Lee Jones, et al.

v.

Moore Chemicals, Inc.

Sponsored by the North Carolina Mock Trial Program

The North Carolina Mock Trial Program (NCMTP) wishes to thank the Wisconsin State Bar and the Wisconsin High School Mock Trial Tournament for allowing the NCMTP to base this year's civil case on their 2009 case (*Lee Jones, et al. v. Badger Aeromechanical Corporation*). We also thank the following members of the NCMTP Case Committee for their leadership and edits to the original case: Brad Bannon of Patterson Harkavy LLP; Adrienne Blocker of DeMayo Law Offices; Rebecca Britton of Britton Law, P.A.; Gayle Goldsmith of Goldsmith Tuch Law; and Hayes Jernigan Finley of Fox Rothschild LLP. All names used in this mock trial case are fictitious. Any similarity to an actual event or person is strictly coincidental.

AVAILABLE WITNESSES

PLAINTIFF WITNESSES	DEFENDANT WITNESSES
Lee Jones	Jerilyn/Jerry Smith
Dr. Kris/Kristen Wessell	Riff Randall
Robin Roberts	Dr. Leslee M. Nielsen

CASE DOCUMENTS

Legal Documents

1. Stipulations
2. Jury Instructions and Verdict Form
3. Civil Complaint
4. Answer
5. Available Case Law

Affidavits

Plaintiff

1. Affidavit of Lee Jones
2. Affidavit of Kris/Kristen Wessell
3. Affidavit of Robin Roberts

Defense

4. Affidavit of Jerilyn/Jerry Smith
5. Affidavit of Riff Randall
6. Affidavit of Dr. Leslee Nielsen

Exhibits

1. Curriculum vitae for Robin Roberts, R.P.G.
2. Table 1. Environmental Monitoring Data: Roberts Environmental Associates
3. Department of Natural Resources: Case Closure Report
4. Appendix 1 to Exhibit 3 – Summary of Ground Water Monitoring Results of Private Water Supply Wells
5. Report of Togar Environmental on Hazardous Substance Materials at the Moore Chemicals Windmill Fabrication Facility
6. Curriculum vitae for Kris/Kristen Wessell, M.D./Ph.D.
7. Curriculum vitae for Leslee M. Nielsen, M.D.
8. Curriculum vitae for Riff Randall, P.E.

SUPERIOR COURT FOR THE STATE OF UTOPIA
ORANGE COUNTY

LEE JONES, CHRIS JONES,
EDNA JONES,

Plaintiffs,

vs.

MOORE CHEMICALS, INC.,

Defendant.

CIVIL ACTION DOCKET

NO. 21-CIV-0503

Judge Mary Wilson

STIPULATIONS

The parties agree to the following stipulations:

1. The amount of damages is not an issue in this case. The parties are only addressing liability against Moore Chemicals, Inc. at this stage of the proceedings.

2. The authenticity of the exhibits may not be contested.

3. The chain of custody of the evidence may not be contested.

4. The signatures on the Witness Statements and other documents are authentic. If asked, a witness must acknowledge signing the document(s) and must attest to the contents of the document(s).

UTOPIA JURY INSTRUCTIONS – CIVIL

At the conclusion of a jury trial, the judge will instruct the jury on how to apply the law to the evidence. Hypothetically, if the judge in your mock trial case were to provide instructions to the jury, they would look something like the following. [Please note: These instructions may NOT be read aloud or tendered to the mock trial jury or used as an exhibit during the competition; however, students may use these concepts in fashioning their case and making arguments to the jury.]

Count # 1: Negligence – Duty of Adjoining Landowners

Negligence refers to a person's failure to follow a duty of conduct imposed by law. Every person is under a duty to use ordinary care to protect himself/herself and others from injury. Ordinary care means that degree of care which a reasonable and prudent person would use under the same or similar circumstances to protect himself/herself and others from injury. When deciding on a verdict in a negligence case, juries are instructed to compare the facts, testimony, and evidence in determining whether the following elements were satisfied:

Duty (of adjoining landowners)
Breach of Duty
Proximate Cause
Damages

The below outlines the burden of proof for negligence related to the duty of adjoining landowners. On these issues the burden of proof is on the plaintiff. This means that the plaintiff must prove, by the greater weight of the evidence, that defendant was negligent and that such negligence was a proximate cause of the plaintiff's [injury] [damage].

Duty of Adjoining Landowners
A landowner has a duty to use and maintain his property in a reasonable manner so as not to injure or damage any adjoining landowner or otherwise interfere in a material or important way with the use and enjoyment of the adjoining property. In other words, the law requires a landowner to use and maintain his property in the same manner as a reasonable and prudent person would under the same or similar circumstances.

Breach of Duty
A breach of the foregoing duty is negligence.

Proximate Cause
A party seeking damages as the result of the negligence of another has the burden of proving not only negligence, but also that such negligence was a proximate cause of the injury or damage. Proximate cause is a real cause — a cause without which the claimed injury or damage would not have occurred, and one which a reasonably careful and prudent person could foresee would probably produce such injury or damage or some similar injurious result.

There may be more than one proximate cause of an injury or damage. Therefore, the plaintiff need not prove that the defendant's negligence was the sole proximate cause of the injury or damage. The plaintiff must prove, by the greater weight of the evidence, only that the defendant's negligence was a proximate cause.

{See note on damages below}

Count #2 : Trespass

The plaintiff must prove, by the greater weight of the evidence, four things:

First, that the plaintiff was in possession of the property at the time of the alleged trespass. [A person is in possession of the property when he physically occupies it; exercises acts of dominion over it; or has title to it with the right to immediate actual possession].

Second, that the defendant intentionally entered or caused a substance under his or her control to enter or remain present on plaintiff's property, even if the entry is unaccompanied by bad or wrong intent. This is merely an intent to go upon the land of another, not intent to do injury. The unintentional and non-negligent entry onto the land of another does not constitute trespass.

Third, that the defendant's entry or continued presence was unauthorized. Entry upon the property of another is unauthorized when it occurs without the consent of the owner or possessor, whether express or implied. A person's continued presence is unauthorized when he refuses to leave after being asked to do so, or when his conduct exceeds that which has been authorized.

And fourth, that the defendant's entry or continued presence resulted in significant harm. "Significant harm" means harm involving more than a slight inconvenience or petty annoyance.

Count #3 : Nuisance

The plaintiff must prove, by the greater weight of the evidence, two things:

First, that the defendant substantially interfered with the plaintiff's use and enjoyment of his property. Interference is substantial when it results in significant annoyance, material physical discomfort or injury to a person's health or property. A slight inconvenience or a petty annoyance is not a substantial interference.

Second, that such substantial interference was unreasonable. Substantial interference is unreasonable if an ordinary person would consider it excessive or inappropriate after giving due consideration to the interests of the plaintiff, the defendant, and the community. In determining whether such substantial interference is unreasonable, you may consider

1. the surroundings and conditions under which the defendant's interference occurs
2. the location of the property
3. the nature, utility and social value of the defendant's operation
4. the nature of the plaintiff's injury
5. the suitability of the location for the defendant's operation
6. the suitability of the location for the use which the plaintiff makes of his property
7. the extent, nature and frequency of the harm to the plaintiff's interest
8. the priority in time of occupation or conflicting uses between the plaintiff and the defendant.

Damages

[For purposes of the mock trial exercise, student competitors need only prove the fact of injury. The amount of damages need not be proven or argued by participants and will not be determined by our mock trial juries. The element of damages is included here for educational purposes only.] Actual damages are the fair compensation to be awarded to a person for any past, present, and/or future injury proximately caused by the negligence of another. In determining the amount, if any, to be awarded to the plaintiff, evidence is considered as to each of the following types of damages: medical expenses, loss of earnings, pain and suffering, scars or disfigurement, partial loss of use of part of the body, and/or permanent injury. The total of all damages are to be awarded in one lump sum.

State of Utopia **Circuit Court Branch 2** **Orange County**

LEE JONES, CHRIS JONES,
EDNA JONES,
Plaintiffs, Case No. 08 CV 1356

vs.

MOORE CHEMICALS, INC.,
Defendant.

VERDICT FORM

Count #1: Negligence

1. Was Moore Chemicals, Inc., ("Moore Chemicals") negligent?
_____ Yes _____No

2. If the answer to No. 1 is "yes", was Moore Chemicals' negligence a cause of injuries to Lee Jones?
_____ Yes _____No

3. If the answer to No. 1 is "yes," was Moore Chemicals' negligence a cause of Edna Jones' injuries?
_____ Yes _____No

Count #2: Trespass

4. Did Moore Chemicals trespass upon the Jones' property by intentionally allowing hazardous materials from its business operations to enter upon the Jones' property without their consent?
_____ Yes _____No

5. If the answer to No. 4 is "yes", did such trespass result in significant harm to the Joneses?
_____ Yes _____No

Count #3: Nuisance

6. If the answer to No. 1 is "yes," did such negligence cause interference with the Jones' use or enjoyment of their property?
_____ Yes _____No

7. Did Moore Chemicals' business operations contaminate the atmosphere in close proximity to dwellings or other business places with disagreeable, unwholesome or offensive odors such as to unreasonably interfere with the comfort or enjoyment of Jones' property?
_____ Yes _____No

State of Utopia **Circuit Court Branch 2** **Orange County**

LEE JONES, CHRIS JONES,
EDNA JONES,
13 Claim Street
Forward, Utopia 54311

CIVIL COMPLAINT

Plaintiffs,

Case No. 08 CV 1356

vs.

MOORE CHEMICALS, INC.,
32 Claim Street
Forward, Utopia 54311

Defendant.

Plaintiffs Lee Jones, Chris Jones, and Edna Jones (collective the Joneses), by and through their attorneys, assert and plead as follows:

1. The Plaintiff Lee Jones is an adult resident of the State of Utopia whose primary residence is located at 13 Claim Street, Forward, Orange County, Utopia.

2. The Plaintiff Chris Jones is an adult resident of the State of Utopia whose primary residence is located at 13 Claim Street, Forward, Orange County, Utopia.

3. The Plaintiff Edna Jones is a minor child whose parents are the Plaintiffs Lee and Chris Jones; Edna Jones resides with her parents at 13 Claim Street, Forward, Orange County, Utopia.

4. The Jones' family residence is an adjoining landowner of Defendant, Moore Chemicals, Inc. ("Moore Chemicals").

5. Moore Chemicals, Inc., is a corporation duly licensed to do business in the State of Utopia, and whose principal place of business is located at 32 Claim Street, Forward, Utopia.

6. The Joneses have lived in Forward, Utopia for approximately 15 years. Their home is approximately two (2) blocks from the Moore Chemicals facility.

7. Moore Chemicals has been operating its main factory at the Claim Street location in Forward, Utopia for approximately ten (10) years.

8. Moore Chemicals makes wind turbines and its manufacturing process includes the use of chemicals including, but not limited to, mercury, arsenic, trichloroethylene ("TCE"), tetrachloroethylene ("PCE"), and insecticides such as Endrin,

Hepthachlor and Lindane.

9. Upon information and belief, Moore Chemicals stores waste liquids generated as part of its manufacturing processes in drums that are then stored in a waste storage building that is located on the southeast portion of Moore Chemicals' property.

10. The prevailing winds on Claim Street blow noxious fumes and vapors off of the Moore Chemicals facility, including towards the Jones' home.

11. Upon information and belief, during the time that Moore Chemicals has operated at its Forward facility, Moore Chemicals employees have poured liquid wastes on the ground directly outside the waste storage building.

12. Upon information and belief, over the last year or so, the Utopia Department of Natural Resources ("UDNR") has been investigating the release of noxious fumes from the Moore Chemicals facility, as well as the illegal dumping of hazardous wastes.

13. All of the residents living on Claim Street, including the Joneses, rely on potable wells as their source of drinking water.

14. A plume of PCE groundwater contamination affects all of the drinking water wells on Claim Street, including the Jones' well. Upon information and belief, PCE has migrated from the Moore Chemicals facility to the Jones' drinking water well.

15. Recent sampling conducted in the Jones' neighborhood, including in the vicinity of the stream that runs behind the Jones' home, has revealed soil and groundwater that is contaminated with various levels of mercury, PCE, arsenic and insecticides, many of which exceed the State of Utopia's enforcement standards.

16. Plaintiff Lee Jones was recently diagnosed with liver cancer which was proximately and directly caused by Lee Jones' exposure to the PCE, arsenic and insecticides used and/or improperly disposed of by Moore Chemicals.

17. Plaintiff Edna Jones was recently diagnosed with autism which was proximately and directly caused by Edna Jones' exposure to elevated mercury levels in the Jones' drinking water and the stream adjacent to Jones' home.

18. Moore Chemicals has failed to safely manage its chemicals and waste streams at its Forward facility, which has resulted in air emissions that are unsafe to the general public's health, contamination of soils at the Moore Chemicals site and neighboring sites, and contamination to surface water and groundwater.

FIRST CAUSE OF ACTION
NEGLIGENCE

19. Plaintiffs repeat and reassert the allegations set forth in paragraphs 1-18, above, as if fully set forth herein.

20. That Moore Chemicals was negligent, in and among other things, the following respects:

a. Failure to provide, adopt or use methods and processes reasonably adequate to ensure that hazardous wastes, chemicals, metals and/or insecticides did not enter the environment outside of the Moore Chemicals facility;
b. Failure to properly inspect its manufacturing and hazardous waste handling processes; and
c. Failure to enact policies or procedures to address or respond to spills or releases from the Moore Chemicals facility and its operations.

