

STATE OF MICHIGAN

IN THE DISTRICT COURT FOR THE 67-5 JUDICIAL DISTRICT

THE PEOPLE OF THE STATE OF MICHIGAN,

v.

D.C.#17T-1356FY

EDEN VICTORIA WELLS,

Defendant.

PRELIMINARY EXAMINATION - VOLUME XI

BEFORE THE HONORABLE WILLIAM H. CRAWFORD, II, DISTRICT JUDGE

Flint, Michigan - March 27, 2018

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Flint, Michigan

Tuesday, March 27, 2018

10:01 a.m.

THE COURT: In the matter of the People of the State of Michigan versus Eden Victoria Wells, Case No. 17-1356.

MR. FLOOD: Good morning, Judge, Todd Flood and Alex Edelen on behalf of the People, and our officer in charge Jeff Speinko is here as well.

MR. TRAMONTIN: Good morning, Your Honor, Steve Tramontin and Jerold Lax on behalf of the defendant, Dr. Eden Wells.

THE COURT: This matter is scheduled for exam today at 9:00, everybody's here now, are you ready to proceed?

MR. FLOOD: Yes, Judge.

THE COURT: Any motions or preliminary matters?

MR. TRAMONTIN: No, thank you, Your Honor.

MR. FLOOD: None, Judge.

It's my understanding there's a witness we're taking out of order, Judge, Dr. Edwards.

THE COURT: Right.

MR. FLOOD: Okay, Your Honor.

MR. TRAMONTIN: I wasn't sure what you were driving at. Yes, the Prosecution has not rested their

1 case; however, we had a witness from out of state who was
2 in town and the Court has graciously extended us a day to
3 take his testimony. So we're prepared to proceed.

4 THE COURT: Alright. Step up to the podium,
5 please.

6 I think I said this guy, this gentleman from
7 Virginia is here from out of state, raise your right
8 hand, please.

9 Do you swear or affirm to tell the truth, the
10 whole truth, and nothing but the truth, so help you God?

11 DR. EDWARDS: Thank you, you may be seated.

12 MR. TRAMONTIN: For the record, the defense
13 calls to the stand Dr. Marc Edwards.

14 MARK ANDREW EDWARDS, PhD
15 called as a witness at 10:03 a.m., testified as follows:

16 DIRECT EXAMINATION

17 BY MR. TRAMONTIN:

18 Q Doctor Edwards, could you state your name for the record,
19 please.

20 A Marc Andrew Edwards.

21 Q And, Dr. Edwards, where are you employed?

22 A Virginia Tech, Blacksburg, Virginia.

23 Q I'm going to start by asking you a little bit about your
24 background so that we can do this chronologically.

25 Before that, were you subpoenaed to testify

1 here today?

2 A Yes.

3 Q And by the defense?

4 A Yes.

5 Q Are you being compensated for your time in testifying?

6 A No.

7 Q And had you previously interviewed with the Prosecution
8 related to this matter?

9 A Yes.

10 Q Let's start -- we're going to get into why you're here
11 and how you became involved in Flint, but I want to start
12 with your background.

13 What is your educational background, sir?

14 A I have an undergraduate degree in Bio-Physics from the
15 Medical School at the State University of New York at
16 Buffalo. I have environmental -- a Master's and a Ph.D.
17 in Environmental Engineering from the University of
18 Washington in Seattle. And I also did a post-doc later
19 at the University of Washington.

20 MR. TRAMONTIN: Your Honor, just so the Court
21 can follow along, may I approach the witness with a copy
22 of his curriculum vitae and present a proposed exhibit to
23 the Court?

24 THE COURT: Yes. Thank you.

25 BY MR. TRAMONTIN:

1 Q Thank you, Dr. Edwards.

2 Could you tell us a little bit about your work
3 experience after your education or during your education.

4 A Well after my Ph.D. I went to San Francisco, I worked
5 with James Montgomery Consulting Engineers as a
6 consultant, and that was on a project working with
7 homeowners who were having corrosion problems in their
8 homes, specifically blue water from elevated copper. And
9 so after that I realized this was an important problem
10 that affected people, had profound public health
11 implications, and no academics were devoting any of their
12 time to studying it, and so I resolved I was going to
13 spend most of my academic career working on those issues,
14 anything related to building plumbing systems, the
15 bacteria, the growing them, corrosion that occurs, both
16 lead, copper, galvanized iron, plastic failures, leaks.
17 And that ultimately became very important when about ten
18 years ago people realized that Legionella was a major
19 cause of water borne disease deaths in the developed
20 world. So it's the topic I resolved to work on.

21 And as I said, I went back to the University of
22 Washington, did a post doc on that subject, did it during
23 my career at the University of Colorado Boulder for six
24 years, and I've done it ever since. And along with that,
25 which is what we're known for, it's really kind of

1 inventing this area of research, if you will, done normal
2 work for the EPA, water, utilities, customers, people
3 that have building plumbing problems, all on the way to
4 kind of pay for my group's research.

5 Q So you've been looking at Legionella issues and water
6 systems since the early '90's; is that fair to say?

7 A No, it was not really on the radar of people, except for
8 hospitals problems, until about 2003, 2004 whereas part
9 of a national academy's panel and I argued that this was
10 going to be an important emerging issue and there was a
11 lot of push back that says it's not, it's not a
12 significant problem for Legionella in drinking water,
13 that's a hospital issue or a cooling tower issue. But we
14 ultimately got it on the agenda of the national academy
15 in large part due to the work that I had done and the
16 argument I made.

17 And it was a few years after that that CDC
18 started tracking it in drinking water, so that wasn't
19 until 2007, and when they started tracking it, it
20 immediately became the number one cause of documented
21 deaths in drinking water systems.

22 Q Are you currently a professor?

23 A Yes, I'm a university distinguished professor at Virginia
24 Tech.

25 Q And what is it that you teach currently?

1 A Environmental Engineering.

2 Q Have you taught any other courses there or anywhere else?

3 A We -- I teach a class on Engineering Ethics, Professional
4 Responsibility. I had research for the National Science
5 Foundation developing that curriculum, and I also lecture
6 on that subject all around the world.

7 Q I know you're too modest to go through this list on your
8 curriculum vitae of awards that you've received, but it's
9 true that you were named to the Time Magazine Person of
10 the Year short list in 2016?

11 A No. Actually I was amongst all of the Flint
12 Whistleblowers who were put forth for that honor.

13 Q And you received the Scientific Freedom and
14 Responsibility Award?

15 A Yes.

16 Q Excellence in Justice Award from the Indiana State
17 University Law School?

18 A Yes.

19 Q You were named one of the hundred most influential people
20 in the world by Time Magazine; isn't that right?

21 A Yes.

22 Q In 2016 you received the Ethics Education Exemplar Award
23 from the National Academy of Engineering?

24 A Yes, that was -- yes.

25 Q And also in 2013 you received an award for defending the

1 public health and interest from the IEEE Social
2 Implications of Technology?

3 A Yes.

4 Q And lastly, in 2004, before this Flint water situation,
5 you were named the world's leading -- one of the world's
6 leading innovators in water?

7 A That's correct, one of the four leading innovators in
8 water.

9 Q I've listed -- or I've mentioned some of the awards that
10 stuck out in reading this, are there any other awards
11 that you've received that are more meaningful or
12 meaningful to you personally?

13 A Well, I mean, was given a Presidential Faculty Fellowship
14 by the White House and a McArthur Fellowship Award, those
15 were pretty amazing.

16 Q Thank you.

17 And the document I handed to you, what is that?

18 A That's my CV or vita.

19 Q And as you go through it is that an accurate
20 representation of your education, experience, and
21 professional honors?

22 A Yes.

23 Q I also note that there are, I think the Judge noticed
24 that this is a rather large curriculum vitae, but in the
25 middle it lists all of the research projects that you've

1 engaged in.

2 Can you estimate how many research studies and
3 projects you've been involved in?

4 A Actually I can't as I sit here, but, you know, the total
5 research that my group's conducted is about \$15 million
6 at the University -- at Virginia Tech.

7 MR. TRAMONTIN: At this time I'd move for the
8 admission of Defendant's Exhibit M.

9 MR. FLOOD: No objections to the CV, Judge.

10 THE COURT: People's Exhibit M -- Defendant's
11 Exhibit M is hereby admitted without objection.

12 (DX#M admitted at 10:12 a.m.)

13 MR. TRAMONTIN: Also at this time, Your Honor, I
14 would ask that Dr. Edwards be qualified in the areas of
15 premise plumbing and water systems related to lead and
16 Legionella.

17 MR. FLOOD: May I voir dire, Judge?

18 THE COURT: Yes. You say premise plumbing and?

19 MR. TRAMONTIN: Legionella and lead as it
20 relates to premise plumbing and water systems.

21 THE COURT: Yes, you may voir dire.

22 MR. TRAMONTIN: Your Honor, I'm also requesting,
23 in case it becomes a part of the voir dire, that Dr.
24 Edwards be qualified as an expert in engineering and
25 scientific ethics.

1 THE COURT: Engineering and scientific?

2 MR. TRAMONTIN: Ethics.

3 THE COURT: Ethics.

4 MR. FLOOD: I'm not sure, Judge, is that -- is
5 he asking prior -- for the witness to become qualified as
6 an expert in the two latter things he mentioned only
7 subsequent to my voir dire?

8 MR. TRAMONTIN: No. I just wanted to let the
9 Court and yourself know that that was the request for the
10 qualifications so that your voir dire would cover both of
11 those issues.

12 MR. FLOOD: I got you. Thank you.

13 VOIR DIRE EXAMINATION

14 BY MR. FLOOD:

15 Q Good morning, Dr. Edwards.

16 A Good morning.

17 Q This feels likes ground hog's day, I realize you're doing
18 it all over again.

19 So you've been qualified as an expert, I think
20 you've mentioned before in the past two times to testify
21 as an expert. How many times have you been qualified as
22 an expert and in what fields?

23 A They were all cases related to corrosion; so copper
24 corrosion and lead corrosion, so probably five times I'd
25 guess.

1 Q Five times.

2 And in state court?

3 A I think so, yes.

4 Q And in civil matters?

5 A I think so, yes.

6 Q And it was limited and focused in on corrosion as it
7 relates to water distributions systems?

8 A Yes, those were the topics under discussion including
9 microbial growths, microbial induced corrosion, for
10 example.

11 Q Right. So those distributions systems were -- that was
12 primarily in Washington, D.C.?

13 A No, it was also in San Francisco and a case in Seattle,
14 Washington.

15 Q Okay. So two on the west coast and then D.C. were the
16 others?

17 A Yes.

18 Q I see. And it relates the status of a professional
19 engineer, are you a professional engineer?

20 A No.

21 Q And are you familiar with the professional engineer
22 licensures and laws within the State of Michigan?

23 A Yes.

24 Q Yesterday you deferred to say no as it related to the
25 laws in the State of Michigan as a professional engineer?

1 MR. TRAMONTIN: Objection, Your Honor.

2 THE WITNESS: That's -- no, I didn't.

3 MR. TRAMONTIN: First of all, it's a
4 mischaracterization.

5 THE WITNESS: You asked about the plumbing code,
6 if I recall yesterday.

7 BY MR. FLOOD:

8 Q I'm sorry. I'll rephrase, it was the Court asking the
9 questions, I wasn't -- I thought --

10 A No one asked me a question about professional engineering
11 yesterday.

12 Q Okay. So are you familiar with the laws in the plumbing
13 code as it relates to the State of Michigan?

14 A No, not intimately familiar.

15 Q Okay. And are you familiar with the building codes and
16 requirements in the State of Michigan as it relates to
17 water distribution systems?

18 A No. Except to the extent that the national codes apply
19 and I have familiarity with those codes.

20 Q Okay. And as a professional engineer there's different
21 licenses that are required as it relates to -- or
22 different tests as it relates to becoming a professional
23 engineer; is that right?

24 A Yes.

25 Q Is it that you haven't taken the license with any state

1 or nationally?

2 A It's irrelevant to what I do to become a professional
3 engineer, it's not a requirement, it's never impeded me
4 from working on grants or doing the research work that I
5 want to do or work with municipalities. So it's just not
6 worth my time to become a professional engineer.

7 Q Okay. Are there certain requirements that must be taken
8 as a professional engineer in the area of ethics?

9 A To -- no. I mean, I teach engineers ethics. I lecture all
10 around the country. You don't have to be a registered
11 professional engineer to study that and research it.

12 Q No, I understand. I'm just -- I was asking not to study,
13 anyone can study anything, that's fair, right?

14 A Yeah. But I also research it and teach it.

15 Q Right. My question was do professional engineers have to
16 take a test that includes ethics?

17 A Yes. I teach that part in my class.

18 Q And that someone has to pass, obviously, that portion of
19 it to become a professional engineer?

20 A They have to pass the overall test, that's correct.

21 Q Okay. And your primary study and focus is that of
22 corrosion control of what you've testified before and
23 treatment and corrosion within water distribution
24 systems?

25 A In more recent years my emphasis has been opportunistic

1 pathogens in plumbing systems. The vast majority of our
2 research over the last eight years has been related to
3 Legionella and opportunistic pathogens.

4 MR. FLOOD: Okay, one second, Your Honor.

5 Judge, I have no other questions as it relates
6 to Dr. Edwards' qualifications.

7 I have no objection to Dr. Edwards testifying
8 as an expert in the field of water distribution systems,
9 premise plumbing and corrosion. I have no objections to
10 those. And, Judge, I have no objection as it relates to
11 ethics as well.

12 THE COURT: Alright. The witness will be so
13 qualified in those areas.

14 MR. TRAMONTIN: Thank you, Your Honor.

15 CONTINUED DIRECT EXAMINATION

16 BY MR. TRAMONTIN:

17 Q So, Dr. Edwards, you're a professor at Virginia Tech
18 University, water expert, how did you first become
19 involved in Michigan and in Flint specifically?

20 A Well after a tragic water crisis in Washington, D.C. I
21 knew because the laws and attitudes of the water
22 utilities and regulatory agencies had not been
23 significantly changed by that that someday there'd be
24 another water crisis.

25 Q Can you explain a little bit of background in your

1 involvement in the Washington, D.C. water issues?

2 A Sure. So I was hired by the EPA in 2002 to solve a lead
3 problem in Washington, D.C., and we had differences of
4 opinion about how that matter should proceed, and I was
5 soon unhired by the EPA.

6 In 2004 it became publically known that for
7 about three years lead in Washington, D.C. water had been
8 exceeding federal standards, and that information had
9 been withheld from the public and whistleblowers had been
10 fired.

11 But we now know the benefit of the research
12 that my team did that during that time hundreds of
13 children had their blood lead elevated, so-called lead
14 poisoning, there were higher rates of miscarriages, fetal
15 deaths. Our team did all that work over six years and
16 ultimately exposed the tragic harm that occurred from
17 that event.

18 In 2010 there was a bipartisan hearing that
19 showed that the agencies involved had covered up the harm
20 that was done, but, you know, unfortunately they hadn't
21 learned their lesson from that, so we knew it was going
22 to happen again someday, and we kind of prepared for the
23 day.

24 So my first knowledge of Flint was early 2015
25 from an EPA employee, Miguel Del Toral, Region 5 EPA, who

1 alerted me to the fact that there was some serious issues
2 with the water in Flint, that he started to work with
3 Miss LeeAnne Walters who had elevated lead in her water,
4 and the two of them ultimately figured out that one of
5 Miss Walters' twins had lead poisoning and the most
6 likely source was the water supply, and the two of them
7 also figured out, for all practical purposes, that there
8 was no corrosion control in the Flint water.

9 In Miguel's opinion, and he should know, he's
10 the foremost expert on the lead and copper rule in the
11 country, in my opinion, that Flint was breaking federal
12 law, and the next question was what to do about that.

13 Q Could you speak briefly about the Lead and Copper Rule,
14 your experience with that, what you know about what that
15 requires?

16 A Well, you know, one thing Governor Snyder said that I
17 agree with it's a dumb and dangerous rule, at least the
18 way it's been --

19 MR. FLOOD: Judge, I would object to hearsay.

20 THE COURT: Sustained.

21 THE WITNESS: So it's a problematic rule, it
22 kind of has been from the start. It's the first
23 regulation that has required water utilities to maintain
24 water quality all the way to the consumer's tap. Every
25 other regulation under the Safe Drinking Water Act

1 requires measurements of water as it exists in the water
2 main. Anything that happens bad to the water after it
3 crosses the property line is generally considered the
4 responsibility of the building owner or the homeowner,
5 period, that's historic.

6 But the Lead and Copper Rule's different
7 because it shares responsibility. There is no lead in the
8 plumbing up until the service line typically, there's no
9 significant lead. So because all the lead comes from the
10 service line which connects your house to the water main
11 or from lead solder or lead and brass, there's no point
12 in measuring the water out at the street, it almost
13 always had no lead.

14 So the Safe Drinking Water Act through the Lead
15 and Copper Rule attempting to control human lead exposure
16 to lead, it required utilities to monitor at the
17 consumers tap and meet certain standards, and if you did
18 not meet those standards you have to do things, you have
19 to take actions, and those actions can include alerting
20 the public to public health risks, telling them how to
21 avoid lead exposure, implementing improved corrosion
22 control on top of what is considered normal. But the rule
23 has a lot of loopholes, EPA knew about those loopholes
24 for a decade, and I wrote them many letters and I spoke
25 out nationally that if something's not done, people are

1 going to hurt. And, unfortunately, all of those things
2 came true in Flint.

3 Q So it's fair to say that you've had concerns about
4 governmental compliance with the Lead and Copper Rule for
5 some time?

6 A I've been outspoken about that fact, yes, the cheating
7 that was allowed to occur nationally with EPA doing
8 nothing about it.

9 Q And so Mr. Del Toral contacted you directly at some point
10 regarding this?

11 A Yes, and it was along the lines of, you know, here we go
12 again.

13 Q Was there a time when he sent you something to let you
14 know or to let others know that, outside of government,
15 that this was becoming an issue?

16 A Yes. In late April of 2015 I worked with LeeAnne to
17 sample her water at her house before the city --

18 Q Miss Walters?

19 A Miss Walters, before the city came and replaced her lead
20 pipes, and Miguel helped arrange that, and one morning I
21 talked her through a 30 bottle sampling then at her house
22 that really would allow us to see very clearly how big
23 the danger was in her home before, quote, the evidence of
24 the source of the lead was removed.

25 And so she mailed those samples to us at

1 Virginia Tech, they were analyzed the first week of May
2 in 2015. The results were astronomically high, and so I
3 immediately called Miss Walters and Mr. Del Toral after
4 we reran the samples because we at first didn't believe
5 it, we were skeptical as many scientists are, but, yeah,
6 the three of us were kind of wondering how to deal with
7 this issue given EPA's reluctance to, you know, correct
8 the Lead and Copper Rule nationally and to stop the kind
9 of cheating that was occurring in Flint as we later
10 determined.

11 Q Just as a frame of reference, when did you find out that
12 the Lead and Copper Rule was not being followed by the
13 MDEQ and/or EPA?

14 A That was probably about April of May of 2015 when Mr. Del
15 Toral told me that, and Miss Walters and Mr. Del Toral
16 had figured that out.

17 Q With that knowledge and after testing Miss Walters'
18 water, what did you do next?

19 A Well you try to work within the system as best you can,
20 that's one of the first rules of ethics, if you see
21 something wrong. And the problem we had was we felt MDEQ
22 was probably assisting the cheating in Flint, that was
23 our belief at the time, it later proved to be true
24 through Freedom of Information Act emails that I later
25 obtained and published on my website.

1 But then the question was how do you get EPA
2 involved, how do you get EPA to do their job to make sure
3 federal law is followed in Flint. So Mr. Del Toral was
4 very brave and he put his career on the line to write a
5 memo that laid out the imminent and substantial
6 endangerment to Flint residents in no uncertain terms,
7 and that came out in June of 2015.

8 Q You mentioned, just as an aside, your website, what is
9 the name of that and what have you put together
10 throughout the situation as it relates to what
11 information you provided?

