cross-contaminate the spent etchant. *Id.* at 21-22. APEX added that “[t]he full spectrum of TCLP would be run if APEX had reason to believe that certain constituents of concern might exist in the CAC material after the initial testing was performed by First Environmental.” APEX Ans. at 11. Mr. Welgs testified that, before APEX processes any CAC, it “will test the material again to make sure it is consistent with our product specifications.” Tr. at 18.

At hearing, the Board noted that, although its November 24, 2014 hearing officer order had requested test results of CAC for each prospective supplier to demonstrate whether it exhibits any characteristic of hazardous waste, APEX’s response did not include such results. Tr. at 33; *see* APEX Ans. at 2-3 (Question 1(b)). APEX stated that “it would be cost prohibitive to test the CAC from each of its 350+ potential customers” before obtaining relief from the Board. APEX Brief at 1. APEX later submitted analytical reports on ten samples obtained from printed circuit board manufacturers in the Chicago area. *Id.* at 2; *see* Feb. Exh. A. First Environmental Laboratories sampled each of the ten for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. *Id.*

APEX acknowledged that three of the ten samples exceeded regulatory levels for arsenic. APEX Brief at 2; *see* Feb. Exh. A at 3 (8.05 mg/L), 8 (6.30 mg/L), 10 (5.15 mg/L). APEX characterized this as “a slight variance” and attributed it to “naturally occurring inconsistency in the Copper, Lead and certain integrated circuits associated with the CAC.” APEX Brief at 2.

APEX argues that the maximum concentrations for the toxicity characteristic apply to “waste.” APEX Brief at 2, citing 35 Ill. Adm. Code 721.124. APEX further argues that these limits are based on an expectation that the material will be disposed of in a landfill or through some other method. APEX Brief at 2-3. APEX asserts that CAC is not a waste and that “[n]one of the constituents within the CAC material will be disposed of, with the exception of the wastewater brine, and all of the TCLP metals will be extracted out during the APEX process.” *Id.* at 3.

APEX also argues that “slight variances in the levels of metals will not cause any additional threat to human health or the environment.” APEX Brief at 2. APEX adds that these

variations “will be completely mitigated during the APEX process, so as to ultimately remove any potential threat. . . .” *Id.* at 3.

In its November 24, 2014 hearing officer order, the Board asked whether APEX would receive CAC directly from its prospective customers or whether it intended ever to receive it through an intermediary. APEX responded that, although it had no current plans to purchase CAC through an intermediary, “it is theoretically possible that APEX could contract through an intermediary or broker for the purchase of CAC.” APEX Ans. at 14. APEX stated that, if it did so, “[b]oth the intermediary and its client would have to be qualified just like any other customer, and APEX would employ the same testing and QA/QC process as it plans to employ when purchasing the CAC directly from its customers.” *Id.*

APEX states that “its QA/QC testing procedures will filter out and reject any proposed CAC that is truly ‘hazardous’ or contains any ‘foreign substances’ that APEX would not anticipate being a normal constituent within the CAC.” APEX Ans. at 8. APEX adds that it “will reject any proposed CAC material that it believes should be characterized as a ‘hazardous waste’ or is a significant threat to human health or the environment.” *Id.*

APEX states that it “would also rely upon the customer certifications that they had inspected the CAC, and that the process that generated the CAC had remained consistent from all prior shipments.” APEX Ans. at 3; *see* Tr. at 40. APEX suggested that, if the customer certifies that its process has not changed since initial testing, “then APEX will only test a limited suite of TCLP.” APEX Ans. at 11. APEX adds that “[a]ny changes in the process would require the same comprehensive testing initially conducted by First Environmental.” *Id.* at 3, citing Aug. Exh. 1 (Product Supply Agreement); *see* Tr. at 18-19.

APEX states that, “[e]very six months, and in order to validate both the customer certifications and its in-house testing, APEX proposes to send representative samples for all customers to First Environmental for a comprehensive analysis for Ignitability, Corrosivity, Reactivity and Toxicity pursuant to Illinois regulations.” APEX Ans. at 3; *see id.* at 9; Pet. at 6, citing Aug. Exh. G (Raw Material Profile Form and attachments including MSDS); Tr. at 18. The MSDS prepared for Galaxy Circuits, Inc. and submitted as an appendix to August Exhibit G states that “[i]t is reasonable to assume that ammonia etchant compounds contain arsenic, cadmium, chromium, and lead in concentrations ranging from a few parts per billion to several parts per million.” Aug. Exh. G, Appendix B at 7 (§16). APEX adds that this testing will run the full suite of TCLP in order to confirm the initial testing. APEX Ans. at 11. APEX characterized this semi-annual recertification as serving “as an independent check on APEX’s ongoing in-house testing protocol.” APEX Ans. at 11. APEX adds that it would require transporters to provide a similar certification. Pet. at 6-7.

In addition, APEX reports that its prospective customers have evaluated, tested, and classified used etchant for sale and shipment to Micronutrients in Indiana through standard bills of lading. Pet. at 7, citing Aug. Exh. J (samples of “Hazmat Bill of Lading/Manifest”); *see* Dec. Exh. 9 (bill of lading for used etchant). APEX states that it “plans to track and control the movement of the used etchant solution with the Customers via bills of lading and manifests, and to create a ‘closed loop’ system.” Pet. at 7. APEX argues that this system ensures that all

material “is controlled and accounted for during the entire process from pick up and transportation, to processing at the APEX facility, to sale and transportation back to the original Customer.” *Id.*

At hearing, the Board asked APEX to distinguish bills of lading from manifests. Tr. at 35, 54. APEX explained that the Board’s regulations establish standards for generators and transporters of hazardous waste. APEX Brief at 5, citing 35 Ill. Adm. Code 722 (generators), 723 (transporters). These requirements include a manifest, which consists of a six-part form and includes a unique tracking number. APEX states that “[t]hese manifest forms must be used nationwide to document shipments of hazardous waste by all generators, transporters, and treatment/storage/disposal facilities.” APEX Brief at 5. APEX adds that, “[i]n contrast, a Bill of Lading is a generic shipping document that generally needs to meet Department of Transportation and Interstate Commerce Commission regulations for land, sea, and air shipments of various materials. It provides space to list all essential shipping details including carrier, consignee, description, and costs. *Id.*; see Dec. Exhs. 9-11.

At hearing the Board also asked APEX whether potential customers ship used etchant through bills of lading or waste manifests. Tr. at 35-37. APEX stated that it had determined that they “ship the used etchant solution via bills of lading and not on waste manifests.” APEX Brief at 5, citing Feb. Exh. B (letters from potential customers submitted as trade secrets); see Dec. Exh. 3, 7, Feb. Exh. B (potential suppliers submitted as trade secret).

The Board also asked APEX to explain the type of tracking required for both domestic and international shipments. Tr. at 37. The Board noted that APEX’s list of potential customers included entities in a number of states and Canada. *Id.* Mr. Welgs testified that tracking requires a bill of lading, proper labeling, and an MSDS. *Id.* at 38. He added that, when material arrives at APEX’s facility, it is sampled and tested, and the tracking documents reflect that testing in “no more than a day or two.” *Id.* APEX noted a typical paper flow for international shipments. APEX Brief at 6, citing Feb. Exh. C (submitted as trade secret). APEX also noted a typical paper flow for domestic shipments. APEX Brief at 6, citing Feb. Exh. D (submitted as trade secret). APEX also stated that it relies on separate paperwork for internal tracking of “1) used etchant from supplier to APEX; 2) fresh etchant from APEX to customers; and 3) copper oxide from APEX to customers.” APEX Brief at 6, citing Feb. Exh. E (submitted as trade secret).

In summarizing these intended expenditures, the Board has considered August Exhibit F, documents pertaining to APEX’s QA/QC protocols and determining values in samples, which APEX submitted with a request for trade secret protection.

Pollution Control Equipment at the Facility

APEX states that ammonia detection equipment at the facility “includes an ambient ammonia monitor. The monitor detects ammonia levels at four stations throughout the property and will alert at levels of 10 ppm [parts per million] and above.” Pet. at 5. APEX reports that it also employs two single-stage wet caustic scrubbers, which “capture acid mist and particles from copper and nickel batch operations.” *Id.*

Pollution control equipment at the facility also includes a High Purity Grade (HPG) dust collector, which “uses high temperature, pleated cartridge filters to capture HPG fines generated from an HPG dryer.” *Id.*; *see* APEX Ans. at 17.

In its November 24, 2014 hearing officer order, the Board asked APEX to comment on whether upgrading the facility to process CAC would increase emission of HPG fines. APEX acknowledges that “emissions would increase from current production levels,” but argued that “the capacity of its current emission control equipment would be more than sufficient to handle the increased emission volume.” APEX Ans. at 17. APEX states that, although it “does not anticipate having to upgrade its dust collector and scrubbers,” it “will monitor the efficiency of its emission control equipment.” *Id.* APEX adds that, “should upgrades be necessary, then APEX will proceed to upgrade accordingly.” *Id.*

Regarding water treatment at the facility, APEX states that “ammonia is removed by primary and secondary ammonia scrubbing systems, and dissolved metals are precipitated with sodium sulfide.” Pet. at 5; *see* Tr. at 19. APEX adds that “water treatment equipment also utilizes pH controls and a two-stage filtration system.” Pet. at 5. In addition, APEX reports that “water samples are submitted to APEX’s laboratory for a full analysis on a daily basis.” *Id.*; *see* Tr. at 19. APEX further states that it “monitors its waste water stream very carefully, and also performs semi-annual waste water analyses in which the full suite of TCLP metals are analyzed.” APEX Ans. at 8. APEX asserts “that this additional safety measure will result in the waste water generated in its process to be well below the characteristic levels specified for hazardous waste, despite processing the CAC material that might contain higher trace levels of certain TCLP metals.” *Id.* In summarizing this treatment, the Board has considered December Exhibit 12 and February Exhibit H, diagrams of treatment submitted with a request for trade secret protection.

LEGAL FRAMEWORK

Adjusted Standard Procedure

The Environmental Protection Act (Act) and the Board’s procedural rules provide that a petitioner may request, and the Board may grant, an environmental standard that is different from the generally applicable standard that would otherwise apply to the petitioner. This is called an adjusted standard. The general procedures that govern an adjusted standard proceeding are found at Section 28.1 of the Act and Section 104.Subpart D of the Board’s procedural rules. 415 ILCS 5/28.1 (2014); 35 Ill. Adm. Code 104.400 – 104.428.

The Board’s procedural rules specify the required contents of a petition for an adjusted standard. *See* 35 Ill. Adm. Code 104.406, 104.416. Once a petition for an adjusted standard is filed, the Agency must file its recommendation with the Board. *See* 415 ILCS 5/28.1(d)(3) (2014); 35 Ill. Adm. Code 104.416. The adjusted standard proceeding is adjudicatory in nature and therefore is not subject to the rulemaking provisions of the Act or the Illinois Administrative Procedure Act (5 ILCS 100/1-1 *et seq.* (2014)). *See* 415 ILCS 5/28.1(a) (2014); 35 Ill. Adm. Code 101.202 (defining “adjudicatory proceeding”).

Section 28.1(d)(1) of the Act (415 ILCS 5/28.1(d)(1) (2014)) and Section 104.408(a) of the Board's procedural rules (35 Ill. Adm. Code 104.408(a) (quoting the Act)) require the adjusted standard petitioner to publish notice of filing the petition by advertisement in a newspaper of general circulation in the area likely to be affected by the proposed adjusted standard. Publication must take place within 14 days after the petition is filed. The newspaper notice must indicate that any person may cause a public hearing to be held on the proposed adjusted standard by filing a hearing request with the Board within 21 days after publication. *See* 415 ILCS 5/28.1(d)(1) (2014); 35 Ill. Adm. Code 104.408(b).

Standard of Review and Burden of Proof for Adjusted Standard

APEX seeks a finding of inapplicability or, in the alternative, an adjusted standard from specified portions of 35 Ill. Adm. Code 807.104 and 810.103. Pet. at 1, 18-19, 24. APEX states that these regulations do not specify the level of justification that must be met by a petitioner for an adjusted standard. Pet. at 19. Therefore, in determining whether to grant the requested adjusted standard, the Board must consider, and APEX has the burden to prove that:

- 1) factors relating to that petitioner are substantially and significantly different from the factors relied upon by the Board in adopting the general regulation applicable to the petitioner;
- 2) the existence of those factors justifies an adjusted standard;
- 3) the requested standard will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability; and
- 4) the adjusted standard is consistent with any applicable federal law. 415 ILCS 5/28.1(c) (2014); *see* Pet. at 24-25; *see also* Rec. at 8.

The burden of proof in an adjusted standard proceeding is on the petitioner. *See* 415 ILCS 5/28.1(b), (c) (2014); 35 Ill. Adm. Code 104.426. Once granted, the adjusted standard, instead of the rule of general applicability, applies to the petitioner. *See* 415 ILCS 5/28.1(a) (2014); 35 Ill. Adm. Code 101.202, 104.400(a). In granting adjusted standards, the Board may impose conditions as may be necessary to accomplish the purposes of the Act. *See* 415 ILCS 5/28.1(a) (2014); 35 Ill. Adm. Code 104.428(a).

Section 28.1(a) of the Act (415 ILCS 5/28.1(a) (2014)) provides that the Board may grant, consistent with Section 27(a) of the Act (415 ILCS 5/27(a) (2014)), an adjusted standard "for persons who can justify such an adjustment." Section 27(a) provides in pertinent part that, when adopting regulations under the Act, "the Board shall take into account the existing physical conditions, the character of the area involved, including the character of surrounding land uses, zoning classifications, the nature of the existing air quality, or receiving body of water, as the case may be, and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution." 415 ILCS 5/27(a) (2014).

Statutory and Regulatory Authorities

Section 3.535 of the Act defines “waste” in pertinent part to mean “any garbage, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility or other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining and agricultural operations, and from community activities.” 415 ILCS 5/3.535 (2014).

The Board’s definition of “waste” at Section 807.104 of its solid waste regulations includes identical language. *See* 35 Ill. Adm. Code 807.104.

Section 721.101(c) of the Board’s hazardous waste regulations provides in pertinent part that, for the purposes of Sections 721.102 and 721.106 the following definitions apply:

- 1) A “spent material” is any material that has been used and as a result of contamination can no longer serve the purpose for which it was produced without processing.
* * *
- 4) A material is “reclaimed” if it is processed to recover a usable product, or if it is regenerated. Examples are recovery of lead values from spent batteries and regeneration of spent solvents. . . .
* * *
- 7) A material is “recycled” if it is used, reused, or reclaimed. 35 Ill. Adm. Code 721.101(c).

Section 721.102(a)(1) of the Board’s hazardous waste regulations provides that “[a] solid waste is any discarded material that is not excluded pursuant to Section 721.104(a) or that is not excluded pursuant to 35 Ill. Adm. Code 720.130 and 720.131 or 35 Ill. Adm. Code 720.130 and 720.134.” 35 Ill. Adm. Code 721.102(a)(1). Section 721.102(a)(2)(A) provides that

- A) A discarded material is any material that is described as follows:
* * *
 - ii) It is recycled, as described in subsection (c) of this Section;

35 Ill. Adm. Code 721.102(a)(2)(A)(ii).

Section 721.102(c) of the Board’s hazardous waste regulations provides that “[a] material is a solid waste if it is recycled - or accumulated, stored, or treated before recycling - as specified in subsections (c)(1) through (c)(4) of this Section, if one of the following occurs with regard to the material.” 35 Ill. Adm. Code 721.102(c). Subsection (c)(3) addresses reclamation. 35 Ill. Adm. Code 721.102(c).

