BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
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 2015-002 (Adjusted Standard – Land)

ORIGINAL

NOTICE OF FILING

To: Joseph L. Pellis II
Pellis Law Group, LLP
901 Warrenville Road, Suite 205
Lisle, Illinois 60532

Bradley Halloran
Hearing Officer
Illinois Pollution Control Board
James R. Thompson Center
100 W. Randolph
Suite 11-500
Chicago, Illinois 60601

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Pollution Control Board the RECOMMENDATION OF THE ILLINOIS EPA, a copy of which is served upon you.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,

Michelle M. Ryan
Assistant Counsel

Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217) 782-5544

Dated: October 9, 2014

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

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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 2015-002 (Adjusted Standard – Land)

RECOMMENDATION OF THE ILLINOIS EPA

Now comes the Illinois Environmental Protection Agency ("Illinois EPA") by its attorney, Michelle M. Ryan, and pursuant to 35 Ill. Adm. Code 104.416 provides this Recommendation to the Petition for Adjusted Standard filed in this cause on August 8, 2014. For the reasons that follow, Illinois EPA recommends that the adjusted standard petition be denied.

I. BACKGROUND

APEX Material Technologies, LLC ("APEX") is a chemical manufacturer that currently supplies ammonia etching fluid to circuit board manufacturers. APEX seeks to begin a new process of accepting spent etchant from these customers and treating it to create reclaimed etchant and a copper salt product it plans to sell to new customers in various industries.

As described by APEX, spent etchants are generated by its customers from etching metal circuit boards. Once the metal content becomes too high in the etchant solution, it no longer performs its original purpose effectively and must be replaced with new etchant. APEX receives the spent etchant where it is stored and subsequently introduced into a process which removes the copper contamination and results in three separate streams: regenerated ammonia etching fluid,

copper salts, and wastewater brine. The first two streams would be resold as products, while the third would be discharged to the sewer.

APEX seeks an adjusted standard from a subset of the definitions in 35 Ill. Adm. Code 807.104 and 810.103 for the spent etchant it would be receiving from its customers. In the alternative, APEX seeks a determination from the Pollution Control Board ("Board") that the spent etchant is not a "waste" as used in its process. Because the Board will not need to consider the issue of an adjusted standard if it determines that APEX's spent etchant is not a waste, Illinois EPA will address the alternative request for relief first.

II. FINDING OF INAPPLICABILITY

The regulations which apply to this process depend on whether the material is hazardous or non-hazardous. The definition of solid waste in 35 Ill. Adm. Code 721.101 only applies only to wastes that are also hazardous for purposes of the regulations implementing subtitle C of the Resource Conservation and Recovery Act ("RCRA"). APEX claims the spent etchant is non-hazardous, based on a representative sample. However, the supporting documentation they have provided tends to throw that issue back into question. For example, the Material Safety Data Sheet ("MSDS") included in Exhibit G to the Petition states in Section 16, "It 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." All of these are hazardous constituents under 35 Ill. Adm. Code 721.Appendix H. Although the "Raw Material Profile Form" submitted as part of Exhibit G contains a checkbox indicating "no" to hazardous constituents, the MSDS also states that such results cannot be guaranteed, and that all risk

remains with the purchaser of the spent etchant. Therefore, Illinois EPA will first address this issue.

If 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." A material is "discarded" if it is "recycled." 35 Ill. Adm. Code 721.102(a)(2)(B). A material is "recycled" if it is "reclaimed." 35 Ill. Adm. Code 721.101(c)(7). A material is "reclaimed" if it is processed to recover a useable product or if it is regenerated. The 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.

The letters provided from other states in Exhibits M, N, P, and Q relate to similar processes that all involve hazardous waste. These other states qualify their positions on those processes by saying they are not regulated provided no reclamation is occurring. U.S. EPA has previously evaluated the regeneration of spent ammonia etchant and determined that reclamation was occurring.[1] The Supreme Court of Connecticut found that processing spent etchant into copper and ammonia products was reclamation and therefore hazardous waste management. *MacDermid, Inc. v. Dept. of Env. Protection,* 778 A.2d 7 (2001) (additionally indicating that "two ingredients in the spent etchant are listed as toxic under 40 C.F.R. 37.65, namely ammonium chloride and ammonium hydroxide").