12 A Well the website was really launched in August, early
13 August 2015 because the Flint residents got back to us
14 that they had a meeting with MDEQ, and the residents were
15 very upset and it was alleged by Miss Walters to me that
16 MDEQ employees said Mr. Del Toral had been handled, that
17 his report would never be finalized and they would never
18 hear from Mr. Del Toral again. And I later learned that
19 Mr. Del Toral had been told by EPA ethics officers to
20 stand down, effectively that he was not to talk to anyone
21 from Flint or about Flint again.

22 So with Mr. Del Toral out of the picture we
23 felt we'd done everything possible to work within the
24 system at that point, and we felt an environmental crime
25 was in progress, and we launched our effort, which was

1 called Flint Water Study, and we started a web page,
2 Flintwaterstudy.org to be, in our opinion, truth tellers,
3 truth seekers, and to collaborate directly with Flint
4 residents in terms of getting to an understanding of what
5 water problems they had in their system.

6 So we provided the funding from money I'd saved
7 up, the analytical support of a team that eventually grew
8 to 45 people at Virginia Tech, included many senior
9 research scientist, other professors, volunteers. We did
10 probably the most in -- thorough independent evaluation
11 of water quality in US history, and we did it quickly
12 because we felt that Flint residents were in danger and
13 that every day that went by was potentially unnecessary
14 exposure to harmful bacteria, elevated levels of lead.

15 Q So you maintained a website which provided information as
16 you went along in terms of your research and findings?

17 A Right. We tried to conduct what we call open science
18 where we forego academic rewards and try to do science in
19 the public good where we're just getting the data out
20 there, our scientific knowledge out there in real time so
21 that residents could benefit from that.

22 Q So when is the first time when you arrived personally in
23 Flint?

24 A That was mid-August of 2015 after we had written a grant
25 to the National Science Foundation, emergency grant, to

1 study Legionella in Flint water. As part of that that was
2 a -- that was a new topic, we just published research on
3 that subject that suggested that a lack of corrosion
4 control would cause Legionella to grow in a system like
5 Flint with unlined iron pipe.

6 So we had tested that in the lab and we'd seen
7 these bad results, and then we realized this unfortunate
8 human experiment was going on wherein there was no
9 corrosion control in Flint, there was obviously high
10 levels of iron because consumers were collecting bottles
11 that were orange in color. And so we hypothesized that
12 Legionella would be high throughout the distribution
13 system, the buildings, the houses.

14 And so that was the new part of the grant. The
15 old -- the part of the grant that was more testing the
16 obvious was well, if you don't have corrosion control and
17 you have lead pipes, you'll probably have high lead in
18 the water. So that was another hypothesis.

19 But we came in and we tested everything; we
20 tested disinfection byproducts and found that they were
21 low just like the state was saying. We tested coliform
22 bacteria, that was low. The chlorine residuals were lower
23 than I'd like to see but still consistent with what the
24 city was reporting and not outside the norms of what's
25 expected.

1 We then launched a -- the consumers, Flint
2 residents, they launched a sampling campaign for lead,
3 and getting those bottles back from them in late August
4 caused us to go to our website and declare that in our
5 opinion Flint probably was not meeting federal corrosion
6 control laws and lead was over the action level. And we
7 made a decision to tell Flint residents that the water,
8 in our opinion at least, was not safe to drink.

9 Q Going back to your testimony about your hypothesis that a
10 lack of corrosion control could lead to increased
11 Legionella, that was your hypothesis?

12 A That's correct. Yeah, we had studied it for five years,
13 there were two, three Ph.D.'s that worked on that in the
14 laboratory, so we had the laboratory data, and our papers
15 on that had just come out in the prior year, year and-a-
16 half. So, you know, this unfortunate human experiment, if
17 you will, provided us the opportunity to see if that
18 hypothesis held in the field.

19 Q Were there any other scientists or researchers working on
20 that particular issue and publishing papers?

21 A No. The -- my area of work, premise plumbing problems,
22 the opportunistic pathogens, lead and cooper corrosion,
23 it kind of exploded in terms of importance. That's been
24 very satisfying, but no one previously had a hypothesis
25 like we had and proved it in the laboratory that this

1 combination of factors could and would trigger a
2 Legionella outbreak.

3 Q So governmental agencies, anybody in charge of water
4 systems of health departments would not have that
5 knowledge going into this particular situation?

6 MR. FLOOD: Objection to the leading, Judge.

7 BY MR. TRAMONTIN:

8 Q Would governmental agencies have had the benefit of your
9 hypothesis going into this situation?

10 MR. FLOOD: Objection to the speculation, Judge.

11 BY MR. TRAMONTIN:

12 Q Was it commonly known?

13 A I don't believe it was commonly known. It was commonly
14 known that distribution system deficiencies, water main
15 breaks, for example, chlorine levels that were too low,
16 those could cause Legionella outbreaks. But it wasn't
17 known that this specific set of circumstances that we
18 hypothesized in our grant would cause it. In fact, it was
19 a hypothesis at the time, that's why we got funded to do
20 the emergency work.

21 Q So when you were funded, what did you do to test for
22 Legionella, if anything?

23 A Okay. Well it was actually before we were funded because
24 we didn't want to wait, so August is the best month to
25 look for Legionella. The grant, if it was approved, that

1 would not come until a month later. So I got research
2 scientist together in my wife's minivan, we packed it to
3 come to Flint to look for all those things I mentioned,
4 but our specific focus was really Legionella, that was
5 why we made the visit, because you can't -- this is
6 specialized sampling that residents can't really do
7 themselves, you need specialized sanitized equipment and
8 procedures.

9 Q So did you go out into the Flint community and test for
10 Legionella?

11 A Yes, we did. We sampled the eight sites that the city
12 samples regularly for distribution system bacteria, E.
13 coli, chlorine, for example, and as it turned out we were
14 going around the exact same day as those folks so much so
15 that at three of the sites we actually encountered the
16 city people going into the bathrooms when we were. And we
17 were a little bit paranoid that someone had tipped them
18 off that, you know, we were coming or something, but I
19 don't think that happened.

20 So that was important because we wanted to
21 compare our data to the data the city had, because there
22 were -- the residents were rightly concerned that the
23 city might not be doing the sampling right.

24 Q Was the city testing for Legionella as well?

25 A No. There's no required sampling for Legionella. It's a

1 new contaminant unlike lead where we have laws that
2 require certain actions and reporting. Legionella is a
3 new -- relatively new contaminant for which we're having
4 a societal and scientific debate as to what to do about
5 this problem now that we know in 1997 that it's the
6 number one source of water borne disease.

7 Again, it's got to be a shared responsibility
8 law because you're required to go into buildings to do
9 these measurements. And historically, in regulation wise
10 almost all regulations end at the property line. Once the
11 water line goes beyond that point, it's the building
12 owner's responsibility. The only precedent that that was
13 not the case was the lead rule. If we come up with a
14 regulation on Legionella it's going to have to be
15 similar.

16 Right now as of 2001 effectively there were --
17 there's a joint commission that said that the hospitals
18 must have Legionella control plans. So the best
19 management practice we have right now is that large
20 building owners have the responsibility to protect their
21 occupants. But I hope that we can get that changed,
22 that's one of my goals of our research, that's something
23 we're trying to change opinions on. Unfortunately, we
24 haven't been successful yet, but, you know, that's a --
25 again, that's a political science and social debate.

1 Science informs that debate, it doesn't decide it.

2 Q Thank you. So we're into August 2015, you're testing
3 points in the community for Legionella. You mention that
4 you tested sites where you knew the city was testing, did
5 you test any other sites?

6 A Yes. We tested homes that based on consumer reports we
7 thought would have a high likelihood of Legionella,
8 specifically -- the conditions we thought were most
9 likely were high iron, low levels of chlorine in the
10 water, and we found about, I think, you know, seven sites
11 that we did intensive sampling on that. I can't remember
12 the exact number.

13 MR. TRAMONTIN: May I approach the witness?

14 THE COURT: Yes, you may.

15 MR. TRAMONTIN: The record shall reflect that
16 I'm approaching with Defendant's Proposed Exhibit R.

17 BY MR. TRAMONTIN:

18 Q Dr. Edwards, do you recognize that document?

19 A Yes, I do. This is a table that ultimately recorded the
20 results of our work.

21 Q And so as we look at that you're testing not only the
22 water, but the biofilm?

23 A Right.

24 Q And you tested that at businesses, at residences, and
25 also what is this Detroit Water Businesses?

1 A Well the idea is we need a control, you never want to
2 sample just one city alone because you don't know how it
3 compares to the other cities. So the key point of
4 comparison here was what would be expected in a water
5 that was on Detroit water, which is what folks were
6 getting in Flint before the switch. So we had four
7 businesses that we went and sampled for Legionella in
8 Detroit water just as a basis of comparison.

9 Q Thank you. And is this table an accurate reflection of
10 the results of the sampling that you did?

11 A Yes.

12 MR. TRAMONTIN: At this time I'd move for the
13 admission of Defendant's Exhibit R.

14 THE COURT: Any objection?

15 MR. FLOOD: No objection, Judge.

16 BY MR. TRAMONTIN:

17 Q So you have a hypothesis that lack of corrosion control
18 will result in increased Legionella, you do this testing,
19 what, if anything, was significant about these results?

20 A Well in terms of the most dangerous form of Legionella,
21 which is Legionella pneumophila --

22 Q Why is that -- why do you say that's the most dangerous?

23 A Because there are many forms of Legionella, but the one
24 most commonly implicated in human illness by far is the
25 pneumophila group. And so that's really what you analyze

1 for if you want to begin a discussion about human health
2 risk. Even if you find it it doesn't end the discussion
3 because Legionella pneumophila are commonly present in
4 about 25 percent of homes sampled in the influent water
5 nationally, just the water flowing into the homes. But
6 the shocking thing about our work, and we discussed it at
7 length and we tested, and retested the samples was that
8 there was, contrary to our hypothesis, there was no
9 Legionella pneumophila detectable in the Flint homes, in
10 businesses.

11 THE COURT: Could you spell that for me, please?

12 DR. EDWARDS: Pneumophila, it's p -- I have to
13 look at it, p-n-e-u-m-o-p-h-i-l-a.

14 THE COURT: Thank you.

15 BY MR. TRAMONTIN:

16 Q So essentially your hypothesis that you'd find Legionella
17 did not pan out?

18 A Right, and we reported that on our website and our
19 mystification as to how it could be, but it was, that was
20 the fact so we reported that in real time.

21 Q Did you do any other testing of other sites for
22 Legionella around this time period?

23 A Before the switch back to Detroit water, which occurred I
24 think late October, yeah, we had another expedition, if
25 you will. I didn't personally go on that, but my team

1 did, and they -- our hypothesis was that maybe Legionella
2 would be high in the large buildings, the hospitals, the
3 multi-story buildings.

4 Q Why did you -- what supported that hypothesis or what was
5 your thinking?

6 A Well historically that's where Legionella problems were,
7 and our initial thought was if this was an atypical
8 outbreak, which we hypothesized, you know, if it was
9 going to be an atypical problem, we didn't know there was
10 an outbreak yet, we wanted to go to the homes first to
11 see if there was anything, you know, unusual happening
12 and we really did expect to find high Legionella
13 pneumophila in the homes, and if we had we would have
14 escalated this because you're concerned about human
15 exposure in the homes.

16 So the next thing is to go back to the large
17 buildings and say well is there a more conventional
18 problem with Legionella, is Legionella pneumophila high
19 in the large buildings, and if so is it higher than
20 what's commonly reported based on our monitoring in other
21 cities and other data.

22 Q Is it true that you didn't find any Legionella species at
23 all in this initial testing in the homes?

24 A No. We actually found Legionella species that is not
25 uncommon. The levels of Legionella species were

1 relatively low compared to what we'd seen in some other
2 cities and other reports. But generally speaking, that's
3 not considered as big a public health threat, not even
4 close.

5 Q So when your team tested the larger buildings before the
6 water switch, what were the results?

7 A The results were high Legionella, very concerning levels
8 of Legionella.

9 Q And what particular locations were tested?

10 A We tested Hurley Hospital, some taps in McLaren Hospital,
11 we tested some other large buildings, you know,
12 eventually, but it was primarily Hurley and McLaren were
13 most of our samples.

14 Q And why is that you would expect to find high levels of
15 Legionella in larger buildings?

16 A Well we're still working on that mystery right now, we
17 think it's because the plumbing systems are very
18 complicated, they have large diameter pipes, there's a
19 lot of storage on site. And our sampling in Flint during
20 the water crisis was consistent with the idea that
21 whatever happens in large buildings it's more conducive
22 to the growth of Legionella even without corrosion
23 control.

24 So that was what we concluded based on our
25 sampling. We don't know exactly why to this day we're

1 still -- we've done a year and-a-half of research trying
2 to figure that out, we're still doing that research now.

3 Q Well obviously it appears you have quite a bit of
4 personal experience with the Flint water crisis.

5 Just going back a little bit, what have you
6 reviewed in addition to your own investigation that -- in
7 forming your testimony today?

8 A Well I reviewed some of the testimony of some of the
9 other experts, specifically Dr. McElmurry from Wayne
10 State, some of the exhibits that he used, that's what
11 I've done. I'm familiar with their research as well. So
12 there's been work, two other papers published on
13 Legionella in the Flint system just in the last, I think
14 month, month and-a-half.

15 Q And what would be from the FACHEP group --

16 A Yes.

17 Q -- that you've reviewed their findings?

18 During the course of that review did you come
19 to learn whether or not -- well, we'll get to that.

20 So when you got to Flint you mentioned a FOIA
21 request, what did that entail?

22 A Well I made many Freedom of Information Act requests
23 because we felt, as I said, an environmental crime was
24 occurring and we wanted to know who knew what, when, and
25 who made inappropriate decisions and said things that

1 were not true and who was acting in an appropriate
2 manner. And we did that not only for ourselves because we
3 wanted to collaborate with people, that's always your
4 hope, but we also intended to confront people who we
5 thought were behaving unethically, and we did so on our
6 website.

7 We published all of our documents online to
8 make it freely available to any reports who wanted to use
9 it, and many reporters around the country took advantage
10 of that. We put all our pictures online and said just
11 take it, if you want to report on this feel free. So
12 there were many Freedom of Information Act requests that
13 I submitted through 2015, early 2016.

14 Q Specifically did you make any requests related to
15 communications between the Michigan Department of
16 Environmental Quality and the Michigan Department of
17 Health and Human Services and/or the Governor's office?

18 A Yes. I asked for all communications related to the lead
19 issue initially, because we weren't aware of a Legionella
20 problem. The only knowledge I had of the Legionella
21 problem was one line of Mr. Del Toral's memo where EPA
22 had been aware of this problem, I think in early 2015. So
23 that was kind of consistent with our hypothesis, but
24 other than that we weren't aware of any kind of outbreak
25 or anything like that. We predicted it, but we weren't

1 aware of it.

2 Q Did you eventually receive copies of communications
3 between MDEQ and MDHHS?

4 A Yes. Through our Freedom of Information Act requests,
5 yeah.

6 Q And were you able to conclude anything from reviewing
7 those emails?

8 MR. FLOOD: Judge, may we approach?

9 THE COURT: Yes.

10 (Off the record at 10:50 a.m.)

11 (Back on the record at 10:51 a.m.)

12 MR. TRAMONTIN: Just one moment, please.

13 THE COURT: Sure.

14 MR. TRAMONTIN: Thank you.

15 BY MR. TRAMONTIN:

16 Q Dr. Edwards, you have already stated your opinion that
17 MDEQ was not following the Lead and Copper Rule, from
18 what do you derive that opinion?

19 A Well as I testified to congress twice on that issue in
20 2015, it was based on the emails that I read that stated
21 that they knew -- well first they tried to mislead Mr.
22 Del Toral and say they had corrosion control when they
23 didn't, and then gradually became known they didn't have
24 corrosion control. And then I watched how the sampling of
25 lead was being manipulated through the emails and the

1 data that was presented, and it looked like a very
2 serious case of cheating on the Lead and Copper Rule
3 using many of the tricks that we had spoken out against
4 nationally over the years. And that their data generally
5 could not be trusted, the data -- the claim that Flint's
6 water was safe to drink, that it had low levels of lead,
7 it didn't make any sense scientifically, and the way they
8 were doing the sampling wouldn't uncover a problem if it
9 existed.

10 So all the emails were consistent with the idea
11 that a few employees of the Michigan Department of
12 Environmental Quality, for reasons that I can't under --
13 you know, I'm not going to interpret their intent, but
14 they were clearly misleading people who were asking
15 questions such as Mr. Del Toral, and they were quote --
16 you know, and to my mind covering up the fact that Flint
17 was not following federal corrosion control law.

18 Q So in all the emails that you reviewed, did you ever see
19 any evidence that MDEQ informed MDHHS or the Governor's
20 office that there were no corrosion controls?

21 MR. FLOOD: That's --

22 BY MR. TRAMONTIN:

23 Q Do you have a sense of the statement?

24 MR. FLOOD: Yeah, Judge, I think that would
25 clearly call for an opinion of something that's not

1 evidence here today.

2 MR. TRAMONTIN: It's not an opinion, I'm asking
3 if he uncovered anything which would suggest that MDEQ
4 communicated with any other agency that there was a lack
5 of corrosion control.

6 THE COURT: That's factual, so I'll allow it.

7 MR. FLOOD: Thank you.

8 THE WITNESS: So at least through September of
9 2015, the emails that I reviewed, there was no such
10 acknowledgement by MDEQ that there was a problem. To the
11 contrary, there were many emails that those employees
12 were claiming that what was happening in Flint was normal
13 and wasn't worthy of anyone looking into in greater
14 detail.

15 BY MR. TRAMONTIN:

16 Q Was one of those FOIA requests that you made to the
17 Michigan Department of Health and Human Services?

18 A Yes. There were -- yeah.

19 Q So we'll get out in front of that.

20 How was your -- what was your experience, at
21 least initially, with getting the information you
22 requested from the Department of Health and Human
23 Services?

24 A Well compared to the abysmal performance of our agencies
25 I've unfortunately had to FOIA in the past, including the

1 US Centers For Disease Control, the USEPA, Washington
2 Department of Health, the local water company in D.C.,
3 other agencies, the Michigan response was very fast by
4 comparison.

5 Now I did complain about it because unlike
6 those other cases I thought there was an imminent
7 substantial health risk, and part of our strategy on our
8 website was to draw attention to this issue and, you
9 know, there's some gamesmanship that I involved myself
10 in, which was to be very angry, and that was not fate,
11 about the fact that, you know, FOIA's were taking as long
12 as they did. But the record shows very clearly in my
13 opinion that Michigan -- the FOIA laws are taken
14 seriously, generally speaking, and the agencies did a
15 good job compared to my prior experience.

16 Q Just to tie this up, and we'll get back to the FOIA's and
17 MDHHS, in your review of the FACHEP studies did you
18 become aware that that group later on tested for
19 Legionella in homes?

20 A Yes. There was a report written, I think it was June
21 2015, that they had collected samples in January -- 2016,
22 collected samples in January of 2016 that report about 31
23 samples throughout the city.

24 Q And what were the results of that -- those studies?

25 A Undetectable levels of Legionella in the biofilm in the

1 water and shower samples that were collected.

2 Q Did -- and that was in June of 2015 -- 2016?

3 A The report was written then, that was the date on the
4 report, I did not see that information until it was --
5 presented in the court documents. And I was kind of
6 shocked, to say the least, that that data -- I had never
7 seen that data, I never heard of that data.

8 Q So you had not seen the report that you're referencing
9 until it was provided to you as an exhibit?

10 A I saw it in the court testimony of Mr. McElmurry, yes.

11 Q And you had -- and we're going to get to your contact
12 with Dr. McElmurry in a bit, but you had been following
13 their work and were interested in it obviously because
14 why?

15 A Well, I mean, we were still -- at least been engaged in
16 Flint continuously since April of 2015, and so we're very
17 carefully monitoring new information and checking to see
18 if our data's consistent with that of other researchers,
19 and here's an example of where their data was perfectly
20 consistent with our data and I would have liked to have
21 known that. But I'm happy I know it now, yeah.