Section 721.103(a) of the Board’s hazardous waste regulations provides in pertinent part that

- a) A solid waste, as defined in Section 721.102, is a hazardous waste if the following is true of the waste:
- 1) It is not excluded from regulation as a hazardous waste pursuant to Section 721.104(b); and
 - 2) It meets any of the following criteria:
 - A) It exhibits any of the characteristics of hazardous waste identified in Subpart C of this Part. 35 Ill. Adm. Code 721.103(a)(

Section 721.124(a) of the Board's hazardous waste regulations provides in pertinent part that

[a] solid waste (except manufactured gas plant waste) exhibits the characteristic of toxicity if, using Method 1311 (Toxicity Characteristic Leaching Procedure (TCLP)) in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA publication number EPA 530/SW-846, as incorporated by reference in 35 Ill. Adm. Code 720.111(a), the extract from a representative sample of the waste contains any of the contaminants listed in the table in subsection (b) of this Section at a concentration equal to or greater than the respective value given in that table.

Section 721.124(b) of the Board's hazardous waste regulations provides in pertinent part that

[a] solid waste that exhibits the characteristic of toxicity has the USEPA hazardous waste number specified in the following table that corresponds to the toxic contaminant causing it to be hazardous.

MAXIMUM CONCENTRATION OF CONTAMINANTS
FOR THE TOXICITY CHARACTERISTIC

USEPA Hazardous Waste No.	Contaminant	CAS Number	Note	Regulatory Level (mg/ℓ)
D004	Arsenic	7440-38-2		5.0
D006	Cadmium	7440-43-9		1.0
D007	Chromium	7440-47-3		5.0
D008	Lead	7439-92-1		5.0

35 Ill. Adm. Code 721.124(b).

APEX'S PETITION

APEX reports that it first sought a Beneficial Use Determination (BUD) from the Agency so it could use CAC “as a non-waste product.” Pet. at 8. After the Agency indicated that CAC would not be eligible for a BUD, APEX withdrew its BUD application. *Id.*; *see* Tr. at 12.

APEX states that on May 9, 2014, it then submitted to the Agency a letter explaining the intended use of CAC and requesting agreement “that its use would not be subject to Illinois’ solid waste disposal regulations.” Pet. at 8, citing Aug. Exh. K. The Agency’s response dated June 9, 2014, indicated that APEX’s proposed process was beyond the authority under Section 22.54 of the Act to issue a BUD. Pet. at 8, *see* 415 ILCS 5/22.54 (2014); Aug. Exh. L at 1-2. The Agency stated that “[t]he reclamation of the spent copper ammonium chloride etchant prior to use as a raw material or product is a regulated waste treatment activity. The activity must be conducted at a facility which has obtained the applicable solid waste permits unless a determination is obtained from the Illinois Pollution Control Board that the material is not a waste.” Aug. Exh. L. at 2.

In its November 24, 2014 hearing officer order, the Board asked APEX to “clarify whether the CAC is reclaimed prior to being used as an ingredient in the production of fresh etchant solution or if it is directly used as an ingredient.” *See* 35 Ill. Adm. Code 720.131 (Solid Waste Determinations). APEX responded that it “does not believe that its proprietary process necessarily fits within the regulatory definition of ‘recycling, reclamation or reuse’ of the CAC material as those terms are generally used.” APEX Ans. at 5, citing 415 ILCS 5/3.380 (2014). APEX argues that its “process does not ‘remove any contaminants from a waste’ nor does it process ‘materials that would otherwise be disposed of or discarded.’” APEX Ans. at 6. APEX argues that the process is technically not “recycling, reclamation or reuse” under the Board’s regulations. *Id.*

APEX indicates that, as an alternative to obtaining an operating permit, it filed its petition requesting a Board determination that CAC is not a “waste.” Pet. at 8-9. In the event that the Board finds that CAC is a “waste,” APEX seeks an adjusted standard from specified provisions of Parts 807 and 810 of the Board’s solid waste regulations. *Id.* at 9, 18.

Summary of Request for Finding of Inapplicability

APEX argues that the threshold issue is whether the used etchant solution it wishes to purchase from its customers is a “waste.” Pet. at 9. APEX cites the Act and the Board’s regulations, which define “waste” to mean “any garbage, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility or other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining and agricultural operations, or from community activities. . . .” Pet. at 9, citing 415 ILCS 5/3.535 (2014), 35 Ill. Adm. Code 807.104. APEX argues that the solution is not a “waste” under this definition and that its production facility is therefore not a “pollution control facility” requiring a permit. Pet. at 9. APEX requests that the Board find that the requirements of Parts 807 and 810 of the Board’s solid waste regulations do not apply to its process. *Id.* APEX states that “[t]he Board has previously recognized that an adjusted standard

petition can, in the alternative, seek a finding of inapplicability. *Id.*, citing Petition of Illinois Wood Energy Partners, L.P. for an Adjusted Standard from 35 Ill. Adm. Code Part 807 or, in the Alternative, a Finding of Inapplicability, AS 94-1, slip op. at 2 (Oct. 6, 1994); Petition of Jo'Lyn Corporation and Falcon Waste and Recycling for an Adjusted Standard from 35 Ill. Adm. Code Part 807 or, in the Alternative, a Finding of Inapplicability, AS 04-2, slip op. at 13-14 (Apr. 7, 2005).

APEX argues that decisions by the Board and Illinois courts support its position. In the following subsections of the opinion, the Board summarizes APEX's arguments relating to those authorities.

Safety-Kleen, Southern California Chemical, and R.R. Donnelly

In Safety-Kleen Corp. v. IEPA, PCB 80-12 (Feb. 7, 1980) (Safety-Kleen), *aff'd. sub nom. IEPA v. PCB*, 427 N.E.2d 1053 (2nd Dist. 1981) (Rule 23), the petitioner requested a variance from special waste hauling regulations or, in the alternative, a finding that those regulations did not apply to its solvent collection and regeneration operation. Safety-Kleen, slip op. at 1. The Board summarized Safety-Kleen's operations:

Safety-Kleen leases solvent washing equipment to customers throughout the state. . . . The equipment is leased for a periodic charge that includes regularly scheduled maintenance and solvent changes. . . . The spent solvents are transported in closed drums by route truck to storage tanks at the sales branch offices. Tanker trucks periodically transport spent solvent from the sales branches to one of Safety-Kleen's regional solvent regeneration facilities, one of which is in Elgin, Illinois. The spent solvent is distilled after emulsions and sediments are removed. Products which are not reused as solvent or sold are disposed of at approved disposal sites. *Id.*

The Board stated that, to determine whether the spent solvent was subject to regulation as special waste, "it is necessary first to determine whether the spent solvent is waste." *Id.* at 2. The Board determined that it did not fit within any of the specific categories of materials named in the regulatory definition of "waste." *Id.* The Board further determined that it did not qualify as waste as "other discarded material." *Id.* The Board concluded that, "[s]ince it is destined to be reused, rather than discarded, it is not waste. The fact that a small fraction is rejected from the clarification and distillation process to be landfilled does not change this conclusion." *Id.* The Board added that its regulations did not intend "to regulate the movement of materials in general, but only waste." *Id.*

The Board subsequently denied an Agency motion for reconsideration of the February 7, 1980 order. In doing so, the Board stated that its decision was "not based on a finding that the solvent in question is recyclable. Under the facts alleged in the petition, Safety-Kleen maintains control over the solvent at all stages. It is able to state that the solvent is in fact recycled." Safety-Kleen, slip op. at 2 (July 10, 1980). The Board added that "[t]his situation is clearly distinguishable from the case in which a generator delivers material to a third person with no knowledge or control over its subsequent disposition." *Id.*

In S. Cal. Chem. Co. v. IEPA, PCB 84-51 (Sept. 20, 1984) (SCC), the petitioner, a formulator and manufacturer of ammoniacal etching solutions, sought a variance from regulatory manifest requirements or, alternatively, that the petition be dismissed as unnecessary. SCC, slip op. at 1. The Board summarized SCC's operations:

[t]hese ammoniacal etching solutions are used by SCC's customers at their facilities in automatically controlled etching systems, utilizing SCC-supplied chemical monitoring and replenishment equipment. After they are used to remove copper from printed circuit boards, the copper-laden solutions are returned to SCC via SCC-supplied returnable deposit containers or leased railcars and trucks. The copper-bearing solutions are routinely picked up at the time delivery of 'fresh' product is made. On receipt of these solutions at the Company's Union plant site, the copper is removed from these solutions using a closed-loop Liquid Ion Exchange System. The recovered copper is processed into copper sulfate and sold as a normal item of commerce. The ammoniacal etching solutions, depleted of copper, are chemically adjusted to compensate for loss due to evaporation during customer use and are resold as 'fresh' ammoniacal etching solution. All of the copper-laden solutions returned to SCC are either regenerated in this manner or directly sold by SCC to customers in other industries. The value of the spent etchant exceeds the value of the fresh etchant. *Id.* at 1-2.

The Board stated that SCC was controlled by the Safety-Kleen decision. *Id.* at 2. The Board first determined that the spent etchant did not fit within any of the specific categories of materials named in the regulatory definition of "waste." *Id.* at 3. The Board noted the Safety-Kleen standard that material is not "discarded" if it is "destined to be reused." *Id.* In Safety-Kleen, the Board found that the spent solvent was destined to be reused based on the fact "that the company involved maintained ownership over the solvent and maintained control over the solvent at all stages." *Id.* The Board found that SCC retained rights to and responsibility for etchant before and after use, which was sufficient to retain control over it. *Id.* at 4. The Board concluded "that in this situation the etchant remains within a 'closed loop' system which tracks the etchant in a manner that meets the purpose of the manifest system." *Id.* The Board added that "SCC's spent etchant when it is returned to SCC is not a waste" and that is not subject to regulatory manifest requirements. *Id.* The Board denied the variance petition as unnecessary. *Id.*

APEX argues that these two decisions "are nearly directly on point" and establish a standard for determining whether material is waste for purposes of regulation. Under Safety-Kleen and SCC, APEX further argues that the used etchant it intends to purchase from customers is not a "waste" because it is "destined to be reused." Pet. at 11. APEX asserts that, as in SCC, "[t]he value of the spent etchant exceeds the value of the fresh etchant" because of the value of the copper that is to be separated from it. *Id.*, citing SCC, slip op. at 2. APEX adds that its customers generating CAC "do not classify the used etchant solution as a waste, and do not handle, store, transport, or discard it as a waste of any kind." Pet. at 11, citing *id.* at 6-7 (Quality Assurance/Quality Control).

APEX argues that, in both Safety-Kleen and SCC, the Board relied on a finding that the petitioner maintained control over the spent materials. Pet. at 11. APEX states that a subsequent case, R.R. Donnelly & Sons Co. v. IEPA, PCB 88-79 (Donnelly), relied on Safety-Kleen and SCC. Pet. at 11. The Board cited the parties' stipulated facts to summarize Donnelly's operations. The Donnelly facility

uses the web offset printing process. During printing, the web is passed through a natural gas-fired heat set ink dryer. Ink oils which vaporize from the paper during drying are collected by a device called an MMT unit. . . . The MMT unit is a condensation-filter system that uses the indirect contact of ambient air to cool vaporized ink oils. Both ink oil and water vapors from the ink dryer are condensed into droplets in the MMT unit. The resulting unit is then sent through an oil/water separator. After separation, Donnelly collects the MMT oil in a 10,000 gallon holding tank. Donnelly subsequently sells the MMT oil to fuel or oil companies. The current purchase of Donnelly's MMT oil is Mohr Oil Company ("Mohr"). . . . Mohr is in the business of buying and selling oils and fuels.

Mohr buys the MMT oil and picks it up at the Donnelly facility. Mohr then sells and delivers the oil directly to an industrial facility in Chicago. The MMT oil is not delivered to, or stored, blended or treated at, any other facility prior to its delivery to the industrial facility. The facility uses the MMT oil as a fuel in its industrial furnaces. Donnelly, slip op. at 2.

Applying Safety-Kleen and SCC, the Board found that, in "the particular circumstances under which Donnelly currently handles its MMT oil, the MMT oil is not 'discarded material,' and therefore is not a waste." Donnelly, slip op. at 5. The Board noted that the oil was used as a valuable energy product in place of virgin oil. The Board also noted that the oil was handled in an environmentally appropriate manner and that it would not be classified as hazardous even if a waste. *Id.* The Board added that, "[i]n holding that Donnelly's current disposition of its MMT oil is such as not to characterize the oil as a waste, the Board emphasizes that this holding applies only under the particular circumstances here presented. The Board further notes that under other dispositions it can readily conceive that a contrary holding would follow." *Id.*

The Board addressed its order denying the motion for reconsideration in Safety-Kleen. Donnelly, slip op. at 4, n.1. That order stated that Safety-Kleen's control over solvent at all stages "is clearly distinguishable from the case in which a generator delivers material to a third person with no knowledge or control over its subsequent disposition." Safety-Kleen, slip op. at 2 (July 10, 1980). The Board stated that, in Donnelly, "[o]ur situation is not like this 'clearly distinguishable' situation because the generator, Donnelly, does have knowledge and at least partial control over its subsequent disposition. For Donnelly knows exactly to whom it is selling the oil, Mohr Company, and the oil is subsequently sent directly to the burner without treatment or storage." Donnelly, slip op. at 4, n.1. The Board added that "it is the language in the Board's first order which the appellate court relied upon in its affirmance of the Board's decision that the spent solvent was not waste." *Id.*

APEX argues that, in Donnelly, “[o]wnership and control was not a determinative factor in the Board’s finding that the MMT oil was not ‘discarded material.’” Pet. at 12. While arguing that control is “not a determinative factor,” APEX states that it will maintain “at least partial control over the used etchant at all stages.” *Id.* APEX further argues that, with its customers, it will share responsibility for the etchant throughout its process. *Id.* APEX adds that, “[t]hroughout all the stages of its life cycle, the etchant solution will be tracked via APEX’s QA/QC system, as well as manifested with licensed transporters to ensure that the material is properly handled, transported, stored, and processed.” *Id.*, citing *id.* at 6-7 (Quality Assurance/Quality Control).

APEX argues that these three cases involve facts and circumstances that are “nearly identical to this case.” Pet. at 12. APEX further argues that they provide “sufficient validation to rule that the used etchant solution that APEX plans to process is not a ‘waste’ for regulatory purposes. *Id.*

APEX adds that more recent cases provide further support for its request. The Board summarizes these cases in the following subsections of the opinion.

Alternate Fuels, Inc.

