

1 UNITED STATES DISTRICT COURT  
2 FOR THE DISTRICT OF DELAWARE  
3 CIV. No. 1:19-cv-01334-CJB

4 - - - - -x

5 MIDWEST ENERGY EMISSIONS CORP.

6 and MES INC.,

7 Plaintiffs,

8 v.

9 ARTHUR J. GALLAGHER & CO., ET AL.,

10 Defendants.

11 - - - - -x

12 [Redacted]

13 August 26, 2022

14 9:34 a.m.

15  
16 DEPOSITION of EDWIN OLSON, Ph.D., in  
17 the above-entitled action, located at  
18 Country Inn & Suites in Grand Forest,  
19 North Dakota, was taken before Dawn  
20 Matera, a Certified Shorthand Reporter  
21 and Notary Public of the State of New  
22 York.

23  
24 \* \* \*  
25

Page 2

1 APPEARANCES:  
2  
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4 Attorneys for Plaintiffs  
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29  
30 Also Present:  
31 Jeffrey D. Anders, Videographer  
32 James Budkins, Concierge  
33  
34 \* \* \*  
35

Page 4

1 me is Wendy Cai.  
2 MR. WILSON: Ben Wilson, here  
3 for the CERT defendants.  
4 MS. DELLINGER: Adrienne  
5 Dellinger, I am here on behalf of  
6 Dr. Olson.  
7 EDWIN OLSON, P h. D.,  
8 the Witness herein, having first  
9 been duly sworn by the Notary  
10 Public, was examined and  
11 testified as follows:  
12 EXAMINATION  
13 BY MR. GLANDORF:  
14 Q. Good morning, Dr. Olson.  
15 A. Good morning.  
16 Q. I am going to start with a few  
17 introductory questions, if that's okay  
18 with you.  
19 A. Yeah.  
20 Q. Could you once more state and  
21 spell your full name for the record,  
22 please?  
23 A. Edwin Olson. You want me to  
24 spell it?  
25 Q. Yes, please.

Page 3

1 THE VIDEOGRAPHER: We are now on  
2 the record. This is the video  
3 recording of the deposition of  
4 Dr. Edwin Olson taken by the  
5 defendants' attorneys in the matter of  
6 Midwest Energy Emissions Corporation  
7 and MES Incorporated versus Arthur J.  
8 Gallagher & Company in the United  
9 States District Court for the District  
10 of Delaware. The Civil File Number is  
11 119-CV-01334.  
12 We are located at the Country  
13 Inn & Suites in Grand Forest, North  
14 Dakota. Today's date is August 26th,  
15 2022. The time is 8:34 a.m.  
16 The court reporter today is Dawn  
17 Matera. My name is Jeffrey D. Anders,  
18 I am the videographer here  
19 representing Veritext.  
20 Will counsel for the respective  
21 parties please identify yourselves,  
22 starting with the noticing attorney.  
23 MR. GLANDORF: My name is David  
24 Glandorf. I am here for Gibson Dunn,  
25 on behalf of the defendants, and with

Page 5

1 A. E-D-W-I-N, O-L-S-O-N.  
2 Q. Thank you. Yes, that's a  
3 little bit of a convention that we  
4 traditionally do here.  
5 And where is your current  
6 address?  
7 A. It's in Grand Forks North  
8 Dakota.  
9 Q. Can you give us the address?  
10 A. Yes. 223 Circle Hills Drive,  
11 Grand Forks, North Dakota, 58201.  
12 Q. Excellent. Have you ever been  
13 deposed previously, Dr. Olson?  
14 A. No.  
15 Q. Okay. Well, I am going to lay  
16 out a little bit of the expectations and  
17 feel free to ask me any questions about  
18 these.  
19 As I mentioned before, I  
20 represent the defendants in this lawsuit  
21 and so I am here to ask questions of you.  
22 You understand that?  
23 A. Yes.  
24 Q. This is our opportunity as  
25 defendants to ask you questions. Your