21. The negligence of the Defendant was a cause of the injuries and damages to the Plaintiffs.

22. As a direct and proximate result of the aforesaid acts of negligence on the part of Moore Chemicals, the Plaintiffs, Lee and Edna Jones, have sustained injuries, suffering, and incurred medical and hospital expenses; said injuries have required medical care and attention, along with continued pain, suffering, disability, and medical care and attention, all in a sum according to proof.

SECOND CAUSE OF ACTION
TRESPASS

23. Plaintiffs reincorporate herein and reallege as if set forth in full all of the allegations of paragraphs 1 through 18, above.

24. The release of chemicals and hazardous waste by Moore Chemicals intentionally caused the migration of chemicals and hazardous waste onto the Plaintiffs' property. The intrusion was without Plaintiffs' consent and was unprivileged, constituting a trespass upon Jones' property.

25. As a result of Moore Chemicals' trespass, the Plaintiffs incurred substantial harm to their property, including but not limited to damage to their groundwater and drinking water supply.

THIRD CAUSE OF ACTION
NUISANCE

26. Plaintiffs reincorporate herein and reallege as if set forth in full all of the allegations of paragraphs 1 through 18, above.

27. The release of chemicals and hazardous wastes into the Jones' water supply constituted a substantial and unreasonable interference with the Jones' private use and enjoyment of their property.

28. The release of noxious fumes and odors from the Moore Chemicals facility

also constituted a substantial and unreasonable interference with the Jones' private use and enjoyment of their property.

WHEREFORE, the Plaintiffs respectfully demand judgment against the above-named Defendant, Moore Chemicals, Inc., as follows:

A. For compensatory damages in an amount to be determined;

B. For the costs, disbursements, and attorneys' fees of this action; and

C. For injunctive or any further relief as the Court deems just and equitable.

Dated this 15th day of August, 2019

ARNDT, GRAFF & ROSENBERG, S.C.
By ***jodiarndt***
Jodi L. Arndt

P.O. ADDRESS:
12 Green Street Suite A
Forward, Utopia 54311

State of Utopia **Circuit Court Branch 2** **Orange County**

LEE JONES,
CHRIS JONES,
EDNA JONES,

ANSWER
DEMAND FOR JURY TRIAL

Plaintiffs,

vs.

MOORE CHEMICALS, INC.,

Defendant.

ANSWER

Defendant Moore Chemicals, Inc., responds to Plaintiff's Complaint as follows:

1. Admitted.
2. Admitted.
3. Admitted.
4. Admitted.
5. Admitted.
6. Admitted.
7. Admitted.
8. Admitted.
9. Admitted.
10. Defendants lack sufficient knowledge to form a belief as to the truth of the allegations in paragraph 10, and thus is denied.
11. Denied.
12. Admitted.
13. Admitted.
14. Denied.
15. Denied.
16. It is admitted that plaintiff Lee Jones has been diagnosed with liver cancer; the remainder of this allegation is denied.
17. It is admitted that plaintiff Edna Jones has been diagnosed with autism; the remainder of this allegation is denied.
18. Denied.

COUNT ONE: Negligence

19. Defendants' responses to paragraphs 1-18 are incorporated hereby by reference.
20. Denied.
21. Defendants lack sufficient knowledge to form a belief as to the truth of the allegations in paragraph 21, and thus is denied.
22. Denied.

COUNT TWO: Trespass

23. Defendants' responses to paragraphs 1-18 are incorporated hereby by reference.
24. Denied.
25. Denied.

COUNT THREE: Nuisance

26. Defendants' responses to paragraphs 1-18 are incorporated hereby by reference.
27. Denied.
28. Denied.

WHEREFORE, Defendant prays the following from the Court:

1. That Plaintiff recover nothing from Moore Chemicals, Inc.; and
2. Such other and further relief which the Court may deem just and proper

Defendants request a jury trial on all issues.

Respectfully submitted this the 10th day of October, 2019

Jane Jason, Esq.
Attorney at Law
123 Main Street
Forward, Utopia 14387

AVAILABLE CASE LAW
All decisions were rendered by the Utopia Supreme Court

In *Lunda v. Matthews*, 46 Utpa. App. 701, 613 P.2d 63 (1980), a cement plant was held liable for emitting debris, dust, and fumes that encompassed a landowner's house and aggravated his bronchitis and emphysema. The court reached this determination despite arguments that the landowner's illness made him more vulnerable to debris and dust than would be persons of ordinary health. The court also held that the cement plant could not escape liability merely because it was complying with state pollution standards.

Kellogg v. Village of Viola, 67 Utpa. 2d 345, 227 N. W. 2d 55 (1975), a landowner was permitted to recover for the loss of mink kittens who were eaten by their skittish mother after being frightened by noises and odors from a nearby dump. The court was not persuaded that the mink were abnormally squeamish or that the landowner was primarily responsible for their death because he had chosen to move next to the dump with full knowledge of its activities.

In *Rudd v. Electrolux Corp*., 982 Utpa. 355, 370 (M.D.N.C. 1997), a manufacturing facility was not liable to neighboring landowner after removal of two Underground Storage Tanks on the manufacturer’s property revealed that the tanks had been leaking and caused hazardous substances to migrate onto neighboring property. The landowner sought claims of trespass and nuisance based on damages of the stigma of contamination, diminished property value, and lost opportunity to sell the property. The court found the manufacturer was not liable for the leak and migration of the contaminants because they had no knowledge of the leak, the migration was unintentional, and they took immediate action to abate the problem once it was discovered.

AFFIDAVIT OF LEE JONES

1. My family and I have lived in Forward, Utopia for about 15 years. We moved from Arid, Texas in 2005 and have lived at 13 Claim Street in Forward ever since. We have three children, a daughter Star who is 15, a son James age 11, and a daughter Edna who just turned 5.

2. My family and I have been experiencing severe health problems since Moore Chemicals, Inc. ("Moore Chemicals") started operating in town in 2008. My older daughter and son have bad allergies. Their allergies are always worse in the summer months when those noxious smells coming from Moore Chemicals are the most pungent and seem to head straight into our yard. The smell gets so bad sometimes that the kids cannot even play outside. It is just not right that the kids need to stay indoors while it is nice out. Moore Chemicals is taking their childhood away. We cannot even have guests over for a barbeque during the summer months as our family members and friends always complain about the smell coming from Moore Chemicals.

3. When we bought our house many years ago, the woman who owned the house before us told us that the water had started tasting funny. However, she said that the DNR came out and investigated and determined it was ok. She said we had nothing to worry about. We believed her that it was all taken care of, and she took off for Las Vegas with the money we paid her for the house.

4. Two years ago, our youngest daughter was diagnosed with autism on the severe spectrum. This news devastated our family. Edna was the happiest little girl, always smiling and so eager. When she was very little and just learning to walk, we most often kept her inside because we have a large backyard and we didn't want her wandering off or getting hurt. There's also a creek that runs by our yard that starts northwest near the Moore Chemicals plant called Sleepy Creek. As much as we tried to keep her inside and away from the creek, we just couldn't resist her requests to go play by the creek. Edna and her brother, James, who she absolutely adored, kept begging to play outside by the creek, so we relented.

5. Soon thereafter, when Edna was nearly three years old, she started to change. She stopped speaking, became withdrawn, and resistant to touch. This was just not the Edna we knew so we took her to our family doctor. When the doctor told us that Edna had autism, we could hardly believe it. How could our bright energetic child have changed so much seemingly overnight? It just seemed like a horrible dream that I could not wake up from. None of this made sense to us.

6. The Moore Chemicals plant is located just down the road from our house. When they announced they were setting up shop we had a lot of questions for them. They told us they were going to be making wind turbines to help the environment, and at first we were very supportive. After all, I am in favor of improving air quality and providing a better place for my children to live, particularly since I have two children with asthma. I even applied at one of their job fairs, and they hired me to work part-time as a file clerk in the main office.

7. After a couple years or so, I started getting concerned about the company's safety practices. I saw memos in some of my filing that made it look like they were trying to dump some waste as it appeared that they were generating more waste than was allowed. One time, when I was taking the shredding out back, I even saw a couple guys knock over an open barrel of liquid labeled "toxic" and they didn't even try to clean it up. It looked like it did not even concern them. I figured this must happen all the time. I left Moore Chemicals shortly thereafter.

8. Now that I think about it, the toxic barrels being dumped at Moore Chemicals reminded me of the toxic materials at the thermometer factory where both my spouse and I worked just before we had Edna. We worked at the thermometer factory for about two years, 2011 to 2013. At the factory, both my spouse and I were responsible for quality control and we had to inspect each of the thermometers for cracks and other problems. I was always concerned about mercury because there were warning labels everywhere about the dangers of handling it or breathing it. Of course, the company told us it was safe in small doses, but we still decided to leave that job soon before we had Edna just in case.

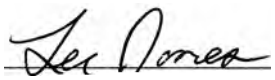
9. Because of our concerns with Moore Chemicals, and the noxious smells that come from its facility, we've been trying to sell our house to get away from that place. We've had the house on the market for 18 months now, and all that time have not had any offers. It is not because we don't have a nice house. Our realtor told us that the listing for our house online gets a lot of "hits" and that people are excited to see the house when they see the pictures. But whenever folks come over to view the property, they always complain about the noxious fumes and odors from the Moore Chemicals plant. They've also told us that our well water tastes funny. We try to tell potential buyers that you get used to it, but nobody's buying it. We've already lowered the price twice and stand to lose $10,000 even if we manage to sell the house at the new listing price. It does not look like we will ever be able to sell this house as long as Moore Chemicals is operating its facility.

10. To make matters worse, I was recently diagnosed with liver cancer. My doctor says that it may be because of my exposure to PCE while working at Moore Chemicals, as well as the possible emission of PCE and other chemicals from Moore Chemicals' operations. Of course, Moore Chemicals and its doctors are trying to blame my cancer on other things in my life. Sure, when I was much younger I had some problems with alcohol. Who hasn't? But when we moved to Forward I quit cold turkey, and I've been sober ever since.

11. The medical expenses for me and my daughter have been unbearable. Some of them are covered by insurance, but a big portion of our expenses are not. For example, our insurance does not cover treatments for Edna's play therapy for autism, but it's the only thing that seems to help. Hard as we tried, we started falling behind on our mortgage payments. We were working with Larry Lender over at the Forward Bank which was just bought by BigBank, Inc. They closed the branch and the only way to communicate with them is online. They don't even have a phone number where you can talk to a live body. Just last month, we got a foreclosure notice, and now I don't know what we're going to do.

12. My spouse has even taken on a second job to help us with the medical expenses. Unfortunately, I am too sick to get a second job, or even work full time at the job I have. Besides, the children need at least one of their parents at home with them. Edna requires a lot of extra care and attention so it is just not practical for both of us to be working full-time jobs.

13. I am not familiar with any of the exhibits in this case.



Lee Jones

Signed and sworn to before me this
11 day of July 2018
Becky Daniels
Notary Public, State of Utopia
My commission expires: 9/9/2025

Affidavit of Dr. Kris / Kristin Wessell, M.D. / Ph.D.

1. My name is Dr. Kris / Kristin Wessell. I am a physician licensed to practice in the State of Utopia. I currently practice at the University of Utopia Hospital & Clinical satellite office in Forward, Utopia. I have also been an adjunct faculty member of the University of Utopia School of Medicine and Public Health since 2000.

2. I earned an M.D. from Wayne State University in Detroit, Michigan in 1994 and a Ph.D. from Duke University in 1997. I became Board Certified in Family Medicine by the American Board of Family Medicine in 2001, renewed in 2010. I also completed a Research Fellowship in Environmental Toxicology in 1996 at Duke University.

3. My practice and professional duties include both treating patients and conducting research on the correlation between environmental pollutants and human health. I have written numerous articles regarding the potential harmful effects of environmental pollutants. I have been published in the *Journal of the American Medical Association*, the *New England Journal of Medicine*, the *Journal of Medical Toxicology* and others.

4. One area of particular concentration in my research has been the potential correlation between exposure to various environmental pollutants and increased risk of cancer, including liver cancer. My most recent research project on this topic, set to be published in the *New England Journal of Medicine* in January of 2022, indicates a significant correlation between exposure to PCE and higher rates of liver cancer when PCE exposure is pronounced. My research also indicates an even higher rate of cancer among sample populations that have been exposed to PCE along with other common environmental pollutants, including Arsenic and insecticides. This research indicates that exposure to these harmful environmental contaminants can lead to liver damage. The liver's attempt to heal this damage leads to active regeneration of cells, which in turn can lead to the production of cancer.

5. I shifted my research emphasis to studying the correlation between exposure to pollutants and abnormal childhood cognitive development after my oldest child was diagnosed with autism in 2008. I recently completed a research study that is set for publication in the *Journal of Medical Toxicology* in July 2021, which explores the potential link between exposure to Mercury caused by environmental contaminants and the risk of cognitive impairment in young children. This research demonstrates that sustained exposure to abnormal levels of Mercury creates a significantly greater risk of cognitive disabilities for small children, including autism. My research also demonstrates a statistically significant correlation between proximity to the source of an environmental pollutant and the risk of developing autism. Finally, my research indicates that exposure to Mercury along with other environmental pollutants, including Arsenic, may act as an aggravating factor, leading to even greater risk of cognitive disabilities among young children.