In Alternate Fuels, Inc. v. IEPA, 215 Ill. 2d 219, 830 N.E.2d 444 (2004) (AFI), the petitioner sought a declaratory judgment that an item was not a “waste” under the definition in the Act. The Court summarized AFI’s operations:

[t]he subject material consisted of various types of plastics generated by the shredding of empty agricultural chemical containers into chips approximately one inch in size. Prior to shredding, a company named Tri-Rinse, Inc., ‘triple rinsed’ the containers according to United States Environmental Protection Agency and Department of Agriculture guidelines to remove residual agricultural chemicals. AFI would transport the resulting chips to Illinois Power for use as fuel at its Baldwin Power Station. AFI, 830 N.E.2d at 446; *see* Pet. at 13.

The Court stated that “[t]he present material does not constitute hazardous waste.” AFI, 830 N.E.2d at 454, n.3. Although the Court noted recent revisions to Part 721 regarding the identification of hazardous waste, it stated that the parties had not argued “that this provision could apply to this matter.” *Id.*

Following inspections of AFI’s facility, the Agency issued AFI a notice alleging violations of the Act’s waste storage and treatment provisions. AFI, 830 N.E.2d at 448-49, citing 415 ILCS 5/21(d)(1), 21(e) (1998). The Agency considered AFI’s alternate fuel material to be “waste” under the statutory definition of the term, which included “other discarded material.” AFI, 830 N.E.2d at 449, citing 415 ILCS 5/3.53 (1998). “The Agency interpreted ‘discarded material’ to refer to any material ‘which is not being utilized for its original purpose.’ As AFI was not utilizing the alternate fuel material in a manner which was consistent with its original use by the supplier, it was the Agency’s position that such material had been ‘discarded’ and was therefore a ‘waste.’” AFI, 830 N.E.2d at 449. As a resolution, the Agency suggested that AFI

submit an application for a waste storage and treatment permit, which would require local site approval under the Act. *Id.*, citing 415 ILCS 5/39.2 (1998).

AFI filed a complaint including a request for “a declaration that the materials used by AFI in its manufacturing process were not ‘wastes’ because the materials were not discarded.” AFI, 830 N.E.2d at 449. The trial court granted AFI’s motion for summary judgment on that issue, and the appellate court affirmed. *Id.* at 449-50; *see* Pet. at 13.

The Supreme Court established a “two categories test” to determine whether items are discarded. The Court addressed the Agency’s position that term “discarded” in the statutory definition of “waste” should be read from the perspective of the supplier. The Court first noted that “[t]he Act does not elaborate as to who or what subject exactly performed the discard action. Rather, the focus remains on the object: ‘material.’” AFI, 830 N.E.2d at 455. The Court continued that the Act’s definition of “recycling, reclamation, or reuse” reflected an emphasis on the material itself. *Id.*, citing 415 ILCS 5/3.380 (2002). In that definition, “the legislature has categorized items that may be recycled, reclaimed, or reused into two main categories: (1) waste from which contaminants may be removed and (2) materials.” AFI, 830 N.E.2d at 455-56. The Court divided “materials” into those that are “discarded” and those “that would otherwise be disposed of or discarded [which] are collected, separated or processed and returned to the economic mainstream in the form of raw materials or products.” *Id.* at 456. The Court stated that, while the legislature had not defined “discarded materials,” it mentioned that the term does not include material that would otherwise be disposed of or discarded that is returned to the economic mainstream. *Id.* “Thus, materials are ‘discarded’ unless they are returned to the economic mainstream.” *Id.*; *see* Pet. at 13-14. The Court specifically rejected “the Agency’s contention that ‘discarded’ is defined solely from the viewpoint of the supplier. . . . There is nothing in the statute which would dictate this definition. Rather, the Act contemplates that materials that may otherwise be discarded by the supplier may be diverted from becoming waste and returned to the economic mainstream.” AFI, 830 N.E.2d at 457.

APEX states that the relevant facts in its petition “are nearly identical to AFI.” Pet. at 14. APEX argues that its proposed process does not remove contaminants from the used etchant. *Id.* APEX adds that its TCLP analysis “indicates that the CAC does not contain any other contaminants.” *Id.* Applying AFI, APEX concludes that “the CAC is a material.” *Id.*

APEX states that its proposed process produces two products, copper oxide and ammonium chloride, that it will return to the economic mainstream. Pet. at 14. APEX argues that it “will not discard the material.” *Id.* Again applying AFI, APEX argues that CAC is not discarded and therefore does not fall within the definitions of “waste.” *Id.*, citing 415 ILCS 5/3.535 (2014); 35 Ill. Adm. Code 807.104.

Jo’Lyn

In Petition of Jo’Lyn Corporation and Falcon Waste and Recycling Inc. for an Adjusted Standard from 35 Ill. Adm. Code 807.103 and 35 Ill. Adm. Code 810.103, or in the Alternative, a Finding of Inapplicability, AS 04-02 (Apr. 7, 2005) (Jo’Lyn), the petitioners requested a

determination that the material they sought to process is not a waste or, alternatively, an adjusted standard from specified waste regulations. The Board summarized petitioners' operations:

The petitioners' facility . . . processes granulate bituminous shingle material (GBSM) into dust control and paving applications. . . .

Petitioners state that GBSM is pre-consumer material that contains no asbestos, nails, wood, or other 'contaminants' that could adversely affect the environment while storing the product for short periods of time. . . .

The GBSM that the petitioners use is clean and consistent post-production material generated by the roofing shingle manufacturing process, such as punch-outs, mis-colored, or damaged shingles. The petitioners do not use post-consumer materials, known as 'tear-offs; which may be inconsistent or contain nails or asbestos.

Petitioners state they currently purchase GBSM from only one roofing shingle manufacturer, IKO Chicago, Inc., located in Bedford Park. The petitioners state that the material they purchase from IKO Chicago must be free from 'contaminants' as provided by a temporary purchase agreement entered into by the parties. . . .

The petitioners use a portable horizontal grinder to shred the GBSM into uniform size. . . .GBSM becomes Eclipse Dust Control (EDC) after the grinding process. The material then is applied as a paving product. . . . Jo'Lyn, slip op. at 2-3 (Apr. 7, 2005) (citations omitted); *see* Pet. at 16-17.

Petitioners maintained that GBSM was not waste because they collect it and process it into a paving product. Petitioners cited a 1993 Agency determination "that GBSM produced by IKO is not a waste when used for specific paving applications. . . ." *Id.* Citing AFI, petitioners also maintained that GBSM was not discarded because it was returned to the economic mainstream as a product. Jo'Lyn, slip op. at 5 (Apr. 7, 2005).

The Board found that neither petitioners nor any other entity removed contaminants from GBSM and that the GBSM is a "material." Jo'Lyn, slip op. at 13 (Apr. 7, 2005). The Board also found that, because petitioners return GBSM to the economic mainstream as EDC, the GBSM is not "discarded." *Id.*; *see* Pet. at 17. The Board stated that "the petitioners' facility has more characteristics of a 'recycling center' than a 'pollution control facility.'" Jo'Lyn, slip op. at 13 (Apr. 7, 2005), citing 415 ILCS 5/3.75 (2002) (defining "recycling center"). The Board clarified that it based its finding on several factors: that GBSM is not hazardous, that it is used only as a paving product, and that the process uses only "clean" GBSM. Jo'Lyn, slip op. at 14 (Apr. 7, 2005).

APEX argues that the facts of its case "fall squarely within" the Board's decision in Jo'Lyn. Pet. at 17. APEX asserts that its petition requires the same finding that CAC is not a

discarded material and is therefore not a waste as defined in the Act and the Board's regulations. *Id.*, citing 415 ICLS 5/3.535 (2014); 35 Ill. Adm. Code 807.104.

Westwood Lands

In Petition of Westwood Lands, Inc. for an Adjusted Standard from Portions of 35 Ill. Adm. Code 807.104 and 35 Ill. Adm. Code 810.103 or, in the Alternative, a Finding of Inapplicability, AS 09-3 (Oct. 7, 2010) (Westwood), the petitioner sought a finding of inapplicability of specified waste regulations or, in the alternative, an adjusted standard. The Board summarized Westwood Lands' operations:

Westwood's facility will process slag fines from steelmaking by extracting metallic content in the form of metallic iron and iron oxides from the fines.

* * *

Westwood's process forms the steelmaking slag fines into two usable products for sale to steel manufacturers 'for use in the making of steel in electric arc furnaces.'

* * *

In the course of Westwood's process, '[t]he slag fines are first put through three stages of size reduction, each stage with its own dust collection and related control equipment.' After reducing the size of the fractions, Westwood classifies them as either coarse, medium, fine, or very fine. . . . Westwood separates coarse fines from the other classifications and sells them in bulk form.

Westwood conveys medium, fine, and very fine fractions 'to individual magnetic drums, which separate the predominately metallic particles from the non-metallic particles.' Westwood then transports the metallic particles to separate silos for storage. From those silos, Westwood feeds the particles through a process in which 'the metallic fractions are combined with hydrated lime and molasses to create a briquette' for sale.

Westwood's process also produces material that would be transported off-site for disposal in a landfill. Specifically, '[t]he separation of the metallic from the non-metallic particles results in a non-metallic calcium magnesium silicate.' Of the steelmaking slag fines introduced into Westwood's process as raw material, approximately two-thirds by weight will be this material. Westwood conveys that material to a hopper and then transports it to a silo. Westwood then feeds it to a paddle mixer, where it is 'blended with water to produce a moist cake' for landfill disposal. Westwood, slip op. at 2-3 (Jan. 7, 2010) (internal citations omitted); *see* Pet. at 15.

The Board found "that calcium magnesium silicate is a part of the chemical composition of the slag fines and is not a 'contaminant.' Therefore, the calcium magnesium silicate resulting from Westwood's process does not constitute removal of a contaminant." Westwood, slip op. at 12 (Oct. 7, 2010). Citing AFI, the Board also found "that the steelmaking slag fines are 'materials' that 'are collected, separated or processed and returned to the economic mainstream in the form of raw materials or products.'" *Id.*

at 13. The Board concluded that the steelmaking slag fines processed at Westwood Lands' facility are not a waste and exempted fines meeting specified conditions from the Board's solid waste regulations. *Id.* at 16; *see* Pet. at 16. The Board also denied the alternative request for an adjusted standard as moot. Westwood, slip op. at 16 (Oct. 7, 2010).

APEX argues that the petition in Westwood is "factually analogous" to its own petition. Pet. at 15. APEX further argues that the only by-product of its process will be wash water brine, the chemical composition of which is "an intrinsic part" of CAC and cannot be a contaminant. *Id.* APEX asserts that, unlike Westwood Lands, it "will return the vast majority of material processed back to the economic mainstream so there can be no argument that the CAC is a waste from which contaminants may be removed." *Id.* APEX argues that, under AFI and Westwood, CAC must be considered a "material." *Id.* APEX adds that it does not discard the material. *Id.* Because its process produces copper oxide and ammonium chloride that are returned to the economic mainstream, APEX concludes that the CAC is not "discarded" within the definition of "waste." *Id.*

Other Jurisdictions

APEX argues that the Illinois cases summarized above provide "more than sufficient justification for a finding of inapplicability." Pet. at 17. APEX adds that Heritage Environmental Services (HES), also known as Micronutrients, conducts operations in Indiana substantially similar to those proposed by APEX. *Id.* at 17, 18. APEX asserts that other states and USEPA agree that HES's use of etchant is not subject to waste regulations. *Id.* at 17, 18. APEX acknowledges that these decisions are not binding on the Board but argues that "they may nonetheless be instructive." *Id.* at 17.

APEX argues that the Indiana Department of Environmental Management (IDEM) found that spent etchants as used by HES "to produce an animal micronutrient are not solid waste." Pet. at 17, citing Aug. Exh. M (Apr. 14, 1994 letter from IDEM to HES). IDEM considered recycling of copper-containing secondary materials to be exempt from Indiana hazardous waste regulations under a recycling exemption at 40 CFR 261.2(e). Aug. Exh. M. APEX further argues that USEPA "reviewed HES's process and found IDEM's determination was not inconsistent with the environmental regulations." Pet. at 17-18, citing Aug. Exhs. N, O. In an August 3, 1995 letter to IDEM, USEPA noted IDEM's determination but "identified several regulatory considerations which may impact the exclusion for the incoming waste streams to the Heritage copper salt production process." Aug. Exh. N at 1. USEPA asked "[i]f the alkaline etchant co-product is sold as a product, does the 'regeneration' of this stream constitute reclamation? If it does, does the incoming alkaline etchant continue to be excluded as a solid waste by the 'use/reuse' provision?" Aug. Exh. N., Attachment at 1. Addressing this issue, USEPA's regulatory assessment states that,

[i]n our opinion, the collection and resale of the alkaline etchant co-product at the end of the copper salt production process represents regeneration (and thus reclamation) because the alkaline stream is a separate and distinct end component of an incoming waste stream. . . . In fact, the identification of the alkaline etchant

as a co-product by Heritage clearly indicates that two products are being produced in the Heritage process, each of which should be fully evaluated as a potential reclamation product. Consequently, the regeneration of the alkaline waste stream should subject the incoming alkaline waste stream to [Resource Conservation and Recovery Act] RCRA regulation as a solid waste, regardless of whether copper salt production is also occurring. *Id.* (emphasis in original).

In a September 7, 1995 letter to IDEM, USEPA acknowledged that HES “appears to be producing a unique copper salt product. Supporting documentation from Heritage indicates that the process itself does not resemble other types of recycling operations which utilize these etchants, and more importantly, which manage the etchants as hazardous wastes prior to recycling.” Exh. O at 1 (emphasis in original). USEPA also acknowledged HES’s position that the etchant by-product “is waste generated by its process and should not be linked back to the incoming alkaline etchant. The disposition of the brine would not therefore, impact the regulatory status of the incoming alkaline etchant.” *Id.* at 2. USEPA recognized this position but stated that

RCRA regulation is specific about the extent to which this ‘as generated’ interpretation can be applied to products and by-products from a manufacturing process which utilizes hazardous waste (such as the Heritage process). The use/reuse provision contains specific restrictions (40 CFR 261.1(c)(5) and 261.2(e)) which must be met to exclude a waste (and thus anything generated from that waste) from the otherwise broad scope of reclamation as defined by RCRA regulation. . . . We are of the opinion that 40 CFR 261.1(c)(5)(i) implies that reclamation would be occurring if the alkaline brine exhibits distinct and separate end components of the incoming alkaline etchant, regardless of whether the components in the byproduct are present ‘by design’ or are incidental to the copper salt production process. This conclusion is directly based on the definition of reclamation, which includes both regeneration (as in the reformulation of etchant) and recovery (for any purpose, but to recover a distinct component of the incoming waste stream). *Id.* at 2-3 (emphasis in original).

USEPA concluded that Heritage’s incoming acid etchant solution “meets the criteria for use/reuse exclusion specified at 40 CFR 261.2(e). It is our opinion that the acid etchant is not a RCRA solid waste (and thus not a RCRA hazardous waste), when this waste is wholly utilized in the Heritage process (40 CFR 261.1(c)(5)(i)).” *Id.* at 2. USEPA supported IDEM’s determination that HES’s production of copper salt is consistent with the use/reuse exclusion, “provided that the issues regarding the disposition of the alkaline brine (and its impact on the incoming alkaline etchant) are resolved.” *Id.* at 3.

