

ILLINOIS POLLUTION CONTROL BOARD
November 24, 2014

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STATE OF ILLINOIS
Pollution Control Board

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



ORIGINAL

HEARING OFFICER ORDER

Following a status conference on November 5, 2014, a hearing officer order stated that “any questions the Board or Board staff may have will be forwarded to the petitioner on or before November 28, 2014. The Board is anticipating that any responses will be filed with the Board at least a week before the hearing so that the Board or Board staff will have time to review the responses.” In an effort to assist the Board in its determination of the above-captioned petition for an adjusted standard or finding of inapplicability, petitioner is directed to file written responses addressing the questions in Attachment A on or before Wednesday, December 31, 2014. The “mailbox rule” (35 Ill. Adm. Code 101.300(b)(2)) does not apply to this filing, and the responses must be filed with the Board’s Clerk before the close of business on Wednesday, December 31, 2014. Written responses may be filed electronically through the Clerk’s Office On-Line (COOL) on the Board’s Web site at www.ipcb.state.il.us. Questions about electronic filing should be directed to the Clerk’s Office at 312-814-3629.

Pursuant to notice issued November 20, 2014, the hearing will take place as scheduled on Wednesday, January 7, 2015, in Bolingbrook.

IT IS SO ORDERED.

Bradley P. Halloran
Hearing Officer
Illinois Pollution Control Board
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Test Results for Hazardous Waste Characteristics

1. The petition states that copper-rich “used etchant solution” or “copper ammonium chloride etchant (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. To confirm this fact, APEX recently performed analytical tests, including TCLP and pH, on a representative sample of CAC. The test results demonstrate CAC’s non corrosive and non-hazardous properties. Attached as Exhibit I are the test results.” Pet. at 7.

Exhibit I contains a table entitled “Analytical Test Results” and a laboratory report from First Environmental Laboratories, Inc. Concentrations of the contaminants included in Exh. I that appear under the federal hazardous waste rules at 40 CFR 261.24 Toxicity characteristic are: cadmium, chromium, and lead. The table states, “No other TCLP metals were analyzed as they are not used nor present at the processing facilities.” Exh. I. Exhibit I does not indicate the test method used.

- a. Indicate the method or methods that were utilized to obtain the results reported in Exhibit I and if the methods are consistent with the test methods under 35 Ill. Adm. Code 721.124.
 - b. Provide 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 used etchant solution exhibits any of the characteristics of hazardous waste identified in 35 Ill. Adm. Code 721.121 Characteristic of Ignitability, 721.122 Characteristic of Corrosivity, 721.123 Characteristic of Reactivity, or 721.124 Toxicity Characteristic. For the toxicity characteristic, 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 in “Test Methods for Evaluation Solid Waste, Physical/Chemical Methods.”
2. Exhibit I states, “All inbound Spent Etchant will be analyzed regularly and routinely by Apex Material Technologies’ internal lab prior to processing. Apex will also use this independent IL EPA certified lab to analyze inbound Spent Etchant materials for TCLP metals prior to processing. Apex Material Technologies will use this IL EPA Certified lab to qualify samples of spent etchant from all”. Exhibit I. The end last sentence above appears to have been cut off. Please address whether there should be more.

Non-Solid Waste Determination under Hazardous Waste Rules

3. Exhibit O of the petition is a letter from USEPA Region 5 regarding Heritage Environmental Services, Inc. stating, “spent etchants may occasionally exhibit the toxicity characteristic (TC) for several TC metals.” Exhibit O at 2. USEPA goes on to find, “the Region believes that the 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))...In summary, the Region supports the State's determination that the production of the Heritage copper salt is consistent with the RCRA use/reuse exclusion..." Exhibit O.

