

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

- - - - -x

MIDWEST ENERGY EMISSIONS CORP.

and MES INC.,

Plaintiffs,

v.

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

Defendants.

- - - - -x

August 26, 2022

9:34 a.m.

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

* * *

<p style="text-align: right;">Page 2</p> <p>1 APPEARANCES:</p> <p>2 CALDWELL CASSADY & CURRY</p> <p>3 Attorneys for Plaintiffs</p> <p>4 2121 N Pearl Street</p> <p>5 Suite 1200</p> <p>6 Dallas, Texas 75201</p> <p>7 BY: ADRIENNE DELLINGER, ESQ.</p> <p>8 adellinger@caldwellcc.com</p> <p>9 GIBSON DUNN & CRUTCHER LLP</p> <p>10 Attorneys for Defendants</p> <p>11 1801 California Street</p> <p>12 Suite 4200</p> <p>13 Denver, Colorado 80202</p> <p>14 BY: DAVID GLANDORF, ESQ.</p> <p>15 dglendorf@gibsondunn.com</p> <p>16 BY: WENDY C. CAI, ESQ.</p> <p>17 wcai@gibsondunn.com</p> <p>18 200 Park Avenue 47th Floor</p> <p>19 New York New York 10166</p> <p>20 BRADLEY ARANT BOULT CUMMINGS LLP</p> <p>21 Attorneys for CERT Defendants</p> <p>22 1819 5th Ave N</p> <p>23 One Federal Place</p> <p>24 Suite 200</p> <p>25 Birmingham Alabama 35203</p> <p>BY: BEN C. WILSON, ESQ.</p> <p>bwilson@bradley.com</p> <p>Also Present:</p> <p>Jeffrey D. Anders, Videographer</p> <p>James Budkins, Concierge</p> <p>* * *</p>	<p style="text-align: right;">Page 4</p> <p>1 me is Wendy Cai.</p> <p>2 MR. WILSON: Ben Wilson, here</p> <p>3 for the CERT defendants.</p> <p>4 MS. DELLINGER: Adrienne</p> <p>5 Dellinger, I am here on behalf of</p> <p>6 Dr. Olson.</p> <p>7 EDWIN OLSON, P h. D.,</p> <p>8 the Witness herein, having first</p> <p>9 been duly sworn by the Notary</p> <p>10 Public, was examined and</p> <p>11 testified as follows:</p> <p>12 EXAMINATION</p> <p>13 BY MR. GLANDORF:</p> <p>14 Q. Good morning, Dr. Olson.</p> <p>15 A. Good morning.</p> <p>16 Q. I am going to start with a few</p> <p>17 introductory questions, if that's okay</p> <p>18 with you.</p> <p>19 A. Yeah.</p> <p>20 Q. Could you once more state and</p> <p>21 spell your full name for the record,</p> <p>22 please?</p> <p>23 A. Edwin Olson. You want me to</p> <p>24 spell it?</p> <p>25 Q. Yes, please.</p>
<p style="text-align: right;">Page 3</p> <p>1 THE VIDEOGRAPHER: We are now on</p> <p>2 the record. This is the video</p> <p>3 recording of the deposition of</p> <p>4 Dr. Edwin Olson taken by the</p> <p>5 defendants' attorneys in the matter of</p> <p>6 Midwest Energy Emissions Corporation</p> <p>7 and MES Incorporated versus Arthur J.</p> <p>8 Gallagher & Company in the United</p> <p>9 States District Court for the District</p> <p>10 of Delaware. The Civil File Number is</p> <p>11 119-CV-01334.</p> <p>12 We are located at the Country</p> <p>13 Inn & Suites in Grand Forest, North</p> <p>14 Dakota. Today's date is August 26th,</p> <p>15 2022. The time is 8:34 a.m.</p> <p>16 The court reporter today is Dawn</p> <p>17 Matera. My name is Jeffrey D. Anders,</p> <p>18 I am the videographer here</p> <p>19 representing Veritext.</p> <p>20 Will counsel for the respective</p> <p>21 parties please identify yourselves,</p> <p>22 starting with the noticing attorney.</p> <p>23 MR. GLANDORF: My name is David</p> <p>24 Glandorf. I am here for Gibson Dunn,</p> <p>25 on behalf of the defendants, and with</p>	<p style="text-align: right;">Page 5</p> <p>1 A. E-D-W-I-N, O-L-S-O-N.</p> <p>2 Q. Thank you. Yes, that's a</p> <p>3 little bit of a convention that we</p> <p>4 traditionally do here.</p> <p>5 And where is your current</p> <p>6 address?</p> <p>7 A. It's in Grand Forks North</p> <p>8 Dakota.</p> <p>9 Q. Can you give us the address?</p> <p>10 A. Yes. 223 Circle Hills Drive,</p> <p>11 Grand Forks, North Dakota, 58201.</p> <p>12 Q. Excellent. Have you ever been</p> <p>13 deposed previously, Dr. Olson?</p> <p>14 A. No.</p> <p>15 Q. Okay. Well, I am going to lay</p> <p>16 out a little bit of the expectations and</p> <p>17 feel free to ask me any questions about</p> <p>18 these.</p> <p>19 As I mentioned before, I</p> <p>20 represent the defendants in this lawsuit</p> <p>21 and so I am here to ask questions of you.</p> <p>22 You understand that?</p> <p>23 A. Yes.</p> <p>24 Q. This is our opportunity as</p> <p>25 defendants to ask you questions. Your</p>