APEX also argues that the Virginia Department of Environmental Quality (DEQ) has determined that “the use/reuse of spent printed circuit board etchant solutions as feedstock in the manufacture of copper salts . . . to be used as an animal feed additive” qualifies for exclusion from hazardous waste regulation. Pet. at 18; Aug. Exh. P (Mar. 28, 1996 letter from DEQ to HES). DEQ states that “[t]his decision is based on the presumption that said materials are to be used as ingredients in an industrial process to make a product without first being reclaimed, and

as such, are excluded from regulation as a hazardous waste. . . .” under Virginia regulations. Aug. Exh. P. at 1.

APEX adds that the Colorado Department of Public Health and Environment (DPHE) determined that spent etchant used by HES to manufacture an animal feed supplement is not a solid waste under the state’s hazardous waste regulations. Pet. at 18; Aug. Exh. Q (Dec. 3, 2001 letter from DPHE to Micronutrients). DPHE determined that “the spent copper etch does not meet the definition of a solid waste when it is being directly used as an ingredient in the manufacture of TBCC [tri-basic copper chloride] and is not first reclaimed.” Aug. Exh. Q at 1. DPHE added that “this determination may not be valid if the recycling process is altered such that the spent copper etch requires reclamation prior to being used in the manufacture of TBCC.” *Id.* at 2.

In its November 24, 2014 hearing officer order, the Board asked APEX to explain why HES sought an exclusion under the hazardous waste regulations. APEX responded that it was not involved in any of HES’s exclusions and cannot provide an explanation. APEX Ans. at 5. APEX states that it understands HES “sought the exclusion because its predecessor company, Philbrotech, originally classified the CAC material as a hazardous waste in order to keep competition out of this market, and it was easier for them to argue the use/reuse exclusion under their existing RCRA permit.” *Id.* APEX adds that it proposes to purchase used etchant that “is exactly the same” as that purchased by HES, which Micronutrients has qualified as non-hazardous. *Id.* APEX argues that “it does not consider the CAC material to be hazardous,” and states that CAC “is currently being shipped across Illinois roads and highways via Bills of Lading and not as a hazardous waste.” *Id.*

Summary of Petition for Adjusted Standard

APEX states that, “[i]f the Board determines that the used etchant solution is a ‘waste,’ then APEX seeks an adjusted standard from specific provisions of 35 Ill. Adm. Code Parts 807 and 810.” Pet. at 18. In the following subsections, the Board summarizes APEX’s petition for an adjusted standard.

Standard From Which APEX Seeks Relief

APEX argues that the definition of “waste” does not apply to CAC, that CAC should not be regulated as a waste, and that its facility is therefore not a solid waste management site. Pet. at 18-19. APEX seeks an adjusted standard from the definitions of “facility,” “solid waste,” “solid waste management,” “unit,” and “waste” at 35 Ill. Adm. Code 807.104. *Id.* at 18; see 35 Ill. Adm. Code 104.406(a). APEX asserts that, if the Board grants an adjusted standard from these definitions, then the remaining provisions of Part 807 would not apply “to APEX’s facility because it would not be handling ‘waste,’ and thus would not be a waste management site.” Pet. at 19.

APEX argues that CAC should not be treated as “solid waste” and that its facility is therefore not a landfill. Pet. at 19. APEX also seeks an adjusted standard from the definitions of “facility,” “landfill,” and “solid waste” at 35 Ill. Adm. Code 810.103. *Id.*; 35 Ill. Adm. Code

104.406(a). APEX further argues that, if the Board grants an adjusted standard from these definitions, then the provisions of Parts 811 through 817 of the Board's solid waste regulations would not apply to its facility. Pet. at 19.

APEX states that Sections 807.104 and 810.103 of the Board's solid waste regulations "do not specify a level of justification or other requirements for an adjusted standard." APEX therefore seeks an adjusted standard under the general provisions of Section 28.1(c) of the Act. Pet. at 19, 24; *see* 415 ILCS 5/28.1(c) (2014); 35 Ill. Adm. Code 104.406(c).

Efforts Necessary to Comply

APEX argues that, if the Board finds that CAC is a "waste," "then the only alternative would be to fully comply with the panoply of regulatory requirements imposed by the Act and by Parts 807 and 810." Pet. at 22. As one example, APEX states that obtaining a permit would require it to obtain local siting approval under Section 39.2 of the Act. *Id.*, citing 415 ILCS 5/39.2 (2014). APEX states that the petitioners in both Westwood and Jo'Lyn argued that the costs of obtaining this approval would amount to hundreds of thousands of dollars. Pet. at 22, citing Westwood, slip op. at 9 (Mar. 31, 2009); Jo'Lyn, slip op. at 9 (Apr. 21, 2004). APEX asserts that its costs "would be substantially similar" to costs faced by those petitioners. Pet. at 22. APEX stresses that these costs do not include "the costs of complying with the requirements of Parts 807 and 810." Pet. at 22. APEX concludes that "full compliance with the waste regulatory requirements of the Act and Parts 807 and 810, would most likely be cost-prohibitive." *Id.*

Impact of APEX's Proposed Activity

APEX states that, if it is granted an adjusted standard, it would be able to process CAC into ammonium chloride and copper oxide. Pet. at 23. "APEX will use 100% of the incoming product and will only generate wash water brine as a by-product." Pet. at 24. APEX states that "[t]he excess chloride and water are constituents of the original solution purchased from the Customers." *Id.* APEX stresses that its existing industrial pretreatment permit allows it to discharge this water brine to the City of Joliet's publicly-owned treatment works (POTW). *Id.*

APEX intends to sell ammonium chloride back to its original customers for use as fresh etchant in the same process that generated CAC. APEX argues that, without this adjusted standard, its customers "will use more prime resources (anhydrous ammonium, hydrochloric acid, and copper) than would otherwise be required for the production of fresh etchant." Pet. at 24. *Id.* APEX further argues that its process minimizes use of reagents and heat to produce copper oxide. *Id.*

APEX cites the costs of complying with the generally-applicable standard to assert that it will not be able to process CAC without an adjusted standard. Pet. at 24. APEX further argues that an adjusted standard will provide manufacturers an additional opportunity to obtain fresh etchant and a more competitive market for processing used etchant. *Id.*

Description of Proposed Adjusted Standard

APEX's Proposed Language. APEX proposed the following language of its requested adjusted standard:

APEX Material Technologies, LLC (APEX) is hereby granted an adjusted standard from the following definitions of 35 Ill. Adm. Code 807.104: “facility,” “solid waste,” “solid waste management,” “unit,” and “waste.” APEX is further granted an adjusted standard from the following definitions of 35 Ill. Adm. Code 807.103: “facility,” “landfill,” and “solid waste.” The enumerated definitions do not apply to operations conducted by APEX at its facility located in Will County, Illinois, so long as:

1. APEX uses only copper-rich, copper ammonium chloride etchant (CAC).
2. For purposes of this adjusted standard, CAC is defined as ‘copper-rich, copper ammonium chloride etchant used to strip away excess copper from printed circuit boards.’
3. APEX must contain a quality control program that includes:
 - a. The right to reject any CAC that does not comply with APEX’s Profile Sheet;
 - b. Weekly testing of a representative shipment for its copper content;
 - c. Visual inspection of each shipment to ensure that no visual contaminants are present in that shipment;
 - d. Before receiving any CAC from a new supplier, performing TCLP tests of a representative sample of the CAC from that new supplier; and
 - e. Interim testing of a representative sample of each source of CAC, pursuant to an appropriate method, from each existing supplier. Such interim testing will be performed at least every six months, or upon significant changes in operating conditions.
4. APEX operates the facility in compliance with the other provisions of the Environmental Protection Act. Pet. at 22-23; *see* 35 Ill. Adm. Code 104.406(f).

Conditions Proposed by Board. In its November 24, 2014 hearing officer order, the Board requested APEX’s comment on conditions that could potentially be included in an adjusted standard. To elicit comment, the Board first proposed potential relief providing that “[t]he Board finds that the used etchant solution or copper ammonium chloride etchant (CAC)

that APEX processed at its facility on 10 Industry Avenue, Joliet, Will County, to produce fresh etchant solution and copper oxide is not a waste under the following conditions.” In the following subsections, the Board addresses APEX’s response to the proposed conditions.

Definition. APEX “agreed” to a condition providing that, “[f]or purposes of this order, ‘used etchant solution’ or ‘copper ammonium chloride etchant (CAC)’ is defined as ‘ammonium chloride etchant solution’ that is used to strip away excess copper from printed circuit boards.” APEX Ans. at 18 (proposed Condition 1).

Limits on Use of CAC and Product Specifications. The Board requested that APEX comment on a proposed condition providing that “APEX must not use used etchant solution or CAC which is characteristic hazardous waste, or contains a listed hazardous waste, asbestos, or PCBs [polychlorinated biphenyls]. APEX must reject and return a load to the supplier if it finds that the used etchant solution exhibits a characteristic of hazardous waste or contains a listed hazardous waste, asbestos, or PCBs.” While APEX “agreed” to this proposed condition, it qualified its agreement by referring to trivalent chromium, cadmium, and lead. APEX Ans. at 18 (Condition 2). Specifically, APEX states that the Board’s hazardous waste regulations do not distinguish types of chromium and that concentrations of trivalent chromium in samples from two prospective customers should not be considered cause for concern for human health and the environment. *Id.*, citing *id.* at 6-7. APEX anticipates “that the copper metal within the CAC may have some elevated levels” of lead and cadmium. *Id.* APEX argues that “any TCLP metals that may be present in the CAC at certain levels would have no significant impact on its CAC processing activity, nor will it represent a potential for release to the environment through normal operations.” *Id.* at 7-8.

APEX also qualified its agreement to this proposed condition by referring to the following product specifications for spent etchant:

Product Specification
Spent Etchant

Parameter	Unit	Range
Copper, as Cu	wt%	7-20
Iron, as Fe	wt%	0.05 max.
Zinc, as Zn	wt%	0.2 max.
Arsenic, as As	ppm	< 5.0
Cadmium, as Cd	ppm	< 1.0 – 5.0
Chromium (VI+), as Cr (VI+)	ppm	< 5.0
Lead, as Pb	ppm	< 5.0 – 50.0
Mercury, as Hg	ppm	< 0.2
Selenium, as Se	ppm	< 1.0
Silver, as Ag	ppm	< 5.0
pH		8 – 10.5

Appearance: Clear, dark green liquid, free of suspended matter.

APEX Ans. at 18-19 (Condition 3). Mr. Welgs testified that these specifications represent constituents of concern for APEX. Tr. at 44. He added that these ranges reflect guidelines based on customers' concerns. He cited as a first guideline that testing would be based on whether the constituent "would make the material hazardous." *Id.* Second, he indicated that it would test for constituents that may prevent APEX from meeting the requirements of customers for copper oxide. *Id.* Third, he added that APEX would also test for elements that may cause an upset in its manufacturing process. *Id.* at 44-45.

During the hearing, both the Board and the Agency asked about the range for copper that APEX could technically and economically use in its proposed process. Tr. at 29-32. Mr. Welgs testified that, below five percent copper by weight, APEX could not economically process CAC. *Id.* at 30, 32. Mr. Welgs added that a concentration of five percent copper shows that the manufacturer isn't "getting the economic value out of the etchant." *Id.* at 31. He also suggested that a five percent concentration would be rare because the manufacturer would improve its system so that it used the solvent until it approached saturation with copper at 20 percent. *See id.* at 30-32.

Also during the hearing, both the Board and the Agency asked whether the proposed specification for cadmium effectively means < 5.0 ppm and for lead effectively means < 50 ppm. Tr. at 46-47, 52-53. On behalf of APEX, Mr. Racette testified that the cadmium specification should be < 5.0 ppm. *Id.* at 53. He acknowledged that "the characteristic hazardous waste limit for cadmium for DLL 06 is 1 rather than 5." *Id.* Mr. Racette agreed that the cadmium specification of < 5.0 ppm reflects "what is expected to be found naturally occurring with copper." *Id.* He further testified that the lead specification should be < 50 ppm. *Id.* at 53-54; *see* 35 Ill. Adm. Code 721.124(b) (setting regulatory toxicity level for lead of 5.0 mg/L). Finally, APEX stated that, to reflect the analytical reports submitted to the Board, it proposed "a range for Arsenic values that it believes reflects a reasonable specification for this chemical element." APEX Brief at 3. Accordingly, APEX submitted revised product specifications for spent etchant to be used in its proposed process:

Product Specification
Spent Etchant

Parameter	Unit	Range
Copper, as Cu	wt%	5-20
Iron, as Fe	wt%	0.05 max.
Zinc, as Zn	wt%	0.2 max.
Arsenic, as As	ppm	< 10.0
Cadmium, as Cd	ppm	< 5.0
Chromium (VI+), as Cr (VI+)	ppm	< 5.0
Lead, as Pb	ppm	< 50.0
Mercury, as Hg	ppm	< 0.2
Selenium, as Se	ppm	< 1.0
Silver, as Ag	ppm	< 5.0
pH		8 – 10.5

Appearance: Clear, dark green liquid, free of suspended matter.

APEX Brief at 4.

Compliance. APEX “agreed” to a proposed condition providing that it “must operate the facility in compliance with all applicable provisions of the Environmental Protection Act.” APEX Ans. at 19 (Condition 4).

QA/QC. APEX commented on a number of proposed conditions relating to required elements of a quality control program. APEX Ans. at 19-20 (Condition 5).

First, APEX “agreed” to a proposed condition that the quality control program must include “[t]he right to reject any used etchant solution or CAC that does not comply with the specifications set forth in Condition 3 above.” APEX Ans. at 19 (Condition 5(a)).

Second, APEX did not agree to a proposed condition that the quality control program must include “[d]aily testing of a representative sample of each shipment for its copper content.” APEX Ans. at 19 (Condition 5(b)). APEX argued that “[t]his requirement is over burdensome and unnecessary as long as the material is securely stored after it is tested and accepted upon arrival.” *Id.*; see Tr. at 47. During hearing, APEX agreed to propose amended language addressing this objection. *Id.* at 49. APEX proposed a condition requiring “[p]ost-production qualification of the copper oxide and ammonium chloride to ensure compliance with respective product specification.” APEX Brief at 4.

Third, APEX “agreed” to a proposed condition that the quality control program must include “[v]isual inspection of each load to ensure that no waste is contained in that load.” APEX Ans. at 19 (Condition 5(c)).

Fourth, APEX “agreed” to a proposed condition that the quality control program must require, “[b]efore receiving any used etchant solution or CAC from a new supplier not identified in APEX’s petition AS 15-2, testing pursuant to TCLP Method 1311 of a representative sample of each source of CAC from that new supplier.” APEX Ans. at 19 (Condition 5(d)).

Fifth, APEX “agreed” to a proposed condition that the quality control program must include “[i]nterim testing of a representative sample of each source of used etchant solution, pursuant to TCLP Method 1311, from each supplier. Such interim [testing] will be performed at least every six months, or upon significant changes in operating conditions.” APEX Ans. at 19-20 (Condition 5(e)). APEX added that, “prior to actual processing, all CAC would be further tested for Copper content, pH, and limited TCLP as an additional quality control measure.” *Id.* at 20. APEX stated that it had no objection to including sampling protocols as conditions, as these protocols formed “an integral part of APEX’s initial plan.” *Id.* at 12.