<p style="text-align: right;">Page 6</p> <p>1 attorney may object at some points, but  2 unless your attorney instructs you not to  3 answer, you should go ahead and answer  4 the question anyway.  5 Do you understand that?  6 A. Yes.  7 Q. Again, your attorney is very  8 capable. She will instruct you not to  9 answer if it's a question that should not  10 be answered.  11 Do you understand that?  12 A. Yes.  13 Q. The court reporter will record  14 my questions and your answers and the  15 videographer will film you. Since the  16 court reporter only records words, it is  17 important for you to answer in words  18 rather than gestures or nods. Is that  19 okay?  20 A. Yes.  21 Q. And I will do my best to let  22 you finish answering a question. And I  23 ask that you let me finish asking a  24 question before you provide your answer;  25 is that okay?</p>	<p style="text-align: right;">Page 8</p> <p>1 external factor that would prevent you  2 from answering truthfully today; is that  3 correct?  4 A. No.  5 Q. We will be taking periodic  6 breaks. If at any time you feel like you  7 need a break, you can just say so to me;  8 if that's okay.  9 Again, I know this is a minor  10 question, but you do want to answer  11 either yes or no verbally.  12 A. Yes.  13 Q. Do you plan to offer testimony  14 at trial?  15 A. I don't understand your  16 question.  17 Q. Sure. You understand we have a  18 litigation that is going on here that may  19 proceed to an in-person trial. Are you  20 planning to offer testimony at that  21 trial?  22 A. No.  23 Q. Are you being paid for your  24 deposition today?  25 A. No.</p>
<p style="text-align: right;">Page 7</p> <p>1 A. Yes.  2 Q. It can be easy in this format  3 to speak over one another, but we will  4 try to avoid that.  5 If at any time you do not  6 understand a question, please ask and I  7 will do my best my clarify. Is that  8 okay?  9 A. Yes.  10 Q. You are under oath today. Do  11 you understand that?  12 A. Yes.  13 Q. And so you are obligated to  14 provide true and accurate and complete  15 answers to the best of your ability.  16 Do you understand that?  17 A. Yes.  18 Q. Is there any reason why you  19 would not be able to provide truthful and  20 accurate answers today?  21 A. No.  22 Q. And just so, you know, some of  23 the things we ask, generally, you're not  24 on any medications or suffering from any  25 kind of illness or any kind of other</p>	<p style="text-align: right;">Page 9</p> <p>1 Q. Are you set to receive any type  2 of payment based on the outcome of this  3 case?  4 A. No.  5 Q. If there is a settlement or an  6 award in this case, do you expect to get  7 any portion of that?  8 A. No.  9 Q. To start things off, I would  10 like to hear from you a little bit about  11 your background. We will march through a  12 little bit of your educational employment  13 background. So let me start just by  14 asking you where you went to college and  15 what did you study?  16 A. Yes. I went to undergraduate  17 college at St. Olaf College, Northfield,  18 Minnesota. I got a bachelor's of arts  19 degree in 1959. Then subsequently I went  20 to graduate school at the California  21 Institute of Technology, Caltech. And I  22 received a Ph.D. in chemistry and  23 physics, and that was about 1963 -- 1963.  24 Q. And what was your major or your  25 undergraduate degree?</p>

3 (Pages 6 - 9)

<p style="text-align: right;">Page 10</p> <p>1 A. Chemistry and physics.  2 Q. For your Caltech Ph.D., what  3 was the subject of your thesis?  4 A. It was in the general field of  5 organic chemistry and more specifically  6 it had to do with natural products and  7 actually three different types of topics  8 were included in my thesis.  9 Q. Could you just explain at a  10 high level what those three topics were?  11 A. Okay. Sure. The first topic  12 was to determine the chemical structure  13 of a pigment that was produced by a  14 bacterin.  15 The second project was to  16 discover a way to take apart a stearyl  17 molecule, a stearyl being like a plant  18 steroid to open up. It typically has a  19 four or five-ring structures. So the  20 problem was to find a way to open up one  21 of the rings of the structure, so that it  22 could be subsequently analyzed or  23 converted into something else.  24 The third portion of my work  25 was concerned with a biosynthesis of</p>	<p style="text-align: right;">Page 12</p> <p>1 A. I went to Idaho State  2 University, as assistant professor of  3 chemistry.  4 Q. How long were you at Idaho  5 State?  6 A. Four years.  7 Q. And were you teaching organic  8 chemistry?  9 A. I taught organic chemistry,  10 yes.  11 Q. Did you teach general chemistry  12 as well?  13 A. Yes.  14 Q. Inorganic chemistry?  15 A. No.  16 Q. Physical chemistry?  17 A. No.  18 Q. Did you have a research group  19 at Idaho State?  20 A. Yes.  21 Q. And what, at a high level, what  22 types of topics was, what were the  23 subjects of that research?  24 A. Well, there were, over the four  25 years, there were maybe a couple of</p>
<p style="text-align: right;">Page 11</p> <p>1 strychnine. So what that means I was  2 trying to learn, trying to understand all  3 of the strychnos nux-vomica plant  4 produces the alkaloid molecule  5 strychnine. What were the precursors of  6 it. What did it use to make the  7 molecule. And I would put them together  8 to form a structure.  9 Q. And where did you begin  10 employment after graduating?  11 A. Oh, after I graduated with my  12 Ph.D.?  13 Q. Yes.  14 A. I went to UCLA to the  15 department of biological chemistry and  16 worked in the institute for radiological  17 chemistry and I studied fatty acid  18 chemistry.  19 Q. Was that a post-doc?  20 A. Yes, post-doc. Yes.  21 Q. And how long were you at that  22 position?  23 A. One year.  24 Q. And where did you go after  25 that?</p>	<p style="text-align: right;">Page 13</p> <p>1 different areas. One of the areas was to  2 find a way to synthesize a substituted  3 amino acid that might be useful as a  4 cancer drug.  5 Q. Okay. Is there another topic  6 that you researched as well or was that  7 the primary one?  8 A. I worked on maybe one or two  9 other things. I did do some work with  10 fatty acid chemistry and some nitrogen  11 heterocyclic chemistry.  12 Q. And you understand that the  13 litigation we are here for today relates  14 to mercury capture from power plants,  15 correct?  16 A. Yes.  17 Q. Was any of the work that you  18 did during your post-doc related to that  19 topic?  20 A. No.  21 Q. And where did you go after that  22 post-doc position?  23 A. Well, I just told you after my  24 post-doc position I went to Idaho State  25 University.</p>

