

ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF: )  
 )  
PETITION OF APEX MATERIAL )  
TECHNOLOGIES, LLC FOR AN )  
ADJUSTED STANDARD FROM ) No. AS 15-2  
PORTIONS OF 35 ILL. ADM. ) (Permit  
CODE 807.104 AND 810-103 OR ) Appeal-Land)  
IN THE ALTERNATIVE, A )  
FINDING OF INAPPLICABILITY )  
 )

REPORT OF THE PROCEEDINGS had at the hearing on a motion of the above-entitled cause before the Honorable BRADLEY HALLORAN, Hearing Officer, Illinois Pollution Control Board, 375 West Briarcliff Road, Board Room, Bolingbrook, Illinois, on the 7th day of January, 2015, at the hour of 9:03 a.m.

1 A P P E A R A N C E S:

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13 Appeared on behalf of APEX Material  
14 Technologies;

15 ILLINOIS ENVIRONMENTAL PROTECTION AGENCY  
16 BY: MS. MICHELLE RYAN  
17 MR. THEODORE J. DRAGOVICH  
18 MS. MARY RIEGLE  
19 1021 North Grand Avenue East  
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23 Appeared on behalf of the Illinois  
24 Environmental Protection Agency;

ALSO PRESENT: MR. LEE WELGS  
MR. TIMOTHY RACETTE  
MR. RAJANI PATEL

REPORTED BY:

Steven J. Brickey, CSR  
CSR License No. 084-004675

1 HEARING OFFICER HALLORAN: We're on  
2 the record. Good morning. My name is Bradley  
3 Halloran. I'm the Hearing Officer with the  
4 Illinois Pollution Control Board. I'm also  
5 assigned to this matter entitled In The Matter Of:  
6 Petition of APEX Material Technologies, LLC, for  
7 an adjusted standard from portions of 35 Ill. Adm.  
8 Code 807.104 and 810.103 or in the alternative, a  
9 finding of inapplicability.

10 It is docketed as AS 15-2.  
11 Again, it is an adjusted standard land. This  
12 hearing was noticed in accordance with the  
13 Illinois Pollution Control Board's procedural  
14 rules. The hearing will be conducted pursuant to  
15 Section's 101, 104 of the Board's procedural  
16 rules. Today is January 7th, by the way, 2015.  
17 It is approximately 9:00 and for the record it is  
18 cold outside.

19 I do not make the final  
20 determination in this adjusted standard petition.  
21 That is left to the four Board members. They will  
22 review the transcript generated from this hearing  
23 along with the exhibits, filings and post-hearing  
24 briefs. Before we go any further, I think I

1 should note that the petitioner on August 8th,  
2 2015 (sic), and as part of its petition filed a  
3 trade secret claim letter stating that Exhibit's  
4 C, E and F are trade secrets. Also, on December  
5 29th, 2014, in response to the Board's technical  
6 questions APEX filed another trade secret letter  
7 and protection of the entirety of its responses to  
8 and I quote technical questions 5, 12, 13, 15B and  
9 22, certain portions of its responses to technical  
10 questions 3C, 6, 15A, 16, 17 and 18 and the  
11 entirety of Exhibit's 2, 3, 4, 6, 7, 8 and 12.

12           They state "all trade secret  
13 information has been marked and filed separately  
14 pursuant to the provisions of Part 130. When the  
15 questions regarding these claim trade secrets  
16 develop, the public and the Agency will have to  
17 exit the hearing doors. The doors will be closed  
18 until discussion regarding the claimed trade  
19 secrets have concluded. I will post a sign  
20 outside letting everybody know about that.

21           We will try to reserve all  
22 questions of this sort and address them at the  
23 same time so not to disrupt the hearing any more  
24 than necessary. Finally, I want to introduce the

1 members of the Board here. We have member Jerry  
2 O'Leary. We have staff attorney Timothy J. Fox.  
3 We have environmental scientist Alisa Liu and  
4 Anand Rao. The environmental scientists will  
5 probably be asking the majority of the questions  
6 and it should be noted that the Agency had filed a  
7 recommendation asking that the petition be denied.

8 At this point, APEX, would you  
9 like to introduce yourselves, please?

10 MR. LAVOIE: Certainly. My name is  
11 Daniel Lavoie. I'm an attorney with Pellis Law  
12 Group on behalf of the petitioner.

13 MR. TENUTO: My name is Michael  
14 Tenuto. I'm also an attorney with Pellis Law  
15 Group on behalf of APEX, the petitioner.

16 HEARING OFFICER HALLORAN: Thank  
17 you. You may be seated.

18 MR. WELGS: Hi. My name is Lee  
19 Welgs. I'm the executive vice president and  
20 general manager of APEX Material Technologies.

21 HEARING OFFICER HALLORAN: Thank  
22 you, sir. Ms. Ryan?

23 MS. RYAN: Michelle Ryan, assistant  
24 counsel for the Illinois Environmental Protection

1 Agency.

2 MR. DRAGOVICH: Ted Dragovich. I'm  
3 the manager of the Disposable Alternatives Unit,  
4 Permit Section, Bureau of Land.

5 MS. RIEGLE: Mary Riegler. I work  
6 for Ted.

7 HEARING OFFICER HALLORAN: Thank  
8 you. Mr. Lavoie, you stated you want to give an  
9 opening?

10 MR. LAVOIE: Yes, sir.

11 HEARING OFFICER HALLORAN: Proceed,  
12 please.

13 MR. LAVOIE: Thank you. Good  
14 morning. My name is Daniel Lavoie and with me  
15 here this morning is my colleague Michael Tenuto  
16 and we're attorneys for the petitioner APEX  
17 Material Technologies, LLC. The petition before  
18 the Board today is fairly straightforward. APEX  
19 seeks a finding of inapplicability, or in the  
20 alternative, an adjusted standard that states that  
21 Copper Ammonium Chloride, or CAC, when purchased  
22 for use as a feedstock in its manufacturing  
23 process is not a waste and, therefore, the APEX  
24 facility is not subject to regulation and doesn't

1 need a solid waste operating permit.

2 Our argument is also fairly  
3 straightforward. This Board in the matter  
4 entitled Southern California Chemical versus IEPA  
5 unanimously ruled that the exact same material  
6 that we're discussing here today, the CAC, was not  
7 a waste in the first instance. At that time, this  
8 Board relied on prior precedent in its  
9 Safety-Kleen decision that held that a material  
10 that is destined to be reused rather than  
11 discarded is not a waste. Since that time and for  
12 the last 35 years this Board in its Jo'Lyn and  
13 Westwood Lands decisions along with the Illinois  
14 Supreme Court in its alternative fuels decision  
15 have maintained a very consistent position that a  
16 material such as CAC, which is separated or  
17 processed and returned to the economic mainstream  
18 in the form of a raw material or a product, is not  
19 discarded and, therefore, is not a waste.

20 In the case before the Board  
21 today, there is really no genuine issue of  
22 material fact and APEX believes it is entitled to  
23 judgment as a matter of well-established Illinois  
24 law. The irrefutable fact is that CAC material

1 that APEX seeks to purchase and return to the  
2 economic mainstream is not a waste. For at least  
3 35 years, CAC material has been sold in this state  
4 as a product and as far as we know has never been  
5 disposed of as a waste.

6 In addition, APEX does not plan  
7 to store or landfill or dispose or transfer or  
8 treat or incinerate any waste and, therefore, the  
9 APEX facility is not a pollution control facility  
10 that is subject to regulation. Accordingly, we  
11 believe that we have a very solid basis in both  
12 fact and with 35 years of legal precedent in our  
13 favor that would allow this Board to easily  
14 approve our petition for a finding of  
15 inapplicability.

16 In closing, I'd just like to  
17 note that APEX is incorporating into the record  
18 the facts and arguments as set forth in its  
19 initial petition dated August 8, 2014, its reply  
20 to the IEPA's recommendation dated October 28th,  
21 2014, and its response to the Board's technical  
22 questions dated December 29th, 2014, and also for  
23 the record I'd like to note I presented  
24 Mr. Halloran a binder that has all of the

1     aforementioned submissions along with all of our  
2     exhibits to those submissions for the Board's  
3     review and note for today.

4                     I'd also like to note for the  
5     record that we do have actually three  
6     representatives from APEX here today; Mr. Lee  
7     Welgs, the executive VP and general manager of  
8     APEX who introduced himself earlier. We also have  
9     Mr. Samuel Yang, the APEX plant manager with us  
10    today and also Mr. Timothy Racette who is also  
11    APEX's technical manager all of whom are prepared  
12    to be sworn in to answer any questions that either  
13    the Board or IEPA would like to ask or provide any  
14    additional information or clarification regarding  
15    our prior submissions.