22 Q And -- alright, thank you.

23 So when did you first have contact with Dr.
24 Wells?

25 A I think it came about because I ruined her Christmas

1 vacation, it was probably late 2015, I had just gotten a
2 massive amount of MDHHS emails, and I was going to
3 Florida, I worked on it for about 16 hours straight, and
4 in about three days my team and I had put a blog post up
5 on our website which showed something I initially thought
6 was very disturbing, and that was that MDHHS had done a
7 study of what happened to childhood blood lead in Flint
8 after the water switch. And so we wrote a blog post on
9 that, and I think Dr. Wells called me probably within 36,
10 48 hours of that, is my guess, and we had our first
11 conversation.

12 Q That conversation was about --

13 MR. FLOOD: Objection to the hearsay, Judge, of
14 what Dr. Wells and Dr. Edwards are talking about.

15 MR. TRAMONTIN: I believe he can testify to the
16 general subject matter of the conversation without any
17 hearsay implications, it's part of his investigation.

18 THE COURT: It depends if it's offered to prove
19 the truth of the matter asserted, I guess.

20 MR. TRAMONTIN: It is not, it's the nature of
21 his first contact with Dr. Wells.

22 THE COURT: I'll allow it for that purpose then.

23 THE WITNESS: And so at that point we had a
24 conversation, I said I thought there were emails missing,
25 we exchanged a few emails at that time, and very quickly

1 I had the emails in question and I was, frankly I was
2 impressed.

3 MR. FLOOD: Judge, I would imagine that goes for
4 the truth of the matter asserted.

5 MR. TRAMONTIN: I believe the witness testified
6 that he was impressed as to the rapidity of the response
7 and the answering of his questions to his satisfaction. I
8 don't believe that's for the truth of the matter
9 asserted. He's recounting his experience and his first
10 contact with the defendant.

11 MR. FLOOD: I don't know how I get to cross-
12 examine that of Dr. Wells' voracity, but what he's saying
13 is what we had a conversation about. And then I asked
14 her and she then in turn gave me these emails quite
15 quickly and I was seriously impressed.

16 MR. TRAMONTIN: That was an act, it's an act,
17 it's not a statement, it's not an assertion. To
18 facilitate -- to have a request and then honor that
19 request quickly is not hearsay, and it's not -- there's
20 nothing implicating voracity.

21 THE COURT: There's no difference between that
22 and the countless references he's made to requesting
23 emails and FOIA's and they were provided. It's just
24 things that happened, it's transactional.

25 Now if there were some detail that were

1 specific questions or inquiries of statements, that
2 hasn't been testified to. So the fact that it transpired
3 that he was looking for emails and they were provided,
4 the Court will allow that.

5 BY MR. TRAMONTIN:

6 Q Without going into anything that Dr. Wells said, you
7 mentioned that you were impressed, what specifically were
8 you impressed with?

9 A Well, you know, I thanked her on my website in writing, I
10 think it was January 9th, where we wrote a blog post about
11 our analysis and putting everything in the context. And
12 our conclusion of the blog post at that time was there
13 was a small group of MDEQ employees who were actively
14 misleading people at every opportunity, that because of
15 their misleading emails that they wrote they -- certain
16 people believed them, and that it looked like, for
17 example, that the analysis that was done in 2015 on the
18 blood leads of Flint children was a missed opportunity to
19 evaluate the issue of high lead in the water before we
20 engaged in August and launched our website.

21 So we wrote --

22 MR. FLOOD: Object to the speculation, Judge, of
23 the missed opportunity.

24 THE WITNESS: So I wrote on my website it was a
25 missed opportunity.

1 MR. TRAMONTIN: Your Honor, that's his
2 conclusion. It'd be fine if that were stricken and he
3 continues his answer.

4 THE COURT: I mean, if you want to go into it
5 further you can lay a foundation, otherwise the objection
6 is sustained.

7 MR. TRAMONTIN: Well, thank you, Judge.

8 BY MR. TRAMONTIN:

9 Q Dr. Edwards, you testified as to a missed opportunity,
10 what led you to that conclusion, what did you review,
11 what were you familiarized with which brought you to that
12 point?

13 A Well it was the totality of the emails and that --

14 MR. FLOOD: I object, I don't know what -- we've
15 been through this before as it relates to things that are
16 not in evidence. The totality of emails are not here in
17 this courtroom nor have they been admitted. So unless
18 that foundation is laid, it's not in evidence.

19 BY MR. TRAMONTIN:

20 Q Dr. Edwards, did you review at any point a report that
21 was generated in July of 2015 prepared by DHHS related to
22 blood lead levels in children?

23 A Yes.

24 Q And what -- and what did that report contain?

25 MR. FLOOD: Judge, that report's not in

1 evidence.

2 MR. TRAMONTIN: Your Honor, I hadn't even
3 intended to go into this, so I can go onto the next
4 question.

5 THE COURT: Okay.

6 MR. TRAMONTIN: Thank you.

7 BY MR. TRAMONTIN:

8 Q But I appreciate that background, Dr. Edwards.

9 So my original question was what in your
10 initial interaction with Dr. Wells impressed you in
11 particular?

12 A Well the fact that I asked for the emails and the emails
13 appeared. She seemed very professional, she seemed to
14 want to get to the truth of the matter and help me do so
15 in a timely fashion.

16 Q Did you continue to work with Dr. Wells after this
17 particular interaction?

18 A Yes, I did.

19 Q And did you make her aware that you -- it was part of
20 your research, if it was part of your research, and if
21 you did make her aware that you were looking into whether
22 or not the source of the Legionella outbreak was the
23 switch in the water?

24 A Yes. In late -- well it was early January of 2016 I had
25 been working with Genesee County Health Department

1 because they're typically the point people on the
2 Legionella issue, so Mr. Cupal and Mr. Henry, and we were
3 informing them of our continued efforts to look at the
4 Legionella and bacteria issues in Flint. They asked us
5 for updates, we provided them our data. So it was about
6 early January of 2016 that we had in hand not only our
7 data that showed high levels of Legionella in the
8 hospitals and, you know, by extension large buildings,
9 but also Genesee County had given us information that --
10 from something in December of 2015 that there was --
11 there had been Legionella outbreaks in Flint.

12 Q Let me back up real quick.

13 You said that you had begun working with
14 Genesee County Health Department, about when did that
15 begin?

16 A That was -- probably my first contact with them was
17 September 15th of -- that I met them in this building, as
18 a matter of fact, I think, of -- it was 2015.

19 Q And what in particular were you communicating with them
20 about?

21 A I had a meeting with Miss Cupal, and I'm not -- there
22 were other people there, I can't remember who, but I said
23 it was my hypothesis that lead was very, very high in the
24 Flint water system, we were about to go a press
25 conference with Flint residents to announce those

1 findings of their citywide sampling, and that we also
2 thought that bacteria, opportunistic pathogens like
3 Legionella, could be high, even though our data showed
4 that in the homes they were not. So I already reported to
5 her those results.

6 Q During your initial contact with Genesee County Health
7 Department, did anyone from that health department
8 complain to you at all about working with the Michigan
9 Department of Health and Human Services?

10 MR. FLOOD: Objection to leading, Judge, and
11 hearsay.

12 THE COURT: Sustained.

13 MR. TRAMONTIN: Your Honor, it was potentially
14 leading but the absence of a statement is not a
15 statement; therefore, if I may rephrase the question I
16 believe it doesn't call for hearsay.

17 THE COURT: Alright.

18 BY MR. TRAMONTIN:

19 Q Dr. Edwards, were you ever made aware by the local health
20 department here that there was conflict or any particular
21 concerns related to working with -- were you informed of
22 any concerns with the Michigan Department of Health and
23 Human Services?

24 MR. FLOOD: It's still suggesting answers,
25 Judge, and leading, and it also requires, a back door way

1 in, hearsay.

2 BY MR. TRAMONTIN:

3 Q Did you discuss the relationship between the Department
4 of Health and Human Services and the local health
5 department?

6 A No, that did not come up. The Michigan Department of
7 Environmental Quality was mentioned as a huge issue.
8 There were complaints about the Michigan Department of
9 Environmental Quality, in fact the same people that were
10 involved with the lead issue.

11 Q So getting back to your contact with Dr. Wells in early
12 2016, you may have answered this, but did you make her
13 aware that you were looking into the switch in the water
14 system and its potential impact on the Legionella
15 outbreak?

16 A Yes, and that it was our hypothesis that the switch was
17 the cause of the outbreak, a triggering event, one of the
18 causes, and that I've been working with Genesee County at
19 least informing them of what we were finding and that I
20 was hopeful that an announcement would be made on this.

21 Q An announcement would be made on what, sir?

22 A That a Legionella outbreak had occurred because that was
23 just what Genesee County had sent to us. And our data on
24 large buildings, which became available in December of
25 2015, we gave it to them, showed Legionella levels were

1 relatively high in large buildings, at least through the
2 switch.

3 Now already hypothesized that after the switch,
4 once Detroit water came back into the system, that
5 triggering event was gone, that the Detroit water would
6 be much less conducive to growing Legionella, that's what
7 our prior experiments had shown, so everything suggested
8 to us that after the switch that the Legionella problem
9 should once again go back to historic levels. And I
10 actually said that in a news report early January 2016.

11 Q So after you learned --

12 THE COURT: Could you repeat that again?

13 THE WITNESS: So after the announcement was made
14 of the Legionella outbreak I was asked to comment on it
15 because we had predicted the outbreak in our research
16 proposal, and based on our prior work, and one of the
17 first things I said is that the conditions that caused
18 this outbreak are no longer present, meaning that they'd
19 switched back to Detroit water.

20 So we had every belief, based on my scientific
21 experience, that in the coming summer that the problems
22 would not reoccur.

23 THE COURT: And this was in December of 2016?

24 THE WITNESS: I made that statement in January
25 2016.

1 THE COURT: January 2016, okay.

2 THE WITNESS: Yes.

3 THE COURT: Thank you.

4 BY MR. TRAMONTIN:

5 Q So after you spoke with -- strike that.

6 So after you informed Dr. Wells of what your
7 hypotheses were and what you were looking into, was there
8 anything -- did you continue to work with her?

9 A Yes, we contacted each other every now and then.

10 Q Did you ever make any additional requests to Dr. Wells
11 specifically as it would aide in your research?

12 A Yes. I, you know, I asked her certain things about, you
13 know, our Legionella work, she would answer the
14 questions. She knew that we were preparing publications
15 on our Legionella work that were showing this problem in
16 the large buildings, and that it was our conclusion that
17 the switch to Flint River was a triggering event.

18 Q Now you said triggering event, earlier you said cause,
19 can you tell the Court if there's any distinction between
20 those two terms?

21 A Well so our current hypothesis about how the Flint
22 Legionella outbreak occurred is that first and foremost
23 it is the responsibility of large building owners to
24 protect their occupants from Legionella, that's --
25 especially in hospitals, joint commission report in 2001

1 that is the strategy. The defense against Legionella is
2 for the hospital, the building to have some kind of
3 method of controlling Legionella, whether it's
4 chlorination or chloramination or high temperature, some
5 plan, if you will.

6 And so when the switch occurred in the water
7 supply basically a protection against Legionella that had
8 been present in Detroit water was no longer there; the
9 higher levels of chlorine, for example, that were more
10 common in the Detroit water, the presence of corrosion
11 control. We now believe, based on our lab work and our
12 work in Flint, that during that time the water system
13 itself was protecting large building occupants. And so
14 large buildings that didn't really have a good Legionella
15 control plan did not see as serious a problem as when the
16 switch to Flint river occurred and the defenses from the
17 water system were now gone and they were exclusively
18 reliant on their own defense, if you will, against
19 Legionella.

20 So we believe that three things are descriptive
21 of the Flint Legionella outbreak. First, that Legionella
22 was high in the large buildings during the Flint River
23 time period if they did not have a good Legionella
24 control program. Secondly, the reason that they were
25 higher then is because the water system wasn't providing

1 a defense, for example, from chlorine that had been there
2 for decades previously. And thirdly, for reasons we fully
3 don't understand, the Legionella levels in the Flint
4 homes never got higher or lower than what we saw in other
5 cities.

6 So all three things, all three of those factors
7 seemed to be consistent with our laboratory data, our
8 field monitoring data, and also the conventional wisdom
9 of science, you know, if you will.

10 Q Have you studied the incident rates of Legionella in
11 Genesee County in terms of, you know, where -- how
12 individuals may have contracted Legionnaires' disease or
13 what their exposures were?

14 A No. We've used the statistics that are available to write
15 papers that showed that the incidences of Legionella in
16 the Flint system was high during the outbreak, and so we
17 studied it from that perspective. In terms of the
18 detailed analysis, we have reviewed the available data
19 that's been published by MDHHS in terms of where the
20 deaths occurred, where the exposures are believed to have
21 occurred, according to kind of conventional CDC
22 approaches in characterizing an outbreak.

23 So I'm familiar with those documents and I'm
24 also familiar with a recent paper on it by FACHEP.

25 Q Do you derive any significance from your review of those

1 documents --

2 MR. FLOOD: Judge, those documents aren't in
3 evidence, the FACHEP document has been published but not
4 in evidence, it's been published to the world but not in
5 evidence. And I'm not sure what he's referring to as it
6 relates to the other areas.

7 MR. TRAMONTIN: I'm referring to testimony that
8 has been presented in this Court through various
9 witnesses as to data use by FACHEP that relates to health
10 care associated exposures and the entire number of
11 Legionella cases, how many of them lived on Flint water,
12 how many of them lived off of Flint water. There's been
13 extensive testimony before this Court on those issues.
14 This witness has reviewed that and I'm simply asking him
15 to compare his knowledge of that data to his findings or
16 lack of findings of Legionella in the home.

17 It's also being pointed out that Prosecution's
18 Exhibit No. 14, the Legionellosis Outbreak Summary of
19 Genesee County, was admitted into evidence.

20 MR. FLOOD: Judge, I'm not quite sure -- 14, I
21 know what it is, but did he review it, when did he review
22 it, what specifically -- what testimony has gone through
23 in this case -- (inaudible) -- in this particular case.
24 So FACHEP's publication, I have no problem with that
25 coming into evidence, I don't know if he's already -- if

1 that's what he's referring to and his opinion.

2 But I'm just trying to figure out what it is so
3 I can specifically -- (inaudible) -- we got into evidence
4 that he's referred to, and I have no issues with bringing
5 it in if there's something you have or want that we could
6 agree to for admission that he's reviewed.

7 MR. TRAMONTIN: Just one moment, Your Honor.

8 Your Honor, may I approach the witness with
9 Exhibit No. 14, which is an Outbreak Summary prepared by
10 the Michigan Department of Health and Human Services for
11 the period of June 2014 to March 2015? This has been
12 admitted into evidence as Prosecution's Exhibit No. 14,
13 I'd ask this witness if he's reviewed this particular
14 document.

15 THE COURT: You may. But the Court will, in
16 ruling on the objection, the Court does find that the
17 information, the testimony, the documents that you
18 referred to do form a basis for him testify about them.

19 And your objections, Mr. Flood, I think would
20 be -- would go to cross-examination. If you want to get
21 into detail exactly how he based his opinion --

22 MR. FLOOD: Not a problem, Judge. I thought he
23 was saying that, if I heard him right, Judge, there was a
24 document that's not in this court and that's the FACHEP
25 publication.

1 THE COURT: Okay.

2 MR. FLOOD: So if that's not in this court, I
3 just was objecting to that as a basis for his testimony.

4 THE COURT: Oh, okay, I see what you're saying.

5 MR. FLOOD: I don't have a problem --

6 MR. TRAMONTIN: Your Honor, I was not attempting
7 -- the witness himself said he reviewed MDHHS information
8 as to the exposures of Legionella patients and whether
9 they lived on the water or didn't.

10 THE COURT: Right.

11 MR. TRAMONTIN: And that's what --

12 THE COURT: And I actually think it's kind of,
13 not unfair, but burdensome to expect this witness to know
14 what document he's been reviewed -- he doesn't know
15 what's been admitted in this case and another case or
16 not, and that's why I say cross-examination you can say
17 well -- that can be pointed out.

18 But he's got to be able to testify fairly, so.

19 MR. FLOOD: Thank you, Judge.

20 THE COURT: Alright.

21 BY MR. TRAMONTIN:

22 Q So you've reviewed MDHHS data on the cases in Genesee
23 County and what some of the common denominators were of
24 those cases?

25 A Yeah. The one statistic that stands out, based on the

1 documents I reviewed, were that 80 to 90 percent of the
2 deaths that occurred in McLaren Hospital were folks who
3 had been at McLaren Hospital.

4 Q Did you review any data about whether or not some of the
5 -- you said deaths, have you reviewed some of the
6 information about cases that did not result in deaths?

7 A Yes, and those were -- a majority of those were, you
8 know, related to exposures that could have occurred in
9 hospitals.

10 Q So how does that -- so what do you conclude from that as
11 you compare that to the data that you collected regarding
12 finding Legionella in homes versus large buildings?

13 A The data's not inconsistent, it's not inconsistent with
14 the conventional exposure, where is the most likely place
15 of exposure, tends to be hospitals and large buildings.
16 And unfortunately hope to show that Legionella was high
17 in Flint homes during the outbreak, but unfortunately we
18 did not do that. So that conventional wisdom still holds
19 to this day that the likelihood to exposure to Legionella
20 in homes is relatively low.

21 Q And as you said -- as you testified, one of those large
22 buildings that you tested was McLaren Hospital, correct?

23 A Yes.

24 Q And did you seek permission to test there?

25 A No.

1 Q And did you have any reason to believe that -- why did
2 you make the decision not to seek permission?

3 MR. FLOOD: Objection to the speculation, Judge.

4 MR. TRAMONTIN: I'm asking the witness why he
5 did a particular thing that he did, it's within his
6 personal knowledge.

7 THE COURT: Overruled.

8 THE WITNESS: Because it was my belief that we
9 would not be granted permission if we asked.

10 MR. FLOOD: That's the speculation, Judge.

11 THE COURT: Okay.

12 MR. TRAMONTIN: That's why he --

13 MR. FLOOD: I'm sorry?

14 THE COURT: Well that's his answer, I'm not
15 accepting it as true that he wouldn't, but that's why --
16 his intent, his state of mind, I will allow it for that
17 purpose. I'm not saying that it's true that he would
18 have been denied because, like you said, that's
19 speculation.

20 MR. TRAMONTIN: Can I ask what he based that on?

21 THE WITNESS: Well so I had, you know, it was
22 the nature of how we became aware of the outbreak, that
23 it was, I think, August, a clerk from ACLU Michigan had
24 emailed us that he heard from a nurse in McLaren --

25 MR. FLOOD: Judge, that's all hearsay.

1 MR. TRAMONTIN: Alright, I'll move on.

2 BY MR. TRAMONTIN:

3 Q I want to get back to a topic that we didn't cover
4 extensively enough.

5 Your relationship with Dr. Wells, your
6 interaction with Dr. Wells, did she do anything to
7 discourage you from your research into whether or not the
8 water switch was related to the Legionella outbreak?

9 A No, to the contrary she seemed interested in what the
10 data would show and she encouraged it.

11 Q And is it -- and I asked you this before, but do you
12 recall any specific requests that you made of MDHHS or
13 Dr. Wells to get information to assist with your
14 research?

15 A No, not generally, we had conversations about the work,
16 they read our work after it came out, we had
17 conversations about that.

18 Q Did you at any point acquire sputum samples from MDHHS?

19 A Eventually we did, yes.

20 Q And how were those provided to you?

21 A They were shipped to our laboratory and to my team that
22 does that work.

23 Q Did you have -- did you make that request of Dr. Wells?

24 A Yeah, we said that we had environmental isolates, that if
25 we could get the sputum samples, the clinical samples we

1 could do this analysis. We had funding from the Sloan
2 Foundation that we could access, and the Sloan
3 Foundation's very interested in this research, it is
4 cutting edge research, and so we did those analyses.

5 Q Okay. And do you recall approximately when this was?

6 A Actually I don't, I think it was about, you know, a year
7 ago, but I'd have to check my records.

8 Q So you've testified that you had environmental samples.

9 A Um-hmm.

10 Q So does that mean that you had a certain DNA type of
11 Legionella? I don't want to lead you, but what would an
12 environmental sample tell you about Legionella?