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<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>

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<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>

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<p style="text-align: right;">Page 14</p> <p>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.</p>	<p style="text-align: right;">Page 16</p> <p>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.</p>
<p style="text-align: right;">Page 15</p> <p>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?</p>	<p style="text-align: right;">Page 17</p> <div style="background-color: black; width: 100%; height: 100%; min-height: 400px;"></div>

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

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<div>Page 78</div> <div>1 [REDACTED]</div> <div>2 [REDACTED]</div> <div>3 [REDACTED]</div> <div>4 [REDACTED]</div> <div>5 [REDACTED]</div> <div>6 [REDACTED]</div> <div>7 [REDACTED]</div> <div>8 [REDACTED]</div> <div>9 [REDACTED]</div> <div>10 [REDACTED]</div> <div>11 [REDACTED]</div> <div>12 [REDACTED]</div> <div>13 [REDACTED]</div> <div>14 [REDACTED]</div> <div>15 [REDACTED]</div> <div>16 [REDACTED]</div> <div>17 [REDACTED]</div> <div>18 [REDACTED]</div> <div>19 [REDACTED]</div> <div>20 [REDACTED]</div> <div>21 [REDACTED]</div> <div>22 [REDACTED]</div> <div>23 [REDACTED]</div> <div>24 [REDACTED]</div> <div>25 [REDACTED]</div>	<div>Page 80</div> <div>1 Q. Let's go back to the claim</div> <div>2 language. Let's go back to Claim 1. So</div> <div>3 if you're in Exhibit 2 of Claim 1.</div> <div>4 Yeah, let's go down to the</div> <div>5 claim at the end. So go ahead and read</div> <div>6 through Claim 1, and I will ask my</div> <div>7 question now and I will ask it at the end</div> <div>8 after reading it, if you prefer, as well.</div> <div>9 Is it fair to say that Claim 1</div> <div>10 covers a heterogeneous oxidation of</div> <div>11 mercury by a bromine species, but not a</div> <div>12 homogenous oxidation of mercury by a</div> <div>13 bromine species?</div> <div>14 MS. DELLINGER: I'll object</div> <div>15 again. Calls for a legal conclusion.</div> <div>16 You may answer.</div> <div>17 A. The claim does not say it has</div> <div>18 to be heterogeneous.</div> <div>19 Q. It doesn't use that word. But</div> <div>20 going by our understanding of those</div> <div>21 terms, heterogeneous and homogenous, and</div> <div>22 the pathway described here, I am going to</div> <div>23 ask the question again: Is it fair to</div> <div>24 say that Claim 1 covers a heterogeneous</div> <div>25 oxidation of mercury by a bromine species</div>
<div>Page 79</div> <div>1 [REDACTED]</div> <div>2 [REDACTED]</div> <div>3 [REDACTED]</div> <div>4 [REDACTED]</div> <div>5 [REDACTED]</div> <div>6 [REDACTED]</div> <div>7 [REDACTED]</div> <div>8 [REDACTED]</div> <div>9 [REDACTED]</div> <div>10 [REDACTED]</div> <div>11 [REDACTED]</div> <div>12 [REDACTED]</div> <div>13 [REDACTED]</div> <div>14 [REDACTED]</div> <div>15 [REDACTED]</div> <div>16 [REDACTED]</div> <div>17 [REDACTED]</div> <div>18 [REDACTED]</div> <div>19 [REDACTED]</div> <div>20 [REDACTED]</div> <div>21 [REDACTED]</div> <div>22 [REDACTED]</div> <div>23 [REDACTED]</div> <div>24 [REDACTED]</div> <div>25 [REDACTED]</div>	<div>Page 81</div> <div>1 but not a homogenous oxidation of mercury</div> <div>2 by a bromine species?</div> <div>3 MS. DELLINGER: Same objection.</div> <div>4 A. I would say that it could, it</div> <div>5 could involve a homogenous reaction that</div> <div>6 we haven't thought about yet.</div> <div>7 Q. So Claim 1 could cover the</div> <div>8 homogenous oxidation of mercury by a</div> <div>9 bromine species; is that your testimony?</div> <div>10 A. Sure.</div> <div>11 Q. There is an indication in here</div> <div>12 that you formed a promoted brominated</div> <div>13 sorbent by chemically reacting the</div> <div>14 sorbent material with the</div> <div>15 bromine-containing promoter; is that</div> <div>16 right?</div> <div>17 A. Yes, that would be a chemical</div> <div>18 reaction, yeah.</div> <div>19 Q. Is it possible that -- well,</div> <div>20 let me pause here. Do you have an</div> <div>21 understanding of what species may or may</div> <div>22 not may qualify -- let me ask it again.</div> <div>23 Do you have an understanding of</div> <div>24 what bromine species would qualify as a</div> <div>25 bromine-containing promoter?</div>