4 (Pages 10 - 13)

Page 14

1 Q. I apologize, I am sorry, you're  
2 right. Where did you go after Idaho  
3 State?  
4 A. I went to South Dakota State  
5 University.  
6 Q. And what was your position  
7 there?  
8 A. It was assistant professor,  
9 associate professor and a full professor  
10 of chemistry.  
11 Q. Did you teach the same types of  
12 classes that you taught at Idaho State?  
13 A. Yes --  
14 Q. Okay.  
15 A. -- plus additional graduate  
16 classes.  
17 Q. And what were the topics of  
18 those graduate classes?  
19 A. They were in inorganic  
20 chemistry. One was polymer chemistry.  
21 One was heterocyclic chemistry.  
22 Biochemistry.  
23 Q. And did you have a research  
24 group at that university?  
25 A. Yes.

Page 15

1 Q. And what topics was your  
2 research group studying?  
3 A. Generally, synthesis of  
4 potential cancer drugs, amino acid type  
5 molecules.  
6 Q. Okay.  
7 A. Most of it was in that area.  
8 Some of it was maybe a little bit more  
9 organic chemical manipulations, to try to  
10 make a certain type of molecule. So it  
11 was just conducting a series of reactions  
12 that were designed to make a certain type  
13 of molecule.  
14 Q. So most of the focus was on  
15 organic chemistry and biochemistry; is  
16 that fair?  
17 A. That's correct.  
18 Q. And what year did you leave San  
19 Diego State -- sorry, scratch that. Let  
20 me try that again.  
21 What year did you leave South  
22 Dakota State?  
23 A. 1980.  
24 Q. And where did you go at that  
25 time?

Page 16

1 A. I went to Grand Forks North  
2 Dakota and started working at the United  
3 States Bureau of Mines laboratory in  
4 1980.  
5 MR. GLANDORF: Let's go ahead,  
6 actually and take a moment and  
7 introduce our first exhibit. It will  
8 be Exhibit 1 here.  
9 (Olson Exhibit 1, a curriculum  
10 vitae of Dr. Edwin Olson prepared in  
11 2012 was so marked for identification,  
12 as of this date.)  
13 Q. Dr. Olson and Adrienne, are you  
14 able to access the Marked Exhibits  
15 folder?  
16 MS. DELLINGER: Yes.  
17 Q. Dr. Olson, you should have the  
18 ability to scroll up and down and view  
19 these documents.  
20 Dr. Olson, I will point out, in  
21 the lower right corner of the exhibit, do  
22 you see first of all what's a virtual  
23 sticker that says Exhibit 0001; do you  
24 see that?  
25 A. Yes.

Page 17

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5 (Pages 14 - 17)

Page 54  
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15 [REDACTED]  
16 [REDACTED]  
17 [REDACTED]  
18 [REDACTED]  
19 [REDACTED]  
20 [REDACTED]  
21 [REDACTED]  
22 [REDACTED]  
23 [REDACTED]  
24 [REDACTED]  
25 [REDACTED]

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1 Q. And then you mentioned that you  
2 had -- I am sorry, had you met Constance  
3 Senior?  
4 A. Oh, yes, yes.  
5 Q. Do you find Ms. Senior to be a  
6 reliable scientist?  
7 A. Dr. Senior is a reliable  
8 scientist, yes.  
9 Q. Well, I want to introduce this  
10 document -- just to let you know, I want  
11 to introduce this document just to make  
12 sure we are on the same page, you and I,  
13 on some of the terminology here.  
14 A. Okay.  
15 Q. If you disagree with any of the  
16 terminology, let's just make sure we are  
17 on the same page. So let's go to the  
18 page ending in 40336, that's that number  
19 stamped in the bottom right. Let me know  
20 when you have this page.  
21 A. Yes.  
22 Q. I would direct you to read, you  
23 can read to yourself here, the paragraph  
24 at the top that starts with "Much  
25 fundamental work"?