13 A Well we had bact -- we had Legionella pneumophila that we
14 found in the Flint system both in large buildings and a
15 very few small buildings in the summer of 2016. So we
16 were growing these and then -- so we can do the genetic
17 analysis of that, we can do the genetic analysis of the
18 clinical isolates. We don't feel it's our expertise to
19 do those comparisons. We are going to release that data,
20 make it available to anyone who wants to look at it so
21 they can do those comparisons. There's people that have
22 more expertise on that subject than we do. But we did the
23 analysis.

24 Q This might seem like a simple question, but what is the
25 purpose of trying to match a clinical sample to an

1 environmental sample?

2 A Well in general terms it's to see if the water was a
3 likely source. So to the extent that the bacteria in the
4 lungs of the patient is a genetic match for bacteria
5 that's found in the water supply, that increases the
6 likelihood that the water was a potential source. But you
7 also have to realize it's complicated because the water
8 supply feeds a cooling tower, and so even if an exposure
9 occurred, for example, through a cooling tower, the
10 bacteria that grew in the cooling tower came at one point
11 from the water oftentimes.

12 So, you know, it's a first step in trying to
13 draw cause and effect relationships between higher
14 incidents of Legionnaires' disease and where the exposure
15 might have come from, because Legionella can come from
16 many different sources.

17 Q So you're trying to determine where a person may have
18 been exposed to Legionella bacteria?

19 A The data we generated can be used by others to make that
20 determination, but we've resolved that we're not going to
21 do that analysis because it requires a specialized
22 expertise that we don't claim to have at this point.

23 Q But you requested sputum samples and those -- through Dr.
24 Wells and those were provided?

25 A Yes. And we made it clear we would be making the results

1 available to everyone who asked cognizant, of course, of
2 patient and HIPAA requirements, so that's the plan.

3 Q You mentioned Dr. McElmurry's name a few times already,
4 what was your first contact with Dr. McElmurry of the
5 FACHEP group?

6 A It was in early October of 2015 that I received
7 notification from Dr. Mona that Mr. McElmurry would be
8 contacting me by email. He then emailed me and said he'd
9 like to speak to me because he had a lot of experience
10 working in Flint --

11 MR. FLOOD: Judge, I would object to the
12 hearsay.

13 MR. TRAMONTIN: Your Honor, as an offer of
14 proof, where we're going with this is Dr. McElmurry
15 approached Dr. Edwards for some assistance, and Dr.
16 Edwards provided that assistance, made certain
17 representations to Dr. Edwards that he relied upon and,
18 therefore, Dr. McElmurry's statements would be admissible
19 because of their effect on the listener. So Dr.
20 McElmurry's making representations, Dr. Edwards is
21 receiving those representations, makes decisions going
22 forward as to what level of assistance he's going to
23 provide.

24 MR. FLOOD: I object to the hearsay evidence of
25 what Dr. McElmurry was saying. I mean --

1 THE COURT: I agree with the defense in that if
2 Dr. McElmurry says I'm the foremost expert in this, he's
3 not saying that it's true, he's just saying that that's
4 what he was told and he relied upon it, not necessarily
5 that it was true, but that he just gave him certain
6 statements and he acted on those statements.

7 MR. FLOOD: Then why is it relevant? Because
8 whatever he did next -- you talked to Dr. McElmurry, yes,
9 I did; you had communication with him, yes, I did; what'd
10 you do, I did the following, A, B, C and D, not the
11 substance of what Dr. McElmurry said because then that's
12 not relevant, you're only getting it in for the action of
13 him. So and then but that's not what I just understood,
14 I understood that he was asking the content of what Dr.
15 McElmurry was saying for the truth of the matter
16 asserted.

17 Now if it's you're saying for a limited purpose
18 of just the perception and my actions, we've been
19 consistent throughout this court to allow that in.

20 THE COURT: Well I didn't think we got that far,
21 all I heard him get out was that Dr. McElmurry said that
22 he had a lot of experience and then the objection, so I'm
23 not -- so he may have -- I mean, if he had that
24 experience I don't -- I don't think that's why it's being
25 offered to show that Dr. McElmurry had this experience

1 that he was just beginning to refer to.

2 MR. TRAMONTIN: Your Honor, may we approach?

3 THE COURT: Yes, you may.

4 (Off the record at 11:33 a.m.)

5 (Back on the record at 11:42 a.m.)

6 BY MR. TRAMONTIN:

7 Q Dr. Edwards, relating back to your communications with
8 Dr. McElmurry, why is that he approached you? In what
9 context did he approach you?

10 A He sent me an email that said he had knowledge of the
11 Flint water system and that he wanted to talk to me about
12 research opportunities.

13 Q And did you respond to that email?

14 A I did, I set up a time for a phone call.

15 Q And did you have that telephone conversation?

16 A Yes.

17 Q And what in -- particular knowledge did he express to you
18 that he had?

19 A That he had been working in Flint since 2010, that he had
20 five years of work as a volunteer humanitarian looking at
21 the Flint water system, that he had intimate knowledge of
22 the pipes and the network, that he had a working
23 hydraulic model of the system, that he knew people on
24 Flint based on his years of work. And this was priceless
25 to the extent he had this knowledge at that time in an

1 unfolding emergency situation. You know, I was getting
2 five phone calls a day from professors who wanted to
3 study the Flint system, they wanted to apply for research
4 funding, but they didn't have the local knowledge, you
5 know, they didn't have the expertise, they didn't have
6 the experiences on the ground, if you will.

7 So in a federal -- in an emergency situation,
8 which we had already entered into, it wasn't a federal
9 emergency at that point, you want the folks who have the
10 on ground knowledge, the quote boots on the ground,
11 who've been there, so this is really a golden ticket, if
12 you will, to get funding, research funding for relief
13 efforts, a seat at the decision table where people are
14 going to be deciding how to direct the recovery and
15 making decisions that profoundly impact the --
16 potentially the Flint residents.

17 So this was -- this was someone who presented
18 himself as a person that had this critical knowledge, and
19 I introduced him to the inner circle of people working on
20 the Flint Water Crisis response. He asked me to write a
21 letter of support for an NIH grant that he was writing to
22 get \$422,000.00 of funding, and I wrote that letter of
23 support for him based on what he presented to me as his
24 expertise and intimate knowledge of the Flint water
25 system.

1 Q Did you have any further contact with Dr. McElmurry?

2 A Yes.

3 Q In what context?

4 A Well so, for example, I would ask him questions that
5 based on his supposed intimate knowledge of the system he
6 should be able to answer and he couldn't answer those
7 questions. I asked for information about the hydraulic
8 model that he said he had, suddenly he said that he was
9 working on the hydraulic model. And I later got an NIH
10 grant wherein in the first version of his NIH proposal it
11 said I had a working model of the hydraulic system, and
12 then after he was invited to submit it said I will build
13 the hydraulic model.

14 So I didn't know that at the time, I've just
15 seen that in the last few weeks what the final version of
16 the NIH grant said that he would build a hydraulic model.

17 Q But you -- these representation that were made to you by
18 Dr. McElmurry, is it your testimony that that's what led
19 you to assist him?

20 A Without a question. If he hadn't had that -- those years
21 of experience in Flint working on the ground, building
22 the hydraulic model with his supposed intimate knowledge
23 of the Flint water distribution system, I would have
24 politely said there's nothing really you can offer. If
25 you look at his record he has almost no experience

1 working on drinking water, he had no experience working
2 on Legionella. He would not have any expertise worthwhile
3 to the disaster recovery or relief efforts.

4 Q Did you -- when you did become -- strike that.

5 Did you ever personally consider applying for
6 grant money from the State of Michigan to look into
7 whether or not the water switch was responsible for
8 Legionella outbreak?

9 A No, I didn't.

10 Q And why not?

11 A Because we were pretty tired by January of 2016. I paid
12 for almost all that work out of my own pocket from
13 discretionary accounts at the university. We wanted to
14 see Michigan faculty take a more proactive role because
15 they had been criticized for not getting involved earlier
16 in the press. So in early 2016 we kind of thought it was
17 time for us to, you know, just advise from a distance,
18 we're 600 miles away. We really needed to partner with
19 people who were in the community who had this, you know,
20 boots on the ground experience because it was a -- it's a
21 logistical -- large logistical nightmare to try to do
22 what we did in Flint.

23 Q Have you reviewed Dr. McElmurry's CV that's been admitted
24 into evidence in this matter as Exhibit 18?

25 A Yes.

1 Q Would you like to review it to refresh your recollection
2 or do you recall it?

3 MR. FLOOD: He said he --

4 BY MR. TRAMONTIN:

5 Q Is there anything that you found in reviewing that
6 curriculum vitae that would support the representation
7 that Dr. McElmurry made to you about his experience in
8 Flint?

9 A No.

10 Q Did you become familiarized with the activities of Dr.
11 McElmurry's FACHEP group in Flint?

12 A Yes.

13 Q Did -- what concerned you, if anything, about their
14 research project?

15 A First that Mr. McElmurry was given this contract in a
16 sole source fashion without a competition based on
17 supposedly his unique expertise. And so he didn't have
18 the knowledge in Legionella himself, by his own
19 admission, his own phone call, his vitae, he has no
20 experience with Legionella, very, very limited experience
21 with drinking water at all.

22 So the idea that he was given this important
23 leadership role was somewhat shocking to me, but it could
24 be justified on the basis of his five years on the ground
25 work in Flint and his intimate knowledge of the

1 distribution system, that's the only thing he had that
2 could have possibly qualified him to be a sole source for
3 a research grant of that size and complexity. So I was
4 concerned from the start.

5 I later reviewed documents that -- where he put
6 in his writing his claim of specialization was -- to the
7 state he claimed that his specialization was urban water
8 system and human health which, based on my reading of his
9 record, is simply incorrect.

10 So there's the written representation that was
11 made to the state about his expertise that's not
12 consistent with his record, there's the years of on the
13 ground experience which, you know, I thought he had at
14 that time.

15 Q Thank you.

16 Anything in particular about their work? And I
17 guess let's talk about the filter study.

18 So what is your relationship with the lead
19 filters that the Flint residents were using during this
20 time period?

21 A So we, I think it was August, September, October, we
22 actually started a go fund me campaign to get Flint
23 residents filters to protect them from the high lead and
24 water, and within a period of weeks we were getting
25 donations, the United Way called us -- the United Way

1 came -- this huge organization, amazing organization,
2 they said they wanted to get everyone in Flint a filter.
3 And we immediately put all our backing behind the United
4 Way and donated our money to them. So to some extent my
5 graduate students started the goal of getting Flint
6 residents filters, and the idea was anyone who wanted a
7 filter could get one.

8 Now you have to realize these filters are
9 probably used in about 25 percent of homes nationally to
10 protect people against lead from their drinking water, to
11 protect them against discolored water. So they have a
12 long, long track record, they've been used for decades in
13 homes.

14 And it was early 2016 that Mr. McElmurry and
15 Dr. Love, from Michigan -- the University of Michigan,
16 approached me and we had a meeting with the National
17 Science Foundation and the idea was what could Michigan
18 faculty do to help out in Flint, and the idea was set
19 upon we could get three grants to look at filter
20 performance. So I assisted them in getting those three
21 grants to look at the lead filter performance; one was
22 with Mr. McElmurry, one was with Dr. Love, one was with
23 Paul Kilgore, Wayne State. Mr. McElmurry thanked me for
24 helping them get those three grants to look at the
25 filters.

1 Q And what specifically was being tested or looked at with
2 regard to filter performance?

3 A Well, you know, the idea was would they work for the lead
4 in Flint, how well were they working, were there any
5 other concerns about the filters that would cause us to
6 think that, you know, they were potentially not useful
7 going forward, that there would be cause for concern. So
8 they were going to look at all the dimensions of the
9 filter performance using some new molecular tools as well
10 as traditional tools.

11 Q And did you say you supported that research?

12 A Yes, I helped them get those three grants, and Dr.
13 McElmurry thanked me in writing for doing so.

14 Q So during the course of this did you become aware of
15 results from Dr. McElmurry's filter study as they were
16 being presented?

17 A Yes. They -- first off, it's been known for 25 years
18 that these filters grow bacteria, so much so there's a
19 longstanding World Health Organization symposium guidance
20 that says we know these filters grow bacteria, but
21 there's no evidence that they're harmful. That is the
22 scientific conventional wisdom, that's the scientific
23 conventional wisdom as it has existed for decades.

24 And this group was going to take a new look at
25 that using these new tools to see if there's anything

1 that made us question that wisdom.

2 Q And did you become aware of results from that study that
3 were disseminated to the public?

4 A Yes. There was a phone call in December of 2015 --

5 MR. FLOOD: Judge, I -- just for the record, and
6 I understand the Court's prior rulings on all of this,
7 but I would object again to hearsay, and I understand the
8 Court's ruling ahead of time.

9 THE COURT: So I need to see what he's going to
10 say, but if the phone call just made him aware of it I
11 don't --

12 MR. FLOOD: Well I was getting into all the
13 other stuff that he just mentioned as it relates to what
14 content he just started talking about, then were you
15 aware of the results of the filters and the testing that
16 was being done, yes, and now getting into all of that I
17 find it to be hearsay. But I understand the Court's
18 ruling ahead of time, I just wanted to make my record.

19 THE COURT: Right. But he said he was aware of
20 it, correct?

21 MR. TRAMONTIN: Yeah.

22 THE COURT: Okay.

23 BY MR. TRAMONTIN:

24 Q And so what is your understanding of -- was it -- are you
25 aware if any bacteria was found on the filters by Mr. --

1 Dr. McElmurry's study?

2 A Sure, just like decades of prior work they found higher
3 levels of bacteria coming from the filters.

4 Q So is it fair to say that was not out of the ordinary?

5 A That was fully expected based on 25 years of experience.

6 Q Did you become aware of public statements -- well, let me
7 just ask you specifically.

8 Did you participate in a screening of a Nova
9 documentary related to the Flint Water Crisis?

10 A Yes.

11 Q And was there anything related to the filter study that
12 arose during that screening?

13 A Yes. There -- we had frequently been approached by Flint
14 residents that FACHEP knew about dangerous bacteria on
15 the filters.

16 MR. FLOOD: Well, Judge, again, and with all due
17 respect, it's hearsay as it relates to out of court
18 statements of citizens that I don't know. But I
19 understand the Court's theory is is that it doesn't
20 really matter, he gets to -- based on what those comments
21 are he is doing whatever he's doing. But the statements
22 of unknown people about certain dangers and what other
23 people may have said to him is like double hearsay.

24 THE COURT: So the fact that he's investigating
25 this, he's been qualified as an expert, I mean he's just

1 -- he gained knowledge that he acted on. So that's what
2 I'm looking at. I'm not looking at --

3 MR. FLOOD: Under 702, Judge, you have to have
4 admitted into evidence for which he is basing his opinion
5 on, if that was where you're going with it, I'm sorry.

6 THE COURT: Well I don't think -- we're not
7 talking about his opinion yet, we're talking about what
8 he actually did unless I'm missing this.

9 Mr. Tramontin.

10 MR. TRAMONTIN: Your Honor, during the
11 screening, as an offer of proof, a member of FACHEP got
12 up and said that there -- the results of their study was
13 that there was dangerous bacteria and that the state was
14 covering it up.

15 MR. FLOOD: And who's testifying here?

16 MR. TRAMONTIN: The witness who heard the
17 statement, who the statement was directed towards, and --

18 THE COURT: Okay. So that statement right there,
19 are you offering it to prove that the statement --

20 MR. TRAMONTIN: No. No.

21 THE COURT: -- the state was covering up?

22 MR. TRAMONTIN: Absolutely not.

23 THE COURT: Okay, so that's not hearsay.

24 MR. TRAMONTIN: Thank you.

25 THE COURT: Are you offering it prove that there

1 were dangerous levels of bacteria?

2 MR. TRAMONTIN: Certainly not.

3 MR. FLOOD: So it's true then or it's not true,
4 because it's totally relevant, to what this is all about.
5 I would object on the relevance, I would object on his
6 opinion as it's based here in this court under 702.
7 Because -- the last time I checked, if he's an expert,
8 he's doing something and an opinion, the opinion has to
9 be based on admitted evidence.

10 So that's all, and I'll sit down, Judge.

11 THE COURT: It's okay, make your record.

12 But we'll just go question by question. At this
13 point, I'll allow that.

14 BY MR. TRAMONTIN:

15 Q So was there something that arose during that screening
16 related to the filter study?

17 A A statement was made by someone representing themselves
18 as working for FACHEP that the state and Virginia Tech
19 knew, as did FACHEP, that there was dangerous bacteria on
20 the filters, and the implication was that Virginia Tech
21 and the state were covering this up.

22 MR. FLOOD: I'll stand with my same objection,
23 Judge.

24 THE COURT: So what's the next question?

25 BY MR. TRAMONTIN:

1 Q The next question is were you familiar with the study at
2 that time?

3 A Yes.

4 Q And what was the bacteria that was found on the filters?

5 A They were basing their opinion not on quote known
6 dangerous bacteria, but total bacteria and
7 enterobacteriaceae, which is a group of bacteria that has
8 some harmful and not harmful species in it. And so they
9 had been raising this concern since December 2016, and
10 the Nova conference, and that sort of concern was coming
11 from the community all the way until the Nova conference,
12 so this was a longstanding problem. I raised this issue
13 at an EPA data summit in January of, I think it was 2017.

14 Q And were members of FACHEP present at that data summit?

15 A Yes, they were.

16 Q Who was present?

17 A Dr. Laura Sullivan, Shawn McElmurry, Zervos.

18 Q And what in particular -- what particularized concerns
19 did you raise?

20 A Nancy Love, Dr. Nancy Love was there too. That based on
21 the exact same sort of data that had been gathered over
22 25 years and the World Health Organization had concluded
23 did not indicate a public health concern to normal
24 individuals consuming the water, that this group suddenly
25 thought that this was dangerous, these were dangerous

1 bacteria.

2 Q Was Dr. Wells also present at that EPA data summit?

3 A Yes, she was.

4 Q So, Dr. Edwards, you manage a website, now you were one
5 of the first people to come to Flint to study these
6 issues, you've interfaced with the Flint residents
7 virtually from the beginning, what concerns, if any,
8 would you have from the messaging that was going to the
9 public about these filters from FACHEP?

10 MR. FLOOD: Judge, I would object to the public
11 health aspect of messaging, that's a totally different
12 science and it's governed by a totally different body as
13 it relates to public health.

14 MR. TRAMONTIN: Your Honor, this witness has
15 established that he is constant communication with the
16 citizens of Flint, he has expertise, or at least
17 extensive experience, in gathering data, presenting that
18 data responsibly and in the proper context. He can
19 certainly express what concerns he had about false
20 information getting to the public during a public health
21 crisis. That is what he has been -- he has been providing
22 information to the public in a responsible way, and he
23 can certainly detail his concern when others aren't.

24 THE COURT: I'll allow it, because we certainly
25 had testimony on how the others responded to that exact

1 issue.

2 MR. FLOOD: Only public health officials, Judge,
3 this is not a public health official.

4 So but I understand where the Court's mind is
5 and I'll just make that objection for the record.

6 THE COURT: I understand. For the record, I
7 think that his qualifications as stated would indicate to
8 me that he has knowledge about this subject.

9 THE WITNESS: Well there were many concerns. The
10 first and most important one is the issue that the
11 implication, very clear, that the state and myself,
12 Virginia Tech, were hiding or somehow suppressing
13 information about dangerous bacteria on these filters,
14 that was simply false.

15 And so that was an example of FACHEP sort of
16 claiming that they knew something about dangerous
17 bacteria and they weren't allowed to say it because I and
18 Virginia Tech, 600 miles away, or the state was somehow
19 preventing them from exercising their freedom of speech
20 and their obligation as scientists that they knew it to
21 come out and say the filters were dangerous, that there
22 were dangerous bacteria. That was -- that's their
23 obligation, that was there obligation, if they know it
24 today they should come out and say it.

25 MR. TRAMONTIN: May I approach the witness?

1 THE COURT: Yes, you may.

2 MR. TRAMONTIN: Let the record reflect I'm
3 approaching Dr. Edwards with Defendant's Exhibit Z.

4 BY MR. TRAMONTIN:

5 Q Do you recognize this document?

6 A Yes, I do.

7 Q And what is it?

8 A It's an email from me to Mr. McElroy talking about the
9 Nova question which was a continuation of questions from
10 the public that had been occurring going back to December
11 of 2016.