21 (Pages 78 - 81)

<p style="text-align: right;">Page 82</p> <p>1 A. Well, I have a partial 2 understanding. 3 Q. Could HBr be a 4 bromine-containing promoter? 5 A. Yes. 6 Q. Could sodium bromide be a 7 bromine-containing promoter? 8 A. Not unless it is converted into 9 something else. 10 Q. Could calcium bromide be a 11 bromine-containing promoter? 12 A. Again, it would have to be 13 converted. 14 Q. Converted to something else? 15 A. Yes. 16 Q. Could Br₂ be a 17 bromine-containing promoter? 18 A. Yes. 19 Q. Could Br radical be a 20 bromine-containing promoter? 21 A. I don't know. 22 Q. Could Br⁻ be a 23 bromine-containing promoter? 24 A. Br⁻? 25 Q. Yes.</p>	<p style="text-align: right;">Page 84</p> <div style="background-color: black; width: 100%; height: 100%; min-height: 400px;"></div>
<p style="text-align: right;">Page 83</p> <p>1 A. No. Not unless it's converted 2 into something else. 3 Q. Could PBr₃ be a 4 bromine-containing promoter? 5 A. Yes. 6 Q. In fact, let me direct you to 7 claim 12; do you see claim 12? 8 A. Just a second. 9 Q. Actually, let me use a 10 different one. Let's look at claim 25, 11 if we could. 12 A. All right. 13 Q. Do you see that claim 25 refers 14 to a Group V or Group VI bromides? 15 A. Mmm-hmm. 16 Q. And PBr₃ is a Group V bromide, 17 I believe; is that right? 18 A. That's correct. 19 Q. So are Group V bromides 20 bromine-containing promoters? 21 A. Yes, or at least the one that 22 we tested was. 23 Q. And which one did you test? 24 A. PBr₃. 25 Q. Are Group VI bromides</p>	<p style="text-align: right;">Page 85</p> <div style="background-color: black; width: 100%; height: 100%; min-height: 400px;"></div>