16                    We would respectfully reserve  
17    the right to redirect questioning of each of these  
18    witnesses based on any examination that the Board  
19    or IEPA would like to conduct. We'd also  
20    respectfully reserve our right to present rebuttal  
21    arguments and any additional testimony regarding  
22    any statements or legal arguments that IEPA would  
23    like to make.

24                    HEARING OFFICER HALLORAN: Thank

1 you.

2 MR. LAVOIE: Thank you very much.

3 HEARING OFFICER HALLORAN: Ms. Ryan,  
4 an opening?

5 MS. RYAN: Yes. Thank you.

6 Illinois EPA has filed its recommendation in this  
7 matter recommending that the Board deny both of  
8 the requests in the petition.

9 In summary, we believe that the  
10 copper -- the spent etchant is a waste and needs a  
11 permit and we're very concerned with the  
12 possibility that some or all of that material may  
13 be a hazardous waste as well and we do not believe  
14 that the standard for an adjusted standard  
15 differentiating APEX from other competitors or  
16 other situated companies has been met. So we  
17 continue to maintain our position that the  
18 adjusted standard and the alternative be denied.

19 HEARING OFFICER HALLORAN: Thank  
20 you, Ms. Ryan. Mr. Lavoie, is it Mr. Welgs, is  
21 it, do you want to have him read a statement?

22 MR. LAVOIE: Yes, sir.

23 HEARING OFFICER HALLORAN: Do you  
24 want it under oath?

1 MR. LAVOIE: Yes, sir.

2 HEARING OFFICER HALLORAN: Then he  
3 can be crossed. Mr. Brickey, would you please.

4 WHEREUPON:

5 LEE WELGS  
6 called as a witness herein, having been first duly  
7 sworn, deposeth and saith as follows:

8 HEARING OFFICER HALLORAN: Thank  
9 you. You may proceed.

10 MR. WELGS: Okay. Good morning,  
11 again, and what I'd like to do is give you some  
12 background on APEX as well as talk about the  
13 reasons for us bringing this filing and give you  
14 some -- what we think are some material facts in  
15 this case.

16 First of all, APEX or the  
17 company that was originally CP Inorganics was  
18 started in 1972 for the sheer purpose of doing  
19 CAC. So the company was originally founded to do  
20 Copper Ammonium Chloride. It was sold in 1994 to  
21 Phibro-Tech who then basically sold it to us in  
22 2011. So we continue to manufacture high quality  
23 copper, cobalt and nickel products. By the way,  
24 we also make copper oxide using Copper Ammonium

1 Carbonate instead of Copper Ammonium Chloride.  
2 Copper Ammonium Chloride is a direct substitution  
3 for Cooper Ammonium Carbonate and by using Copper  
4 Ammonium Chloride we eliminate the use of  
5 Anhydrous Ammonium and liquid CO2 that we use in  
6 our process to make our copper oxide.

7 We currently employ 27 full-time  
8 employees, but we would anticipate hiring more.  
9 We pride ourselves on being responsible citizens.  
10 We went to the IEPA at the very beginning of this  
11 process. We did not try, you know, to go around  
12 them, try to just take the material in. We had  
13 determined that the material was not hazardous  
14 based on what we saw and we've continued to try to  
15 work with them in order to try to resolve this.

16 We initially engaged the  
17 discussion a year ago and prior to initiating  
18 these proceedings to make sure we were doing  
19 everything in our case to do the right things to  
20 comply with all the Illinois regulations.  
21 Unfortunately, we disagree with IEPA's assessment  
22 that we needed a solid waste handling permit to  
23 process the CAC.

24 Regarding our specific plans and

1 business objectives, in order to better serve our  
2 current customers, and to expand our product  
3 offerings to new customers, we want to begin the  
4 new service which will process copper rich Copper  
5 Ammonium Chloride etchant into two useful  
6 products. We plan to purchase a printed circuit  
7 board -- we plan to purchase the CAC from printed  
8 circuit board manufacturers and basically the CAC,  
9 again, is an ammonium-based fluid that is used to  
10 strip away copper from the printed circuit boards.

11 APEX will then process the used  
12 etchant into two separate products. We will make  
13 the copper oxide as I stated in the beginning and  
14 we will use the ammonium to make ammonium  
15 chloride, the etchant that will go back to the  
16 customers.

17 As outlined in our written  
18 submissions, APEX plans to sign long-term  
19 contracts to purchase the CAC from the customers  
20 at a unit price based on its copper content.  
21 Regarding the market for the products we produce,  
22 as we indicated in our submission the market to  
23 process used etchant is significant and is  
24 currently being underserved in Illinois and

1 throughout the Midwest. APEX is only aware of two  
2 other companies in America that process used  
3 etchant; Phibro-Tech in Santa Fe Springs,  
4 California and Micronutrients from Indianapolis,  
5 Indiana.

6 APEX has already secured the  
7 commitment of quite a number of customers  
8 throughout the Midwest that want APEX to get into  
9 this market. Why do the customers want us into  
10 the market? Because it's a monopoly. Everything  
11 west of the Mississippi goes to Phibro-Tech.  
12 Everything east of the Mississippi goes to  
13 Micronutrients. That was the agreement when  
14 Phibro-Tech sold their share of the eastern market  
15 to Micronutrients.

16 With respect to the legal issue  
17 before the Board regarding the CAC whether it  
18 should be classified as waste or not, I'll leave  
19 that argument up to our attorney Mr. Lavoie to  
20 address, but I can testify based on my personal  
21 knowledge and our customers have never disposed of  
22 CAC as a waste and the reason is simple. The  
23 material is far too valuable to dispose of as a  
24 waste. The copper content in the CAC makes the

1 used etchant more valuable than the fresh etchant.  
2 As far as I know, the CAC has always been sold as  
3 a product that was destined to be reused just the  
4 way APEX intends to process it and send it back  
5 into the economic mainstream.

6 Now, regarding some of the  
7 technical issues raised by the Board from a  
8 technical risk-based perspective we believe that  
9 CAC does not pose any threat to human health and  
10 the environment. That is especially true given  
11 our experience with handling liquid products and  
12 our detailed quality assurance, quality control  
13 and safety protocols that we have in place. We  
14 have provided our 60-page written protocols to  
15 both the Board and IEPA in our written  
16 submissions. In addition, we planned on spending  
17 up to \$1 million to refurbish the facility. Along  
18 those same lines, we do appreciate the 25  
19 technical questions the Board posed to us some  
20 weeks back and I would like to highlight and  
21 address one of them in my statement.

22 As you are aware, APEX provided  
23 in its written submissions some analyticals of  
24 three representative samples -- excuse me -- of

1 CAC from three different potential customers. All  
2 the samples demonstrated levels of metals below  
3 regulatory standards except two of the samples had  
4 exceedances of chromium. As we outlined in our  
5 response to the Board's technical question, the  
6 chromium identified in our testing is trivalent  
7 chrome, not hexavalent chrome and its distinction  
8 is very important.

9 As we pointed out in our  
10 submissions, trivalent chrome is a nutrient and is  
11 not in and of itself hazardous to human health and  
12 the environment. In fact, Micronutrients makes  
13 this product into chicken feed and the chromium  
14 goes right with the product. It goes right with  
15 the copper. In addition, according to the US EPA  
16 study, we cite in our submission trivalent chrome  
17 is an essential element to both human and animal  
18 health.

19 Now, with respect to our  
20 proposed product specification and the conditions  
21 as set forth in number 25 in the Board's technical  
22 questions that we are more than happy to accept,  
23 based upon our technical expertise with our  
24 circuit board customers, we would only expect to

1 see few metals within the CAC material. The  
2 trivalent chromium I've already addressed. We  
3 would also expect to see other metals that are  
4 naturally occurring with copper metal such as  
5 cadmium, nickel and zinc. We would potentially  
6 also see some lead, but most of the potential  
7 customers that we're purchasing from the CAC have  
8 moved away from using any type of lead within  
9 their manufacturing process, which they initially  
10 did.

11           And I want to emphasize we could  
12 possibly see some of these metals, but we have not  
13 seen any of them yet in our testing other than the  
14 trivalent chrome. This is the reason we have  
15 posed a range of levels for certain metals within  
16 our product specification table. I also want to  
17 emphasize that we believe in a very rigorous and  
18 comprehensive testing protocol to ensure that CAC  
19 meets our specifications and does not contain  
20 excessive levels of any hazardous constituents.  
21 As we have repeatedly said in our submission, we  
22 plan to test all incoming CAC from any new  
23 customer using a certified and accredited  
24 third-party lab, First Environmental Laboratories

1 in Naperville. The initial testing would be  
2 performed prior to shipment and include a  
3 comprehensive analysis for ignitability, for  
4 reactivity and toxicity pursuant to Illinois  
5 regulations.