There is reasonable concern that the process proposed by APEX would involve the management of hazardous waste, at least for some of the shipments of spent etchant. Although

1 http://yosemite.epa.gov/osw/rcra.nsf/0c994248c239947e85256d090071175f/9F46F151BFA8837D8525670F006C2910/$file/11111.pdf (Exhibit A).

APEX proposes that it will reject any loads that do not meet its specifications (including the non-hazardous nature of the spent etchant), such a situation would result in two unregulated shipments of hazardous liquid waste, first from the generator and then back. APEX only proposes to test spent etchants from each supplier twice per year. Petition p. 23. Any determination by this Board that spent etchant is not a "waste" under Illinois law must not include hazardous spent etchant.

For the sake of continuing the analysis, the following is based on the assumption that APEX's process will only deal with non-hazardous spent etchant. The determination whether non-hazardous spent etchant is a "waste" subject to regulation relies upon the definition in Section 3.535 of the Environmental Protection Act (415 ILCS 5/3.535)("Act"), which includes material that is "discarded." Although the hazardous waste regulations provide a clear definition of "discarded," as described above, which defines the spent etchant as waste, the Act does not define "discarded." The ammonium etchant is no longer being used for its original intended purpose and must be regenerated before it can be used again. The copper that is removed from printed circuit boards during the etching process becomes a contaminant in the spent etchant, which renders it ineffective for etching. Any potential cadmium, chromium, and lead in the etchant would also be contaminants that would need to be removed in order to render the fluid effective for etching. Therefore, the spent etchant is "discarded" by the generator in favor of fresh product that can effectively etch circuit boards.

If the spent etchant could be used directly in the generation of new etchant, then the process could have been eligible for a Beneficial Use Determination ("BUD") under 22.54 of the Act (415 ILCS 5/22.54). *See also* Exhibit L. But the process that regenerates ammonium chloride etchant is not the same process that created the original etchant. Product specifications

for fresh etchant allow only trace amounts of copper as a contaminant. Excess amounts of water or lead would also be detrimental to the effectiveness of the process.[2] Therefore, such contamination must be removed in order to produce new etchant. This activity falls within the definition of waste "treatment" in Section 3.505 of the Act (415 ILCS 5/3.505), which includes changing the character or composition of waste to render it amenable for recovery. The copper salt product is not available to APEX without treatment of the spent etchant.

This treatment method is what distinguishes the APEX process from most of the cases cited in support of its petition. Neither RR Donnelly & Sons Co. (MMT Oil), Alternate Fuels Inc. (shredded plastic), nor Jo'Lyn Corporation (shredded shingles) removed anything from the material they received. *R.R. Donnelly & Sons Co. v. Illinois EPA*, PCB 88-79 (February 23, 1989) p. 2; *Alternate Fuels, Inc. v. Illinois EPA*, 215 Ill. 2d 219 (2004) p. 10; *In the Matter of Jo'Lyn Corp., et al.*, AS 04-2 (April 7, 2005) p. 13. Westwood Lands, Inc. 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, as noted by the Board. *In the Matter of Westwood Lands, Inc.*, AS 09-3 (October 7, 2010) pp. 12, 13. In contrast, 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.

APEX claims it will return the "vast majority" of the spent etchant to the economic mainstream (Petition at 16), but the information in the petition belies this claim. APEX plans to

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[2] *e.g.*, http://www.circuitetchants.net/wp-content/uploads/2010/12/AdvantEdge-300-TF.pdf, https://www.thechemco.com/wp-content/uploads/2012/03/Ammonium-Chloride-Spec-TCC.pdf (Exhibit B).

take in one tanker truck per day of spent etchant and produce one-half tanker truck per day of finished products. Petition p. 3. This is a net loss of 50% of material, which indicates that the exact same etchant cannot be returned to each customer, or there would soon be virtually nothing left to return. *See* Petition at 25. For each gallon of spent etchant treated, 1.775 gallons of brine is generated and must be disposed of in the sewer system. In order to facilitate this, APEX has a pre-treatment permit from the Bureau of Water. Petition p. 24. But the brine still needs to be treated further prior to discharge. Petition, Exhibit A. From the incoming spent etchant, three streams are created: copper, ammonia, and brine. The largest of the three streams produced by this reclamation process is sent down the drain. This likewise 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.