12 Q Did you write this email?

13 A Yes, I did.

14 Q Did you adopt this statement?

15 A Yes, I do.

16 Q Is Dr. Wells on this email?

17 A Yes, she is.

18 Q And when was this email sent?

19 A May 24, 2017.

20 MR. TRAMONTIN: Your Honor, at this time I'd
21 request admission of Defendant's Exhibit Z.

22 MR. FLOOD: May I voir dire, Judge?

23 THE COURT: Yes, you may.

24 VOIR DIRE EXAMINATION

25 BY MR. FLOOD:

1 Q When you wrote this email did you make a phone call to
2 Dr. McElmurry too?

3 A No, I did not.

4 Q Did you call his superiors?

5 A No, I did not.

6 Q Did he return a message to you this?

7 A Ultimately he did.

8 Q And where is that?

9 A I have it, I assume it's --

10 Q You don't have that with you?

11 A I don't have a document of that with me, but.

12 Q Thank you. So there is a response to this?

13 A Eventually, yes.

14 Q Eventually. A couple years later?

15 A No.

16 Q A month later?

17 A There was an exchange.

18 Q Long exchange over days?

19 A There were several emails exchanged, yes.

20 Q Okay. Not just one?

21 A Not just one.

22 Q Did you also get correspondence back from Dr. Wells on
23 this?

24 A Yes.

25 Q Did you text her on this?

1 A I don't believe so.

2 Q Okay. Do you text her on a normal basis with these
3 issues?

4 MR. TRAMONTIN: How is this related to
5 admissibility, Judge?

6 MR. FLOOD: Because, Judge, under the Rule of
7 Completeness I'd want all of it.

8 MR. TRAMONTIN: You have all of it?

9 MR. FLOOD: No, I don't have any other text
10 messages or any other correspondence as it relates to
11 what you just have. I don't even have a bate stamp --

12 MR. TRAMONTIN: That's not the law that you need
13 to have all -- every single text message and telephone
14 conversation corresponding with every email. I mean, if
15 that were the case then we wouldn't have any evidence in
16 this --

17 MR. FLOOD: As it relates to a single
18 conversation, yes, Judge, I think that falls into play. I
19 think that is -- this conversation, what's there and
20 what's the basis of it. I don't have it all. This was
21 given to me by defense.

22 MR. TRAMONTIN: I don't have the response
23 either. Dr. Edwards can testify to the response.

24 MR. FLOOD: Well I already know -- the Court's
25 subject on that of hearsay, but I don't --

1 MR. TRAMONTIN: But this is his statement, this
2 is not hearsay, so.

3 MR. FLOOD: I don't even have the -- what
4 counsel has just given me from Dr. Edwards here.

5 MR. TRAMONTIN: That was provided to your office
6 before --

7 MR. FLOOD: No.

8 MR. TRAMONTIN: Yes, it was.

9 MR. FLOOD: Not the complete set of documents.

10 MR. TRAMONTIN: I don't have it either. I don't
11 have it either. I have additional --

12 THE COURT: I don't know what the response might
13 look like or sound like, so I'm going to allow you to
14 continue questioning and we'll see if it's relevant or
15 pertinent material.

16 MR. TRAMONTIN: Thank you, Judge.

17 So is Defendant's Exhibit Z admitted?

18 THE COURT: It's really hard to say, I don't
19 know what it is, I guess I need to take a look at it.

20 MR. TRAMONTIN: Yeah, I can show it to the
21 Court. It's simply Dr. Edwards' email contemporaneous to
22 the events we were just discussing to Dr. McElmurry.

23 THE COURT: Okay. So he's already testified to
24 this, right?

25 MR. TRAMONTIN: That's correct, corroboration.

1 THE COURT: The Court will allow it over
2 defendant's objection for whatever it's worth. We already
3 have testimony.

4 (DX#Z admitted at 12:11 p.m.)

5 CONTINUED DIRECT EXAMINATION

6 BY MR. TRAMONTIN:

7 Q Dr. Edwards, could you read the subject line of that
8 email?

9 A "Wayne State team member claiming publicly last night
10 that the whole team knows the filters are unsafe. This is
11 what I have heard 5 times. That Shawn knows the water's
12 actually dangerous, but the state and I are preventing
13 him from telling the truth."

14 Q And you sent that email to Dr. McElmurry?

15 A Yes.

16 Q At a later date did you ever ask Dr. McElmurry for
17 support in a proclamation about the quality of the water
18 in Flint?

19 A That was earlier -- it wasn't a proclamation, it was
20 December 2016 I asked Dr. McElmurry whether he would go
21 on the record to say that the Flint water system was
22 improving.

23 Q And did you have research or data to support that the
24 Flint water quality was improving?

25 A Yes, there was data from EPA, there was data from the

1 state, there was Virginia Tech data, all of the data
2 showed that the water system was getting better in terms
3 of lead and in terms of chlorine levels.

4 Q Did Dr. McElmurry lend his support to that position?

5 A No, he wouldn't, not at that time.

6 Q Did he at a later time?

7 A In January or February the team agreed that the water was
8 getting better.

9 Q You went into it a little bit, I don't know if there's an
10 objection to hearsay, but there was a response from Dr.
11 McElmurry to that email?

12 A Yes.

13 Q And what was that response?

14 MR. FLOOD: Well, I mean, Judge I would love to
15 have it, love to have it, but I don't.

16 MR. TRAMONTIN: Are you --

17 MR. FLOOD: So where -- that would be great.

18 Defense just gave a portion of whole messages, string of
19 messages, I guess, back and forth.

20 THE COURT: Sustained.

21 BY MR. TRAMONTIN:

22 Q So was this -- was there any other communication with Dr.
23 McElmurry about the water filters?

24 A The water filters, yes.

25 Q And what was the nature of that communication?

1 A He asked basic questions that I was shocked he didn't
2 know the answer to. I provided those answers to him, he
3 didn't know about prior studies that my group had done,
4 prior studies other groups had done, he didn't know about
5 the World Health Organization consensus statement, he
6 didn't know how frequently filters were being used across
7 the country. I provided him with all those documents.

8 Q So getting back to an earlier question, which I believe
9 I'm permitted to ask given your relationship with the
10 citizens of Flint, what were your concerns about this what
11 you believed to be false information getting to the
12 public?

13 A Well there, you know, there were multiple concerns, one
14 of them revolved around the issue of the relative risk of
15 bathing or showering in Flint. Due to how this crisis
16 unfolded and due to the messaging of many individuals,
17 including Scott Smith, of Water Defense, of FACHEP over a
18 period of time the CDC found that 80 percent of Flint
19 residents have changed their bathing habits, for example.

20 A member of FACHEP published on Facebook that
21 she had contracted shigella and she believed that it was
22 coming from the water.

23 MR. FLOOD: Judge, and I already understand the
24 Court's ruling, but again this is all hearsay and I don't
25 even know how it's germane to anything, but it's hearsay.

1 We don't even know who the declarant is.

2 THE COURT: Right. And the Court's not receiving
3 it that it's true that some unknown declarant contracted
4 shigella, just what he did in response to him learning of
5 some potential information.

6 BY MR. TRAMONTIN:

7 Q Please continue.

8 A So, you know, Dr. Laura Sullivan of FACHEP posted on
9 Facebook that she had been instructed by Wayne State and
10 University of Michigan to boil her water before bathing
11 because they believed the water supply was causing the
12 shigella outbreak. Every set of data that we've seen
13 shows that shigella was being transmitted by a
14 traditional mode of hand to hand contact. The US Center
15 for Disease Control did a study that showed that.

16 Virginia Tech, we analyzed a hundred plus
17 samples we collected during the height of the shigella
18 outbreak in summer 2016, no detectable shigella in the
19 water, but yet this group's public messaging, informal as
20 it was, was that the shigella was coming from the water
21 supply. This is -- if the relief agencies, including
22 FEMA, CDC, EPA, the state health department, Genesee
23 County Health Department and Virginia Tech were all
24 finding that the water was in normal range of safety for
25 bathing and showering and this message is being sent that

1 folks at FACHEP know that that's not so, that's the wrong
2 message at the wrong time in the wrong place.

3 And so that has severe public health
4 implications. If people alter their bathing and showering
5 habits, we can have outbreaks of communicable disease,
6 such as shigella, which Flint, Saginaw were experiencing
7 at a very high level at that time.

8 So getting the wrong message out to the public
9 can hurt people, and I believe it did hurt people. In
10 fact, we're writing a paper, period paper that makes that
11 very claim and backs it up scientifically.

12 Q Thank you, Dr. Edwards.

13 I noticed in your CV, and I think we've touched
14 on this, the number of research projects that you've been
15 involved in, I believe you said over 15 million, was that
16 just Virginia Tech or was that --

17 A Yeah, that's Virginia Tech.

18 Q So you have experience in the relationship between a
19 research -- a researcher and a funding source, do you
20 not?

21 A Yes.

22 Q Okay. There's been testimony in this case that there were
23 discussions about funding between Dr. Wells who was
24 heading -- project manager, project officer for the
25 FACHEP project and various members of FACHEP.

1 In your experience how does funding relate to
2 the relationship between a researcher and a project
3 manager?

4 A Well generally speaking if performance is good and
5 satisfactory you can expect the funding to come as
6 expected. To the extent you're performing well you might
7 expect to get more funding. To the extent you're not
8 performing you can expect to get less. So these are the
9 kind of conversations that go on.

10 Q In your experience as a researcher has any funding source
11 reminded you that there was a financial relationship
12 between you as a researcher and the funding source?

13 A Yes. You're expected to perform satisfactorily, and if
14 you don't then funding will be cutoff, that's the nature
15 of research.

16 Q And in your experience do you see anything in appropriate
17 about mentioning the fact that one is funding research in
18 a context of disagreements about responsiveness and
19 quality?

20 A No, those -- you would hope if you weren't performing
21 adequately that someone would call you out on it. Yeah.

22 Q Now you've had an opportunity to deal with many
23 government agencies throughout your career; is that
24 correct?

25 A Right.

1 Q And I think you testified that you may have a healthy
2 skepticism about governmental agencies or maybe
3 understating that?

4 A I've been accused, I think wrongly, of being anti-
5 government, but too strong in my condemnation of some
6 people, but I call it as I see it.

7 Q So you had the opportunity to work with government
8 agencies related to this -- the Flint water crisis,
9 correct?

10 A Right.

11 Q And in your working with Dr. Wells and the Michigan
12 Department of Health and Human Services, what was your
13 experience?

14 A My experience was actually quite good, that they were
15 cooperative, they gave us materials, they supported the
16 questions that we were asking as was Dr. Wells.

17 Q In particular Dr. Wells in your experience working with
18 her, what is your general sense of how she performs her
19 job?

20 A I thought she was performing her job very well. Now this
21 is speaking after I met her which was December 2015. So
22 by that point you already had the local emergency
23 declared in Genesee County, you know, so I met her after
24 the state had admitted there was a problem and folks were
25 working to fix it, and in general Dr. Wells appeared to

1 be very anxious to do the science and the hard work
2 necessary to get the system fixed.

3 MR. TRAMONTIN: Just one moment, please, Your
4 Honor.

5 Thank you, Dr. Edwards, I have nothing further.

6 THE COURT: You said two or three times early on
7 this unfortunate human experiment, what do you mean by
8 that?

9 THE WITNESS: Well the nature of our emergency
10 grant, when you write an emergency grant to the National
11 Science Foundation, you generally have those for kind of
12 almost natural disasters, and we argued that this was a
13 manmade disaster. And the -- what had been done in Flint
14 breaking federal law, obviously if I proposed that to do
15 that anywhere in the country I hope I would be turned
16 down. You're not allowed to break federal law to see what
17 happens to a city's water system.

18 So in our grant we characterized this as an
19 unfortunate manmade disaster, that was our opinion at the
20 time, and history has since vindicated us, I think, but
21 it's "a natural experiment", meaning I couldn't pay
22 people to allow me to do this. So you had to go to the
23 city and look at the consequences that were happening to
24 the residents and the water system.

25 THE COURT: Alright, thank you.

1 BY MR. FLOOD:

2 Q Dr. Edwards, you told the Court earlier that the first
3 time you became involved in the City of Flint and its
4 plight was in April, yes?

5 A Late April 2015 was the first time I personally made a
6 contact with a Flint resident, yes.

7 Q Dr. Del Toral, Miguel Del Toral, he is the one that
8 contacted you first?

9 A Yes.

10 Q And Mr. Del Toral, he was concerned about lead within
11 LeeAnne Walters's home; is that right?

12 A Yes.

13 Q And he told you that there were concerns as it relates to
14 the elevated lead levels and potentially the lack of
15 control -- corrosion control treatment here in the City
16 of Flint?

17 A Yes.

18 Q Did alarms go off immediately in your mind being the
19 corrosion control expert in the -- and your background
20 and the like --

21 A Yes.

22 Q -- when you heard treatment wasn't potentially being
23 used?

24 A Yes.

25 Q And you found out at that time that Miss Walters, she had

1 young children under the age of five in her home?

2 A Yes.

3 Q And you teach ethics with regard to engineers,
4 professional engineers, yes?

5 A Yes.

6 Q As a matter of fact, one of the very first things you
7 talked about with the McArthur award that you received is
8 the very first edict that you put in your mind is that of
9 health, correct?

10 A To protect the public welfare, yes, health is part of
11 that.

12 Q Well health was pretty much the golden rule, right?

13 A Yes.

14 Q I mean, we are here to save lives and make sure people
15 don't get hurt because of manmade catastrophes, yes?

16 A Or better yet prevent manmade catastrophe in the first
17 place, yeah.

18 Q Make is so it's not remedial, prevent it in the first
19 place, correct?

20 A Yes.

21 Q And so the code of ethics of engineering, number one,
22 engineers shall hold paramount the safety, health, and
23 welfare of the public in the performance of their
24 professional duties, right?

25 A Yes.

1 Q And all of a sudden we have twins that are drinking, for
2 all practical purposes, toxic waste?

3 A Yes.

4 Q You're not a licensed professional engineer, but you
5 teach ethics?

6 A Yes.

7 Q Where were the alarms? Where were the alarms by you?

8 A Well Mr. Del Toral, he's the foremost authority on the
9 Lead and Copper Rule in the country, and he's at the EPA,
10 he worked on that problem for a period of months, he was
11 risking -- he was willing to risk his career to try to
12 force EPA to do their job. So I decided, right or
13 wrongly, that I would work with Mr. Del Toral to work
14 within the system to the extent humanly possible, and
15 that when that effort failed we knew that it was us or
16 nobody.

17 Q I appreciate all that.

18 So Miguel Del Toral, the gentleman that was
19 putting his job on the line in a whistleblower case, and
20 you know all about that position as a whistleblower,
21 right?

22 A Absolutely.

23 Q It destroyed your life for a short period of time and you
24 were a crusader against big government and CDC and EPA
25 because you were ferreting out the wrong, right?

1 A Yes.

2 Q And you knew Del Toral was in the same crosshairs of that
3 pressure, right?

4 A That's right.

5 Q You, on the other hand, are not a whistleblower from the
6 standpoint you, out of your own money, your own personal
7 pockets, your own cash, come in here and you are the one
8 that can raise the alarm without the backlash, right?

9 A I had to take that chance that we would be successful. I
10 was fully prepared I might not be, I could lose my job as
11 the result of what we did.

12 Q You put that all to the side for these mighty rules of
13 ethics, right?

14 A Yes.

15 Q Risk everything for those ethics for which you stand by?

16 A Yes.

17 Q And here in April you come to find out that people are
18 drinking toxic waste?

19 A Absolutely.

20 Q And the alarm that goes off in your mind, Doctor, is that
21 Flint is missing a fundamental rule paramount to treating
22 and giving potable water to humans; that is, they weren't
23 using corrosion control treatment?

24 A That's right.

25 Q So who else, other than the EPA and our government

1 bureaucracy, who else has the mission to take care of the
2 health of children and citizens in our State of Michigan?

3 A Well in relation to the lead and drinking water it's
4 MDEQ. The chain of authority is the City of Flint, MDEQ,
5 EPA, that's their turf, the drinking water regulation,
6 the Safe Drinking Water Act.

7 Q Well --

8 A This is a specialized expertise. There are probably only
9 five people in the world that could have really argued
10 strongly and compellingly that Flint's failure to
11 implement corrosion control was a violation of federal
12 law given all the laxness that EPA had allowed over the
13 years, and two of them were involved in this case, Miguel
14 and myself.

15 Q So, and I understand, you went up the funnel of people
16 that deal with water. My question specifically, getting
17 away from water for a moment, and I'm not sure if you
18 have this experience or not, but I believe you do, who
19 else, get away from the DEQ and the EPA, who else in our
20 state has a requirement, insofar as you know, to protect
21 our citizens regarding health?

22 A When it comes to the Safe Drinking Water Act that's the
23 chain of authority. Over the years I've learned that
24 government bureaucracies do not tread on each other's
25 turf without very, very good reason. The EPA is the

1 highest authority period. So Region 5 EPA, that was the
2 best hope to allow the system to work.

3 Q What about the CDC, what about the Health and Human
4 Services, should the Health and Human Services Department
5 for here in our State of Michigan say, you know what, I
6 understand LeeAnne Walters' kids are poisoned, but really
7 that's a Safe Drinking Water Act and I'm not concerned
8 about their health if it deals with water; is that what
9 you're saying?

10 A I'm saying that based on my decades of experience working
11 with these agencies that bringing in the CDC to work on a
12 lead case, as I've tried to do before, they would refuse
13 to do it. They would say EPA is the authority, EPA has
14 the scientist, EPA has expertise, EPA has the regulatory
15 collar, who are we to come in knowing nothing about
16 corrosion control. Realize corrosion control is a very
17 specialized skill, only a few professors in the country
18 possess that skill. Like I said, there's probably only
19 five people in the country who could have called out
20 Michigan as not following federal law, two of them were
21 involved, me and Miguel in this case.

22 There is no way, based on my past experience
23 with CDC, other health department, that they would
24 encroach on that very specialized scientific turf arguing
25 about what does a regulation mean and do you have

1 corrosion control when the EPA is sitting there and they
2 have full knowledge about that and they're doing nothing.

3 Q So I, maybe I wasn't articulating my question very well,
4 and I apologize, I was just talking about public health.
5 So you're dealing with water, I was dealing with public
6 health, I see the disconnect.

7 Does the CDC, were they involved, were you
8 upset with them when you were dealing with the crisis
9 that you talked about on direct examination with
10 Washington, D.C.?

11 A Yes.

12 Q But the CDC, they don't know anything about corrosion
13 control, correct?

14 A Right.

15 Q They have no interest in dealing with water issues,
16 right?

17 A Except to cover it up, no, they don't have an interest.

18 Q So that does happen, cover ups in government agencies?

19 A Unfortunately, yes.

20 Q And so the cover up here, were they covering up the lead
21 poisoning of children in Washington, D.C.?

22 A I feel that they were, I feel we've made a case that that
23 happened, yes.

24 Q Okay. And lead is a health issue, lead poisoning, from
25 the beginning of time, I was reading some of the earliest

1 papers, we know lead's bad for kids and bad for people,
2 right?

3 A There's no safe level of lead exposure, that's true.

4 Q Zero.

5 How many days does it require for someone to
6 get lead poisoning by drinking a glass of water? Could
7 you tell the Court that.

8 A Well at LeeAnne's house, which was an exceptional case, a
9 single sip of that water would have elevated her child's
10 blood lead above the threshold for "elevated".

11 Q So how much time do we give the grace period for our
12 health agencies and our -- both be it the Department of
13 Health and Human Services and our Department of
14 Environmental Quality, how much time do we give them as a
15 grace period to say, in your experience, to say, you know
16 what, we'll give you 30 days before you change the water
17 or 30 days before we give notice that the water is bad?
18 How much grace period do we give, could you tell the
19 Judge, that based on that one sip analogy how much time
20 we give nowadays?

21 A Unfortunately it's infinite time because you can have
22 children getting lead poison and there's nothing illegal
23 about that from the drinking water. As we sit here today,
24 the way the rule is written up to ten percent of homes
25 can have any amount of lead whatsoever, and if a child's

1 getting lead poisoned from that water they will say
2 that's the responsibility of the homeowner because the
3 city is doing what they're doing in terms of the shared
4 responsibility model.