6 After that, we utilize our  
7 in-house lab to test every subsequent load of CAC  
8 to determine its chemical composition and  
9 specifically test for certain metals, which we do  
10 with all incoming raw materials by the way. As an  
11 additional QA/QC procedure and before any CAC is  
12 processed, we will test the material again to make  
13 sure it is consistent with our product  
14 specifications. Every six months as a validation  
15 to our in-house testing, we will send  
16 representative samples of all incoming CAC  
17 material back to First Environmental to once again  
18 perform a comprehensive analysis of the chemical  
19 composition of the material.

20 Lastly, we will rely upon  
21 certifications from our customers that they have  
22 inspected the CAC material and it is free from any  
23 foreign substances and is not a hazardous waste.  
24 Our customers will also pledge to notify us if

1 their manufacturing process changes in any way  
2 that might affect the chemical composition of the  
3 CAC. In this event, we will revert back to our  
4 testing protocols as dealing with the new  
5 customer. In addition to our testing and protocol  
6 and certification procedures, I want to emphasize  
7 that our waste water treatment process would  
8 capture and remove all ammonia and dissolved  
9 metals before discharge in compliance with our  
10 current discharge permit from the City of Joliet.

11 In fact, our current discharge  
12 permit already contemplates and specifically  
13 allows APEX to dispose of the waste water brine  
14 generated from the processing of the CAC.  
15 Further, we voluntarily test our waste water  
16 samples on a daily basis to ensure that our  
17 discharge meets regulatory standards. I would  
18 like to end by saying that APEX is not breaking  
19 new ground here.

20 Micronutrients and Phibro-Tech  
21 have been conducting these same exact operations  
22 for decades. APEX simply wants to get into the  
23 business and inject some competition that our  
24 existing customers have been asking for for years

1 and, again, remember Copper Ammonium Chloride is  
2 a -- has to be in that form for us to use. We  
3 make Copper Ammonium Carbonate. Copper Ammonium  
4 Chloride would be a direct substitution and it  
5 would need to be in that form or we would need to  
6 put it in that form to actually process it.

7           What we want to do is we want to  
8 do all this with the State of Illinois' approval  
9 and as I began by saying our goal is always to  
10 conduct our operations with the highest regard for  
11 and protection of human health and the  
12 environment. We truly believe our plan including  
13 our testing and safety protocols coupled with the  
14 conditions as set forth at the end of the Board's  
15 technical questions is sufficiently protective of  
16 both health and human environment -- health and  
17 the environment and we respectfully request that  
18 our petition be granted.

19           Thank you very much for your  
20 consideration and I'll be happy to answer any  
21 questions.

22           HEARING OFFICER HALLORAN: Thank  
23 you, sir. Do you have a copy of that?  
24 Mr. Brickey, might want it for his transcript.

1 That would be great. Thank you.

2 MR. WELGS: You're welcome.

3 HEARING OFFICER HALLORAN: Ms. Ryan,  
4 any questions?

5 MS. RYAN: I do. How -- in your --  
6 I think it was in the responses to the Board's  
7 questions you indicated that you would analyze  
8 each customer's material for the metals that you  
9 reasonably expected to be found in their  
10 materials. How would you make that determination  
11 for each of your customers?

12 MR. WELGS: A, by knowing what the  
13 customer's process is, knowing what is going  
14 into -- what they're putting into the process and  
15 most of our customers are using copper laminated  
16 to fiberboard. So what we would expect to see is  
17 anything that was associated with copper or  
18 fiberboard and then the -- I'm not sure. We  
19 checked whatever additives they had, what they  
20 used to etch the process and see what metals  
21 potentially would be in there and that is pretty  
22 straightforward and I think it's pretty standard.

23 MS. RYAN: What information do you  
24 have about your generator's ability to avoid cross

1 contamination with their spent etchant with other  
2 processes that they may have at their facility?

3 MR. WELGS: I don't know that they  
4 have other processes in their facility that would  
5 cross contaminate.

6 MS. RYAN: How do the generators  
7 store their spent etchant -- how would they store  
8 it before shipping it to APEX?

9 MR. WELGS: They store it in drums  
10 or totes or in tanks.

11 MS. RYAN: Do you know how long that  
12 would be there?

13 MR. WELGS: Not very long I would  
14 imagine. They don't have a lot of room. This  
15 material is not -- not good to store for a long  
16 time in the sense that it takes up a lot of room.  
17 It is a lot of liquid and most of these board  
18 shops do not have quite the amount of room that  
19 you would need to store let's say a month's worth.  
20 They want to get it out of there on a regular  
21 basis.

22 MS. RYAN: The documentation that  
23 you filed indicated that APEX would not be storing  
24 it for a significant amount of time before

1 processing. How long is not a significant amount  
2 of time?

3 MR. WELGS: I would expect that our  
4 turnover would be easily every month and I would  
5 expect it to be probably every week.

6 MS. RYAN: I see.

7 MR. WELGS: In fact, I think there  
8 is information in the submission that we made on  
9 the -- on the storage capacity, et cetera, and  
10 what the turnover would be.

11 MR. RAO: Are you --

12 MS. RYAN: Go ahead.

13 MR. RAO: Are you saying each  
14 shipment will be stored for about a week or so?

15 MR. WELGS: I will say this. Our  
16 objective is to get the material into process, get  
17 it converted and shipped out as quickly as  
18 possible. All right? We don't want to have any  
19 inventory, but the reality of it is that we will  
20 probably have -- you know, when customers ship in  
21 we'll probably be turning what would amount to  
22 a -- I think it's about a truckload a day.

23 MR. RAO: So what would be the  
24 typical storage time period for a shipment that

1 comes in?

2 MR. WELGS: I would say typical time  
3 should be anywhere from two days to one week.

4 MR. RAO: Thank you. Sorry,  
5 Ms. Ryan, for butting in.

6 MS. RYAN: No, that's fine. I was  
7 going to change subjects. In response to the  
8 Board's questions about loads that did come from  
9 the customer and tested as hazardous, how were you  
10 planning to return those to your customers?

11 MR. WELGS: First of all, we  
12 wouldn't accept that from the customer. That  
13 would have to come about because there was a  
14 significant change in the customer's process.  
15 Number one, we prequalify the customer. Number  
16 two, the customer certifies that unless there is a  
17 significant change in their process that will  
18 materially affect the quality of the CAC then  
19 they're responsible for telling us before it ever  
20 comes in.

21 MS. RYAN: What if when you do test  
22 it turns out there is a hazardous level of  
23 constituents in the material?

24 MR. WELGS: Well, then the material

1 would have -- it would have to go to -- back to  
2 the customer.

3 MS. RYAN: And how would you  
4 manifest that back to them?

5 MR. WELGS: I would have to -- what  
6 we'd have to do is probably send it on a manifest.

7 MS. RYAN: So would APEX be listed  
8 as a generator on the manifest then?

9 MR. LAVOIE: I don't think APEX  
10 would be. They wouldn't be taking ownership of  
11 it. They would send it right back to the original  
12 generator.

13 MS. RYAN: Would they prepare a  
14 manifest for that?

15 MR. LAVOIE: I think we would have  
16 the original generator prepare the manifest and  
17 take responsibility for it. I mean, our contracts  
18 with the -- with the customers contemplate the  
19 fact that if the CAC does not meet our  
20 specification they will take it back and they will  
21 be responsible for the transportation and the  
22 manifesting of the material.

23 MR. WELGS: I guess the question  
24 presupposes something that I don't think exists.

1 It assumes that there is something that is going  
2 to be put in here that is a hazardous material and  
3 I don't understand where that could come in from  
4 because the copper is the copper. The -- the  
5 material that was probably in the past that used  
6 to come in was lead. Lead was eliminated I think  
7 five to ten years back from this process because  
8 of the cost of dealing with the product or the  
9 waste streams or the byproduct streams.

10 So as far as I know the only  
11 things that could come in are things that would  
12 probably be naturally occurring in the copper and  
13 that is not going to change tremendously over time  
14 as far as I know.

15 MS. RYAN: But you don't actually  
16 control the process at the generator's facilities?

17 MR. WELGS: No. Of course, like I  
18 don't control the process of anybody I buy a  
19 chemical from.

20 MS. RYAN: Exactly.

21 MR. RAO: May I ask a follow-up  
22 question?

23 MS. RYAN: Sure.

24 MR. RAO: Regarding the material

1 that -- that is shipped to APEX, are you saying  
2 that it will meet all threshold levels for  
3 hazardous waste?

4 MR. WELGS: It would meet all what?

5 MR. RAO: The threshold levels, the  
6 TCLP levels.

7 MR. WELGS: That's exactly what  
8 we're prequalifying the customers for. The only  
9 thing that we see -- if they don't meet that  
10 requirement, then we can't take in the material.