Finally, APEX “agreed” to a proposed condition that the quality control program must include a “[c]ontractual agreement between APEX and its suppliers that the suppliers will notify APEX upon significant changes in the suppliers’ operating conditions that would affect the characteristics of the used etchant solution.” APEX Ans. at 20 (Condition 5(f)).

Documentation. APEX “agreed” to a proposed condition requiring that it “must maintain documentation showing receipt of and payment for the used etchant solution by APEX and documentation of the sale of fresh etchant and copper oxide.” APEX Ans. at 20 (Condition 6).

Process Change. APEX “agreed” to a proposed condition requiring that, “[i]n the event of a change in APEX’s processing used etchant solution to produce fresh etchant solution and copper oxide, APEX must seek a new determination from the Board that the used etchant solution is not a waste.” APEX Ans. at 20 (Condition 7).

Cease Processing. APEX “agreed” to a proposed condition requiring that, “[i]f APEX ceases to process and return the used etchant solution to the economic mainstream in the form of a raw material or product, the used etchant solution is considered ‘discarded’ and, thus, a waste.” APEX Ans. at 20 (Condition 8).

Section 28.1 Factors

APEX states that, because Parts 807 and 810 do not specify a level of justification for an adjusted standard, the level of justification is established by the four factors under Section 28.1(c) of the Act. Pet. at 24; *see* 415 ILCS 5/28.1(c) (2014). In the following subsections of the opinion, the Board summarizes APEX’s arguments on these factors.

Substantially and Significantly Different Factors

APEX argues that the Board adopted Part 807 to “replace and supersede Rules and Regulations for Refuse Disposal Sites and Facilities, adopted by the Illinois Department of Public Health on March 22, 1966. . . .” 35 Ill. Adm. Code 807.102 (Repeals); *see* Pet. at 25. APEX further argues that the Board’s adoption of those rules implements Section 22 of the Act, which authorizes regulation of waste treatment, storage, and disposal sites. Pet. at 25, citing 415 ILCS 5/22 (2014). APEX asserts that the process it seeks to perform “is not refuse or waste disposal, and APEX’s facility is not a landfill or transfer station.” Pet. at 25. APEX argues that its process reduces waste and results in a positive environmental impact. *Id.* APEX further argues that its process should not be subject to the requirements of Part 807 and 810 “because its processing of material into end-products is not the type of operation contemplated by the Board” in promulgating them. *Id.* at 22. APEX concludes that the factors relating to it “are substantially and significantly different than those pertaining to activities regulated under Part 807 and 810.” *Id.* at 26.

Factors Justify Adjusted Standard

APEX states that, because Part 807 regulates solid waste management sites and Part 810 regulates solid waste disposal facilities, neither applies to its process. Pet. at 26. APEX argues that compliance with the generally applicable standards is cost-prohibitive. *Id.* APEX further argues that it will only be able to perform its process and generate the environmental benefits of it if the Board grants its request for an adjusted standard. *Id.* APEX concludes that these factors and those cited throughout its petition justify an adjusted standard. *Id.*

Environmental or Health Effects

APEX argues that an “adjusted standard will not result in adverse environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting Parts 807 and 810.” Pet. at 26. APEX states that an adjusted standard “will benefit the environment by reducing the amount of prime resources used by the Customers and decreasing the amount of heat and reagents used to produce copper oxide.” *Id.* APEX argues that, “[i]n fact, the adjusted standard will not result in any adverse environmental or health effects at all.” *Id.*

Consistent with Federal Law

APEX states that “[t]he Board may grant the proposed standard consistent with federal law.” Pet. at 26, 27.

AGENCY RECOMMENDATION

As noted above under “Procedural History,” the Agency filed its Recommendation on October 15, 2014. In the following subsections of the opinion, the Board summarizes the arguments made by the Agency in its recommendation.

Request for Finding of Inapplicability

Regulatory Status of Spent Etchant

The Agency argues that the definition of “solid waste” in the Board’s rules “applies only to wastes that are also hazardous for purposes of the regulations implementing subtitle C of the Resource Conservation and Recovery Act.” Rec. at 2, citing 35 Ill. Adm. Code 721.101 (Purpose and Scope). The Agency questions APEX’s argument that a representative sample shows that the spent etchant is non-hazardous. The Agency cites an MSDS stating that “[i]t is reasonable to assume that ammonia etchant compounds contain arsenic, cadmium, chromium, and lead in concentrations ranging from a few parts per billion to several parts per million.” Rec. at 2, citing Aug. Exh. G (§16: Other Information). The Agency argues that each of these named constituents is hazardous under the Board’s regulations. Rec. at 2, citing 35 Ill. Adm. Code 721.APPENDIX H (Hazardous Constituents).

The Agency states that, if “spent etchant is potentially hazardous, then it is a solid waste pursuant to 35 Ill. Adm. Code 721.102(a)(1) if it is ‘discarded.’” Rec. at 3. The Agency further states that “[a] material is ‘discarded’ if it is ‘recycled.’” Rec. at 3; *see* 35 Ill. Adm. Code 721.102(a)(2)(A)(ii). “A material is ‘recycled’ if it is ‘reclaimed.’ A material is ‘reclaimed’ if it is processed to recover a usable product or if it is regenerated.” Rec. at 3, citing 35 Ill. Adm. Code 721.101(c)(7). The Agency asserts that “[t]he spent etchant process meets both of these definitions of ‘reclaimed,’ because the etchant is regenerated and contaminants including the copper (made into a distinct product that was not part of the original clean etchant) and brine (discharged to the sewer) are removed.” Rec. at 3.

The Agency notes that findings from other jurisdictions cited by APEX address similar processes. Rec. at 3, citing Aug. Exhs. M, N, P, Q. The Agency argues that “other states qualify their positions on these processes by saying they are not regulated *provided no reclamation is occurring.*” Rec. at 3 (emphasis in original).

The Agency argues that USEPA has “evaluated the regeneration of spent ammonia etchant and determined that reclamation was occurring.” *Id.*, citing Agency Exh. A. In an October 29, 1985 letter to Olin Chemicals, USEPA addressed the applicability of a variance to the processing of a spent etchant material. Agency Exh. A at 1. In that process, spent etchant is “returned to the manufacture of the alkaline etchant where copper is first recovered (defined as reclamation); the remainder of the etchant (after reclamation) is then used as a raw material to produce additional alkaline etchant.” *Id.* Responding to Olin, USEPA stated that qualifying for a variance requires that

the material that is reclaimed must be used as a feedstock within the original primary production process. . . . In your situation, the process which generated the waste is the use of the etchant by the printed circuited board manufacturer, the reclaimed material is not returned and used as an etchant but rather used as an ingredient to make additional etchant. . . . Thus, since you do not return the reclaimed material to the process which generated the waste, your particular situation does not meet the basic conditions of the modified closed-loop provision. *Id.* at 1-2.

The Agency also argues that “[t]he Supreme Court of Connecticut found that processing spent etchant into copper and ammonia products was reclamation and therefore hazardous waste management.” Rec. at 3, citing MacDermid, Inc. v. Dept. of Env. Protection, 778 A.2d 7 (Conn. 2001).

The Agency notes that, while APEX proposes to reject loads failing to meet its specifications, rejection of a load because it is hazardous “would result in two unregulated shipments of hazardous liquid waste, first from the generator and then back.” Rec. at 4. The Agency emphasizes that APEX “only proposes to test spent etchants from each supplier twice per year.” *Id.*, citing Pet. at 23. The Agency argues that, if the Board finds that spent etchant is not a “waste,” its finding “must not include hazardous spent etchant.” Rec. at 4.

The Agency also considers APEX’s request to be “based on the assumption that APEX’s process will only deal with non-hazardous spent etchant.” Rec. at 4. The Agency argues that the Act would define non-hazardous spent etchant as a “waste” if it is “discarded.” *Id.*, citing 415 ILCS 5/3.535 (2014). Although the Act does not define “discarded,” the Agency asserts that “[t]he ammonium etchant is no longer being used for its original intended purpose and must be regenerated before it can be used again.” Rec. at 4. The Agency argues that the copper removed in the etching process and any other constituents including cadmium, chromium, and lead become contaminants rendering the etchant ineffective for further etching. *Id.* The Agency further argues that “the spent etchant is ‘discarded’ by the generator in favor of fresh product that can effectively etch circuit boards.” *Id.*

The Agency states that spent etchant used directly to generate new etchant may be eligible for a BUD. Rec. at 4. The Agency argues, however, that “the process that regenerates ammonium chloride etchant is not the same process that created the original etchant.” *Id.* The Agency argues that fresh etchant specifications “allow only trace amounts of copper as a contaminant.” *Id.* at 5, citing Agency Exh. B (product specifications). Product specifications for Micronutrients’ AdvantEdge 300 TF alkaline etchant for printed circuit boards show a copper concentration of “< 70 ppm.” Agency Exh. B at 1. The Agency further argues that “[e]xcess amounts of water or lead would also be detrimental to the effectiveness of the process.” Rec. at 5. The Chemical Company’s product specification for ammonium chloride shows a moisture specification of < 0.4% and heavy metal as lead specification of < 0.0005%. Agency Exh. B. at 2. The Agency adds that contamination above levels such as these “must be removed to produce new etchant.” Rec. at 5. The Agency asserts that removing these contaminants to produce fresh etchant constitutes waste “treatment” under the Act. *Id.* The Agency argues that the Act defines “treatment” to include “changing the character or composition of waste to render it amenable for recovery. *Id.*, citing 415 ILCS 5/3.505 (2014). The Agency adds that the proposed “copper salt product is not available to APEX without treatment of the spent etchant.” Rec. at 5.

The Agency argues that APEX’s petition does not support its position that the “vast majority” of spent etchant will return to the economic mainstream. Rec. at 5, citing Pet. at 16. The Agency notes APEX’s plan to take in one tanker truck daily of spent etchant and produce one-half tanker truck of finished product for a 50% net loss of material. Rec. at 5-6, citing Pet. at 3. The Agency argues that, “[f]or each gallon of spent etchant treated, 1.775 gallons of brine is generated and must be disposed of in the sewer system.” Rec. at 6. Although the Agency acknowledges that APEX has a pretreatment permit (Pet. at 24), it stresses that the brine requires treatment before it can be discharged (Aug. Exh. A). Rec. at 6. The Agency argues that APEX’s proposed process generates three streams: copper, ammonia, and brine. *Id.* The Agency further argues that the largest of these “is sent down the drain.” *Id.* The Agency concludes that this “indicates that the APEX process is waste treatment of a spent material rather than use of the spent etchant as a raw material in an industrial process.” *Id.*

Cases Cited in APEX’s Petition

The Agency asserts that this treatment process distinguishes APEX from the cases cited in its petition. The Agency argues that the petitioners in Donnelly, AFI, and Jo’Lyn did not remove “anything from the material they received.” Rec. at 5, citing Donnelly, slip op. at 2 (Feb. 23, 1989); AFI, 215 Ill. 2d 219 (2004); Jo’Lyn, slip op. at 13 (Apr. 7, 2005). The Agency further argues that the Board’s decision in Westwood “relied on the fact that its slag fines were not a ‘spent’ material, as well as its promise to only use fines without additional contaminants.” Rec. at 5, citing Westwood, slip op. at 12, 13 (Oct. 7, 2010). The Agency argues that “the used etchant proposed to be sent to APEX is a spent material that does contain contaminants that must be removed prior to additional use.” Rec. at 5.

The Agency also distinguishes APEX’s process from Safety-Kleen, in which only “a small fraction” of the incoming used solvent was discarded. Rec. at 6, citing Safety-Kleen, slip

op. at 1 (Feb. 7, 1980). The Agency stresses that, “at the time of the Safety-Kleen decision, Illinois’ RCRA regulations had not yet been promulgated.” Rec. at 6.

The Agency notes that SCC considered regeneration of spent ammonia etchants with regard to a request for a variance from manifest requirement under Part 809. Rec. at 6. The Agency notes that, two years after the Board issued its decision in that case, the General Assembly adopted a definition of “industrial process waste.” *Id.*, citing P.A. 84-1308, eff. Aug. 25, 1986; *see* 415 ILCS 5/3.235 (2014). The Agency states that this definition addresses waste “which would pose a present or potential threat to human health or the environment or with inherent properties which make the disposal of such waste in a landfill difficult.” Rec. at 6-7. The Agency further states that the definition lists “etching acids” as an example. *Id.* at 7. The Agency argues that liquid spent etchant is more vulnerable to discharge into the environment than the same constituents in a solid state. *Id.* The Agency further argues that, “[a]s a liquid, the spent etchant can neither be disposed of in a landfill (35 Ill. Adm. Code 811.107(m)) nor certified as a non-special waste (415 ILCS 22.48).” *Id.* The Agency argues that the adoption of this statutory definition and the difficulty of managing spent etchant “should permit re-evaluation of a 30-year-old Board decision.” Rec. at 7.

Summary

The Agency “recommends that the Board consider the spent etchant in the APEX process a waste subject to regulation.” Rec. at 7.

Petition for Adjusted Standard

Having recommended that the Board consider spent etchant in APEX’s proposed process to be a waste subject to regulation, the Agency addresses APEX’s alternative request for an adjusted standard under the Board’s rules regarding the contents of an adjusted standard petition. Rec. at 7, citing 35 Ill. Adm. Code 104.406.

Standard from Which APEX Seeks Relief

The Agency states that it “takes issue with APEX’s statement on this factor.” Rec. at 7; *see* 35 Ill. Adm. Code 104.406(a). The Agency notes that APEX seeks an adjusted standard from 35 Ill. Adm. Code 807.104 and 35 Ill. Adm. Code 810.103, which consist entirely of definitions. Rec. at 7. The Agency argues that definitions cannot be complied with or violated. *Id.* The Agency further argues that the Board lacks authority to adjust statutory standards such as the definition of “waste” and can grant an adjusted standard only from its own regulations. Rec. at 8.

The Agency further argues that APEX actually seeks “an adjusted standard from the entirety of the solid waste regulations.” Although the Agency acknowledges that requesting relief from Part 807 “is somewhat logical,” it asserts that relief from the landfill requirements in Part 810 “is not.” *Id.* at 7-8. The Agency argues that “[n]othing in the Petition indicates that the APEX process would involve landfilling. . . .” *Id.* at 8. The Agency adds that the petition refers to disposal only through discharge to a publicly-owned treatment works (POTW). *Id.* The

Agency also notes that the petition does not request relief from the requirements of Part 809, which addresses management of special waste. *Id.*

While it challenges APEX on the standards from which it seeks relief, the Agency states that it “does not take issue with APEX’s statements” on the promulgation of those standards. Rec. at 8; *see* 35 Ill. Adm. Code 104.406(b). The Agency also “does not take issue with APEX’s statements” on the issue of the level of justification necessary for an adjusted standard. Rec. at 8; *see* 35 Ill. Adm. Code 104.406(c).

Nature of Petitioner’s Activity

The Agency states that it “does not take issue with APEX’s statements on this subject.” Rec. at 8; *see* 35 Ill. Adm. Code 104.406(d).