5 So you gotta realize this a very unique law
6 that doesn't give the city or the state or anyone
7 complete responsibility to keep lead low. A city is
8 allowed to have up to ten percent of their high risk
9 homes with high lead. This is the nature of the law, I
10 don't like it, it creates all kinds of problems such as
11 what we saw in Flint where you had a very strong evidence
12 of a mom who figured out her child had elevated lead in
13 their blood and there's nothing illegal about that.
14 There's nothing illegal about hazardous waste levels of
15 lead coming out of a kindergarten classroom in this
16 country.

17 So that's the nature of the lead law.

18 Q So I appreciate that.

19 So, Doctor, what you're just explaining to this
20 Court is is that Governor Snyder, had he known, or Dr.
21 Wells, had she known, or anyone else in the health
22 department, had they known that toxic waste was coming
23 into this courtroom and was being drank by citizens here
24 that, unbeknownst to us, that we don't have to tell them
25 if we're in the upper echelons because it's not a

1 violation of law, is that what you're saying?

2 MR. TRAMONTIN: Your Honor, I'm going to object
3 to this hypothetical. Dr. Edwards has testified to some
4 messaging aspects, but he is not a public health expert
5 and, therefore, would not be qualified to answer some
6 vague hypothetical about the Governor or Eden Wells
7 knowing about toxic waste coming into the court. It's an
8 improper hypothetical to propose to this witness. He
9 doesn't work for a public health entity, he never --
10 doesn't have experience in public health.

11 MR. FLOOD: I think the Court somewhat chuckled
12 at my objection when I mentioned that after looking at
13 his CV in that, that area of public knowledge and public
14 health and public dissemination of information. We just -
15 - you just got done allowing counsel to bring out on
16 direct examination that very issue.

17 THE COURT: So toxic waste is your reference to
18 the amount of lead that was in the water?

19 MR. FLOOD: That's his, that was what was
20 brought out by -- on direct examination, and we --

21 THE COURT: Just so we understand that's what
22 we're talking about.

23 MR. FLOOD: Yeah.

24 THE COURT: The Court does believe that he can
25 answer the question.

1 BY MR. FLOOD:

2 Q You had said earlier that the measurement of LeeAnne
3 Walters' lead levels was -- couldn't even measure,
4 correct?

5 A I could measure it, it was two and-a-half times hazardous
6 waste levels of lead.

7 Q Two and-a-half times hazardous waste levels?

8 A Correct.

9 Q And based on the current position announcing that to the
10 world, from a public health standpoint it's your opinion
11 that that wouldn't have to come out, there was not
12 requirement for that dissemination?

13 A To my great frustration, and I speak out about this all
14 the time, no, there's no requirement that that's
15 considered within the realm of normal unfortunately for
16 cities that have old lead pipes.

17 Q So if the constitution of the State of Michigan says that
18 health of citizens is paramount and you shall keep health
19 of citizens paramount, you would endorse that, would you
20 not?

21 A Yes. I mean, we have laws that set standards, you should
22 follow those, hopefully go beyond that.

23 Q You should follow the constitution?

24 A Yes, you should follow the laws.

25 Q Okay. And you're not aware of that section within the

1 constitution talking about public health being paramount?

2 A I -- no, I'm not.

3 Q Okay, fair enough.

4 A The state constitution --

5 Q So you learn about these problems and alarms are going
6 off in your mind, as you just told the Court, that the
7 City of Flint is distributing water to how many citizens,
8 do you know?

9 A Probably 97,000.

10 Q How many citizens come into Flint?

11 A I don't know.

12 Q How many people -- corporations are there in Flint?

13 A I don't know.

14 Q How many small businesses, you don't know?

15 A No.

16 Q How many tourists come into the airport?

17 A Don't know.

18 Q How many students at the University of Michigan?

19 A I don't know.

20 Q Up here in Flint?

21 So all of those users, all of the users of
22 innocent citizens, how many, if you know, had lead
23 poisoning in this city during the term from 2014, April
24 to when the switch took place in October of 2015?

25 A I don't know.

1 Q How many infant children came to this city during a
2 holiday to visit their family or loved ones with their
3 parents and then traversed back across the country but
4 yet were polluted with lead poisoning?

5 A I don't know.

6 Q So if you, Doctor, had a small child and had relatives
7 here in town and you were coming up for the Christmas
8 holidays or the Easter break coming up during this
9 outbreak of lead poisoning, would you want to know ahead
10 of time if you were coming in that there's a lead crisis
11 and you got an infant child coming in?

12 A Yes.

13 Q So you talked briefly, Doctor, you came in in April, you
14 started doing some testing in August, correct?

15 A Yes.

16 Q I'm sorry, I misspoke. You found out about it in April,
17 you came in in August?

18 A Well I had done the testing with LeeAnne in April,
19 results were available in May. Mr. Del Toral was taken
20 out of the picture, if you will, in August, late July, so
21 that's when we started acting.

22 Q And, Dr. Edwards, Mr. Del Toral's reports that you're
23 referring to that we're talking about, that's the one
24 that you told the Court that the ACLU was involved, you
25 were involved, you assisted in that information, correct?

1 A Yes.

2 Q And there was a chronological order of basically how
3 things had worked and progressed here in the City of
4 Flint, yes?

5 A Mr. Del Toral put a timeline together, yes.

6 Q And you assisted, correct?

7 A To some extent. The vast majority of the work was
8 Miguel's.

9 Q And there were boil water alerts, right?

10 A Yes.

11 Q There were THM problems, trihalomethanes, yes?

12 A Yes.

13 Q And can you tell the Court what a trihalomethane is?

14 A It's a dis -- when we add chlorine to the water to
15 protect people from bacteria we produce carcinogens, this
16 happens all around the country, and we do that because we
17 save many, many times more people from water borne
18 disease than the risk of carcinogens as a byproduct of
19 chlorination. So it's a classic health trade off where if
20 we put chlorine in the water we save more people than get
21 cancer by a wide, wide margin. So it's considered one of
22 the greatest public health advances in the last hundred
23 years to put chlorine in water, but byproducts,
24 disinfection byproducts, are formed when we do that and
25 you try to limit the amount of those to the extent

1 possible.

2 Q Okay. Are you familiar with Dr. Yu out of Penn State?

3 A Somewhat.

4 Q And are you familiar with any of his studies with

5 Legionella in water treatment distribution systems?

6 A I know of some of those studies, yes.

7 Q Do you know of the one in the '80's in the southern

8 portion of the United States?

9 A I don't, maybe don't know that one.

10 Q 1986?

11 A I'd have to see the article.

12 Q Okay. Which ones are you familiar with?

13 A Well I'd have to -- I mean there was -- I think he did

14 some work with Dr. Stout in hospitals in Pittsburgh,

15 things like that.

16 Q You're not familiar with the one dealing with

17 distribution systems?

18 A There's one, yes, on distribution system deficiencies,

19 right.

20 Q And are you familiar with some of the indicators of what

21 would be basically a red flag of potential risk of

22 Legionella in distribution systems when certain things

23 happen?

24 A Sure, main breaks, low levels of chlorine.

25 Q What else?

1 A Those are good indicators. Warm water in buildings you
2 can have problems.

3 Q What about trihalomethanes?

4 A Well that would be a contrary indicator unfortunately. So
5 the more THM's you have, the more chlorine you have, the
6 less likely Legionella would grow.

7 Q Well the chlorine gets absorbed into the organic
8 material, doesn't it?

9 A Right. But if you have higher THM's that means added more
10 chlorine, so in general I'd expect in a system, all
11 things being equal, if you have higher THM's that's a
12 lower likelihood of Legionella.

13 Q Except for when you put in the caveat a water treatment
14 facility that doesn't have a water distribution -- that
15 doesn't have corrosion control treatment?

16 A Right, that's a -- that was the unique aspect of our
17 work. Yeah.

18 Q So someone looking at this in Flint, it wouldn't be
19 surprising to you if they have experience in Legionella
20 and treatment facilities that it was a perfect recipe or
21 storm for an outbreak of Legionella?

22 A Well we wrote that as our hypothesis in the NSF grant, so
23 we felt we had that experience, we made that prediction,
24 and unfortunately it was true. So how many other people
25 were -- you know, there were other world renowned experts

1 who were working on the system at that time, Dr. Joan
2 Rose, for example, at Michigan State, she'd been
3 involved, she was aware of these issues. And I don't know
4 -- I think she would have been someone who could have
5 figured this out, and whether anything happened there I
6 don't know.

7 But it's not intuitively obvious.

8 Q Except for someone that's an expert in this particular
9 field and studies Legionella?

10 A Yes.

11 Q Okay. And people of the Department of Health and Human
12 Services, that's normally the place and location where
13 people study Legionella, fair?

14 A Yes. They have some folks there who are tracking the
15 disease mostly from an epidemiological perspective and
16 outbreak perspective, yeah.

17 Q Okay. So one of the things that you talked about in --
18 or not you personally, but you educate people on is stick
19 true to your core competency in engineering, don't stray
20 afield in engineering that you're not competent in; is
21 that one of the code of ethics?

22 A Correct. Yes.

23 Q And you would expect that of someone in the Department of
24 Health and Human Services, right?

25 A Yes. If they didn't -- weren't aware of something, yeah,

1 they would -- hopefully you're working within your
2 competency.

3 Q Right. And if you're not, you're asking people to come in
4 and assist, right?

5 A Yes. If there's something out of the ordinary you would
6 presumably ask someone to assist.

7 Q So in April by that time, of 2015, there was already an
8 acute coliform violation, yes?

9 A Yes.

10 Q There was, here in the City of Flint, monthly coliform
11 violation in August of '14, there was another in
12 September of '14, there was TTHM violations in December
13 of '14, and again in June of 2015, yes?

14 A That sounds consistent, yes, with my knowledge.

15 Q And with those we've had a boil water alerts, correct?

16 A Yes.

17 Q And at that time do you know, as you sit here today, what
18 Dr. Wells knew or didn't know in June of 2015?

19 A No.

20 Q Do you know at that time -- well, strike that.

21 You say you learn about a Legionella outbreak
22 Decemberish of '15?

23 A Yes.

24 Q That's when you learn about it.

25 A Yes.

1 Q Is that the first time you suspect it?

2 A Well we predicted in our grant that there could, probably
3 should be an outbreak. That was a hypothesis so that's a
4 form of suspicion.

5 Q Did you ask Dr. Wells is there an outbreak going on?

6 A No, I didn't know her at that time.

7 Q I'm sorry, you contacted her when for the first time, I
8 thought it was Christmas?

9 A I think the first time I was in contact with her was
10 around Christmas or January 2016.

11 Q I thought you said specifically I ruined her Christmas.

12 A I did ruin her Christmas, yep.

13 Q So --

14 A So but when she first contacted me it was perhaps early
15 January, I can't remember the exact time.

16 Q You can't remember that?

17 A Yep.

18 Q So you were writing the grant back then in December?

19 A No.

20 Q When were you writing the grant?

21 A That was back in late -- so it was July, August of 2015.

22 Q When were you first interviewed by the Governor?

23 A First interviewed by the Governor? I don't remember,

24 that might have been January, middle of January,

25 February, probably late January or early February is my

1 guess.

2 Q January of 2016?

3 A 2016, yes.

4 Q Before you testified in front of congress?

5 A I can't -- I think probably, yeah.

6 Q And were you hired at that time or your school given a
7 grant at that time in January?

8 A No, we didn't get any funding from the state until April
9 of 2016.

10 Q April of 2016?

11 A Yes.

12 Q And is that April of -- was it April 25th, I can't
13 remember when you testified.

14 A It was probably March.

15 Q March?

16 A Yeah, I think it was twice, March and maybe July or
17 something like that.

18 Q And when you're testifying in front of congress, you had
19 already met with the Governor, yes?

20 A My guess is yes, I guess that -- yeah.

21 Q And your first grant, was it about \$80,000.00 or so?

22 A Yes.

23 Q And that wasn't given to you in January?

24 A No, that wasn't finalized until about April timeframe.
25 That was designed to look at the water heaters in Flint

1 in the summer.

2 Q Okay. So fair enough to say you're working in conjunction
3 with the state, correct?

4 A Yes. After -- well actually I felt I was working "with
5 the state" from the time the emergency was declared and
6 Dr. Wells and Governor Snyder and they had that press
7 conference that said there's a problem.

8 Q That was when?

9 A I believe that was October of 2015.

10 Q So you're working with the State of Michigan in October
11 of 2015?

12 A Yeah. I'm not getting paid, but I'm willing to answer
13 their questions and work proactively to try to help Flint
14 residents with this manmade disaster.

15 Q And at no -- and you're saying under oath here today,
16 first time after that October frame that you meet and
17 talk with or at least with Dr. Wells is in December of
18 2015?

19 A Yeah, it was at least -- I believe it was December and
20 then we sent emails in January too.

21 Q Okay. And so you come to learn there's an outbreak of
22 Legionella, I think you said when, January?

23 A December of 2015.

24 Q And how did you learn that?

25 A Genesee County Health Department sent me a, kind of a

1 report that said there was an outbreak of Legionnaires'
2 disease 2014-2015 and 2015-2016.

3 Q Okay. And Otto Schwake, for the record it's spelled, last
4 name, S-c-h-w-a-k-e, this is a student that works for
5 you?

6 A Post doc, research scientist.

7 Q Oh, he's graduated and working for you as -- within the
8 university?

9 A Right, not a student.

10 Q I'm sorry?

11 A Not a student, a research scientist.

12 Q Right, he's graduated.

13 So are you his superior?

14 A Yes, I'm his advisor.

15 Q And you two communicate on a regular basis about Flint
16 and what's going on?

17 A Yes, we do.

18 Q And did you have communications with the CDC at that
19 time?

20 A No, I did not.

21 Q Your team didn't?

22 A I don't think so. He might have had a conversation at a
23 conference with them, I might recall something of that
24 nature, but I don't recall any direct contact with CDC.

25 Q Do you know a Clarissa Lucas from the CDC?

1 A I know of her, I met her once or twice, yes.

2 Q So you have met her a couple of times, that's what you're
3 saying?

4 A I think so, yes.

5 Q So in August of 2015 there's no way you all knew about
6 the Legionella outbreak?

7 A Other than what we heard from Miguel's memo, and then I
8 tried to say earlier that Kirk Iette (sic) had heard
9 about from a nurse at McLaren there was cases of
10 Legionnaires' disease. We heard about that in August. To
11 my recollection those are the only two things I knew
12 about Legionella in Flint.

13 Q Did alarms go off in your mind at that time that there's
14 a Legionella outbreak?

15 A Yes, we were very concerned.

16 Q You were concerned?

17 A Yes.

18 Q And how concerned were you then in August?

19 A Concerned enough to write the emergency grant in late
20 July and to publish the results on our website, and after
21 we published those results to go back and try again to
22 look at the larger building. So, you know, the funding we
23 had received wasn't sufficient to cover all that, I was
24 paying for a lot of that out of my own pocket, I mean my
25 discretionary accounts.

1 Q You published that you knew about the Legionella, were
2 worrisome about the Legionella outbreak in August?

3 A Yes. On our website we said we had a hypothesis we would
4 find Legionella. We went to Flint homes to test, and it
5 was probably September, early September we released our
6 results that said contrary to our hypothesis we didn't
7 find detectable Legionella pneumophila and found
8 relatively low levels of all the pathogens we looked for
9 to our surprise.

10 Q Did you instruct Otto to contact Clarissa about checking
11 on an outbreak in Michigan that they're experiencing
12 right now?

13 A I think Otto was doing some of that on his own. I don't
14 think I instructed him to do that.

15 Q You think he was doing it on his own?

16 A Yeah. I think that we, you know, we were trying to figure
17 out what was going on. We didn't find Legionella in the
18 single family home as we expected. We heard about this
19 rumor from a nurse at --

20 Q Well --

21 A You know, and then so we were making plans like what's
22 going wrong, and Otto was a fulltime employee looking at
23 this, realize that, he's working on this fulltime.

24 Q I see.

25 A I'm advising him, so I don't micromanage my people, I

1 don't know what he did exactly.

2 Q I see. So you're not sure what he did or didn't do?

3 A No.

4 Q And you didn't base any of your opinions on what he did
5 or didn't do?

6 A Well he went -- I mean, he collected that data in the
7 large buildings. He went on the first trip and the second
8 trip. So the first trip I went with him, the second trip
9 he led that, he took the samples.

10 Q Okay. So the first time you took samples was August 18th
11 and 19th, correct?

12 A Yes.

13 Q And you went to only 16 single story homes?

14 A Well when you say only that's a lot of work for a short
15 period of time and getting --

16 Q Well it's a lot of work.

17 A Yeah, we took multiple samples per place, but yeah.

18 Q Sixteen.

19 So and how long does it take for you -- is it
20 immediately testing when you take that sample you can
21 find out if there's Legionella in it?

22 A No, it takes time, you gotta process the samples.

23 Q How much time?

24 A Well depends on the priorities. I mean, to a large extent
25 we were doing this as volunteers. We didn't get the

1 funding from NSF 'til September, so, you know, we -- the
2 students were volunteering their time, they're working at
3 nights, on weekends. Under normal circumstances you could
4 possibly process those samples in say three days. It
5 probably took us, I guess, a week with the students
6 working on this as volunteers.

7 Q So you had your results within one week?

8 A I think it probably took about two weeks. If I recall we
9 published our results about early September on our
10 website.

11 Q So no way you had the results back by August 20th,
12 correct?

13 A Oh, I don't think so, I don't think that would have been
14 possible, no.

15 Q Okay. And at that time did you have knowledge that the
16 Michigan Department of Health and Human Services had
17 sputum samples?

18 A No.

19 Q Did you have any knowledge about, as we sit here today,
20 that sputum samples at the Michigan Department of Health
21 and Human Services were destroyed in March of 2015 or not
22 destroyed in 2015?

23 A No.

24 Q Do you have any knowledge about the Michigan Department
25 of Health and Human Services about how many sputum

1 samples they currently have?

2 A They sent us all the one they claimed to have.

3 Q I'm sorry?

4 A They sent us all the ones they claimed to have.

5 Q Well claim is kind of an ambiguous term, do you think

6 they're lying to you?

7 A I don't have any reason to believe they were lying. They

8 sent us samples, so that's all I know is they sent us

9 samples that are, you know, claimed to be sputum samples,

10 we ran --

11 Q How many?

12 A I can't remember as I sit here right now, yeah.

13 Q You can't remember how many sputum samples?

14 A No, I can't.

15 Q More than a hundred?

16 A No, it's less than a hundred.

17 Q More than 50?

18 A I think it's less than 50 too. I think it's, just

19 ballpark, I'll make a number up, maybe 20 I guess, 20,

20 30.

21 Q Somewhere in that ballpark?

22 A It seems about right, yeah.

23 Q And you sent those samples out to Sloan Kettering?

24 A No, Sloan Foundation.

25 Q Sloan Foundation, I'm sorry.

1 A Yeah.

2 Q You sent those out when?

3 A I'd have to go look at the timeline on that. I don't
4 remember.

5 Q What year?

6 A I think it was last year.

7 Q Two thousand --

8 A We probably got the samples, my guess around May of 2017,
9 we sent those samples out with our environmental
10 isolates. We've analyzed those, we're writing a paper on
11 them.

12 Q So I'm just trying to get a timeframe.

13 So May of 2017 is when you sent them over to
14 Sloan?

15 A I'm just ballparking it, that's my recollection, yeah.

16 Q When did you receive them?

17 A I think we got them about May 2017, we probably sent them
18 to Sloan like a month or two later is my guess.

19 Q And that's because you had environmental samples?

20 A We had environmental samples too, yes.

21 Q Why didn't you send those to the Department of Health and
22 Human Services?

23 A Well the goal was to have an independent evaluation, so
24 we had -- we had all these environmental samples that we
25 had collected, and to our knowledge some of those are the

1 only cultures available from the time of the water
2 crisis. We collected more samples as time went on, so we
3 got a, you know, a body of these samples and then the
4 idea it's best to compare them all the same time. Who's
5 done what with those samples, you know, I'm not really
6 sure. I think FACHEP got some of those, I think CDC has
7 analyzed some. I'm not really sure. Alls I know is what,
8 sort of in general terms what we did with those general
9 samples.