11 MR. RAO: For example, in the  
12 information that you provided, we looked at some  
13 levels that were above the TCLP levels and  
14 chromium was one and you have provided some  
15 responses about the -- you know, the form of  
16 chromium that we should be concerned about, but  
17 the TCLP level doesn't make a distinction between,  
18 you know, Chromium 6 or Chromium 3, it's total  
19 chromium. So when you accept material, the CAC,  
20 are you going to ensure that the chromium levels  
21 will be below the TCLP level as a total chromium?

22 MR. WELGS: No. And as we stated  
23 the chromium is trivalent chrome, not hexavalent  
24 chrome. Number two, it's going into your animal

1 feed. It is being made into animal feed and the  
2 chrome is being concentrated. All right? Right  
3 now that material goes down to Micronutrients.  
4 They make it into tribasic copper chloride and  
5 it's fed to chickens.

6 MR. RAO: So the total chromium may  
7 be above the TCLP level, is that what you're  
8 saying?

9 MR. WELGS: I'm sorry? It may be  
10 above. Yes, that's what we're saying.

11 MR. RAO: Okay. Thank you.

12 MS. RYAN: One second. Assuming  
13 that you could get a load that would exceed the  
14 TCLP levels and would need to reject it, how long  
15 would the material be at APEX while you were  
16 waiting for the testing and the re-manifesting and  
17 the re-shipping back to the customer?

18 MR. WELGS: Days.

19 MS. RYAN: How many days?

20 MR. WELGS: I would say a couple of  
21 days. It certainly wouldn't sit there for more  
22 than a week.

23 MS. RYAN: In your responses to the  
24 Board's comments, you have -- on page 18, you have

1 a product specification chart with numbers listed  
2 for different types of metals. Some of these have  
3 a range and some of them have a less than.  
4 Particularly, I'm referring to the cadmium, which  
5 has a less than and a range and the -- there was  
6 another one, the lead, which has a less than and a  
7 range and I'm curious as to -- as to what that  
8 means. Is that less than 1 or is that between 0  
9 and 5?

10 MR. WELGS: I would let my technical  
11 manager answer that.

12 MS. RYAN: Okay.

13 MR. LAVOIE: Why don't you come up.

14 HEARING OFFICER HALLORAN: Can we --  
15 do you want to swear him in now or we can wait?

16 MS. RYAN: I can wait and ask him  
17 later. That's fine.

18 HEARING OFFICER HALLORAN: Okay.  
19 Yeah. Let's ask him later so it's a little  
20 cleaner this way, but thank you. Earmark that.

21 MS. RYAN: No problem.

22 HEARING OFFICER HALLORAN: Thank  
23 you.

24 MS. RYAN: In the -- in the process

1 that you're proposing to use the CAC in, what is  
2 the range of copper -- maybe this is also for your  
3 other technical person. This is regarding the  
4 table here again.

5 MR. WELGS: I might be able to  
6 answer it. Go ahead and ask it.

7 MS. RYAN: Maybe you can answer part  
8 of this. You have the range listed here as 7 to  
9 20, but in some of the other documentation it  
10 indicates you may accept things outside of those  
11 numbers occasionally, but you didn't expect it to  
12 fall outside of those numbers.

13 What is the range of copper that  
14 would be acceptable to -- for use -- for APEX's  
15 use both technically in the process and then  
16 economically?

17 MR. WELGS: Economically, it can  
18 range -- first of all, 20 range is probably  
19 maximum. It is going to be saturated at 20  
20 percent copper. It is probably going to be more  
21 like 16 copper percent on average. I would say if  
22 we got down to 5 percent we wouldn't want to take  
23 it in. It wouldn't be economical, but then again  
24 if it got down to 5 percent or even 10 percent the

1 people that are using the etchant aren't getting  
2 the economic value out of the etchant. They're  
3 not doing their job and it's costing them money.  
4 So it behooves both the generator and us to keep  
5 that level up and around that pound per gallon  
6 range.

7 MS. RYAN: Is there an amount  
8 outside of this range where it would no longer be  
9 technically feasible to remove the copper and make  
10 the copper oxide product?

11 MR. WELGS: Actually, no, you could  
12 make the copper oxide if there was one percent  
13 copper in it.

14 MS. RYAN: And if there is a -- I  
15 don't want to say 100 percent, but 90 percent --

16 MR. WELGS: If there is 90 percent  
17 copper, it wouldn't be Copper Ammonium Chloride.  
18 Like I said, at 20 percent it's saturated. You  
19 couldn't put more copper in there.

20 MS. RYAN: Okay.

21 MR. RAO: So are you saying that 5  
22 percent copper may be the lower range?

23 MR. WELGS: Yeah, I'd say if you got  
24 down to -- one of the ways the customers know when

1 to take this out is when it becomes saturated.  
2 All right? They want to use it until it is no  
3 longer effective and as it builds up copper, it  
4 becomes ineffective. So, yes, you could say that  
5 below 5 percent it would be more -- it would cost  
6 us more to process it than it would if it was at  
7 10 to 15 percent, but it would still work.

8 MR. RAO: So would it make sense in  
9 the conditions that you've proposed in the table  
10 to change the load threshold from 5 percent to 20  
11 percent rather than 7 because once it's in the  
12 Board order then you've got to comply with it.

13 MR. WELGS: I would put it at 5 to  
14 20. I would be okay with that. I would say this.  
15 If it gets down to 5, it's not going to last very  
16 long because the customer is going to be doing  
17 something on his end to get his system tightened  
18 up.

19 MS. RYAN: I don't have any other  
20 questions for this witness.

21 HEARING OFFICER HALLORAN: Thank  
22 you. Ms. Liu? Mr. Rao?

23 MS. LIU: Good morning, Mr. Welgs.  
24 Thank you for bringing everyone out on such a cold

1 day.

2 MR. WELGS: As I get older, it gets  
3 more brutal, too.

4 MS. LIU: We do have some questions  
5 and if they're more appropriate for someone else  
6 to answer or if you would rather defer those to  
7 the second part of the closed hearing, that would  
8 be fine, too. Just let us know.

9 MR. WELGS: Okay.

10 MS. LIU: Question 1(b) of the  
11 November 24th, 2014, Hearing Officer Order  
12 requested test results for the CAC or the used  
13 etchant solution for each supplier APEX is  
14 currently considering to demonstrate whether or  
15 not it exhibits any characteristics of hazardous  
16 waste.

17 APEX's December 29th response  
18 does not contain any such results. In this  
19 proceeding, does APEX plan to submit such test  
20 results?

21 MR. WELGS: We will -- first of all,  
22 we will test every customer that we consider.  
23 Right now there are currently I think 300, 400  
24 customers out there. The financial burden of

1 doing that right now without a finding from the  
2 Board would be -- would be rather onerous on us.  
3 What we plan on doing is before we qualify a  
4 customer we would have the complete testing done.  
5 All right? It would be on record and on file and  
6 it would meet all the standards of Illinois. The  
7 only thing that I said that we are concerned about  
8 is the chromium level. All right? The chromium  
9 level is going to be higher, but if a customer is  
10 out on any other of those levels it will be  
11 rejected out of hand. We won't -- we won't take  
12 in their product.

13 MS. LIU: You already provided some  
14 test results for, I believe, three --

15 MR. WELGS: Right. Correct.

16 MS. LIU: -- Galaxy Circuits and two  
17 others. I can't remember right now. Is there a  
18 possibility to find -- supply a full spectrum of  
19 test results on those?

20 MR. WELGS: Sure.

21 MR. RAO: Again, like Ms. Liu said,  
22 if any of her questions -- if you want any other  
23 witnesses to answer, feel free.

24 Question 5 in the Board's

1 Hearing Officer Attachment A asks for a list of  
2 all potential suppliers APEX is considering. In  
3 your December 29th response, you provided Exhibit  
4 3 which was supplied separately as a trade secret.  
5 In response to question three, APEX notes that,  
6 quote, the CAC material is currently being shipped  
7 across Illinois roads via bills of lading and not  
8 as a hazardous waste, unquote.

9 This is in your response at page  
10 five. Could you please explain the difference  
11 between bills of lading and solid waste or  
12 hazardous waste manifests for the record?