Page 55  
1 A. All right.  
2 Q. And do you see this is titled,  
3 "Boiler Mercury Control: A Holistic  
4 Approach"?  
5 A. I do.  
6 Q. Do you recognize the authors of  
7 this paper, these names?  
8 A. Two of them.  
9 Q. Which one do you recognize?  
10 A. Constance Senior and Sharon  
11 Sjostrom.  
12 Q. And have you interacted with  
13 Ms. Sjostrom?  
14 A. What do you mean by interacted?  
15 Q. Have you met her?  
16 A. Yes, I've met Sharon Sjostrom.  
17 Q. Have you collaborated on any  
18 research with her?  
19 A. Yes.  
20 Q. Do you find her to be a  
21 trustworthy scientist?  
22 A. Sorry, can you repeat that?  
23 Q. Do you find her to be a  
24 trustworthy scientist?  
25 A. Yes, as far as I know.

Page 57  
1 [REDACTED]  
2 [REDACTED]  
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4 [REDACTED]  
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6 [REDACTED]  
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19 [REDACTED]  
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22 [REDACTED]  
23 [REDACTED]  
24 [REDACTED]  
25 [REDACTED]

<p style="text-align: right;">Page 66</p> <p>1 1; is that fair?  2 A. Yes.  3 Q. There is an element of Claim 1  4 that is referred to as the  5 bromine-containing promoter, correct?  6 A. Yes.  7 Q. In the example shown here in  8 Figure 2, what is the bromine-containing  9 promoter?  10 A. HBr.  11 Q. And also, is there an activated  12 carbon sorbent shown in Figure 2?  13 A. It's represented by the part of  14 the figure that says "carbon basic  15 zig-zag site." That would be part of the  16 activated carbon.  17 Q. I see. And again if we go back  18 to Claim 1 of the '147 patent, it refers  19 to a promoted brominated sorbent; do you  20 see that?  21 A. Sorry, I am on the wrong thing.  22 I have to go back to Exhibit 2?  23 Q. Yes. Let me point you to a  24 particular part of Claim 1 here, and then  25 we'll go back to the drawing and try to</p>	<p style="text-align: right;">Page 68</p> <p>1 there needs to be a chemical reaction  2 between the HBr and the unpromoted  3 sorbent, which I marked as 2, to form the  4 promoted brominated sorbent, which I  5 marked as 3; do I have that right?  6 A. That's correct. 2 represents  7 the edge structure of the activated  8 carbon.  9 Q. What do you mean by "the edge  10 structure"?  11 A. Well, the structure of the  12 activated carbon, in this case, is a,  13 what's referred to as a graphene sheet or  14 ribbon where you have a lot of these  15 structures that are adjacent to each  16 other in a chicken-wire type arrangement.  17 And the edge of that ribbon or sheet,  18 part of the edge of it would look like  19 that.  20 Q. And this description of  21 activated carbon, was this something that  22 you yourself discovered?  23 A. No.  24 Q. It was known from other  25 researchers, correct?</p>
<p style="text-align: right;">Page 67</p> <p>1 find that.  2 So if you look at claim 1(a)  3 and kind of the first clause in that  4 where it says "Promoting at least a  5 portion of a particulate sorbent material  6 comprising activated carbon, by  7 chemically reacting the sorbent material  8 with a bromine-containing promoter to  9 form a promoted brominated sorbent."  10 A. Yes.  11 Q. Okay. So let's go back now to  12 claim, to Figure 2, which is Exhibit 8.  13 A. All right.  14 Q. The bromine-containing promoter  15 here is HBr, correct?  16 A. Yes.  17 Q. And is what I marked as Figure  18 2, a representation of the unpromoted  19 sorbent?  20 A. Yes.  21 Q. And is what I marked as figure  22 3, a representation of a promoted  23 brominated sorbent?  24 A. Yes.  25 Q. So according to the claim,</p>	<p style="text-align: right;">Page 69</p> <p>1 A. Yes.  2 Q. It was known from other  3 researchers at the time the provisional  4 was filed, which if you recall was a  5 August 2004?  6 A. Yes, and yes it would be known  7 because it was published several years  8 earlier. In fact, well known.  9 Q. And now what's going on, if we,  10 as we move from what I marked as number 3  11 to number 4 on Exhibit 8?  12 A. I am sorry, what is going on?  13 Q. Yes, what is the change from  14 step 3 to step 4 of Exhibit 8?  15 A. Yes. That represents the  16 oxidation of the mercury which forms new  17 bonds to the mercury, one to the carbon  18 and one to the bromine.  19 Q. And then what is happening from  20 step 4 to step 5, or species 4 to species  21 5 in Figure 2?  22 A. Well, what we know is that the  23 primary oxidant in the reaction of  24 mercury on the carbon surface, the  25 primary oxidant, the one that is actually</p>