This fact distinguishes the APEX process from that in *Safety-Kleen Corp. v. Illinois EPA*, PCB No. 80-12 (February 7, 1980). In *Safety-Kleen*, only "a small fraction" of the incoming used solvent was discarded. *Id.*, p. 1. It is also worth noting that at the time of the *Safety-Kleen* decision, Illinois's RCRA regulations had not yet been promulgated.

In *Southern California Chemical Co., Inc. v. Illinois EPA*, PCB No. 84-51 (September 20, 1984), the issue of regeneration of spent ammonia etchants was considered in relation to a variance request from the manifesting requirements of 35 Ill. Adm. Code Part 809. Unfortunately, the Board decision in that 30-year-old case is a mere two pages long, and does not indicate whether any of the issues raised above were evaluated. Two years after that decision, however, the definition of "industrial process waste" was added to Section 3.235 of the Act (415 ILCS 5/3.235) (P.A. 84-1308 (August 25, 1986)). This definition concerns "Any such waste

which would pose a present or potential threat to human health or to the environment or with inherent properties which make the disposal of such waste in a landfill difficult," and specifically identifies "etching acids" as one example. APEX plans to store spent etchant at the treatment site prior to treatment. As a liquid, spent etchant is more amenable to accidental discharge into the environment than the same hazardous constituents would be in a solid state. If not properly managed at the treatment site, potential releases to air, land, and water could occur. As a liquid, the spent etchant can neither be disposed of in a landfill (35 Ill. Adm. Code 811.107(m)) nor certified as non-special waste (415 ILCS 22.48). These changes in the law during the last 30 years and the difficulties inherent in managing this type of waste properly should permit re-evaluation of the 30-year-old Board decision.

III. SECTION 104.406 FACTORS

For all of the reasons indicated above, Illinois EPA recommends that the Board consider the spent etchant in the APEX process a waste subject to regulation. This recommendation will now address the adjusted standard factors in the Board regulations.

A. Section 104.406(a) – Standards from which adjusted standard is sought

The Illinois EPA takes issue with APEX's statements on this factor. APEX states that it is seeking an adjusted standard from portions of 35 Ill. Adm. Code 807.104 and 810.103, which solely comprise definitions. A person can neither "violate" nor "comply" with a definition. Definitions are guides to the application of the actual requirements contained in other regulations. What APEX is really seeking is an adjusted standard from the entirety of the solid waste regulations. Although the request for relief from 35 Ill. Adm. Code Part 807 is somewhat logical,

the need for relief from 35 Ill. Adm. Code Part 810 pertaining to landfilling is not. Nothing in the Petition indicates that the APEX process would involve landfilling, in fact, the only disposal described to be occurring would be the discharge to the Publically Owned Treatment Works. No request is made at all regarding 35 Ill. Adm. Code Part 809, which deals with the management of special waste. Some of the definitions that APEX requests relief from are statutory, including "waste" (415 ILCS 5/3.535) and "landfill" (*see* 415 ILCS 5/3.285, "Municipal Solid Waste Landfill"). This Board has no authority to give an adjusted standard to the Act, only its own regulations.

B. Section 104.406(b) – Promulgation of regulation of general applicability

The Illinois EPA does not take issue with APEX's statements on this subject.

C. Section 104.406(c) – Level of Justification

The Illinois EPA does not take issue with APEX's statements on this subject.

D. Section 104.406(d) – Petitioner's Activity

The Illinois EPA does not take issue with APEX's statements on this subject.

E. Section 104.406(e) – Efforts necessary to comply

The Illinois EPA 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. APEX's objection to complying with the law is entirely financial and based on the cost of local siting approval (Petition p. 22), which is beyond the scope of Illinois EPA or the Board's authorities.

F. Section 104.406(f) – Proposed Adjusted Standard

The Illinois EPA has concerns about the testing of incoming spent etchant only once every six months. Petition p. 23. This scarcity of testing 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. As indicated earlier in this recommendation, this situation would violate the hazardous waste regulations and could lead to dangerous releases to the environment.