13 MR. WELGS: I think I will let my  
14 technical manager handle that.

15 MR. RAO: Then I will go on to the  
16 second part of the question. Please clarify if  
17 the CAC that is being shipped via bills of lading  
18 and not as hazardous waste is only the used  
19 etchant solution that has already qualified for  
20 the use or reuse exclusion specified at 40 CFR  
21 261.2(e) and as such is not a RCRA solid waste  
22 (and thus not a RCRA hazardous waste) when it is  
23 fully utilized in the process per 40 CFR 261  
24 .1(c)(5)(i) as it is for Heritage Environmental

1 Services, Inc.

2 MR. WELGS: I'm sorry. You lost me  
3 in the question.

4 MR. RAO: Basically, we're asking  
5 for you to clarify the used etchant that is being  
6 shipped using bills of lading --

7 MR. WELGS: Yes, it is.

8 MR. RAO: -- and not as hazardous  
9 waste. It's only used etch solution that has  
10 already qualified for use or reuse exclusion  
11 specified under 40 CFR 261(e).

12 MR. WELGS: That would be my  
13 understanding. I don't know that personally, but  
14 that would be my understanding because that was a  
15 process that Micronutrients went through to gain  
16 the exception and all those people on the list are  
17 customers of Micronutrients. All right? So  
18 they're all shipping into Micronutrients not on a  
19 manifest, but on a bill of lading.

20 MR. RAO: Okay.

21 MR. WELGS: And again --

22 MR. RAO: Is this something you can  
23 check and let us know later?

24 MR. WELGS: I don't know how I would

1 be able to check with Micronutrients. They're a  
2 competitor. All right? I don't know that they  
3 would allow me to get into their records.

4 MR. RAO: No. But with your  
5 potential customers, would they be aware of  
6 other --

7 MR. WELGS: Yes, I can check with  
8 potential customers and we have -- actually, the  
9 list you see is pretty long. That list of  
10 potential customers we have we can probably boil  
11 down realistically to people within, you know, the  
12 area and those are people that we could talk to  
13 directly.

14 MR. RAO: Okay. Please explain what  
15 type of paper tracking (either bills of lading or  
16 waste manifests or some other tracking system) is  
17 required for shipping used etchant solution that  
18 is already qualified for use/reuse exclusion  
19 specified at 40 CFR 261.1(e) between states or  
20 countries.

21 We're asking this question  
22 because the list that you provided had, you know,  
23 multiple states and also I think Canada was part  
24 of the list.

1 MR. WELGS: Correct. What you need  
2 is you need a bill of lading obviously. You need  
3 the proper labeling. So you have to have the  
4 proper labeling for Copper Ammonium Chloride. You  
5 have to have an MSDS and then when the material is  
6 brought into the facility, our facility,  
7 Micronutrients' facility, Phibro-Tech's facility  
8 for that matter, the material is sampled and  
9 tested to make sure that it conforms to whatever,  
10 you know, it is supposed to conform to and at that  
11 point then it is scheduled for production and that  
12 whole process of getting the proper paperwork in,  
13 proper documentation and testing being added to it  
14 probably takes no more than a day or two.

15 MR. RAO: Okay. Thank you.

16 MS. LIU: Mr. Welgs, question 7 on  
17 the Hearing Officer Order talked about the sample  
18 profile procedure. In APEX's response, you note  
19 that one of the factors for the specifications is,  
20 quote, the CAC is nonhazardous and does not pose  
21 any threat to APEX employees, its customers, human  
22 health and the environment and that was on page  
23 ten of your response.

24 Administratively speaking,

1 how -- could you explain how compliance with that  
2 specification would be determined?

3 MR. WELGS: There are several issues  
4 regarding the material. There is -- that could  
5 potentially give hazards. One is the metals that  
6 we talked about. The other one would be the pH.  
7 All right? In fact, right now if you look at the  
8 current MSDS that Micronutrients uses, it uses --  
9 saying it ships at either a pH below 2 or above  
10 12. Well, the material is about a pH of 8. It  
11 actually is -- when it is made -- when the fresh  
12 etchant is made, it's 11, I think around 10 or 11,  
13 and when it comes back to us because of cooking up  
14 the copper it's almost neutral. So the way that  
15 we would check compliance was, number one, you  
16 have the customer's prequalification of the  
17 material. All right? And it is going to be  
18 within that pH range and it is also going to have  
19 so much copper in it as we talked about and it's  
20 going to have a minimal amount of metals in it and  
21 under the TCLP metals with the exception of chrome  
22 under 5 parts per million.

23 So what we do is the customer  
24 certifies that he has not made a material change

1 to his process, which is exactly the same as the  
2 supplier of any of my raw materials does. All  
3 right? I don't test in the sense that -- test for  
4 metals that I don't know are not there. All  
5 right? I don't test for the periodic table of  
6 elements. I test for the metals that should be  
7 there. So we know to test for the TCLP metals  
8 because of the nature of them and if there is no  
9 other change to the process we would just reuse  
10 the same testing protocol when it came in.

11 So if you're asking how do we  
12 guarantee before the material is shipped, the  
13 customer is the one that guarantees. The customer  
14 warrants that the material that he is sending into  
15 us is consistent with what he sent into us and  
16 there has been no material changes in his process.  
17 Our check comes when the material actually hits to  
18 confirm that that is the case if that answers your  
19 question.

20 MS. LIU: It does. I'd like to ask  
21 you a question on something you mentioned earlier  
22 in your opening statement. You mentioned that  
23 most potential suppliers are eliminating the use  
24 of lead. Was that something they used in the

1 solder?

2 MR. WELGS: What was that?

3 MS. LIU: Lead, is that something  
4 that gets used in solder or --

5 MR. WELGS: I actually have somebody  
6 here who is an expert in the printed circuit board  
7 industry here and they could possibly answer that  
8 question for you if you would like because I'm not  
9 exactly sure where it came from because it's no  
10 longer there in most cases.

11 MS. LIU: I guess that would be a  
12 question we defer when the next witness is called.

13 HEARING OFFICER HALLORAN: That  
14 would be great. Thank you.

15 MR. RAO: Mr. Welgs, in your  
16 response to the Board's question number 9(b), we  
17 asked about the chemical constituent that would be  
18 sampled, APEX responded, quote, regarding TCLP  
19 testing of the CAC material, APEX will test for  
20 constituents of concern that it knows based upon  
21 its experience in this area, could potentially be  
22 problematic on the customer side and might be  
23 found in the raw material in response at page 11.

24 Would you please elaborate on

1 what the constituents or concern might be, you  
2 know, generally focusing on those constituents  
3 which are not listed in the specifications what  
4 would be typically --

5 MR. WELGS: First of all, let's take  
6 a step back. First of all, we prequalify against  
7 a wide range of things initially that go beyond  
8 our concern, but, secondly, when the material  
9 comes in the one area that would be concerned is  
10 what is coming in on the copper. When you buy  
11 copper, copper is not 100 percent copper. Copper  
12 has trace elements in it and it's mined oftentimes  
13 with lead, with zinc. You find it in zinc mines,  
14 you find a little bit of cadmium in it because in  
15 the same mine they often find copper. It's just  
16 the nature of how copper -- how copper mines  
17 operate.

18 So what we will do is we look  
19 for those things that are potentially in the  
20 copper. All right? And the things that we  
21 identified and things that are generally found in  
22 the copper. The customer is not adding anything  
23 to the mix that will contaminate it. He is  
24 etching things away from the board. He is taking

1 copper away from the board, not adding things to  
2 the board. So the only thing we expect to find in  
3 there is the copper and the constituents that  
4 would come in with the copper itself and those are  
5 the ones that we test for.

6 MR. LAVOIE: And if I may just add  
7 to this and this sort of goes back to Ms. Ryan's  
8 question a little bit earlier regarding the  
9 specification table that we have in -- in question  
10 or in response to question three in the -- in the  
11 Board's technical questions.

12 The reason we have a certain  
13 range for cadmium and lead is the very fact that  
14 what Mr. Welgs just said. Cadmium and lead we  
15 would expect to see some range of those two  
16 elements within naturally occurring substances  
17 within the copper itself. So that's why we wanted  
18 to place a little bit of a range to give ourselves  
19 some flexibility to see some naturally occurring  
20 substances within the -- within the copper itself.

21 MS. LIU: When you refer to the  
22 copper, you're referring to the copper that the  
23 circuit board manufacturers use?

24 MR. LAVOIE: Within the CAC, yes.

1 MR. RAO: So would you say that the  
2 list of constituents that you are proposing the  
3 specifications is a good representation of  
4 constituents of concern?

5 MR. WELGS: Yes.

6 MR. RAO: Are there any others that  
7 we may want to add to it?

8 MR. WELGS: Those are the ones that  
9 we would be concerned about. Most of the other  
10 elements -- it is not possible to measure the  
11 periodic table. So you look at what do you  
12 normally find. What are customer's concerns on  
13 the back end and you've got a couple -- a couple  
14 guidelines here.

15 Number one, what would make the  
16 material hazardous as we discussed? Number two,  
17 what are your customer specs on the outside? If  
18 I'm making copper oxide, my customer has a  
19 specification that I need to meet. So if the  
20 material -- the raw material I'm using doesn't  
21 meet it, then that's a problematic raw material  
22 for me and then, number three, anything that would  
23 be a concern in the manufacturing process or cause  
24 an upset to the manufacturing process and that

1 would be the three criterion that we would use in  
2 determining what elements we test for.