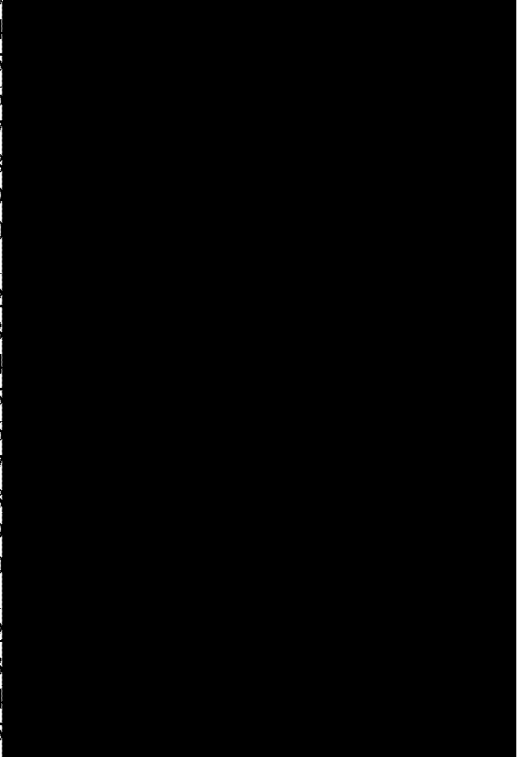
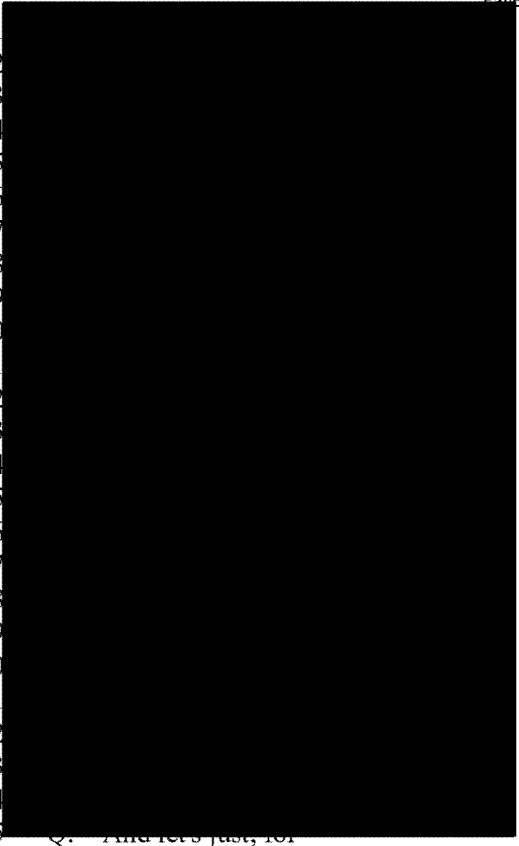
22 (Pages 82 - 85)

<div data-bbox="261 138 300 1010"> 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 </div> <div data-bbox="300 138 857 1010"></div>	<div data-bbox="857 138 1451 1010"> <div data-bbox="857 138 1451 1010"></div> <div data-bbox="857 905 1451 1010"> <p>Q. Claim 1 of the '114 patent requires the addition of a bromine species to the system, correct?</p> </div> </div>
<div data-bbox="261 1010 300 1883"> 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 </div> <div data-bbox="300 1010 857 1883"></div>	<div data-bbox="857 1010 1451 1883"> <div data-bbox="857 1010 1451 1883"></div> <div data-bbox="857 1050 1451 1883"> <p>A. No, not correct.</p> <p>Q. Claim 1 doesn't require the addition of a bromine species to the system?</p> <p>A. What it says is comprises a halogen or halide promoter comprising HBr Br- or a combination thereof. But I don't think it's exclusive.</p> <p>Q. Well, if the claim -- sorry, let me start again here.</p> <p>The claim requires the introduction of Br₂, HBr or Br- at least one of those if not a combination, correct?</p> <p>A. At least one of those, okay.</p> <p>Q. The claim also requires injection of activated carbon downstream of a combustion chamber, correct?</p> <p>A. Yes.</p> <p>Q. And the purpose of injecting that activated carbon is to act as a sorbent; is that right?</p> <p>A. To act as an oxidant and sorbent for mercury.</p> <p>Q. And it requires that that</p> </div> </div>

24 (Pages 90 - 93)

<p style="text-align: right;">Page 94</p> <p>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</p>	<p style="text-align: right;">Page 96</p> <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div>
<p style="text-align: right;">Page 95</p> <p>1 would burn. 2 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 3 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 4 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 5 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 6 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 7 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 8 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 9 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 10 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 11 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 12 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 13 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 14 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 15 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 16 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 17 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 18 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 19 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 20 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 21 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 22 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 23 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 24 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div> 25 <div style="background-color: black; width: 100%; height: 100%; min-height: 350px;"></div></p>	<p style="text-align: right;">Page 97</p> <p>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</p>