6. I began treating Edna Jones in late 2015 when she showed warning signs of learning disabilities and abnormal cognitive development. After extensive evaluations I diagnosed Edna with autism in 2016.

7. As part of my evaluation of Edna's condition, I reviewed Edna's family history and discovered no indications of significant past cognitive disability in any of Edna's family members.

8. I then began to assess whether Edna's autism may have been caused by her exposure to environmental contaminants near the Jones' household. As part of this research I performed a detailed toxicology screen on Edna.

9. I quickly ruled out Edna's exposure to PCE near the Jones' household. At present, PCE has been documented as a carcinogen but has not been linked to birth defects or cognitive disability.

10. I then decided to look into the possibility that the high levels of Mercury near the Jones' household may have led to Edna's development of autism.

11. Mercury has been well documented to cause cognitive impairments in small children as well as birth defects in developing fetuses. Several studies in the past decade have explored the possibility that exposure to the Mercury based preservative thimerosal may be tied to autism. Until recently, thimerosal was commonly used in many vaccines.

12. My recent research, noted above, explored the potential link between autism rates and environmentally released Mercury. My research indicates that there is a significantly higher rate of autism and other cognitive disabilities among children in areas exposed to abnormally high levels of environmentally released Mercury. Some evidence also suggests that these rates may be even higher in areas where exposure to Mercury is combined with other environmental contaminants, including Arsenic. Further, my research indicates that the highest rates of autism and other cognitive disabilities exist in the areas closest to the source of Mercury pollution.

13. Based on this research and the fact that I was able to rule out the other potential causes of Edna's autism, it is my opinion, to a reasonable degree of medical certainty, that Edna's exposure to high levels of both Mercury and Arsenic caused her development of autism.

14. I have also treated Lee Jones from the time the Joneses moved to Forward, Utopia. Lee came to me complaining of continued abdominal pain and rapid, unexplained weight loss. Upon physical examination I noticed a slightly enlarged, tender liver. I then performed blood tests and found abnormally high levels of alpha-fetoprotein, a standard indicator of the possibility of liver cancer. I then ordered an ultrasound and CT scan for Lee. Based on the results of these tests I diagnosed Lee with liver cancer.

15. As part of my treatment of Lee I began researching the potential causes that could have led to the development of Lee's cancer. I reviewed the family history and discovered no prior instances of liver cancer in any of Lee's family members.

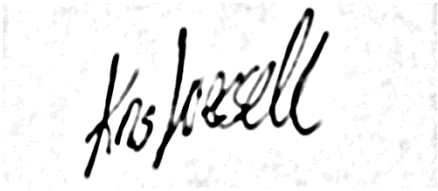
16. I also reviewed Lee's medical history and noted that Lee had been hospitalized briefly at ages 19 and 21 for overconsumption of alcohol. There were also notes in Lee's file from annual evaluations indicating that some of Lee's previous physicians had recommended some moderation of alcohol consumption. Nothing in Lee's file, however, indicated to me that Lee had a chronic problem with excessive alcohol consumption.

17. I then began to explore the potential link between the various environmental contaminants around the Jones' neighborhood and Lee's liver cancer. I reviewed the relevant scientific literature and found that exposure to each of the insecticides prevalent in the area near the Jones' home - Endrin, Heptachlor and Lindane - are all associated with the possibility of liver damage.

18. Further, my review of the scientific literature found that PCE has been shown to cause liver tumors in mice and that exposure to Arsenic can lead to cancer in the liver, bladder and lungs. To further test this correlation, I decided to perform my own research, the results of which, as I noted above, are set to be published in January 2022.

19. Based on this research, and after ruling out the other potential causes, it is my opinion, to a reasonable degree of medical certainty, that Lees' sustained, pronounced exposure to PCE, especially when combined with exposure to Arsenic and other environmental contaminants, was the primary cause in the development of Lee's liver cancer.

20. Of all the available exhibits in this case, I am familiar with the following and only the following: Exhibit #6.



KWessell, M.D./Ph.D.___

Signed and sworn to before me this
18th day of July, 2018
Ricky Rich
Notary Public, State of Utopia
My commission expires: 9/9/2025

AFFIDAVIT OF ROBIN ROBERTS, R.P.G.

I, Robin Roberts, being first duly sworn, do hereby state:

1. I am an adult resident of Raleigh, Utopia.

2. I have a Bachelors of Science degree from the University of North Carolina-Chapel Hill in 1998, with a major in geology and a minor in water resources.

3. Since graduating from college, I have worked in the environmental field, focusing on soil and groundwater investigation and remediation.

4. I began my professional career with the Utopia DNR. Initially, I worked in the area of landfill management, where I reviewed environmental monitoring reports relating to groundwater conditions in the vicinity of licensed solid and hazardous waste landfills. After approximately six months, I switched to the leaking underground storage tank program, where I was involved in regulatory oversight of the removal of underground petroleum storage tanks, and the investigation and remediation of releases from those tanks.

5. In 2002, I joined Ecology Restoration, Inc. ("ERI"), as a hydrogeologist. ERI was founded in 1999, and the bulk of its work involved petroleum underground storage tanks and related investigations and clean-ups. It was a natural fit for me as I understood the science related to petroleum contamination. I also understood the DNR's regulations of contaminated sites as well as the regulations for obtaining reimbursements from the Utopia Petroleum Environmental Cleanup Fund, also known as PECFA. The PECFA fund reimburses owners of properties contaminated from petroleum underground storage tanks so long as the tanks meet the program's eligibility requirements.

6. During my tenure at ERI, I took the exam to qualify as a Registered Professional Geologist, and I also applied to be a certified PECFA consultant so that my work would be eligible for PECFA reimbursement.

7. By 2012, most of the old petroleum contaminated sites had been cleaned up, and ERI only had a few industrial clients with other kinds of environmental problems. I, therefore, left ERI to start my own environmental consulting firm, Roberts Environmental Associates ("REA"). At first, most of my projects at REA were small contaminated sites that could be remediated using common groundwater pump-and-treat systems. However, my former schoolmate Cecilia Cooper, a professional engineer, joined the firm in 2014. Since that time, we have taken on more complex projects involving a variety of chemical contaminants. Our firm now has five professionals: two hydrogeologists, a biologist, and two professional engineers. Our work includes environmental site assessments, as well as investigations and remediations at industrial facilities in Utopia and nearby states.

8. I am aware that there have been a variety of environmental problems in Forward. I once did an investigation for a service station there for which I had reviewed DNR reports on neighboring properties.

9. I have known Lee Jones and Lee's family for many years. Our children are close in age and attend the same school. We have socialized on occasions, usually at school related functions. I have followed the Jones' problems with their daughter Edna's autism, as well as Lee Jones' development of liver cancer, with great concern.

10. After Lee was diagnosed with cancer, Lee called me to tell me that Dr. Wessell suspected that both Edna and Lee may have been exposed to contaminants. I told Lee that I had some knowledge of environmental problems in Forward, and Lee agreed to hire our firm to investigate the source of the contaminants.

11. My first activity was to review DNR records relating to sites that were potential sources of contaminant releases. I focused my review on sites that were up gradient in terms of prevailing winds and groundwater flow. Groundwater in Forward generally flows from northwest to southeast, which is also the direction of prevailing winds in that part of Utopia.

12. My review of the DNR list of contaminated sites identified two gasoline stations, a former dry cleaner site, and the Moore Chemicals facility. I therefore reviewed the files for each of those sites and discussed each site with knowledgeable DNR staff.

13. The gasoline station files, including one that I had worked on at ERI, did not reveal any concerns. Both of them had tanks removed in the early 2000s, and each required removal of a limited amount of contaminated soil. One site (not the one I worked on) had a detectable concentration of petroleum compounds in the groundwater but it was below the regulatory limits that would have required further investigation or remediation.

14. The former dry cleaner site, Perky Dry Cleaners, had been investigated due to the release of tetrachloroethylene (also known as perchloroethylene), or "PCE". The soil was significantly contaminated, and there also was groundwater contamination. The PCE likely had been released when the dry cleaner was operating in the 1980s. According to the records I reviewed at the DNR's office, at the time of the remediation in 2008, the contaminants had mostly dissipated and the remaining plume of contamination in groundwater extended approximately 50 feet to the southeast, which was under the street right of way. DNR allowed the site to be closed based on "natural attenuation," meaning that the owner was only required to monitor groundwater to demonstrate that the concentrations of contaminants were declining over time. Perky Dry Cleaners was not required to do any further active remediation at the site as the DNR concluded that they had adequately addressed the contamination so as to address any potential threat to the public safety or health.

15. The last site of concern was the Moore Chemicals site. Moore Chemicals is an industrial manufacturer of metal parts for the aerospace industry. It submits material safety data sheets ("MSDS") to the State, as required by State law, which identify chemicals used by the company. These MSDS sheets show that Moore Chemicals uses chemicals that include arsenic, toxic heavy metals like copper, mercury and cadmium, and chlorinated chemicals and cleaning solvents, including PCE.

16. The DNR file for Moore Chemicals was fairly substantial, and included a 2015 investigation report prepared by Togar Environmental. According to the report, Moore Chemicals had hired Togar to investigate releases of contaminants at its manufacturing site.

17. The Togar investigation included interviews of employees, soil samples, groundwater samples, and samples from Sleepy Creek. The report indicated that there had been periodic releases at the facility, and that there were significant detections of various chemicals in the soil and groundwater. These included toxic heavy metals, including mercury, and chlorinated solvents, including PCE. Mercury and other heavy metals also were detected in the sediments in Sleepy Creek.

18. In addition to reviewing DNR information regarding potential sources of contamination, it was important to sample soils, surface water, and groundwater in the vicinity of the Jones' residence. I took six soil samples at different locations on the Jones' property, at the surface and at two-foot intervals for ten feet. At three of those soil sample locations, I also drilled to groundwater, to determine the depth to groundwater, the direction of groundwater flow, and whether the groundwater was contaminated. I also reviewed the well log and took a sample from the well serving the Jones' residence.

19. I also took surface water and sediment samples from Sleepy Creek immediately behind the Jones' residence. I was particularly concerned about this creek, because it runs very close to the Moore Chemicals yard where they store chemicals and because Lee told me that Edna loves to play in the creek.

20. Each of the soil and water samples was collected, packaged and sent to a certified laboratory for testing, using EPA-required methodologies and maintaining the chain of custody records.

21. The results of the sampling are shown on Table 1, which is attached to this affidavit. Additionally, I have prepared a site map showing the Jones' property and vicinity, which identifies all of my soil, groundwater and stream sampling locations.

22. The sampling that I conducted showed that the creek sediments in the vicinity of the Jones' residence contain elevated concentrations of both arsenic and mercury. There was no detection of either arsenic or mercury in the surface water samples.

23. Arsenic is known to be naturally occurring in the vicinity of Forward, but the concentrations in the sediment samples were higher than I would expect from naturally occurring arsenic. Unlike arsenic, mercury is not naturally occurring in the vicinity of Forward and would have had to come from a release of some type.

24. Based on my investigation, the Moore Chemicals facility is the only likely source of mercury in the stream sediments, and is a likely source of the elevated arsenic concentrations. Moore Chemicals is the only facility upstream and in reasonably close proximity to the Jones' residence that generates both mercury and arsenic waste. Additionally, the Togar report indicated that there was mercury in stream sediments immediately adjacent to the facility, consistent with reports of spills at the facility.

25. It is not surprising that there would be mercury in the stream sediments behind the Jones' residence but not in the surface water. Surface water contamination would necessarily mean that mercury is suspended in the water column. Since mercury is significantly heavier than water, mercury detected in the surface water would indicate a very recent release. Mercury in sediments, however, typically represent an accumulation of mercury over time, and may have resulted from suspended mercury settling over a period of weeks, months, or even years.

26. Additionally, there is a bend, or meander, in Sleepy Creek behind the Jones' residence. Typically, stream velocity decreases immediately below the interior of a bend, allowing suspended sediments to easily settle on the stream bed. Over time, one often sees accretion of settling sediments at stream bends. If the suspended sediments are contaminated, one would expect to see a higher concentration of those contaminants at the quiescent location in the stream bend.

27. As noted above, I also took samples of soil and groundwater and a water sample from the Jones' well. I took three rounds of groundwater samples: the first being immediately after installing and developing the monitoring wells, the next after approximately three months, and again after approximately five months.

28. The soil samples in the unsaturated zone above the water table, known as the vadose zone, had no detectable concentrations of heavy metals or PCE, and very low concentrations of arsenic.

29. Groundwater samples, however, identified concentrations of PCE very close to or exceeding the enforcement standard for PCE (5 ug/l). Additionally, the samples indicated that at the depth of the monitoring wells and water supply well, groundwater flowed from west- northwest to east-southeast.

30. Based on my investigation, which included both review of public records, including the Togar report, and my own independent data collection and analysis, it is my opinion to a reasonable degree of scientific certainty that the mercury found in Sleepy Creek sediments behind the Jones' property is attributable to releases from the Moore Chemicals facility. Factors that support my opinion include: (a) the proximity of the Moore Chemicals facility to the Jones' residence, (b) the documented use and releases of mercury from Moore Chemicals, (c) the concentrations in the stream sediments adjacent to the Moore Chemicals facility, and (d) the fact that there are no other known sources of mercury in the area. Additionally, the location of the mercury concentrations in the creek is consistent with the likely contaminant migration pathway from Moore Chemicals (i.e., downstream).