3 MR. RAO: All right. Thank you.

4 MS. LIU: Question 15 of the Hearing  
5 Officer Order asked about selling fresh etchant  
6 back to the original customers.

7 Would you please clarify whether  
8 the Products Supply Agreement that you had in  
9 Exhibit 1 requires a customer to purchase the  
10 exact same amount of fresh etchant solution as the  
11 used etchant solution that they provide to you or  
12 simply does the agreement just require them to  
13 purchase 100 percent of whatever fresh etchant  
14 from you exclusively?

15 MR. WELGS: Let me clarify that,  
16 first of all. When we send out the fresh etchant,  
17 the customers lose about 15 percent of it in their  
18 process. So -- between evaporation and between  
19 waste water treatment. So they will only send us  
20 back about 85 percent of the fresh etchant that  
21 they generate and then our requirement in the  
22 contract is that they purchase 100 percent of  
23 their etchant from us. So we would actually have  
24 to supplement the etchant that we send back to

1 them. So we will use some fresh anhydrous  
2 ammonia, which we already have on the facility,  
3 which we're permitted for, to make it and some  
4 fresh hydrochloric acid.

5 MS. LIU: In your introductory  
6 statement, you mentioned that you purchased -- the  
7 purchase price of the CAC is based on the copper  
8 content. Does that mean that the price you pay  
9 for CAC varies from supplier to supplier?

10 MR. WELGS: Yes.

11 MR. RAO: The next question relates  
12 to your response to the Board's question 25. I  
13 think you have already touched on this issue about  
14 product specification where you proposed sort of a  
15 range for certain constituents. I need a  
16 clarification. For example, in -- for cadmium and  
17 lead, APEX listed a range of less than 1 ppm to  
18 less than 5 ppm.

19 MR. WELGS: I think.

20 MR. RAO: And also -- let me just  
21 finish.

22 MR. WELGS: I'm sorry.

23 MR. RAO: I think for lead it was  
24 less than 5 ppm or less than 2 ppm. Could you

1 clarify when you say less than 5 to -- less than 1  
2 to less than 5 ppm essentially you mean less than  
3 5 ppm?

4 MR. WELGS: My guess is it was a  
5 typo on my technical managers part which is why I  
6 threw him under the bus and said I would throw the  
7 question to him as I think what it should mean  
8 there is 1 to 5 ppm. It can be 0 obviously, but 1  
9 to 5 ppm would be what --

10 MR. RAO: Thank you.

11 MS. LIU: Question 25(5)(b) of the  
12 Hearing Officer Order had proposed a condition and  
13 it was on a daily testing on representative  
14 samples from each shipment for the copper content  
15 and in its response APEX didn't agree with the  
16 provision to require daily sampling, but rather  
17 that each shipment would be tested once -- before  
18 it was accepted and placed into the process. And  
19 that was on your response at page nine.

20 Would you please clarify if the  
21 testing should also include the other chemical  
22 parameters that you would have had set forth in  
23 your product specification on pages 18 and 19 of  
24 the response in addition to the copper?

1 MR. WELGS: In addition to the  
2 copper? What we do -- just to clarify what we do.  
3 When a shipment comes in of anything, samples are  
4 taken. It is tested. When it is put into  
5 process, so if I take product A and product B and  
6 I put them together in a tank that is then tested  
7 and unless that tank changes materially or  
8 something else is added in and that tank stays the  
9 same, it is not tested again until it is moved and  
10 added to another product, all right, or something  
11 else is introduced.

12 So every step of the process the  
13 material is being tested and the elements that  
14 you're asking about aren't tested based on  
15 customer specification. So we're tracking the  
16 elements. We don't test every element of  
17 everything once we put it in the mix, but we do  
18 when we get to the very end because we have to  
19 qualify our products.

20 So we have copper oxide that  
21 we're now going to sell and we're going to have  
22 anhydrous ammonia that is now being made into  
23 fresh etchant that also has a qualification, which  
24 include no metals. All right? So you have here a

1 product qualification or specification over here  
2 and then you have here a product qualification on  
3 the copper oxide. So basically material is tested  
4 every step of the way and all the metals that are  
5 of concern or tested at the beginning and at the  
6 end based on the product -- the final product that  
7 we make.

8 MS. LIU: Is there a way that you  
9 can propose revision to that proposed condition?  
10 I think it's 5(b) --

11 MR. WELGS: Sure.

12 MS. LIU: -- to reflect what you're  
13 saying --

14 MR. WELGS: Sure.

15 MS. LIU: -- rather than what we had  
16 come up with?

17 MR. WELGS: Sure.

18 MR. RAO: Exhibit N of the original  
19 petition is a letter from US EPA Region 5 dated  
20 August 3rd, 1995. In the attachment to the  
21 letter, an issue number 3 and Exhibit 3 are  
22 identified, however both a discussion of issue  
23 three as well as Exhibit 3 of the letter do not  
24 appear to be included in Exhibit N of the

1 petition. The letter on page three of the  
2 attachment refers to, quote, the legitimacy issue  
3 discussed below, end quote, but there is no  
4 following description of such an issue.

5                   Would you be able to supply the  
6 complete letter and attachments for the record?

7                   MR. LAVOIE: Well, I think we have  
8 in the materials that we provided to Mr. Halloran  
9 prior to the start of the hearing. There is an  
10 Exhibit No. 1 and an Exhibit No. 2 in Exhibit N.  
11 So I'm not sure if that might answer your  
12 question. I don't know.

13                   MR. RAO: We were looking at issue  
14 number 3 and Exhibit 3. We can take a look at the  
15 issue you supplied during the break.

16                   MR. LAVOIE: I see. I see that. We  
17 have Exhibit 1 and 2 included. This is the way  
18 that we got this information and it did not have  
19 an Exhibit No. 3 in the original that we had  
20 obtained. We can endeavor to try to obtain  
21 Exhibit No. 3 for you.

22                   MR. RAO: Thank you. That's all we  
23 have for the open part of the hearing.

24                   HEARING OFFICER HALLORAN: Do you

1 have any questions? Any redirect?

2 MR. LAVOIE: No redirect, sir.

3 HEARING OFFICER HALLORAN: Ms. Ryan,  
4 you're fine?

5 MS. RYAN: Yes, thank you.

6 HEARING OFFICER HALLORAN: You may  
7 step down or step aside as the case may be. Thank  
8 you. Mr. Lavoie, do you want to call your next  
9 witness? Is everybody okay?

10 MR. LAVOIE: Unless the Board or  
11 Ms. Ryan had any other additional questions that  
12 they reserved, unless we answered them  
13 sufficiently, then we weren't planning on calling  
14 another witness.

15 MR. RAO: I think there were two --

16 HEARING OFFICER HALLORAN: Two  
17 deferred. One. I have it marked here.

18 MR. WELGS: There was a question on  
19 the specification sheet.

20 HEARING OFFICER HALLORAN:  
21 Mr. Racette?

22 MR. LAVOIE: Racette.

23 HEARING OFFICER HALLORAN: And then  
24 there was another one.

1 MR. LAVOIE: So we'll ask  
2 Mr. Racette to come up.

3 HEARING OFFICER HALLORAN: Great.  
4 Raise your right hand and Mr. Brickey will swear  
5 you in.

6 WHEREUPON:

7 TIMOTHY RACETTE  
8 called as a witness herein, having been first duly  
9 sworn, deposeth and saith as follows:

10 HEARING OFFICER HALLORAN: Any  
11 direct, Mr. Lavoie?

12 MR. LAVOIE: No direct.

13 HEARING OFFICER HALLORAN: Ms. Ryan,  
14 did you have --

15 MS. RYAN: My reserved question was  
16 related to the chart that's on page 18 of the  
17 responses to the Board's questions, I guess, and  
18 also 19, it continues into 19, which is for  
19 cadmium you have listed here less than 1 to 5 and  
20 for lead on page 19 you have less than 5 to 50 and  
21 my initial question was whether that is a range or  
22 whether that is basically a less than 50 for lead?

23 MR. RACETTE: It's the latter. I'm  
24 not sure because the copy I have doesn't have that

1 so it should be just less than.

2 MR. LAVOIE: Well, it does. I  
3 scratched it out as we were talking.

4 MR. RACETTE: I'm working from a  
5 different copy.

6 MS. RYAN: So your proposal then for  
7 cadmium is 1 to 5?

8 MR. RACETTE: Less than 5.

9 MS. RYAN: Okay. Just less than 5.  
10 So you're crossing out the 1 then?

11 MR. RACETTE: Right.

12 MS. RYAN: And you're aware that the  
13 characteristic hazardous waste limit for cadmium  
14 for DLL 06 is 1 rather than 5?