25 (Pages 94 - 97)

<p style="text-align: right;">Page 98</p> <p>1 carbon.</p> <p>2 Q. But the question is by the time</p> <p>3 the mercury contacts it, is it required</p> <p>4 to be promoted activated carbon?</p> <p>5 A. It would be. It would be</p> <p>6 promoted because they are both together</p> <p>7 in the gas phase.</p> <p>8 Q. And to be clear, the claim</p> <p>9 language doesn't require that, correct?</p> <p>10 MS. DELLINGER: Objection.</p> <p>11 Calls for a legal conclusion.</p> <p>12 You may answer.</p> <p>13 A. Yeah, your question is</p> <p>14 confusing to me.</p> <p>15 Q. Well, I will go back and do it</p> <p>16 again here. There is no language in the</p> <p>17 claim that requires that the mercury come</p> <p>18 in contact with a promoted or a</p> <p>19 brominated sorbent?</p> <p>20 A. The word "promoted" is not</p> <p>21 used. However, its equivalent is</p> <p>22 described in the claim.</p> <p>23 Q. And that's based on your</p> <p>24 experience of what will happen if you</p> <p>25 have one of these bromine species in a</p>	<p style="text-align: right;">Page 100</p> <p>1 injected in the combustion chamber, it</p> <p>2 will form the promoted sorbent</p> <p>3 downstream</p> 
<p style="text-align: right;">Page 99</p> <p>1 gas stream with activated carbon; is that</p> <p>2 right?</p> <p>3 A. Yes.</p> <p>4 Q. Your experience is that there</p> <p>5 would be a promoted brominated sorbent</p> <p>6 formed, correct?</p> <p>7 A. Yes.</p> <p>8 Q. Is that true for any coal-fired</p> <p>9 power plant where you've added HBr to the</p> <p>10 combustion chamber, and you inject</p> <p>11 activated carbon downstream of the</p> <p>12 combustion chamber?</p> <p>13 A. I believe so.</p> <p>14 Q. And is it true -- let me start</p> <p>15 that again.</p> <p>16 Is it your testimony that a</p> <p>17 promoted brominated sorbent would be</p> <p>18 formed anytime you add Br- to the</p> <p>19 combustion chamber or upstream of the</p> <p>20 combustion chamber in combination with</p> <p>21 the injection of activated carbon</p> <p>22 downstream?</p> <p>23 A. Yes. If some composition of</p> <p>24 Br- any metal salt, for example, of Br-</p> <p>25 or a nonmetal compound of Br, if that's</p>	<p style="text-align: right;">Page 101</p>  <p>25 Q. And let's just, for</p>

26 (Pages 98 - 101)

<div>Page 114</div> <div>1 [REDACTED]</div> <div>2 [REDACTED]</div> <div>3 [REDACTED]</div> <div>4 [REDACTED]</div> <div>5 [REDACTED]</div> <div>6 [REDACTED]</div> <div>7 [REDACTED]</div> <div>8 [REDACTED]</div> <div>9 [REDACTED]</div> <div>10 [REDACTED]</div> <div>11 Q. At the time the provisional</div> <div>12 patent was filed, so in August of 2004,</div> <div>13 was activated carbonate carbon sorbent</div> <div>14 used for mercury capture?</div> <div>15 A. Yes. Well, there were some,</div> <div>16 there were some groups at least</div> <div>17 interested in doing that. But I am not</div> <div>18 certain about how much of it was actually</div> <div>19 going on at, you know, in the industry in</div> <div>20 real power plants.</div> <div>21 Q. As of 2004, is it fair to say</div> <div>22 that activated carbon was the most</div> <div>23 heavily studied sorbent for the capture</div> <div>24 of mercury?</div> <div>25 A. Yes.</div>	<div>Page 116</div> <div>1 [REDACTED]</div> <div>2 [REDACTED]</div> <div>3 [REDACTED]</div> <div>4 [REDACTED]</div> <div>5 [REDACTED]</div> <div>6 [REDACTED]</div> <div>7 [REDACTED]</div> <div>8 [REDACTED]</div> <div>9 [REDACTED]</div> <div>10 [REDACTED]</div> <div>11 [REDACTED]</div> <div>12 [REDACTED]</div> <div>13 [REDACTED]</div> <div>14 [REDACTED]</div> <div>15 [REDACTED]</div> <div>16 [REDACTED]</div> <div>17 [REDACTED]</div> <div>18 [REDACTED]</div> <div>19 [REDACTED]</div> <div>20 [REDACTED]</div> <div>21 [REDACTED]</div> <div>22 [REDACTED]</div> <div>23 [REDACTED]</div> <div>24 [REDACTED]</div> <div>25 [REDACTED]</div>
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30 (Pages 114 - 117)