In Exhibit O, USEPA considers the "spent etchants" under the 40 CFR Part 261 hazardous waste regulations. Exhibit M indicates the Indiana Department of Environmental Management also considered recycling of the "Copper containing secondary materials" to be exempt under the federal hazardous waste regulations 40 CFR 261.2(e). Exhibit P indicates the Commonwealth of Virginia also considered "spent printed circuit board etchant solutions" for the exclusion under the hazardous waste regulations. Similarly, Exhibit Q indicates the State of Colorado considered "spent copper etch" under the hazardous waste regulations.

Exhibits O, M, P and Q all relate to Heritage Environmental Services (HES). The petition states, "HES's process is substantially similar to the process proposed by APEX." Pet. at 18.

- a. Please explain why Heritage Environmental Services sought the exclusion under the hazardous waste regulations while APEX has not.
 - b. Please explain how the used etchant solution APEX plans to purchase is different from that in the Heritage Environmental Services situation.
 - c. Exhibit L is a letter from Illinois EPA dated June 9, 2014, finding, "The reclamation of the spent copper ammonium chloride etchant prior to use as a raw material or product is a regulated waste treatment activity." Exhibit L at 2. The petition states, "The APEX process does not remove any contaminants from the used etchant solution. Rather, the APEX process simply separates the ammonia-based etchant from the residual copper." Pet. at 14. Please 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 regarding the requirement for reclamation for a non-solid waste determination under the hazardous waste rules.
4. According to Exhibit I, the chromium (total) concentration in the samples from Midwest Printed Circuits and Galaxy Circuits is 29 mg/L and 41 mg/L, respectively. The maximum concentration of contaminants for the toxicity characteristic under the hazardous waste rules for chromium is 5.0 mg/L. See 35 Ill. Adm. Code 721.124(b), 40 CFR 261.24.
- a. Please explain why APEX did not consider the used etchant solution as a characteristic hazardous waste pursuant to Part 721 and proceed under non-solid waste determination under 35 Ill. Adm. Code 720.131.

- b. If further testing in accordance with Question 1(b), above, indicates that used etchant solution is a characteristic hazardous waste, please comment on whether a non-solid waste determination under 35 Ill. Adm. Code 720.131 would be the appropriate relief mechanism for APEX.

Quality Control Over Used Etchant Solution Purchased

5. Exhibit G, App. C, Exhibit C includes testing from three sources: ITO Industries, Midwest Printed Circuits, and Galaxy Circuits. Please provide a list of all potential suppliers APEX is considering.
6. Provide documentation that all of the parties involved will have sufficient control over the materials to preclude unknown contamination from entering into the materials.
7. On page 6 regarding QA/QC, the petition states, "APEX will purchase the CAC from various circuit board manufacturers and will require each Customer to sample, profile, and certify that the material APEX is purchasing meets its specifications, and is free from hazardous waste or hazardous materials."
 - a. Please clarify whether "sample and profile" means to obtain a representative sample of the CAC and have it tested by an Illinois EPA certified lab pursuant to TCLP Method 1311.
 - b. Please explain whether the "specifications" for CAC are established based on the copper content of the material or on the basis of TCLP limits under Part 721. If specifications only address copper content, please comment on whether the applicable TCLP limits for other constituents listed in Part 721 should be added to the CAC specifications.
 - c. Please clarify whether APEX is proposing a copper content in the range of 10 - 20 % by weight listed in MSDS (Exhibit G, Appendix B) as the acceptable specification for CAC. If so, please comment on the rationale for choosing the 10 - 20 % copper content as the acceptable range considering that the analytical results (Exhibit G, Appendix C) indicate that copper content to be in the range of 10- 13 % by weight.
 - a. Please comment on whether the CAC specifications must be included as a condition in the Board Order, if APEX's petition is granted by the Board. If so, propose language for the Board Order prescribing the specifications for CAC that set forth the minimum copper content, and demonstrate that CAC is not a hazardous waste. See Question 25.
8. The petition states, "APEX will maintain a Profile Sheet that sets forth certain specifications for the CAC...APEX will require each customer to semi-annually re-certify its adherence to the Profile Sheet." Pet. at 6. Exhibit G is provided for proposed customer Galaxy Circuits, Inc.