31. It is also my opinion to a reasonable degree of scientific certainty that the PCE found in the Jones' well is attributable to PCE release from Moore Chemicals. Factors that support my opinion include (a) the proximity of Moore Chemicals to the Jones' residence, (b) the documented use and releases of PCE by Moore Chemicals, (c) the fact that PCE was detected in groundwater at the Moore Chemicals facility, and (d) the groundwater flow direction from Moore Chemicals toward the Jones' residence.

Additionally, the only other potential source of PCE in the area is Perky Dry Cleaner, and the reports in the DNR records indicate that the PCE plume from that facility does not extend as far as the Jones' residence.

32. Of all the available exhibits in this case, I am familiar with the following and only the following: Exhibits #1, #2, #3, #4, and #5.

Robin Roberts

Robin
Roberts

Subscribed and sworn to before me this
13th day of September, 2018.

Sandra Smith

Notary Public, State of Utopia
My commission expires:
permanent

AFFIDAVIT OF JERRY/JERILYN SMITH

1. My name is Jerry / Jerilyn Smith and I live in Forward, Orange County, Utopia. All of my friends and co-workers call me Jerry. I have lived in Forward all of my life with the exception of the time that I went off to college in Durham. I earned a bachelor's degree in environmental sciences at University of Utopia-Durham in 2007.

2. I currently work at Moore Chemicals, Inc. and have been employed with Moore Chemicals for approximately seven (7) years as the company's environmental, health and safety manager. I believe that Moore Chemicals started operating its facility in Forward in 2008.

3. Moore Chemicals makes wind turbines for clean, low-carbon energy, including what we call "Mini- Mills." The "Mini-Mills" are exported to developing countries as a source of water and electrical power. Moore Chemicals was the first company to manufacture such Mini-Mills. In fact, I do not believe that anyone else makes wind turbines that are comparable to the Mini- Mills; Moore Chemicals truly is a leader in this respect. Recognizing the benefits such wind turbines offer third-world countries, along with the fact that they would not adversely impact their environment, Moore Chemicals received a multi-billion dollar grant from The Gates Foundation. The grant is for the purchase and shipment of "Mini-Mills" to the Sahara Desert and southern Africa. Moore Chemicals also manufactures large wind turbines for use in large-scale electricity generation in Utopia and the Mid Atlantic as an alternative to coal- fired power plants. Moore Chemicals set out to be a leader in combating climate change and through its advances in technology it is playing a significant role in reducing greenhouse gas emissions throughout the world.

4. Because the Mini-Mills that are shipped to Africa are exposed to extreme heat and insects, Moore Chemicals needs to treat the turbines with a special mix of chemicals as part of the manufacturing process. The special mix of chemicals used by Moore Chemicals provides a few important benefits. They (i) harden the towers and blades against the wind, heat and extremely dry conditions; (ii) treat the towers and superstructure to prevent parasites and malaria-causing mosquitoes from living and breeding on the mills; and (iii) meet a Gates Foundation grant requirement that Moore Chemicals use grease-free metals which allow effective assembly overseas. The hardening, degreasing and mosquito proofing are done by dipping the mills in a series of high-temperature liquid baths consisting of metals, including mercury and arsenic that are known for their metallurgical and pest-killing properties; organic chemicals that include trichloroethylene (TCE) and tetrachloroethylene (PCE) for degreasing; and insecticides Endrin, Hepthachlor and Lindane.

5. I know that there has been some criticism about the fact that Moore Chemicals proclaims to be an environmentally-responsible company but yet chooses to use harmful chemicals in its manufacturing process. It is true that there are other chemicals and metals that Moore Chemicals could use in its manufacturing process that would provide some of the same properties and benefits as the materials that Moore Chemicals uses. However, it is generally accepted among professionals in the industry that the chemicals and metals that Moore Chemicals uses are the most effective and the

most economical, thus enabling the maximum number of Mini-Mills to be sent overseas at the lowest possible cost.

6. As the environmental, health and safety manager at Moore Chemicals, I am responsible for overseeing and implementing the Company's health and safety programs. I am also responsible for ensuring that our operations are in compliance with all local, state and federal environmental rules and regulations. Moore Chemicals strives to be an environmental steward and thus it has adopted a company-wide philosophy that requires it to manage and operate its business in as an environmentally-friendly manner as possible. I really enjoy working for a company that takes its environmental responsibility seriously. Prior to working at Moore Chemicals, I worked for another company in Forward that did not take environmental issues seriously, and had even encouraged us to hide things from the regulators.

7. Moore Chemicals even goes above and beyond what is required by the state and federal environmental rules and regulations. In fact, although not required to, it spent a considerable amount of money to install and maintain a state-of-the-art system to monitor emissions to the air and water from its facility. In addition, it has installed special air monitoring equipment outside the boundaries of its facility that monitors ambient air conditions. In fact, Moore Chemicals works directly with the DNR to assist it in compiling useful air emission data for the Forward community. As part of its environmental management program, Moore Chemicals also conducts monthly tests of surface water in stream and lakes within a five-mile radius of the facility to ensure that its facility is not emitting significant amounts of the chemicals and metals that it uses in its manufacturing processes.

8. There is no question that Moore Chemicals' manufacturing process produces various liquid wastes; any industrial facility of this magnitude does as it is just the nature of the beast. The chemicals that are used in the dipping baths lose their effect after so many uses and, therefore, Moore Chemicals must change them out on a monthly basis. The liquid wastes from the baths are stored in sealed drums, which Moore Chemicals then stores in an enclosed waste storage building that is located on the southeast corner of the Moore Chemicals property until such wastes are then hauled off by a licensed hauler to a licensed treatment and disposal facility. Moore Chemicals follows all of the rules and regulations concerning the storage and disposal of hazardous wastes. Moore Chemicals does not dump or dispose of these liquid wastes on site. I know that there have been rumors in the community that Moore Chemicals has been dumping hazardous wastes on its property and in the stream that runs behind the facility. They are just that, rumors. I would never stand by and allow our employees to engage in such activity. After all, I have a family and children that live in this community and I would not want to jeopardize their health.

9. As with any manufacturing environment, particularly those that rely on people, accidents happen, but this is why we have implemented emergency and spill response procedures at the plant. Workers will sometimes spill chemicals and the liquid wastes when pouring them into drums or vats but Moore Chemicals has spill containment throughout the facility so this should prevent any hazardous wastes from entering the environment or leaving the site.

In addition, we keep spill absorbent materials on site for the employees to use when they are cleaning up any accidents or spills.

10. Business has been really good for Moore Chemicals. In fact, we have had to increase production by adding a third shift on in order to meet the demand for the Mini-Mills. Of course, I am not able to manage and supervise all three shifts so I do rely on shift supervisors to manage the employees on the second and third shifts. They are supposed to follow all of the same procedures I have in place for the employees on the first shift to ensure that we do not have any accidental spills or releases to the environment. In fact, all employees that handle the chemicals, insecticides, metals, and hazardous wastes at the facility are required to go through specialized training that instructs them on the proper means of handling such materials.

11. I am aware that our neighbors believe Moore Chemicals is the cause of the problems they are experiencing with the sale of their property and/or their health. They claim that Moore Chemicals is emitting noxious fumes from their facility thereby contaminating the air that they breathe, as well as dumping hazardous wastes into the environment. The local newspaper, Forward Progress, is always looking for negative stories about industry in Forward. I don't know why but the paper does not seem to appreciate the value industry brings to its community. It is always casting the industries in a negative light. In fact, they have printed some negative articles concerning Moore Chemicals. The articles stated that some Moore Chemicals employees reported problems with spilling of waste liquids while being poured into drums in the waste storage areas. Some articles have even suggested that the employees were purposefully dumping drums of wastes out at the back of the property so the company would not have to pay to have such wastes hauled to a special facility for treatment. We have tried to find out who these employees were so I could talk to them about the alleged problems. How else can I address the problem and fix it or develop a safer method of handling the wastes if I am not aware of the problem. As I said before, accidents happen but we have safety procedures in place to ensure that there are no releases to the environment. Unfortunately, the Forward Progress would not give us the names of the employees who supposedly reported this information. The paper claims that First Amendment and freedom of the press rights would be infringed if it were to name its sources.

12. The Forward Progress has also alleged that Moore Chemicals is the source of noxious smells in the community. Yes, during the warm summer months, people may be more likely to notice some odor from our operations but this is no different than any other industry or even farming. The warm weather and prevailing winds just happen to accentuate the odors. They are no different than the odors and emissions being emitted from the facility during the rest of the year. People spend a lot of time outdoors during the summer months so they just happen to notice the smell more.

13. I am responsible for reviewing the data collected and compiled by all of the monitoring equipment installed by Moore Chemicals. The monitoring data does reveal that trace amounts of chemicals and metals, including mercury and arsenic, are emitted to the environment as a result of Moore Chemicals' manufacturing process.

However, those amounts are very small and are easily detected by Moore Chemicals' extensive environmental monitoring program. Furthermore, these trace amounts are well below the regulatory standards that the DNR and EPA have established as discharge limits for such chemicals and metals. Simply said, Moore Chemicals is operating within the parameters of the environmental rules and regulations that it is required to follow. It is not required to run its operations in a manner wherein no chemicals are emitted to the environment.

14. Moore Chemicals is inspected by the DNR on a regular basis. The DNR inspects the facility's hazardous waste management program to ensure that Moore Chemicals is complying with all of the appropriate rules and regulations. The DNR has even conducted surprise inspections in response to the rumors posted in the Forward Progress. To date, Moore Chemicals has never received any type of notice of violation or other enforcement action from the DNR. In fact, I think the DNR conducted a thorough investigation back in 2016 or so to address some reported spills at the site but I do not believe that Moore Chemicals ever received any type of notice of violation as a result of such investigation.

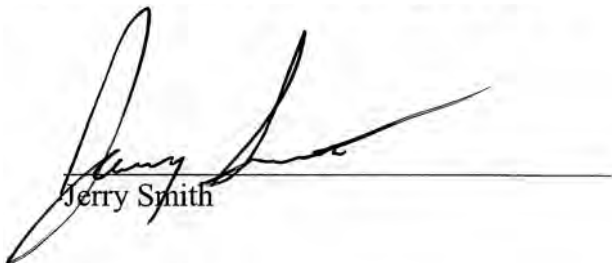
15. I know the Jones family, as well as other families that live on Claim Street, through a series of public meetings that I have attended. The DNR has been holding public meetings to discuss remedial action at a nearby former dry cleaner facility that was located up gradient from the Jones' home. The former dry cleaner facility used various dry cleaning chemicals, including PCE and TCE, which were ultimately discharged to the environment resulting in soil and groundwater contamination. It is my understanding that some of the contamination from the dry cleaner facility actually migrated on to Jones' property.

16. Of all the available exhibits in this case, I am familiar with the following and only the following: Exhibits #3, #4, and #5.

Signed and sworn to before me this
21 day of July, 2018

Bannon Bishop

My commission Expires: 5/24/2035



AFFIDAVIT OF RIFF RANDALL, M.S., P.E.

1. My name is Riff Randall. I am a Principal and the founder of Togar Environmental Solutions, an environmental remediation firm based in Raleigh, Utopia. I currently hold the title of Senior Project Manager. I have personal knowledge of all matters set forth in this affidavit. All opinions expressed in this affidavit are made to a reasonable degree of engineering and scientific certainty.

2. I have been retained by Moore Chemicals, Inc. to serve as an expert witness in this action. I am being compensated at the rate of $300/hour for deposition and courtroom testimony. All other work that I perform as an expert witness for Moore Chemicals is compensated at the rate of $200/hour.

3. I received a Bachelors of Science in Geology from Duke University in 1983. I earned a Masters of Science in Environmental Technology from the NCSU College of Engineering in 1986. From 1986-1991, I worked for The Rambeau Group in Raleigh, Utopia, as an Environmental Engineer. My responsibilities at Rambeau included designing, installing, and operating soil and groundwater treatment equipment; characterizing, segregating and removing regulated wastes; and implementing water, wastewater, groundwater, soil, solid and hazardous waste engineering and management programs

4. In 1991, I founded Togar Environmental. Since its founding, Togar Environmental has become the largest environmental investigation, characterization, and remediation consultant in Utopia. I employ a full-time staff of approximately 120 employees that includes hydrologists, hydrogeologists, environmental engineers, soil scientists, environmental technicians, certified GIS professionals, licensed professional engineers, environmental health professionals, and surveyors. I and my colleagues at Togar have managed the remediation of dozens of contaminated sites throughout the State of Utopia. A more complete statement of my qualifications to render opinions in this action is contained in my curriculum vitae, a copy of which is attached to this affidavit.

5. I am quite familiar with the Moore Chemicals facility, its operations, and its impact on the surrounding environment. In 2015, at the request of Jerry Smith, Moore Chemicals' Environmental Compliance Officer, I and Togar Environmental performed an investigation into the handling and possible release of process waste materials, including mercury, arsenic, and PCE, from the Moore Chemicals facility. As part of my investigation, I interviewed several Moore Chemicals employees, commissioned Togar to conduct a subsurface investigation and soil excavation, and supervised the installation of three (3) groundwater monitoring wells. My investigation at that time revealed that although detectable levels of mercury, arsenic, and PCE were present in soil on the Moore Chemicals site and in the surface water immediately to the east of the facility, no detectable levels of mercury, arsenic, or PCE were found in any samples collected downstream of the Jones' property.