G. Section 104.406(g) – Quantitative and Qualitative impact on the environment

The Illinois EPA takes issue with APEX's statements on this factor. The 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. Petition, Exhibit J. Rather, the lack of an adjusted standard merely deprives APEX of the opportunity to take customers away from Indiana.

H. Section 104.406(h) – Justification for the proposed adjusted standard

The Illinois EPA takes issue with APEX's statements on this factor. 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. The concerns regarding such waste treatment remain valid for the process APEX has described, and the permitting system and regulations were designed to address those concerns. The fact that APEX must pay to seek local siting approval does not differentiate them from any other permit applicant in Illinois. As differentiating factors do not exist, they cannot provide justification for an adjusted standard.

I. Section 104.406(i) – Consistency with Federal Law

The Illinois EPA takes issue with APEX's statements on this factor. According to 35 Ill. Adm. Code 811.Appendix B, Part 810.103 of the regulations correlates to 40 C.F.R. §258.2, which also contains definitions of "facility," "solid waste," and Municipal Solid Waste "Landfill." A wholesale exemption for APEX from these definitions in the regulations could be inconsistent with each of these federal definitions.

J. Section 104.406(j) – Hearing

The Illinois EPA does not request a hearing on this matter, but notes that the Petitioner has requested a hearing. If the Board schedules a hearing, the Illinois EPA intends to participate.

K. Section 104.406(k) – Supporting documents or legal authorities

The Illinois EPA does not take issue with APEX's supporting documentation, other than that already described above.

L. Section 104.406(l) – Additional information

No additional information was provided in the Petition.

IV. CONCLUSION

WHEREFORE the Illinois EPA recommends that the adjusted standard be DENIED.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY,

Michelle M. Ryan
Assistant Counsel

Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217) 782-5544

Dated: October 9, 2014

PROOF OF SERVICE

I hereby certify that I did on the 9th day of October, 2014, send by U.S. Mail with postage thereon fully prepaid, by depositing in a United States Post Office Box a true and correct copy of the following instrument(s) entitled RECOMMENDATION OF THE ILLINOIS EPA

To: Joseph L. Pellis II
Pellis Law Group, LLP
901 Warrenville Road, Suite 205
Lisle, Illinois 60532

Bradley Halloran
Hearing Officer
Illinois Pollution Control Board
James R. Thompson Center
100 W. Randolph
Suite 11-500
Chicago, Illinois 60601

and the original and nine (9) copies of the same foregoing instrument on the same date.

RECEIVED
CLERK'S OFFICE
OCT 15 2014
STATE OF ILLINOIS
Pollution Control Board

To: John Therriault, Clerk
Pollution Control Board
James R. Thompson Center
100 West Randolph Street, Suite 11-500
Chicago, Illinois 60601

Michelle M. Ryan
Assistant Counsel

Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217) 782-5544

9433.1985(06)

OCT 29 1985

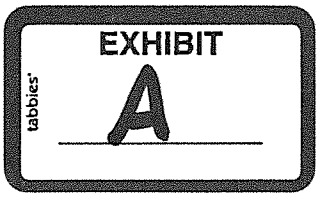
Mr. Verrill M. Norwood, Jr.
Vice President, Environmental Affair
Olin Chemicals
P.O. Box 248
Lower River Road
Charleston, Tennessee 37310

Dear Mr. Norwood:

This is in response to your letter to me dated October 8, 1985, regarding the applicability of a variance from classification as a solid waste for a spent material which is regenerated and then recycled at the facility which produced the original commercial product. Before I respond to your specific request, I would like to define the facts (as I understand them):

> A commercial alkaline etchant (produced by the Philip A. Hunt Chemical Company) is distributed for use to manufacturers of printed circuits. After a period of use, the alkaline etchant is reduced below acceptable levels and therefore becomes spent (i.e., a material that has been used and as a result of contamination can no longer serve the purpose for which it was produced without processing). This material (as you indicated) would be defined as hazardous because of its corrosive nature. This spent material is then 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. (Although not germane to the decision, you indicate that the recovered copper salts are sold providing additional economic benefits.)