15 MR. RACETTE: Yes.

16 MS. RYAN: And my understanding from  
17 Mr. Welgs' testimony was that the reason that is 5  
18 is because that is what is expected to be found  
19 naturally occurring with copper?

20 MR. RACETTE: Yes.

21 MS. RYAN: And, likewise, for lead  
22 the characteristic hazardous waste limit is 5 and  
23 you're changing that to less than 50 from the  
24 same --

1 MR. RACETTE: Less than 50.

2 MS. RYAN: That was my question.

3 Thank you.

4 HEARING OFFICER HALLORAN: Thank  
5 you, Ms. Ryan. Any questions?

6 MS. LIU: Mr. Racette, you're the  
7 person we were going to ask about the difference  
8 between bills of lading and hazardous or solid  
9 waste manifests --

10 MR. RACETTE: Yes.

11 MS. LIU: -- or is that someone  
12 else?

13 MR. RACETTE: I was the person  
14 identified. I'm not prepared to answer that  
15 today.

16 MS. LIU: You're welcome to respond  
17 in post-hearing comments, I believe, if you'd like  
18 some time to research the question and get back to  
19 us.

20 MR. RACETTE: Yes, I'd like to do  
21 that.

22 MS. LIU: There was another question  
23 we had about lead in the circuit board  
24 manufacturing process and I believe someone

1 identified someone as an expert.

2 MR. RACETTE: We're going to talk to  
3 a --

4 MS. LIU: Was that you or someone  
5 else?

6 MR. RACETTE: No, that was one of  
7 the people that actually runs one of those  
8 operations.

9 HEARING OFFICER HALLORAN: With that  
10 said --

11 MS. LIU: Thank you.

12 HEARING OFFICER HALLORAN: -- you  
13 may step down. So we can just wrap this up. One  
14 more witness who was going to answer that last  
15 question, please.

16 MR. LAVOIE: Marty?

17 MR. WELGS: Marty, we talked about  
18 the process.

19 THE AUDIENCE: I think it would be  
20 better to have the customer. Rajani is the  
21 engineer.

22

23

24

1 WHEREUPON:

2 RAJANI PATEL

3 called as a witness herein, having been first duly  
4 sworn, deposeth and saith as follows:

5 HEARING OFFICER HALLORAN: And your  
6 name and spell it, please.

7 MR. PATEL: Name is Rajani,  
8 R-A-J-A-N-I. Last name is P-A-T-E-L.

9 HEARING OFFICER HALLORAN: Thank  
10 you, sir.

11 MS. LIU: Mr. Patel, when Mr. Welgs  
12 was talking earlier this morning, he mentioned  
13 that most of the potential suppliers that APEX is  
14 considering are discontinuing or have already  
15 discontinued the use of lead in the circuit board  
16 manufacturing process.

17 Could you describe what the lead  
18 is used for?

19 MR. PATEL: Sure. In the olden  
20 days, the way the process work is we selectively  
21 mask the circuit that we want to create or leave  
22 it on the board and in order to protect the copper  
23 on that trace in the etchant process people used  
24 to use tin lead as a plating resist, etchant

1 resist. So what happened is when the board go  
2 through the process it will not attack the copper  
3 underneath the tin lead. Okay?

4                   Nowadays because of all these  
5 things everybody use as tin as etchant resist, not  
6 tin lead. So there wouldn't be any traces of lead  
7 coming into the contact in the etchant process.  
8 Every one of the shops nowadays use tin plating as  
9 etchant resist.

10                   MS. LIU: What metals are used to  
11 make up tin?

12                   MR. PATEL: Tin is just like a  
13 regular copper, copper plating. It's a plating  
14 process. What it does is they have a tin  
15 solution. With electrification it will place the  
16 tin on the -- on the copper where we want it to  
17 mask for the etchant and after 20 minutes of  
18 plating in it and it's a sulfuric acid base  
19 solution with the tin in it and they're anodes on  
20 it --

21                   THE COURT REPORTER: Tin?

22                   MR. PATEL: Not tin lead. Not  
23 anymore. It's a pure tin anodes.

24                   MS. LIU: Anodes, A-N-O-D-E-S.

1 MR. PATEL: So with electrification  
2 when you power the tank with the plating -- plates  
3 in it, it will dissolve the pure tin into the tin  
4 ion and the tin ion from the solution will plate  
5 onto the board. It is like same as the copper  
6 plating process. In the copper, copper would be  
7 anode and it would dissolve the copper ion and it  
8 will plate it onto the copper, on the boards.  
9 It's the same process.

10 Before, they were using the same  
11 thing, but they were using tin lead as a plating  
12 process and they were using solder as anode, tin  
13 layer anode to replenish the solution.

14 MS. LIU: Is tin an element or is it  
15 made up of metals together?

16 MR. PATEL: No, tin is regular --  
17 regular metal like copper. It's just like you buy  
18 off the shelf. It's a comax. You can buy  
19 whatever size and chips. People use it in a  
20 basket as chips. Some people use a solid slab as  
21 anode.

22 MS. LIU: Would you be able to  
23 identify potential suppliers that lead existed in  
24 their process still through the testing that you

1 proposed to do when they become initial customers?

2 MR. PATEL: No. Our process really  
3 does not involve any of the metal. The way the  
4 process work, etchant is work, is it's controlled  
5 by the automatic -- the mounting controller. So  
6 there is a set point for the copper to be in the  
7 solution when we etch. So when the copper goes  
8 above that, automatically feed the fresh and when  
9 you're etching into the tank and it's like a  
10 constant process. If I -- it's not a manual  
11 process. If I do manual, then I will not able to  
12 etch it when the copper goes too high and I will  
13 be making scrap. So it's a consistent process  
14 that is feed and bleed and the pH is controlled at  
15 7.2. So the fresh etchant comes at 9 pH and then  
16 when it fills into the sump when the pH goes above  
17 -- below 7.2 it automatically replenishes the  
18 placed chemical for continuous etching. So two  
19 controller on it.

20 MR. LAVOIE: Ms. Liu, if I can just  
21 clarify, and we should have clarified this at the  
22 beginning, Mr. Patel is a potential customer of  
23 APEX and just for the record, Mr. Patel, could you  
24 let us know what the name of your company is.

1 MR. PATEL: Delta Precision.

2 MR. LAVOIE: Delta Precision.

3 MR. PATEL: In Elk Grove, Illinois.

4 I've been a process engineer and I've been in this  
5 industry for 25 years and most of the process once  
6 you set it up they don't change. So, basically,  
7 raw material that we etch is a plated -- tin  
8 plated copper that goes through the etching and  
9 generally the circuit and the laminate we buy is a  
10 copper plate laminate therefore in the metal.

11 MS. LIU: The constant process that  
12 you described where the fresh etchant resupplies  
13 the etchant solution, what method do you determine  
14 when another solution is too saturated to use  
15 anymore? Is it through pH or is it through  
16 conductivity testing or --

17 MR. PATEL: We have two things on  
18 the pH. Once a pH go below, we worry on the  
19 etching problem because it's not going to etch and  
20 we're going to create scrap. So the pH is  
21 controlled and then we do with the lab analysis,  
22 the pH, where the pH is and a feed and bleed is  
23 based on the Baume. So we have the hydrometer  
24 that is set at 20 -- no. On a normal solution at

1 whatever the 20, 22 Baume is, so we set the  
2 solution at 22 Baume and then when it goes up the  
3 sensor kicks in and it comes up trace amounts from  
4 the drum or a tank, wherever it's coming from, on  
5 the process and it automatically feeds it into the  
6 sump.

7 MS. LIU: When you say 20 to 22 --  
8 what was the word that followed?

9 MR. PATEL: It's a specific gravity  
10 that they call Baume or, you know, Baume is the  
11 known word, but -- what is the specific? 1.7  
12 something?

13 THE AUDIENCE: 1.20.

14 MR. PATEL: 1.20.

15 THE AUDIENCE: Baume.

16 MR. PATEL: So there is a controller  
17 that you can set it up at 1.20. It's a direct  
18 correlation of Baume for specific gravity.

19 MR. RAO: How do you spell that  
20 unit --

21 MR. PATEL: Baume?

22 MR. RAO: -- for the court reporter?

23 MR. PATEL: It is BE with a dash on  
24 it.

1 THE AUDIENCE: B-A-U-M-E with --

2 MR. PATEL: But normally in the  
3 scientific term --

4 HEARING OFFICER HALLORAN: Hold on.  
5 We can't have anybody talk from the back. We have  
6 a court reporter. He's having a hard time and I  
7 can't blame him.