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33 (Pages 126 - 129)

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Page 136

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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35 (Pages 134 - 137)

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<div>Page 143</div> <div>1 [REDACTED]</div> <div>2 [REDACTED]</div> <div>3 [REDACTED]</div> <div>4 [REDACTED]</div> <div>5 [REDACTED]</div> <div>6 [REDACTED]</div> <div>7 [REDACTED]</div> <div>8 [REDACTED]</div> <div>9 [REDACTED]</div> <div>10 [REDACTED]</div> <div>11 [REDACTED]</div> <div>12 [REDACTED]</div> <div>13 [REDACTED]</div> <div>14 [REDACTED]</div> <div>15 [REDACTED]</div> <div>16 [REDACTED]</div> <div>17 [REDACTED]</div> <div>18 [REDACTED]</div> <div>19 [REDACTED]</div> <div>20 [REDACTED]</div> <div>21 [REDACTED]</div> <div>22 [REDACTED]</div> <div>23 [REDACTED]</div> <div>24 [REDACTED]</div> <div>25 [REDACTED]</div>	<div>Page 145</div> <div>1 addition of a bromine compound to the</div> <div>2 furnace or the flue gas, correct?</div> <div>3 A. Yes.</div> <div>4 Q. Do you agree that the addition</div> <div>5 of the bromine compound to the furnace or</div> <div>6 the flue gas is an important part of your</div> <div>7 invention?</div> <div>8 A. Yes, but his addition of sulfur</div> <div>9 is not.</div> <div>10 Q. Your group at EERC was not the</div> <div>11 first group to disclose the addition of a</div> <div>12 bromine compound to the furnace or flue</div> <div>13 gas, correct?</div> <div>14 A. I am sorry, can you repeat</div> <div>15 that?</div> <div>16 Q. Your group at EERC was not the</div> <div>17 first group to disclose the addition of a</div> <div>18 bromine compound to the furnace or to the</div> <div>19 flue gas, correct?</div> <div>20 A. According to the dates on the</div> <div>21 patent application, our disclosure came</div> <div>22 after the publication of the Vosteen.</div> <div>23 But the technologies are not identical.</div> <div>24 They are quite different.</div> <div>25 Q. You agree that EERC was not the</div>

37 (Pages 142 - 145)

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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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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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(Whereupon, at 4:48 P.M., the deposition was concluded.)

ACKNOWLEDGMENT OF DEPONENT

I have read the foregoing transcript of my deposition and except for any corrections or changes noted on the errata sheet, I hereby subscribe to the transcript as an accurate record of the statements made by me.

EDWIN OLSON, Ph.D.

SUBSCRIBED AND SWORN before and to me this ____ day of _____, 20__.

NOTARY PUBLIC

My Commission Expires:

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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
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15	Exhibit 4, document consisting of '225	38
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1

2 CERTIFICATION

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 DAWN MATERA

23

24 * * *

25

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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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PAGE/LINE(S)	CHANGE	REASON
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20 EDWIN OLSON, P.D.

21 SUBSCRIBED AND SWORN TO

22 BEFORE ME THIS DAY

23 OF 2022.

24

25 NOTARY PUBLIC

26 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
COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

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.

Veritext Legal Solutions is committed to maintaining the confidentiality of client and witness information, in accordance with the regulations promulgated under the Health Insurance Portability and Accountability Act (HIPAA), as amended with respect to protected health information and the Gramm-Leach-Bliley Act, as amended, with respect to Personally Identifiable Information (PII). Physical transcripts and exhibits are managed under strict facility and personnel access controls. Electronic files of documents are stored in encrypted form and are transmitted in an encrypted fashion to authenticated parties who are permitted to access the material. Our data is hosted in a Tier 4 SSAE 16 certified facility.

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