Page 78

1 [REDACTED]  
2 [REDACTED]  
3 [REDACTED]  
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Page 79

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20 [REDACTED]  
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23 [REDACTED]  
24 [REDACTED]  
25 [REDACTED]

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1 Q. Let's go back to the claim  
2 language. Let's go back to Claim 1. So  
3 if you're in Exhibit 2 of Claim 1.  
4 Yeah, let's go down to the  
5 claim at the end. So go ahead and read  
6 through Claim 1, and I will ask my  
7 question now and I will ask it at the end  
8 after reading it, if you prefer, as well.  
9 Is it fair to say that Claim 1  
10 covers a heterogeneous oxidation of  
11 mercury by a bromine species, but not a  
12 homogenous oxidation of mercury by a  
13 bromine species?  
14 MS. DELLINGER: I'll object  
15 again. Calls for a legal conclusion.  
16 You may answer.  
17 A. The claim does not say it has  
18 to be heterogeneous.  
19 Q. It doesn't use that word. But  
20 going by our understanding of those  
21 terms, heterogeneous and homogenous, and  
22 the pathway described here, I am going to  
23 ask the question again: Is it fair to  
24 say that Claim 1 covers a heterogeneous  
25 oxidation of mercury by a bromine species

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1 but not a homogenous oxidation of mercury  
2 by a bromine species?  
3 MS. DELLINGER: Same objection.  
4 A. I would say that it could, it  
5 could involve a homogenous reaction that  
6 we haven't thought about yet.  
7 Q. So Claim 1 could cover the  
8 homogenous oxidation of mercury by a  
9 bromine species; is that your testimony?  
10 A. Sure.  
11 Q. There is an indication in here  
12 that you formed a promoted brominated  
13 sorbent by chemically reacting the  
14 sorbent material with the  
15 bromine-containing promoter; is that  
16 right?  
17 A. Yes, that would be a chemical  
18 reaction, yeah.  
19 Q. Is it possible that -- well,  
20 let me pause here. Do you have an  
21 understanding of what species may or may  
22 not may qualify -- let me ask it again.  
23 Do you have an understanding of  
24 what bromine species would qualify as a  
25 bromine-containing promoter?

[REDACTED]

Page 82	Page 84
1 A. Well, I have a partial	1 [REDACTED]
2 understanding.	2 [REDACTED]
3 Q. Could HBr be a	3 [REDACTED]
4 bromine-containing promoter?	4 [REDACTED]
5 A. Yes.	5 [REDACTED]
6 Q. Could sodium bromide be a	6 [REDACTED]
7 bromine-containing promoter?	7 [REDACTED]
8 A. Not unless it is converted into	8 [REDACTED]
9 something else.	9 [REDACTED]
10 Q. Could calcium bromide be a	10 [REDACTED]
11 bromine-containing promoter?	11 [REDACTED]
12 A. Again, it would have to be	12 [REDACTED]
13 converted.	13 [REDACTED]
14 Q. Converted to something else?	14 [REDACTED]
15 A. Yes.	15 [REDACTED]
16 Q. Could Br <sub>2</sub> be a	16 [REDACTED]
17 bromine-containing promoter?	17 [REDACTED]
18 A. Yes.	18 [REDACTED]
19 Q. Could Br radical be a	19 [REDACTED]
20 bromine-containing promoter?	20 [REDACTED]
21 A. I don't know.	21 [REDACTED]
22 Q. Could Br <sup>-</sup> be a	22 [REDACTED]
23 bromine-containing promoter?	23 [REDACTED]
24 A. Br <sup>-</sup> ?	24 [REDACTED]
25 Q. Yes.	25 [REDACTED]