Efforts Necessary to Comply

The Agency “does not take issue with APEX’s statements on this subject, other than to note that APEX is currently in compliance with the law, because it is not currently conducting the proposed operation.” Rec. at 8; *see* 35 Ill. Adm. Code 104.406(e). The Agency argues that APEX’s objection to compliance “is entirely financial and based on the cost of local siting approval, which is beyond the scope of the Illinois EPA or the Board’s authorities.” Rec. at 8, citing Pet. at 22.

APEX’s Proposed Adjusted Standard

The Agency questions APEX’s proposed condition 3(e), which requires interim testing at least every six months of a representative sample from each source of CAC. Rec. at 9, citing Pet. at 23; *see* 35 Ill. Adm. Code 104.406(f). The Agency argues that testing with this frequency “could allow a large quantity of potentially hazardous waste to move throughout the State in an unregulated manner outside of the awareness of any involved parties.” Rec. at 9. The Agency argues that “this situation would violate the hazardous waste regulations and could lead to dangerous releases to the environment.” *Id.*

Section 28.1(c) Factors

APEX states that Sections 807.104 and 810.103 “do not specify a level of justification or other requirements for an adjusted standard” (Pet. at 19) and that the “level of justification is governed by Section 28.1(c) of the Act. . . (Pet. at 24). The Agency states that it “does not take issue with APEX’s statements on this subject.” Rec. at 8. However, the Agency questions the justifications offered by APEX (*id.* at 9), and the Board summarizes the Agency’s objection in the following subsections of the opinion.

Substantially and Significantly Different Factors

The Agency argues that “APEX is not situated substantially or significantly differently than any other facility seeking to treat waste materials in Illinois. The hazards associated with such waste treatment are no different for APEX than any of its competitors.” Rec. at 9. The Agency further argues that permitting regulations address waste treatment and suggests that those regulations validly apply to APEX’s proposed process. *Id.* The Agency adds that the costs of obtaining local siting approval do not distinguish APEX from any other permit applicant. *Id.*

Factors Justify Adjusted Standard

The Agency argues that, “[a]s differentiating factors do not exist, they cannot provide justification for an adjusted standard.” Rec. at 9; *see* 35 Ill. Adm. Code 104.406(h).

Environmental or Health Effects

The Agency “takes issue with APEX’s statement on this factor.” Rec. at 9; *see* 35 Ill. Adm. Code 104.406(g). The Agency states that “[t]he lack of an adjusted standard would not deprive APEX’s customers of an alternative market for their spent etchant, as they appear to be utilizing the currently available market in Indiana.” Rec. at 9, citing Aug. Exh. J. The Agency suggests that the lack of an adjusted standard means only that APEX cannot do business with Micronutrients’ current customers. Rec. at 9.

Consistent with Federal Law

The Agency “takes issue with APEX’s statements on this factor.” Rec. at 10; *see* 35 Ill. Adm. Code 104.406(i). The Agency asserts that, “[a]ccording to 35 Ill. Adm. Code 811.Appendix B [State-Federal MSWLF Regulations Correlations Table], Part 810.103 of the regulations correlates to 40 C.F.R. § 258.2 [Definitions], which also contains definitions of “facility,” “solid waste,” and Municipal Solid Waste “Landfill.” Rec. at 10.

Summary

The Agency recommends that the Board deny APEX’s petition for an adjusted standard. Rec. at 11.

APEX’S RESPONSE TO AGENCY RECOMMENDATION

As noted above under “Procedural History,” APEX filed its response to the Agency’s recommendation on October 28, 2014. *See* 35 Ill. Adm. Code 104.416(d). In the following subsections of the opinion, the Board summarizes the arguments in APEX’s response.

Regulatory Status of Spent Etchant

APEX first challenges the Agency’s position that, “[i]f the spent etchant is *potentially* hazardous, then it is a solid waste pursuant to 35 Ill. Adm. Code 721.102(a)(1) if it is

‘discarded.’” Resp. at 2 (emphasis in original), citing Rec. at 3. APEX acknowledges that the MSDS submitted as August Exhibit G states that CAC may contain trace amounts of hazardous constituents. Resp. at 2. APEX argues that the Board’s definition of “solid waste” “applies only to wastes that also *are hazardous* for purposes of the regulations implementing Subtitle C of RCRA.” Resp. at 2 (emphasis in original), citing 35 Ill. Adm. Code 721.101(b)(1). APEX states that Section 721.111 establishes criteria for listing hazardous waste. Resp. at 2; *see* 35 Ill. Adm. Code 721.111, citing 40 C.F.R § 261.11. APEX argues that the possibility of hazardous constituents in CAC does not automatically cause CAC to become a hazardous waste. Resp. at 2. APEX argues that listing a solid waste as hazardous requires a determination based on 11 factors “including toxicity, concentration, and the ‘nature and severity of the human health and environmental damage *that has occurred* as a result of the improper management of the wastes containing the constituent.” *Id.* at 2-3 (emphasis in original), citing 35 Ill. Adm. Code 721.111(a)(3)(A-K). APEX further argues that the Agency has not listed CAC as hazardous under these factors and cannot insist that it is hazardous for the purposes of Subtitle C of RCRA. Resp. at 3.

In its November 24, 2014 hearing officer order, the Board asked APEX whether, if testing of used etchant indicates that it is characteristic hazardous waste, a non-solid waste determination would provide suitable relief. *See* 35 Ill. Adm. Code 720.131 (Solid Waste Determinations). APEX responded that CAC is not a “solid waste” or a “hazardous waste.” APEX Ans. at 7. APEX states that, if it sought a non-solid waste determination, it would follow the “same analysis.” APEX Ans. at 7. APEX argues that analyzing the 11 criteria for listing hazardous waste demonstrates that CAC is not hazardous. *Id.* APEX concludes that analysis under either 35 Ill. Adm. Code 720.131(c) or 35 Ill. Adm. Code 721.111(a)(3)(A-K) “would yield the same result – that the CAC material is neither a ‘solid waste’ nor a ‘hazardous waste’ that is subject to regulation.” *Id.* at 8.

APEX acknowledges that some customers’ CAC may have “some constituents that could potentially fall within the technical definition of characteristic hazardous waste.” APEX Ans. at 7. APEX argues that CAC remains “viable as a raw material for its process. . . .” *Id.* APEX further argues that “there is no apparent downside to the APEX process when potential trace metals are present at ‘reasonable’ levels. APEX believes that any TCLP metals that may be present in the CAC at certain levels would have no significant impact on its CAC processing activity, nor will it represent a potential for release to the environment through its normal operations.” *Id.* at 7-8.

In addition, APEX states that “[t]he purpose of RCRA Subtitle C regulations is the permitting of hazardous waste treatment, storage, and disposal facilities.” Resp. at 3. APEX asserts that its process does not perform these functions and would instead separate CAC into component parts and return those parts to commercial use. *Id.* APEX argues that, because there is no evidence that its facility “would ever be considered a treatment, storage, and disposal facility in the RCRA context,” the Agency has no basis to argue that CAC is a waste because it is hazardous. *Id.*

APEX also addresses the Agency’s objection that, if APEX rejects a load that fails to meet its specifications, the rejection would cause “two unregulated shipments of hazardous

liquid waste, first from the generator and then back.” Resp. at 4, citing Rec. at 4. APEX notes that the Agency had not questioned its QA/QC program. Resp. at 4. In addition, APEX rejects the suggestion that it would intentionally ship hazardous liquid waste back to a generator without a required RCRA manifest.” *Id.*

APEX argues that the Agency has overlooked shipments of CAC within Illinois as a “Corrosive Liquid” and not under hazardous waste manifests. Resp. at 4, citing Aug. Exh. J (samples of “Hazmat Bill of Lading/Manifest”). APEX further argues that these shipments have generated “no apparent regulation or concern at all from IEPA.” Resp. at 4. APEX states that the Board’s regulations establish a generator’s responsibility to determine whether its waste is “hazardous” for the purposes of RCRA. *Id.* APEX asserts that the facilities from which it intends to purchase CAC “have fulfilled their respective responsibilities under Illinois regulations, and have themselves determined that the CAC material is not hazardous.” *Id.* at 4-5.

In addition, APEX clarifies “that it will test *all inbound* loads of CAC to confirm that the material is non-hazardous and meets its specification.” Resp. at 5 (emphasis in original). APEX added that, when the petition referred to interim testing every six months, it referred to samples sent “to outside, independent laboratories for confirmatory testing.” *Id.*, citing Pet. at 23. APEX states that it “appreciates the significance of the CAC being a liquid material, and has designed its safety procedures to take this factor into consideration.” Resp. at 5.

Whether Spent Etchant is “Discarded”

APEX disputes the Agency’s contention “that the copper within the CAC ‘becomes a contaminant’ and therefore is ‘discarded’ by the generator in favor of fresh product that can effectively etch circuit boards.” Resp. at 5, citing Rec. at 4. APEX first responds that its “Customers *sell* CAC as a valuable product and do not dispose or discard it as a waste.” Resp. at 5 (emphasis in original). APEX next argues that the copper content of the CAC causes it to have a higher value than fresh etchant. *Id.* APEX also argues that the Agency’s position overlooks precedents interpreting the term “discarded material.” *Id.* APEX suggests that there is nothing about its proposed process for separating copper from the incoming CAC that causes the CAC to be discarded material. *See id.* Finally, APEX states that, to the extent the Agency’s position cites a Connecticut case, that case “was decided based upon a different set of regulations, has no precedential value, and is not binding upon the Board.” *Id.*, n.1; *see* Rec. at 3, citing McDermid, Inc. v. Dept. of Env. Protection, 778 A.2d 7 (2001).

AFI

APEX states that AFI was “adopted” by the Board in Jo’Lyn and is “critical” to the Board’s determination in this case. Resp. at 6. APEX argues that AFI established a test “to determine whether a substance, like CAC, is a ‘waste’ or a ‘material,’ and if determined to be a material, whether the material is ‘discarded.’” *Id.*, citing AFI, 830 N.E.2d at 455-56. APEX argues that CAC is a material that is not discarded and is therefore not subject to regulation as a waste. Resp. at 6.

APEX argues that, “[u]nder the AFI test, ‘waste’ is an item from which contaminants may be removed, while all other items are ‘materials.’” Resp. at 6, citing AFI, 830 N.E.2d at 456. APEX asserts that its proposed process does not remove contaminants but only “*separates* the ammonia-based etchant from the residual copper. The copper that is stripped away from the circuit board does not ‘contaminate’ the etchant.” Resp. at 6-7 (emphasis in original). APEX cites Westwood, in which the Board found “that calcium magnesium silicate is part of the chemical composition of the slag fines and is not a ‘contaminant.’” *Id.* at 7, citing Westwood, slip op. at 12 (Oct. 7, 2010). APEX argues that CAC is intended to contain copper and the copper is “an intrinsic part” of it. Resp. at 7. APEX adds that “the chemical composition of the wash water brine also is ‘an intrinsic part’” of CAC. *Id.* APEX concludes that copper and brine are not contaminants and that CAC is therefore not “a solution from which contaminants are removed.” *Id.* APEX characterizes CAC as a “material” under AFI. *Id.*

APEX next addresses whether CAC is discarded or is instead “collected, separated or processed and returned to the economic mainstream in the form of raw materials or products.” Resp. at 7, citing AFI, 830 N.E.2d at 456. APEX states that it intends to purchase CAC, separate its constituents from one another, and then return it to the economic mainstream. Resp. at 7. APEX argues that, under AFI, CAC is not discarded and is therefore not a waste under the Act and Board regulations. *Id.*, citing 415 ILCS 5/3.535 (2014); 35 Ill. Adm. Code 807.104.

APEX Process

APEX disputes the Agency’s effort to distinguish cases cited in the petition. APEX argues that each cited case addresses the basic question of whether a particular item is a “waste.” Resp. at 8. APEX states that the Board found in Safety-Kleen that “the spent solvent at issue *was not a waste* because it was ‘destined to be reused, rather than discarded.’” *Id.* (emphasis in original), citing Safety-Kleen, slip op. at 2.

APEX also discounts the Agency’s emphasis on APEX’s proposed process instead of the CAC itself. APEX argues that the analysis in AFI focused on the “material itself as it passes between entities.” Resp. at 8, citing AFI, 830 N.E.2d at 455. APEX further argues that the Board and the Illinois Supreme Court have rejected the position “that the term ‘discarded’ is defined solely from the viewpoint of the generator.” Resp. at 8, citing Jo’Lyn, slip op. at 12.

In addition, APEX dismisses as “erroneous” the Agency’s emphasis on the wash water brine to be generated by its proposed process. Resp. at 8-9. APEX characterizes this emphasis as “misdirected, in that the amount of by-product generated from APEX’s process is not a determinative factor in whether CAC material should be regulated under Illinois law in the first instance.” *Id.* at 9. APEX argues that the Agency has failed to recognize that “most of the excess chloride and water that will be disposed of pursuant to APEX’s existing discharge permit will be constituents of the original CAC purchased from the Customers, and not ‘generated’ from APEX’s process. . . .” *Id.*, citing Rec. at 6. APEX also cites Westwood, in which the petitioner’s process generated a by-product accounting for two-thirds of the process. Resp. at 9, n.5, citing Westwood, slip op. at 12.

Finally, APEX also faults the Agency's view that a reference in SCC to "industrial process waste" warrants a "reevaluation of the 30-year old Board decision." Resp. at 9, citing Rec. at 7. APEX argues that the Agency's reference to "industrial process waste" erroneously assumes that CAC is a waste. Resp. at 9. APEX adds that the definition addresses waste that "would pose a threat or potential threat to human health or to the environment" or that makes "disposal of such waste in a landfill difficult." *Id.*, citing 415 ILCS 5/3.235 (2014). APEX argues that there is no evidence that CAC poses any threat of that nature or results in disposal of anything other than wash water brine. Resp. at 9-10. APEX concludes that the Agency's reference to "industrial process waste" is "irrelevant." Resp. at 9-10. In addition, APEX stresses that SCC "dealt with the exact same CAC material that APEX plans to purchase from its Customers, and concluded that CAC was *not a waste*." *Id.* at 8 (emphasis in original), citing SCC, slip op. at 4.

Summary

APEX argues that it has shown that CAC is not discarded material and that the definition of "waste" does not apply to it. Resp. at 10. APEX further argues that it does not plan to handle waste and that its facility is therefore not a "pollution control facility" under the Board's rules. *Id.*

APEX asserts that, in addition to Illinois precedents noted above, three factors favor approval of its petition. First, APEX argues that CAC "is already being handled as a product, and not a waste." Resp. at 10. APEX also argues that its proposed process will generate economic benefits, including competition in the market for its proposed process. *Id.* Finally, APEX states that its process will create a "closed loop" system for its customers, which "will reduce the carbon footprint for the existing market process, and will have no adverse effects on human health or the environment." *Id.*

SUMMARY OF AGENCY'S POST-HEARING BRIEF

The Agency first argues that "[t]he spent etchant is a RCRA-regulated hazardous waste." Agency Brief at 4. The Agency contends that APEX seeks the Board's authorization to take hazardous waste and treat it as non-hazardous. *Id.* at 5. The Agency also contends that this is inconsistent with federal law. *Id.*

In addition, the Agency confirmed its original recommendation that the Board should deny the petition for an adjusted standard. *Id.* at 1.