6. In response to the spill and remediation work that Togar performed in 2015, I and my company helped to design and implement a state-of-the-art environmental monitoring system. That system, which Togar periodically checks and calibrates, detects and measures emissions of various chemicals and metals from the Togar facility into the surrounding environment.

7. I also am familiar with the environmental monitoring program that Moore Chemicals has implemented. Moore Chemicals employees perform daily inspections of the on-site water monitoring equipment. At Togar's suggestion, Moore Chemicals also implemented a program in which its employees conduct monthly testing of surface water in streams and lakes within a five-mile radius of the Moore Chemicals facility to ensure that the facility is not emitting significant amounts of chemicals and metals used in its manufacturing processes.

8. The equipment that Moore Chemicals has installed for controlling and detecting emissions from its facility, and the sampling and monitoring programs that Moore Chemicals has implemented, all of which I and my company helped to design and install, are state-of-the-art. Togar employees recently have inspected and evaluated Moore Chemicals' monitoring equipment and programs and found them to be in good working order.

9. In my opinion, Moore Chemicals' environmental monitoring equipment and systems are adequate to detect any releases to the environment of amounts of chemicals and metals that could be hazardous to human health. This includes amounts of arsenic, mercury, and PCE that are emitted from the Moore Chemicals facility as process waste.

10. In addition to my familiarity with the Moore Chemicals facility and its environmental monitoring, I have reviewed the following materials and conducted the following activities to formulate my opinions in this case: I have examined the homes located along Claim Street in Forward, Utopia, including the home of the Jones family; I have reviewed the records of soil vapor monitoring conducted by the DNR; I have reviewed the results of DNR sampling of water drawn from wells located on properties along Claim Street; I have reviewed the topographical and hydrogeologic conditions of the area including the Moore Chemicals facility and the Claim Street neighborhood in which the Jones family lives; I have reviewed the DNR's closeout letter to Perky Dry Cleaners of Forward, Utopia, relating to the remediation of PCE that leaked from underground storage tanks on the Perky Dry Cleaners site; I have reviewed the complaint filed by the Jones family and all affidavits submitted in this case.

11. In the course of my investigation and based on my own personal knowledge and experience, I have come to learn that arsenic and mercury from natural sources are present in the soils, surface water, and ground water of Utopia generally, including in the Claim Street area. Mercury, for example, is an element found in the earth's crust, many rocks, and coal. It is released to the environment by several natural phenomena, including volcanic eruptions, forest fires, erosion of mercury-bearing soils and rocks, evaporation of mercury-containing water, and animal secretions. Accordingly, even if the Moore Chemicals facility were not located in close proximity to Claim Street, the soil on which the Jones family home is located would contain arsenic and mercury from natural sources, as would the ground water, surface waters, and sediment in the surrounding area, such as Sleepy Creek. In fact, the DNR's closeout report on the Perky Dry Cleaners site, which was written in 2008, notes that DNR sampling conducted at that time detected a regional concentration of arsenic in ground water that averaged 740 milligrams per liter. It is significant to note that these samples were taken before Moore Chemicals began its manufacturing operations in Forward.

12. Mercury also is present in the environment in Utopia generally, including Forward, specifically from human activities. The overwhelming amount of mercury in the environment is due to releases from power plants. Mercury in power plant emissions is released to the atmosphere and deposited in Utopia through the process of wet deposition. Mercury also long has been used in thousands of other industrial, agricultural, medical, and household applications. It is commonly used in agriculture, the dairy industry and paper mills, all of which have had a major presence in Utopia for more than 100 years and have emitted mercury to the environment. Major uses of mercury include dental amalgams, tilt switches, thermometers, lamps, pigments, batteries, reagents, and barometers. When these products are thrown in the trash or flushed down a drain, the mercury doesn't go away. Although mercury may change forms, it doesn't break down because it is an element. In lakes and wetlands, bacteria convert elemental mercury to methyl mercury, a more toxic form readily taken up by fish and other organisms in water bodies. Therefore, whether in elemental or methyl form, mercury persists in the environment and commonly is found in Utopia's soil, surface water, and ground water.

13. Because of the presence of naturally occurring arsenic and mercury from natural and man-made sources in surface water, soil, and groundwater on and around the Jones property, arsenic and mercury from both natural and man-made sources other than Moore Chemicals would be expected to be detected in samples drawn from the Jones family's well, taken from soil on their property, or taken from the surface water or sediment of Sleepy Creek near the Jones family's property. The concentration of naturally occurring arsenic and mercury in an area is referred to as "background." Because of topography and natural forces and phenomena such as erosion, wet deposition, dry deposition, background concentrations of arsenic and mercury are not uniformly distributed. For example, one would expect to find a higher concentration of mercury in low-lying areas that collect rainwater. Because background concentrations vary, background typically is referred to by a range of values rather than by reference to a single point value.

14. I have read the affidavit of Robin Roberts and the results of Roberts' sampling. Roberts' conclusions from analyzing the samples drawn from the Jones family's well and sediment samples taken from Sleepy Creek that arsenic is present in "elevated" concentrations in the well water and sediment, and that the arsenic originated from Moore Chemicals, are not supportable in fact and are not scientifically sound. Roberts acknowledges that arsenic is naturally present in the environment and concludes that the measured concentrations are "higher" than would be expected from naturally occurring arsenic but makes no comparison of the results of the well or sediment samples that Roberts drew to any range of established background concentrations of naturally occurring arsenic. Nor does Roberts explain how the arsenic that Roberts sampled can be scientifically demonstrated to have originated at Moore Chemicals. The results of Roberts' sampling of surface water in Sleepy Creek, which failed to detect any arsenic in surface water, further undermine Roberts' conclusions that Moore Chemicals is the source of the arsenic that Roberts' sampling d**e**tected.

15. I also have read Roberts' opinions that the sediment sampling that Roberts conducted showed that the creek sediments in the vicinity of the Jones residence contain "elevated" concentrations of mercury and that Moore Chemicals is the only likely source of that mercury. As noted above, significant amounts of mercury are released to the atmosphere each year in Utopia and in other states that are upwind of Utopia. Roberts fails to account

for the possibility that a source other than Moore Chemicals is responsible for the concentrations of mercury found in the Sleepy Creek sediment. Nor does Roberts compare the measured concentrations to background concentrations of mercury in other similar locations not expected to have been impacted by Moore Chemicals to determine whether the concentrations that Roberts measured are outside the range of what normally would be expected.

16. In addition, because I and my colleagues at Togar installed and maintained a state-of-the-art monitoring regime that would have detected any releases of arsenic and mercury to the environment due to Moore Chemicals' operations, that system would have detected any releases that could have caused the supposedly "elevated" levels of arsenic that Roberts measured in the Jones Family's well water had that arsenic originated from Moore Chemicals.

17. Based on all these considerations, it is my opinion that, to a reasonable degree of scientific and engineering certainty, any arsenic and mercury detected in the soil, water, or sediment in the Claim Street neighborhood, including in the soil and well water of the Jones family property, did not originate from the Moore Chemicals facility, but is present from natural sources.

18. In addition, my investigation also has revealed that at least one dry cleaning facility, Perky Dry Cleaners, is located up-gradient from the Jones family home and from the Moore Chemicals facility. It is well-known and a generally accepted scientific and engineering principle that dry cleaners use PCE and that dry cleaning facilities emit significant quantities of PCE to the environment in the ordinary course of their operations. Consistent with that principle, the DNR required Perky Dry Cleaners to conduct an investigation and remediation due to the presence of underground storage tanks on the Perky Dry Cleaners property that contained PCE and leaked PCE to the environment. The DNR's closeout letter from that remediation demonstrated "a plume of contamination with PCE from the tank site in concentrations above the groundwater enforcement standard of 5 micrograms per liter" and required Perky to notify affected property owners of the remediation.

19. I have read the report and opinions of Robin Roberts attributing "high levels of PCE" that Roberts found in soil, well, and groundwater samples taken on and around the Jones family's property to releases of PCE from Moore Chemicals. Roberts' testimony appears to suggest that the PCE Roberts detected could not have come from the Perky site because at the time of the closeout letter, the plume of PCE had "dissipated" and extended only 50 feet beyond the boundaries of the Perky site in the soil beneath a public right of way. Roberts' conclusions are not scientifically sound. It is well-known that PCE has relatively low solubility in water and has medium-to-high mobility in soil. It tends to volatilize (evaporate) from surface environments; however, it may persist in subsurface soil and groundwater for months or years, depending on subsurface conditions. Therefore, even if PCE released to the environment from Perky had dissipated, because of its mobility and persistence in soil, it is more likely than not and a reasonable scientific conclusion that the PCE released from Perky continued to move down-gradient in soil toward the Jones family property and well and that it persisted in the soil and water on the Jones family property at the time that Roberts took Roberts' samples.

20. In addition, because of the monitoring systems that I and my colleagues at Togar Environmental installed and maintained on the Moore Chemicals property, which are state-of-the-art and specifically designed to allow the detection of chemicals including PCE, I am confident that any dispersal of PCE from the Moore Chemicals site would have been detected. Therefore, it is my opinion that, to a reasonable degree of scientific and engineering certainty, any PCE detected in the soil, water, or sediment in the Claim Street neighborhood, including in the soil and well water of the Jones family property, did not originate from the Moore Chemicals facility, but is from the former dry cleaning facility located up-gradient.

21. Of all the available exhibits in this case, I am familiar with the following and only the following: Exhibits #2, #3, #4, #5 and #8.

Riff Randall

Subscribed and sworn to before me
this 4th day of August, 2018

Adrienne Adams

My Commission Expires: 3/14/2025

AFFIDAVIT OF LESLEE M. NIELSEN, M.D., PH.D., M.B.

1. My name is Leslee Nielsen. I am a physician licensed to practice medicine in the states of Pennsylvania and New York. I am currently employed as the Chief of Public Health, Risk Management and Epidemiology Research for the Chemical Manufacturers Association of America, and as an Adjunct Professor of Clinical Epidemiology, Oncology, and Internal Medicine at the University of Pennsylvania at Philadelphia.

2. I attended the Mayo Medical School and did my residency in internal medicine and oncology at Johns Hopkins University Hospital. After medical school, I obtained a Ph.D. in public health from the University of Pennsylvania and a post-doctorate degree in world health from the Free University of Berlin.

3. I have spent 30 years in various jobs where I have had day-to-day clinical experience with people exposed to chemical hazards. I have also analyzed those hazards on both a small and large scale by conducting population studies both local and global.

4. I have been employed with both the World Health Organization to study natural and manmade chemical exposure to third world populations; I have served as the Associate Dean to the University of Delaware School of Public Health supervising research by public health graduate students regarding industrial exposures to urbanized communities; and I have been employed as the chief research chemist for a global chemical company analyzing the risk to employees and the public caused by the chemical manufacturer's product.

5. I have practiced medicine at the Sloan Kettering Cancer Center in New York, and have headed the morbidity actuarial research department (conducting research in anticipated illness and death rates) for one of the largest life insurers in the western world.

6. I have written dozens of articles and one textbook on the potential effects of chemical exposure to human populations. I have published in the United States and abroad on the topic of causes of cancer in humans.

7. I have paid particular attention in much of my work to the issue of causation. One of the major concerns I have with much of the public health literature I read is the problem of "post hoc ergo propter hoc". In Latin this means it happened afterwards therefore it happened because of it. This is the false cause that so much bad science and incomplete research introduces.

8. Much of my study in third world populations has shown that where populations are exposed naturally to chemicals, those populations generally suffer cancer rates well in excess of control groups. Later additional exposures from manmade sources cannot be determined to be causal.

9. My own published research shows that false causes for cancer and other health impacts are often determined based on inadequate exposure windows.

10. Much of the published research and popular and court made doctrine in such cases is also based on failure to have absolute control populations thereby not properly eliminating alternate causes.

11. The level of exposure and the dose/response relationship together with time studies for exposure must be confirmed with bioassays and animal testing. All of this must be shown to deviate from proper control populations in order to develop an accurate causal model. Much of the literature in the scientific community today does not satisfy this standard.

12. I have been retained by Moore Chemicals, Inc. ("Moore Chemicals") to consult with the Corporation regarding the environmental exposure claims of Lee and Edna Jones.

13. I routinely testify in cases of this type, both large and small, individual and class action, civil and even occasionally criminal, nationwide. This will be the first time I will appear in court in the State of Utopia.

14. In total I have been retained as an expert witness in 34 different lawsuits involving personal injury (or the perception thereof) from actual or potential chemical exposure. Of these cases, I have appeared on behalf of the defense or defense related interests 29 times, and on behalf of the plaintiff or plaintiff related interests 5 times.

15. I have reviewed the depositions, reports and written statements of plaintiff Jones' doctor, Dr. Wessel, plaintiff's environmental expert, and Plaintiff Lee Jones. I have also conducted independent medical examinations of Lee Jones and Edna Jones.