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1 A. No. Not unless it's converted	1 [REDACTED]
2 into something else.	2 [REDACTED]
3 Q. Could PBr <sub>3</sub> be a	3 [REDACTED]
4 bromine-containing promoter?	4 [REDACTED]
5 A. Yes.	5 [REDACTED]
6 Q. In fact, let me direct you to	6 [REDACTED]
7 claim 12; do you see claim 12?	7 [REDACTED]
8 A. Just a second.	8 [REDACTED]
9 Q. Actually, let me use a	9 [REDACTED]
10 different one. Let's look at claim 25,	10 [REDACTED]
11 if we could.	11 [REDACTED]
12 A. All right.	12 [REDACTED]
13 Q. Do you see that claim 25 refers	13 [REDACTED]
14 to a Group V or Group VI bromides?	14 [REDACTED]
15 A. Mmm-hmm.	15 [REDACTED]
16 Q. And PBr <sub>3</sub> is a Group V bromide,	16 [REDACTED]
17 I believe; is that right?	17 [REDACTED]
18 A. That's correct.	18 [REDACTED]
19 Q. So are Group V bromides	19 [REDACTED]
20 bromine-containing promoters?	20 [REDACTED]
21 A. Yes, or at least the one that	21 [REDACTED]
22 we tested was.	22 [REDACTED]
23 Q. And which one did you test?	23 [REDACTED]
24 A. PBr <sub>3</sub> .	24 [REDACTED]
25 Q. Are Group VI bromides	25 [REDACTED]

22 (Pages 82 - 85)

[REDACTED]

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	90 Page 92 [REDACTED] 23 Q. Claim 1 of the '114 patent 24 requires the addition of a bromine 25 species to the system, correct?
---	--

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	91 Page 93 1 A. No, not correct. 2 Q. Claim 1 doesn't require the 3 addition of a bromine species to the 4 system? 5 A. What it says is comprises a 6 halogen or halide promoter comprising HBr 7 Br- or a combination thereof. But I 8 don't think it's exclusive. 9 Q. Well, if the claim -- sorry, 10 let me start again here. 11 The claim requires the 12 introduction of Br <sub>2</sub> , HBr or Br- at least 13 one of those if not a combination, 14 correct? 15 A. At least one of those, okay. 16 Q. The claim also requires 17 injection of activated carbon downstream 18 of a combustion chamber, correct? 19 A. Yes. 20 Q. And the purpose of injecting 21 that activated carbon is to act as a 22 sorbent; is that right? 23 A. To act as an oxidant and 24 sorbent for mercury. 25 Q. And it requires that that
---	--

24 (Pages 90 - 93)

Page 94

1 injection occur downstream of the  
2 combustion chamber; is that right?  
3 A. The sorbent is injected  
4 downstream of the combustion chamber,  
5 yes.  
6 Q. Practically speaking, would you  
7 ever inject an activated carbon sorbent  
8 into the combustion chamber?  
9 A. I don't think so unless you  
10 were trying to dispose of it.  
11 Q. What would happen if you  
12 injected activated carbon into the  
13 combustion chamber?  
14 A. It would burn up most of it.  
15 Q. And is that true also if you  
16 were using pyrolysis char as the  
17 activated carbon?  
18 A. If you were using pyrolysis  
19 char as what?  
20 Q. Let me step back and ask the  
21 question more generally.  
22 If pyrolysis char was present  
23 in the combustion chamber, what would  
24 happen to that pyrolysis char?  
25 A. It would be a fuel. So it

Page 95

1 would burn.  
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Page 97

1 A. Yes.  
2 Q. Is there any language in this  
3 claim that requires the creation of a  
4 promoted brominated sorbent?  
5 A. It doesn't appear to use the  
6 word "promoted."  
7 Q. In fact, the step that  
8 specifies that the mercury contacts the  
9 sorbent simply says that there is contact  
10 between mercury and the sorbent, it does  
11 not refer to a promoted or a brominated  
12 sorbent, correct?  
13 A. It uses the term "activated  
14 carbon" for the sorbent, it specifies  
15 that the bromine is in the gas phase that  
16 is coming in contact with the activated  
17 carbon. It's there. It doesn't use the  
18 word -- it doesn't use the word "promoted  
19 activated carbon" being injected, because  
20 that's not usually the case. In other  
21 words, the promotion occurs during the  
22 contact with a gas phase. So you  
23 wouldn't call it -- at the point of  
24 injection before it's injected, you  
25 wouldn't call it promoted activated

Page 98

1 carbon.  
2 Q. But the question is by the time  
3 the mercury contacts it, is it required  
4 to be promoted activated carbon?  
5 A. It would be. It would be  
6 promoted because they are both together  
7 in the gas phase.  
8 Q. And to be clear, the claim  
9 language doesn't require that, correct?  
10 MS. DELLINGER: Objection.  
11 Calls for a legal conclusion.  
12 You may answer.  
13 A. Yeah, your question is  
14 confusing to me.  
15 Q. Well, I will go back and do it  
16 again here. There is no language in the  
17 claim that requires that the mercury come  
18 in contact with a promoted or a  
19 brominated sorbent?  
20 A. The word "promoted" is not  
21 used. However, its equivalent is  
22 described in the claim.  
23 Q. And that's based on your  
24 experience of what will happen if you  
25 have one of these bromine species in a