8 MR. PATEL: It's B-A-U-M-E and like  
9 in a chemical compound it's BE. Just like tin  
10 is -- like copper is Cu.

11 MS. LIU: Do you use a type of an  
12 instrument to measure that?

13 MR. PATEL: Yeah, we have the  
14 controller that we set it up on the machine and  
15 then we also have the cylinder and hydrometer that  
16 you put it in the lab and it shows you the Baume.

17 MS. LIU: The hydrometer?

18 MR. PATEL: Yes.

19 MS. LIU: Thank you. I wish I could  
20 see it.

21 MR. PATEL: That's fine. I know you  
22 guys aren't involved. We involved day-to-day so  
23 obviously we know. That's why all these elements  
24 that's -- it's not in our process. Again, like

1 copper coil we buy or laminate we buy they may  
2 have traces of those that they come into the  
3 etchant solution, but normally APEX will not get  
4 way low on the copper because we control feed and  
5 bleed and etchant process.

6 In order to maintain our  
7 quality, we have to control that. Otherwise, we'd  
8 be over that, under that, and it would be scrap.  
9 So they normally get within the range that we are  
10 setting up on that. On that normal day, they will  
11 get very close to that copper what we set it at.

12 MS. LIU: Thank you.

13 HEARING OFFICER HALLORAN: Any  
14 further questions of APEX's potential customer,  
15 Mr. Patel?

16 MR. LAVOIE: I just had one  
17 question. Is there any reason that there would be  
18 any outliers of any other hazardous constituents  
19 within the CAC material that you would potentially  
20 be sending to APEX?

21 MR. PATEL: Not really. The way it  
22 works is we plate the traces that we want to keep  
23 it in mask of the tin. The other copper we want  
24 to etch it out is protected with drive resist. It

1 is organic resist. So in the plating it will not  
2 plate their copper because it's -- it's basically  
3 a photographic process. It's a photographic film,  
4 but it's in the other environment. It reacts with  
5 the UV. So whatever the circuit we wanted to  
6 produce is the one that's open.

7                   So they will -- and then when we  
8 go in the plating process only the circuits are  
9 plated with copper and tin and then we strip the  
10 photographic film out to open up the copper  
11 underneath that we need to remove in the etching.  
12 So basically we get the laminate, we clean it, we  
13 apply the dry film, take the picture of the  
14 circuit and we plate, double up and etch it and  
15 then we process further down, we tin strip and  
16 then we put it in the mask. So basically the  
17 direct contact of the thing is a laminate  
18 material, dry plating and a tin plating in the  
19 etchant process.

20                   MR. LAVOIE: So --

21                   MR. PATEL: So, again, other tin  
22 comes out. It could be -- like I say, it could  
23 have come from the copper foil or, you know,  
24 things like that and there won't be any chromium

1 or anything else, but I don't know if somebody has  
2 any samples.

3 MR. LAVOIE: So you wouldn't expect  
4 to see any PCBs or any solid material that might  
5 be hazardous or some other kind of hazardous  
6 constituent within it because the process is so  
7 controlled on your end?

8 MR. PATEL: Yeah. I mean, our raw  
9 material is strictly doesn't have anything except  
10 for the laminate with the copper foil laminated on  
11 it and those copper foils are produced by the  
12 copper manufacturer as ED plating. So what they  
13 do is they plate on a drum the copper plate to the  
14 thickness they want, one ounce or two ounce, and  
15 then they peel it off and then they send it to us  
16 and sometimes they make the material using that  
17 foil or if we make multilaminate material we reuse  
18 the foil, but we buy it from the manufacturer.

19 After that, nothing else go in  
20 there except those copper laminate, striping and a  
21 plating and an etching process. So I don't see  
22 anything that come up and, like you say, most  
23 of -- currently, we have our sample analyzed once  
24 a year. If there is a process change, then they

1 do it again, but normally it's so very consistent  
2 because we have to keep the chemistry on a  
3 consistent basis in order to make good quality.  
4 Otherwise, we would have nothing but scrap, either  
5 under it or over it. So it has to control at the  
6 pH, at the Baume, and speed and temperature.

7 MS. LIU: Is your process typical of  
8 other circuit board manufacturers?

9 MR. PATEL: It's the same process  
10 for everybody. It is a computerized machine  
11 basically that has a sump with an ammonia  
12 solution. You feed the panel, it sprays it on  
13 that, it comes out, it goes to the double, triple  
14 range, water rinse out the waste treatment system  
15 and then it dries it out.

16 So it's like you feed it on one  
17 side and it will come out another side and if you  
18 don't control that we will not be able to make any  
19 product because it is going to be underetch or  
20 overetch. So it has to be maintained within those  
21 specs.

22 MR. RAO: Mr. Patel, currently the  
23 spent etchant that you generate you're sending it  
24 to APEX's competitor or what do you do?

1 MR. PATEL: We are sending it to  
2 Micronutrients because we are buying the raw  
3 material, the ammonium etchant from them, use it,  
4 and then we add more copper into it and when the  
5 copper is saturated we -- we take it back into the  
6 sump. So it's -- again, that is also automatic  
7 for us. When my label goes in my sump, but by  
8 filling it it automatically pumps it out into the  
9 drum and once the drum is full, we label it and  
10 then we call Micronutrients that we have ten drums  
11 to pick up. So what they do is when they bring a  
12 replace etchant to us they will pick it up those  
13 other ones and we --

14 MR. RAO: So they come and pick it  
15 up --

16 MR. PATEL: Yes.

17 MR. RAO: -- from your facility and  
18 it's done through bills of lading?

19 MR. PATEL: Yes, bill of lading and  
20 then they take it and they recover and I heard  
21 that they make chicken feed, but, you know -- so  
22 basically they are using it as a raw material.

23 You know, our byproduct is their  
24 raw material basically and the same thing with

1 etchant, but that's another different things.

2 MR. RAO: Thank you.

3 MS. LIU: Thank you very much.

4 MR. PATEL: Thank you.

5 HEARING OFFICER HALLORAN: Any  
6 further questions?

7 MR. LAVOIE: No further questions.

8 HEARING OFFICER HALLORAN: You may  
9 step down. Thank you, Mr. Patel. When we come  
10 back -- I think I want to take a 10, 12-minute  
11 break. When we come back, I think we're going to  
12 get into the trade secret claim questions. With  
13 that, I would like only APEX to be present.  
14 Members of the public, potential customers and the  
15 Agency will just wait outside. I don't know how  
16 long it will take. Maybe 20 minutes. And then we  
17 can all come back in and talk about briefing  
18 schedules and closing arguments.

19 Keep in mind as you're kind of  
20 sitting around it looks like the transcript will  
21 be completed by January 19th. So you can key off  
22 that as far as the petitioner's brief and the  
23 Agency's brief and the reply. So thank you.

24

1 (Whereupon, a break was taken to  
2 go into a closed session  
3 involving trade secrets and the  
4 open portion was resumed and  
5 proceeds as follows.)

6 HEARING OFFICER HALLORAN: We're  
7 back on the record. We finished with the closed  
8 session subject to the trademark -- trade secret  
9 claim. We've been discussing post-hearing  
10 briefing schedules such as they may be. Anyway,  
11 APEX's post-hearing brief, and they do have some  
12 follow-up questions they will be filing with the  
13 Board, that is due February 2nd. The Agency's  
14 post-hearing brief, if any, is due February 17th.  
15 APEX's reply, if any, is due February 24th.  
16 Public comment is due on or before January 29th.  
17 And we think that's it. But we want to go into  
18 closing arguments. Mr. Lavoie, would you like to  
19 do a closing?

20 MR. LAVOIE: I'll waive closing  
21 argument.

22 HEARING OFFICER HALLORAN: Ms. Ryan?

23 MS. RYAN: I'll reserve mine for the  
24 brief. Thanks.

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HEARING OFFICER HALLORAN: Any other questions? I thank you all for your civility and professionalism and thanks for making it on this brutally cold day and, Mr. Lavoie, I hope you have a good flight back to New York. Safe travels, everyone.

MR. LAVOIE: Thank you very much. Thank you, everyone.

1 STATE OF ILLINOIS )  
 2 ) SS.  
 3 COUNTY OF COOK )  
 4

5 I, Steven Brickey, Certified Shorthand  
 6 Reporter, do hereby certify that I reported in  
 7 shorthand the proceedings had at the trial  
 8 aforesaid, and that the foregoing is a true,  
 9 complete and correct transcript of the proceedings  
 10 of said trial as appears from my stenographic  
 11 notes so taken and transcribed under my personal  
 12 direction.

13 Witness my official signature in and for  
 14 Cook County, Illinois, on this \_\_\_\_\_ day of  
 15 \_\_\_\_\_, A.D., 2015.

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