Request for Finding of Inapplicability

The Agency first summarizes the process for which APEX seeks regulatory relief. The Agency states that APEX would store the spent etchant received from circuit board manufacturers for as long as one week and then "process it to create regenerated ammonia etching fluid, copper salts, and wastewater brine." Agency Brief at 1. The Agency adds that "[t]he first two streams would be resold as products, while the third and largest portion would be discharged to the sewer." *Id.*

The Agency contends that the regulations applicable to APEX's process depend on whether the material is hazardous or non-hazardous. Agency Brief at 2. The Agency argues that APEX's testimony and post-hearing brief confirm that at least some of the spent etchant is a hazardous waste under RCRA. *Id.* The Agency asserts that two samples from three different potential customers exceed the regulatory level of 5.0 mg/L for chromium. *Id.*, citing 35 Ill. Adm. Code 721.124(b). The Agency notes APEX's argument that this limit should be disregarded because the chromium is a trivalent and not a hexavalent form. Agency Brief at 2, citing Tr. at 16. The Agency contends that, under RCRA, this distinction between forms of chromium is "completely irrelevant." Agency Brief at 2. The Agency argues that, although TCLP requires analysis for total chromium, APEX acknowledges that "*it will not* ensure that the TCLP for total chromium is not exceeded." *Id.* (emphasis in original), citing Tr. at 27.

The Agency contends that APEX intends to accept spent etchant containing arsenic at up to twice the regulatory level, cadmium up to five times the regulatory level, and lead at ten times the regulatory level. Agency Brief at 2, citing APEX Brief at 4. The Agency stresses that three of 10 samples submitted by APEX with its post-hearing brief show arsenic exceeding the regulatory level of 5.0 mg/L. Agency Brief at 2-3, citing APEX Brief, Exh. 1. The Agency argues that, although "testimony at hearing claimed that lead would no longer be found in the spent etchant, one sample found 2.5 mg/L." Agency Brief at 3, citing Tr. at 57 (noting replacement of tin lead with tin in etching process). The Agency contends that "APEX has no intention of limiting its acceptance of the spent etchant to non-hazardous wastestreams." Agency Brief at 2.

The Agency argues that the definition of "solid waste" in the Board's hazardous waste regulations "applies to wastes that are also hazardous for [the] purposes of the regulations implementing subtitle C of RCRA." Agency Brief at 3, citing 35 Ill. Adm. Code 721.101. The Agency further argues that spent etchant falls under the regulatory definition of "solid waste" if it is discarded. Agency Brief at 3, citing 35 Ill. Adm. Code 721.102(a)(1). The Agency continues that "[a] material is 'discarded' if it is 'recycled.'" Agency Brief at 3, *see* 35 Ill. Adm. Code 721.102(a)(2)(A)(ii). "A material is 'recycled' if it is 'reclaimed.'" Agency Brief at 3, citing 35 Ill. Adm. Code 721.101(c)(7). The Agency asserts that "material is 'reclaimed' if it is processed to recover a usable product or if it is regenerated." Agency Brief at 3; *see* 35 Ill. Adm. Code 721.101(c)(4). The Agency argues that "[t]he spent etchant process meets both of these definitions of 'reclaimed,' because the etchant is regenerated and contaminants including the copper (made into a distinct product that was not part of the original clean etchant) and brine (discharged to the sewer) are removed." Agency Brief at 3. The Agency concludes that "[t]he spent etchant is a RCRA solid waste." *Id.*

The Agency notes APEX's assertion that it will rely on what it knows about its customers' processes to determine the constituents it will analyze. Agency Brief at 3. The Agency argues that the Board's hazardous waste regulations provide that the generator of a solid waste must determine whether that waste is hazardous. *Id.*, citing 35 Ill. Adm. Code 722.111. The Agency stresses that RCRA regulations require testing only of specified contaminants, "which are applicable to all RCRA solid wastes from any generator." Agency Brief at 3. The Agency argues that APEX has not explained why it cannot meet this requirement. *Id.*

The Agency notes APEX's position that its testing protocols will ensure that the spent etchant "does not contain excessive levels of any hazardous constituents." Agency Brief at 3, citing Tr. at 17. The Agency argues that, if any of the toxicity characteristic constituents exceeds its regulatory level, then the spent etchant is hazardous and must be regulated accordingly. Agency Brief at 3-4. The Agency suggests that the regulations do not provide for materials to be "a little bit hazardous." *See id.* at 4. The Agency also suggests that it does not matter whether the toxic contaminants are "naturally occurring." *Id.*, citing APEX Brief at 2. Finally, the Agency disputes APEX's position that the material is not "disposed." Agency Brief at 4, citing APEX Brief at 3. The Agency characterizes this position as irrelevant and untrue because "more than half of the incoming material is flushed down the sewer as wastewater." Agency Brief at 4.

Petition for Adjusted Standard

The Agency notes that APEX seeks an adjusted standard from portions of 35 Ill. Adm. Code 807.104 and 810.103, which consist solely of definitions. Agency Brief at 4. The Agency argues again that these provisions can neither be complied with nor violated. *Id.* The Agency further argues that "because the spent etchant is regulated as a hazardous waste under RCRA, relief from these sections does not address APEX's process, nor would it provide any actual relief to APEX or its potential customers." *Id.*

The Agency states that APEX's proposed Condition 5 does not address the Agency's concerns with testing incoming spent etchant. Agency Brief at 4, citing APEX Brief at 4. The Agency argues that requiring testing of any load of spent etchant on receipt "should be a minimum requirement." Agency Brief at 4.

The Agency argues that APEX discounts hazardous waste manifest requirements by referring to other companies. Agency Brief at 5. The Agency argues that it is not clear whether those companies "may meet an exemption from the regulations or may be operating illegally, or some other scenario." *Id.* The Agency also argues that APEX does not have appropriate procedures to manage and report unmanifested shipments of hazardous waste. *Id.*, citing 35 Ill. Adm. Code 725.Subpart E (Manifest System, Recordkeeping, and Reporting). *Id.* at 5. The Agency concludes that APEX "is not situated substantially or significantly differently than any other facility seeking to treat waste materials in Illinois. It is not requesting the correct relief and it has not supported its claim to any relief." Agency Brief at 5.

SUMMARY OF APEX'S REPLY

Request for Finding of Inapplicability

APEX disputes the Agency's position that CAC is a "waste" and argues that this position is not consistent with Illinois precedent. Reply at 1. APEX asserts that the Illinois Supreme Court concluded that materials returned to the economic mainstream are not "discarded materials." *Id.*, citing AFI, 830 N.E.2d at 455-56. APEX argues that CAC is not a discarded material "and thus cannot be considered a 'waste.'" Reply at 1-2, citing AFI, 830 N.E.2d at 456. APEX also cites SCC. APEX further argues that the Board in AFI "dealt with the exact same

CAC material that APEX plans to purchase from its Customers, and concluded that the CAC was *not a waste*. Reply at 2 (emphasis in original), citing SCC, PCB 84-51 (Sept. 20, 1984). APEX concludes that precedent and facts show “beyond any doubt that the CAC is not a waste, and therefore cannot be regulated as one.” Reply at 2 (citations omitted).

Protection of Environment

APEX argues that it “has clearly demonstrated that its plan to purchase CAC, which is currently being handled, stored, and transported across Illinois roads and highways as a *product*, would in no way endanger human health or the environment.” Reply at 2 (emphasis in original). APEX acknowledges that CAC generators “must make a hazardous waste determination” and states that they are now doing so according to Illinois regulations. *Id.*, citing Agency Brief at 3. APEX notes that a representative of one of its customers testified that his company ships CAC through bills of lading. *Id.*, citing Tr. at 67. APEX argues that CAC is not now regulated in Illinois as a waste of any kind. Reply at 3. APEX adds that, to the best of its knowledge, all customers operate “completely within the law.” *Id.*

APEX argues that it has in place all appropriate safeguards for proper handling of CAC “from the time it arrives at its facility.” Reply at 3. APEX states that “any CAC that did not meet the APEX specifications would be rejected, and the delivering Customer would then be responsible for transporting and manifesting.” *Id.*, citing Tr. at 25. APEX further argues that the Agency has not disputed any element of its process and procedures. *Id.*, citing Agency Brief at 5.

In addition, APEX argues that the Agency “ignores *the purpose*” of Section 721.124 of the Board’s hazardous waste regulations. Reply at 3 (emphasis in original), citing 35 Ill. Adm. Code 721.124. APEX argues that the regulation sets toxicity concentrations with “the presumption that such ‘waste’ will ultimately be disposed of via landfill or some other method of disposal.” Reply at 3. APEX further argues that the regulation does not apply to material that is not disposed of or discarded. *Id.* APEX asserts that “the undisputed fact is that APEX will not dispose or discard any of the chemical components of the CAC in any way.” *Id.*

APEX argues that the Agency fails to acknowledge “that all of the TCLP metals will be extracted out during the APEX process, and only inert wastewater brine will be discharged pursuant to a valid and existing permit from the City of Joliet.” Reply at 3-4. APEX further argues, if there are slight variances in toxicity levels in CAC, those variances “will be completely mitigated during the APEX process.” *Id.* at 4. APEX contends that this mitigation will “ultimately remove any potential threat to human health and the environment.” *Id.*

Summary

APEX argues that it has consistently demonstrated that CAC is not a “waste” subject to regulation and that its facility is therefore not a “pollution control facility” requiring a permit. Reply at 4. APEX further argues that it has “also demonstrated that its plan is completely protective of human health and the environment” and that it would willingly accept conditions providing this protection. *Id.* APEX concludes by asking the Board to find that CAC is not a regulated waste and that Parts 807 and 810 of the waste regulations do not apply to its facility.

Id. at 5. In the alternative, APEX requests that the Board grant the proposed adjusted standard from the specified portions of Parts 807 and 810. *Id.*

BOARD ANALYSIS

APEX first requests a Board determination that the CAC it proposes to use in its process is not a “waste” and is therefore not subject to the waste requirements under Parts 807 and 810 of the Board’s regulations. In the alternative, APEX requests an adjusted standard from specified provisions of Parts 807 and 810. Below, the Board first addresses APEX’s request for a finding of inapplicability before turning to its petition for an adjusted standard.

Request for Finding of Inapplicability

In the following subsections, the Board summarizes APEX’s and the Agency’s positions and then reviews the record before discussing the issues raised by the request for a finding of inapplicability.

APEX’s Position

APEX argues that “CAC is not classified as solid waste or hazardous waste for regulatory purposes.” Pet. at 7. APEX asserts that results of TCLP analysis show that representative samples of CAC are non-hazardous. *Id.*, citing Aug. Exh. I. APEX further argues that its QA/QC procedures will require customers to certify that they are providing CAC “free from hazardous waste and hazardous materials.” Pet. at 6; *see* APEX Ans. at 10. APEX also commits to testing incoming materials for various constituents. Pet. at 7; *see* APEX Ans. at 9.

APEX argues that prior Board decisions support a conclusion that the CAC APEX proposes to use is not a “waste.” Pet. at 9-17 (citations omitted). APEX specifically argues that, under AFI, CAC is not discarded material and is therefore not a waste under the Act and the Board’s regulations. Pet. at 14-15, citing 415 ILCS 5/3.535, 35 Ill. Adm. Code 807.104. In addition, APEX cites decisions from other jurisdictions. *Id.* at 17-18, citing Aug. Exhs. M, N, O, P, Q.

Agency’s Position

The Agency questions APEX’s position that CAC is non-hazardous. Rec. at 2, citing Aug. Exh. G (MSDS § 16). “There is reasonable concern that the process proposed by APEX would involve the management of hazardous waste, at least for some shipments of spent etchant.” Rec. at 3. The Agency argues that, if APEX proposes to process any CAC that is hazardous, then the CAC is a solid waste. The Agency also asserts that the process constitutes reclamation both because it removes contaminants including recovered copper and because it regenerates the spent etchant. *Id.*

The Agency adds that, even if APEX is assumed to employ only non-hazardous CAC, that material still falls within the statutory definition of “waste.” Rec. at 4, citing 415 ILCS 5/3.535 (2014). The Agency argues that the definition includes material that is discarded. The

Agency adds that a generator discards spent etchant, which then undergoes removal of contaminants and regeneration for use as fresh etchant. Rec. at 4.

In addition, the Agency distinguishes authorities cited by APEX. The Agency notes that other states have addressed hazardous waste and base their position on the absence of reclamation. Rec. at 3, citing Aug. Exhs. M, N, P, Q. The Agency also argues that APEX's process differs from those that were the subject of the Board cases cited by APEX. Rec. at 5-7 (citations omitted).

Board Discussion

Under federal law, RCRA establishes a regulatory program to manage the treatment, storage, and disposal of hazardous waste from its generation to its final disposal. 42 U.S.C. 6901 *et seq.* USEPA has promulgated regulations establishing minimum requirements for managing hazardous waste. RCRA allows states to establish their own programs that are at least as stringent. 42 U.S.C. 6929(b). Illinois has done so, and its hazardous waste regulations are found beginning at Part 720 in Chapter I, Subchapter c of the Board's waste disposal regulations. Wastes that are not hazardous are regulated under Illinois law including regulations beginning at Part 807 in Chapter I, Subchapter I of the Board's waste disposal regulations. In this matter, APEX and the Agency dispute whether CAC is a waste. To analyze this, however, the Board needs to consider whether CAC is hazardous in order to know whether to apply the hazardous waste rules or the solid waste rules.¹

In general, a material is hazardous under the hazardous waste rules if it exhibits one of four characteristics: toxicity, ignitability, corrosivity, or reactivity. *See* 35 Ill. Adm. Code 721.120 – 720.124. Section 721.124(a) of the Board's waste regulations provides that a solid waste exhibits the characteristic of toxicity if TCLP analysis of a representative sample shows a concentration of a specified contaminant equal to or greater than specified levels. 35 Ill. Adm. Code 721.124(a). Subsection (b) provides the regulatory levels at and above which the concentration of the specified contaminants will cause the solid waste to exhibit the toxicity characteristic. 35 Ill. Adm. Code 721.124(b). The Board notes that USEPA identifies and defines a characteristic of hazardous waste only upon first determining

[t]hat a solid waste that exhibits the characteristic may do either of the following:

- A) It could cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

¹ The Board notes USEPA has published "a final rule that revises several recycling-related provisions associated with the definition of solid waste used to determine hazardous waste regulation under Subtitle C of the Resource Conservation and Recovery Act (RCRA)." 80 Fed. Reg. 1694 (Jan. 13, 2015). The final rule is effective July 15, 2015. *Id.* Because Illinois is an authorized state, the amendments will become effective in Illinois only after Illinois adopts them. As it does routinely, the Board has reserved a rulemaking docket to address USEPA amendments to the RCRA Subtitle C regulations. *See RCRA Subtitle C (Hazardous Waste) Update, USEPA Amendments (January 1, 2015 through June 30, 2015), R16-7 (Apr. 23, 2015).*

- B) It could pose a substantial present or potential hazard to human health or the environment when it is improperly treated, stored, transported, disposed of or otherwise managed. 35 Ill. Adm. Code 721.110 (Criteria for Identifying the Characteristics of Hazardous Waste), citing 40 C.F.R. § 261.10.

While APEX has argued that CAC is non-hazardous, the Board finds this position difficult to reconcile with the record.