Page 99

1 gas stream with activated carbon; is that  
2 right?  
3 A. Yes.  
4 Q. Your experience is that there  
5 would be a promoted brominated sorbent  
6 formed, correct?  
7 A. Yes.  
8 Q. Is that true for any coal-fired  
9 power plant where you've added HBr to the  
10 combustion chamber, and you inject  
11 activated carbon downstream of the  
12 combustion chamber?  
13 A. I believe so.  
14 Q. And is it true -- let me start  
15 that again.  
16 Is it your testimony that a  
17 promoted brominated sorbent would be  
18 formed anytime you add Br- to the  
19 combustion chamber or upstream of the  
20 combustion chamber in combination with  
21 the injection of activated carbon  
22 downstream?  
23 A. Yes. If some composition of  
24 Br- any metal salt, for example, of Br-  
25 or a nonmetal compound of Br, if that's

Page 100

1 injected in the combustion chamber, it  
2 will form the promoted sorbent  
3 downstream.  
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 11 Q. At the time the provisional  
 12 patent was filed, so in August of 2004,  
 13 was activated carbonate carbon sorbent  
 14 used for mercury capture?  
 15 A. Yes. Well, there were some,  
 16 there were some groups at least  
 17 interested in doing that. But I am not  
 18 certain about how much of it was actually  
 19 going on at, you know, in the industry in  
 20 real power plants.  
 21 Q. As of 2004, is it fair to say  
 22 that activated carbon was the most  
 23 heavily studied sorbent for the capture  
 24 of mercury?  
 25 A. Yes.

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14 [REDACTED]

15 Q. Was the Br<sub>2</sub> ever introduced in

16 the system by applying it to the coal

17 before combustion in the examples of the

18 '147 patent?

19 A. Not that I know of.

20 Q. Was any bromine-containing

21 promoter introduced to the system by

22 applying it to the coal before combustion

23 in the examples of the '147 patent?

24 A. Well, not in the ones that we

25 looked at, anyway.

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25 [REDACTED]

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1 Q. Was any bromine-containing

2 promoter introduced in the system by

3 injecting it into the combustion zone in

4 the examples of the '147 patent?

5 A. Not in the examples that we

6 looked at previously.

7 Q. And there are no further

8 examples listed after Example 12,

9 correct?

10 A. There are none after 12.

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1 references describing the addition of  
 2 halides to the furnace?  
 3 A. I am aware of some other  
 4 references, but I don't know the dates.  
 5 Q. Can you give me an example of  
 6 one reference that you are thinking of?  
 7 A. There is a patent by Vosteen  
 8 which adds a halogen to the fuel, to the  
 9 furnace.  
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 24 Q. As of August of 2004, is it  
 25 true that there were already a number of

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 25 Q. Vosteen did disclose the

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1 addition of a bromine compound to the  
 2 furnace or the flue gas, correct?  
 3 A. Yes.  
 4 Q. Do you agree that the addition  
 5 of the bromine compound to the furnace or  
 6 the flue gas is an important part of your  
 7 invention?  
 8 A. Yes, but his addition of sulfur  
 9 is not.  
 10 Q. Your group at EERC was not the  
 11 first group to disclose the addition of a  
 12 bromine compound to the furnace or flue  
 13 gas, correct?  
 14 A. I am sorry, can you repeat  
 15 that?  
 16 Q. Your group at EERC was not the  
 17 first group to disclose the addition of a  
 18 bromine compound to the furnace or to the  
 19 flue gas, correct?  
 20 A. According to the dates on the  
 21 patent application, our disclosure came  
 22 after the publication of the Vosteen.  
 23 But the technologies are not identical.  
 24 They are quite different.  
 25 Q. You agree that EERC was not the



Page 146

1 first group to conceive of adding a  
 2 bromine compound to the furnace or to the  
 3 flue gas, correct?  
 4 A. We were not the first.  
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1 [REDACTED]  
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 3 Q. In a coal-fired power plant, if  
 4 calcium bromide is added to coal and put  
 5 into the furnace and activated carbon is  
 6 injected downstream of the furnace, would  
 7 in-flight promotion occur?  
 8 MR. GLANDORF: Same objection.  
 9 A. Yes.  
 10 Q. In that circumstance, how would  
 11 you define in-flight promotion?  
 12 MR. GLANDORF: Object to the  
 13 form of the question.  
 14 A. The in-flight then would refer  
 15 to a passage down a duct where the solid  
 16 sorbent had been injected at the  
 17 beginning of the duct or at some point in  
 18 the duct, and the gas flow of the duct  
 19 contained promoted material and -- I am  
 20 sorry, the gas flow in the duct contained  
 21 the halogenated or the halide promoter  
 22 for the carbon, that would be in-flight.  
 23 Q. And that would be in-flight  
 24 promotion?  
 25 A. Mmm-hmm.