10 Q Did you have any knowledge of any of the samples ever
11 being destroyed?

12 A No, that never came up.

13 Q Okay. So now you have 16 homes in August of 2015.

14 A Um-hmm.

15 Q Correct?

16 A Yes.

17 Q And then you have a second round occurring of homes
18 October 15th and 16th, yes? Well actually I'm sorry,
19 strike that.

20 Actually you focused on two health care
21 centers, hospital one and two, yes?

22 A Yes. Yeah.

23 Q You didn't go back to the houses again?

24 A No.

25 Q You just went to the two hospitals, yes?

1 A Yes. Yeah.

2 Q And is it fair to say that, Dr. Edwards, this is a decent
3 size city, yes?

4 A Yes.

5 Q And the water system, the water, you can tell the Judge
6 if you went to go drink over here on Saginaw Street or he
7 went to go drink over by McLaren Hospital that the water
8 quality may be different in those two different locations
9 --

10 A Yes.

11 Q -- during this effort?

12 A Yes.

13 Q And did you test the water of the houses of these 16
14 homes, were all they relatively in one location?

15 A No, they were kind of spread out, but again we were
16 working, you know, with the residents who had the most
17 vocal health concerns and that we were collaborating
18 with.

19 Q How did you get their concerns, how did you get them?

20 A They were telling us that their water's no good, and so
21 we tried to sample the homes where we thought we'd find
22 the least chlorine and the most iron based on their
23 reports because that was our hypothesis.

24 Q Where did you meet these folks?

25 A That was -- I actually didn't, so LeeAnne and Melissa

1 Mays, they were kind of coordinating the sampling event,
2 finding people who wanted their house sampled. So we had
3 the eight sites for the city sample, plus we needed to
4 supplement that with private homes, that was our goal. So
5 that was how we put it together.

6 Q So you got information of homes to go to by LeeAnne
7 Walters and Melissa Mays?

8 A Yes.

9 Q And they -- did you get -- at the time that you tested
10 these homes did you get from the DEQ what their lead
11 levels were?

12 A No, no, that -- we didn't think -- we were measuring lead
13 in those homes, but --

14 Q I was just curious if you got the lead information.

15 A No, we didn't because they -- in all likelihood most of
16 them hadn't had testing, LeeAnne and Melissa had, but the
17 other ones -- it's -- because they only test a very small
18 number of homes. But two of the homes where we tested
19 they did have lead data.

20 Q Well they sent out tests to how many homes?

21 A Well they were distributing kits randomly, but the only
22 got 71 back according to what they said.

23 Q Well they got 100 back at one time, right?

24 A That was the year before, the 2014.

25 Q Right. Right. And that's when the lead started coming

1 out, right?

2 A Yeah, we think it probably started coming out in 2014.

3 Q Right.

4 A Right.

5 Q And so you got a hundred homes in 2014 and you got
6 another 71 in 2015, right?

7 A Right.

8 Q And then you also have, Dr. Edwards, you would agree,
9 you're telling the Judge that there was a lot of samples
10 sent out, right?

11 A Yes.

12 Q And you didn't necessarily trust what the DEQ was sending
13 back, correct?

14 A No.

15 Q Okay. So when was it, tell the Judge, that in your
16 information when the DEQ and the health department are
17 discussing Legionella, when was the first time is your
18 understanding?

19 A It was probably I'd guess 2014, late 2014, early 2015.

20 Q October 13, 2014? October 13, 2014?

21 A It seems about right, yeah.

22 Q So the health department and the Department of
23 Environmental Quality are having communications about an
24 outbreak of Legionella?

25 A Right, and I think Genesee County was in the mix too.

1 Q Fair enough.

2 A Right.

3 Q And you're going around now testing these homes, you're
4 not sure if the DEQ tested their houses in the past or
5 not, correct?

6 A Yeah. I don't think I had the FOIA -- so I did a Freedom
7 of Information Act request for the lead test results.

8 Q Right.

9 A I don't think that came in until September timeframe. So
10 we started reviewing those results, and we knew from
11 LeeAnne and Melissa they had been tested but we didn't
12 have the addresses of all of the homes in the city yet at
13 that point in time.

14 Q You could have asked the resident whether or not they had
15 their house tested and whether or not they had the
16 results back?

17 A Right, but it's a pretty longshot because you only got 71
18 -- or let's even say it's 171 homes counting the two
19 years out of all these, you know, how many homes are in
20 Flint, you're just trying to find a needle in a haystack
21 basically.

22 Q Well you only had 15 you tested, correct?

23 A Pardon me?

24 Q Only 15 of those homes -- or 16 of those homes you tested
25 in the City of Flint?

1 A Yeah, small businesses and homes.

2 Q The small businesses, how many?

3 A Well essentially all the water sampling locations the
4 city used were small businesses.

5 Q Small businesses, how many did you sample?

6 A That was eight.

7 Q Eight.

8 And the two hospitals?

9 A No, that was late October.

10 Q Late October.

11 A Yeah, October we sampled.

12 Q And could you tell the Judge whether or not you found
13 Legionella in both hospitals?

14 A Yes, we did.

15 Q And you didn't test for PR6, correct?

16 A No. We looked for Legionella species which includes
17 serogroup six.

18 Q Okay.

19 A So it's inclusive of that and other forms, yeah.

20 Q But Hurley Hospital had quite a large amount of
21 Legionella found within it in your study?

22 A Yes.

23 Q And who runs Hurley Hospital, do you know?

24 A I don't know.

25 Q Who was running the city while you were doing this

1 testing?

2 A I believe that was the emergency manager, but I confess I
3 don't know every detail about how the city is run.

4 Q I understand.

5 A Yes.

6 Q Did you have to get permission from the emergency
7 managers to go into their hospital at Hurley that they
8 run?

9 A No, I asked Dr. Mona to let me in.

10 Q Okay. And that's a state ran hospital?

11 A Yes.

12 Q Okay.

13 A Honestly I don't know. I don't know who runs Hurley.

14 Q Okay, fair enough.

15 A It might be the state, I don't know.

16 Q The city's being ran by the state, yes?

17 A I'm not an expert on it, it seems confusing to me, that's
18 my understanding, yes.

19 Q You did write about it though?

20 A Yes. To be heard, yes, that's what's happening.

21 Q And one of the things in ethics that engineers hold true
22 to their heart is never to publish anything that you
23 haven't basically verified?

24 A Well you hope that's true for everyone. You try to be
25 honest about --

1 Q No, (inaudible, talking at the same time) --

2 A Yes.

3 Q So you talked about the filters, and you actually put
4 some slides up at several locations about filters here,
5 correct, and being used in this -- you told the Judge for
6 the 25 years of knowledge there's really -- it's common
7 knowledge that bacteria falls within the filters, right?

8 A The knowledge that bacteria grows on filters, yeah, that
9 goes back to the '80's, 1980's or so, but I don't know
10 what slides -- I did a presentation if you're talking
11 about that, yes.

12 Q Do you remember talking about do the free lead filters
13 provide -- provided by the relief agencies create
14 problems with bacteria, do you remember talking about
15 that?

16 A Yes.

17 Q You would agree with me, would you not, Doctor, that a
18 lot of what bacterias may be commonly found on the
19 filter, that's obviously common knowledge, but it really
20 depends on what water is going into the filter; isn't
21 that true?

22 A Yes, that's one factor that can be influential, that's
23 one reason I wanted to study the filters. That's why I --

24 Q Oh, you did want to study them?

25 A Yes.

1 Q And bacterial growth, you would agree, occurs all the
2 time in domestic water devices I think you wrote?

3 A And also in plumbing, just normal plumbing will grow the
4 bacteria.

5 Q You put it included water softeners, carbon filters, et
6 cetera, and plumbed in commercial devices such as
7 beverage vending machines, you know the ones where you
8 put the cup up to at McDonald's or whatever and it -- you
9 get the dispenser of the Coca-Cola, right?

10 A Right.

11 Q Those filters oftentimes collect, yes?

12 A Yes.

13 Q But one of things you want to find out is the HBC, the
14 hetro -- what is it, hetro bacteria count?

15 A Heterotrophic plate count.

16 Q Oh, plate count, heterotrophic plate count, you want to
17 find out what the -- what that water is like coming into
18 that tap, correct?

19 A Yeah, that's one thing you would look at as a researcher.
20 Yes.

21 Q Did you realize or know that the heterotrophic plate
22 count was way up and being reported by Mr. Glascoe in
23 your studies, in your opinions?

24 A I wouldn't be surprised if that happened, I don't recall
25 that.

1 Q Well if the heterotrophic plate count was up, wouldn't
2 that skew where the bacteria was found in the filter?

3 A Well, you know, they grow on the filters.

4 Q I understand.

5 A So you have some coming in that are trapped there, more
6 of them growing, so the filter is fed by the bacteria
7 that are coming in and different types grow on the
8 filters. So it's influential in what happens, yes.

9 Q Okay. And it wouldn't surprise that the heterotrophic
10 plate count and the water distribution system going into
11 people's homes was increased from prior to the switch in
12 the water source?

13 A I would be surprised if it was not increased.

14 Q I want to talk just briefly about your position on the
15 increase in Legionella that you -- you looked at the epi-
16 curves, you looked at the water system, yes?

17 A Yes.

18 Q Percentagewise, do you know how high percentagewise the
19 spike was in the City of Flint compared to over a five
20 year stand?

21 A My guess maybe four times normal, something like that. It
22 was a very substantial increase.

23 Q Okay. So significant enough -- had you seen it that high
24 in a community this size before in the country?

25 A A community the size --

1 Q It's a five year average, had you ever seen it this high
2 --

3 A This was a serious outbreak.

4 Q This was a serious outbreak?

5 A Yes.

6 Q And at this time could you tell the Court during this
7 outbreak, and I'll go until June of 2015, was it your
8 belief at that time in June of 2015 that citizens were in
9 imminent danger of consuming water here in Flint?

10 A June 2016 or 2015?

11 Q Fifteen.

12 A 2015. Based on what Mr. Del Toral had written, yes, I
13 agreed with his assessment in the memo that the residents
14 were in danger.

15 Q Imminent danger?

16 A Yes, I would use that word.

17 Q And you said you did some experiments on Legionella, and
18 you actually wrote a paper, I haven't found the paper,
19 but you wrote a paper on experiments that you did in 2014
20 on Legionella within pipe systems?

21 A Right, and my students that I advise, yes.

22 Q I'm sorry?

23 A The students I advise for their Ph.D., we're a team, so I
24 was part of that team.

25 Q Did you -- so your students -- it was the students that

1 wrote it, you advised them and counseled them throughout
2 that paper?

3 A Yes.

4 Q And is that published under your name?

5 A Yes. Well the student's name, we put the student's name
6 first because they did the work, and but my name's on the
7 paper, yes.

8 Q Okay. You, based on those experiments that you did in
9 2014, you would agree, and I think tell the Judge that,
10 and certainly correct me if I'm wrong, that you would
11 have expected as late as 2016 to say that that's what
12 caused the outbreak of Legionella was the switch in the
13 water source, based on your experiments?

14 A I would say that today that was a triggering event.

15 Q And a triggering event is what I'm confused by.

16 A Okay.

17 Q Just so we're both on the same page, and you can't put
18 the bullet back in the gun, right, once it's fired, so
19 once the chlorine and once this treatment plant that's
20 inoperable of producing potable water at the time, once
21 it distributes the water, this corrosive water, that was
22 the cause, that was the trigger that caused, being
23 pulled, that caused the outbreak of Legionella?

24 Q Yes, that the -- if that switch had not occurred or
25 perhaps even if corrosion control had been in place I

1 don't believe the Legionella outbreak would have been
2 severe or would have occurred because the protection
3 offered by the distribution system would still have been
4 there, as it was with Detroit. And the building
5 occupants, such as those at Hurley and McLaren and other
6 large buildings, would not be protected exclusively by
7 their own buildings' defenses, if you will.

8 Q So you would agree with me if someone posited the
9 chlorine -- when the chlorine is gone and you have iron
10 coming into the pipes, it's basically Legionella food?

11 A That is our hypothesis as we originated it in the NSF
12 grant, yes.

13 Q Basically it's a nutrient that will have Legionella grow
14 like crazy?

15 A Right. If the other conditions are right, such as the
16 temperature, stagnation, such as they occur in the
17 buildings.

18 Q So do you remember saying that in an article, Al Jazeera
19 America back in 2016?

20 A I wouldn't be surprised I said it, yeah.

21 Q And your advice and public notice in giving dissemination
22 you talk about when a person's in a shower or little
23 droplets are in the air or you drink the water and
24 somehow a little bit of that water goes into your lung,
25 this bacteria can go into your lungs and cause this

1 infection.

2 A Yes, if it's present in your water that can happen. The
3 more that's present the more likely it's going to happen.

4 Q And so if I get this correct, the pipe system within the
5 City of Flint without any corrosive control, and chlorine
6 being absorbed, that little asterisk here that's not
7 normal throughout the country, there's no corrosion
8 control treatment so you add chlorine, the organic
9 material comes down from the pipes, basically as you
10 called it the lead and iron and other organic materials,
11 get saturated within the chlorine, correct?

12 A Well the iron corrosion and the organics consume the
13 chlorine.

14 Q Right.

15 A Right.

16 Q Down the system, if I came close to dead ends where the
17 water isn't being used as much or not being pulled back,
18 that's a feeding ground in that location for Legionella?

19 A That's the hypothesis, yes.

20 Q And that's something Dr. Yu talked about; isn't that
21 fair?

22 A Yes, I think -- you know, the general idea dead ends are
23 a problem area. Yeah.

24 Q Which then the plume or the growth of the Legionella will
25 be there and grow at a more rapid pace, correct?

1 A Well the Legionella, so they grow mostly in the
2 buildings.

3 Q Well I understand. But in the water distribution system,
4 I'm not talking about the building right now.

5 A Right.

6 Q Because in McLaren Hospital, did they have -- in their
7 water distribution system did they have iron pipes in
8 there?

9 A I believe there are some probably, yeah.

10 Q Well you don't know?

11 A Well we saw copper but there was high iron in the water
12 as well.

13 Q Well the iron wouldn't surprise you if it came in through
14 the water distribution system?

15 A No, but, you know, large hospitals, they have big
16 diameter pipes that are almost invariably not copper, so
17 there were some pipes there that probably are not copper.
18 That's the nature of hospitals.

19 Q Right.

20 A So.

21 Q So outside the hospital, in those pipes, those
22 distribution systems, Legionella is found within those
23 systems, correct?

24 A At low levels, yes.

25 Q But if I give them food, if I pump them full of steroids

1 they're basically going to grow like crazy as you put it,
2 right?

3 A Not in the main distribution system.

4 Q Why not?

5 A So even when we came -- because the water is flowing, the
6 temperatures tends to be cooler, the chlorine levels tend
7 to be higher. So if we had come to Flint and found high
8 levels of Legionella in those samples of 16 homes, then I
9 would have said that that was happening, that this would
10 have been an unconventional event, we're actually getting
11 a lot of Legionella from your water mains. But instead
12 the levels were lower than what's found -- what EPA found
13 in a national survey. So the data showed, contrary to the
14 hypothesis, that the levels of Legionella that existed in
15 the Flint system in mid-August 2015 were undetectable for
16 Legionella pneumophila.

17 Q What was the percentage of homes, occupied homes and
18 otherwise, for the City of Flint that you tested?

19 A Percent of homes that were occupied?

20 Q No. You tested 16.

21 A Yeah.

22 Q How many homes are in the City of Flint?

23 A Yeah, so I think there were eight there and we tested
24 four buildings in Detroit.

25 Q How many homes are in the City of Flint?

1 A I would guess some 30 -- I don't know, 30,000 might be a
2 number that I've heard.

3 Q Is that a good representation, a good factor?

4 A Well if you're looking for the water that's in the mains
5 to have 16 -- so you're sampling all 16 points. The eight
6 sample sites of the city are set to be so called
7 distributed across the city representative of the system.
8 So we sampled those eight. We sampled eight other sites.
9 And LeeAnne Walters' house had zero chlorine, that had
10 zero chlorine for months. We were actually -- I left
11 LeeAnne a chlorine meter. For example, we got no
12 detectable chlorine in her house for months.

13 Q She had PVC pipes, correct?

14 A No, she had -- well she had galvanized iron -- PVC in her
15 house --

16 Q Right.

17 A She had iron, notable iron problems, iron water, never
18 any detectable chlorine. So to some extent, you know, her
19 house, based on our hypothesis, would have been predicted
20 to be the worst case example of Legionella.

21 Q How often did they flush outside there in that fire
22 hydrant?

23 A I don't think very often at all.

24 Q As a matter of fact, didn't they do it well before many
25 times prior to your testing?

1 A Right. But the point is they never got chlorine to her
2 house.

3 Q Well which one is it, they didn't test very much at all
4 or did they -- or did they flush the fire hydrants a lot?

5 A I don't know.

6 Q Okay.

7 A There's -- there were times they'd come and, I was told
8 they were flushed and LeeAnne still had zero chlorine in
9 her house. So it was the old reliable she didn't get
10 chlorine at her house until last year for the first time,
11 probably this year.

12 Q So and she wasn't by a dead end area, was she?

13 A I think she was a dead end, yeah.

14 Q Actually the water went up the street to two other
15 houses?

16 A Yeah. But her -- she had an unusually long service line,
17 valves were closed, it's hard to predict where the
18 water's going in that system.

19 Q Okay. At the end of the day as it relates to the
20 Legionella growth, you say that, and you published that
21 this was a perfect storm for Legionella to grow?

22 A We hypothesized it was and I believe it was. If I had to
23 invent conditions to try to grow Legionella, that would
24 be it.

25 Q Had you matched any of the source samples to the -- come

1 to find out source samples matched that of human samples,
2 sputum samples, in your testing?

3 A Yes, there's 20 some matching.

4 Q How many?

5 A I don't recall the exact numbers.

6 Q And where were the locations?

7 A There were some from hospitals. We're currently writing
8 that up as we speak.

9 Q I understand. Where were they at?

10 A Well the samples were collected from, you know, the
11 hospitals and from a few houses.

12 Q So you found some from houses that matched those of
13 humans?

14 A Well I would prefer, again, I don't have the expertise to
15 say what is a match and what is not, so we're going to
16 share the data so that any expert can look at that. But
17 some --

18 Q What's your understanding?

19 A Some of the samples from the few houses where we found
20 Legionella pneumophila were very close to what was
21 collected in some clinical samples.

22 Q Some clinical samples.

23 A Yes.

24 Q And where were those homes?

25 A The one home I know was right next to McLaren.

1 Q A house next to McLaren.

2 A Yes.

3 Q And in that house next to McLaren, did that person -- did
4 that person die that you know of?

5 A No.

6 Q You don't know?

7 A No, she didn't die, she was fine.

8 Q Okay. Did she catch the bacteria? Did she -- but it
9 matched someone else at another location?

10 A Right, who'd got the disease from somewhere, either
11 McLaren or Hurley or somewhere else. I'm not sure where
12 the sputum samples were collected.

13 Q Very well. One second.

14 Just briefly, I want to talk to you about this
15 -- what you brought up on direct examination when counsel
16 said you'd get in front of it, that being the request for
17 information from the Department of Health and Human
18 Services; do you remember that? Do you remember him
19 asking you questions?

20 A No, I'm totally confused about that. If you can refresh
21 my memory.

22 Q Sure, not a problem.

23 Remember you dealing with Robert Scott and you
24 wanted to get some information.

25 A Right.

1 Q And the information you wanted to get was based on the
2 blood lead levels of children in the City of Flint; do
3 you remember that?

4 A Yes, I remember.

5 Q Because you thought kids would be -- well Dr. Mona
6 Attisha and you were working together --

7 A Right.

8 Q -- at that time?

9 A Right.

10 Q And her claim was that the -- as you were working with
11 her children were being poisoned here in the City of
12 Flint?