- a. Please clarify if the Profile Sheet would be the same for all customers, and if not, how it would change.
 - b. Please clarify whether the semi-annual recertification required by APEX would require customers sample and test CAC to demonstrate compliance with APEX's specifications. Also comment on whether the proposed semi-annual certification requirement must be included as a condition of granting APEX's request. If so, please propose language for inclusion in the Board Order. See Question 25.
9. On page 7, the petition states, "[a]s an additional quality control measure, APEX will also sample the incoming materials to verify that the CAC matches the Material Safety Data Sheets ("MSDS") provided by each Customer."
- a. Please clarify whether incoming CAC from each customer would be sampled and analyzed on a daily basis. If not, please address the frequency of testing of incoming CAC.
 - b. Please list the chemical constituents in the MSDS (Petition Exhibit G) for which the daily samples will be analyzed by APEX. In addition, to the constituents in the MSDS, please comment on whether the samples of incoming CAC will be analyzed for any constituents with TCLP limits specified under Part 721.
 - c. Please comment on whether the sampling of incoming CAC must be included as a condition of granting APEX's petition. If so, propose language for condition requiring ongoing sampling of incoming used etchant solution. See Question 25.
10. Does used etchant solution have a shelf life? If so, please address what APEX would do with used etchant solution whose shelf life has expired.
11. Address whether the used etchant solution may be reused over and over again through the APEX process indefinitely or if there is a limit to how many times it can be separated?

Value of Used Etchant Solution Before Processing

12. The petition states the "'value of the spent etchant exceeds the value of the fresh etchant' due to the value of the copper that APEX will separate from the used etchant solution." Pet. at 11. Please provide information to support this statement. If necessary, petitioner may file such information under the Trade Secret provision of the Board's rules.
13. The petition states, "APEX plans to spend upwards of \$1 million or more on upgrading its existing infrastructure to properly process the CAC material.." Pet. at 4. Exhibit B is "a map showing segregated areas at the APEX facility that will be used for the incoming material [used etchant solution]". Pet. at 3. The Petition states, "Exhibit E is a complete inventory listing of all proposed equipment and other infrastructure improvements associated with this program." Pet. at 5. Please provide a larger copy of Exhibit B such

that the proposed equipment and improvements listed in Exhibit E (marked as Trade Secret) can be more clearly discerned.

14. Describe how APEX will handle used etchant solution to minimize loss?
15. The petition on page 5 states, “[t]he “used etchant solution,” once processed, is sold directly back to the original Customers for use in the same process that originally produced the CAC.”
 - a. Please clarify whether an “original” customer who supplies certain amount of spent etchant to APEX will be required to purchase the same amount of processed “used etchant solution” to maintain the “closed” loop.
 - b. If not, does APEX collect and mix used etchant solution from a variety of customers and sell the fresh etchant solution without regard to origin?
 - c. Please address whether APEX would receive used etchant solution directly from the facility producing it or if APEX would ever receive it through an intermediary.
16. Please explain if used etchant solution will be accumulated at the APEX facility speculatively.