APEX's petition included an MSDS for copper ammonium chloride, a circuit board etchant manufactured by both Galaxy Circuits, Inc. and Delta Precision Circuits. Aug. Exhs. G, H. Each MSDS reports that "[i]t is reasonable to assume that ammonia etchant compounds contain arsenic, cadmium, chromium, and lead in concentrations ranging from a few parts per billion to several parts per million. It is reasonable to assume that copper compounds contain arsenic, cadmium, chromium, and lead in concentrations ranging from a few parts per billion to several parts per million." *Id.* (§ 16). While these ranges are not precise, the higher end is consistent with concentrations exceeding regulatory levels for any of the four named constituents. *See* 35 Ill. Adm. Code 721.124(b). APEX states that it anticipates processing "CAC material having some constituents that could potentially fall within the technical definition of a characteristic hazardous waste as defined under Illinois regulations. . . ." APEX Ans. at 7. APEX cites chromium, lead, and cadmium as examples of constituents that may have "elevated levels." *Id.*

Chromium. With its petition, APEX submitted results of the analysis of representative samples provided by three different printed circuit board manufacturers. Aug. Exh. I. APEX stated that First Environmental Laboratories, Inc. tested for hexavalent chromium and lead consistent with TCLP. APEX Ans. at 2. APEX's internal lab performed analyses of all other constituents. Aug. Exh. I. Analysis of the sample provided by Midwest Printed Circuits showed a hexavalent chromium concentration of < 2.5 ppm and a total chromium concentration of 29 ppm. For Galaxy Circuits, analysis showed a hexavalent chromium concentration of < 2.5 ppm and a total chromium concentration of 41 ppm. *Id.* For chromium, the regulatory level for the toxicity characteristic is 5.0 mg/L. 35 Ill. Adm. Code 721.124(b). APEX argues that the concentrations of trivalent chromium found in these two samples "are not, and should not be considered, a significant cause for concern." APEX Ans. at 7. APEX notes that a competitor's process does not remove any of the trivalent chromium found in its CAC and uses it as an ingredient in animal feed. APEX further notes that trivalent chromium is an essential nutrient for adults. *Id.* at 6. At hearing, Mr. Welgs cited these factors in stating that APEX would not "ensure that the chromium levels are below the TCLP level as a total chromium." Tr. at 27-28. He acknowledged that "the total chromium may be above the TCLP level." *Id.* at 28. However, APEX itself acknowledges that the Section 721.124(b) "does not differentiate between the different types of chromium." APEX Ans. at 6. Consequently, the Board can only conclude that APEX is prepared to accept CAC with concentrations of total chromium exceeding regulatory limits in the hazardous waste rules.

Arsenic. APEX also submitted an exhibit consisting of analytical reports of ten CAC samples obtained from nine potential customers. The report shows that First Environmental Laboratories, Inc. analyzed a number of metals employing Method 6010C, a method described by APEX as consistent with TCLP. Feb. Exh. A; *see* APEX Ans. at 2. The analytical report for Eagle shows an arsenic concentration of 8.05 mg/L. Alpha Circuits and Ampel Circuits showed arsenic concentrations of 6.30 mg/L and 5.15 mg/L, respectively. Feb. Exh. A. APEX characterizes these three results as “slight” variations in the concentration of arsenic and as “naturally occurring” inconsistencies. APEX Brief at 2. In addition, the Board notes that APEX’s post-hearing brief updates product specifications, which include “a range for Arsenic that it believes reflects a reasonable specification for this chemical element.” APEX Brief at 3. Specifically, APEX proposed a specification for spent etchant containing an arsenic concentration of up to 10.0 ppm. *Id.* at 4. The regulatory limit for arsenic is 5.0 mg/L. 35 Ill. Adm. Code 721.124(b). By its terms, the limit does not allow variation based on either extent or source. *Id.* The Board can only conclude that APEX is prepared routinely to accept CAC with concentrations of arsenic at up to twice the regulatory limit established by the hazardous waste rules.

Cadmium. The Board also notes that APEX’s updated product specifications show that APEX proposes to accept spent etchant with cadmium concentrations of up to 5.0 ppm. APEX Brief at 4. During hearing, Mr. Racette acknowledged “that the characteristic hazardous waste limit for cadmium for DLL 06 is 1 rather than 5.” Tr. at 53. He further acknowledged that APEX’s proposed specification is based on expected levels occurring naturally with copper. *Id.*; *see id.* at 17. The regulatory limit for cadmium is 1.0 mg/L. 35 Ill. Adm. Code 721.124(b). As with arsenic, this limit by its terms does not allow variation based on either extent or source. *Id.* The Board can only conclude that APEX is prepared routinely to accept CAC with concentrations of cadmium at up to five times the regulatory limit established by the hazardous waste rules.

Lead. Mr. Patel’s testimony indicated that circuit board manufacturers had discontinued use of lead and replaced it with tin in their processes. Tr. at 56-57. He stated that, as a result, “there wouldn’t be any traces of lead coming into the contact in the etchant process.” *Id.* at 57. However, Mr. Welgs testified that CAC may contain metals such as lead that are “naturally occurring with copper. . . .” *Id.* at 17. Analysis of CAC obtained from American Progressive Circuits reports a lead concentration of 2.50 mg/L. Feb. Exh. A at 6. The Board recognizes that this concentration does not exceed the regulatory level. However, this result indicates that lead remains a factor in printed circuit board manufacturing and can be expected to continue to appear in spent etchant. Reflecting this expectation, APEX’s updated product specifications show that APEX proposes to accept spent etchant with lead concentrations of up to 50.0 ppm. APEX Brief at 4. Mr. Racette’s testimony confirmed that APEX proposed this specification. Tr. at 53-54. The regulatory limit for lead is 5.0 mg/L. 35 Ill. Adm. Code 721.124(b). As with other constituents, this limit by its terms does not allow variation limit based on either extent or source. 35 Ill. Adm. Code 721.124(b). The Board can only conclude that APEX is prepared routinely to accept CAC with concentrations of lead at up to ten times the regulatory limit established by the hazardous waste rules.

APEX Procedures. The Board is not persuaded by APEX's view that CAC with a concentration of any of these TCLP constituents exceeding regulatory levels is still suitable for processing outside of the hazardous waste regulations. APEX Ans. at 7. The Board notes APEX's view that "reasonable" levels of these constituents would not have a detrimental effect on its process. *Id.* at 7-8. The record provides no reason to conclude that CAC exceeding one or more of these levels would compromise APEX's process. However, if CAC is a "solid waste" under Section 721.102, then CAC with a TCLP constituent concentration at or above any of the Section 721.124(b) regulatory levels would constitute a hazardous waste, absent exclusion, exemption, or the like. As summarized above, the record demonstrates that APEX is prepared to accept CAC with concentrations of total chromium, arsenic, cadmium, and lead exceeding regulatory levels established in Section 721.124(b). The Board concurs with the Agency that, if the concentration of any constituent in a solid waste exceeds its regulatory level for the toxicity characteristic, that concentration renders the solid waste a hazardous waste and requires it to be so regulated. *See* Agency Brief at 4.

The Board also questions the adequacy of APEX's proposed QA/QC procedures. APEX states that "its QA/QC testing procedures will filter out and reject any proposed CAC that is truly 'hazardous.'" APEX Ans. at 8. APEX adds that it "will reject any proposed CAC material that it believes should be characterized as a 'hazardous waste.'" *Id.* APEX elaborates that "any CAC that did not meet the APEX specification would be rejected. . . ." Reply at 3. APEX's product specifications include an arsenic limit of < 10 ppm that APEX considers to be "reasonable." APEX Brief at 3. As noted above, that threshold is twice the regulatory level. Similarly, APEX proposes a specification for cadmium that is five times the regulatory level and for lead that is 10 times the regulatory level. In addition, APEX offers a specification for chromium that addresses only one form of that constituent and that does not reflect the regulatory limit for total chromium. While APEX commits to testing CAC arriving at its facility before it is accepted, the record shows that APEX is prepared to accept CAC exceeding regulatory limits for chromium, cadmium, arsenic, and lead. To the extent that APEX's QA/QC reflects its own product specifications, it does not employ screening levels consistent with regulatory limits. Under those specifications, CAC exceeding regulatory limits would be accepted for processing. The Board cannot conclude that the QA/QC program will ensure that all CAC to be accepted and processed by APEX will be non-hazardous.

Hazardous Waste Listing. Finally, APEX argues that the Agency "has never listed CAC as hazardous per 35 Ill. Adm. Code 721.111(a)(3)(A-K), nor to APEX's knowledge has IEPA ever analyzed the eleven factors that must be investigated before a compound is considered hazardous." Resp. at 3; *see* APEX Ans. at 7. Section 721.111(a) notes that USEPA has stated "that it lists a solid waste as a hazardous waste only upon determining that the solid waste meets" one of three criteria. *See* 35 Ill. Adm. Code 721.Subpart D (Lists of Hazardous Waste). A hazardous waste listing is not at issue in this proceeding, and the Board's determination does not hinge on the factors in subsection (a)(3) cited by APEX.

Board Determination. As summarized above, the record demonstrates that the CAC APEX is prepared to accept would routinely have concentrations of one or more constituents exceeding regulatory limits for the hazardous waste characteristic of toxicity. *See* 35 Ill. Adm. Code 721.124(b). However, APEX's petition requests a finding of inapplicability of the solid

waste rules at Parts 807 and 810. This record does not demonstrate that APEX's proposed process falls outside of hazardous waste regulation and does not support granting the relief specifically requested by APEX. Relief from Parts 807 and 810 would not necessarily address its proposed process. Consequently, the Board denies the request for a finding of inapplicability of Parts 807 and 810. In doing so, the Board does not today determine whether CAC is a "waste."

Before hearing, the Board asked APEX to explain why it did not consider the used etchant solution as having a hazardous characteristic and proceed under a non-solid waste determination under 35 Ill. Adm. Code 720.131. Petition of Apex Material Technologies, LLC for an Adjusted Standard From Portions of 35 Ill. Adm. Code 807.104 and 810-103 OR in the Alternative, A Finding of Inapplicability, AS 15-2, slip op. at 3 (Nov. 24, 2014) (Question 4a). That provision establishes criteria on which the Board "will determine" that material is not a solid waste. 35 Ill. Adm. Code 720.131. Based on its position that the CAC is not a "solid waste" or "hazardous waste," APEX first discounted the possibility of obtaining such a determination. APEX Ans. at 6. The Board also asked APEX to "comment on whether a non-solid waste determination under 35 Ill. Adm. Code 720.131 would be the appropriate relief mechanism for APEX." Petition of Apex Material Technologies, LLC for an Adjusted Standard From Portions of 35 Ill. Adm. Code 807.104 and 810-103 OR in the Alternative, A Finding of Inapplicability, AS 15-2, slip op. at 4 (Nov. 24, 2014) (Question 4b). APEX responded that analysis under Section 720.131(c) regarding reclamation would lead to the conclusion that CAC "is neither a 'solid waste' nor a 'hazardous waste' that is subject to regulation." *Id.* at 8. Also, the Board notes that APEX supported its petition with determinations from other jurisdictions. Exhs. M, N, O, P, Q. While those exhibits do not include the full record of the determinations, it appears that each provides relief from hazardous waste regulations based on reuse of CAC in a process similar to APEX's. APEX has not requested such a non-solid waste determination in this proceeding, and the Board today makes no finding on whether APEX is eligible for such a determination.

The Board also notes that APEX cited AFI in support of its request for a finding of inapplicability of Parts 807 and 810. As noted above, the Illinois Supreme Court in AFI established a framework under the statutory definition of "waste" for categorizing items that may be recycled, reclaimed, or reused. In that case, the Court stated that "[t]here is no dispute that the materials that AFI processes are not 'hazardous.'" AFI, 830 N.E.2d at 458. The Board makes no finding today on whether APEX is eligible for a determination under AFI.

In discussing APEX's petition, the Board does not overlook APEX's statements that beginning to process CAC would generate infrastructure improvements, employ five additional persons, and generate competition into the market for processing CAC. Pet. at 4, 6. The Board determines only that this record does not demonstrate that APEX's proposed process falls outside of hazardous waste regulation. The Board reaches no conclusion on whether APEX qualifies for a non-solid waste determination under Section 720.131 or for an analogous finding under AFI. The Board is prepared to consider subsequent filings of those types or others submitted under the Act and its procedural regulations.

Petition for an Adjusted Standard

Above, the Board noted that APEX's petition requests relief from specified definitions in the solid waste rules at Parts 807 and 810. APEX maintains that granting this adjusted standard would make the remaining provisions of Parts 807 and 811 through 817 inapplicable to APEX's facility. As discussed above, the Board concluded that this record does not demonstrate that APEX's proposed process falls outside of hazardous waste regulation. Based on this conclusion, the Board declines to grant the requested adjusted standard from the definitions of "facility," "solid waste," "solid waste management," "unit," and "waste" at 35 Ill. Adm. Code 807.104 and from the definitions of "facility," "landfill," and "solid waste" at 35 Ill. Adm. Code 810.103.

In addition, the Board notes that APEX requests an adjusted standard from definitions drawn from statutory language. While Section 807.104 of the Board's regulations defines "waste," that definition is derived from Section 3.535 of the Act. Similarly, the Section 807.104 definition of "solid waste" mirrors the definition at Section 3.470 of the Act. Even if receiving an adjusted standard from the regulatory definitions would relieve APEX of complying with applicable rules that use the terms, the Board cannot grant an adjusted standard from a statutory requirement. *See* Petition of Maximum Investments, LLC for an Adjusted Standard from 35 Ill Administrative Code 740.210(a) for the Stoney Creek Landfill, Palos Hills, Ill. v. IEPA, AS 09-2, slip op. at 7 (June 18, 2009) ("The Board finds that petitioner seeks an adjusted standard from a provision in the Board's rules . . . that adopts language quoting statutory requirements. . . . The Board does not have authority to change statutory language. Therefore, the Board finds that granting an adjusted standard is not appropriate.").

CONCLUSION

For the reasons above, the Board denies APEX's request for a finding of inapplicability and denies APEX's alternate request for an adjusted standard from specified definitions in Sections 807.104 and 810.103 of its waste regulations.

IT IS SO ORDERED.

Board Member G.M. Keenan concurs.

Section 41(a) of the Environmental Protection Act provides that final Board orders may be appealed directly to the Illinois Appellate Court within 35 days after the Board serves the order. 415 ILCS 5/41(a) (2014); *see also* 35 Ill. Adm. Code 101.300(d)(2), 101.906, 102.706. Illinois Supreme Court Rule 335 establishes filing requirements that apply when the Illinois Appellate Court, by statute, directly reviews administrative orders. 172 Ill. 2d R. 335. The Board's procedural rules provide that motions for the Board to reconsider or modify its final orders may be filed with the Board within 35 days after the order is received. 35 Ill. Adm. Code 101.520; *see also* 35 Ill. Adm. Code 101.902, 102.700, 102.702.

I, John T. Therriault, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on June 18, 2015, by a vote of 5-0.

A handwritten signature in black ink that reads "John T. Therriault". The signature is written in a cursive style with a long horizontal flourish at the end.

John T. Therriault, Clerk
Illinois Pollution Control Board