13 A Yes.

14 Q And did -- it was urgent that you all get some data to
15 figure out whether or not it was due to the water system?

16 A Right.

17 Q Because one child is worth saving, speed is everything,
18 right?

19 A Right.

20 Q Is that fair?

21 A Yes.

22 Q And it goes along with your code of ethics?

23 A Yes.

24 Q So one day is too long in a lot of ways, fair?

25 A Yeah, in a lot of ways, but, you know, you're dealing

1 with big bureaucracies and unfortunately they don't
2 respond as fast as you'd like them to, but I felt one day
3 is too long.

4 Q Well I mean you're talking about saving a child's life.

5 A Yes.

6 Q Or making his life better, right?

7 A I felt so, yes.

8 Q And that's normal, I think everyone in this room would
9 agree with.

10 A I would hope.

11 Q We at least hope so.

12 A Yep.

13 (PX#52 marked at 1:58 p.m.)

14 MR. FLOOD: May I approach, Judge?

15 THE COURT: Yes, you may.

16 MR. FLOOD: Thank you.

17 BY MR. FLOOD:

18 Q Dr. Edwards, I want to show you what's been marked as
19 People's Proposed Exhibit No. 52 and have you have look
20 at those two pages if you would.

21 A Yes. Okay.

22 Q Did you get a chance to look at that?

23 A Yes.

24 Q Okay. And do you recognize those?

25 A Yes.

1 Q Did you write those?

2 A Yes.

3 Q And you wrote those in response to attempting -- in
4 September of 2015 to get information from the Department
5 of Health and Human Services, yes?

6 A Yes.

7 MR. FLOOD: I'd move for the admission of
8 People's Proposed Exhibit No. 52.

9 THE COURT: Any objection?

10 MR. TRAMONTIN: No objection, Your Honor.

11 THE COURT: Alright, No. 52 is hereby admitted
12 without objection.

13 (PX#52 admitted at 2:00 p.m.)

14 BY MR. FLOOD:

15 Q Doctor, those emails you were writing, you know the
16 person by name of Robert Scott, yes?

17 A Yes.

18 Q And Robert Scott, you had dealt with him in the past in
19 2010 or so?

20 A Probably, yeah, around that time.

21 Q And he was a cooperative person with you, got you what
22 you needed back in 2010, relatively simply and easy
23 without much problem, correct?

24 A Yes.

25 Q And now you're working as it relates to lead problems and

1 poisoning children, yes?

2 A Yes.

3 Q And one day waiting for someone drinking what you
4 potentially have found in this city in September of a
5 serious lead crisis; is that fair?

6 A Yes.

7 Q Knowing what the lead levels are in children at that time
8 was something that was needed right away; is that fair?

9 A Yes, and the state had represented they did a study and
10 it showed there was nothing to worry about.

11 Q They represented that to you?

12 A It's a paraphrase, a spokesperson for MDEQ, yes.

13 Q And that was with the MDHHS, correct?

14 A No, that was -- well the guy who's saying it publically
15 was from MDEQ from my understanding, he was referencing a
16 study that was supposedly done by MDHHS.

17 Q I see.

18 A This is how it was presented in the paper.

19 Q So you weren't surprised by the fact that the Michigan
20 Department of Environmental Quality and the Michigan
21 Department of Health and Human Services were working
22 together at that time?

23 A No.

24 Q Because that's something common that happens?

25 A Especially when there's a crisis sort of breaking or

1 unfolding, yes.

2 Q And communication between these two agencies would be
3 normal?

4 A Yes.

5 Q To try to solve problems?

6 A Right.

7 Q And here in this particular situation you had requested
8 this information back on early September; is that fair?

9 A Yes.

10 Q And did you ever get it?

11 A No.

12 Q You never got it?

13 A No.

14 Q So is that the purpose and the reason Dr. Mona Attisha
15 came out with -- and you about the lead poisoning
16 problems in the City of Flint?

17 A Well she had already done some analysis before September
18 15th, but after September 15th we had been working with her
19 data, so she had her own data.

20 Q I understand that.

21 A So she --

22 Q But the announcement after the 25th?

23 A Right. So she, I think the initial -- her announcement
24 was based on her data exclusively.

25 Q Oh, I see.

1 A Yeah.

2 Q You were assisting her in --

3 A I was playing bad cop to her good cop trying to advance
4 this issue. So the issue was I wanted the data, but if I
5 couldn't get it I wanted her to have it, so -- and I
6 trusted her to do the analysis correctly.

7 Q Not a problem. But it's fair enough you're telling this
8 Court that the Department of Health and Human Services
9 never gave you the information?

10 A Well I gave up. In this email right here I basically said
11 just give it to Mona and she will take care of it and I
12 will, you know, you don't need me anymore.

13 Q She never got it?

14 A I think she got it eventually, yeah.

15 Q What year?

16 A I think she got it around that time or she worked with
17 the Department of Health -- MDHHS and they did the
18 analysis and they confirmed her findings from her data.

19 Q You're not sure?

20 A So I think there was some exchange of data but they both
21 ended up at the same point within a few days after this
22 email.

23 Q And you don't know when they did their reports?

24 A Well which reports I guess.

25 Q Well let me strike that.

1 You never got what you requested?

2 A Well I gave up. In this email I said Mona's got her own
3 data, I'm fully confident in this outstanding young
4 woman, she had made a similar request, I said just give
5 it to her and then I'm calling y'all out as, you know, I
6 think this is wrong especially because I felt it was an
7 imminent endangerment and the data had been used just a
8 little bit prior to that in a way to claim that it didn't
9 look like there was a problem.

10 Q Fair enough to say you called the Department of Health
11 and Human Services unethical?

12 A Yes, that was my point then and I stand by that today.

13 Q And you stand by that today?

14 A Yes.

15 Q Because you don't know how many children were poisoned
16 for a delay, correct?

17 A Yes. You can estimate this delay was a period of some
18 weeks. To me, given my knowledge of corrosion control and
19 seeing this whole thing unfold, this was -- I didn't have
20 much patience, I'm not going to apologize for that.

21 Q But you want to save lives?

22 A I felt like this had to move along quickly, yes. And so I
23 was doing everything in my power to make it move along
24 quickly.

25 Q Okay. Today you gave an interview on the radio to WJR,

1 Mr. Beck?

2 A Yes.

3 Q Is that fair?

4 A Yes.

5 Q And you characterized, and do you remember how the crisis
6 here in Flint really wasn't as big as you suspected.

7 A No. I said as it was portrayed by some in the media, by
8 some media folks that the lead elevations were much more
9 serious than the actual data showed. So I made it very
10 clear on the radio that this was a tragedy, this was
11 criminal, people were hurt, but some in the media
12 portrayed the lead exposures that occurred as being
13 almost completely without precedent, and that's not even
14 true within the City of Flint. The precedent of just a
15 few years before was the same as what occurred during the
16 water crisis.

17 Q So you're saying there was a lead outbreak in the City of
18 Flint 2012?

19 A No, that was -- well, there was a national lead outbreak
20 of epic proportions a few decades ago when we had lead in
21 gasoline and lead in food and lead in paint and lead in
22 water.

23 Q Right.

24 A And so the dominant trend nationally is plummeting blood
25 lead levels, it's one of the biggest public health

1 success stories of the last several decades.

2 Q I misunderstood, I thought you were saying just a couple
3 years ago in the City of Flint.

4 A Yeah. No, the actual data in the City of Flint five
5 year's prior is analogous levels of lead poisoning is
6 what we saw during the height of the water crisis.

7 Q Well the Lead and Cooper Rule took place in this city in
8 1992.

9 A Right.

10 Q And going through historical data using Detroit water,
11 the lead and cooper results were, did you find in your
12 studies, for several years at zero?

13 A I wouldn't say zero, but they were below detection, yeah.
14 That's still not zero, but go ahead.

15 Q Alright. So and what year specifically -- I would like to
16 find out what year specifically are you talking about
17 that there was a lead crisis here in the City of Flint?

18 A No, it wasn't a crisis, this is the normal levels of lead
19 in the city at that time from lead paint, from lead in
20 dirt, from lead in food.

21 Q Oh, I see.

22 A So those levels of elevated blood lead in children in say
23 2010 were the same as what we saw during the height of
24 the crisis in 2015.

25 Q Right. Okay, I'm talking about when someone actually, as

1 you put it, manipulates reports and we have a manmade
2 crisis here in the City of Flint with the water system.

3 A So --

4 Q You've seen that, haven't you?

5 A I'm just putting this in the context.

6 Q Okay.

7 A So, you know, what happened I believe was criminal, it
8 never should have happened, children were hurt, people
9 should face consequences for that. But at the same time
10 the elevation in blood lead of the children in Flint in
11 2014-2015 was not higher than what was normal in the city
12 in 2010, it was actually lower than what occurred before
13 2010.

14 Q I understand, and that was caused by other natural or
15 whatever circumstances took place. This was a manmade
16 issue.

17 A Oh, yes. No, that's what makes it in my mind criminal.

18 Q And you had testified before to the people that were in
19 this state and in the federal government, you accused
20 them of having willful blindness to this epidemic here of
21 Legionella -- or lead corrosion control and Legionella
22 outbreak?

23 A I've been accusing the EPA of willful blindness since
24 about 2007 on this issue.

25 Q And you said, if I understood you correctly, and

1 testified under oath that the Michigan State government
2 here both -- on all levels was aided and abetted by the
3 federal government?

4 A Yes.

5 Q For this willful blindness?

6 A Yes.

7 Q Doctor, just last area, last topic.

8 Lead came into the water system, you're in
9 agreement, right?

10 A Well lead was in the water system and after the switch it
11 started falling off the pipes.

12 Q It falls off the pipes, it goes to the house, and where
13 does it go?

14 A A lot of it goes in the sewers, some of it goes in the
15 food, some of it goes in the beverages.

16 Q Some would go in the soil?

17 A Probably not so much, a little bit maybe.

18 Q Some of it goes -- a lot of it go into the sewer system?

19 A Yes.

20 Q And when it goes into the sewer system where did it go?

21 A It's removed in the sludge, about 90 percent plus.

22 Q And when it goes to the sludge, where does the sludge go?

23 A I'm not really sure where they dispose of it, oftentimes
24 it's land disposal.

25 Q Did you know in the City of Flint they burned it off of a

1 barge, the sludge?

2 A That wouldn't surprise me, that happens.

3 Q Okay. Where does that lead go that's being burned off

4 that sludge?

5 A It goes typically up into the air, it stays in the

6 residual ash.

7 Q So if it goes up in the air is it air pollution for lead

8 too?

9 A Yes, that's a source of lead in air.

10 Q I'm sorry?

11 A That's a source of lead in air.

12 Q Is that why we stopped, you know, with gasoline that you

13 talked about and actually wrote a paper about with

14 unleaded and lead gas?

15 A Well I didn't write a paper on that.

16 Q Your students?

17 A We wrote review papers, we didn't do any of that

18 research.

19 Q Okay.

20 A But actually the amount of lead in the sludge was

21 slightly elevated during the water crisis, but not --

22 once again, it wasn't much higher than it had been just

23 three, four years before.

24 Q But again, manmade in polluting the citizens of Flint?

25 A Yes.

1 MR. FLOOD: Judge, I have no other questions.
2 Thank you.

3 THE COURT: Redirect?

4 MR. TRAMONTIN: Thank you, Judge.

5 REDIRECT EXAMINATION

6 BY MR. TRAMONTIN:

7 Q I'm going to try and bring this back to Dr. Wells a
8 little bit.

9 Exhibit 52, that email exchange that you had
10 with Dr. Mona Hanna-Attisha and Robert Scott, do you have
11 that in front of you?

12 A Yes.

13 Q You see Dr. Wells' name on that email at all?

14 A No.

15 Q Do you have any reason to believe that Dr. Wells was
16 involved in your FOIA request at that time?

17 A No.

18 Q You reviewed many emails between the Department of
19 Environmental Quality and the Department of Health and
20 Human Services in preparation for your testimony or in
21 your investigation more so, correct?

22 A Yes.

23 Q You ever see any communication between Dr. Wells and
24 anyone at DEQ in those emails you reviewed?

25 A Not -- I mean up until January when we published our

1 results on our website. It might have been some later,
2 but --

3 Q January 2016?

4 A Yeah, this is after -- that would have been after the
5 Federal Emergency Declaration. I never saw her name --

6 Q That's when you started to see communications between Dr.
7 Wells and DEQ officials?

8 A If I did, yeah, so I don't remember -- even remember it.

9 Q This --

10 A Yeah, that would have been -- excuse me, during the
11 emergency response there were many emails with Dr. Wells
12 and MDEQ and CDC and EPA and everybody.

13 Q This willful blindness that the Prosecutor elicited from
14 you with regard to the federal government aiding -- or
15 aiding and abetting the state government, do you recall
16 that?

17 A Right.

18 Q You ever seen any evidence or any indication that Dr.
19 Wells was willfully blind in any of your investigation to
20 public health?

21 A No.

22 Q You've been qualified as an expert in ethics, research
23 ethics, engineering ethics, correct?

24 A Yes.

25 Q You've had an opportunity to work with the FACHEP

1 organization or at least interface with them?

2 A Yes.

3 Q Review their reports?

4 A Yes.

5 Q Experience the messages they were sending to the public?

6 A Yes.

7 Q Listen to the residents of Flint in response to those
8 messages?

9 A Yes.

10 Q Do you have an opinion as to whether FACHEP was acting
11 ethically in this contract?

12 A I believe that some of their actions were unethical and I
13 reported them to the State Licensing Board and to the
14 National Institutes of Health.

15 Q And what in particular?

16 A The -- Dr. McElmurry misrepresented his expertise and his
17 work in Flint. That when he wrote a National Institutes
18 of Health Research grant he misappropriated work from a
19 professor in Texas and represented it as his own.

20 Q Anything to do with conflicts of interest?

21 A Yes. We have reported them for failure to disclose a
22 conflict of interest in a PNAS paper that they wrote.

23 Q And what would be that conflict?

24 A Well Mr. McElmurry was testifying under oath in this case
25 and in the case of Mr. Lyon, they wrote a paper to a

1 journal, there's a place you're supposed to disclose your
2 conflicts of interest. Ethically this is an obvious
3 conflict of interest and it was not disclosed.

4 MR. FLOOD: (Inaudible, talking at the same
5 time) -- cross-examination as it relates to McElmurry. I
6 didn't bring up Dr. McElmurry.

7 MR. TRAMONTIN: Your Honor, he did bring up
8 ethics and he did bring up the fact that Dr. Edwards had
9 claimed in a previous email that the Michigan Department
10 of Health and Human Services was unethical, so this is
11 along those lines. And he has been qualified as an expert
12 in this area, and has testified extensively to the facts
13 which would form the basis of that opinion.

14 THE COURT: Well when we allowed testimony
15 before it was in regards to the things that he did next
16 and in regards to his overall handling of this. Now it's
17 just for to impeach Dr. McElmurry or his credibility?

18 MR. TRAMONTIN: It's to give an opinion as to
19 whether or not that research project was conducting
20 itself in an ethical manner. He's an expert, he lectures
21 around the world, he teaches course on it, he's written
22 about it, and he's here to give his opinion.

23 THE COURT: Alright, I'll allow it.

24 BY MR. TRAMONTIN:

25 Q Had you concluded your answer, Dr. Edwards, or was there

1 more?

2 A Yes, that's enough. I've reported specific actions of Dr.
3 McElmurry to those three groups.

4 MR. TRAMONTIN: Thank you, Doctor.

5 MR. FLOOD: May I briefly, Judge?

6 THE COURT: Yes, you may.

7 RECROSSE-EXAMINATION

8 BY MR. FLOOD:

9 Q Dr. McElmurry, I'm sorry, Dr. Edwards, you had talked
10 about making sure what you publish is true, correct?

11 A I strive to achieve that, yes.

12 Q And you had talked about, just now you just got into
13 calling out Dr. McElmurry for scaring people and them not
14 taking showers; do you remember that?

15 A That was one implication of their messaging on Facebook
16 that the water was causing shigella, and that was July of
17 2016 where that message was released on Facebook.

18 Q As a matter of fact, that was your opinion, right?

19 A No.

20 Q You didn't write and say in New York -- in a New York
21 Times Magazine?

22 A Absolutely not, it's completely contrary to my opinion.

23 Q Okay.

24 A All of our data showed that shigella was not coming from
25 the water and FACHEP was claiming it was.

1 Q What -- do you remember Melissa Mays, you just talked
2 about her?

3 A Yes.

4 Q And Melissa Mays criticizing you because you basically
5 talked about that the citizens here, she was accusing you
6 of calling them dumb and the like; do you remember all
7 that?

8 A I remember her saying that.

9 Q And that we all took showers here regardless; do you
10 remember that?

11 A That's -- first of all, I never said any way, shape or
12 form what she claimed I was saying. Secondly, the US
13 Centers For Disease Control did a study that showed 80
14 percent of Flint residents changed their bathing habits
15 because they were afraid of the water. That is creating a
16 public health risk, and that risk was manifested in the
17 shigella outbreak.

18 Q So when you said, Doctor, that people in an outbreak with
19 Legionella could catch Legionella from the shower
20 droplets, death by catching Legionella, which one --
21 would you just come in here and give a public
22 announcement that the City of Flint has been poisoned?

23 A We had already found out that the Legionella levels were
24 low in Flint homes. We would never make such a
25 pronouncement. FACHEP's data showed that, all their data

1 since then has showed that. Legionella risk in the homes
2 were relatively low in Flint. They were relatively low
3 during the crisis. They were relatively low after the
4 crisis. I'm not sure why, we're still studying it, but
5 that is a fact, the Legionella levels were low.

6 Q You don't have an answer for why there was 50 or 45
7 percent of the outbreak of Legionella was outside the
8 hospitals, do you?

9 A Well I -- there's always exposure of Legionella occurring
10 in homes across the county, there's no such thing as zero
11 health risk from Legionella. Twenty-five percent of homes
12 across the country --

13 Q Was there an outbreak here or not?

14 MR. TRAMONTIN: Can he be allowed to finish his
15 answer?

16 THE COURT: Right.

17 MR. FLOOD: It was non-responsive, Judge, I'd
18 ask that you instruct the witness to answer the question.

19 MR. TRAMONTIN: It was responsive.

20 THE WITNESS: I thought I was answering the
21 question.

22 THE COURT: You can finish.

23 THE WITNESS: Twenty-five percent of homes
24 nationally have Legionella pneumophila coming in the
25 water into the house. Legionella often grows in the

1 homes. People are at risk from Legionella. I am
2 dedicating a large portion of my career to reducing that
3 risk whenever possible. Amongst the things that we're
4 trying to do is to get responsibility of water, city
5 water companies to have more chlorine in the water. We're
6 thinking about things that we can do to tell people to
7 reduce risk in their homes, including things like baths.

8 But the reality is is that during the crisis in
9 homes the levels of Legionella in the home water while
10 not zero, while there's no such thing as a perfectly safe
11 bath or shower anywhere in this country, the risk from
12 Legionella in the Flint homes based on all the available
13 data was not high, in fact it was relatively low compared
14 to other cities.

15 BY MR. FLOOD:

16 Q And so you disagree with Dr. Love, Dr. Zervos, Dr. Paul
17 Kilgore, Shawn McElmurry, Dr. McElmurry and their
18 publication that the Legionella was caused here by the
19 switch in the water source, do you disagree with them?

20 A No. We had already published and said that it was the
21 source. We published two peer reviewed papers on that
22 more than a year before they did.

23 Q And you just found bacteria of Legionella matching a
24 human being next to a house -- next to the hospital in a
25 house, correct?

1 A Yes. In one of the houses we found one culture of
2 Legionella --

3 Q That was found in a human?

4 A Yes.

5 MR. FLOOD: Okay, I have no other questions,
6 Judge.

7 THE COURT: Thank you very much, Doctor, you may
8 step down.

9 THE WITNESS: Thank you.

10 (Witness excused at 2:23 p.m.)

11 MR. FLOOD: Judge, may we approach?

12 THE COURT: Yes, you may.

13 (Off the record at 2:23 p.m.)

14 (Back on the record at 2:32 p.m.)

15 So this matter will adjourn until tomorrow
16 afternoon at 1:00.

17 MR. TRAMONTIN: Thank you, Your Honor.

18 THE COURT: Thank you.

19 (Proceedings concluded at 2:33 p.m.)

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