Market for Fresh Etchant Solution and Copper Oxide

17. The petition states, “APEX will also sell the ammonium chloride as ‘fresh etchant solution’ back to the original Customers to use in the same process that originally produced the ‘used etchant solution.’” Pet. at 2. Please provide evidence that a market for APEX’s proposed fresh etchant solution exists. For example, provide preliminary contracts or letters of interest between APEX and various customers illustrating a willingness to purchase the fresh etchant solution made from the used etchant solution and under what circumstances.
18. The petition states, “APEX will then sell the copper oxide as a product into the pigment, frit, and/or micronutrient industries.” Pet. at 2. Please provide evidence that a market for APEX’s proposed “copper oxide” exists. For example, provide preliminary contracts or letters of interest between APEX and various customers illustrating a willingness to purchase the copper oxide made from the used etchant solution and under what circumstances.
19. The petition states, “Attached as Exhibit J are the Bills of Lading/Shipping Manifests currently used by the Customers to transport the CAC material.” Pet. at 7. Each form in Exhibit J lists an “offerer” and a “designated facility”, including Micronutrients of Indianapolis, IN; Ampel, Inc. of Elk Grove Village, IL; General Circuits of Elk Grove Village, IL; and Star Acquisitions of Elk Grove, IL. The US DOT description is “RQ,

UN3266, Corrosive Liquid, Basic, Inorganic, N.O.S., 8, PGII, (Ammonium Hydroxide, Ammonium Chloride), ERG#154". Exhibit J.

- a. Please clarify if the Bills of Lading/Shipping Manifests are for used etchant solution, fresh etchant solution, or the copper oxide.
- b. Please clarify if APEX considers the facilities identified in Exhibit J as potential customers for its proposed fresh etchant solution and/or copper oxide products.

Environmental Concerns

20. If the used etchant solution were not purchased by APEX and instead disposed of as waste, please describe how it would be disposed of.
21. Please address whether APEX's facility for used etchant solution would retain more characteristics of a "recycling center" [415 ILCS 5/3.375] than a "pollution control facility" [415 ILCS 5/3.330].
22. On page 3, the petition states, "As demonstrated in the Process Flow Diagram and Material Balance (Exhibit A), the APEX process uses 100% of the incoming CAC material, and will not result in any adverse impact on human health or the environment." Exhibit A indicates that APEX's process results in the brine waste stream that accounts for 52 percent by weight of the process inputs. Please elaborate on the on-site treatment of brine wastewater provided by APEX prior to its discharge to the POTW. Does this treatment generate any other waste stream or sludge? If so, please comment on how any wastes generated by on-site treatment will be managed by APEX.
23. On page 5, the petition states, "APEX also utilizes an HPG dust collector. The dust collector uses high temperature, pleated cartridge filters to capture HPG fines generated from an HPG dryer."
 - a. Please clarify whether HPG stands for "high pressure gravimetric".
 - b. Please comment on whether upgrading infrastructure to process CAC material increase the emission of HPG fines. If so, would such an increase in emissions require upgrading of dust collector and scrubbers?

Proposed Conditions

24. APEX proposed conditions of an adjusted standard relief. Pet. at 22-23. Please consider proposing conditions for the used etchant solution to not be considered a waste.
25. Please comment on including the following conditions of any relief granted:

The 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.

1. For purposes of this order, “used etchant solution” or “copper ammonium chloride etchant (CAC)” is defined as used “ammonium chloride etchant solution” that is used to strip away excess copper from printed circuit boards.
2. APEX must not use used etchant solution or CAC which is characteristic hazardous waste, or contain a listed hazardous waste, asbestos or PCBs. 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 contain a listed hazardous waste, asbestos or PCBs.
3. APEX must use only used etchant solution or CAC that meets the following specifications.

Specifications to be proposed by APEX in accordance with Question #, above.

4. APEX must operate the facility in compliance with all applicable provisions of the Environmental Protection Act.
5. APEX must maintain a quality control program that includes:
 - a. The right to reject any used etchant solution or CAC that does not comply with the specifications set forth in Condition 3 above;
 - b. Daily testing of a representative sample of each shipment for its copper content;
 - c. Visual inspection of each load to ensure that no waste is contained in that load;
 - d. Before 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;
 - e. Interim testing of a representative sample of each source of used etchant solution, pursuant to TCLP Method 1311, from each supplier. Such interim will be performed at least every six months, or upon significant changes in operating conditions; and
 - f. Contractual 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.

6. APEX 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.
7. In 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.
8. If 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.