16. I reviewed Lee Jones' medical history and personal history and note that Jones had been hospitalized for over consumption of alcohol. Alcohol consumption is an exacerbating factor and has been a documented cause of liver cancer in humans according to population studies. It has also been shown to cause liver cancer in bioassay and animal studies.

17. I also note that both Mr. and Mrs. Jones had worked in a thermometer factory for several years where they were exposed to mercury on a regular basis. This exposure included the period during which Mrs. Jones was pregnant with Edna.

18. Exposure to mercury can cause cancer particularly in the liver as it enters the bloodstream by breathing, ingestion, or absorption and is removed from the bloodstream by the liver.

19. Jones was also potentially exposed to PCE contamination emanating from a dry cleaning facility for approximately three (3) years.

20. Jones has been exposed to high natural background levels of arsenic and mercury from the time the Jones family moved to Forward to the present day for a total of over thirteen (13) years.

21. I note that the Moore Chemicals operations in the vicinity of the Jones' residence has only existed for a period of just over ten (10) years to the present day.

22. Lee Jones worked at Moore Chemicals for two (2) to three (3) years during which time Jones may have worked with TCE, PCE, mercury, arsenic, Endrin, Hepthachlor, and Lindane.

23. Lee Jones' exposure windows for PCE, TCE, mercury and arsenic have been sufficient to have a carcinogenic impact but have come from multiple sources.

24. Lee Jones' documented exposure levels of PCE, TCE, mercury, and arsenic from Moore Chemicals are not of a sufficient dosage or time window to comport with any established dose/response, and time studies data for cancer causation.

25. Lee Jones' liver cancer was not to a reasonable degree of scientific and medical certainty caused by exposure to PCE, mercury, and arsenic in the last ten (10) years emanating from Moore Chemicals. This is true whether the issue is under the "substantial factor" analysis where such exposure was a substantial factor in causing the cancer or in a "but for" analysis where the cancers would not have occurred but for the exposures in question.

26. Edna Jones claims exposure to mercury from Moore Chemicals' operations.

27. Assuming Edna has been exposed to mercury as a result of Moore Chemicals' operations, the question is whether that exposure caused Edna's autism.

28. Autism has no known cause. However, the most promising research has focused on genetic causes. Population studies have shown that in families with one autistic child the risk of a second autistic child is one in twenty. In the general population, the risk of an autistic child is one in one hundred sixty-seven.

29. No published dose/response study through bioassay or animal testing and no population study of any kind has ever established a definitive link between autism and chemical exposures. Certain cognitive disabilities have been linked to childhood and gestational exposures to chemicals. However, efforts to link such chemical exposures to autism have suffered from "post hoc ergo propter hoc". No study to date has included adequate exposure data, adequate time studies for exposure, adequate dose/response, or adequate studies of routes of exposure to confirm causation of autism. No such study has ever established a sufficient causal link between PCE, arsenic, or mercury and autism.

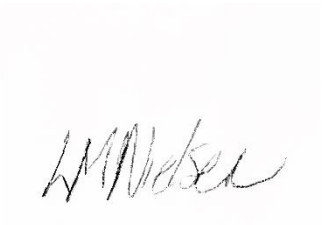
30. Autism is a developmental disability but it is not a cognitive disability in the same sense as those cognitive disabilities which have been shown to be linked to gestational or childhood chemical exposure.

31. Edna's chemical exposures both gestationally and in her early childhood could have been partially causal of certain cognitive disabilities other than autism. However, this is not what is claimed.

32. Dr. Wessel relies on preliminary data from population studies that fail to establish a causal link between mercury (as exacerbated by other exposures) and autism. The studies do not provide time studies for exposure, there is no dose response data, and no bioassay or animal testing to confirm the "findings."

33. Edna's autism has not to a reasonable degree of scientific and medical certainty been established to have been caused by exposure to PCE, arsenic, mercury, or any combination thereof. This is true whether viewed under the "substantial factor" analysis where such exposure was a substantial factor in causing the cancer, or in a " but for" analysis to determine whether her autism would not have occurred but for the exposure.

34. Of all the available exhibits in this case, I am familiar with the following and only the following: Exhibits #2 and #7.



Leslee M. Nielsen, M.D., Ph.D., M.E., D.

Subscribed and sworn to before me
this 11th day of August, 2018

Andy Mines
My Commission Expires: *permanent*

Exhibit 1

Curriculum Vitae

Robin Roberts, R.P.G.
300 Club Street
Raleigh, Utopia
(919) 555-1212
rroberts@mvp.com

Education:
University of North Carolina-Chapel Hill: B.S., Geology, 1998

Licenses, Certifications and Registrations:
Registered Professional Geologist:
Utopia Hydrogeologist
Certified PECFA Consultant

Work History:
1998-2002: Utopia Department of Natural Resources, Southeast District, Raleigh, Utopia
Hydrogeologist in bureau of solid waste management; primary work initially involved regulation of solid and hazardous waste landfills, and subsequently leaking underground storage tanks.

2002-2012: Ecology Restoration, Inc., Raleigh, Utopia
PECFA-related investigations and remedial actions, including tank removals, soil and groundwater investigations, remedial design and implementation.

2012-present: Roberts Environmental Associates, Clayton, Utopia
Soil and groundwater investigations and remedial actions at commercial, industrial, and residential properties, including Phase I and II environmental site assessments, remedial design and implementation.

Illustrative Experience:
Investigation and remediation of petroleum releases at Flaming Beagle Brewery, Lost Lake, Utopia, including unsaturated soil and groundwater remediation

Investigation of contaminant plume at Widget Dairy Equipment Corporation, Angus City, Utopia

Remediation of petroleum contamination at Wrigley Chevrolet, Hickory, Utopia

Exhibit 2

Table 1

Environmental Monitoring Data: Roberts Environmental Associates

Soil (composite samples) (date)

	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6
PCE	ND	ND	ND	ND	ND	ND
Arsenic	0.3	1.2	0.6	ND	0.8	0.4
Mercury (Hg)	ND	ND	ND	ND	ND	ND

Groundwater

	PW-1	MW-1	MW-2	MW-3
PCE				
Date 1	4.8	4.5	1.8	0.9
Date 2	12.4	6.9	2.7	7.6
Date 3	9.2	6.2	3.5	1.3
Arsenic				
Date 1	0.4	0.7	1.8	1.7
Date 2	ND	1.2	2.4	ND
Date 3	0.8	0.4	0.8	0.2
Mercury (Hg)				
Date 1	ND	ND	ND	ND
Date 2	ND	ND	ND	ND
Date 3	ND	ND	ND	ND

Stream (date)

	Surface H_20	Sediment-1	Sediment-2	Sediment-3
Arsenic	ND	3.4	6.8	0.7
Mercury (Hg)	ND	197.0	643.0	94.0

ND = No detect
All water samples = ug/l
All soil/sediment samples = mg/kg
PCE Groundwater Enforcement Standard/Preventive Action Limit = 5.0/0.5 ug/l Arsenic Groundwater Enforcement Standard/Preventive Action Limit = 10.0/1.0 ug/l Mercury Groundwater Enforcement Standard/Preventive Action Limit = 2.0/0.2 ug/l Arsenic Residual Soil Standard (Non-Industrial) = 1.6 mg/kg

Roberts Environmental Associates Diagram

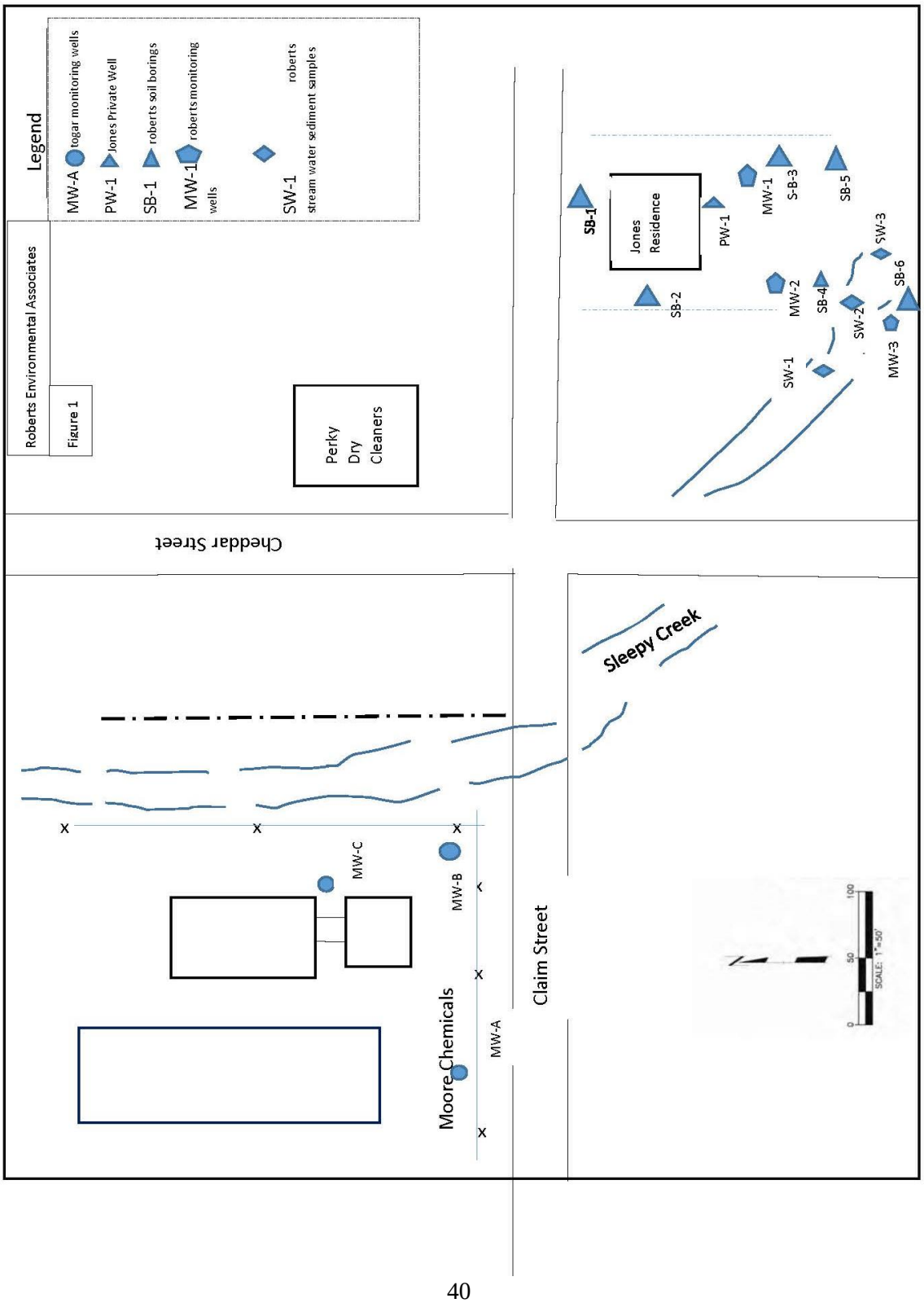


Exhibit 3

STATE OF UTOPIA / DEPARTMENT OF NATURAL RESOURCES

E. Lected Official, Governor
N. Agency-Head, Secretary

101 S Webster Street
Capital, Utopia 23173

July 4, 2008

Dee Dee Ramone
Perky Dry Cleaners
27 Claim Street
Forward, Utopia 5999

Subject: Case Closure
Perky Dry Cleaners, 28 Claim Street, Forward, Utopia
|UDNR BRRTS # 01-99-012345678

Dear Ms. Ramone:

On March 26, 2008 your request for closure of the case described above was reviewed by the Department's Regional Closure Committee. The Closure Committee reviews environmental remediation cases for compliance with state rules and statutes to maintain consistency in the closure of these cases. After careful review of the closure requested, the Closure Committee has determined that the contamination of tetrachloroethylene [also known as perchloroethylene or PCE] from the site of Perky Dry Cleaners from former underground storage tanks appears to have been investigated and remediated to the extent practicable under site conditions. Your case has been remediated in accordance with s. NR 726.05, Utopia. Adm. Code.

We have reached this conclusion because of the investigations and measures you took, which include the following:

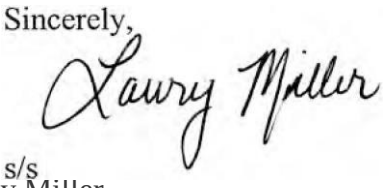
- Installing a monitoring well network that determined regional ground water quality. This showed a ground water flow from west to east.
- The monitoring well network showed no background levels of PCE in the regional groundwater, although metals testing did find a regional concentration of arsenic in ground water that averaged 740 milligrams per liter (740 mg/l).
- Definition of leaked PCE from an underground storage tank on the Perky Cleaners property, and removal of the tank and PCE-contaminated soil as described in your Consultant's report.
- Eight quarters of ground water monitoring in the well network that showed a plume of contamination with PCE from the tank site in concentrations above the groundwater enforcement standard of 5 micrograms per liter (5 ug/l) as defined in s. NR 140.10, Wis. Adm. Code, Table 1. These results are summarized in the attached Appendix I.
- Your action to inform affected property owners by letter of the contamination and propose remediation.

- The measures by your consultant to:
    - cap the site to prevent further infiltration and mobilization on of remaining PCE;
    - allow natural attenuation to further degrade the remaining residual PCE in soil; and
    - continue quarterly ground water monitoring to confirm attenuation and lowered concentrations of PCE are observed ground water for an additional eight [8] quarters.