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 19 (Whereupon, at 4:48 P.M., the  
 20 deposition was concluded.)  
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1 ACKNOWLEDGMENT OF DEPONENT  
 2 I have read the foregoing  
 3 transcript of my deposition and except  
 4 for any corrections or changes noted on  
 5 the errata sheet, I hereby subscribe to  
 6 the transcript as an accurate record of  
 7 the statements made by me.  
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 11 \_\_\_\_\_  
 12 EDWIN OLSON, Ph.D.  
 13  
 14 SUBSCRIBED AND SWORN before  
 15 and to me this \_\_\_\_ day  
 16 of \_\_\_\_\_, 20\_\_.  
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 19 \_\_\_\_\_  
 20 NOTARY PUBLIC  
 21 My Commission Expires:  
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1 ----- I N D E X -----

2 WITNESS EXAMINATION BY PAGE

3 EDWIN OLSON, Mr. Glandorf 4

4 Ph.D., Mr. Wilson 190

5 Ms. Dellinger 232

6

7 ----- EXHIBITS -----

8 OLSON FOR ID.

9 Exhibit 1, a curriculum vitae of Dr. 16

10 Edwin Olson prepared in 2012

11 Exhibit 2, document consisting of '147 37

12 Patent

13 Exhibit 3, document consisting of '114 37

14 patent

15 Exhibit 4, document consisting of '225 38

16 patent

17 Exhibit 5, document consisting of '517 38

18 patent

19 Exhibit 6, document consisting of '430 38

20 patent

21 Exhibit 7, document bearing Bates stamp 54

22 ME2C-RC-00040334

23 Exhibit 8, document consisting of an 64

24 annotated Figure 2 from the '147

25 patent

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1 CERTIFICATION

2

3

4 I, DAWN MATERA, a Notary Public for

5 and within the State of New York, do

6 hereby certify:

7 That the witness whose testimony as

8 herein set forth, was duly sworn by me;

9 and that the within transcript is a true

10 record of the testimony given by said

11 witness.

12 I further certify that I am not

13 related to any of the parties to this

14 action by blood or marriage, and that I

15 am in no way interested in the outcome of

16 this matter.

17 IN WITNESS WHEREOF, I have hereunto

18 set my hand this 29th day of August,

19 2022.

20

21 *Dawn Matera*

22 \_\_\_\_\_

23 DAWN MATERA

24 \* \* \*

25

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1 I N D E X O F (Cont'd)

2 ----- EXHIBITS -----

3 OLSON FOR ID.

4 Exhibit 9, document bearing Bates stamp 131

5 ME2C-RC-00055866

6 Exhibit 10, document bearing Bates stamp 139

7 ME2C-RC-00121392

8 Exhibit 11, document bearing Bates stamp 146

9 ME2C-RC-00070797

10 Exhibit 12, document bearing Bates stamp 151

11 ME2C-RC-00179930

12 Exhibit 13, document bearing Bates stamp 154

13 ME2C-RC-00119710

14 Exhibit 14, document bearing Bates stamp 154

15 ME2C-RC-00119712

16 Exhibit 15, document consisting of the 166

17 '374 patent 194

18 Exhibit 16, document beginning with

19 Bates stamp ME2C-RC-00055476

20 Exhibit 17, document beginning with 196

21 Bates stamp ME2C-RC-00072299

22 Exhibit 18, document beginning with 209

23 Bates stamp ME2C-0000355

24 Exhibit 19, document beginning with 213

25 Bates stamp ME2C-0000327

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1 ERRATA SHEET

2 VERITEXT LEGAL SOLUTIONS

3

4 MIDWEST ENERGY v ARTHUR J. GALLAGHER & CO

5 DATE OF DEPOSITION: AUGUST 26, 2022

6 NAME OF WITNESS: EDWIN OLSON, P.D.

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8 PAGE/LINE(S)	9 CHANGE	10 REASON
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26 EDWIN OLSON, P.D.

27

28 SUBSCRIBED AND SWORN TO

29 BEFORE ME THIS \_\_\_\_\_ DAY

30 Of \_\_\_\_\_, 2022.

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32 \_\_\_\_\_

33 NOTARY PUBLIC

34 MY COMMISSION EXPIRES \_\_\_\_\_

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and  
(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

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Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

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