Based on this description, I do not believe that you qualify for a variance under the modified closed-loop provision. In particular, to qualify for a variance pursuant to §260.31(b), the material that is reclaimed must be used as a feedstock within the original primary production process in which the waste was generated. You are correct that the regulations do not require that this all occur at a single production/regeneration facility; however, the material (after reclamation) must be returned to the process from which it was generated. In your



situation, the process which generated the waste is the use of the etchant by the printed circuited board manufacture, the reclaimed material is not returned and used as an etchant but rather used as an ingredient to make additional etchant. (It should also be noted that if you were to return the etchant to the printed circuit board manufacturer after reclamation, you still would not qualify for a variance since the material is not being used as a feedstock/ingredient.) 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. 1/

Therefore, the spent alkaline etchant is subject to regulation by the generator (which includes the manifest), must be transported by a hazardous waste transporter, and the reclamation facility must comply with the appropriate standards regarding storage of the spent alkaline etchant. I had discussed this with several of the Regions when you originally sent in your petition and, therefore, I believe we are all being consistent.

Please feel free to give me a call if you have any questions; my telephone number is (202) 475-8551.

Sincerely yours,

Matthew A. Straus
Chief
Waste Identification Branch

1/ Although you do not qualify for a variance pursuant to §260.31(b), the reclaimed material that is used as a raw material to produce the alkaline etchant is not a waste, and thus is not subject to regulation.

Product Specification

AdvantEdge 300 TF

Replenisher

Alkaline Etchant for Printed Circuit Boards

Description

AdvantEdge 300 TF is designed for high volume production of printed circuit boards. It offers excellent line width control, elimination of slivering, consistent etch rates and superior undercut protection. The relatively low operating pH of AdvantEdge 300 TF increases the ability of typical resists to withstand the tendency to soften or lift. As indicated by the initials "TF", all this is achieved without the addition of thiourea.

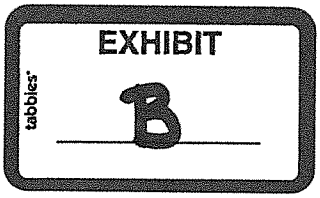
AdvantEdge 300 TF is designed for use in conveyorized spray etching equipment having thermostatic temperature controls and proper ventilation. The venting system must be capable of creating a slight negative pressure in order to confine ammonia fumes to the etch chamber.

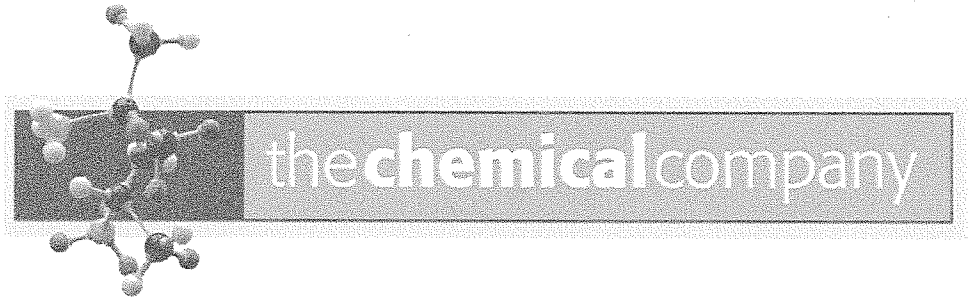
Composition of AdvantEdge 300 TF Replenisher Solution

Property/(Unit)	Typical Specifications		
Ammonium Chloride - g/l	233	-	247
Ammonium Chloride - N	4.36	-	4.62
Total Alkalinity - g/l	300	-	330
Total Alkalinity - N	4.98	-	5.47
Copper – ppm		<	70
pH	9.5	-	9.9

1550 Research Way
Indianapolis, IN 46231
Phone: 317-486-5880
Fax: 317-486-5888

ISO 9001:2000 Registered





PRODUCT SPECIFICATION

Product: Ammonium Chloride
CAS No: 12125-02-9
Molec. Formula: NH_4Cl

Index	Specification
AMMONIUM CHLORIDE (NH_4CL), %	≥99.5
MOISTURE, %	≤0.4
RESIDUE ON IGNITION, %	≤0.4
HEAVY METAL(Pb), %	≤0.0005
SULFATE, %	≤0.02
Fe, %	≤0.001
PH value	4-5.8