Your site will be listed in the DNR Remediation and Redevelopment GIS Registry of Closed Remediation Sites. Information that was submitted with your closure request application wi.11 be included on the registry. To review the sites on the GIS Registry, please visit h ttp://gomapout.dnr.state.ut.us /org/at/et/geo/gwur/index.htm.

Please be aware that this case may be reopened pursuant to s. NR 726.09, Utopia. Adm. Code if additional information regarding site conditions indicates that contamination on or from the site poses-a threat to public health, safety or welfare, or the environment.

Sincerely,



s/s
Laury Miller
Hydrogeologist
Bureau for Remediation and Redevelopment

Exhibit 4

Appendix I – Summary of Ground Water Monitoring Results of Private Water Supply Wells at:

Perky's Dry Cleaners

28 Claim Street
Forward, Utopia 5999

UDNR BRRTS # 01-99-012345678

Date of Sample Collection

Address	Well Owner	9/06	12/06	3/07	6/07	9/07	12/07	3/08	4/08
10	Ellas Bates	4.4	7.0	7.1	7.1	6.4	5.3	4.6	3.8
13	Lee Jones	4.9	7.2	6.3	5.6	5.1	4.7	4.3	4.0
16	Roy Scherer	9.6	7.8	4.0	N/D	3.7	2.1	N/D	N/D
28	Douglas Glenn Colvin	10.3	10.2	10.2	8.7	5.3	4.9	4.6	3.1
34	Cherilyn Sarkisian	3.2	1.1	N/D	1.0	N/D	N/D	N/D	N/D

Notes:

1. All address numbers are on Claim Street, Forward, Utopia.

2. All concentrations are for analysis of tetrachloroethylene or PCE and listed in micrograms per liter [ug/L].

3. N/D means not detected or present below the limit of quantitation.

Exhibit 5

Report of Togar Environmental on Hazardous Substance Management at the Moore Chemicals, Inc., Facility Forward, Utopia

July 4, 2015

Prepared by:

Riff Randle PE

Executive Summary

This report has been prepared by Riff Randle, P.E., of Togar Environmental at the request of Jerry Smith, environmental compliance officer of Moore Chemicals. Smith requested a review of reported issues with materials handling and possible releases of waste materials. Smith further requested Togar provide conclusions and recommendations about needed action under ch. 292, Utopia Statutes for hazardous substance spills.

This report is based on the following the following data:

- A review of relevant Department of Natural Resources records and regulatory requirements
- A review of records kept by Moore Chemicals and its commercial waste hauler, Ty-Dee Factoreez
- Interviews with employees of Moore Chemicals and Ty-Dee
- On-site surface inspections in and around the liquid waste storage building on the east side of Moore Chemicals' Forward manufacturing facility
- Undisturbed soil samples taken with a split spoon and auger drill in areas of visible contamination
- Grab soil samples of excavations of visibly contaminated soil
- Logs of undisturbed soil samples collecting during drilling of 3 on-site ground water monitoring wells
- Ground water samples from the groundwater monitoring wells
- Sediment samples from the drainageway from Sleepy Creek

Refer to the attached Figure A for the locations of these investigatory activities and samples.

The principal findings and recommendations are explained in detail in body of the report, but include the following:

Employee Interviews

I undertook a series of interviews in April 2015 with Edison de Nasciemento, a Moore Chemicals employee who was in charge of day-to-day management of the liquid wastes. He reports the spent degreasing solvent and arsenic/mercury metals solutions were often inadequately managed. Mr. Nasciemento reported that during a short-staffed period from late 2014 to March 2015, drums of the above liquid wastes were often left outside the secured storage buildings and often without tops securely bung banded and bolted on. He also reports that employees of the Ty-Dee Factoreez waste management firm also on occasion knocked over some of the unsecured barrels of solvent and metal wastes during this time, and that there contents spilled onto soil outside the storage building. He indicates that he did report these incidents to Moore Chemicals' security office, but was unaware of the waste materials management plan that required immediate notification of Moore Chemicals' environmental compliance officer.

I also interviewed Isaac Hanson and Mary Jane West, who worked for the Ty-Dee Factoreez waste management service. Mr. Hanson, who has a very lean build, prominent tattoos and extremely poor teeth, essentially reiterated Mr. Nasciemento's version of issues in our initial interview of April 6, 2015. He also mentioned what he described as the "fork lift tank truck puncture incident" at that interview. Unfortunately I never had the chance to meet Mr. Hanson for further interviews, and was told his employment was terminated for "troubles with the DEA".

Ms. West did not corroborate this version, but instead related that as a long-time Ty-Dee Factoreez employee everything at Moore Chemicals' Forward factory was done "by the book and in accordance with the law." She did mention, however, that there was a pervasive smell of chlorinated hydrocarbons that she said "smelled like perk" whenever she and Mr. Hanson collected liquid wastes from Moore Chemicals. She also indicated that Ty-Dee had difficulty operating its forklift that was routinely used to empty drums of liquid waste into the firm's liquid tank truck in the vicinity of the liquid waste building due to space limitations and poor facility design.

II. Subsurface Investigations

Based on the above reports of spilled liquid wastes, I commissioned a subsurface investigation and soil excavation. Undisturbed soil samples were collected through hollow-stem augers using a 2-inch diameter split spoon to a depth of 20 feet at three areas of visible soil discoloration. The samples were analyzed for chlorinated hydrocarbons and the metals mercury, zinc and arsenic [all likely constituents of Moore Chemicals' metal finishing solution] using appropriate procedures in the US EPA's "SW 846 – Test Methods for Evaluating Solid Waste" as specified in s. NR 716.13(3), Utp. Adm. Code. Results of the chemical analysis of soil samples are discussed in detail in the report below, and not repeated here for brevity.

It is noteworthy that the chlorinated hydrocarbon tetrachloroethylene [or PCE] and the metals mercury and zinc were detectable at 20-foot depths in borings SB-C and SB-D. Arsenic was present in these borings at the 20-foot level at 1.5 and 1.6 milligrams per liter, respectively at the 20 foot levels of SB-C and SB-D, which overall complies with the cleanup standard in Table 2 of s. NR 720.11, Utopia. Adm. Code.

Based on these laboratory analyses, soils were excavated using a back hoe to the 20-foot depth, the allowable concentration for arsenic. This resulted in approximately 40 cubic yards of excavated material.

Because of the potential for groundwater contamination from the above liquid waste handling practices, three (3) ground water monitoring wells were also installed in the vicinity of the liquid waste storage building. The wells were installed under the supervision of a Utopia Professional Engineer pursuant to the relevant requirements of ch. NR 141, Utopia. Adm. Code. Based on static water levels from these wells, a general ground water gradient from west to east, with a slight southern component, is present in the vicinity of the waste storage building.

The groundwater monitoring wells were subsequently sampled twice in a three-month interval and tested for the chlorinated hydrocarbon tetracholorethylene, or PCE, and the metals mercury, zinc and arsenic in accordance with the applicable methods specified in ch. NR 149, Utopia. Adm. Code. Monitoring wells MW-A and MW-C did not contain detectable levels of these constituents. However, PCE and the metals mercury, zinc and arsenic all were detected in samples from MW-B. Results of these analyses are summarized in the following Table.

RESULTS OF GROUND WATER MONITORING, WELL MW-B

Date of Sample	Concentration of PCE	Concentration of Mercury	Concentration of Arsenic	Concentration of Zinc
April 1, 2015	5 ug/L	0.01 ug/L	15 ug/L	ND
June 15, 2015	3 ug/L	ND	17 ug/L	N/D

1. Concentrations in ug/L or micrograms per liter.

2. N/D is not detected or present below the limit of quantitation

I interpret the ground water monitoring results to indicate some residuals from past discharges of the sampled constituents. Further investigation is needed to determine the nature and extent of any migration to the east of the Moore Chemicals property and whether the detection of arsenic is due to past activities at Moore Chemicals or the result of naturally occurring background concentrations.

Surface Water Investigations

Visible discoloration likely caused by past spills and surface transport via surface drainage to Sleepy Creek was observed in an April 2015 site visit. Because of this, three (3) surface water sediments were collected in Sleepy Creek off-site. The collected stream sediment samples were analyzed for chlorinated hydrocarbons and the metals mercury, zinc and arsenic, using EPA soil test method SW 846. Results of the chemical analysis of soil samples are discussed in detail in report below, and for the sake of brevity are not reproduced here.

Two (2) of the stream sediment samples were collected off of the Moore Chemicals property and west of Cheddar Creek. The analysis showed concentrations of mercury, arsenic, and PCE of 2.5 micrograms per liter [ug/L], 25.0 ug/L and 0.3 ug/L, respectively, in the upstream of the two (2) samples above the property in a slow-water area. There were no detectable levels of these constituents in the lower, downstream sample shown on Figure A.

The residential area of Sleepy Creek flowing east of Cheddar Street could not be sampled because the owners repeatedly denied requests for access to the stream. The

third stream sediment sample, collected east of the residences and approximately 500 feet downstream of Cheddar Street [but not shown on Figure A due to scale considerations] did not contain detectable levels of mercury, arsenic, or PCE.

Conclusions and Recommendations

There is creditable evidence to support a conclusion that liquid wastes containing chlorinated hydrocarbons, particularly PCE, and the metals arsenic and mercury, were discharged outside the Liquid Waste Storage Building on the eastern portion of Moore Chemicals' Utopia facility. These liquid wastes have migrated into subsurface soils and appear to have entered the shallow ground water to the point where they are detectable in water table ground water monitoring wells. Constituents from the liquid wastes have also been detected in sediment samples from Sleepy Creek, and have migrated downstream off Moore Chemicals' facility, but do not appear to have migrated east of Cheddar Street.

Moore Chemicals should review its liquid waste management practices and make sure that all its staff understand and can follow the management and reporting requirements in the waste management plan prepared by Togar Environmental on July 4, 2012. Moore Chemicals should also evaluate whether it should continue to use the waste management services of Ty-Dee Factoreez, given questions about the quality and truthfulness of Ty-Dee's staff, problems with staff turnover, and past incidents that appear to have contributed to waste liquid waste management incidents.

Moore Chemicals should continue to monitor the on-site groundwater monitoring wells for chlorinated hydrocarbons and the metals arsenic, mercury and zinc for at least eight (8) additional quarters. Additionally, Moore Chemicals should engage Togar or another qualified environmental consulting firm to develop an appropriate surface water monitoring program.

Because of apparent migration off the Moore Chemicals property of chlorinated hydrocarbons and the metals mercury, zinc and arsenic, Moore Chemicals should also engage Togar or another qualified environmental consulting firm to propose a groundwater monitoring effort for the off-site private drinking water supply wells listed in a July 4, 2008 DNR document.

Finally, Moore Chemicals should report to the UDNR a possible hazardous substance release pursuant to the legal requirements of s. 292.11(2), Utopia Stats.

Togar Environmental Diagram

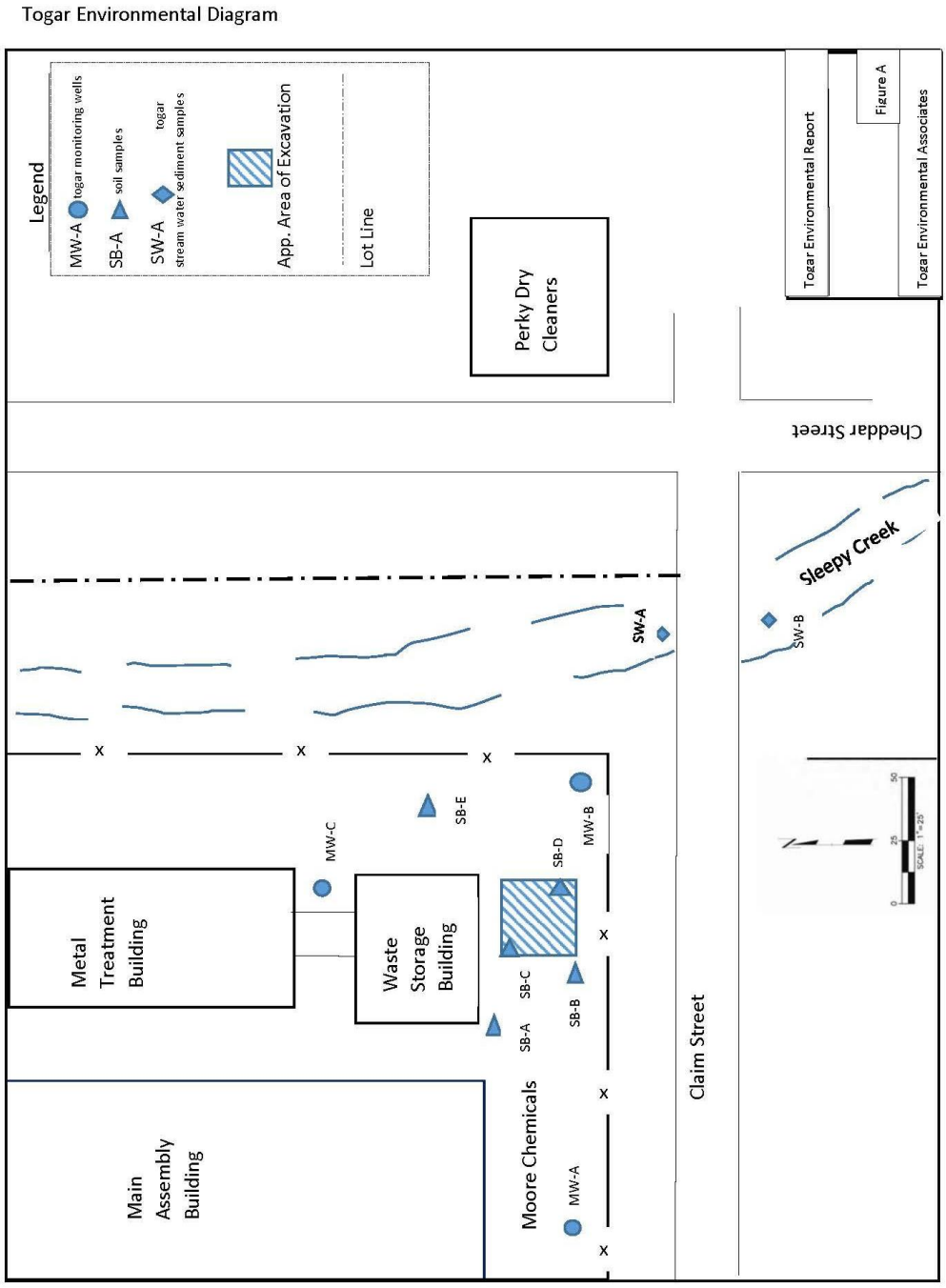


Exhibit 6

CURICULUM VITAE

Kris/Kristin Wessell, M.D./ Ph.D.

PERSONAL

Office Address:	University of Utopia Hospital & Clinic Forward, Utopia Satellite Office 777 Moore Chemicals Way Forward, Utopia 54311 920-555-2739
Birth:	October 7, 1968 Durham, Utopia

EDUCATION

Undergraduate:	University of Wisconsin, Madison Bachelor of Science, 1990 Major: Biochemistry and Biology
Graduate:	Wayne State University Medical School, Detroit, MI M.D., 1994 Duke University Research Fellowship, Environmental Toxicology, 1996 Ph.D., 1997
Residency:	University of Utopia Hospital and Clinics July 1997- June 2000 James, O. Oliva, M.D., Chairman

PROFESSIONAL LICENSURE

Utopia- July 15, 2000

BOARD CERTIFICATION

American Board of Family Medicine, 2001

PROFESSIONAL MEMBERSHIPS

American Medical Association
Utopia Medical Society

American Academy of Family Physicians American College of Medical Toxicology Society of Toxicology

SELECT PUBLICATIONS

Wessell, K.M., Stevens, C.R., Luedtke, S.A.
Herbicide groundwater/air contamination and population specific cancer: Chem. Res Toxicol. 323: 131-143, 2000.

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Wessell, K.M., Maca, C.A.., Wolf, J.A..:
Environmental mercury release and cognitive impairment: learning disabilities and special education, forthcoming, J. Med. Toxico: July 2019.

Wessell, K.M., Jurgella, M.S.., Kane, K.A.: Environmental contamination: the effects of pronounced exposure to PCE and other pollutants, forthcoming, N. Engl. J. Med. January 2023.

PRESENTATIONS

Wessell, K.M., Lindstrom, J.A., Okray, J.G: Groundwater source pollution contaminants, American College of Medical Toxicology, 3rd Annual Meeting, Phoenix, AZ, March 1, 2006.

Wessell, K.M., Biederbeck, J.P., Griffin, P.G. Industrial contamination: population specific risk and childhood cognitive development. Society of Toxicology, 40th Annual Meeting, Madeira Beach, FL, August 3, 2011.

Wessell, K.M., Wacowiak, J.W., Gostomski, K.A. Environmental contamination: aggravation risk factors, American Academy of Family Physicians, 59th Annual Meeting, Warrens, WI, May 15, 2016.

Exhibit 7

Leslee M. Nielsen, M.D., Ph.D., M.B.
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Wilmington, DE 99642
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Current Employment:

Adjunct Professor of Clinical Epidemiology, Oncology, and Internal Medicine, University of Pennsylvania at Philadelphia, 2000-Present.

Chief of Public Health, Risk Management and Epidemiology Research, Chemical Manufacturers Association of the United State of America, Wilmington, Delaware, 2015-Present.

Prior Work Experience:

Director of Chemical Exposure Research, World Health Organization, Geneva, Switzerland, 1995-2000. Conducted research and supervised a staff of 17 and an annual operating budget of $3.9 million conducting population research studies regarding cancer and other health issues resulting from chemical exposures in third world nations.

Associate Dean, University of Delaware School of Public Health, 2000-2015. Associate Dean in charge of clinical programs at University of Delaware in Newark, Delaware. Particular emphasis on clinical programs examining public health issues resulting from industrial exposures to urbanized communities. Over 18 of my students' papers were published in various medical journals and public health journals from this clinical project.

Research Chemist/Risk Management Researcher, E.I. DuPont DuMours Company, Wilmington, Delaware. 1992-1995. Provide research for large multi-
national chemical manufacturer regarding potential impacts of its products on human populations and employees and company facilities. Conducted actuarial and population studies regarding the same.

Chief of Morbidity and Actuarial Research, Northwestern Mutual Life Insurance Company, Raleigh, Utopia. 1990-1992. Headed Department of Fortune 500 Life Insurance Company determining anticipated illness and morbidity rates for human populations in the markets served by my employer. In particular, studied the impacts of smoking, alcohol, and industrial exposures on human longevity.

Staff Internist and Oncologist, Sloan Kettering Clinic New York, New York, 1988-1990.

Education: Meister's Bescheinigung in Weltgesundheit, Frei Universtat, Berlin.
Graduated: 1988

Ph.D. in Public Health, University of Pennsylvania School of Public Health, Graduated: 1987

M.D. Mayo Medical School, Rochester, Minnesota Graduated: 1985, Magna Cum Laude, Order of the Beaker and Forceps. Residency in internal medicine and oncology at Johns Hopkins University, Baltimore, Maryland, 1981-1985.

Bachelor of Arts in Philosophy. The Leland Stanford University, Palo Alto, California, Graduated: 1981, Magna Cum Laude, Phi Beta Kappa.

Publications:

"Epidemiology and False Causes: A Statistical Comparison of Population Studies to Bio Assay and Control Group Data," (University of Pennsylvania Doctoral Thesis 1987)

"A Population Study of the Impacts of Mercury Exposure in the Natural Environment: The Caribbean Experience," World Health Organization Journal of Public Health, July 2017 (Smith and Wesson, co-authors)

"False Causes In Toxic Exposure Claims: The Problem of Dose/Response," Stanford University Medical Journal, Spring 2017 (Bartles and James, co-authors)

"Toward Accurate Bioassays and Animal Testing," New England Journal of Medicine, Summer 2015 (Martin and Lewis, co-authors)

"Time Studies for Exposure to Chemical Hazards: The Shortfalls of Practical Science," Mayo Health Journal, July 2015 (Cheetah, co- author)

Editor: "Conducting Population Studies for Chemical Exposure,"
Harvard University Press, 1995

"Discounting the Multiple Effects of Environmental and Lifestyle Exposures in Actuarial Science," Insurance Journal, 1991

Nielsen, Leslee, Sax, Iriving and Lewis, Richard, "Hawley's Condensed Chemical Dictionary" (11 Ed. 1998)

Editor, World Health Organization Report on the Health of the World's Cities 2000 (World Health Organization, January 1, 2010)

Chemiekrankheit in Europaische Stadte (Krebsforschungzeitschrift, Berlin, 2017)

Presentations: "The Role of the Physician in Diagnosing Chemical Exposure." American Medical Association Convention, Las Vegas, Nevada, 2006.

"World Health Organization Report on the Health of the World's Cities 2010" (World Health Organization, January 1, 2010). Geneva, Switzerland.

"American Chemical Regulation: A Success Story"
Health Subcommittee of the United States Senate at Washington D.C. in May 2012.

"The Reason Behind Skyrocketing Breast Cancer Rates: Debunking a Myth." University of Pennsylvania Symposium on Public Health (Philadelphia, 1998).

"Nature vs. Nurture: The Problem With Causation and Chemical Exposure." North American Summit on Public Health, Vail, Colorado, April 2008.

"Exploitation of Third World Populations by Externalization of Chemical Exposure from the First World." United Nations Health Committee, New York, New York, November 2011.

"Airborne Mercury from Power Plants." House Human Health Subcommittee (proceedings leading to the development of the Toxic Substances Control Act and the Enhancement of the Federal Clean Air Act), January 1989.

Languages: English, German, Latin

Memberships: Fellow and Board Certified, American College of Oncology; Fellow, American Epidemiology Institute; American Medical Association; American Cancer Society Science Committee; UNICEF Health Steering Committee; Physicians for World Peace.

Hobbies: Civil War Reenactment; Sailing, Zymurgy

Exhibit 8

Riff Randall, P.E.
Togar Environmental Solutions
1234 Vince Lombardi Drive
Raleigh, Utopia 53202

CURRICULUM VITAE

Professional Profile

Riff Randall is a Principal of Togar Environmental Solutions, which Randall founded in 1991. Randall has thirty-two (32) years of environmental assessment and remediation experience, including sales, marketing, and administration. Riff Randall has overseen characterization and/or remediation projects for CERCLA, RCRA, TSCA, and the DNR, as well as Voluntary Action or Remedial Activity for industrial and commercial clients. Randall most recently has served as Senior Project Manager for various client sites including Phase I/II assessments, comprehensive contaminate assessments, and remediation activities. Randall specializes in directing environmental characterization, remediation, and restoration projects and programs, taking into account the specific site conditions and local regulations.

Professional Experience

Togar Environmental Solutions, Raleigh, Utopia, 1991-present.
Currently holds title of Senior Project Manager.

The Rambeau Group, Inc., Raleigh, Utopia, 1986-1991, Environmental Engineer.
Responsibilities included designing, installing, and operating soil and groundwater treatment equipment; characterizing, segregating and removing regulated wastes; and implementing water, wastewater, groundwater, soil, solid and hazardous waste engineering and management programs.

Education and Degrees Earned

B.S., Geologic Sciences, Duke University, 1983
M.S.C.E., Environmental Technology, NCSU-Madison College of Engineering, 1986

Professional Certifications

Professional Engineer - Utopia (No. 8675309)
Certified Hazardous Materials Executive - UTO
OSHA Health and Safety Certified (29 CFR 1910.120)

Affiliations and Professional Societies

National Groundwater Association
World Safety Organization

Society for Risk Analysis
Academy of Hazardous Materials
Management Air and Waste Management
Association

Summary Of Capabilities

Phase I/II Environmental Site Assessments
UST Compliance, Assessment, and Remediation
Soil and Groundwater Contamination Investigations and
Assessments Remedial Design and Implementation
Project Management
Regulatory
Negotiation
Hydrogeologic
Studies
Environmental Regulations and
Permitting Voluntary Action Program
Project Management
Environmental Engineering &
Consulting Environmental Site
Assessments/Audits Risk Assessments
Sampling and Analysis Plans
Quality Assurance/Quality Control
Plans Pilot Studies
Remedial Investigation/Feasibility Studies
Remedial Facility Investigations/Corrective Measures
Studies Operation and Maintenance Plans
Hazardous Materials
Management Process Safety
Management

Select Project Experience

Directed the implementation of removal actions for asbestos, PCBs and organic compounds at Ramone Industries in Asheboro, Utopia, a 10-acre facility, in accordance with a CERCLA Administrative Order of Consent (AOC). Activities included initial inventory, sampling, characterization, removal and disposal of 500 gallons of RCRA waste, 2,500 gallons of PCB oils, 15 transformers, 52 capacitors, 450 cubic yards of asbestos containing materials, 22 tons of petroleum-contaminated soil, 3,000 cubic yards of demolition debris, 200 tons of scrap steel, and 10 tons of rubber tires and belts. Managed the removal action pursuant to the Utopia DNR's Remediation and Redevelopment Program.

Directed the installation of a soil vapor extraction (SVE) system for remediation of PCE-contaminated soil and groundwater at Eaglebauer Metal Fabrication in Goldsboro, Utopia. Managed permitting, construction/installation of remediation system concurrent with local and DNR schedules and in accordance with their individual specifications.

Directed an investigation into the handling and possible release of process waste materials, including mercury, arsenic, and PCE, from the Moore Chemicals facility in Forward, Utopia. Project included a subsurface investigation and excavation of contaminated soil, installation of groundwater monitoring wells, and design and installation of environmental monitoring system.

Directed numerous site assessments involving petroleum and petrochemical underground storage tanks. Responsibilities included working with engineers and scientific consultants to develop of field sampling programs, evaluate analytical test results, and prepare reports summarizing the finding of the assessment.

Involved in managing the assessment and subsequent remediation of more than thirty (30) gasoline service stations in various areas in Utopia. Soil and groundwater remediation systems recommended included removal of underground storage tanks, soil excavation and disposal, soil vapor extraction, aboveground biological treatment, and various groundwater pump-and-treat methods.

Directed the removal and disposal of approximately three hundred (300) 55-gallon drums of hazardous waste from the former P.J. Soles Naval Shipyard site in Wilmington, Utopia. The work was performed as a result of an administrative order from U. S. EPA Region 5.